Telford and Wrekin Council

Strategic Flood Risk Assessment
Level 2
Final
December 2008

Halcrow Group Limited

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Executive Summary

In February 2008, Telford and Wrekin Council commissioned Halcrow Group Limited to produce a Level 2 Strategic Flood Risk Assessment (SFRA) in accordance with Planning Policy Statement 25 (PPS25) and its Companion Guide, Making Space for Water (2003) and the new Severn Catchment Flood Management Plan (2008). The study comprises two-dimensional (2D) hydraulic modelling of 6 watercourses in the Borough, including: Hurley Brook Tributary, Hurley Brook, Crow Brook, Wall Brook (also cited as Donnington Watercourse), Wesley Brook Tributary and Mad Brook, to produce refined Flood Zone information for Flood Zones 2 (1 in 1000 year), 3a (1 in 100 year), 3a plus climate change (1 in 100 year +20%) and 3b (1 in 20 year).

The study refines and builds upon the work undertaken during the Level 1 SFRA which identified that the resolution of existing Flood Zone data through the Borough is relatively course. This study therefore focuses on improving the Flood Zone information in order to better inform the Sequential Test and site selection process, which the Council will undertake as part of its Local Development Framework (LDF). It also assesses the flood hazard posed by these watercourses as well as the residual risk from partial blockage of selected culverts. Relevant policies for the management of flood risk and appropriate development in these areas are then put forward. The Environment Agency has been consulted throughout the study to ensure that the approach is robust and meets best practice.

The modelling results have shown that in most areas, Flood Zones 2, 3a and 3b are fairly narrow and there is little difference in flood extent between each of these events. In these areas, it will be important that the flood risk affected areas remain as open space. However, the downstream extents of the Hurley Brook Tributary, Hurley Brook, and the entire modelled area of the Wall Brook, is relatively flatter and flood extents are larger. For some development sites in these areas, the flood hazard is sufficiently low that development could go ahead provided the Sequential Test is passed and the guidance for development in Flood Zones, put forward in this report, is followed. Such instances should be very carefully considered and a strong case for development put forward.

Two formal flood storage areas and a number of informal flood storage areas (produced as a result of the presence of railway embankments) have been identified in the modelled study areas. It is important that these areas are safeguarded from future development, and where possible, options to convert informal storage areas to formal storage areas explored. It is established practice that developer contributions are used for this purpose. There are also numerous culverts in the modelled study area, some of which have been shown to have insufficient capacity to convey flood flows (various blockage scenarios therefore typically showed little difference to the results for the 1 in 100 year event). The surcharging effect in some areas significantly affects flood risk downstream. Opportunities to increase the capacity of the culverts, without increasing flood risk elsewhere, should be explored in order to bring flood risk management benefits to the wider community. Again, developer contributions could be sought for this purpose.

A number of policy recommendations are made for the possible development sites along the modelled watercourses, based on detailed hydraulic modelling results from the Level 2 SFRA. Guidance for Development Control and potential developers required to produce site-specific Flood Risk Assessments is also included.

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1 Introduction

1.1 *Project Overview*

Halcrow Group Ltd has been requested by Telford and Wrekin Council to undertake a Level 2 Strategic Flood Risk Assessment (SFRA). The aim of the study is to improve the existing Flood Zone information for six watercourses in Telford and Wrekin, assess the flood hazard posed by these watercourses and assess the residual risk from partial blockage of selected culverts. This study refines and builds upon the work undertaken during the Level 1 SFRA which included a broad scale assessment of flood risk, using existing data, across the whole of the Borough and from all sources.

Telford and Wrekin's drainage has been influenced by human activity and most watercourses rarely follow the original, open course. Watercourses in the Borough are heavily culverted, sometimes re-aligned and often with various flow and flood control structures. The complexity of the watercourses is often not represented in the existing Flood Zone data, which has been derived from JFLOW, a national broadscale model. Therefore as part of the Level 2 assessment, six two dimensional (2D) TUFLOW models have been developed for key watercourses in Telford and Wrekin, including:

- Hurley Brook Tributary (SJ 63809 11944 to SJ 63811 14270)
- Hurley Brook (SJ 65755 10831/SJ 67100 10383/SJ 67303 10251 to SJ 65102 15158)
- Wall Brook (SJ 71188 14078 to SJ 70029 15617)
- Crow Brook (SJ 68592 11510 to SJ 67761 14893)
- Tributary of Wesley Brook (SJ 70391 08259 to SJ 71949 06049)

It has been necessary to improve the Flood Zone information for these watercourses and establish the different levels of flood hazard and residual risk. This will give a truer account of flood risk in the Borough, upon which informed decisions on the allocation of development sites can be made, via the application of the Sequential Test, by the Council.

The flood extents for key return periods (1 in 20, 100, 100 plus climate change and 1000 years to represent Flood Zone 3b, Flood Zone 3a, Flood Zone 3a plus climate change and Flood Zone 2 respectively) were determined and mapped for each watercourse. These can be found in Volume 2. The 2D software TUFLOW has been used to produce peak flood extents, depths and flow velocities, allowing the production of hazard maps for each return period. The refined assessment of flood risk has then been used to inform appropriate flood risk management policies for the areas affected.

This Level 2 SFRA has been prepared in accordance with best practice, Planning Policy Statement 25: Development and Flood Risk (PPS25). The Environment Agency's Development Control and Flood Risk Mapping teams have also been consulted at all stages of the assessment, and both modelling and mapping methodologies have been discussed with the Environment Agency to ensure acceptance of the Level 2 SFRA approach.

1.2 Flood Risk Management Strategies - Environment Agency

The work undertaken and recommendations provided in Level 2 SFRAs should be in accordance with the relevant Catchment Flood Management Plan (CFMP) covering the study area, in this case, the River Severn CFMP. At the time of production of the Level 2 SFRA, the Severn CFMP was being updated and became available in draft form.

Most of Telford and Wrekin falls in the Policy Unit 'Telford and Black County'. The CFMP states that urbanisation of the area and expected development in the future, particularly in Telford, must be managed to ensure flood risk does not increase across the Policy Unit. The CFMP identifies the following opportunities and constraints:

- Opportunities lie in the use of SUDS and using Defra's 'Making Space for Water' campaign to try and mitigate the effects of surface water flooding. Policy 5 [see below] is therefore the preferred policy choice in this area due to the scale of existing flood risks and the anticipated growth of development and flood risk associated with climate change.

- There are opportunities to implement SUDS within urban areas as well as the promotion of PPS25 which will help to reduce risk to new developments.

- The extension of Flood Warning areas within the catchment has potential for allowing many more people at risk of flooding to receive the service.

- The promotion of flood proofing schemes will help to mitigate the affects of flooding where building defence structures is not an option.

- Telford has been identified for urban development in the future.

- Many urban areas in the catchment experience problems in surface water flooding which occurs in addition to the fluvial flooding.

- Standard of Protection of many defences and number of properties they protect is unknown for many defences within the catchment.

The selected Policy Option for the area is to 'take further action to reduce risk (now and/or in the future)'. Identified actions are as follows:

- Through the implementation of PPS25 and primarily SUDS in FRAs and SFRAs the problem of surface water flooding may be addressed.

- Review maintenance plans and identify new areas for trash screens to reduce blockages caused by large woody debris through the use of Strategic Asset Management Plans and Asset Management Plans.

- Maintain defences through the use of Strategic Asset Management Plans and Asset Management Plans.

- Apply the recommendations from the Integrated Urban Drainage project being undertaken for Telford and Wrekin as part of Defra's 'Making Space for Water project'. Close communication between the Environment Agency Development Control and Local Planning Authority.

- Maintain Flood Warnings and promote other emergency plans and flood plans.

The suggested policies contained in this document therefore take strong direction from the recommended actions for Telford identified in the CFMP, as well as the recommendations of PPS25, Making Space for Water and the Water Framework Directive.

1.3 ***Strategic Flood Risk Assessment***

SFRA Aims

The aims of PPS25 planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is necessary in such areas, under exceptional circumstances, the policy aims to make the development 'safe' without increasing flood risk elsewhere and, where possible, reducing flood risk overall.

The aim of a SFRA therefore is to map all forms of flood risk and use this as an evidence base to locate new development primarily in low flood risk areas (Zone 1). Much of this work has been completed as part of the Level 1 assessment with subsequent Level 2 work required to fully guide the planning and development control processes.

Flood Zones are referred to as follows:

- Flood Zone 1 (Low Probability): This zone comprises land assessed as having less than a 1 in 1000 year annual probability of river or sea flooding in any year (>0.1%)

- Flood Zone 2 (Medium Probability): This zone comprises land assessed as having between a 1 in 100 (1%) and 1 in 1000 (0.1%) annual probability of river flooding in any one year.

- Flood Zone 3a (High Probability): This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding in any one year.

- Flood Zone 3b (Functional Floodplain): This zone comprises land where water has to flow or be stored in times of flood. SFRAs should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the Environment Agency, including water conveyance routes).

It should be noted, however, that flooding from sources including sewers, surface water, groundwater and impounded water bodies such as reservoirs and canals, can occur in any zone.

Where development cannot be located in Flood Zone 1 the planning authority will need to apply the Sequential Test to land use allocations and, where necessary, the Exception Test. In addition, the SFRA allows the planning authority to:

- Prepare appropriate policies for the management of flood risk;
- Inform the sustainability appraisal so that flood risk is taken account of when considering options and in the preparation of strategic land use policies;
- Identify the level of detail required for site-specific Flood Risk Assessments (FRAs), and
- Determine the acceptability of flood risk in relation to emergency planning capability.

The findings of a SFRA will feed directly into the preparation of Local Development Documents (LDDs). To date, the Core Strategy Development Plan Document (DPD) has been adopted (1st December 2007). The Level 2 SFRA will inform the production of the remaining Local Development Framework (LDF) documents, including the updated Proposals Map, which will be amended to conform with the various DPD policies as they are adopted.

Level 2 Strategic Flood Risk Assessment

According to the PPS25 Practice Guide (2008), the principal purpose of a Level 2 SFRA is to facilitate the application of the Sequential and Exception Tests. The Exception Test is applied when there are an insufficient number of suitably available sites for development within zones of lower flood risk or due to possible increases in flood risk arising from climate change.

For the Exception Test to be passed:

a) It must be demonstrated that the development provides wider sustainability benefits to the community which outweigh flood risk, informed by a SFRA where one has been prepared. If the Development Plan Document has reached the 'submission' stage (see Figure 4 of PPS12: Local Development Frameworks) the benefits of the development should contribute to the Core Strategy's Sustainability Appraisal;

b) The development should be on developable previously-developed land or, if it is not on previously developed land, that there are no reasonable alternative sites on developable previously-developed land; and,

c) A flood risk assessment must demonstrate that the development will be safe, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

It is possible that Council will need to apply the Exception Test as several indicative sites fall within Flood Zone 3, although it is not possible to fully determine this until the Sequential Test process has been undertaken.

The increased scope of the Level 2 assessment involves a more detailed review of flood hazard within a Flood Zone (including flood probability, flood depth, flood velocity and the rate of onset of flooding) taking into account the presence of flood risk management measures such as flood defences. This also includes 2D modelling and breach/overtopping analysis for certain locations where the residual risk of failure of existing water retaining structures may impact on future development. It should be noted that there is also a residual risk with SUDS, which may become blocked, fail or have insufficient design capacity, but this risk is minimised by adhering to Ciria's 'Design for Exceedance' and by regular maintenance. There are no formal raised defences in Telford and Wrekin, though there are numerous culverts which can pose a residual risk if they were to become blocked.

This Level 2 SFRA, in conjunction with the Level 1 SFRA, will enable Telford and Wrekin Council to fully apply a Sequential Test approach at the site allocation level (vulnerable uses within the site to be directed to areas at the lowest probability of flooding in the first instance) and will inform policies and practices to ensure that where necessary any development in such areas satisfies the requirements of the Exception Test.

1.4 UK Flood Hazard

In addition to the TUFLOW outputs of depth and velocity, the UK Flood Hazard is also calculated by the model. The output includes a grid of Flood Hazard derived from the flood depth and velocity outputs and a debris factor. The Hazard and its associated classification are calculated within TUFLOW. The UK Flood Hazard is calculated by using the following equation from Defra's Flood Risks to

People – Phase Two Document (FD2321/ TR2) (2006). Hazard is calculated as follows:

Hazard = d x (v + 0.5) + DF

Where **d = depth (m)**

V = velocity (m/s)

DF = debris factor

In this study, the following debris factors have been used:

- If the flood depth is >0.25m, **or** the velocity is >2m/s, DF = 1
- If the flood depth is <0.25m **and** less than <2m/s, DF = 0

Based on the value of the hazard for a given area, a Hazard Classification is then assigned. This can be used to ensure developments are suitably safe up to the 1 in 1000 year event. The Flood Hazard classifications are divided into four classes of risk:

Table 1: Flood Hazard Rating and Associated Category

Flood Hazard Rating	Category
0.0 – 0.75	Low
0.75 – 1.25	Moderate
1.25 – 2.5	Significant
2.5 +	Extreme

These classes of risk then translate into the following Flood Hazard classification (Figure 1):

- Class 1: Danger for some – Flood zone with deep or fast flowing water that presents a hazard for some people (i.e. children)

- Class 2: Danger for most – Flood zone with deep or fast flowing water that presents a hazard for most people

- Class 3: Danger for all – Flood zone with deep or fast flowing water that presents a hazard for all people and emergency services.

For example, if peak water depths are 1.0 m for example, for velocities less than 1.0 m/s, the flooding is considered to present 'Danger for some'. For velocities between 1.0 m/s and 2.0 m/s the flooding is considered to present 'Danger for most'. For velocities greater than 2.0 m/s the flooding is considered to present 'Danger for all'.

Where development is proposed and the flood hazard rating is greater than 0.75 then the development is likely to require the intervention of the emergency services to aid rescue and evacuation. Local Authorities will need to liaise carefully with their Emergency Planners and Emergency Services, as development in areas with this level of risk could lead to an additional burden on the Emergency Services during times of extreme flooding, and at a time when resources are already likely to be stretched dealing with existing problems

Figure 1: Flood Hazard Classification

1.5 Background to the study area

Telford and Wrekin Council covers an area of some 290km² and is bordered by North Shropshire, Shrewsbury and Atcham, Bridgnorth and Stafford. At the heart of the Borough is the 'New Town' of Telford (designated in 1963), which is a regional focus for population and economic growth. The Borough is also composed of several small towns (District Centres) that existed before the designation of the New Town including Wellington, Dawley, Donnington, Madeley and Oakengates. In the south of the area situated on the northern bank of the River Severn is Ironbridge, the birth place of the Industrial Revolution. The

Wrekin, a hill to the south west of Telford, is a prominent and well-known landmark on the border between the boroughs of Shrewsbury and Atcham and Telford and Wrekin. It rises to a height of 407 metres above the Shropshire Plain. The Borough has a significant rural area which is located to the north and west of Telford and covers approximately 72% of the Borough's total area.

The Borough contains a number of designated Main Rivers, including: the River Roden, which cuts across the north west corner of the Borough; the River Meese, which flows across the northern part of the Borough; the River Tern, which flows south through the rural landscape into the Borough of Telford and Wrekin before joining the River Severn; and the River Severn, which flows through the southern tip of the Borough, passing through Ironbridge, Jackfield and Coalport. While some potential development sites lie near these watercourses, the focus of the Level 2 SFRA has been on 6 non-main rivers (Hurley Brook Tributary, Hurley Brook, Wall Brook, Crow Brook and Tributary of Wesley Brook) which flow through areas of identified growth and have not been modelled before.

1.6 *Aims & Objectives*

In September 2007 a Level 1 SFRA was produced by Halcrow for Shropshire County Council and the associated 5 Borough and District Councils, together with the Unitary Authority, Telford and Wrekin, in accordance with PPS25. Following this study the Borough identified the need for a Level 2 SFRA in order to facilitate application of the Sequential and Exception Tests (possible future site allocations were identified in zones of higher flood risk). This study focuses on proposed development along the following watercourses: Crow Brook, Hurley Brook, Hurley Brook Tributary, Mad Brook, Wall Brook and Wesley Brook Tributary. This study therefore has wide spatial coverage of Telford and Wrekin. In addition, all potential site allocations have been assessed on flood risk grounds, the findings and recommendations of which can be found in Appendix A.

Aim

The main aim of this Level 2 SFRA has been to develop 2D hydraulic models to refine the assessment of flood risk from:

- Hurley Brook Tributary (SJ 63809 11944 to SJ 63811 14270)
- Hurley Brook (SJ 65755 10831/SJ 67100 10383/SJ 67303 10251 to SJ 65102 15158)
- Wall Brook (SJ 71188 14078 to SJ 70029 15617)

- Crow Brook (SJ 68592 11510 to SJ 67761 14893)
- Tributary of Wesley Brook (SJ 70391 08259 to SJ 71949 06049)
- Mad Brook (SJ 70022 07039 to SJ 71434 03676)
- A 75% blockage (during the 100 year event) of the following culverts:
    - Hurley Brook: Culvert at SJ 65882 10928 and drop culvert at 66885 11363
    - Crow Brook: Culvert at SJ 68723 11756
    - Wall Brook: Culverts at SJ 71020 14260 and SJ 70420 14890
    - Mad Brook: Culvert at SJ 70488 06475

The location of these watercourses can be viewed in Figure 2. Modelled flood maps can be found in Volume 2.

