

1.5 The major repositories of information consulted comprised:

UNESCO

- List of World Heritage Sites; and
- Tentative List of sites for World Heritage status (January 2012).

Worcestershire Historic Environment Record (GHER)

- Listed buildings;
- Scheduled Monuments;
- Register of Parks and Gardens of Historic Interest; and
- Register of Landscapes of Special or Outstanding Historic Interest
- Database of known archaeological sites, findspots and previous archaeological works.

English Heritage Archive (EHA)

- Database of archaeological monuments and events.

Historic Ordnance Survey mapping

- County Series Ordnance Survey maps

Site visit

- A site visit was undertaken on 20 September 2013 in order to identify any heritage assets not previously recorded within the site, to identify any previous disturbance, and to assess any other potential constraints affecting the proposed development.

1.6 All sites or assets of heritage interest identified in the baseline survey are located on Fig. 1. The gazetteer (Appendix A) correlates points of interest or heritage assets with their reference number on the Historic Environment Record, as well as any other relevant statutory designation or status. Points of interest are marked in bold in the body of the text thus, **00**.

2 BASELINE SURVEY

Designated Heritage Assets

World Heritage Sites

- 2.1 No World Heritage Sites or sites included in the 2012 tentative list of sites for World Heritage status are located within the site or its vicinity.

Scheduled Monuments

- 2.2 No Scheduled Monuments are situated within the site or the study area, and the nearest is c.2.5km to the east.

Listed buildings

- 2.3 There are no Listed buildings within the site. There are five Listed buildings within the study area (Fig 1, 1-5). These are as follows:
- The Church of St Michael, Grade I (Figure 1, 1);
 - Church Mill House, Grade II (Figure 1, 2);
 - A Lynch Gate, located about 75m south-west of the church, Grade II (Figure 1, 3);
 - Aldham House, Grade II (Figure 1, 4); and
 - The Priory, including adjoining outbuildings to the north, Grade II (Figure 1, 5).

Conservation Areas

- 2.4 There are no Conservation Areas within the proposed development site, though there is one Conservation Area within the study area. This is the course of the Birmingham and Worcester Canal (Fig. 1). It runs from Worcester Bar (Gas Street Basin, Birmingham) where it joins the Birmingham Canal Navigations, to Worcester, where it joins the River Severn. The work on the Worcester and Birmingham canal started in 1794 and it opened in 1815.

Registered Parks and Gardens

- 2.5 There are no Registered Parks and Gardens located within the proposed development site or the study area.

3 PLANNING POLICY

National Planning Policy

- 3.1 The National Planning Policy Framework sets out planning policies relating to 'conserving and enhancing the historic environment'. It defines the historic environment as 'all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.' It further classifies a 'heritage asset' as 'a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest.'
- 3.2 Heritage assets include designated heritage assets and assets identified by the local planning authority (including local listing). Policies relate to both the treatment of the assets themselves and their settings, both of which are a material consideration in development management decision making.
- 3.3 The NPPF states that "The purpose of the planning system is to contribute to the achievement of sustainable development" and that there are "three dimensions to sustainable development: economic, social and environmental". The role the environment will play is described as "contributing to protecting and enhancing our natural, built and historic environment; and as part of this, helping to improve biodiversity, use of natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy".
- 3.4 With regard to non-designated heritage assets specific policy is provided in that a balanced judgement will be required having due regard to the scale of any harm or loss and the significance of the heritage asset affected.

Local Planning Policy

- 3.5 Bromsgrove District Council is currently compiling the Bromsgrove District Plan (2011-2030) (formerly the Core Strategy). The current document – known as the Proposed Submission Version – is still in preparation. But, as it stands, Policy BDP20 'Managing the Historic Environment' will provide specifically for heritage.

- 3.6 Until the adoption of the Bromsgrove District Plan, the Bromsgrove District Local Plan (2004) contains certain saved policies which remain in force. Those that relate to the historic environment are Policies C36 – C39 'Archaeology' and Policies S35 – S48 'Conservation'. Both the saved Local Plan policies and the proposed District Plan policies are provided in Appendix B of this appraisal.

4 SUMMARY OF THE HISTORIC DEVELOPMENT OF THE SITE AND ITS ENVIRONS

Previous Archaeological Works

- 4.1 No previous archaeological works have taken place within the proposed development site. Within the study area, an on-going programme of historic building recording and archaeological assessment is recorded at the site of the Stoke Works salt works c.350m south of the proposed development site (Figure 1, 18). Photographic survey has also been undertaken along certain sections of the Birmingham and Worcester Canal (now a Conservation Area), which runs NE-SW to the south of the development site, c.150m away at its nearest point. The only other investigation recorded within the study area is a photographic survey of Moor Farm Barn, a barn located c.300m north-east of the proposed development site (not illustrated).

Prehistoric and Roman

- 4.2 No prehistoric sites have been identified within the proposed development site, and only a single prehistoric site is recorded within the study area. This is the site of an inhumation burial and a number of pits containing animal bone, which are likely to date to the Bronze Age (Fig. 2, 6).
- 4.3 No Roman assets are recorded within the proposed development site. The only Roman asset recorded within the study area is the possible alignment of the Roman Road from Bromsgrove to the south east, which runs roughly NW-SE through the study area, c.150m to the east of the site (Figure 1, 21).

Early medieval and medieval

- 4.4 There are no Early Medieval assets recorded within the proposed development site or anywhere within the wider study area. The possible location of the deserted Medieval settlement of Stoke Prior is located c.360m north-east of the proposed

development site (Figure 1, 7). A short distance to the east of this is the location of a conjectured watermill at Old Mill Pond, c.480m north-east of the proposed development site (Figure 1, 8). During the Medieval period the whole of the study areas is known to have been located within the bounds of Feckenham Forest.

Post-medieval and modern

- 4.5 No Post-medieval or modern heritage assets have been identified within the proposed development site. The majority of the heritage assets within the study area date to the these periods. The earliest of these features are a Post-medieval corn mill, located c.320m to the north-west of the proposed development site (Figure 1, 10), and a possible Post-medieval pit (of unknown function) located c.490m north-east of the proposed development site (Figure 1, 9).
- 4.6 The majority of the modern features within the study area are industrial in nature. Principal amongst these is the site of the Stoke Works salt works (Figure 1, 18). The salt works was operational throughout the 19th and much of the 20th centuries. It is located c.40m south of the proposed development site, to the south of the Birmingham and Gloucester Railway (Figure 1, 17 and 19). Stoke Works station was located just beyond the southern site boundary (Figure 1, 14); it opened in 1841 and closed in 1966. There is no evidence to suggest associated features extend into the site.
- 4.7 Other modern industrial assets comprise Stoke Farm Reformatory, a juvenile prison located just beyond the northern boundary of the proposed development site ((Figure 1, 12); the location of a probable brick kiln located c.320m south-east of the proposed development site (Figure1, 16); and a mill on the River Salwarpe c.180m north-east of the proposed development site (Figure 1, 13). On the basis of place-name evidence, a number of other unconfirmed industrial sites are considered to be dispersed across the study area (and the wider region); these include a needle mill, a brickyard, a paper mill and some lime kilns. There is no place-name evidence to suggest that the proposed development site has ever supported industry.
- 4.8 The first edition OS Map of 1885 (not illustrated) records the site in agricultural use, with much of the central southern part supporting an orchard. This remained unchanged at the time of the second edition OS map of 1903 (not illustrated). The orchard area had been enlarged by the time of the 1927 OS map (not illustrated), to cover much of the southern part of the proposed development site. No further

development, heritage assets or changes in land use are documented by subsequent historic mapping.

Undated

- 4.9 The only undated feature recorded within the study area is a ford over the River Salwarpe, which is located c.400m north-west of the proposed development site (Figure 1, 20).

5 CONCLUSIONS

Recorded Heritage Assets

- 5.1 No heritage assets (neither designated nor non-designated) are recorded within the site on the Worcestershire Historic Environment Record or the English Heritage Archives.

Potential for currently unrecorded heritage assets

- 5.2 The baseline survey has identified very little evidence for prehistoric activity in the site environs, the only finds of this period being a single burial located on the other side of the railway to the south-west. While the posited line of a Roman Road is located to the east of the site, there are no other Roman assets recorded locally and there is no suggestion of any settlement activity in the site area. The potential for currently unrecorded Prehistoric or Roman remains to occur within the study area is, therefore, low.
- 5.3 The study area is known to have been located within Feckenham Forest during the medieval period, with the supposed site of the Stoke Prior medieval settlement located c.360m to the north-east of the proposed development site. The site is likely to have formed part of the agricultural hinterland of the settlement and it is therefore unlikely that any significant medieval remains occur undetected within the site.
- 5.4 There is no suggestion in the Historic Environment Record or the English Heritage Archive databases, or on the available historic mapping, that post-medieval or modern industrial activity occurred within the proposed development site. It seems likely that the site remained in agricultural use following its clearance from Feckenham Forest. During the 19th and early 20th century orchards within the site may have impacted upon (through root damage) any potential buried remains.

- 5.5 The HER records the location of Stoke Works Station in proximity to the southern boundary of the site. There is no suggestion that any elements of the station were ever located to the north of the track, within the proposed site. Any elements that might survive in this regard would not be anticipated to be of sufficient value to influence or preclude development.

Conclusions on archaeological potential

- 5.6 Given the general low potential for archaeological remains indicated by an examination of the site environs, there is considered to be little potential for significant archaeological remains within the site.

The setting of designated heritage assets

- 5.7 As well as physical impacts, development may also have a non-physical effect upon the setting of a heritage asset. The English Heritage volume *The Setting of Heritage Assets* (EH 2011) defines 'setting' as '*the surroundings in which an asset is experienced. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance, or may be neutral*' (*ibid*, 5). Setting comprises one element of the overall significance or 'value' of a heritage asset.
- 5.8 Given the built form of the proposed development, it is possible that it may have an adverse effect on the settings of surrounding heritage assets. In particular, the potential effect of the development on the settings of the Worcester and Birmingham Canal Conservation Area (including its associated infrastructure, e.g. bridges), and the five Listed Buildings identified within the study area, would need to be assessed by means of a formal settings assessment.

Conclusion

- 5.9 The appraisal has not identified any heritage assets within the proposed development site itself. The appraisal did identify a number of heritage assets within 500m of the proposed development site. These include one Grade I Listed Building, four Grade II Listed Buildings, and a single Conservation Area. Identified non-designated heritage assets largely comprised post-medieval and modern industrial assets of comparatively low significance.

- 5.10 Given the general low potential for archaeological remains identified within the site environs, there is considered to be a low potential for significant archaeological remains within the proposed development site. Any remains that might survive are likely to be agricultural in nature, e.g. post-medieval / modern field boundaries, which would not be considered heritage assets. Historic forest and orchard tree-cover may have disturbed any potential buried remains within the proposed development site.
- 5.11 On the basis of this initial appraisal, it is considered that there are no overriding heritage constraints to development within the site and that the development would not be contrary to national, regional or local planning policy. However, further assessment works (such as a full desk-based assessment and possibly field survey techniques such as geophysical survey or trial trenching) may be required to fully establish this. A setting assessment (in line with the English Heritage publication 'The setting of Heritage Assets') may also be required in order to assess whether the development would have any effect on the significance of the Birmingham and Worcester Canal Conservation Area, The Grade I Listed Church of St Michael, or any of the other four Grade II Listed Buildings located within the study area, by adversely altering their settings. The scope of any such further survey may be agreed in consultation with Worcestershire County Council Heritage Service.