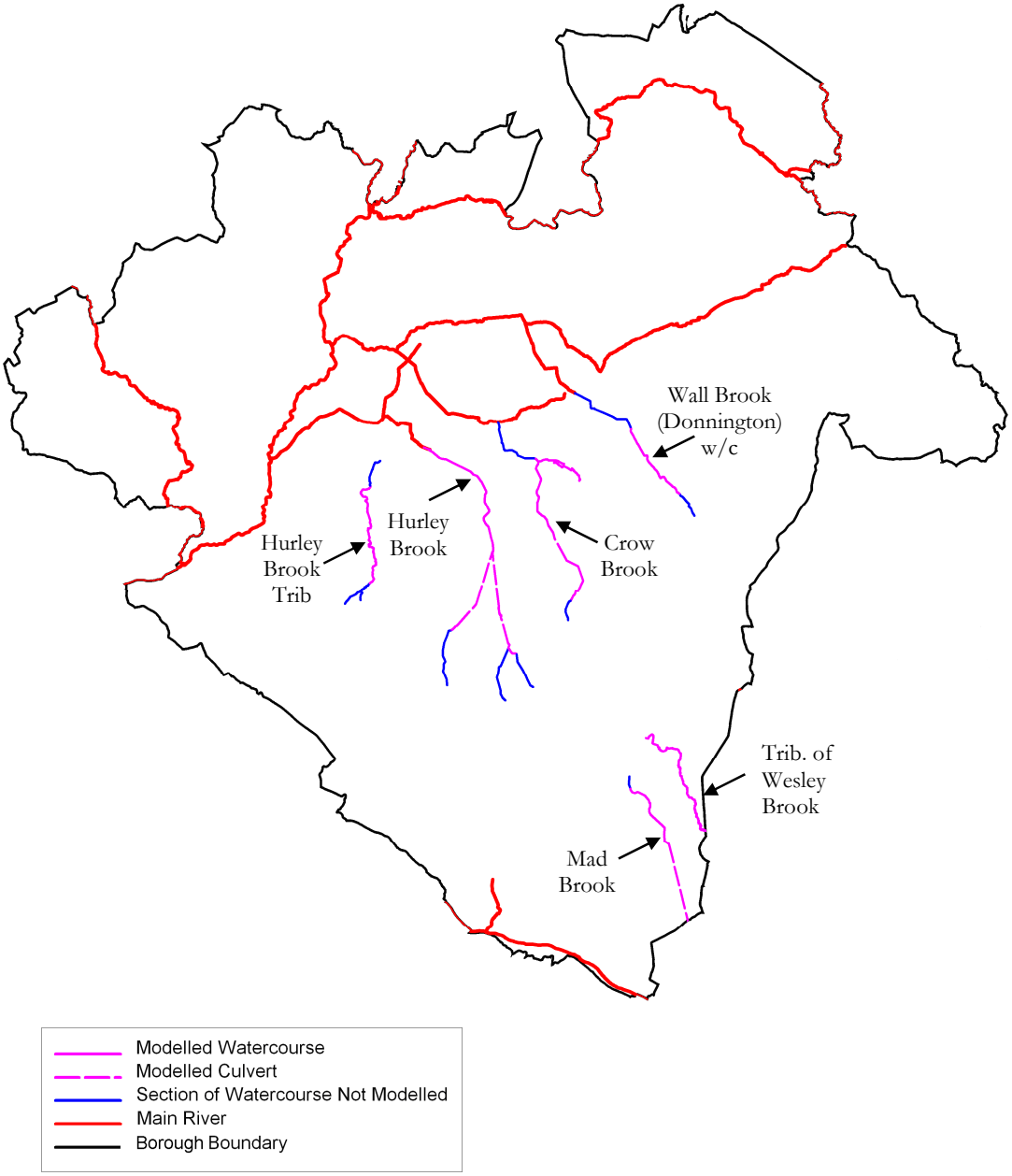

Figure 2: Location of Watercourses Modelled in Level 2 Assessment

Main Tasks

The main tasks of this study are to:

- Develop 2D hydraulic models for the six identified watercourses using Digital Terrain Models (DTM) derived from LiDAR survey data – the 2D aspect of the model allows modelling not only of the flood extent, but also the depth and velocity of out-of-channel flows.
- Identify locations where culvert blockage scenarios should be carried out to identify residual risk areas
- Produce Flood Zones 2, 3a, 3a plus climate change and 3b for each watercourse
- Produce flood maps showing:
  (i) Flood Extent
  (ii) Flood Depth
  (iii) Flood Velocity
  (iv) UK Flood Hazard – derived from flood depth, velocity and UK hazard debris factor.
- Assess flood risk posed to sites and develop appropriate policies for flood affected areas
- Provide appropriate Development Control policies and FRA guidance for developers

2 Planning Context

2.1 *Local Planning Policy*

Telford and Wrekin Council are in the process of preparing the LDF for the Borough, comprising various documents as outlined below, in accordance with the provisions of the Planning and Compulsory Purchase Act 2004. On adoption, the LDF will replace the existing Telford and Wrekin Local Plan (2000) and Joint Shropshire and Telford & Wrekin Structure Plan (JSTWSP, November 2002).

The adopted Telford and Wrekin Local Plan and JSTWSP formally expired on 27th September 2007, however some policies have been 'saved' for a further period until the updated LDF policy is in place, and therefore still form part of the statutory development plan for the Borough, along with the West Midlands Regional Spatial Strategy (RSS). A list of the 88 'saved' Local Plan policies can be found at: http://www.telford.gov.uk/NR/rdonlyres/2A735ED7-66BA-405C-BD93-FDD879A3D8C9/0/WrekinlocalplansavedpolicyschedulefromGOWM.doc Decisions in respect of minerals and waste applications will be determined in accordance with the relevant 'saved' policies of the JSTWSP and the 'saved' policies of the Shropshire and Telford & Wrekin Joint Minerals Local Plan, along with relevant national and regional guidance.

The Local Development Scheme (LDS) for Telford & Wrekin was updated in August 2007, and sets out a timetable for the production of documents. However, due to circumstances and slippage the LDS is in the process of being updated to include more accurate information on the likely timescale for production of the LDF documents and will be finalised later in the year. Based on officer advice, the table below shows the indicative dates for the production of Development Plan Documents (DPDs), subject to confirmation in the revised LDS 2008:

Table 2: Indicative dates for production of LDDs

Development Plan Document (DPD)	Issues & Options	Preferred Options	Submission to Secretary of State	Adoption
Core Strategy	Summer 2004	Autumn 2005	Winter 2006	Winter 2007
Proposals Map	Updated as DPDs are produced – ongoing			
Central Telford AAP	Summer 2004	Autumn 2005 and Winter 2007	Winter 2009	Winter 2010
Land Allocations	Summer 2004	Autumn 2005	Spring 2009	Winter 2010
General Policies (formerly known as Development Control Policies)	Summer 2004	Autumn 2005 and Summer 2009	Winter 2009	Winter 2010
South Telford AAP	Spring 2008	Summer 2009	Spring 2010	Winter 2011

To date, the Core Strategy has been adopted. The Level 2 SFRA will inform the production of the remaining LDF documents, including the updated Proposals Map, which will be amended to conform with the various DPD policies as they are adopted. There is no timetable as yet for the production of the Minerals and Waste Development Framework.

A number of Supplementary Planning Documents will be produced and will form part of the LDF. Some are not site-specific, in that they include general guidance on a particular issue, e.g. design guidance, and therefore may not need to refer to the SFRA's findings. The Level 2 SFRA will inform the production of the remaining un-adopted SPDs where relevant.

Telford & Wrekin Borough Council have also successfully applied to the Government to achieve 'New Growth Point' status. This requires the Borough to provide approximately 20% more housing above existing RSS levels. The higher

levels of development supported by the Borough's Growth Point status will be promoted and tested through the normal LDF procedures, including the Land Allocations DPD, and will therefore have regard to the findings of the Level 2 SFRA where relevant.

In line with PPS25 and the living draft practice guide companion, this SFRA will enable Telford & Wrekin Borough Council to prepare appropriate policies for the management of flood risk within the LDF DPDs and inform the Sustainability Appraisal process in order that flood risk is taken into account when considering development options and the preparation of strategic land use policies.

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3 Site Assessment

3.1 *Overview*

Telford and Wrekin Council are currently appraising in excess of 400 potential housing sites (based on draft Strategic Housing Land Availability Assessment data), some 79 potential employment, education, health and mixed use sites and 4 potential cemetery sites. To assist the Council with this process, this study has included an assessment of the flood risk posed to each of these sites, with associated recommendations. The results of the assessment are tabulated in Appendix A. The location of sites is shown in Figure 3.

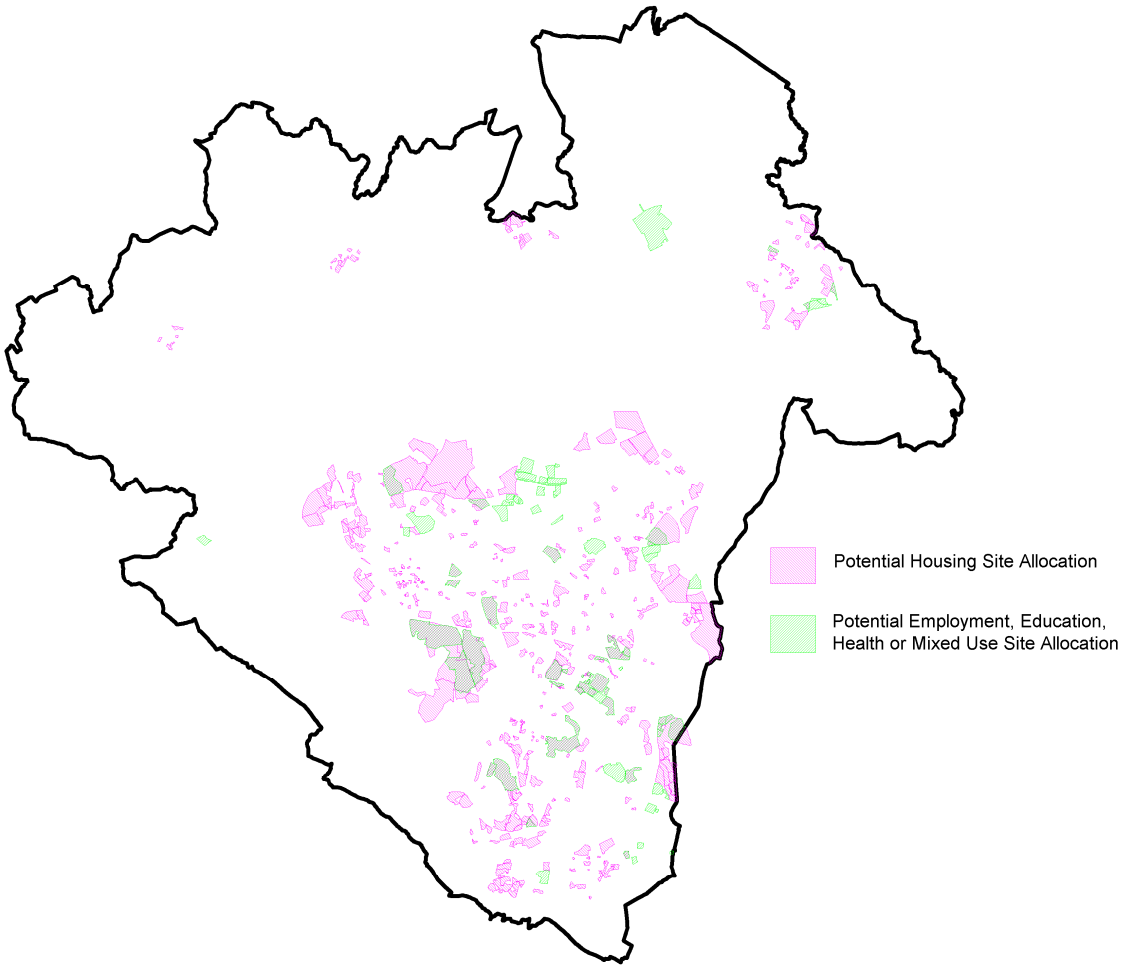

Figure 3: Potential Site Allocations

The site assessment has used the data collected in the Level 1 SFRA, which included mapping the flood risk posed from sources other than fluvial. Recommendations are in accordance with the Level 1 SFRA and relevant guidance including PPS25.

The aim of the site assessment is to assist the Council in gaining a detailed overview of each site, to assist the Sequential Test process. Specific recommendations are given for each site in Appendix A. Section 11.9 gives FRA guidance of the requirements for development of any given site in each Flood Zone, should the Sequential Test be passed (for sites which would need to pass the Exception Test, Appendix A recommends, where applicable, that appropriate alternative in lower risk Flood Zones are developed in preference, though it is possible that the Council may still identify the need to carry out the Exception Test).

Sites which are in the vicinity of the watercourses modelled as part of this study have been assessed, the results of which are presented in Appendix B, as well as Chapters 5, 6, 7, 8, 9 and 10.

3.2 General Points to Note

The site assessment has made use of the DG5 data received from Severn Trent Water, which coarsely illustrates the number of properties within a four-digit postcode polygon (e.g. TF1 6) which have been flooded by either foul, combined or surface water sewers. Figure 3 shows that in general, the majority of Telford and Wrekin's potential site allocations lie in the centre and south of the Borough. In this area, the DG5 data shows that generally, the number of properties flooded by sewers in any given postcode polygon is low to medium (see Figure 4). However, it should be noted that the resolution of data available for this assessment is very coarse and therefore limits its use for spatial planning. It is therefore recommended that the Council considers assessing sewer capacity in more detail through a Water Cycle Strategy (WCS), to further assist the sustainability appraisal of new development areas.

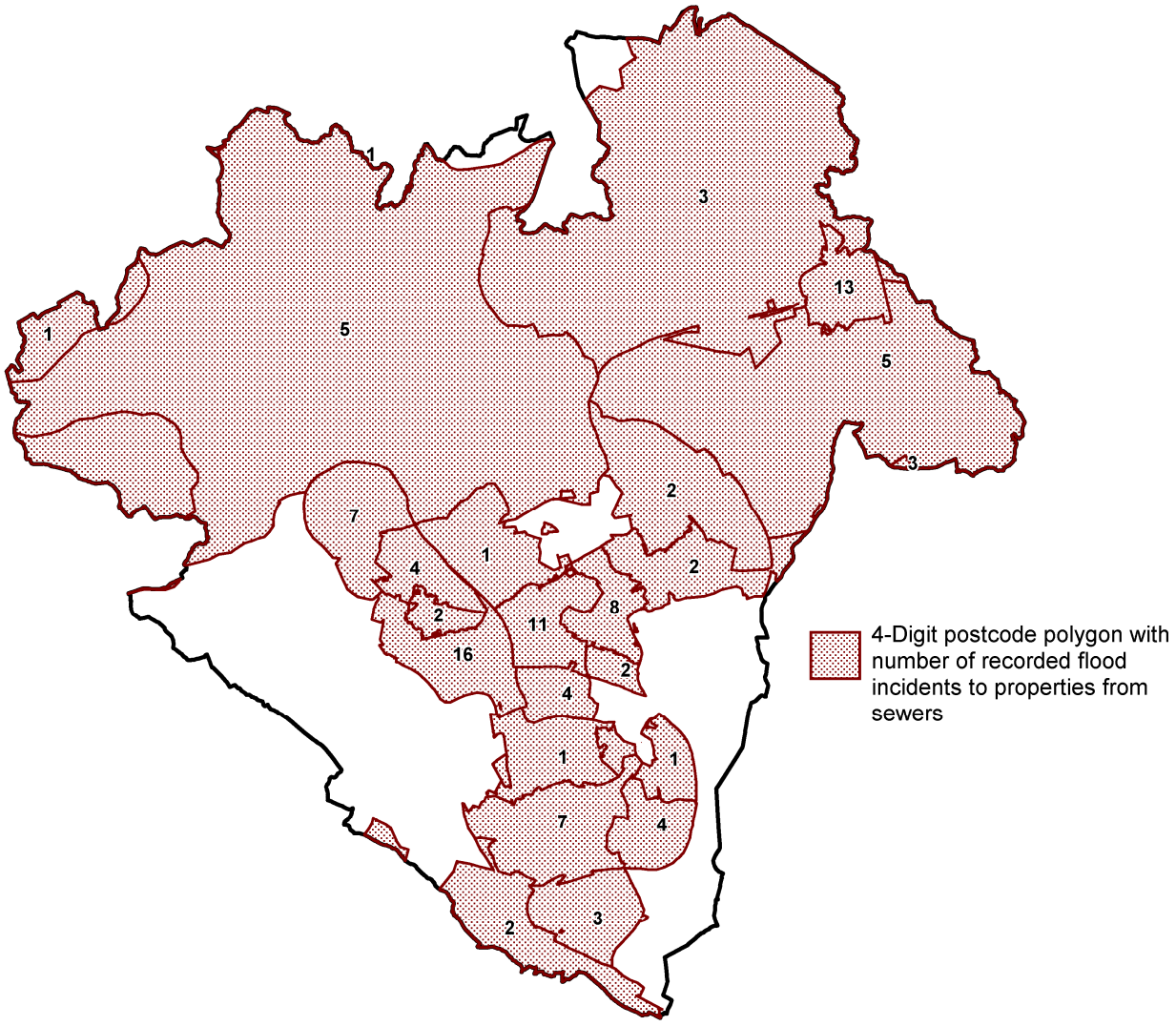

Figure 4: Sewer Flood Risk Data for Telford and Wrekin

3.3 *Site Selection Process*

The Sequential Test Process as advocated by PPS25 (Appendix C) should be carried out for all potential development sites.

The sites identified in Flood Zone 1 are generally suitable for development, as long as the recommendations for development in Flood Zone 1 are followed (Section 11.9). Where only a small proportion of the site is not in Flood Zone 1, development may have some impact on the floodplain through providing new

infrastructure such as access crossings and roads across the floodplain. The Council should try and avoid this happening and consider the options which have the least impact on the floodplain.

Sites which mainly lie in Flood Zone 1, but are affected in some way by Flood Zones 2, 3a and 3b, should only be developed if there are no other suitable sites lying fully in Flood Zone 1. If this can be demonstrated, such sites are generally suitable for development provided that the Council/developer adopts the principle of **avoidance**, ensuring that the area of Flood Zone 2, 3a and 3b remains as undeveloped open space. This is especially important where Flood Zone 3a is shown to affect the site, which has been assumed to equal Flood Zone 3b where no 3b exists to differentiate. The avoidance of flood risk is important in the development of sustainable communities and will deliver a positive reduction in flood risk by reducing the impact that flooding may have on the community (by reducing the number of people within the site that would otherwise be at risk). It can also help the Council to achieve green space targets. This approach is generally appropriate when an area of 10% or less of the site is affected by Flood Zones 2, 3a and 3b.

Provided that the Sequential Test process has been carried out and passed, sites falling in whole or in part in Flood Zones 2, 3a and 3b can be developed **but only in accordance with Table D3 of PPS25** (Table 3). It is important to ensure that sites fully in Flood Zone 1 are considered in preference to the development of sites in higher risk areas, and sites in higher risk areas should only be developed if it can be demonstrated that no alternative site in Flood Zone 1 are suitable.

Where Flood Zones 2, 3a and 3b will be developed after passing the Sequential Test, the Council/developer should **substitute** less vulnerable development types for those incompatible with the degree of flood risk. The land should be developed sequentially; i.e. the layout of the development should be planned so that the development types within each Flood Zone are in accordance with the requirements of Table D3 of PPS25 (Table 3). An example is given in Figure 5.

Table 3: Flood Risk Vulnerability and Flood Zone 'Compatibility' (Table D3 of PPS25)

Flood Risk Vulnerability classification (see Table D2)		Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone (see Table D.1)	Zone 1	✔	✔	✔	✔	✔
	Zone 2	✔	✔	Exception Test required	✔	✔
	Zone 3a	Exception Test required	✔	✗	Exception Test required	✔
	Zone 3b 'Functional Floodplain'	Exception Test required	✔	✗	✗	✗

Key:

✔ Development is appropriate

✗ Development should not be permitted

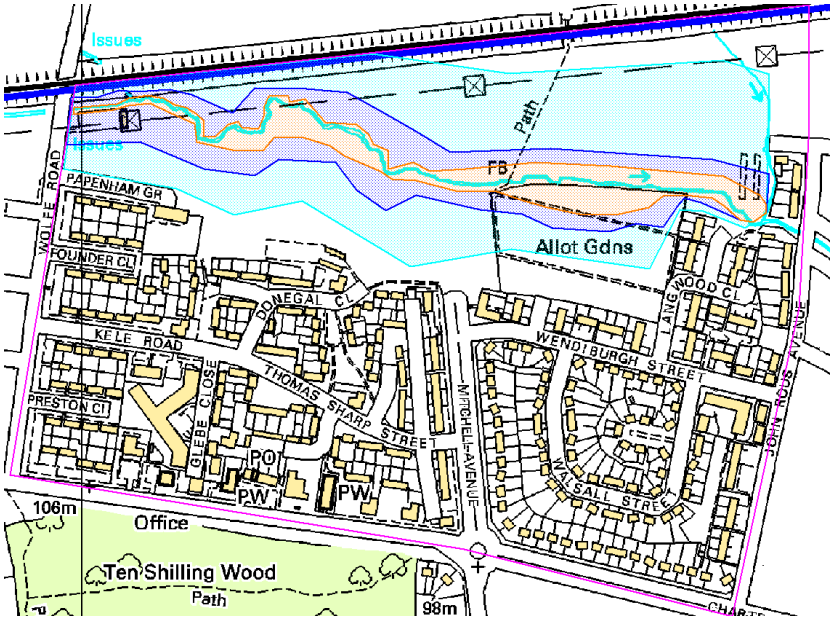

Figure 5: An example of correct master planning of a site affected by Flood risk

Appendix A illustrates that in some cases, potential development sites fall in areas which will be wholly inappropriate for the type of land use proposed. In such instances it has been recommended that alternative sites in lower risk areas are considered in preference.

Section 11.9 includes key requirements for development in Flood Zones 1, 2, 3a and 3b, which should inform developers' FRA requirements and be used to deal with non-allocated 'windfall' sites.

4 Hydrological and Hydraulic Approach

4.1 *Hydrological Approach*

The hydrological inputs to the assessment were derived using the Flood Estimation Handbook (FEH), the current industry standard for flood estimation in the UK. The chosen methodology for the hydrological modelling of each of the six watercourses is the FEH Rainfall-Runoff model. No suitable gauged data was available for any of the catchments therefore estimates are based on catchment descriptors alone, derived from the FEH CD-ROM. Full details of the hydrological approach, as well as peak flows, can be found in Appendix D.

4.2 *Hydraulic Approach*

The 2D modelling software package TUFLOW was used in conjunction with LiDAR data to construct 2D models of the six watercourses. Each of the channels has been represented in the 2D grid and a 'z line' has been used to reinforce the channel and eliminate any localised high points caused by inaccuracies in the LiDAR data. The modelled extents are shown in Table 4.

Table 4: Modelled Extents

Watercourse	**Upstream Modelled Extent**	**Downstream Modelled Extent**
Hurley Brook Tributary	SJ 63809 11944	SJ 63811 14270
Hurley Brook	SJ 65755 10831 SJ 67100 10383 SJ 67303 10251	SJ 65102 15158
Wall Brook	SJ 71188 14078	SJ 70029 15617
Crow Brook	SJ 68592 11510	SJ 67761 14893
Tributary of Wesley Brook	SJ 70391 08259	SJ 71949 06049
Mad Brook	SJ 70022 07039	SJ 71434 03676

The various inflow boundaries for each of the models are detailed in Appendix D. All downstream boundaries are represented by a normal slope calculated using the LiDAR data.

For a Level 2 SFRA the assessment of flood risk should take account of the presence of flood risk management measures, therefore culverts, reservoirs and pools and major flow control structures have been incorporated into the models where they exist (for full details see Appendix E). Culvert dimensions were measured, wherever accessible, during site visits and where measurement was not possible the culvert sizes were estimated. Wherever possible, the level of the culvert (mAOD) was verified using a hand-held GPS system and the data was then used to QA the LiDAR data. A major flow control structure exists on Mad Brook, details of which (dimensions, levels etc.) were obtained from the owner, Severn Trent Water, to assist in the accurate representation of this structure in the model.

A full account of the hydraulic modelling approach can be found in Appendix E. Modelled flood maps can be found in Volume 2.

4.3 Culvert Blockages

There are numerous culverts in the study area, each of which are at risk of complete or partial blockage, or indeed collapse. This poses residual risk to the surrounding area (which might be bigger than the risk area identified by Flood Zones 2 and 3).

A review was undertaken of culverts along the modelled watercourses and their proximity to possible development sites. Where the modelling exercise indicated issues of surcharging (due to insufficient capacity for a given flood event) or where a culvert was located immediately downstream of a development site, an analysis of residual risk was deemed necessary. For the purposes of this study, 75% blockages were modelled using the 1 in 100 year events for the relevant watercourses. The following blockages were modelled:

- Hurley Brook: Culvert at SJ 65882 10928 and drop culvert at 66885 11363
- Crow Brook: Culvert at SJ 68723 11756
- Wall Brook: Culverts at SJ 71020 14260 and SJ 70420 14890
- Mad Brook: Culvert at SJ 70488 06475

5 Hurley Brook Tributary

5.1 *Overview*

The Hurley Brook Tributary lies to the west of the Borough and rises in a principally rural area, flowing northwards. Upon flowing beneath a railway line the watercourse proceeds through mainly residential areas, before flowing into open fields. A full description of the modelled section of the watercourse, including details of structures and photographs, can be found in Appendix F.

5.2 *Proposed Development Areas*

There are a number of sites available for housing development in the vicinity of the Hurley Brook Tributary which has necessitated the need for improved Flood Zone information and a clearer understanding of the flood hazard. These are sites: 16, 68, 81, 166, 179, 181, 182, 183, 184, 380, 381, 395 and 424 (a site plan is shown in Figure 6). A detailed examination of the flood risk posed to these sites is given in this chapter, and in Appendix B.

It should be noted that site 656 has been included in this assessment though this site is affected by Flood Risk from the Hurley Brook (Chapter 6), as its floodwaters flow along the railway line for the 100 year plus climate change and 1000 year events.

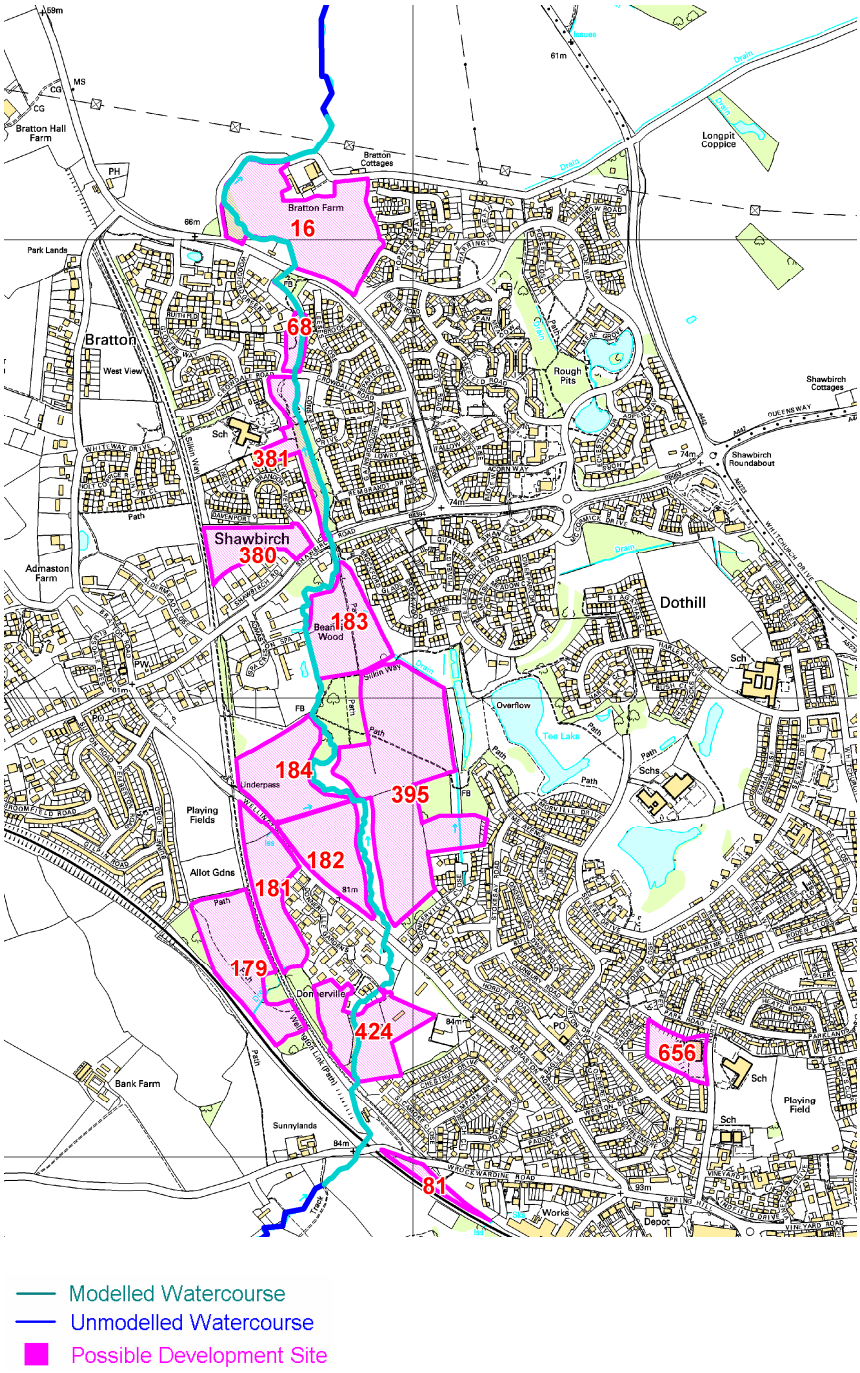

Figure 6: Site Plan of possible development sites along Hurley Brook Tributary

5.3 Model Results

The aim of the hydraulic modelling is to improve the Flood Zone information along the Hurley Brook tributary and assess the flood hazard posed to relevant possible development sites. Therefore, hydraulic modelling results consider flooding from the Hurley Brook Tributary and do not incorporate any other forms of flooding. Appendix B presents the assessment of flood risk and hazard posed to the possible development sites by various return periods along the Hurley Brook Tributary, while this section gives a general overview. Modelled flood maps can be found in Volume 2.

Overall the modelling results show that along this watercourse, the variability in flood extent, depth, velocity and hazard across each of the four modelled scenarios is minimal. The difference between the 100 year and the 100 year plus climate change events is also not significant. This indicates that all flood affected areas, up to and including Flood Zone 2, should remain as open space. For most sites this should be achievable given the size of the development sites. In line with this recommendation, sites **68** and **381** are not deemed suitable for development given the degree of flood risk posed across the sites (though a section of site **381** protrudes into Flood Zone 1 which could be developed if required). It is possible that the flood risk and hazard posed to these sites is higher due to the presence of culverts within the site which may not be able to convey flood flows of higher return periods, hence presenting some residual risk.

Flood risk through the centre of the modelled area, specifically between sites **183** and **424**, is low and flows up to the 1000 year event are generally in bank. This is due to the attenuation effect of the railway upstream, which holds back significant flood flows for all modelled return periods, creating a flood storage area. It should be noted that it has been assumed that there are no openings along the railway line which could allow the passage of water northwards (this should be confirmed prior to the allocation of site **179**). The FRA for site **179** will need to investigate the ability of the railway line to hold back water (see paragraph 7.16 of the PPS25 Practice Guide (2008)) and may require breach analysis. It is recommended that the potential for a formal flood storage area in this area should be investigated in partnership with the Environment Agency. It should also be noted that the removal of the railway embankment would have a significant effect on flood risk downstream, likely to increase the extent of the Flood Zones, as the storage effect would be lost. Prior to the allocation of any sites along the Hurley Tributary, the Council should consult the owner of the railway embankment (Network Rail) to ascertain the status of its maintenance and future use.

It is apparent that the Hurley Brook poses flood risk to some sites in the area, specifically for the 100 year plus climate change and 1000 year events. For the Hurley Brook's 100 year plus climate change event, flood waters flow along the railway and around the Wellington area find their way north westwards, affecting site **656** on the south western side (note that other Wellington sites are assessed in Chapter 6 – Hurley Brook). The situation is similar for the 1000 year event, though flood waters make their way further north, joining a drain along the eastern boundary of sites **395** and **183** and posing low-hazard flood risk. It is recommended that for the sites affected, the areas are left as open space. However, the low flood hazard means this risk could be mitigated in the identified areas, and could be developed for housing if it could be demonstrated that there are no other available sites fully in Flood Zone 1 (i.e. Flood Zone 2 where there is a suitably low hazard).

5.4 Blockage Scenario

Modelling of a 75% blockage (during the 100 year event) at culvert SJ 68552 10928 on the Hurley Brook has indicated development sites **395**, **656**, and **183** are affected by flooding from water that flows along the railway line towards development sites located adjacent to the Hurley Brook Tributary. In general the depth and velocity of flooding is minimal with a flood hazard of 'danger for some.' Modelled flood maps can be found in Volume 2. It is recommended that the parts of the site affected by flooding during a blockage scenario are left as open space.

6 Hurley Brook

6.1 *Overview*

The Hurley Brook lies in the centre of the Borough and rises in a principally rural area at three separate watercourses, the Hurley Brook and two branches of the Ketley Brook. Upon flowing beneath the M54 the watercourses proceed northwards, through various long sections of culverts through a relatively urban area, before meeting around Hadley Castle (SJ 66730 12680) and continuing northwards through open, though engineered, watercourse. At the roundabout on the A442 the watercourse leaves the urban area and enters into open fields, before flowing through Wappenshall and north west, out of the study area. A full description of the modelled section of the watercourse, including details of structures and photographs, can be found in Appendix F.

6.2 *Proposed Development Areas*

There are a number of sites available for housing development, as well as four possible employment, education, health and mixed use developments in the vicinity of the Hurley Brook which have necessitated the need for improved Flood Zone information and a clearer understanding of the flood hazard.

The potential housing development sites are: 69, 74, 93, 138, 189, 190, 191, 192, 193, 225, 228, 290, 361, 382, 414, 432, 441, 443, 460, 493, 519, 530, 609, 611 and 614.

The four employment, education, health and mixed use developments are also possible housing sites and are as follows: EMP2-POR (also housing site 382), 192-SHLAA (also housing site 192), 432-SHLAA (also housing site 432) and 138-SHLAA (also housing site 138). A site plan is shown in Figure 7. A detailed examination of the flood risk posed to these sites is given below.

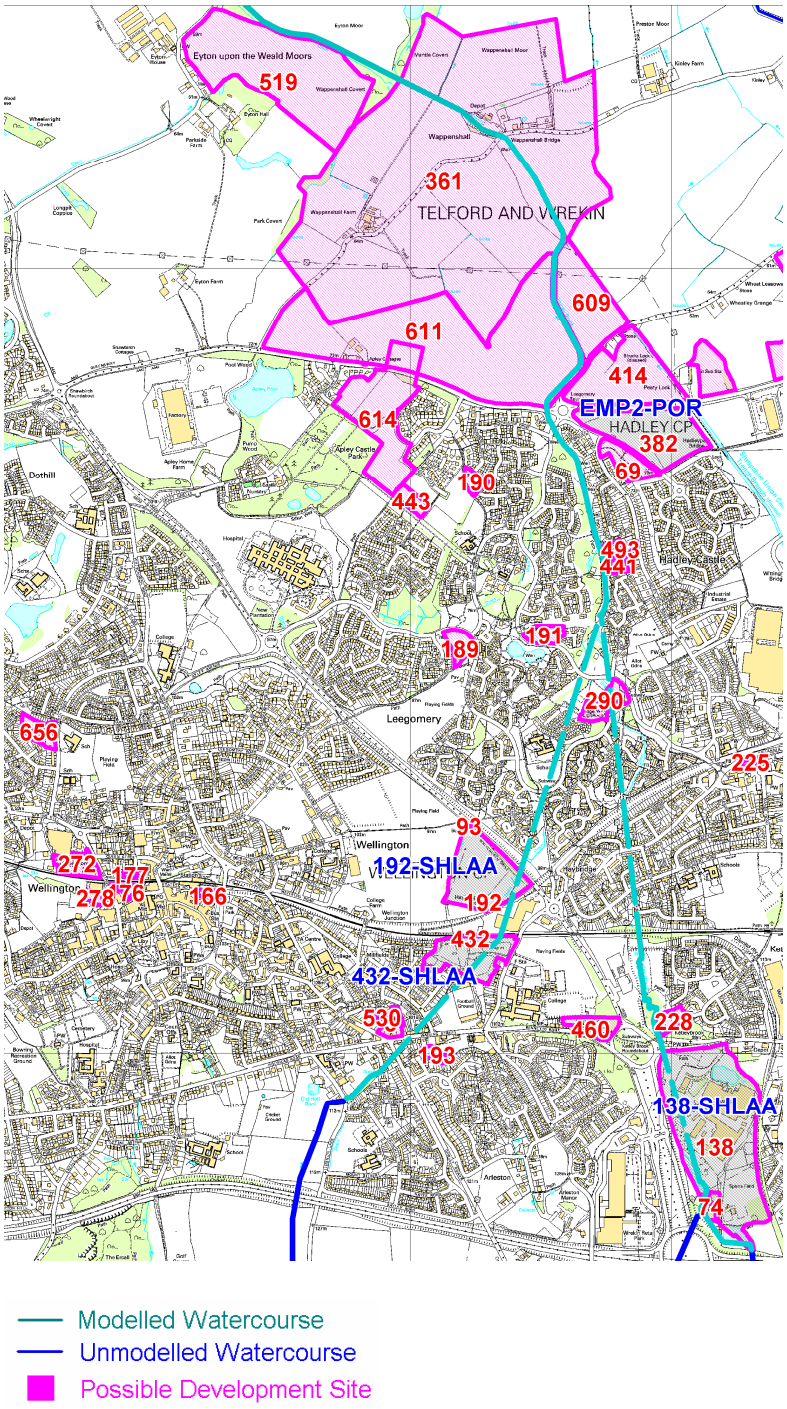

Figure 7: Site Plan of possible development sites along Hurley Brook

6.3 Model Results

The aim of the hydraulic modelling is to improve the Flood Zone information along the Hurley Brook and assess the flood hazard posed to relevant possible development sites. Therefore, hydraulic modelling results consider flooding from the Hurley Brook and do not incorporate any other forms of flooding. Appendix B presents the assessment of flood risk and hazard posed to the possible development sites by various return periods along the Hurley Brook, while this section gives a general overview. Modelled flood maps can be found in Volume 2.

Overall the modelling results show that along this watercourse, the variability in flood extent, depth, velocity and hazard across each of the four modelled scenarios is minimal. The difference between the 100 year and the 100 year plus climate change events is also not significant. This indicates that all flood affected areas, up to and including Flood Zone 2, should remain as open space. For most sites this should be achievable given the size of the development sites. However, in line with this recommendation, sites **74** and **228** on the eastern branch of the Hurley Brook (Ketley Brook), site **432** on the western branch of the Hurley Brook, and site **609** at the downstream extent, are not deemed suitable for development given the degree of flood risk posed across the sites.

The area immediately upstream of the railway line on the eastern branch of the Hurley Brook (Ketley Brook) is acting as a designated flood storage area and is mitigating the risk of flooding downstream. Therefore site **228** is not deemed appropriate for development as it significantly encroaches this storage area. The storage area should continue to be safeguarded from future development, and maintained and operated as such.

Towards the upstream extent of the modelled area between sites **193** and **432** on the western branch of the Hurley Brook, the culvert upstream of Watling Street (SJ 6587 1092) is surcharged for all modelled events, causing flooding downstream. Water flows overland towards the railway line affecting a number of proposed sites. Upstream of the railway line the watercourse emerges for a small section of open channel before being culverted beneath the railway line. Modelling has shown the channel and culvert at this location to be of sufficient capacity to cope with discharge from the upstream culvert (i.e. there is no out-of-bank flow resulting from this location). The out-of-bank flow results only from the lack of culvert capacity upstream of Watling Street. Modelling has shown this flood water to flow along the railway towards Wellington (described below). Increasing the capacity of the culvert upstream of Watling Street, or providing some upstream

storage, may improve the flood risk in this area, and prevent flows along the railway line towards Wellington.