6 REFERENCES

English Heritage 2008 *Conservation Principles*

English Heritage 2011 *The Setting of Heritage Assets; English Heritage Guidance*

IfA (Institute for Archaeologists) 2012 *Standard and Guidance for Desk-Based Assessment*

APPENDIX A: GAZETTEER OF RECORDED HERITAGE ASSETS

CA Ref	Source	HER Ref	Description	Period
1	EH	1100179	Church Of St Michael, Grade I	Medieval
2	EH	1100178	Church Mill House, Grade II	
3	EH	1100180	Lych Gate About 75 Metres South West Of Church Of St Michael, Grade II	
4	EH	1348552	Aldham House, Grade II	
5	EH	1389251	The Priory including outbuildings adjoining to the North, Grade II	
6	HER	118372	Inhumation with Bronze bracelets.	Bronze Age
7	EHA	118395	Stoke Prior deserted medieval settlement	Medieval
8	HER	MWR862	Old Mill Pond, West of Fish House Mill, Stoke Prior	Medieval
9	HER	n/a	Bridge Field Pit Furlong possible pit	Post-med
10	HER	n/a	Site of Stoke Prior Mills, Shaw Lane, a corn mill / watermill	Post-med
11	HER	n/a	Meadow Cottage, Stoke Terrace	Modern
12	HER	n/a	Stoke Farm Reformatory	Modern
13	HER	n/a	A needle mill on the River Salwarpe	Modern
14	EHA	502863	Stoke Works Station; Site of railway station on the Birmingham and Gloucester line, opened in 1841, closed in 1966.	Modern
15	HER	MWR6843	Railway - Abbotswood to Stoke Works Junction - Section BAG/2	Modern
16	HER	MWR5505	Brick Kiln, Stoke Prior	Modern
17	HER	MWR6847	Railway - Droitwich to Stoke Works Junction - Section STO	Modern
18	HER	MWR563	Stoke Works, (Salt), Stoke Prior	Modern
19	HER	MWR9912	Railway - Stoke Work Junction to Longbridge - Section BAG/3	Modern
20	EHA	n/a	Ford over R Salwarpe	Undated
21	HER	MWR6580	Possible Alignment of Roman Road from Bromsgrove to the South East (Margary	Roman

APPENDIX B: EXTRACTS OF RELEVANT PLANNING POLICY

Extract From the Bromsgrove District Local Plan (2004)

Archaeology

18.1 The District Council aims to retain the rich diversity of archaeological remains known to exist in the landscape, whilst at the same time recognising the need to reconcile conflict and competition for land containing evidence of the past. The District Council expects archaeologists and developers to observe the Code of Practice (1988) produced jointly between the British Archaeologists and the British Property Federation. The District Council will continue, with the support of the County Archaeological Service, to identify further sites of archaeological interest, to protect sites of importance and carefully consider any proposals likely to affect other sites and their settings.

18.2 The District Council recognises the need to make the archaeological resource serve the recreational and educational requirements of the general public and will seek to enhance and promote selected sites of archaeological interest. This could be achieved by the pursuit of management agreements, the enhancement of District-owned sites and the production of display and educational material.

Preservation Of Archaeological Resources

C36 There will be a presumption in favour of the preservation of nationally important archaeological remains and their settings. In the cases where development would adversely affect other sites of archaeological interest and their settings, and preservation in situ is not feasible or merited, planning permission may be granted subject to satisfactory provision for excavation and recording. Arrangements should be agreed with the District Council (in the light of archaeological advice) for all aspects of the work. In the case of sites of known archaeological importance or potential, the District Council will require the results of an archaeological evaluation to be submitted with any planning application for development.

18.3 The District Council has a number of archaeological sites of national importance as well as sites of more local interest. The District Council will endeavour to protect all sites, particularly those of the greatest significance, against proposals likely to be detrimental to a site or its setting. Where excavation of a site is acceptable, the District Council will require a schedule of works to be agreed prior to the issue of planning permission. In the absence of an agreed schedule, planning conditions may be imposed to prevent development until the necessary operations are undertaken (see PPG16, para 29, 30). A list of Scheduled Ancient Monuments is included in Appendix 10. As this listing will change from time to time, as will that of possible archaeological sites of interest, for the most recent information the applicant should, and the District Council will, utilise the County Archaeological records to provide the definitive record of sites in the District.

Excavation Around Archaeological Remains

C37 Where development requiring below ground excavation is proposed within a site of archaeological interest the District Council may require an evaluation of the site's significance to be submitted by the applicant before a decision is made.

Development Criteria For Archaeological Sites

C38 Where proposals for development are made which will affect a site of archaeological interest applicants will need to demonstrate that:

- a) an archaeological evaluation has been submitted and approved;
- b) the recommendations of the evaluation have been taken fully into account in the proposed developments design, in order to avoid damage to

significant archaeological deposits; or, where this is inappropriate; c) adequate measures are provided to ensure the proper excavation and recording of significant archaeological deposits where these are affected by the proposed development unless specialist advisers deem otherwise.

18.4 The existence of archaeological remains is a material planning consideration. It is therefore essential to know details of a site before considering applications for development which may destroy or damage a site or its setting. It should be noted that compliance with this policy does not overcome any objections which may arise from policy C36.

18.5 A proper evaluation of a site will be necessary utilising appropriate techniques and personnel. To avoid delay and design costs it should be carried out as soon as possible once development is contemplated and preferably before submission of applications for planning permission, but in any event prior to determination of the planning applications.

18.6 An evaluation of the significance of the site, demonstrating the effect of the proposed development on it, is necessary before the District Council can make an informed decision. Proposals should clearly show the location, extent and depth of below-ground works, including drainage services and other accommodation works, demonstrating the preservation of significant deposits. Where the physical preservation of deposits is not possible the measures proposed for their recording (preservation by record) should be included as part of the application.

Site Access For Archaeologists

C39 Conditions may be imposed in any granting of planning permission to enable reasonable access to the site by nominated archaeologists before and/or during construction, or to facilitate a watching brief to be undertaken during the progress of development, or to ensure that the agreed methods of preservation are enforced on site.

18.7 Where the preservation of archaeological deposits is not considered reasonable, conditions may be applied. These conditions only become effective after the application had been determined and in many cases will not satisfactorily ensure, in themselves, the appropriate level of preservation of archaeological sites. Nevertheless, not all sites will be of equal archaeological significance and such conditions will be used in appropriate circumstances, usually for sites of lesser significance.

Conservation

Proposed New And Extended Conservation Areas

S35 The District Council will consider designating the following new or extended Conservation Areas;

- a) Bromsgrove Town Centre adjacent to the existing Conservation Area including Worcester Road (extension);**
- b) The Worcester and Birmingham Canal (extension);**
- c) The Stratford-upon-Avon Canal;**
- d) Burcot/Blackwell: Around Alcester Road and Greenhill;**
- e) Hunnington: The Harry Vincent Estate;**
- f) Hagley Park;**
- g) Hewell Park;**
- h) Weatheroak Hill/Icknield Street;**
- i) Dodford (extension).**

12.1 In order to preserve or enhance the character or appearance of areas within the District, the Council will designate new or extend existing Conservation Areas to include buildings and structures,

trees or other features of national or local historic or architectural merit. To encourage private investment and tourism, the District Council will liaise with other interested parties in the preparation and implementation of enhancement schemes and promote environmental awareness and participation through the publication of a series of leaflets on the Conservation Areas. For a list of existing Conservation Areas see Appendix 7. New or extended Conservation Areas are designated in accordance with the procedures indicated in Sections 69 - 70 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Development In Conservation Areas

S35A The District Council will seek to preserve or enhance the character or appearance of Conservation Areas and will:

- a) undertake measures as appropriate to promote and improve the environmental quality of such areas;
- b) require new development, in or adjacent to such areas, to be sympathetic to the character of buildings in the detailed treatment of matters of design including the form, scale and materials;
- c) normally require detailed applications or exceptionally where an outline application is submitted the inclusion of sketch designs including elevational drawings showing the relationship with adjacent properties;
- d) seek to retain and enhance open spaces, important views, trees or other features of importance to the street scene.

Design Of Development In Conservation Areas

S36 Where development is proposed in or adjacent to a Conservation Area the District Council will normally require sketch designs to be submitted with outline planning applications, including elevational drawings, showing the relationship with adjacent properties. A high standard of design will be expected which demonstrates that the relevant aspects of the built form have been taken fully into consideration and that proposals are compatible with the character of the area.

12.2 Enhancement as well as protection are objectives of Conservation Area status. While it may be desirable to see proposals which renovate or redevelop part of a Conservation Area care must be taken to ensure that development proposals not only meet the standard of nearby quality buildings but also are appropriate to the locality.

Demolition In Conservation Areas

S37 The District Council will consider applications for demolition in Conservation Areas subject to the criteria set out below. Permission will be granted only if:

- a) the existing buildings do not contribute positively to the character or appearance of the Conservation Area;
- b) an inappropriate gap is not created in an otherwise continuous frontage;
- c) the application is accompanied by acceptable and detailed plans of the proposed replacement;

Where proposals involve replacement the applicant may be required to enter into a satisfactory legal agreement with the Local Planning Authority to prevent premature demolition. Conditions may be imposed providing that demolition shall not take place until a contract for the carrying out of works of redevelopment has been made and planning permission for those works has been granted.

12.3 Proposals involving the demolition of buildings in Conservation Areas will be judged against the likely affect on the area. Many buildings within Conservation Areas are not of sufficient quality to warrant listing but nevertheless, may be of local architectural or historic interest. The need for demolition will, therefore, require full justification. Where proposals involve replacement the District Council will seek to prevent premature demolition which could result in long-term unsightly gaps in the street scene.

12.4 To support its building conservation policies the District Council will make storage space available at a reasonable price to allow for the storage and subsequent reuse of building materials, particularly authentic features in Listed Buildings. When discussing redevelopment proposals, storage space will be offered, where appropriate. In the case of demolition of unlisted buildings outside a Conservation Area the District Council will endeavour to save important features of affected buildings.

Protection Of Buildings Of Merit

S38 Where buildings of architectural or historic value are under threat the District Council will endeavour to protect them. Unlisted buildings which are considered to satisfy the criteria set-down by the Department for Culture, Media and Sport will either be put forward for spot listing or made subject of a Building Preservation Notice. Protection of listed buildings under threat will be achieved by serving a notice for urgent or full repairs.

12.5 The District Council recognises that there are many buildings in the District of considerable merit. Over time the relative importance of a building may increase so that it becomes of listable quality. The District Council will continue to monitor buildings of quality, but not yet afforded extra protection. Where such buildings come under threat the District Council will normally seek specialist advice prior to taking further action.

12.6 The District Council will seek to secure repairs through discussions with the owner(s). However, as a last resort to achieve the necessary repairs to maintain the fabric of important buildings the District Council will use its powers to serve Building Repair Notices. The District Council will, in addition, support the County Council in their provision of grants for Listed Buildings.

Alterations To Listed Buildings

S39 Careful attention will be paid to any proposal affecting the character of a Listed Building or its setting. Any proposal for alteration or extension of a Listed Building, whether or not involving a change of use, will be thoroughly assessed before consent is given. The change of use of Listed Buildings may be acceptable if it can be demonstrated that an alternative use would ensure retention of the building(s). The advantage of keeping a building in active uses will be weighed carefully against any impact on the special architectural or historic interest of the building.

Demolition Of Listed Buildings

S39A Any proposal for the total or substantial demolition of a Listed Building will be subject to very close scrutiny. Consent will not be forthcoming without clear and convincing evidence that all reasonable efforts have been made to sustain existing uses, and these efforts have failed; that preservation in some form of charitable or community ownership is not possible or suitable; or that redevelopment would produce substantial benefits to the community which would decisively outweigh the loss from the demolition.

12.7 The District's stock of historic buildings is a finite and unique resource. They may fall into disrepair through neglect, ignorance or disuse. Their special interest may be lost through unsympathetic extensions which would necessitate permanent alterations to the fabric of the building inappropriate to its character. The District Council is seeking to preserve this aspect of its heritage through the control of development and alterations to retain the character of the building. In order to support the implementation of these policies, the District Council will undertake a survey to identify "buildings at risk" including photographic coverage in conservation areas and of important buildings elsewhere. This information will also help to provide a sound basis for reviewing the District Council's relevant policy guidelines.

Listed Buildings In Shopping Areas

S41 Careful attention will be paid to proposals affecting a Listed Building in a shopping area regarding the materials used, the features proposed, the form of fascia and lettering and the style of any projecting signs. Applications relating to shopfronts will not normally be considered unless accompanied by an application for related signs.

Shopfronts In Conservation Areas

S42 The District Council will refuse the demolition of important original shopfronts in conservation areas and will encourage their restoration. All new proposals will be assessed to see how far they contribute to the maintenance or improvement of the conservation area.

12.8 The District Council needs to ensure that proposals coming forward in shopping areas involving a listed building will not adversely affect the special character of the listed building and its setting and that proposals in a conservation area are sensitively designed to ensure enhancement is continued. Further advice on these matters is to be found in Policy Guidance Note 2 entitled "Shopfronts and Advertisements" produced by the District Council.