Between Watling Street and the railway line, sites **3** and **432** are marginally affected by the 20 year event, with greater flooding for the 100 year event and 100 year event plus climate change. For the 1000 year event, site **193** is also at risk from flooding. It is recommended that the sections of sites **3** and **193** affected by Flood Zones 3a and 2 are left as open space, while site **432** should ideally not be developed. Site **193** could be developed in full for housing if it can be demonstrated there are no other sites fully in Flood Zone 1, given the low probability and flood hazard, though the housing in this area would need appropriate raised floors (see recommendations for development in Flood Zone 2).

Downstream of the railway line, housing and employment site **192** is at risk from flooding for the 100 year event, 100 year plus climate change and 1000 year event, and should only be considered for development if no other sites fully in Flood Zone 1 are available. If the Sequential Test is passed, Flood Zones 2 and 3a should be left as open space (as the flood hazard within Flood Zone 2 is moderate to significant for large parts of the site). The railway itself is acting as a barrier to flow creating residual risk to the site and the FRA will be required to assess this. The FRA for this site will need to investigate the ability of the railway line to hold back water (see paragraph 7.16 of the PPS25 Practice Guide (2008)) and may require breach analysis. More vulnerable uses should be directed away from the flood affected areas.

The Hurley Brook poses flood risk to sites in the Wellington area, for the 100 year, 100 year plus climate change and 1000 year events. Water flows along the railway towards the Wellington area, marginally affecting site **272** along the southern and western boundaries. Flood waters do not inundate sites **166**, **176**, **177**, and **278** with these sites lying fully in Flood Zone 1. It is recommended for the parts of the site affected, the areas are left as open space. However, modelling has indicated that the flood hazard is low for the 1000 year event, and therefore the risk could be mitigated and could be developed for housing if it could be demonstrated that there are no other available sites fully in Flood Zone 1.

Flood risk at the downstream extent of the modelled area is evident between sites **414** and **519**. A significant area of land is being considered for development in this area. Site **414** consists of three parts with the western most part affected by

flooding from the Hurley Brook. There is little difference between the extent of flooding for the 1 in 100 year and 1 in 1000 year event, and as such, it is recommended that these areas are left as open space. The far western part of site **414** is also affected by the Crow Brook (refer to Section 7). Approximately fifty percent of site **609** is affected by Flood Zone 3a, with almost the entire site affected by Flood Zone 2. The nature of flood risk at this site indicates that development should be discouraged and alternative sites in Flood Zone 1 considered.

Site **361** is affected by Flood Zone 3b, 3a and 2, mainly at the central and northern parts of the site. The Hurley Brook itself runs through the centre of this site effectively splitting the site into two halves. On the right bank over fifty per cent of the site is affected by Flood Zones 3b, 3a and 2, with very little difference in the extent of flooding. Parts of the site located within Flood Zone 1 appear to be cut off by flooding entirely, in particular to the south eastern part of the site. It is therefore recommended that the right-bank part of the site is not developed. It is also recommended that the parts of the site on the left bank of the Hurley Brook affected by Flood Zones 3b, 3a and 2 be kept as open space as again, there is little difference in the extent of the flooding. Parts of the site located within Flood Zone 1 are acceptable for development, provided alternative sites fully in Flood Zone 1 are not available, subject to a detailed FRA. More vulnerable parts of the development (bungalows etc.) should be directed towards the lowest risk part of the site (i.e. well away from Flood Zones 2, 3a and 3b). Site **519** is also substantially affected by Flood Zones 3a and 2. Development would be suitable if sites fully in Flood Zone 1 are not available, and Flood Zones 2 and 3a are left as open space, however as the flood affected areas encroach some 50% of the site, this may not make the development feasible.

6.4 Blockage Scenario

With a 75% blockage (during the 100 year event) applied at culvert SJ 68552 10928 and the drop culvert at 66885 11363 on the Hurley Brook, the extent of flooding to sites **3**, **74**, **138**, **193**, **228** and **432** increases marginally in comparison to the 100 year event. Depths, velocities and flood hazard are also only marginally different across the affected parts of the site. This re-enforces the recommendation to leave parts of the site affected by Flood Zones 3a and 2 as open space within sites **3** and **193**. With a 75% blockage on culvert SJ 68552 10928 on the Hurley Brook, the extent of flooding to housing and employment site **192/ 192-SHLAA** increases by a slightly greater margin, to a similar extent as the 1% AEP (1 in 100 year) plus

climate change event. Modelled flood maps can be found in Volume 2. It is recommended that the affected parts of the site remain as open space.

Flooding to sites to the west of the Hurley Brook is also experienced when a blockage is applied to the culvert at SJ 68552 10928.

7 Crow Brook

7.1 *Overview*

The Crow Brook lies to the east of the Borough emerging from a culvert into a natural channel by Oakengates (SJ 68590 11510) and flowing on a north easterly direction towards Trench. At its upstream extent, the watercourse is conveyed through a series of culverts before emerging at Trench Pool, a large raised reservoir. From here, water overflows at the western end of the pool before the channel diverts from its original path and is culverted before emerging to the west of Queensway. This differs from the route of the channel shown by the previous JFLOW outlines which suggested that the watercourse followed a route directly north through Hortonwood before emerging downstream of Horton Lane (SJ 6879 1437). From Queensway, the watercourse is culverted once again beneath Hadley Park Roundabout before continuing in a predominantly north westerly direction. A full description of the modelled section of the watercourse, including details of structures and photographs, can be found in Appendix F.

7.2 *Proposed Development Areas*

Three possible sites available for housing development and nineteen employment, education, health and mixed use developments are proposed in the vicinity of the Crow Brook which have necessitated the need for improved Flood Zone information and a clearer understanding of the flood hazard.

The potential housing development sites are: 164, 195 and 471. Site 471 has also been proposed as an employment site (471-SHLAA). The potential employment, education, health and mixed use development sites are: EMP4-POR (9 individual sites), EMP3-POR (7 sites), 100-SHLAA and 383-SHLAA. A site plan is shown in Figure 8 with a detailed examination of the flood risk posed to these sites outlined below.

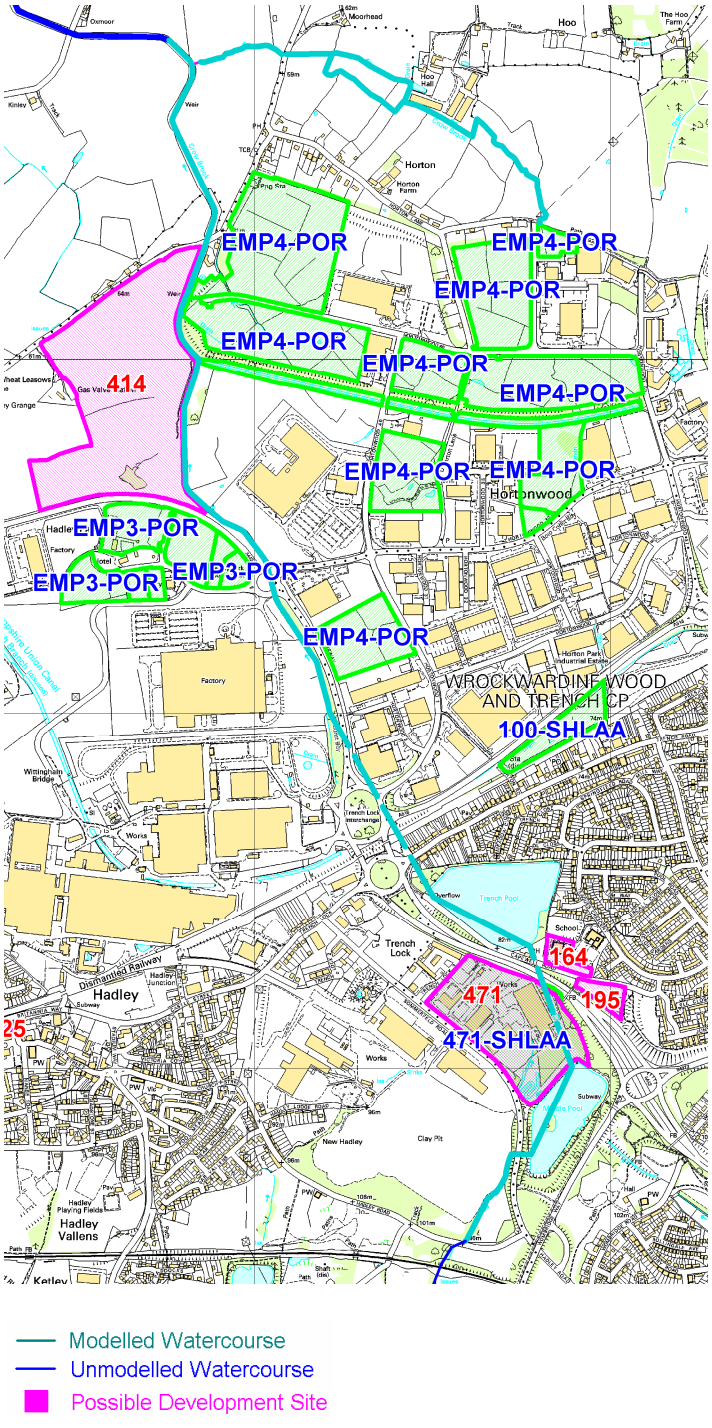

Figure 8: Site Plan of possible development sites along Crow Brook

7.3 Model Results

The aim of the hydraulic modelling is to improve the Flood Zone information along the Crow Brook and assess the flood hazard posed to relevant possible development sites. Therefore, hydraulic modelling results consider flooding from the Crow Brook and do not incorporate any other forms of flooding. Appendix B presents the assessment of flood risk and hazard posed to the possible development sites by various return periods along the Crow Brook, while this section gives a general overview. Modelled flood maps can be found in Volume 2.

Overall the flood risk posed to the majority of sites adjacent to the Crow Brook is minimal, with the majority of proposed sites located within Flood Zone 1. The Flood Zones based on the updated modelling differ significantly from the previous JFLOW outlines. The previous JFLOW outlines showed the watercourse to follow a path through Hortonwood, to the east of the actual path of the watercourse. Sites **100-SHLAA** and five areas of the **EMP4-POR** site were previously shown to lie within Flood Zones 3a and 2. The updated modelling has removed these sites from the floodplain, now placing them fully in Flood Zone 1, as the work undertaken as part of this Level 2 SFRA has confirmed that the watercourse is actually culverted from Trench Pool before emerging to the west of Queensway at SJ 6821 1300. For each of these sites, however, a detailed FRA will be required to confirm the site's placement in Flood Zone 1.

It is apparent that surcharging of culverts at the upstream extent of the Crow Brook poses flood risk to sites at downstream locations, in particular housing/employment site **471/471-SHLAA.** At this location, there is residual risk from the culvert, which surcharges, causing water to flow down Sommerfeld Road, entering the site on the western boundary. In addition, many of the surrounding roads flood, which may present access issues to the site. Although the whole site is not affected, large parts are shown to be inundated towards the centre and western extent, with additional drains/channels located towards the south eastern corner of the site. There are slight differences in the extent of flooding between the 1 in 20 year event and 1 in 100 year event; with greater differences between the 1 in 100 year event and the 1 in 1000 year event. There are also minimal variations in the depth, velocity and hazard posed to this site, however, given the extent of the flooding, alternative sites in lower risk Flood Zones, preferably Flood Zone 1, should be developed in preference to this site.

Towards the downstream extent of the modelled watercourse, a number of sites are shown to be at risk of flooding from the Crow Brook including seven

employment sites **EMP3-POR** and one residential site (**414**). It should be noted that site **414** consists of three parts, with the part located furthest east affected by the Crow Brook. The remainder of the site further west are affected by the Hurley Brook (refer to Section 6). Modelled results have shown the 1 in 20 year and 1 in 100 year events to be contained within the Crow Brook channel at this location. However, there is flood risk from the 1 in 100 year plus climate change event and the 1 in 1000 year event where modelling has shown flood water to follow a route along the roads adjacent to the sites. The part of the site shown to be affected by Flood Zone 2 should ideally be kept as open space, however, given the low flood hazard posed during the 1000 year event, development here may be acceptable provided it can be demonstrated that the Sequential Test has been passed and therefore are no other sites available fully in Flood Zone 1. However, the most vulnerable elements of the development must be placed in the lowest risk Flood Zone (1).

Employment sites **EMP3-POR** (7 sites) are located on the left bank of the Crow Brook. Flood Zone 2 extends into five of the sites; however, the associated flood hazard is low with shallow depths and slow velocities across most of the sites. Flood waters flow along the roads currently surrounding the sites with two appearing to be cut off by floodwaters. It is recommended that areas affected by Flood Zone 2 be left as open space. However, employment development may be acceptable provided it can be demonstrated that the Sequential Test has been passed and therefore are no other sites available fully in Flood Zone 1. However, the most vulnerable elements of the development must be placed in the lowest risk Flood Zone (1).

7.4 Blockage Scenario

With a 75% blockage (during the 100 year event) applied at culvert SJ 68723 11756 the extent, depth and velocity of flooding within site **471** (also housing site **471-SHLAA**) is similar to the 100 year event. Modelled flood maps can be found in Volume 2. It is recommended that the parts of the site affected are left as open space.

8 Wall Brook (Donnington Watercourse)

8.1 *Overview*

The Wall Brook (also cited as Donnington Watercourse) lies to the east of the Borough by Donnington and flows through a predominantly urban area. The watercourse emerges from a culvert under Fieldhouse Drive, proceeding in a north westerly direction and passing beneath a number of culverts between Brookside and New Trench Road. Once emerging downstream of New Trench Road, the watercourse then proceeds in a northerly direction parallel to Donnington Drive before reaching the downstream extent of the model. The general area is very flat, resulting in extensive flood risk areas. A full description of the modelled section of the watercourse, including details of structures and photographs, can be found in Appendix F.

8.2 *Proposed Development Areas*

There are a number of sites available for housing development in the vicinity of the Wall Brook which has necessitated the need for improved Flood Zone information and a clearer understanding of the flood hazard. These are sites: 144, 336, 350, 482, 504 and 508 (a site plan is shown in Figure 9). A detailed examination of the flood risk posed to these sites is given below.

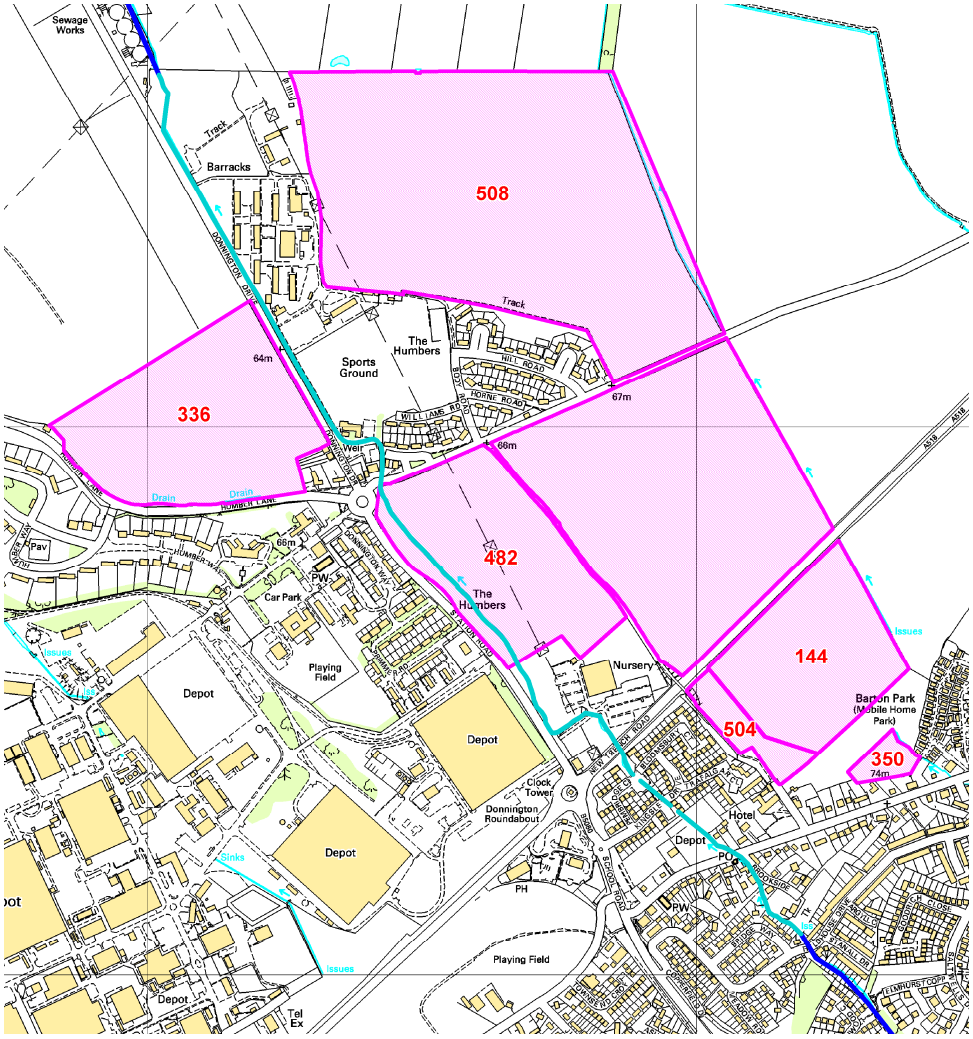

Figure 9: Site Plan of possible development sites along Wall Brook

8.3 ***Model Results***

The aim of the hydraulic modelling is to improve the Flood Zone information along the Wall Brook and assess the flood hazard posed to relevant possible development sites. Therefore, hydraulic modelling results consider flooding from the Wall Brook and do not incorporate any other forms of flooding. Appendix B

presents the assessment of flood risk and hazard posed to the possible development sites by various return periods along the Wall Brook, while this section gives a general overview. Modelled flood maps can be found in Volume 2.

Overall, the modelling results show that along this watercourse, the variability in flood extent, depth, velocity and hazard across each of the four modelled scenarios is minimal. This is predominantly due to the flat nature of the surrounding topography. The difference between the 100 year and the 100 year plus climate change events is also not significant. This indicates that all flood affected areas, up to and including Flood Zone 2, should remain as open space. For most sites this should be achievable given the size of the development sites. The exception to this is site **482** which is not deemed suitable for development given the degree of flood risk posed across the site.

Flood risk to some sites may be higher due to the presence of culverts along the watercourse which may not be able to convey flood flows, hence presenting some residual risk. Modelling results have indicated that parts of sites **144 and 508** are affected by flooding across the range of modelled return periods with flood waters from the surcharged culvert at New Trench Road flowing towards the sites. Access to these sites should also be considered, as all return periods appear to affect the surrounding roads to these sites.

It is recommended that for the sites affected by Flood Zones 2, 3a and 3b, the areas are left as open space. However, the low flood hazard means this risk could be mitigated in the identified areas, and could be developed if it could be demonstrated that there are no other available sites fully in Flood Zone 1.

8.4 Blockage Scenarios

Blockage scenarios were modelled at two locations along the Wall Brook: SJ 71020 14260 and SJ 70420 14890. These were run separately to see the effect a blockage on each culvert would have on flood risk. Results from both blockage scenarios showed the extent, depth, and velocity of flooding to be similar to that of the 100 year event. Modelled flood maps can be found in Volume 2. It is recommended that the parts of the sites affected are left as open space, in accordance with original recommendations outlined above.

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9 Tributary of Wesley Brook

9.1 *Overview*

The Wesley Brook Tributary lies to the south east of the Borough. The watercourse emerges at Hollinswood and proceeds in an easterly direction. After passing beneath Queen Elizabeth Avenue, the watercourse flows through Randlay Wood until it meets a drain running alongside Queensway (A442). The Wesley Brook Tributary then passes under Queensway, emerging to the south west of Nedge Hill, before continuing in a south easterly direction to the downstream extent of the modelled area. A full description of the modelled section of the watercourse, including details of structures and photographs, can be found in Appendix F.

9.2 *Proposed Development Areas*

There are a number of sites available for housing development and employment, education, health and mixed use development sites proposed in the vicinity of the Wesley Brook Tributary which have necessitated the need for improved Flood Zone information and a clearer understanding of the flood hazard. The proposed housing sites are: 111, 112, 155, 156, 221, 229, 379, 605, 606, 607, 608 and 612. There are also three potential employment, education, health and mixed use development sites: EMP8-POR (30010, 60050 and 60060). A site plan is shown in Figure 10 with a detailed examination of the flood risk posed to these sites outlined below.

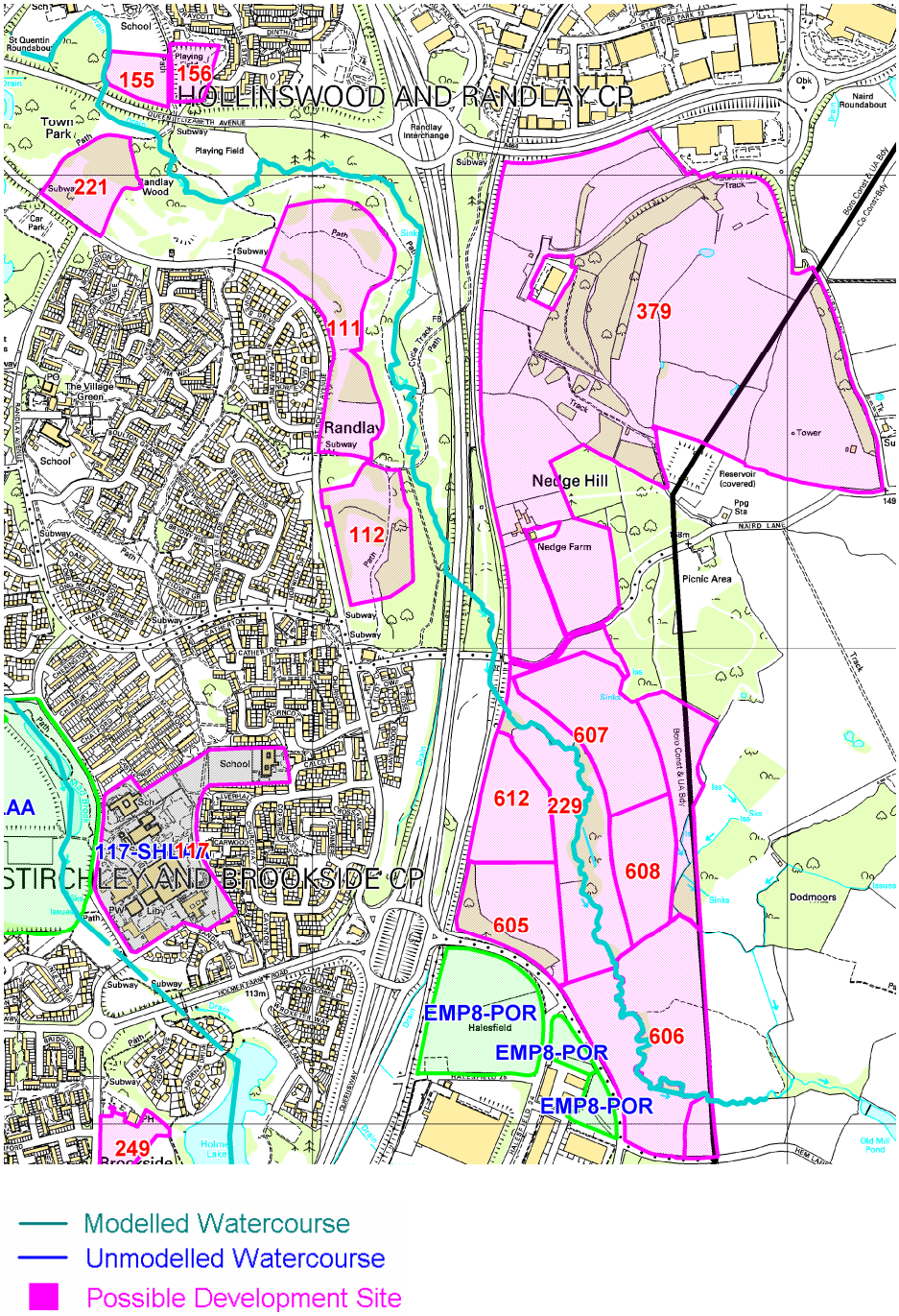

Figure 10: Site Plan of possible development sites along Wesley Brook Tributary

9.3 Model Results

The aim of the hydraulic modelling is to improve the Flood Zone information along the Wesley Brook Tributary and assess the flood hazard posed to relevant possible development sites. Therefore, hydraulic modelling results consider flooding from the Wesley Brook Tributary and do not incorporate any other forms of flooding. Appendix B presents the assessment of flood risk and hazard posed to the possible development sites by various return periods along the Wesley Brook Tributary, while this section gives a general overview. Modelled flood maps can be found in Volume 2.

Overall the modelling results show that along this watercourse, the variability in flood extent, depth, velocity and hazard across each of the four modelled scenarios is minimal. The difference between the 100 year and the 100 year plus climate change events is also not significant. This indicates that all flood affected areas, up to and including Flood Zone 2, should remain as open space. For most sites this should be achievable given the size of the development sites.

Towards the upstream extent of the watercourse, modelled results have shown site **155** to lie entirely within Flood Zone 3b. The watercourse itself is culverted beneath Queen Elizabeth Avenue, which surcharges during all modelled events. Flood water is stored in the area upstream of the culvert and is contained by a series of embankments, with some flood waters flowing through a pedestrian subway located beneath Queen Elizabeth Way to the east. Consequently the velocity of water is high as it is conveyed through the subway. Similarly, the water is deep at this location as it is contained behind the embankments. Given the degree of flood risk posed, this site should not be developed and alternative site in lower risk Flood Zones, preferably Zone 1, should be developed in preference to this site.

Site **156** lies to the east of site **155**. Although the majority of this site lies within Flood Zone 1, it is evident that there is a residual risk to this site as a series of embankments located around the edge of the site are holding back flood water. There may also be flooding issues behind the embankment due to overland flooding. The FRA will require a detailed assessment of the embankments ability to hold back water, in line with the requirements set out in paragraph 7.16 of the PPS25 Practice Guide (2008), and should confirm the flood extents and levels which are shown the affect the sites.

Downstream of Queensway, the Wesley Brook Tributary continues in a south easterly direction with the majority of development sites adjacent to the watercourse located within Flood Zone 1. Towards the downstream extent of the modelled section, the watercourse flows through the centre of sites **229** and **606**. The extent of flooding is similar between the modelled return periods and therefore the parts of the site affected by flood risk should remain as open space. This restricts the area available for development, particularly within site **229**. It is therefore recommended that alternative sites in Flood Zone 1 are developed in preference to site **229**.

Model results have indicated that the three potential employment, education, health and mixed use development sites: EMP8-POR (30010, 60050 and 60060) are located entirely within Flood Zone 1.

10 Mad Brook

10.1 *Overview*

The Mad Brook lies to the south east of the Borough and rises just upstream of Grange Farm Pond, flowing in a south easterly direction towards Stirchley. Downstream of the pond, there is an overflow into a culvert with the watercourse emerging downstream of Stirchley Road. From here, the watercourse flows under a footbridge and through two successive pools before being culverted once again at the southern end of Stirchley playing fields. At the downstream end of the playing fields there is a flood relief culvert, which passes under Grange Avenue and the watercourse emerges downstream of Holmer Farm Road before flowing into Holmer Lake. Water flows out of Holmer Lake via an overflow and is culverted beneath Queensway (A442) emerging downstream of Halesfield Industrial Estate during low flow conditions before continuing in a southerly direction towards the downstream extent of the model. At the downstream end of the Queensway culvert there is an overflow for high flow conditions with water flowing along the overflow and through another culvert under the railway. Downstream of the railway there is a flood storage area and a series of overflow culverts convey water to the storage area. A full description of the modelled section of the watercourse, including details of structures and photographs, can be found in Appendix F.

10.2 *Proposed Development Areas*

There are a number of potential residential housing developments proposed and employment, education, health and mixed use development sites proposed in the vicinity of the Mad Brook which have necessitated the need for improved Flood Zone information and a clearer understanding of the flood hazard. The proposed housing sites are: 117 (also employment), 249, 250 and 368. There are also four potential employment, education, health and mixed use development sites: EMP8-POR (60090 and 60200), 141-SHLAA and 117-SHLAA (also housing). A site plan is shown in Figure 11 with a detailed examination of the flood risk posed to these sites outlined below.

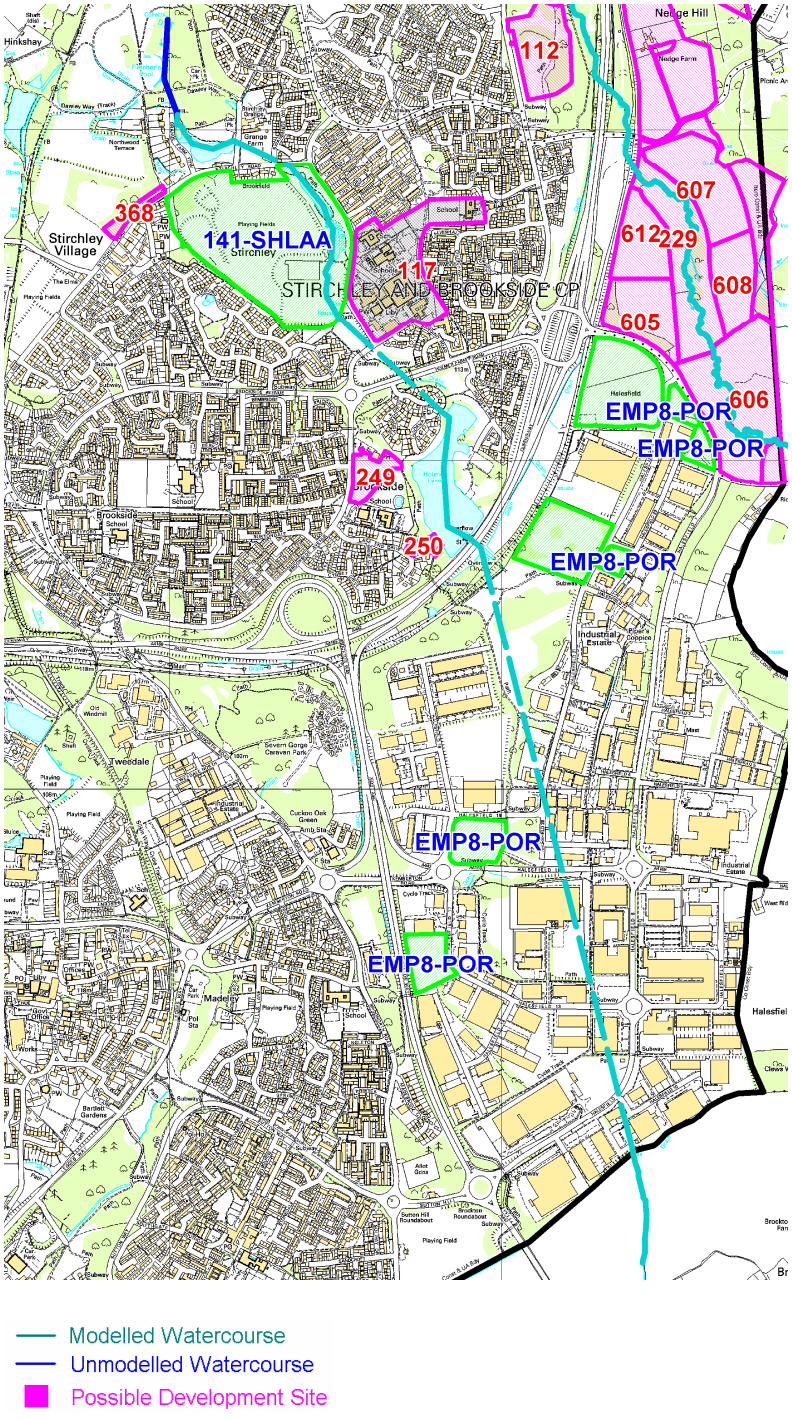

Figure 11: Site Plan of possible development sites along Mad Brook

10.3 Model Results

The aim of the hydraulic modelling is to improve the Flood Zone information along the Mad Brook and assess the flood hazard posed to relevant possible development sites. Therefore, hydraulic modelling results consider flooding from the Mad Brook, though an element of surface water flooding is considered above the downstream culverted section. Appendix B presents the assessment of flood risk and hazard posed to the possible development sites by various return periods along the Mad Brook, while this section gives a general overview. Modelled flood maps can be found in Volume 2.

Overall the modelling results show that along this watercourse, the variability in flood extent, depth, velocity and hazard across each of the four modelled scenarios is minimal. The difference between the 100 year and the 100 year plus climate change events is also not significant. This indicates that all flood affected areas, up to and including Flood Zone 2, should remain as open space. For most sites this should be achievable given the size of the development sites.

The exception to this is sites **EMP8-POR** (**60200** and **60220**) where modelling has shown that the flood risk posed to these sites is a consequence of surface water runoff following a flow route across the industrial estate (the actual watercourse is culverted in this location). The flood hazard is low for each of these sites, but mitigation is still required to ensure the development is safe. Providing the Sequential Test can be passed (i.e. it can be demonstrated that sites fully in Flood Zone 1 are not available), these sites could be developed in accordance with Table D3 of PPS25.

Downstream of Queensway and the railway, employment site EMP8-POR (Halesfield 24) is shown to be affected by Flood Zones 3b, 3a and 2. It is strongly recommended that alternative sites are considered in preference to this site as the area is acting as a purpose built storage area. This, in addition to residual risk from the presence of the railway line across the western boundary of the site mean that the flood risk posed to the site is high. The storage area should continue to be safeguarded from future development, and maintained and operated as such.

10.4 Blockage Scenarios

With a 75% blockage (during the 100 year event) applied at culvert SJ 70488 06475 the extent, depth and velocity of flooding within sites **141-SHLAA**, **177**, and **250** is similar to the 100 year event. Modelled flood maps can be found in Volume 2. It

is recommended that the parts of the site affected are left as open space as recommended previously.

11 Policy Recommendations

11.1 *Overview*

This chapter provides recommendations to enhance the existing flood risk management policies outlined in the Level 1 SFRA report. The recommended policies provided from Section 11.2 to 11.7 are intended to be locationally specific, and do not reproduce policies at the regional and national level.

This chapter also provides Development Control policies and provides guidance for development in different Flood Zones, which can be used by potential developers required to produce site-specific FRAs, and to help the Council deal with non-allocated 'windfall' sites should they arise.

The following recommendations are in line with PPS25 and are in accordance with the broad objectives of the 'Telford and Black County' Policy Unit from the River Severn CFMP.

11.2 *Hurley Brook Tributary*

Planning Recommendations for the Development Areas

Prior to the allocation of any development sites along the Hurley Brook Tributary, the Council should liaise with Network Rail to ascertain the future maintenance and use of the railway embankment, which provides an informal defence and is shown to hold back flood water, creating an informal storage area which appears to mitigate flood risk downstream.

The Council should liaise with the Environment Agency to discuss opportunities to create a formal flood storage area upstream of the railway embankment, which will provide flood risk mitigation downstream. Developer contributions could be sought for this purpose.

The area currently shown to be acting as an informal flood storage area should be safeguarded from development, and maintained and operated as such (by the Council).

Provided the future maintenance and use of the railway line is ascertained and the nature of the railway line is shown not to change in the future (which may increase flood risk downstream) development downstream would be acceptable, only in line

with the recommendations in the Level 2 SFRA (Appendix B). The FRA for site **179** will require a detailed assessment of the embankment's ability to hold back water, in line with the requirements set out in paragraph 7.16 of the PPS25 Practice Guide (2008).

The culvert upstream of Watling Street (on the Hurley Brook) is shown to have insufficient capacity to adequately convey the 100 year, 100 year plus climate change and 1000 year events, causing it to surcharge. The lie of the land causes much of this flood water to flow onto the railway line and north through Wellington towards development sites along the Hurley Brook Tributary. Options to increase the capacity of this culvert, or provide an upstream storage area, should be explored where the opportunity arises, in order to mitigate flood risk downstream. Developer contributions could be sought for this purpose.

Sites **68** and **381** are not deemed suitable for development given the degree of flood risk posed across the sites (though a section of site **381** protrudes into Flood Zone 1 which could be developed if the Sequential Test is passed).

All other sites along the Hurley Brook Tributary which are shown to be marginally affected by flood risk, should only be developed if the Sequential Test is passed and it can be demonstrated that there are no other available sites lying fully in Flood Zone 1.

Where such sites are allocated for development, the Council should adopt the principle of **avoidance** by ensuring that areas affected by Flood Zones 2, 3a and 3b remain as open space. The avoidance of flood risk is important in the development of sustainable communities and will deliver a positive reduction in flood risk by reducing the impact that flooding may have on the community (by reducing the number of people within the site that would otherwise be at risk). It can also help the Council to achieve green space targets.

The exception to this applies to sites **656, 395** and **183** which are shown to be affected by the 1000 year event from the Hurley Brook. As the flood hazard in these areas from the 1000 year event is shown to be low, these sites could be developed in their entirety in accordance with Table D3 of PPS25, provided the Sequential Test is passed (i.e. it can be demonstrated that there are no other alternative sites fully in Flood Zone 1). If so, the development could proceed provided the requirements for development in Flood Zone 2 are followed (Section 11.9) and the developer aims to reduce flood risk. Following these

recommendations are especially important as these areas of the sites are shown to be at residual risk of a blockage of the culvert on Hurley Brook, during a 1 in 100 year event.

All sites will require application of the sequential approach at the site level (sequential design) to ensure that the more vulnerable housing development (e.g. bungalows) is located well away from Flood Zones 2 and 3. The vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff (see below).

Developments should seek to reduce the overall level of flood risk in the area and beyond through the layout and form of the development. There is no significant flood risk constraint on the 'use' proposed for future developments within the Low Probability Flood Zone 1, although the vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff. An FRA will be required to demonstrate that runoff from the site is reduced, thereby reducing surface water flood risk. This will involve the use of SUDS techniques which should take into account the local geological and groundwater conditions (see the Telford and Wrekin Sustainable Drainage Systems Review document, Halcrow (2008) for further details on appropriate SUDS techniques for the Telford and Wrekin area). For all sites, the post development runoff volumes and peak flow rates should be attenuated (1 in 100 year + climate change) to the Greenfield (pre-development) condition with a minimum reduction of 20%, and mimic the surface water flows arising from the site prior to the proposed development.

11.3 ***Hurley Brook***

Planning Recommendations for the Development Areas

Prior to the allocation of any development downstream of the railway line, the Council should liaise with Network Rail to ascertain the future maintenance and use of the railway embankment, which provides an informal defence and is shown to hold back flood water in two areas, creating both formal and informal storage areas which appear to mitigate flood risk downstream.