Traffic Calming Schemes

S43 The introduction of traffic calming schemes will be considered, in conjunction with the Highway Authority, where development proposals would have an effect on vehicular and pedestrian movements in or adjacent to Conservation Areas.

Reinstatement Of Features In Conservation Areas

S44 The District Council will require the reinstatement or replacement of detailed features, such as paving, kerbing and street furniture, affected by proposals in Conservation Areas. Where replacement is required e.g. for safety reasons, an appropriate alternative to 'standard' designs will be sought or alternative measures suggested.

Improvements To Conservation Areas

S45 The District Council will seek to secure improvements to the environmental quality of Conservation Areas when development schemes offer an appropriate opportunity to tidy up vacant land and the removal of unsightly features.

12.9 In order to protect the character of a Conservation Area features which contribute to its environmental integrity must be retained wherever possible. Co-ordination of street furniture and signs will be encouraged. Traffic calming schemes, in conjunction with the County Council, and rationalisation of car parking, where appropriate, will be investigated. Where highways are disturbed the initiating body will be responsible for reinstating the original paving. Areas which detract from the quality of the streetscene or landscape will be targeted.

Areas Of Special Advertisement Control

S46 The District Council will, where it is considered appropriate, request the Secretary of State to designate Areas of Special Control of Advertisements in appropriate Conservation Areas.

12.10 The District Council wishes to maintain the amenity value of Conservation Areas and the setting of historic buildings. A stricter degree of control over advertisements may be required in certain locations than is available through normal planning control. The position will be monitored and appropriate consultations as advised in PPG19 (Outdoor Advertisement Control) will be carried out.

Advertisement Control

S47 Advertising will not normally be permitted in the following types of location, except where attached to and related to business premises:
a) predominantly residential areas or near housing;

- b) sites fronting onto or dominating views from main roads, railways or canals;
- c) any site where advertising could have an adverse affect on public safety.

12.11 Advertising where acceptable in principle will be expected to comply with the District Council's guidelines on advertisements contained in Policy Guidance Note 2.

12.12 Advertisements on business premises are in principle acceptable but should not detract from the appearance of the premises themselves particularly in residential areas. Free-standing advertising hoardings of any size and poster advertising are considered normally to be detrimental to a residential environment.

12.13 The District Council seeks to enhance the environment generally through this Local Plan and this includes areas fronting the ring road round Bromsgrove town centre and road, railway and canal routes through the District. Advertisements, other than those attached to and related to business premises, generally do not enhance the environment in these locations, but contribute to an appearance of lack of landscaping, temporary treatment and lack of investment.

12.14 Advertisements that could distract drivers and increase the risk of accidents are not acceptable. This applies to large hoardings and illuminated advertisements near junctions and signals of any kind.

Historic Parks And Gardens

S48 Planning permission or listed building consent will not be granted for development which would have an adverse effect on the character and setting of historic parks and gardens. Proposals will be assessed against their effect on:

- a) views into or out of the park or garden;
- b) vistas or sequential views within the park or garden;
- c) 'natural' elements such as tree belts, avenues, specimen trees, water features, ornamental gardens and plant species;
- d) structures, statues and garden ornaments;
- e) the topography of the garden;
- f) open spaces and their relationship to enclosures.

The District Council will liaise with English Heritage and the Garden History Society in considering applications either within the boundaries of such parks and gardens or in proximity to them where important views from the park and/or garden would be materially affected.

12.15 Historic parks and gardens include those listed in the register of parks and gardens of special historic interest maintained by English Heritage. These are Hagley Park (Grade I) and Hewell Park (Grade II*). This policy also applies to other parks and gardens of regional importance in the District, which are indicated in Appendix 7A.

**Extract from the Bromsgrove District Plan (2011-2030) (formerly the Core Strategy):
Proposed Submission Version**

BDP20.1 The District Council advocates a holistic approach to the proactive management of the historic environment which encompasses all heritage assets recognised as being of significance for their historic, archaeological, architectural or artistic interest.

BDP20.2 The District Council will support development proposals which sustain and enhance the significance of heritage assets including their setting. This includes:

Designated heritage assets, including listed buildings, conservation areas, scheduled ancient monuments, registered parks and gardens.

Non-designated heritage assets including (but not limited to) those identified on the local list and assets recorded in the Historic Environment Record.

The historic landscape of the District, including locally distinctive settlement patterns, field systems, woodlands and historic farmsteads.

Designed landscapes, including parks and gardens, cemeteries, churchyards, public parks and urban open spaces.

Archaeological remains of all periods from the earliest human habitation to modern times.

Historic transportation networks and infrastructure including roads, trackways, canals and railways.

BDP20.3 Development affecting heritage assets, including alterations or additions as well as development within the setting of heritage assets, should not have a detrimental impact on the character, appearance or significance of the heritage asset or heritage assets.

BDP20.4 Applications to alter, extend, or change the use of heritage assets will be required to provide sufficient information to demonstrate how the proposals would contribute to the asset's conservation whilst preserving or enhancing its significance and setting.

BDP20.5 In considering applications regard will be paid to the desirability of securing the retention, restoration, maintenance and continued use of heritage assets, for example, the District Council will support the sensitive reuse of redundant historic buildings, and will encourage proposals which provide for a sustainable future for heritage assets, particularly those at risk.

BDP20.6 Any proposal which will result in substantial harm or loss of a designated heritage asset will be resisted unless a clear and convincing justification or a substantial public benefit can be identified in accordance with current legislation and national policy.

BDP20.7 Consideration will be given to the designation of new conservation areas. In order to define and protect the special character of conservation areas, the District Council will produce and regularly review character appraisals and management plans for designated conservation areas, and where necessary introduce Article 4 Directions based on an assessment of local identity and uniqueness.

BDP20.8 Where a detailed Conservation Area Appraisal Management Plan has been adopted, it will be a material consideration in determining applications for development within that conservation area.

BDP20.9 Development within or adjacent to a conservation area should preserve or enhance the character or appearance of the area.

BDP20.10 The demolition of buildings or the removal of trees and other landscape features which make a positive contribution to an area's character or appearance will be resisted.

BDP20.11 Outline planning permission will not be granted for development within Conservation Areas unless supported by detailed proposals showing siting, design, external appearance and the relationship with adjacent properties.

BDP20.12 The District Council will update the current draft local list of assets and formally adopt it. It would include all heritage assets recognised as being of local importance, including those which are

locally distinctive such as nailers cottages, assets associated with the scythe industry and assets associated with the use of the Birmingham and Worcester canal which runs the length of the District, to name but a few.

BDP20.13 The District Council will support development that:

- i. Retains locally listed buildings.
- ii. Involves sympathetic alterations and extensions to locally listed buildings
- iii. Does not have a detrimental impact on the setting or context of locally listed buildings.

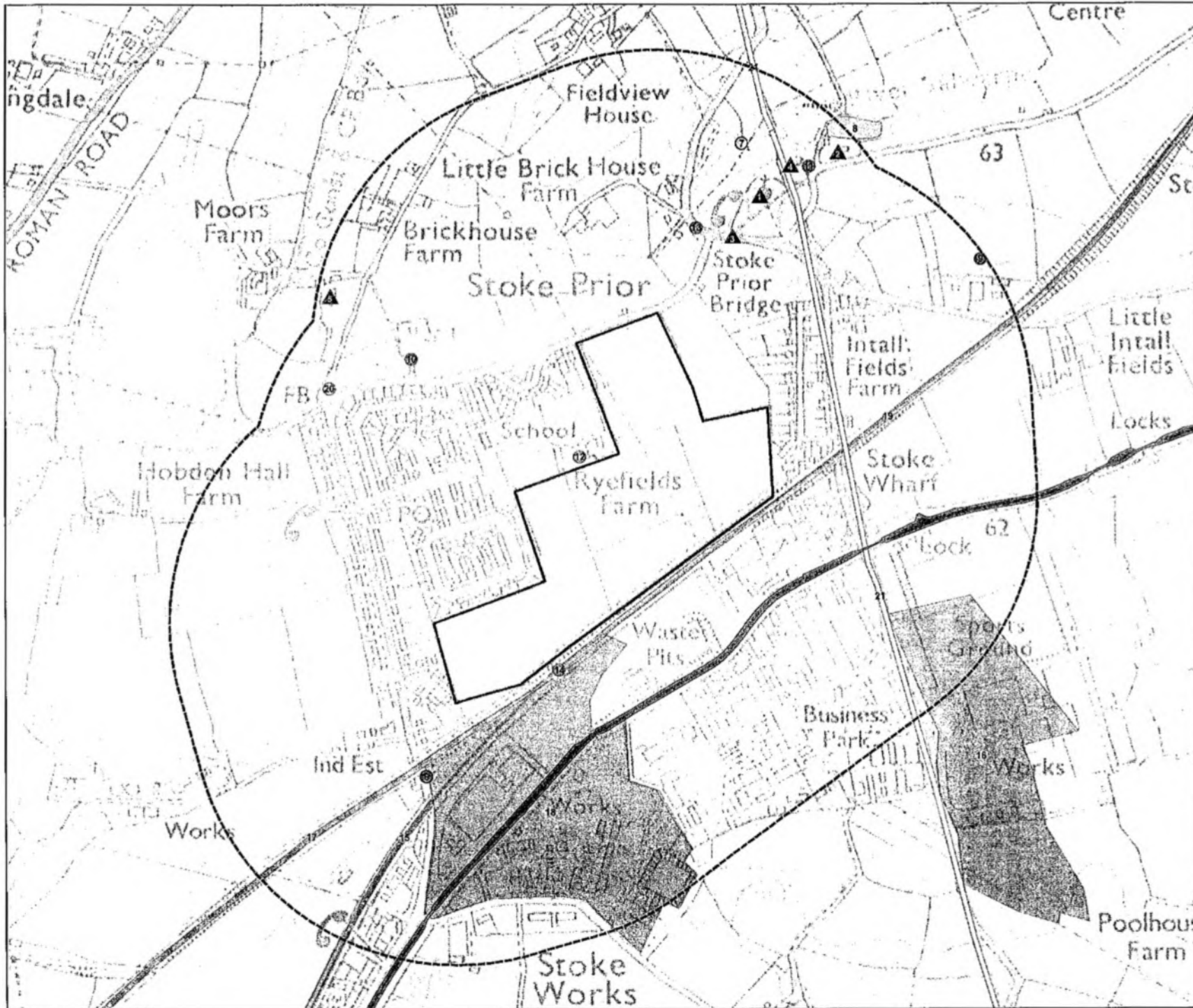
BDP20.14 In considering applications that directly or indirectly affect locally listed buildings, a balanced judgement will be applied having regard to the scale of any harm or loss as a result of proposed development and the significance of the locally listed building.

BDP20.15 The District Council will encourage opportunities to develop Green Infrastructure networks that can enhance the amenity value of the historic environment (refer to BDP24 Green infrastructure).

BDP20.16 The District Council will promote a positive interaction between historic sites and places and high quality modern developments which allows for evolution and positive change whilst preserving and respecting the significance and setting of existing heritage assets.

BDP20.17 Applications likely to affect the significance of known or potential heritage assets or their setting should demonstrate an understanding of their significance in sufficient detail to assess the potential impacts. This should be informed by available evidence and, where appropriate, further information to establish significance of known or potential heritage assets.


BDP20.18 Where material change to a heritage asset has been agreed, recording and interpretation should be undertaken to document and understand the asset's archaeological, architectural, artistic or historic significance. The scope of the recording should be proportionate to the asset's significance and the impact of the development on the asset. The information and understanding gained should be made publicly available, as a minimum through the relevant Historic Environment Record.



- ▲ Grade I Listed Building
- ▲ Grade II Listed Building
- Birmingham and Worcester Conservation Area
- Prehistoric
- Roman
- Medieval
- Post-medieval
- ⊙ Modern
- Undated
- Proposed development site
- 500m study area

0 300Meters

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PROJECT TITLE
Stoke Prior, Worcestershire Appraisal

PROJECT TYPE
Site location plan, showing archaeological features

PROJECT NO: 4833	DATE: 16-11-2013	DRAWN BY: CM	REVISION: 00	SCALE: A3 1:6,000	PAGE NO: 1
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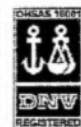


Stoke Prior Developments Limited

Land at Stoke Prior, Worcestershire

Flood Risk Assessment

132102 - R1(0) - FRA



INVESTORS
IN PEOPLE

RSK



NOVEMBER 2013



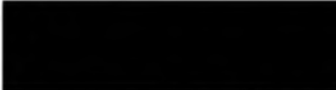

RSK GENERAL NOTES

Project No.: 132012 – R1(0) – FRA
Site Name: Land at Stoke Prior, Worcestershire
Report Title: Flood Risk Assessment
Client: Stoke Prior Developments Limited
Date: November 2013
Office: Hemel Hempstead
Status: Final

Author	<u>R Armstrong</u>	Technical reviewer	<u>C Whittingham</u>
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Signature		Signature	
Date:	<u>11th November 2013</u>	Date:	<u>11th November 2013</u>

Project manager	<u>M Cheeseman</u>	Quality reviewer	<u>J Cooling</u>
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Signature		Signature	
Date:	<u>11th November 2013</u>	Date:	<u>11th November 2013</u>

RSK LDE Ltd (RSK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK LDE Ltd.



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1 INTRODUCTION

RSK Land and Development Engineering Ltd were commissioned to carry out a Flood Risk Assessment (FRA) for Stoke Prior Developments Limited (the client). The assessment has been prepared to demonstrate that land at Stoke Prior, Worcestershire, B60 4DP (the site) is suitable for development in terms of flood risk.

The purpose of the FRA is to establish the flood risk associated with any proposed development to propose suitable mitigation, if required, to reduce the risk to an acceptable level.

The assessment has been prepared in accordance with the National Planning Policy Framework (NPPF) ^(Ref. 1) and its accompanying technical guidance document ^(Ref. 2), the Interim Code of Practice for Sustainable Drainage Systems (ICPSDS) ^(Ref. 3) and British Standards (BS) 8533-2011 Assessing and Managing Flood Risk in Development Code of Practice ^(Ref. 4) with site-specific advice from the Environment Agency (EA), the Local Planning Authority (LPA), the architect and the client.

The NPPF sets out the criteria for development and flood risk by stating that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. The key definitions are:

- "Areas at risk of flooding" means land within Flood Zones 2 and 3; or land within Flood Zone 1 which has critical drainage problems and which has been notified to the local planning authority by the EA.
- "Flood risk" means risk from all sources of flooding - including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

For this site, the key aspects that require the assessment are:

- The EA's indicative flood zone map shows the site to be located in Flood Zone 1. An area of Flood Zone 3 associated with Hen Brook encroaches onto the south-western corner of the site;
- The south-western site boundary is adjacent to Hen Brook; and
- The site area is 18.7ha thus a surface water drainage strategy should be considered.

The comments given in this report and opinions expressed are subject to RSK Group Service Constraints provided in **Appendix A**.



2 CONTEXT AND SCOPE OF WORK

The scope of work relating to an FRA is based on the guidance provided in Section 10 of NPPF ^(Ref. 1) and its accompanying guidance ^(Ref. 2). A site-specific FRA must demonstrate that the development will be safe for its lifetime (in this case 100 years for residential development including allowances for climate change) taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. The scope of this assessment therefore comprises the following elements:

- To determine the existing site conditions;
- To obtain information on the hydrology and hydrological regime in and around the site;
- To review draft indicative masterplans;
- To obtain the views of the EA including scope, location and impacts;
- To determine the extent of new flooding provision and the influence on the site;
- To review site surface water drainage based on the proposed layout;
- To determine the extent of infrastructure required;
- To assess the impact on the site from climate change effects and anticipated increases in rainfall over a 100 year period for residential use; and
- Preparation of a report including calculations and summaries of the source information and elements reviewed.

Appendix B of this report provides clarity of the scope of site-specific FRAs and includes extracts from NPPF technical guidance ^(Ref. 2), ICPSDS ^(Ref. 3) and BS 8533-2011 ^(Ref. 4).

3 SITE DESCRIPTION

3.1 Location

Site Address: Land at Stoke Prior, Bromsgrove, Worcestershire, B60 4DP

Site National Grid Reference: SO 94756 67089 (394756^E 267089^N)

The site is located in the west of Stoke Prior village, with access from Shaw Lane to the north. Open fields and housing lie to the east. The southern site boundary is adjacent to the railway line. To the west are existing residential properties and to the northwest is Ryefields Farm and Stoke Prior County Primary School.

Figure 1 shows a site location map.

3.2 Land Use

The redline boundary site area is approximately 18.7ha and is currently 100% open green space.

Figure 2 shows the existing site layout.

3.3 Topography

Site topographic survey details were referenced from David Tucker Associates Drawing 15263-02, as shown in **Appendix C**. The site generally falls in a south-westerly direction from a central high point of approximately 64.0m metres above ordnance datum (AOD) to 56.0m AOD in the southwest corner. The site falls from the central point to approximately 60.5m AOD at Shaw Lane in the north.

3.4 Geology

Based on published geological records for the area (British Geological Survey Map No. 182 Droitwich) the site geology comprises:

- Superficial Geology: None recorded.
- Bedrock Geology: Triassic Rocks (undifferentiated) - Mudstone, Siltstone And Sandstone.

3.5 Hydrogeology

Hydrogeological information was obtained from the EA's online mapping service. The site is underlain by a Secondary B bedrock aquifer. This aquifer type is defined by the EA as 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.



The site is not located within an EA Groundwater Vulnerability Zone or an EA Groundwater Source Protection Zone.

3.6 Hydrology

The River Salwarpe flows in an east to west direction approximately 25m to the north of the site. The Salwarpe is classified as a Main River.

A tributary of the Salwarpe, Hen Brook, flows in an east to west direction close to the southern site boundary. Hen Brook is classified as an ordinary watercourse. Hen Brook is culverted beneath the Bayers Salt Pans downstream of Stoke Wharf to the south of the site. According to the Bromsgrove District and Redditch Borough Strategic Flood Risk Assessment ^(Ref. 5) this culvert is fairly large (c. 2m) however is considered of inadequate size as a valley outlet.

The Worcester and Birmingham Canal is located to the south of the railway line approximately 180m from the site.

The Nature Reserve Lake and Sailing Lake are located approximately 550m and 950m, respectively, to the east of the site.

3.7 History

Reference to old-maps.co.uk indicates that the site has been a Greenfield site for at least the last 100 years.

4 DEVELOPMENT PROPOSALS

The draft masterplan proposes a mixed-use residential development comprising the following elements:

- Residential (11.2ha)
- Local Centre (0.7ha)
- Primary infrastructure (1.3ha)
- Strategic landscape buffer (0.5ha)
- Informal public open space, including sustainable drainage systems (SuDS) and pylon easement (4.0ha)
- Formal public open space (0.8ha)

Figure 3 shows the proposed site layout.

5 LEGISLATION AND POLICY CONTEXT

5.1 National Policy

Table 5.1: National Legislation and Context

Legislation	Key Provisions
National Planning Policy Framework (2012) ^(Ref. 1)	<p>The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk.</p> <p>Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.</p>
Flood and Water Management Act 2010 ^(Ref. 6)	<p>The Flood and Water Management Act aims to implement the findings of the 2007 Pitt Review and co-ordinate control of drainage and flood issues.</p> <p>There are a number of increased responsibilities within the Act that affect adoption of SuDS features and the role of the EA to expand on the mapping data they provide. The implementation of SuDS features has many beneficial impacts on the treatment of surface water during remediation works.</p>
Water Resources Act 1991 ^(Ref. 7)	<p>Section 24 - The EA is empowered under this Act to maintain and improve the quality of 'controlled' waters</p> <p>Section 85 - It is an offence to cause or knowingly permit pollution of controlled waters</p> <p>Section 88 - Discharge consents are required for discharges to controlled waters</p>
Water Framework Directive (2000) ^(Ref. 8)	<p>The Water Framework Directive (WFD) requires all inland and coastal waters to reach 'good' chemical and biological status by 2015. Flood risk management is unlikely to have a significant impact on chemical water quality except where maintenance works disturb sediment (such as de-silting) or where pollutants are mobilised from contaminated land by floodwaters.</p> <p>The main impact of the WFD on flood risk management, both now and in the future, relates to the ecological quality of water bodies. Channel works, such as straightening and deepening, or flood risk management schemes that modify geomorphological processes can change river morphology. The WFD aims to protect conservation sites identified by the EC Habitats Directive and Birds Directive that have water-related features, by designating them as 'protected sites'.</p>



5.2 Local Policy

Bromsgrove District Council Local Plan

Policies within the Bromsgrove District Local Plan (2004) (Amended 2007) ^(Ref. 9) are adopted until replaced by policies within the Development Plan Documents, to include Bromsgrove District Local Plan 2011-2030 ^(Ref. 10) which is currently in consultation.

Relevant policies in the Local Plan are outlined in **Table 5.2** below.

Table 5.2: Bromsgrove District Council Policy and Context

Policy	Key Provisions
Bromsgrove District Local Plan 2004 (Amended 2007)	<p>ES1 Protection of Natural Watercourse Systems – The Plan aims to prevent the loss of floodplain and prevent drainage that causes substantial changes in the characteristics of surface water run-off. An 8m easement on both banks of the watercourse applies to new developments.</p> <p>ES2 Restrictions on Development where Risk of Flooding – Proposals involving new development i.e. structures, alteration of ground levels or the erection of temporary buildings will not normally be permitted where there is a known risk of flooding, or where the EA indicates that there are potential problems. Advice will be taken from the EA.</p> <p>ES3 Sewerage Systems – For sites where connection to existing main sewerage is practicable, the District Council will oppose any development incorporating individual sewage treatment facilities. Development may be unacceptable if there is the possibility of effluent polluting local watercourses or groundwater.</p> <p>ES4 Groundwater Protection – The District Council will not allow development proposals that either individually or in combination with other similar developments would result in pollution or derogation of groundwater.</p> <p>ES6 Use of Soakaways – Where new housing development is proposed and situated on an aquifer, the District Council favour discharging storm water via soakaways rather than sewers or watercourses, unless it can be shown to the satisfaction of the LPA that ground conditions are not suitable.</p>

6 SOURCES OF INFORMATION

6.1 Environment Agency Consultation

Flood Map

The relevant guidance notes from the EA are available online through the following link:

<http://www.environment-agency.gov.uk/research/planning/93498.aspx>

The guidance notes relevant to this site are:

- Guidance Note 1: Relates to undertaking FRA studies for all development in Flood Zone 1 over 1ha in size.
- Guidance Note 3: Relates to undertaking FRA studies for all development in Flood Zones 2/3 over 1ha in size.

The latest Flood Map and associated modelled flood levels data were obtained from the EA, as presented in **Appendix D**. The Flood Map indicates that the site lies mainly within Flood Zone 1 beyond the floodplain of the River Salwarpe to the north. However, an area of Flood Zone 3 associated with Hen Brook encroaches onto the south-western corner of the site. The modelled data relates to the River Salwarpe only.

Pre-Application Enquiry

The pre-application enquiry response, contained in **Appendix D**, highlights the following key issues:

- For development in Flood Zone 1, the FRA must consider:
 - Flooding to the site from all sources;
 - An allowable surface water run-off from the developed site equivalent to the Greenfield run-off rate via the use of SuDS; and
 - The residual flood risk.
- For development in Floods Zones 2 and 3, the FRA must consider:
 - Flooding to the site from all sources up to the 1 in 100 year climate change event;
 - Proposed flood risk mitigation measures up to the 1 in 100 year climate change event;
 - The flood risk off-site;
 - The residual flood risk; and
 - An allowable surface water run-off from the developed site equivalent to the Greenfield run-off rate via the use of SuDS.

Further information provided by the EA is contained in **Section 7**.

6.2 SuDS Approving Body

A detailed SuDS design is beyond the scope of this preliminary FRA, however an initial drainage appraisal has been carried out.