Along the western branch of the upstream section of the Hurley Brook, the culvert upstream of Watling Street is shown to have insufficient capacity to adequately convey the 100 year, 100 year plus climate change and 1000 year events, causing it to surcharge. The lie of the land causes much of this flood water to flow north east through some existing development and onto the railway line, which then

flows north through Wellington towards development sites along the Hurley Brook Tributary. Options to increase the capacity of this culvert, or provide a formal upstream storage area, should be explored where the opportunity arises, in order to mitigate flood risk both in the existing residential area, and downstream. Developer contributions could be sought for this purpose.

The area currently shown to be acting as a formal flood storage area on the eastern branch of the Hurley Brook (Ketley Brook) immediately upstream of the railway line should be safeguarded from development, and maintained and operated as such (by the Council). This discounts the feasibility of site **228** for development.

Provided the future maintenance and use of the railway line is ascertained and the nature of the railway line is shown not to change in the future (which may increase flood risk downstream) development downstream would be acceptable, only in line with the recommendations in the Level 2 SFRA (Appendix B). The FRA for site **192 (1920-SHLAA)** will require a detailed assessment of the embankments ability to hold back water, in line with the requirements set out in paragraph 7.16 of the PPS25 Practice Guide (2008), and should confirm the flood extents and levels which are shown the affect the site.

Sites **74** and **228** on the eastern branch of the Hurley Brook (Ketley Brook), site **432** on the western branch if the Hurley Brook, and site **609** at the downstream extent, are not deemed suitable for development given the degree of flood risk posed across the sites.

Site **361** is very large and there are large areas which lie in Flood Zone 1. However, there are also considerable flood risk affected areas. Development in Flood Zone 1, the south western side of the site, would be suitable for development provided alternative sites fully in Flood Zone 1 are not available, subject to a detailed FRA. The north eastern side of the site appears to have complex flood risks, which should be carefully considered and only developed in accordance with Table D3 of PPS25 if the Sequential Test is passed. More vulnerable parts of the development (bungalows etc.) should be directed towards the lowest risk part of the site (i.e. well away from Flood Zones 2, 3a and 3b).

All other sites along the Hurley Brook which are shown to be marginally affected by flood risk, should only be developed if the Sequential Test is passed and it can be demonstrated that there are no other available sites lying fully in Flood Zone 1.

Where such sites are allocated for development, the Council should adopt the principle of **avoidance** by ensuring that areas affected by Flood Zones 2, 3a and 3b remain as open space. The avoidance of flood risk is important in the development of sustainable communities and will deliver a positive reduction in flood risk by reducing the impact that flooding may have on the community (by reducing the number of people within the site that would otherwise be at risk). It can also help the Council to achieve green space targets.

The exception to this applies to sites **193**, **290 and 272,** which are shown to be marginally affected by the 1000 year event (with 272 also marginally affected by the 100 year event). As the flood hazard in these areas is shown to be low, these sites could be developed in their entirety in accordance with Table D3 of PPS25, provided the Sequential Test is passed (i.e. it can be demonstrated that there are no other alternative sites fully in Flood Zone 1). If so, the development could proceed provided the requirements for development in Flood Zone 2 (Section 11.9) are followed.

All sites will require application of the sequential approach at the site level (sequential design) to ensure that the more vulnerable housing development (e.g. bungalows) is located well away from Flood Zones 2 and 3. The vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff (see below).

Developments should seek to reduce the overall level of flood risk in the area and beyond through the layout and form of the development. There is no significant flood risk constraint on the 'use' proposed for future developments within the Low Probability Flood Zone 1, although the vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff. An FRA will be required to demonstrate that runoff from the site is reduced, thereby reducing surface water flood risk. This will involve the use of SUDS techniques which should take into account the local geological and groundwater conditions (see the Telford and Wrekin Sustainable Drainage Systems Review document, Halcrow (2008) for further details on appropriate SUDS techniques for the Telford and Wrekin area). For all sites, the post development runoff volumes and peak flow rates should be attenuated (1 in 100 year + climate change) to the Greenfield (pre-development) condition with a minimum reduction of 20%, and mimic the surface water flows arising from the site prior to the proposed development.

Options for de-culverting along the Hurley Brook should be explored wherever possible. In the event that this is not possible, an assessment of the structural integrity of the culverts should be carried out prior to any development in the vicinity. Any remedial works to ensure the culverts' longevity (commensurate with the lifetime of the development) should be carried out. Developer contributions should be sought for this purpose.

The Council should develop a culvert maintenance schedule, to periodically clear culverts (maintained by/on land owned by Telford and Wrekin Council) of debris, which will reduce the risk of blockage during flood events. For culverts on privately owned land, land owners should be encouraged by the Council to also maintain and periodically clear culverts of debris to reduce the risk of blockage during flood events.

11.4 Crow Brook

Planning Recommendations for the Development Areas

The culvert upstream of Middle Pool has insufficient capacity to convey all modelled events, which causes site **471** to be subject to flood risk from all events, as well as major roads in the area. Options to increase the capacity of this culvert, or provide a formal upstream storage area, should be explored where the opportunity arises, in order to mitigate flood risk to site **471**. If this can be achieved, without increasing flood risk elsewhere, then the development of site **471** may become feasible. Developer contributions could be sought for this purpose.

Middle Pool is shown to overtop at the north eastern corner for the 1 in 1000 year event, contributing to flood risk along the A442. Prior to the allocation of Site **471,** this risk should be investigated further (through a detailed FRA) and mitigating actions to reduce this risk identified and carried out.

The eastern, western and southern sides of Trench Pool are at ground level and do not pose a breach risk to surrounding development sites. However, along the northern side, Trench Pool is shown to be raised some 3-4m above the surrounding residential houses. Although a potential breach is unlikely to affect any of the potential development sites, breach analysis should be requested for any future development immediately north of Trench Pool. It may be prudent to carry out this exercise to inform emergency plans for the residential area to the north.

The previous JFLOW outlines showed site **100-SHLAA** and the **EMP4 POR** sites (**61900, 62060** and **62070**) to be at risk of flooding from the 100 and 1000 year

events. The updated modelling has included the diverted channel, and confirms that these sites are fully in Flood Zone 1. These sites will be suitable for development, however, a detailed FRA will be required to confirm the sites' placement in Flood Zone 1.

All other sites along the Crow Brook which are shown to be marginally affected by flood risk, should only be developed if the Sequential Test is passed and it can be demonstrated that there are no other available sites lying fully in Flood Zone 1.

Where such sites are allocated for development, the Council should adopt the principle of **avoidance** by ensuring that areas affected by Flood Zones 2, 3a and 3b remain as open space. The avoidance of flood risk is important in the development of sustainable communities and will deliver a positive reduction in flood risk by reducing the impact that flooding may have on the community (by reducing the number of people within the site that would otherwise be at risk). It can also help the Council to achieve green space targets.

The exception to this applies to site **414** and Employment sites **EMP3-POR** (5 sites). For these sites, the 1000 year event is shown to have a low flood hazard. These sites could therefore be developed including Flood Zone 2, in accordance with Table D3 of PPS25, provided the Sequential Test is passed (i.e. it can be demonstrated that there are no other alternative sites fully in Flood Zone 1). If so, the development could proceed provided the requirements for development in Flood Zone 2 (Section 11.9) are followed.

All sites will require application of the sequential approach at the site level (sequential design) to ensure that the more vulnerable housing development (e.g. bungalows) is located well away from Flood Zones 2 and 3. The vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff (see below).

Developments should seek to reduce the overall level of flood risk in the area and beyond through the layout and form of the development. There is no significant flood risk constraint on the 'use' proposed for future developments within the Low Probability Flood Zone 1, although the vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff. An FRA will be required to demonstrate that runoff from the site is reduced, thereby reducing surface water flood risk. This will involve the use of SUDS techniques which should take into account the local geological and

groundwater conditions (see the Telford and Wrekin Sustainable Drainage Systems Review document, Halcrow (2008) for further details on appropriate SUDS techniques for the Telford and Wrekin area). For all sites, the post development runoff volumes and peak flow rates should be attenuated (1 in 100 year + climate change) to the Greenfield (pre-development) condition with a minimum reduction of 20%, and mimic the surface water flows arising from the site prior to the proposed development.

Options for de-culverting along the Crow Brook should be explored wherever possible. In the event that this is not possible, an assessment of the structural integrity of the culverts should be carried out prior to any development in the vicinity. Any remedial works to ensure the culverts' longevity (commensurate with the lifetime of the development) should be carried out. Developer contributions should be sought for this purpose.

The Council should develop a culvert maintenance schedule, to periodically clear culverts (maintained by/on land owned by Telford and Wrekin Council) of debris, which will reduce the risk of blockage during flood events. For culverts on privately owned land, land owners should be encouraged by the Council to also maintain and periodically clear culverts of debris to reduce the risk of blockage during flood events.

11.5 ***Wall Brook***

Planning Recommendations for the Development Areas

It is clear that flood risk along the Wall Brook (also cited as Donnington Watercourse) is exacerbated by a series of culverts which have insufficient capacity to convey flood flows for all return periods up to and including the 1 in 1000 year event, hence presenting residual risk. Options to increase the capacity of the culverts, or provide an upstream storage area, should be explored where the opportunities arise, in order to mitigate flood risk downstream. If this can be achieved, without increasing flood risk elsewhere, then the development of site **482** may become feasible. Developer contributions could be sought for this purpose. If flood risk is not mitigated, site **482** is not deemed suitable for development given the degree of flood risk currently posed across the site.

All sites along the Wall Brook which are shown to be marginally affected by flood risk should only be developed if the Sequential Test is passed and it can be demonstrated that there are no other available sites lying fully in Flood Zone 1.

Where such sites are allocated for development, the Council should adopt the principle of **avoidance** by ensuring that areas affected by Flood Zones 2, 3a and 3b remain as open space. The avoidance of flood risk is important in the development of sustainable communities and will deliver a positive reduction in flood risk by reducing the impact that flooding may have on the community (by reducing the number of people within the site that would otherwise be at risk). It can also help the Council to achieve green space targets.

All sites will require application of the sequential approach at the site level (sequential design) to ensure that the more vulnerable housing development (e.g. bungalows) is located well away from Flood Zones 2 and 3. The vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff (see below).

Developments should seek to reduce the overall level of flood risk in the area and beyond through the layout and form of the development. There is no significant flood risk constraint on the 'use' proposed for future developments within the Low Probability Flood Zone 1, although the vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff. An FRA will be required to demonstrate that runoff from the site is reduced, thereby reducing surface water flood risk. This will involve the use of SUDS techniques which should take into account the local geological and groundwater conditions (see the Telford and Wrekin Sustainable Drainage Systems Review document, Halcrow (2008) for further details on appropriate SUDS techniques for the Telford and Wrekin area). For all sites, the post development runoff volumes and peak flow rates should be attenuated (1 in 100 year + climate change) to the Greenfield (pre-development) condition with a minimum reduction of 20%, and mimic the surface water flows arising from the site prior to the proposed development.

Options for de-culverting along the Wall Brook should be explored wherever possible. In the event that this is not possible, an assessment of the structural integrity of the culverts should be carried out prior to any development in the vicinity. Any remedial works to ensure the culverts' longevity (commensurate with the lifetime of the development) should be carried out. Developer contributions should be sought for this purpose.

The Council should develop a culvert maintenance schedule, to periodically clear culverts (maintained by/on land owned by Telford and Wrekin Council) of debris,

which will reduce the risk of blockage during flood events. For culverts on privately owned land, land owners should be encouraged by the Council to also maintain and periodically clear culverts of debris to reduce the risk of blockage during flood events.

11.6 Wesley Brook Tributary

Planning Recommendations for the Development Areas

The area currently shown to be acting as an informal flood storage area at the upstream modelled extent (north of Queen Elizabeth Avenue) should be safeguarded from development, and maintained and operated as such (by the Council). This discounts the feasibility of site **155** for development.

Residual risk is posed to site **156** as a series of embankments located around the edge of the site are shown to hold back flood water for all modelled return periods. The FRA will require a detailed assessment of the embankments ability to hold back water, in line with the requirements set out in paragraph 7.16 of the PPS25 Practice Guide (2008), and should confirm the flood extents and levels which are shown the affect the sites.

Prior to the allocation of any development downstream of the railway line, the Council should liaise with Network Rail to ascertain the future maintenance and use of the railway embankment, which provides an informal defence and is shown to hold back flood water, creating an informal storage area.

Provided the future maintenance and use of the railway line is ascertained and the nature of the railway line is shown not to change in the future (which may increase flood risk downstream) development downstream would be acceptable, only in line with the recommendations in the Level 2 SFRA (Appendix B). The FRA for sites **229** and **607** will require a detailed assessment of the embankments ability to hold back water, in line with the requirements set out in paragraph 7.16 of the PPS25 Practice Guide (2008), and should confirm the flood extents and levels which are shown the affect the sites.

The extent of flood affected areas on site **229** restricts the area available for development. It is therefore recommended that alternative sites in Flood Zone 1 are developed in preference to site **229**.

All other sites along the Wesley Brook Tributary which are shown to be marginally affected by flood risk should only be developed if the Sequential Test is passed and

it can be demonstrated that there are no other available sites lying fully in Flood Zone 1.

Where such sites are allocated for development, the Council should adopt the principle of **avoidance** by ensuring that areas affected by Flood Zones 2, 3a and 3b remain as open space. The avoidance of flood risk is important in the development of sustainable communities and will deliver a positive reduction in flood risk by reducing the impact that flooding may have on the community (by reducing the number of people within the site that would otherwise be at risk). It can also help the Council to achieve green space targets.

All sites will require application of the sequential approach at the site level (sequential design) to ensure that the more vulnerable housing development (e.g. bungalows) is located well away from Flood Zones 2 and 3. The vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff (see below).

Developments should seek to reduce the overall level of flood risk in the area and beyond through the layout and form of the development. There is no significant flood risk constraint on the 'use' proposed for future developments within the Low Probability Flood Zone 1, although the vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff. An FRA will be required to demonstrate that runoff from the site is reduced, thereby reducing surface water flood risk. This will involve the use of SUDS techniques which should take into account the local geological and groundwater conditions (see the Telford and Wrekin Sustainable Drainage Systems Review document, Halcrow (2008) for further details on appropriate SUDS techniques for the Telford and Wrekin area). For all sites, the post development runoff volumes and peak flow rates should be attenuated (1 in 100 year + climate change) to the Greenfield (pre-development) condition with a minimum reduction of 20%, and mimic the surface water flows arising from the site prior to the proposed development.

11.7 ***Mad Brook***

Planning Recommendations for the Development Areas

A formal flood storage area exists downstream of Holmer Lake. This area should be safeguarded from development, and maintained and operated as such (by the Council). This discounts the feasibility of site **EMP8-POR (Halesfield 24, also Cemetery site 2)** for development.

All other sites along the Mad Brook which are shown to be marginally affected by flood risk should only be developed if the Sequential Test is passed and it can be demonstrated that there are no other available sites lying fully in Flood Zone 1.

Where such sites are allocated for development, the Council should adopt the principle of **avoidance** by ensuring that areas affected by Flood Zones 2, 3a and 3b remain as open space. The avoidance of flood risk is important in the development of sustainable communities and will deliver a positive reduction in flood risk by reducing the impact that flooding may have on the community (by reducing the number of people within the site that would otherwise be at risk). It can also help the Council to achieve green space targets.

The exception to this is sites **EMP8-POR** (**60200** and **60220**) where modelling has shown that the flood risk posed to these sites is a consequence of surface water runoff following a flow route across the industrial estate (the actual watercourse is culverted in this location). The flood hazard is low for each of these sites. Providing the Sequential Test can be passed (i.e. it can be demonstrated that sites fully in Flood Zone 1 are not available), these sites could be developed in accordance with Table D3 of PPS25 and using the guidance for development in Flood Zones 2 and 3a (Section 11.9).

All sites will require application of the sequential approach at the site level (sequential design) to ensure that the more vulnerable housing development (e.g. bungalows) is located well away from Flood Zones 2 and 3. The vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff (see below).

Developments should seek to reduce the overall level of flood risk in the area and beyond through the layout and form of the development. There is no significant flood risk constraint on the 'use' proposed for future developments within the Low Probability Flood Zone 1, although the vulnerability from other sources of flooding should be considered as well as the effect of the new development on surface water runoff. An FRA will be required to demonstrate that runoff from the site is reduced, thereby reducing surface water flood risk. This will involve the use of SUDS techniques which should take into account the local geological and groundwater conditions (see the Telford and Wrekin Sustainable Drainage Systems Review document, Halcrow (2008) for further details on appropriate SUDS techniques for the Telford and Wrekin area). For all sites, the post development runoff volumes and peak flow rates should be attenuated (1 in 100 year + climate

change) to the Greenfield (pre-development) condition with a minimum reduction of 20%, and mimic the surface water flows arising from the site prior to the proposed development.

Options for de-culverting along the Mad Brook should be explored wherever possible. In the event that this is not possible, an assessment of the structural integrity of the culverts should be carried out prior to any development in the vicinity. Any remedial works to ensure the culverts' longevity (commensurate with the lifetime of the development) should be carried out. Developer contributions should be sought for this purpose.

The Council should develop a culvert maintenance schedule, to periodically clear culverts (maintained by/on land owned by Telford and Wrekin Council) of debris, which will reduce the risk of blockage during flood events. For culverts on privately owned land, land owners should be encouraged by the Council to also maintain and periodically clear culverts of debris to reduce the risk of blockage during flood events.

11.8 Development Control Policies

For the purposes of development control, detailed policies will need to be set out to ensure that flood risk is taken account for both allocated and non-allocated 'windfall' sites. The following policy objectives are recommended for all sites in Telford and Wrekin Council:

- **Application of the Sequential Test** - Use the Sequential Test to locate all new development (site allocations) in least risky areas, giving highest priority to Flood Zone 1. Where the Sequential Test alone cannot deliver acceptable sites, the Exception Test will need to be applied.

- **Protect the functional floodplain (in Greenfield and previously developed areas) –** Avoid development in the Greenfield functional floodplain in the first instance. Identify opportunities for making space for water on previously developed areas by reinstating the functional floodplain.

- **Site Layout** - apply the sequential approach within the development site by locating the most vulnerable elements of a development in the lowest flood risk areas in the first instance. The use of flood risk areas (i.e. Flood Zones 2, 3a and 3b) for recreation, amenity and environmental purposes can provide

an effective means of flood risk management as well as providing connected green spaces with consequent social and environmental benefits.

- **Enhance and restore the river corridor** - identify opportunities to undertake river restoration and enhancement as part of a development to make space for water.

- **De-culvert wherever possible.** Where this is not possible, an assessment of the structural integrity of the culvert, with any required remedial work, should be carried out prior to the development. A maintenance schedule should be developed for all culverts to ensure regular clearance.

- **Set development back from watercourses -** any riverside developments should leave a minimum 8 metre wide as undeveloped buffer strip, maintaining the river and its floodplain as an enhancement feature and allowing for routine maintenance.

- **Reduce surface water runoff from new developments –** any development must ensure that post development runoff volumes and peak flow rates are attenuated to the Greenfield (pre-development) condition with a minimum reduction of 20%. SUDS should also be a requirement for all new development and space should be specifically set-aside for SUDS and used to inform the overall site layout. Hardstanding areas should be kept to a minimum and infiltration techniques and re-use of water should be considered before attenuation devices in accordance with the SUDS hierarchy. SUDS will need to have a maintenance strategy to ensure they are maintained and working efficiently.