6.3 Relevant Studies

Table 6.1: Relevant studies

Study	Key Provisions
<p>Bromsgrove District and Redditch Borough Strategic Flood Risk Assessment Level 1 2009 ^(Ref. 5)</p>	<p>The principle aim of the Strategic Flood Risk Assessment (SFRA) is to map all forms of flood risk in order to provide an evidence base to locate new development. It also aims to provide appropriate policies for the management of flood risk, and identify the level of detail required for site-specific FRAs. The SFRA contains information and maps detailing flood sources and risks.</p> <p>There are known historical instances of flooding in the site area. Specific details relevant to the site are given in Section 7 of this report and the relevant maps can be found at the following link: http://www.bromsgrove.gov.uk/cms/environment-and-planning/planning/strategic-planning/evidence-base/sfra-and-water-cycle-study.aspx</p>
<p>Redditch Borough Council and Bromsgrove District Council Level 2 Strategic Flood Risk Assessment 2012 ^(Ref. 11)</p>	<p>The site was not considered as part of the Level 2 hydraulic modelling studies.</p>
<p>Worcestershire County Council Preliminary Flood Risk Assessment 2011 ^(Ref. 12)</p>	<p>Preliminary Flood Risk Assessments (PFRA) are produced by LLFA's in England and Wales. A PFRA is the first part of the planning cycle for flood risk management as set out in the Flood Risk Regulations (2009), which implement the requirements of the European (EU) Floods Directive (2007). The EU Floods Directive aims to provide a consistent approach to managing flooding across Europe.</p> <p>The PFRA considers local sources of flooding that the LLFA is responsible for: ordinary watercourses, surface water, groundwater and sewers where flooding is wholly or partially caused by rainwater or other precipitation entering or affecting the system. Information is gathered from existing sources on past floods and flood models to identify Flood Risk Areas.</p> <p>There are no areas of 'Nationally Significant Areas of Flood Risk' or 'Locally Significant Flood Risk' within Worcestershire.</p>
<p>Redditch Borough Council and Bromsgrove District Council Water Cycle Study 2012 ^(Ref. 13)</p>	<p>The Water Cycle Study (WSC) follows EA guidelines to assess the constraints and requirements that will arise from the scale of the proposed growth on the water infrastructure in South Staffordshire, including Stafford Borough.</p> <p>In relation to the sites studies as part of the Level 2 SFRA, it was agreed with the EA that if flooding occurs in less than 5% of the proposed development site, this is considered minor for the purposes of the Sequential Test.</p>

<p>River Severn Catchment Flood Management Plan (Ref. 14)</p>	<p>Catchment Flood Management Plans (CFMP) give an overview of the flood risk from inland sources across each river catchment and recommend ways of managing those risks now and over the next 50-100 years. The EA is responsible for producing CFMPs.</p> <p>The site falls within sub-area 5 Telford, Black Country, Bromsgrove, Kidderminster and Coventry Cluster. The policy relevant to this sub-area is Policy Option 5 – “<i>areas of moderate to high flood risk where we can generally take further action to reduce flood risk. This policy is about reducing the risk where the existing flood risk is too high. We need to take action in the short term to reduce this level of risk</i>”.</p> <p>The key messages include:</p> <ul style="list-style-type: none"> • Surface water is a growing problem; • Development must be sustainable over the long term; and • Residents can manage the flood risk themselves by registering with Floodline Warnings Direct; <p>The CFMP provides the following key proposed actions:</p> <ul style="list-style-type: none"> • Ensure floodplains are not inappropriately developed; • Encourage compatibility between urban open spaces and their ability to make space for rivers to expand as flood flows occur; • Develop better understanding of flooding from surface water, from drainage systems, and from ‘non-main’ watercourses. Produce a strategy for operation and investment, integrating all these with main rivers; and • Local authorities to develop Surface Water Management Plans for the Bromsgrove, Droitwich and Kidderminster areas.
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6.4 Drainage

Severn Trent Water

Public sewer details have been referenced from Severn Trent Water sewer records, contained in **Appendix E**.

The plans indicate that there is a network of foul public sewers surrounding the site. There are no surface water sewers indicated on the plans.

There is a water supply network surrounding the site.

Internal Drainage Board

There are no known Internal Drainage Boards in the area.

7 SOURCES OF FLOOD RISK

7.1 Criteria

In accordance with NPPF ^(Ref. 1) and advice from the EA, a prediction of the flood sources and levels is required along with the effects of climate change from the present for the design life of the development (in this case assumed to be 100 years). To consider these effects of climate change, NPPF Technical Guidance Table 5 ^(Ref. 2) recommends consideration of a 30% increase in rainfall intensity and 20% increase in peak river flows over this timeframe.

The flood risk elements that need to be considered for any site are defined in BS 8533 ^(Ref. 4) as the "Forms of Flooding" and are listed as:

- Flooding from Rivers (fluvial flood risk);
- Flooding from the Sea (tidal flood risk);
- Flooding from the Land;
- Flooding from Groundwater;
- Flooding from Sewers (sewer and drain exceedance, pumping station failure etc); and
- Flooding from Reservoirs, Canals and other Artificial Structures.

The following section reviews each of these in respect of the subject site.

7.2 Fluvial Flood Risk

The EA Flood Map, shown as **Figure 4**, shows the majority of the site to be located in Flood Zone 1, which represents less than a 1 in 1000 year (<0.1%) annual probability of fluvial flooding and places the site at 'low' risk of fluvial flooding. The site is shown not to be within the floodplain of the River Salwarpe. The EA have no record of flooding at the site (**Appendix D**).

An area of approximately 9998m² (~1.0ha) in the south-western corner of the site falls within Flood Zone 3 associated with Hen Brook, which represents a 1 in 100 year (1%) annual probability of fluvial flooding and places this part of the site at 'high' risk of fluvial flooding (**Appendix D**).

Figure 5 indicates the area of site within the floodplain. Please note that **Figure 5** is purely indicative as the EA have confirmed that there is no modelled flood level data for the Hen Brook and therefore the flood map is based on a JFLOW model. The extent of the floodplain is shown to be approximately 57.5m AOD.

According to Bromsgrove District Council Drainage Engineer John Bailey, as detailed within the SFRA ^(Ref. 5) there is 'repeated' flooding on Hanbury Road and Stoke Wharf associated with Hen Brook and its interaction Worcester and Birmingham Canal.



"The Hen Brook along with its confluence with the canal can cause serious flooding which is impractical to remedy. Flood prevention undertaken during more recent planning applications but the fact remains that the valley outlet is obstructed by a fairly sizeable culvert underneath Bayers Salt Pans."

In addition, balanced outfalls into Hen Brook and Worcester and Birmingham Canal from the highway drains serving the trading estates off Hanbury Road have also resulted in flooding in the area, most notably south of the Canal.

Hen Brook floodplain is designated a 'Flood Watch Area' and a 'Potentially Vulnerable Area'. The flood zone is classified as a 'Misalignment – Major'.

Fluvial flooding is likely to increase as a result of climate change. A greater intensity and frequency of precipitation is likely to raise river levels and increase the likelihood of a river overtopping its banks.

The risk of fluvial flooding to the majority of the site is considered to be **low**; however, the risk to the area of site in the floodplain of Hen Brook is considered to be **moderate/high**.

7.3 Tidal Flood Risk

The site is not considered to be at tidal flood risk due to its inland location.

7.4 Surface Water Flood Risk

Intense rainfall can create conditions where the local infiltration and drainage capacity is insufficient to cope with the volume of water and so water flows overland. Surface water flooding can also occur due to a reduction in the capacity of a drainage system due to some form of blockage.

Based on published geological data, the site appears to be underlain by low permeability strata and therefore surface water flooding may present a risk to the site.

According to the SFRA ^(Ref. 5) surface water run-off is known to have caused the Canal to overtop and, along with the subsequent interaction with Hen Brook, cause flooding on Hanbury Road. In addition, many of the highway drains in the District connect or infiltrate, unattenuated, into the sewer system, resulting in rapid response of run-off from the road network. Such flooding has been recorded in the Trading Estate off Hanbury Road.

Surface water flooding is likely to increase as a result of climate change in a similar ratio to fluvial flooding. Increased intensity and frequency of precipitation is likely to lead to reduced infiltration and increased overland flow.

Based on the topography of the site, the risk of surface water flooding to the whole site is considered to be **low**.

7.5 Flooding from Groundwater

Groundwater flooding occurs when the water held underground rises to a level where it breaks the surface in areas away from usual channels and drainage pathways. Groundwater flooding typically occurs following long periods of sustained intense rainfall and is typically associated with low-lying areas underlain by permeable aquifers.

There are no recorded superficial deposits beneath the site and the bedrock layer is of relatively low permeability therefore groundwater flooding is not considered to present a particular cause for concern. According to the SFRA ^(Ref. 5) there are no reports of groundwater flooding within Bromsgrove District.

Climate change could increase the risk of groundwater flooding as a result of increased precipitation filtering into the groundwater body. If winter rainfall becomes more frequent and heavier, groundwater levels may increase. Higher winter recharge may however be balanced by lower recharge during the predicted hotter and drier summers. This is less likely to cause a significant change to flood risk than from other sources, since groundwater flow is not as confined. It is probable that any locally perched aquifers may be more affected, but these are likely to be isolated. The change in flood risk is likely to be low.

There are no proposal for subterranean development and therefore the groundwater flood risk to the whole site is considered to be **low**.

7.6 Flooding from Sewers

Flood events occur when the capacity of a sewer is exceeded either due to a blockage in the sewer system or excess surface water run-off entering the system. Most adopted surface water drainage networks are designed to the criteria set out in Sewers for Adoption ^(Ref. 15). One of the design parameters of which is that sewer systems be designed such that no flooding of any part of the site occurs in a 1 in 30 year rainfall event. By definition, a 1 in 100 year event could exceed the capacity of the surrounding sewer network as well as any proposed drainage system. When exceeded, the surcharged pipe work will lead to flooding from backed up manholes and gully connections. This will lead to immediate flooding within highways surrounding the site.

There is a recorded instance of localised foul sewer flooding near to Ryefields Road to the east of the site but there is no evidence to suggest that this affected the site.

The impact of climate change is likely to be negative regarding flooding from sewers. Increased rainfall and more frequent flooding put existing sewer and drainage systems under additional pressure resulting in the potential for more frequent surcharging and potential flooding. This would increase the frequency of local sewer flooding but not significant in terms of the proposed development.

The sewer flood risk to the whole site is considered to be **low**.

7.7 Other Sources of Flooding

Reservoirs

Flood events can occur from a sudden release of large volumes of water from reservoirs, canals and artificial structures.

Figure 6 has been reproduced from the Reservoir Flood Risk Map on the EA website. The map provides a worst case scenario of the maximum extent of flooding that would occur in the event that a reservoir were to fail and release the water it holds. The map indicates that the extent of flooding associated with the lakes to the east of the site is Shaw Lane adjacent to the northern site boundary. According to the SFRA ^(Ref. 5) there are no major reports of reservoir flooding within Bromsgrove District.

Reservoirs can be managed over time, controlling inflow/outflow of water and therefore there is the capacity to control the effects of climate change. Increased rainfall has the potential to increase base flow, but this should be minimal. It is unlikely that there will be a substantial change to the risk of flooding for this site.

The risk of reservoir flooding to the whole site is considered to be **low**.

Canals

Canals can occasionally overtop in places due to high inflows from natural catchments and they are also vulnerable where overtopping occurs from adjacent watercourses. Additional water from adjacent watercourses may be routed/conveyed by the canal which may cause issues elsewhere.

According to the SFRA ^(Ref. 5) the Worcester and Birmingham Canal, along with the Hen Brook, has a tendency to overflow at Hanbury Road to the east of the site. There are two recorded instances (2000 and 2007) in which the Canal has mixed with the waters of Hen Brook during times of intense rainfall and the subsequent overflow has flooded properties and factory units on Hanbury Road and Stoke Wharf to the east and south of the site respectively.

More rainfall could increase the chance of canals overflowing and interacting with adjacent watercourses. However, if this were to occur, excess water would follow the direction of river flow away from the site.

The risk of flooding caused by the Canal, taking into consideration interaction with Hen Brook, is considered to be **moderate/high** in the south of the site.

Blockages of Artificial Drainage Systems

There is a possibility that flooding may occur from the blockage of culverts and/or sewers by debris or from structural failure. This can cause water to backup and result in localised flooding, as well as placing areas with lower ground levels at risk.

The SFRA documents discussion with Bromsgrove District Council Drainage Engineer John Bailey. 'Areas of Concern' within the District in terms of flood risk include



problematic culverts (known to have capacity or structural problems). The culvert channelling Hen Brook beneath the railway line is shown in the SFRA to be an 'Area of Concern' and recognised within the SFRA to be 'inadequate'.

Climate change is unlikely to affect the flood risk to the site from such blockages.