- **Sequential approach to the release of development land** - Brownfield land should be developed in advance of Greenfield sites (NB. In the first instance, the sequential test should be applied prior to considering the release of land to determine which type of land is the safer option in terms of flood risk).

- **Maintenance of existing flood storage areas, both formal and informal** – existing storage areas should be maintained and safeguarded from development.

- **Maintenance of water channels –** New developments adjacent to watercourses should have a maintenance strategy for clearing and maintaining the channel, in particular structures such as trash screens and bridges.

- **Ensure a development is 'Safe' -** For residential developments to be classed as 'safe', dry pedestrian access should be provided to and from the development without crossing through the 1 in 100 year plus climate change floodplain.

In addition, the following guidance should be followed:

11.9 ***Requirements for Flood Risk Assessments and Guidance for Dealing with Windfall Sites***

The following reflects the minimum requirements under PPS25 for a Flood Risk Assessment (reference should be made to Tables D.1-D.3 in PPS25). Appendices A and B outlines FRA requirements for specific development sites, which should also be considered. This guidance could also be used to help the Council to deal with non-allocated 'windfall' sites.

Sites in Flood Zone 1

The majority of sites fall entirely in Flood Zone 1, with no known local flood risk issues. In many cases sites fall in Flood Zone 1 but have a small drain flowing through it, with no associated Flood Zone information. This section details the requirements for development in Flood Zone 1. Some sites may have specific recommendations, in addition to those put forward here, which are detailed in Appendices A and B.

- In accordance with Table D3 of PPS25, any type of development can be located in Low Probability Flood Zone 1.

- The vulnerability of the development from other sources of flooding should be considered as well as the effect of the new development on surface water runoff. The Level 1 SFRA, Telford and Wrekin Council SUDS Report and proposed Water Cycle Strategy provide information on other sources of flooding.

- The potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water runoff, with appropriate mitigating action, should be incorporated in a Flood Risk Assessment (FRA) for the site. This should take the form of a Drainage

Impact Assessment (DIA), required to demonstrate that runoff from the site is the same as in the predevelopment case, thereby ensuring flood risk is not increased (though wherever possible, betterment should be achieved). This will involve the use of SUDS techniques which should take into account the local geological and groundwater conditions. Where possible these should be strategic SUDS. Space should also be set-aside for SUDS at the master planning stage. The Council/developer should refer to the Telford and Wrekin Sustainable Drainage Systems Review document, Halcrow (2008) for further details on appropriate SUDS techniques for the Telford and Wrekin area.

- Reference should be made to the Telford Integrated Urban Drainage (IUD) Project for specific information on surface water issues.

- Where a small watercourse or drain, with no Flood Zone information, either runs through the site or follows the boundary of the site, a development easement from the top of bank should be applied. The exact distance of the easement should be discussed with the Environment Agency, but should typically be 8m, to allow appropriate access for routine maintenance and emergency clearance.

Sites in Flood Zone 2

The majority of sites which are affected by Flood Zone 2 are only affected in a minor way, for example, Flood Zone 2 might encroach a small part of a site (details of how this should be dealt with are given below). Where sites are substantially affected by Flood Zone 2, alternative sites in Flood Zone 1 should be considered in preference as part of the Sequential Test process. Specific recommendations for each affected site are given in Appendices A and B.

- In accordance with Table D3 of PPS25, land use within Medium Probability Flood Zone 2 should be restricted to the 'essential infrastructure', 'water compatible', 'less vulnerable' and 'more vulnerable' categories. Only if the Sequential Test process has been carried out and passed should such development occur in Flood Zone 2.

- 'Highly vulnerable' uses in Flood Zone 2 will have to pass the Exception Test.

- An FRA will be required, which should confirm flood extents and levels.

- Floor levels should be situated above the 100 year plus climate change predicted maximum level plus a minimum freeboard of 600mm.

- Dry pedestrian access to and from the development should be possible above the 1 in 100 year plus climate change flood level.

- The development should be safe, meaning that: people (including those with restricted mobility) should be able to remain safe inside the new development up to a 1 in 1000 year event; and rescue and evacuation of people from a development (including those with restricted mobility) to a place of safety is practicable up to a 1 in 1000 year event.

- The development should incorporate flood resistance and resilience measures.

- The proposed development should be set-back from the watercourse with a minimum 8m wide undeveloped buffer zone, to allow appropriate access for routine maintenance and emergency clearance.

- SUDS should be implemented to ensure that runoff from the site (post development) is reduced. Space should be set-aside for SUDS at the master planning stage. The Council/developer should refer to the Telford and Wrekin Sustainable Drainage Systems Review document, Halcrow (2008) for further details on appropriate SUDS techniques for the Telford and Wrekin area.

- Reference should be made to the Telford Integrated Urban Drainage (IUD) Project for specific information on surface water issues.

- Residents should be made aware that they live in a flood risk area, and should be encouraged to sign up to Floodline Warnings Direct, should a Flood Warning system exist (as indicated by the Level 1 SFRA).

- Car parking needs to be safe, especially in terms of flood warning and overnight parking areas.

Sites in Flood Zone 3a

There are only a few sites which are substantially affected by Flood Zone 3a, in which case it has been recommended that alternative sites in lower risk areas are considered. For most watercourses in the Borough, Flood Zone 3b has not been modelled. Therefore when carrying out the Sequential Test the Council should

assume that where Flood Zone 3b has not been modelled, its extent would be equal to Flood Zone 3a, unless, or until, an FRA can demonstrate otherwise.

Therefore wherever possible, development in Flood Zone 3a should be avoided, due to the reduction in flood storage that can result and the increased flood risk which can occur as a result of climate change. However, for the sake of completion and for future reference, the following recommendations are put forward for development of Flood Zone 3a:

- Land use with High Probability Flood Zone 3a should be restricted to the 'less vulnerable' and 'water compatible' uses to satisfy the requirements of the Sequential Test.
- 'More vulnerable' uses in Flood Zone 3a will have to pass the Exception Test.
- An FRA should be prepared for the site, which should confirm flood extents and levels.
- Properties situated within close proximity to formal defences or water retaining structures (reservoirs/canals) will require a detailed breach and overtopping assessment to ensure that the potential risk to life can be safely managed throughout the lifetime of the development (though it should be noted that no raised defences currently exist in the Borough). The nature of any breach failure analysis should be agreed with the Environment Agency. For breaches of canals, British Waterways should be consulted.
- The development should not increase flood risk elsewhere, and opportunities should be taken to decrease overall flood risk.
- Floor levels should be situated above the 100 year plus climate change predicted maximum level plus a minimum freeboard of 600mm.
- Dry pedestrian access to and from the development should be possible above the 1 in 100 year plus climate change flood level.
- The development should be safe, meaning that: people (including those with restricted mobility) should be able to remain safe inside the new development up to a 1 in 1000 year event; and rescue and evacuation of people from a development (including those with restricted mobility) to a place of safety is practicable up to a 1 in 1000 year event.
- The development should incorporate flood resistance and resilience measures.

- Basements should not be used for habitable purposes. Where basements are permitted for commercial use, it is necessary to ensure that the basement access points are situated 600 mm above the 1 in 100 year flood level plus climate change.

- An evacuation plan should be prepared in consultation with the Council's Emergency Planning team.

- Residents should be made aware that they live in a flood risk area, and should be encouraged to sign up to Floodline Warnings Direct, should a Flood Warning system exist (as indicated by the Level 1 SFRA).

- The proposed development should be set-back from the watercourse with a minimum 8m wide undeveloped buffer zone, to allow appropriate access for routine maintenance and emergency clearance.

- SUDS should be implemented to ensure that runoff from the site (post development) is reduced. Space should be set-aside for SUDS at the master planning stage. The Council/developer should refer to the Telford and Wrekin Sustainable Drainage Systems Review document, Halcrow (2008) for further details on appropriate SUDS techniques for the Telford and Wrekin area.

- Reference should be made to the Telford Integrated Urban Drainage (IUD) Project for specific information on surface water issues.

Sites in Flood Zone 3b

Where a modelled outline for Flood Zone 3b has not been produced, its extent is equal to Flood Zone 3a. Therefore for any development site falling in Flood Zone 3a with no 3b available, this section should be used to understand the requirements of development.

- Development in High Probability Flood Zone 3b should be restricted to 'water-compatible uses' only.

- PPS25 dictates that 'essential infrastructure' can be located in Flood Zone 3b if the Exception test is passed. However, appropriate judgement should be exercised when attempting the Exception Test for essential infrastructure in Flood Zone 3b. Essential infrastructure includes: essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk; and strategic utility infrastructure, including electricity generating power

stations and grid and primary substations. Essential transport infrastructure may be appropriate if designed in such a way that flood flow routes and flood storage areas are not affected (e.g. designing a bridge to cross the flood risk area). However, utility infrastructure may be less appropriate due to the potential consequences that may occur should the utility site become flooded (as demonstrated by the flooding of Mythe Treatment Works and near-flooding of the power station in Gloucestershire during the summer 2007 flood events).

- 'Essential infrastructure' in this zone must be designed and constructed to remain operational in times of flood and not impede water flow.

11.10 ***Guidance on the use of Level 2 SFRA Flood Zone Data***

The modelling approach adopted by the Level 2 SFRA follows the Environment Agency SFRA guidance, but it should be noted that this method varies somewhat to the Environment agency's own flood mapping approach.

The Environment Agency's original Flood Zone philosophy uses a quasi 2D hydraulic modelling package in conjunction with a digital terrain model (DTM). The DTM is filtered to remove flood defences as well as defacto defences (man-made barriers to flow) to create 'undefended' flood maps. This is a key difference to Level 2 SFRA modelling, which, in accordance with PPS25 guidance, states that the presence of flood risk management measures should be taken into account in modelling exercises (thereby producing 'defended' flood maps). The Environment Agency's approach is precautionary and in many instances derives a hypothetical flood regime. Since publication of the flood maps in 2004 there have been many challenges to the original philosophy, in particular with regard to the presence of defacto defences. The Environment Agency's position now on the status of defacto defences within their flood mapping is to generate a combination map showing a worst case scenario of the undefended and defended situation. This approach aims to highlight the risks of both the current situation merged with some possible future scenario where a defence has failed or been removed.

The Environment Agency agrees that the new Flood Zone outputs generated within the Level 2 SFRA (Volume 2) will provide very useful information upon which informed decisions on the location and layout of future development. The Environment Agency notes, however, that the new Flood Zone information should be used in conjunction with the existing zone mapping; in particular, the Environment Agency's flood mapping and development control teams will look to

use it as a complimentary dataset. The new Level 2 SFRA Flood Zone information should be used by the Council to carry out the Sequential and Exception tests. This would be supported where appropriate with a detailed FRA from the developer.

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12 Glossary

1) Breach Hazard/Analysis – Hazard attributed to flooding caused by the constructional failure of a flood defences or other structure that is acting as a flood defence.

2) CFMP – Catchment Flood Management Plan. A CFMP is a high-level strategic plan through which the Environment Agency seeks to work with other key-decision makers within a river catchment to identify and agree long-term policies for sustainable flood risk management.

3) Core Strategy - The Development Plan Document which sets the long-term vision and objectives for the area. It contains a set of strategic policies that are required to deliver the vision including the broad approach to development.

4) Culvert - A closed conduit used for the conveyance of surface drainage water under a roadway, railroad, canal, or other impediment

5) Defra - Department of Environment, Food and Rural Affairs Development

6) DG5 Register - A register of properties at risk from sewer flooding maintained by UK water companies.

7) DPD - Development Plan Document. A DPD is a spatial planning document within the Council's Local Development Framework which set out policies for development and the use of land. Together with the Regional Spatial Strategy they form the development plan for the area. They are subject to independent examination.

8) Dry pedestrian egress - Routes to and from buildings that will remain dry and allow pedestrian/wheelchair evacuation to dry land in times of flood.

9) DTM – Digital Terrain Model.

10) Environment Agency - The leading public body for protecting and improving the environment in England and Wales.

11) Exception Test - If, following application of the Sequential Test, it is not possible (consistent with wider sustainability objectives) to demonstrate that there are no reasonably available sites in areas with less risk of flooding that would be

appropriate to the type of development or land use proposed, the Exception Test may apply. PPS25 sets out strict requirements for the application of the Test.

12) Flood Estimation Handbook (FEH) - The latest hydrological approach for the estimate of flood flows in UK.

13) Flood Defence – Natural or man-made infrastructure used to reduce the risk of flooding

14) Flood Risk – Flood risk is a combination of two components: the chance (or probability) of a particular flood event and the impact (or consequence) that the event would cause if it occurred

15) FRA – Flood Risk Assessment. Assessment of flood risk posed to a defined area (usually a new development site) as defined above.

16) Flood Risk Management – Flood risk management can reduce the probability of occurrence through the management of land, river systems and flood defences and reduce the impact through influencing development on flood risk areas, flood warning and emergency response.

17) Flood Risk Vulnerability - PPS25 provides a vulnerability classification to assess which uses of land maybe appropriate in each flood risk zone.

18) Flood Warning – A system maintained by the Environment Agency to enable warning messages to be sent to homeowners and businesses over the telephone network when floods are likely.

19) Formal Flood Defence - A structure built and maintained specifically for flood defence purposes.

20) Flood Zones - Nationally consistent delineation of 'high' and 'medium' flood risk, published on a quarterly basis by the Environment Agency.

21) Functional Floodplain Zone 3b - Defined as areas at risk of flooding in the 5% AEP (1 in 20 year) design event. In any one year the chance of a 5% AEP (1 in 20 year) event occurring is 5%.

22) GIS – Geographic Information System. GIS is any system which stores geographical data, such as elevations, location of buildings and extent of flood outlines.

23) High probability Zone 3a - Defined as areas at risk of flooding in the 1% AEP (1 in 100 year) design event. In any one year the chance of a 1% AEP (1 in 100 year) event occurring is 1%.

24) Informal Flood Defence - A structure that provides a flood defence function however has not been built and/or maintained for this purpose (e.g. boundary wall).

25) Integrated urban drainage – An integrated approach to surface water management

26) JFLOW - A computer river model based on routeing a flood calculated by Flood Estimation Handbook methodology along a river corridor the levels of which are derived from a Side Aperture Radar (SAR) remote sensed Digital Terrain Model.

27) LDD – Local Development Documents

28) LiDAR - Light Detection and Ranging. LiDAR is an airborne terrain mapping technique which uses a laser to measure the distance between the aircraft and the ground.

29) LDF - Local Development Framework. The LDF consists of a number of documents which together form the spatial strategy for development and the use of land.

30) LDS – Local Development Scheme. A schedule and timetable for production of LDF documents.

31) Low Probability Zone 1 – The area outside Zone 2. Defined as an area with less that 0.1% AEP (1 in 1000 year) chance of flooding. In any one year the chance of a 1% AEP (1 in 100 year) event occurring is less than 0.1%.

32) LPA – Local Planning Authority

33) Main River – All watercourses shown on the statutory main river maps held by the Environment Agency and the Department for Environment, Food and Rural Affairs. This can include any structure or appliance for controlling or regulating the flow of water into, in or out of the channel. The Environment Agency has permissive power to carry out works of maintenance and improvement on these rivers.

34) 'Making Space for Water' (Defra 2004) - The Government's new evolving strategy to manage the risks from flooding and coastal erosion by employing an integrated portfolio of approaches, so as: a) to reduce the threat to people and their property;

b) to deliver the greatest environmental, social and economic benefit, consistent with the Government's sustainable development principles, c) to secure efficient and reliable funding mechanisms that deliver the levels of investment required.

35) Medium probability Zone 2 - Defined as an area at risk of flooding from flood events that are greater than the 1% AEP(1 in 100 year), and less than the 0.1% AEP (1 in 1000 year) design event. The probability of flooding occurring in this area in any one year is between 1% and 0.1%.

36) Minor River - Every river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows and which does not form part of a main river. The local authority or Internal Drainage Board (IDB) where relevant, has powers for ordinary watercourses.

37) mAOD – Metres Above Ordnance Datum

38) NGR – National Grid Reference

39) OS - Ordnance Survey

40) Ordinary Watercourse (non-main river, minor watercourse) – Any section of watercourse not designated as a Main River.

41) PPS - Planning Policy Statements. The Government has updated its planning advice contained within Planning Policy Guidance Notes with the publication of new style Planning Policy Statements.

42) PPS 25 - Planning Policy Statement 25: Development and Flood Risk. PPS 25 reflects the general direction set out in 'Making Space for Water'.

43) Previously Developed (Brownfield) Land - Land which is or was occupied by a building (excluding those used for agriculture and forestry). It also includes land within the curtilage of the building, for example a house and its garden would be considered to be previously developed land.

44) Residual Risk - The risk which remains after all risk avoidance, reduction and mitigation measures have been implemented.

45) Return Period – The probability of a flood of a given magnitude occurring within any one year e.g. a 1% AEP (1 in 100 year) event has a probability of occurring once in 100 years, or a 1% chance in any one year. However, a 1% AEP (1 in 100 year) event could occur twice or more within 100 years, or not at all.

46) RSS - Regional Spatial Strategy. The RSS for Telford and Wrekin is the West Midlands RRS, a regional planning policy providing the overarching framework for the preparation of LDFs. It provides a broad development strategy for the West Midlands region up to 2026.

47) SA - Sustainability Appraisal. An SA is an appraisal of plans, strategies and proposals to test them against broad sustainability objectives.

48) SAAR – Standard-period Annual Average Rainfall.

49) Sequential Test - Informed by a SFRA, a planning authority applies the Sequential Test to demonstrate that there are no reasonably available sites in areas with less risk of flooding that would be appropriate to the type of development or land use proposed.

50) SEA - Strategic Environmental Assessment.

51) SFRA - Strategic Flood Risk Assessment. An SFRA is used as a tool by a planning authority to assess flood risk for spatial planning, producing development briefs, setting constraints, informing sustainability appraisals and identifying locations of emergency planning measures and requirements for flood risk assessments.

52) SPD - Supplementary Planning Document. An SPD provides supplementary guidance to policies and proposals contained within Development Plan Documents. They do not form part of the development plan, nor are they subject to independent examination.

53) SPRHOST – Standard percentage runoff from the Hydrology of Soil Types classification.

54) SoP – Standard of Protection. The return period against which a defence offers protection.

55) SFRM – Strategic Flood Risk Management. An Environment Agency framework typically used to carry out flood mapping and CFMP studies.

56) SUDS – Sustainable Urban Drainage Systems. SUDS are drainage systems which are designed to reduce the impact of urbanisation on the hydrology of a river system.

57) Sustainable Development – "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (The World Commission on Environment and Development, 1987)

58) TUFLOW – A 2D hydraulic modelling package

59) UK Flood Hazard – a measure of hazard of a given flood event, calculated by using the following equation from Defra's Flood Risks to People – Phase Two Document (FD2321/ TR2) (2006). Hazard is calculated as follows:

Hazard = d x (v + 0.5) + DF

Where **d = depth (m)**

V = velocity (m/s)

DF = debris factor

60) URBEXT – Urban Extent. A measure of the urban extent in a given catchment.