The risk of flooding from artificial drainage systems is considered to be **moderate/high** in the south of the site.

8 PLANNING CONTEXT

8.1 Application of Planning Policy

NPPF includes measures specifically dealing with development planning and flood risk using a sequential characterisation of risk based on planning zones and the EA Flood Map. The main study requirement is to identify the flood zones and vulnerability classification relevant to the proposed development, based on an assessment of current and future conditions.

8.2 Land Use Vulnerability

Within NPPF Technical Guidance (appropriate tables contained in **Appendix F**) each Flood Zone has a list of appropriate land uses dependent on vulnerability to flooding. With reference to Table 2 of NPPF Technical Guidance, the proposed residential development is classed as 'More Vulnerable'.

In applying the Sequential Test, reference is made to the following table (reproduced from Table 3 contained within NPPF), which shows that development is appropriate in Flood Zone 1. Development on land in Flood Zone 3a would require application of the Exception Test.

Table 8.1: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood Risk Vulnerability Classification (Table D2)		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone (Table D1)	Zone 1	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
	Zone 2	Appropriate	Appropriate	Exception Test Required	Appropriate	Appropriate
	Zone 3a	Exception Test Required	Appropriate	Should not be permitted	Exception Test Required	Appropriate
	Zone 3b functional floodplain	Exception Test Required	Appropriate	Should not be permitted	Should not be permitted	Should not be permitted

8.3 Sequential and Exception Tests

The Sequential Test is required to assess flood risk and NPPF Technical Guidance recommends that the test be applied at all stages of the planning process to direct new development to areas with the lowest probability of flooding (Flood Zone 1).

According to NPPF, if there is no reasonably available site in Flood Zone 1, the flood vulnerability of the proposed development (see NPPF Technical Guidance Table 2) can be taken into account in locating development in Flood Zone 2 and then Flood Zone 3.



Within each Flood Zone new development should be directed to sites at the lowest probability of flooding from all sources.

The sequential test has been applied on a site specific basis. The latest site masterplan (**Figure 3**) has taken into account the latest indicative EA Flood Map and indicates that no 'More Vulnerable' development will be located within the area of Flood Zone 3a. Therefore the development is considered appropriate and the Exception Test is not considered necessary.

9 SURFACE WATER DRAINAGE ASSESSMENT

9.1 Scope

The EA pre-application enquiry response stipulates that surface water run-off will be balanced to the Greenfield run-off rate for all events up to the 1 in 100 year flood event, including a 30% allowance for climate change, using SuDS (**Appendix D**).

9.2 Pre-development Situation

The pro-rated loH 124 method ^(Ref. 16) has been used to estimate the existing (Greenfield) surface water run-off from the site. Calculations are contained in **Appendix G**. Based on the underlying geological characteristics, the site is presumed to be largely impermeable; however, this would need to be confirmed with site-specific soakage testing.

Table 9.1: loH Surface Water Run-off Calculations (whole site)

Return Period	Peak Flow (l/s)
QBAR	88.2
1 in 1 year	68.2
1 in 30 year	161.0
1 in 100 year	211.1

9.3 Post-Development Situation

To determine the approximate volume of attenuation storage that would be required on-site, the WinDes 'Quick Storage' calculation has been used based on a conservative post-development impermeable area of 13.2ha (~71% of developed site area) and an allowable discharge rate equivalent to the return period. No allowance is included in the calculations for infiltration and therefore the results illustrate a worst-case scenario figure; however, there should be a degree of natural infiltration, to be confirmed with site-specific soakage testing. Full calculations can be found in **Appendix H**.

Table 9.5: Quick Storage Estimates

Return Period	Minimum Storage (m ³)	Maximum Storage (m ³)
1 in 30 year event	2968	4308
1 in 100 year event	3903	5547
1 in 100 year event + 30% climate change	5509	7735



In accordance with EA guidance, the surface water run-off volume will need to be contained within the site for storm events up to the 1 in 100 year plus an allowance for climate change. For 1 in 30 year events surface run-off should be stored below ground.

Taking a precautionary view, for the 1 in 30 year storm events a maximum storage volume of approximately 4,308m³ would be required, which should be contained and stored below ground within the site. For the 1 in 100 year storm event plus a 30% allowance for climate change a maximum storage volume of approximately 7,735m³ would be required, which should be accommodated within the site but could be in above ground structures, including car parks, soft landscaping areas and public open space.

SuDS should be implemented in accordance with the CIRIA document 'The SuDS Manual' ^(Ref. 17). Wherever possible, SuDS should not be located in the 1 in 100 year flood risk zone, therefore the final masterplan should seek to locate all SuDS features outside the flood outline.

Development of a full detailed surface water drainage strategy is beyond the scope of this report but will be required prior to the application for detailed planning for the site.

10 FLOOD MITIGATION MEASURES

10.1 Overview

The EA in their pre-application enquiry response highlight certain flood mitigation measures that must be considered for development in Flood Zones 2 and 3 (**Appendix D**).

10.2 Finished Floor Levels

It is advised that finished floor levels should be set no lower than 600mm above the 1 in 100 year climate change flood level; however, residential development is proposed beyond the 1 in 100 year climate change flood extent and therefore there is no stipulation for the minimum finished floor level.

10.3 Flood Resilience and Resistance

Residential development is proposed beyond the 1 in 100 year climate change flood extent therefore flood resilient and flood resistant measures are not considered necessary.

10.4 Emergency Flood Plan

Residential development is proposed beyond the 1 in 100 year climate change flood extent therefore an emergency flood plan is not considered necessary.

10.5 Floodplain Compensation

In accordance with NPPF Technical Guidance ^(Ref. 2), where development takes place in Flood Zones 2 and 3, the development should include a 'like for like' 'volume for volume' compensatory flood storage. The masterplan (**Figure 3**) indicates that no built footprint is to be located within Flood Zones 2 and 3, therefore on this basis floodplain compensation storage is not considered necessary. However, floodplain compensation storage would be required should there be any ground works in Flood Zone 2 and 3, subject to EA confirmation.

10.6 Ordinary Watercourse Easement

Considering that part of the southern site boundary is adjacent to Hen Brook, it would be precautionary to allow an easement between the bank top and any development. However, considering that no built development is to be located within approximately 30m of the bank top, it is unlikely that any easement will significantly affect the development layout. Further confirmation should be obtained from the local authority regarding any required easements.

11 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and key recommendations have been formatted from this FRA.

Table 11.1: Flood Risk Assessment Summary

1.	Development description and location
1a	What type of development is proposed and where will it be located? <ul style="list-style-type: none"> Residential mixed-use development on an 18.7ha Greenfield site in Stoke Prior, Bromsgrove, Worcestershire, B60 4DP.
1b	What is its vulnerability classification? <ul style="list-style-type: none"> 'More Vulnerable'
1c	Is the proposed development consistent with the Local Development Documents? <ul style="list-style-type: none"> The development will provide additional housing to the area in keeping with the local housing policies.
1d	Provide evidence that the Sequential Test or Exception Test has been applied in the selection of this site for this type of development? <ul style="list-style-type: none"> The majority of the site is in Flood Zone 1. A 1ha area of the site in the southwest lies in Flood Zone 3. No residential development is proposed in the area of Flood Zone 3.
2.	Definition of the flood hazard
2a	What source of flooding could affect the site? <ul style="list-style-type: none"> Fluvial – extreme flooding from Hen Brook in isolation and in combination with Worcester and Birmingham Canal, surface water run-off and blockage of the culvert beneath the railway line.
2b	What are the existing surface water drainage arrangements for the site? <ul style="list-style-type: none"> None, the site is Greenfield.
3.	Probability
3a	Which flood zone is the site within? <ul style="list-style-type: none"> Flood Zones 1, 2 and 3

3b	<p>If there is a Strategic Flood Risk Assessment covering this site, what does it show?</p> <ul style="list-style-type: none"> • The Bromsgrove District and Redditch Borough Council SFRA confirms: <ul style="list-style-type: none"> ○ The site lies in Flood Zones 1, 2 and 3; ○ There are recorded instances of historical flooding associated with Hen Brook; ○ Hen Brook is a 'Flood Watch Area' and a 'Potentially Vulnerable Area'; and ○ The culvert beneath the railway line is 'inadequate' and 'problematic' in terms of flood risk.
3c	<p>What is the probability of the site flooding taking account of the contents of the SFRA of any further site-specific assessment?</p> <ul style="list-style-type: none"> • The majority of the site is at low risk of flooding from all sources. • The southwest of the site is at high risk of fluvial flooding from Hen Brook. • The interaction of Hen Brook with the Canal and the culvert is a moderate/high flood risk.
3d	<p>What are the existing rates and volumes of run-off generated by the site?</p> <ul style="list-style-type: none"> • See Section 9
<p>4. Climate Change</p>	
4a	<p>How is flood risk at the site likely to be affected by climate change?</p> <ul style="list-style-type: none"> • Climate change will increase rainfall by 30%, which may result in increased flow within the surrounding watercourses, therefore a greater potential chance of fluvial flooding within the site.
<p>5. Detailed development proposals</p>	
5a	<p>Demonstrate, where appropriate, how land uses most sensitive to flood damage have been placed within the site that is at least risk of flooding.</p> <ul style="list-style-type: none"> • Based on the latest masterplan (Figure 3) all built development is proposed in Flood Zone 1.
<p>6. Flood risk management measures</p>	
6a	<p>How will the site be protected from flooding, including the potential of climate change, over the development's lifetime?</p> <ul style="list-style-type: none"> • SuDS features will be designed to attenuate surface water flow on site up to the 1 in 100 year plus 30% climate change storm event.
<p>7. Off site impacts</p>	
7a	<p>How will it be ensured that the proposed development and the measures to protect the site from flooding will not increase flood risk elsewhere?</p> <ul style="list-style-type: none"> • See 6a
<p>8. Residual risks</p>	
8a	<p>What flood related risks will remain after the implementation of measures to protect the site from flooding?</p> <ul style="list-style-type: none"> • Extreme fluvial flood events and blockages of artificial drainage sewers.

8b	<p>How, and by whom, will these risks be managed over the lifetime of the development?</p> <ul style="list-style-type: none">• Bromsgrove District Council will manage Hen Brook.• The Environment Agency will manage the River Salwarpe.• Severn Trent Water will manage local public sewers.
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In terms of the flood risk, this assessment considers the proposed development to be appropriate on land within Flood Zone 1.

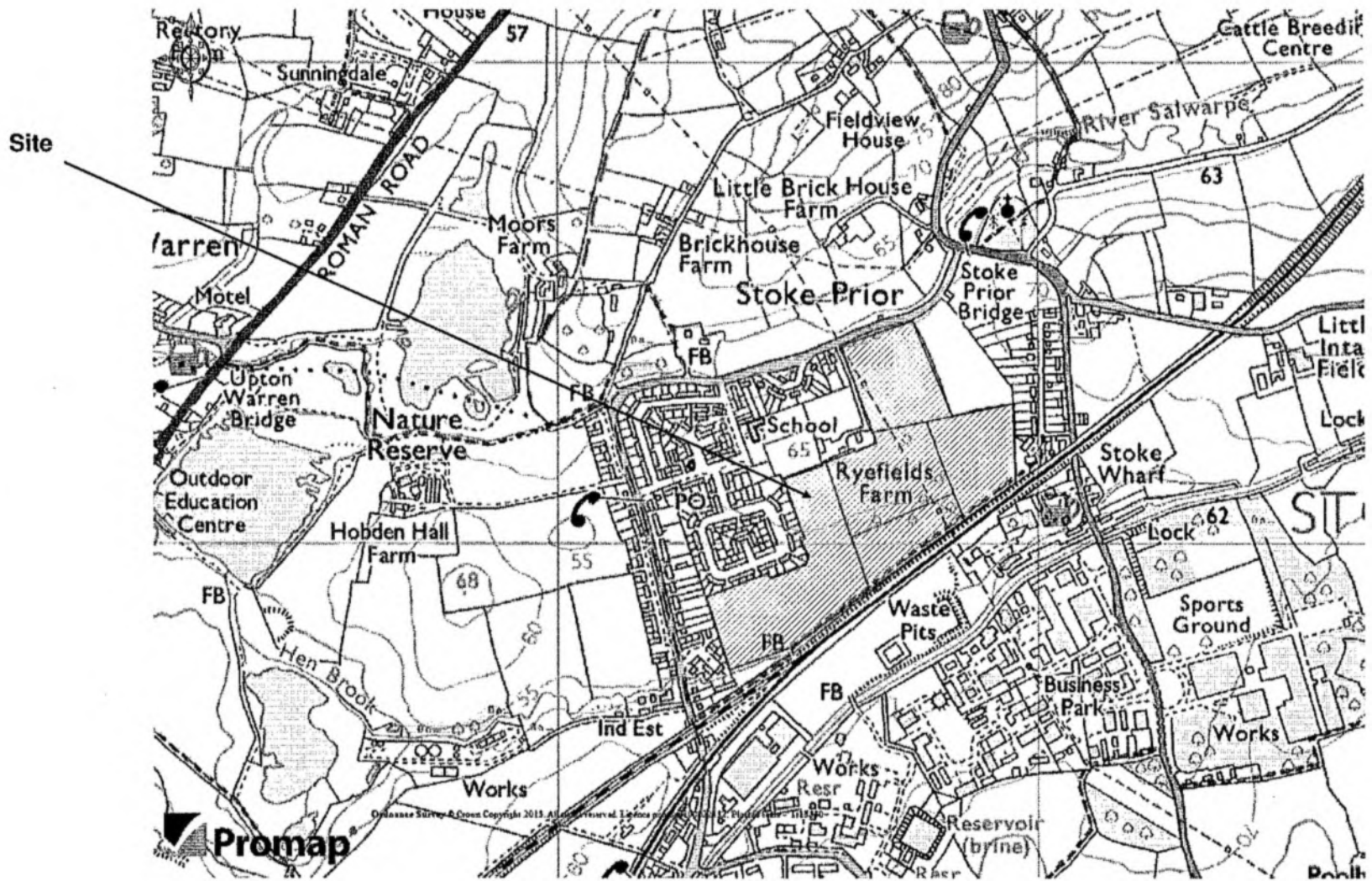


12 REFERENCES

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14. Environment Agency, "River Severn Catchment Flood Management Plan Summary Report", December 2009.
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16. Institute of Hydrology, "Flood Estimation for small catchments", Report 124, 1994.
17. CIRIA, "The SUDS Manual" C697, March 2007.



FIGURES



SITE LOCATION PLAN

Client: Stoke Prior Developments Ltd

Figure No: 1

Site: Land at Stoke Prior, Worcestershire, B60 4DP

Job No: 132102

Scale: NTS

Source: Promap

FIGURE 2



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Application Boundary (18.7ha)

Date: _____			
Project of Name: _____			
INFORMATION			
Drawing No: _____			
Scale: _____			
Date: _____			
Client: _____			
<p>Stoke Prior Developments Ltd.</p> <p>Land at Stoke Prior</p>			
Drawn by:	Checked:	Approved:	Date:
ED	MS	MS	27/10/2018
1:500	Scale	1:1000	Scale
218	1:1000	1:1000	1:1000
Drawing No: _____			
BMD 217.021.001			

BMD
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FIGURE 3



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 - 2. All dimensions are to the centerline of the road unless otherwise stated.
 - 3. All dimensions are to the centerline of the road unless otherwise stated.
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NO.	DESCRIPTION	DATE
1	Issue for planning	15/11/11
2	Issue for planning	15/11/11
3	Issue for planning	15/11/11
4	Issue for planning	15/11/11
5	Issue for planning	15/11/11
6	Issue for planning	15/11/11
7	Issue for planning	15/11/11
8	Issue for planning	15/11/11
9	Issue for planning	15/11/11
10	Issue for planning	15/11/11

INFORMATION

Project Name: Stoke Prior
 Client: Stoke Prior Developments Ltd.
 Location: Stoke Prior, Staffordshire
 Date: 15/11/11

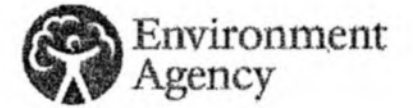
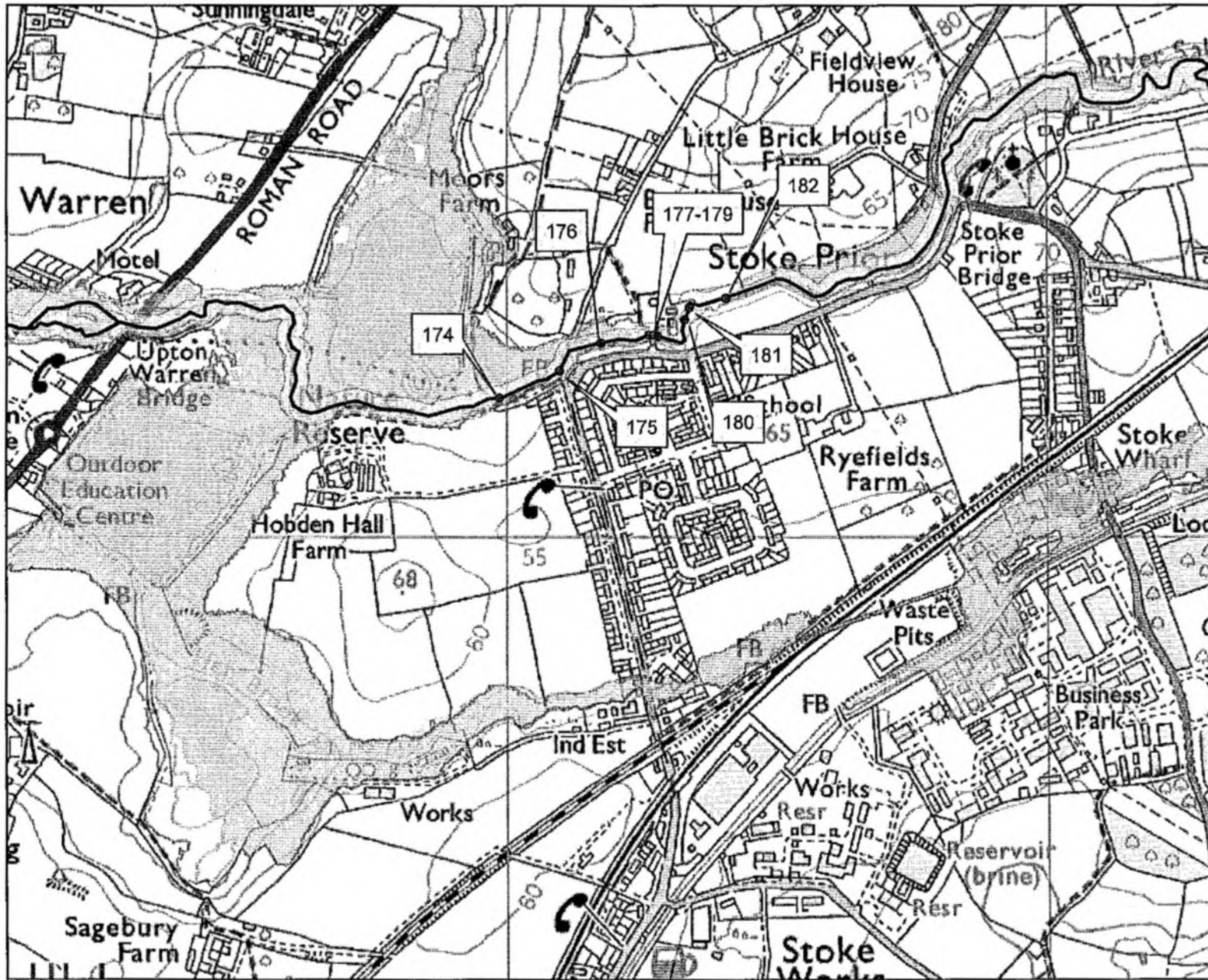
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Stoke Prior Developments Ltd.
 Stoke Prior, Staffordshire
 ST16 2JH

Project: Stoke Prior
 Location: Stoke Prior, Staffordshire
 Date: 15/11/11

Scale: 1:1000
 Drawing No: 11/11/11
 Date: 15/11/11

Detailed FRA Map Centred on Stoke Prior & the River Salwarpe - created 14th October 2013 (W4326)



1: 10,000

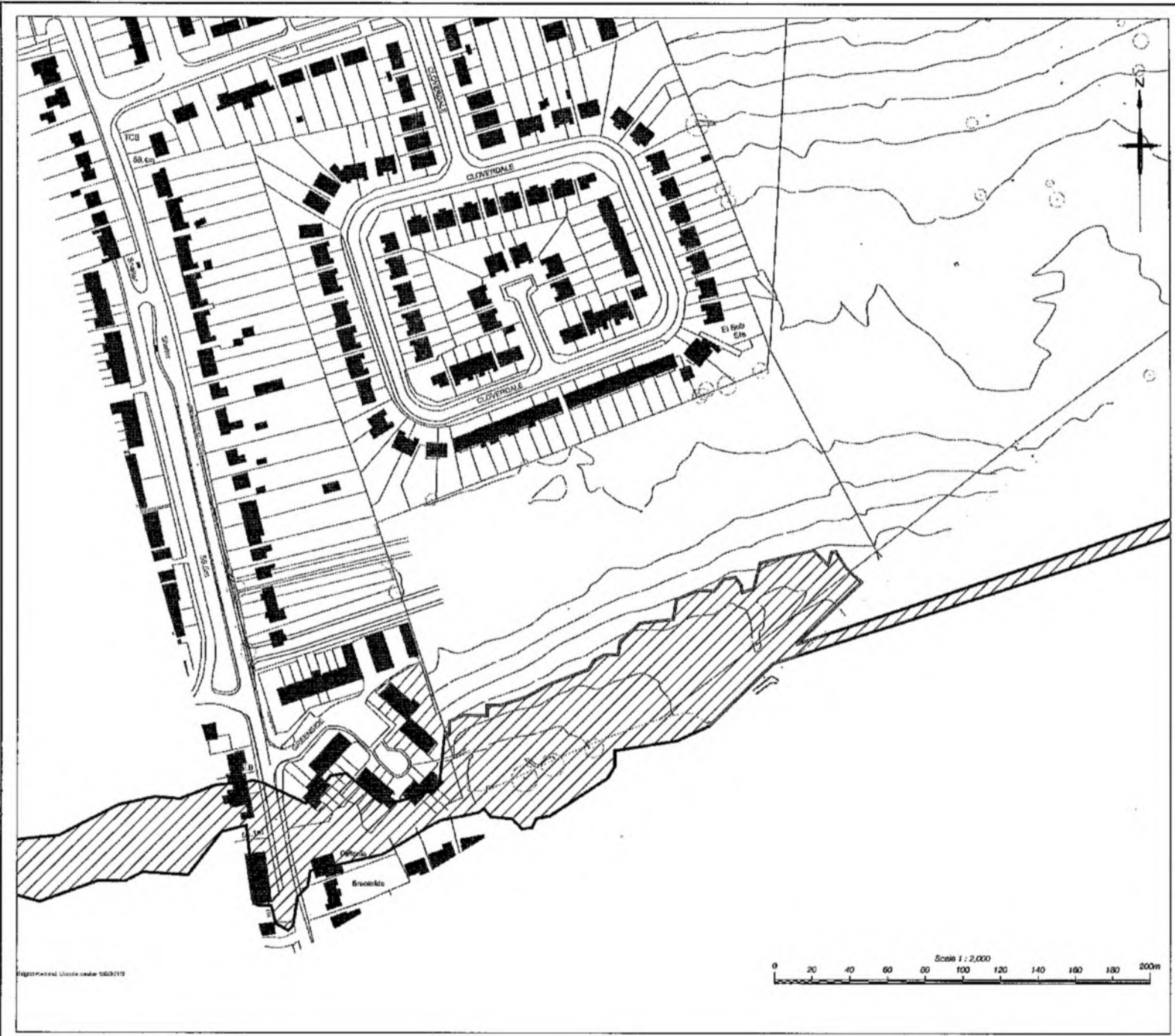


FIGURE 4

Legend

- Salwarpe Model Nodes
- Main River
- Bank top e-planning tool
- ▨ 0.1% (1 in 1000 year) floodplain (fz2)
- ▩ 1% (1 in 100 year) floodplain (fz3)

File Location: K:\132102 - STOKES PRIOR\GRAPH\FLOOD RISK\10-02_HEN-BROOK_FLOODPLAN.DWG



Legend

Environment Agency Flood Zone 3 outline (1 in 100 year) - based on EA Flood Map; no modelled levels available

DRAFT FIGURE 5

P1	05.11.13	FIRST ISSUE	RA	JC	
Rev.	Date	Amendment	Drawn	Chkd.	Appd.

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Client

STOKE PRIOR
DEVELOPMENTS LTD

Project Title

LAND AT STOKE PRIOR

Drawing Title

INDICATIVE FLOODPLAIN
HEN BROOK

Drawn	Date	Checked	Date	Approved	Date
RA	05/11/13	JC	05/11/13		
Scale	1:2000	Orig Size	A3	Dimensions	M
Project No.	132102		Drawing File		
Drawing No.	10-02		Rev.	P1	



Enter a postcode or place name:

Other topics for this area...

Risk of Flooding from Reservoirs



Map legend

Click within the extent of flooding to see which reservoirs affect this area

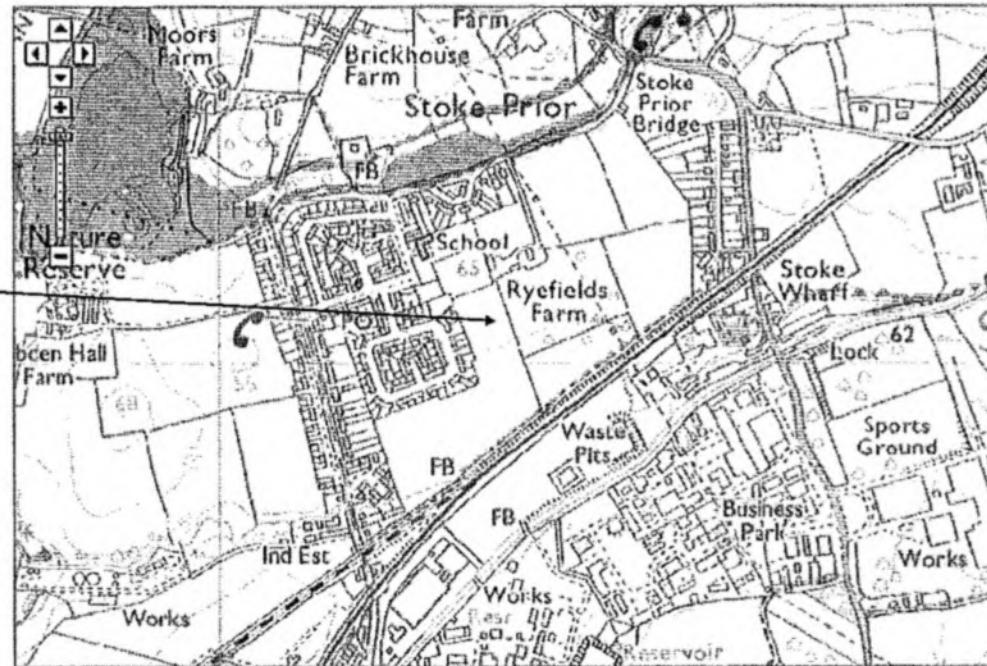
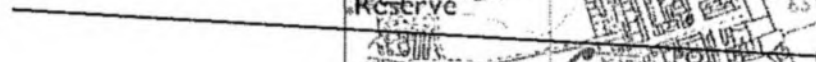
Risk of Flooding from Reservoirs

Maximum extent of flooding

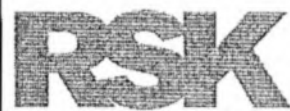
X: 394,582; Y: 267,063 at scale 1:10,000

Data search Text only version

Site



Customers in Wales- From 1 April 2013 Natural Resources Wales (NRW) will take over the responsibilities of the Environment Agency in Wales.
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ENVIRONMENT AGENCY RESERVOIR FLOOD MAP

Client: Stoke Prior Developments Ltd

Figure No: 6

Site: Land at Stoke Prior, Worcestershire, B60 4DP

Job No: 132102

Scale: NTS

Source: Environment Agency



APPENDIX A

Service constraints



RSK GROUP
SERVICE CONSTRAINTS

1. This report (the "Services") was compiled by RSK LDE Ltd (RSK) for Stoke Prior Developments Ltd (the "client") in accordance with the terms of a contract between RSK and the "client" dated September 2013. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable Civil Engineer at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.
2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
3. Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.
4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
6. The observations and conclusions described in this report are based solely upon the Services, which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.
7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walk-over survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.
8. The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on



information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.



APPENDIX B

NPPF Technical Guidance Note

Site-specific Flood Risk Assessments (FRAs)

As set out in the National Planning Policy Framework, local planning authorities should only consider development in flood risk areas appropriate where informed by a site-specific flood risk assessment. This should identify and assess the risks of all forms of flooding to and from the development and demonstrate how these flood risks will be managed so that the development remains safe throughout its lifetime, taking climate change into account. Those proposing developments should take advice from the emergency services when producing an evacuation plan for the development as part of the flood risk assessment.

BS 8533-2011 Assessing and managing flood risk in development Code of practice, Nov 2011

Assessing the risk of flooding

4.1 General

A detailed, development-based flooding investigation should be undertaken to determine:

- a) the likelihood and consequence of flooding in and around the development, from all sources,
- b) how the development might alter the existing flooding regime, potentially increasing the risk of flooding elsewhere; and
- c) the design measures needed to manage the risk of flooding in and around the development.

NOTE a detailed, development-based flooding investigation to be prepared and submitted to the planning authority as part of the planning application. By producing the flood investigation at such an early stage, it can be used to influence the conceptual layout and design of the development and reduce (or avoid) the risk of flooding.

4.2 Site information

Before undertaking a detailed assessment of the risk of flooding, information about the site and surroundings should be obtained, including:

- a) details of existing infrastructure (e.g. reservoirs, canals, culverts, flood risk management infrastructure and/or drainage infrastructure);
- b) details of existing raised flood risk management infrastructure (e.g. the level of protection afforded by them and their condition);
- c) evidence of historical flooding;
- d) topographic mapping including local features (e.g. boundary walls and hedges);
- e) information on site ground conditions.

Assessing the risk of flooding to the development site and beyond

The risk of flooding associated with a proposed development should be assessed as the combination of the likelihood of flooding and its consequence. The following factors should be assessed:



- a) how likely, and to what extent, the site might flood and the nature of that flood hazard;
- b) the consequence of flooding (e.g. damage to property, injury to people or loss of life); and
- c) the impact that the development could have on flooding elsewhere.

The assessment of flood risk should quantify the risk of flooding, both to and from the site, from the following:

- 1) tidal and fluvial flooding
- 2) surface water flooding
- 3) flooding due to surcharging of sewers and drains
- 4) groundwater flooding
- 5) flooding caused by the failure of infrastructure

Interim Code of Practice for Sustainable Drainage Systems

Drainage impact assessments

The drainage impact assessment (DIA) or drainage assessment (DA) will ensure that consideration is given to the impact of the proposed development on the catchment. It should be submitted with the first planning application for developments that require waste or surface water to be drained.

The DIA is site-specific, and guidance on the completion of the assessment recommends the implementation of a drainage system that provides the best environmental protection and states that SUDS is the preferred method of surface water drainage.

The basic requirements for a drainage impact assessment include:

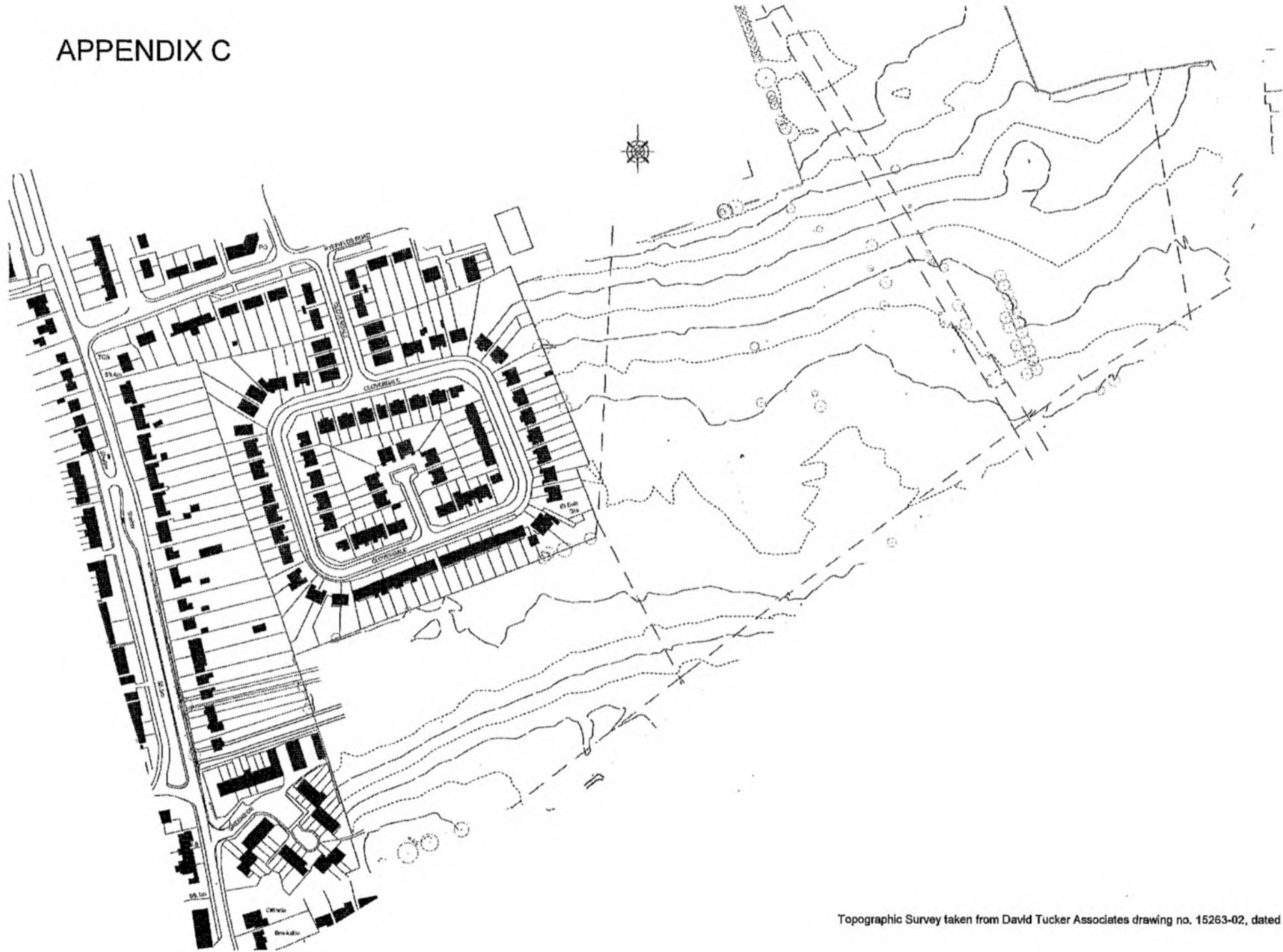
- an examination of drainage patterns including overland flood pathways during extreme events
- concept drawing of the development proposal
- brief summary of how the drainage design provides SUDS techniques (in accordance with CIRIA guidance)
- summary of SUDS to be incorporated
- soil classification for the site
- evidence of soil porosity sites (where possible at site of infiltration devices)
- consideration of ground and groundwater conditions
- calculation for run-off flow for the range of critical rainfall events
- attenuation and treatment designed for a relevant return period rainfall events
- wastewater drainage proposals
- confirmation of maintenance responsibility
- copy of letter from sewerage undertaker giving location of nearest public sewer and confirmation of their availability for servicing the site.



APPENDIX C

Topographic Survey

APPENDIX C



the site should have regard to the WFD status of the watercourse and include appropriate treatment to improve the quality of surface water discharges.

Additional Information

In addition to the above advice, I have also enclosed a document on Development Guidance. This contains general advice on environmental matters including flood risk and drainage, contact details for where you can obtain data, and advice on other consents/permits that may be required.

Going Forward

I trust the above preliminary advice is useful for informing any future stages of the proposed development. As mentioned previously, we would only provide more detailed advice including a review of a Flood Risk Assessment as part of our charged service.

Please do not hesitate to contact me to discuss our charged advice service if you would like further pre-application advice for this project in future.

Yours sincerely