Appendix A

Assessment of all possible allocations

See separate document

Appendix B

Assessment of all possible allocations in the vicinity of modelled areas

See separate document

Appendix C

Sequential Test and Exception Test Process

Appendix D

Hydrological Approach Technical Note

Appendix E

Hydraulic Approach Technical Note

Appendix F

Site Visit Technical Notes x2

Appendix G

Environment Agency Sign-off Letter

Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Appendix A	Appendix B
1	Car Park adj DLLC	St. Matthews Road	Donnington	Page 1	-
3	Rear of Swan Hotel	Watling Street	Wellington	-	Page 4
4	Land at Brittania Way	Brittania Way	Hadley	Page 1	-
5	Land off	Hadley Park Road/Parkdale	Hadley	Page 1	-
6	Land at Lower House Farm, adjacent rear	Orchard Close	Waters Upton	Page 1	-
7	Land at Grove Farm	Wellington Road	Newport	Page 1	-
8	Land off	Park Lane	High Ercall	Page 1	-
10	The Wrockwardine Wood School	Holyhurst Road	Oakengates	Page 1	-
13	Midlands Electricity	Waterloo Road	Ketley	Page 1	-
16	Bratton Farm	B5063	Wellington	-	Page 1
19	Land off	Ben Jones Avenue (Stafford Road)	Newport	Page 1	-
20	Land at	Longford Road	Church Aston	Page 1	-
21	Land south	Trinity Road	Dawley Hamlets	Page 1	-
24	Land at	Glebe Street	St. Georges	Page 1	-
26	Land adjacent to The Fields Bungalow	The Fields	Donnington	Page 1	-
29	Tweedale Industrial Estate off	Bridgnorth Road	Madeley	Page 1	-
33	Land Opposite 39	Mill Lane	Tibberton	Page 1	-
36	Land at The Grange	Catsbritch Lane	Waters Upton	Page 1	-
40	north of The Grange	Park Lane	High Ercall	Page 1	-
43	Land east of Hanford Terrace - Site 4	Catsbritch Lane	Waters Upton	Page 1	-
56	Land adjoining	Haygate Road	Wellington	Page 1	-
63	Land at	Old Park Roundabout	The Rock	Page 1	-
64	Plot at Arleston Brook, near	Lawley Drive	Arleston	Page 2	-
65	Land off	Majestic Way	Aqueduct	Page 2	-
67	Land at	Beveley Road/Holyhead Road	Ketley	Page 2	-
68	Land at	Crowdale Road	Bratton	-	Page 1
69	Land at	Okehampton Road	Hadley Castle	-	Page 4
71	Land at	Marshbrook Way/ Dorchester Drive	Muxton	Page 2	-
72	Land off	Marshbrook Way	Muxton	Page 2	-
73	Paddock at	Church Road	Donnington	Page 2	-
74	Land at Ketley Dingle	Whitchurch Drive	Ketley Brook	-	Page 4
77	Land at	Redhill Way	Donnington Wood	Page 2	-
79	Land south of M54	Park Lane	Old Park	Page 2	-
80	Land at	Forge Junction	Telford	Page 2	-
81	Land off	Wrockwardine Road	Wellington	-	Page 1
84	Land off	Crowdale Road	Bratton	Page 2	-
90	Land at Loamhole Dingle, off	Darby Road	Coalbrookdale	Page 2	-
91	New Pool	Rough Park Way	Coalbrookdale	Page 3	-
93	Land off	Whitchurch Drive	Wellington	-	Page 4
95	Hall Park car park off	Hall Park Way	Telford Town Centre	Page 3	-
96	Car park west of County Courts	Hall Park Way	Telford Town Centre	Page 3	-
99	Land north of Apley Castle off	Sparrowhawk Way	Apley Castle	Page 3	-
101	Land at	Lodge Road	Donnington Wood	Page 3	-
102	Car Park off	Manse Road	Hadley	Page 3	-
103	Land off	Cappoquin Drive	St Georges	Page 3	-
104	Land off	Telford Way	St Georges	Page 3	-
105	Rampart Way North	Rampart Way	Telford Town Centre	Page 3	-
106	Rampart Way South	Rampart Way	Telford Town Centre	Page 3	-
111	Stirchley Avenue A (Site 52360)	Stirchley Avenue	Randlay	-	Page 14
112	Stirchley Avenue B (Site 52340)	Stirchley Avenue	Randlay	-	Page 14
117	Lord Silkin School/Three Oaks Primary School	Grange Avenue	Stirchley	-	Page 17
118	Sutherland School	Gibbons Road	Trench	Page 3	-
119	The Paddock	Arleston Lane	Wellington	Page 3	-
125	Blessed Robert Johnson Phase II	Whitchurch Drive	Wellington	Page 3	-
127	Land at Ketley Grange	Bank Way	Ketley Bank	Page 3	-
128	Land at (Plots 1-6)	Mossey Green	Ketley Bank	Page 3	-
129	Priorslee East D3 Phase II	Gatcombe Way	Priorslee	Page 3	-
130	Priorslee East E Phase I	Gatcombe Way	Priorslee	Page 3	-
131	Priorslee East E Phase II	Gatcombe Way	Priorslee	Page 3	-
132	Land at Priorslee East J1/J2	Gatcombe Way	Priorslee	Page 4	-
133	Land at	Shifnal Road	Priorslee	Page 4	-
134	Land at	Park Road	Dawley Bank	Page 4	-
135	Farm Lane II	Farm Lane	Horsehay	Page 4	-
136	Land between (Plot E)	Doseley Road/Pool Hill	Horsehay	Page 4	-
137	Land between	St. Georges Road/Wrockwardine Wood Way	St. Georges	Page 4	-
138	Land at Sinclair Works	Holyhead Rd / Whitchurch Drive	Ketley	-	Page 4
143	Land east/west	Rock Road	Overdale	Page 4	-
144	Land south	New Trench Road/A518	Muxton	-	Page 13
153	Shawbirch Campus Site off	Shawbirch Roundabout A442/Queensway	Shawbirch	Page 4	-
155	Land south/west	Dale Acre Way/Darliston	Hollinswood	-	Page 14
156	Land south/immediately west	Dale Acre Way/Darliston	Hollinswood	-	Page 14
157	Playing field off	Wrockwardine Wood Way/Stafford Rd	Wrockwardine Wood	Page 4	-
158	Langley County Junior & St. Leonards Infant School	Spout Lane	Malinslee	Page 4	-
159	Part of playing field Aqueduct County Primary School, west	Castlefields Way	Aqueduct	Page 4	-
160	Playing field adj. Hills Lane Play Centre	Hills Lane	Madeley	Page 4	-
162	Nursery School and Hall off	Holyhead Road	Ketley	Page 4	-
163	Land at	Pinewood Avenue	Trench	Page 4	-
164	Land at Teagues Bridge Community Centre	Teagues Crescent	Trench	-	Page 10
165	Playing field between	Burnell Road/Wellington Road	Admaston	Page 4	-
166	Station Car Park	The Parade	Wellington	-	Page 4
167	Tan Bank Car Park	Victoria Road	Wellington	Page 4	-
168	Health Centre Car Park	Victoria Road	Wellington	Page 5	-
171	Land off	Victoria Road	Wellington	Page 5	-
172	Recreation Ground	Union Road	Wellington	Page 5	-
173	Mount Car Park west	Wrekin Road	Wellington	Page 5	-
174	South Car Park	Victoria Road	Wellington	Page 5	-
175	North Car Park	Victoria Road	Wellington	Page 5	-

Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Appendix A	Appendix B
176	Market Car Park	Market Street	Wellington	-	Page 4
177	Tea Tree Car Park	Charlton Street	Wellington	-	Page 4
178	Land to rear of Masonic Hall	Constitutional Hil	Wellington	Page 5	-
179	Land west, adj. railway	Wellington Road	Admaston	-	Page 1
180	Land west, rear	Whitchurch Road, Dee Close	Wellington	Page 5	-
181	Land east, rear	Wellington Road. Donnerville Gardens	Admaston	-	Page 1
182	Land west , opposite	Wellington Road, Donnerville Gardens	Admaston	-	Page 1
183	Land south/east	Shawbirch Road/Admaston Spa	Shawbirch	-	Page 1
184	Land east/south	Wellington Road/Spa Crescent	Admaston	-	Page 2
185	Land between	Wellington Road railway	Admaston	Page 5	-
186	Land west/rear	Whitchurch Road/Arrow Road	Shawbirch	Page 5	-
187	Land	Glade Way	Shawbirch	Page 5	-
188	Land north	Coney Way Green	Shawbirch	Page 5	-
189	Land off	Grainger Drive	Leegomery	-	Page 4
190	Land off	Barnes Drive	Leegomery	-	Page 4
191	Land off	Leegate Avenue	Leegomery	-	Page 4
192	Land east Wrekin College	Whitchurch Drive	Wellington	-	Page 5
193	Land off	Giles Close	Arleston	-	Page 5
194	Land off	Wombridge Road A	Wrockwardine Wood	Page 6	-
195	Land south	Capewell Road	Trench	-	Page 10
196	Land off	Hadley Road	Wombridge	Page 6	-
197	Land off	Wombridge Road B	Wombridge	Page 6	-
198	Land off	Stafford Road	Wrockwardine	Page 6	-
199	Land east	St. Georges Road	St. Georges	Page 6	-
200	Land off	The Nabb	St. Georges	Page 6	-
201	Land off	St. Matthews Road	Donnington Wood	Page 6	-
202	Land off	Celadine Way/Goodyear Way	Donnington Wood	Page 6	-
204	Land west	Grange Lane	Lilleshall+Donngtn	Page 6	-
205	Land at	Pool Side	Horsehay	Page 6	-
206	Land east	Fence Road	Horsehay	Page 6	-
207	Land east/rear	Rock Road/Cedar Close	The Rock	Page 6	-
208	Land east/rear	Rock Road/Lower Wood	The Rock	Page 6	-
211	Land between	Heath Hill/Captain Webb Drive	Heath Hill	Page 6	-
212	Car Park	Burton Street	Dawley	Page 6	-
213	Car Park	George Street	Dawley	Page 6	-
214	Land south	Springhill Road	Dawley	Page 6	-
215	Car Park	Captain Webb Drive	Dawley	Page 6	-
217	Land east (L33)	Royal Way	Malinslee	Page 6	-
218	Land between	Holyhead Road/Church Road	Snedshill	Page 6	-
220	Car Park off	Stirchley Avenue	Randlay	Page 6	-
221	Land north	Stirchley Avenue	Randlay	-	Page 14
222	Land south/rear	St. Georges Bypass/Westcroft Walk	St. Georges	Page 7	-
223	Land rear of St. Georges Church	Church Street	St. Georges	Page 7	-
224	Land off	Snedshill Way	Snedshill	Page 7	-
225	Hadley car park north	Britannia Way	Hadley	-	Page 5
226	Hadley Car Park south	Brittania Way	Hadley	Page 7	-
227	Land north of dismantled railway	Copper Beech Road	Ketley	Page 7	-
228	Land west	Margaret Court	Ketley	-	Page 5
229	South Nedge	Hem Lane	The Nedge	-	Page 15
230	West Woods	Woodside Avenue/Newcomen Way	Woodside	Page 7	-
231	Land south west	Roberts Road	Ironbridge	Page 7	-
232	Land east	Orchard Lane	Ironbridge	Page 7	-
233	Land west	Ironbridge Road	Madeley	Page 7	-
234	Land north	Hodgebower	Ironbridge	Page 7	-
235	Land rear	Hodgebower	Ironbridge	Page 7	-
236	Land north/west	Belmont Road/Orchard Lane	Ironbridge	Page 7	-
237	Land south	Wrekin View	Madeley	Page 7	-
238	Land west	Jiggers Bank	Coalbrookdale	Page 7	-
239	Land east The Old Wynde House	Crackshall Lane	Coalbrookdale	Page 8	-
240	Land west The Old Wynde House	Crackshall Lane	Coalbrookdale	Page 8	-
241	Land west	Wentworth Drive	Aqueduct	Page 8	-
242	Land east	Legges Way/Coalport Road	Madeley	Page 8	-
244	Land west	Coalport Road	Madeley	Page 8	-
249	Land north The Bridge School	Brookside Avenue	Brookside	-	Page 17
250	Land east	Lake End Drive	Brookside	-	Page 17
251	Land north	Ford Road	Newport	Page 8	-
252	Land east Millwood Mere	Juniper Row	Newport	Page 8	-
254	New Street Car Park	New Street	Newport	Page 8	-
255	Overspill car park	Legges Way	Madeley	Page 8	-
256	Land south Moor Farm	Lightmoor Road	Lightmoor	Page 8	-
257	Land between	Broad Meadow Lane/Briery Bank	Lightmoor	Page 8	-
258	Land West	Briery Bank	Woodside	Page 8	-
259	Land between	Woodside Avenue/Broad Meadow Lane	Lightmoor	Page 8	-
260	Land north	Rough Park Way	Woodside	Page 8	-
261	Land between	Court Road/Park Avenue	Madeley	Page 8	-
262	Land west	Pool Hill	Doseley	Page 8	-
264	Land south	Shifnal Road	Priorslee	Page 8	-
265	Land south	Redhill Way	St Georges	Page 9	-
266	Clay pit - east	Redhill Way	St Georges	Page 9	-
267	Land south/east (south west Silkin Way)	Stirchley Lane/Cooke Drive	Dawley	Page 9	-
268	Land west (Jiggers Bank)	Jiggers Bank Roundabout	Lightmoor	Page 9	-
269	Land west Silkin Way	Stirchley Lane	Stirchley	Page 9	-
272	Morrisons Supermarket car park	Bridge Road	Wellington	-	Page 5
273	Land adjacent to The Wickets Inn	Holyhead Road	Wellington	Page 9	-
274	Former Wellington Service Station	King Street	Wellington	Page 9	-
275	Land at rear 31	High Street	Wellington	Page 9	-
276	Land Between	St. John Street & Glebe Street	Wellington	Page 9	-

Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Appendix A	Appendix B
277	Land west	Priory Close/Rosthwaite	Wellington	Page 9	-
278	Supermarket car park (Aldi)	Grooms Alley	Wellington	-	Page 5
279	Land west	Fowler Close	Wellington	Page 9	-
280	Land rear	Furnace Lane	Donnington	Page 9	-
282	Open Space	The Common	Donnington	Page 9	-
290	Open Space adjacent	Grainger Drive	Hadley	-	Page 6
292	Scout Hall	High Street	Hadley	Page 9	-
293	Land at rear of The Queens Arms	Bank Road	Dawley	Page 9	-
294	Land north Heath Hill Industrial Estate	Heath Hill	Dawley	Page 9	-
295	Land adjacent to Engineering Works	Heath Hill	Dawley	Page 9	-
296	Land west of No. 5	Dawley Road	Dawley	Page 10	-
297	Land south	Doseley Road	Dawley	Page 10	-
299	Land south east of Mount Gilbert School	Hinkshay Road	Dawley	Page 10	-
300	Land rear of Library	Walker Street	Wellington	Page 10	-
301	Land east Donnington St Matthews CE Prim. School	St Matthews Road	Donnington	Page 10	-
305	Car park rear of Duke of York	Stafford Road	Oakengates	Page 10	-
306	Central car park between	Slaney Street and New Street	Oakengates	Page 10	-
307	Open space south of	Athol Drive	Oakengates	Page 10	-
309	Land adjacent Robert Moore Flats	Church Street	Madeley	Page 10	-
310	Land to rear Clews Wood Court	Station Road	Madeley	Page 10	-
311	Land rear The Barley Mow	Court Street	Madeley	Page 10	-
312	Land east	Hanover Court	Madeley	Page 10	-
313	Land south	High Street	Madeley	Page 10	-
314	Waste Recycling Centre	Hills Lane	Madeley	Page 10	-
317	Land adjacent to Newport Junior School	Upper Bar	Newport	Page 10	-
318	Scout hut and playing field to rear	Boughey Road	Newport	Page 10	-
319	Builders Yard	Upper Bar	Newport	Page 10	-
321	Land at rear Charlton Arms Hotel	Church Street	Wellington	Page 10	-
322	Former Wrekin Roadways	Holyhead Road	Ketley	Page 10	-
323	Old Park 1	Old Park Way	Old Park	Page 10	-
324	Town Centre 7	Southwater Way	Telford Town Centre	Page 10	-
325	Land off	Rampart Way	Telford Town Centre	Page 10	-
326	West Southwater	Southwater Way	Telford Town Centre	Page 10	-
327	Land forming part of Lower House Farm	-	Waters Upton	Page 11	-
329	Land adjacent The Barns	Dark Lane	Newport	Page 11	-
330	Land north Leasowe Green	Lightmoor Road	Lightmoor	Page 11	-
332	Land adj Chetwynd Knoll	Edgmond Road	Newport	Page 11	-
335	Land at Hill Top Farm	Waterloo Road	Ketley	Page 11	-
336	Land at The Humbers	Humber Lane	Donnington	-	Page 13
339	Land adj The Old Rectory	River Lane	Waters Upton	Page 11	-
341	Land south (Site C)	Pool Hill Road	Horsehay	Page 11	-
342	Land at Church Aston adj.	Highfield	Newport	Page 11	-
343	Land west	Jiggers Bank	Horsehay	Page 11	-
344	Land west	Wellington Road	Horsehay	Page 11	-
348	Land to rear	Quarry View	Waters Upton	Page 11	-
349	Land to north	Shepherds Lane	Ketley	Page 11	-
350	Land adjacent to Mobile Home Park, north of	Wellington Road	Muxton	-	Page 13
351	Residential Park to north	Wellington Road	Muxton	Page 11	-
352	Land south (Site 34)	Edgmond Road (Chetwynd End)	Newport	Page 11	-
355	Land off	Hartbridge Road	Oakengates	Page 11	-
356	Bus Depot	Vineyard Road	Wellington	Page 11	-
357	Land south Blockleys (Hadley Quarry) - edited	Hadley Road	Hadley	Page 11	-
359	Former Concrete Works	Lightmoor Road	Dawley Hamlets	Page 12	-
360	Land at rear	Candleberry Meadow	Ketley	Page 12	-
361	Land at Wappenshall, near	A442 Queensway	Hadley	-	Page 6
366	Land adjacent The Hollies	Back Lane	Tibberton	Page 12	-
367	Land east	Churchill Drive	Ketley	Page 12	-
368	Land fronting	Stirchley Road	Brookside	-	Page 17
371	Land off	Garfield Road / Mossey Green	The Rock	Page 12	-
372	Land at	Pool Hill Road	Dawley	Page 12	-
373	Land at The Old Showground off	Fallow Deer Lawn/Deer Park Drive	Newport	Page 12	-
374	Land off (Site 42)	Plough Lane	Newport	Page 12	-
375	Beeches Hospital	Beech Road/Lincoln Grange	The Gorge	Page 12	-
377	Land at Cheshire Coppice Cottages to rear	Meadowdale Drive	Admaston	Page 12	-
378	Land south	Newcomen Way	Woodside	Page 12	-
379	Land at Nedge Hill (land around Nedge Building)	Naird Lane	The Nedge	-	Page 15
380	Land west/north	Brandon Avenue/ Shawbirch Road	Shawbirch	-	Page 2
381	Land east	Brandon Avenue	Shawbirch	-	Page 2
382	Land at Hadley Castle West	A442	Hadley	-	Page 6
385	Land between	Lightmoor Road/A4169	Lightmoor	Page 13	-
386	Land at East Priorslee off	Castle Farm Way	Priorslee	Page 13	-
387	Central Park	Holyhead Road	Snedshill	Page 13	-
389	Old Park Mound	Colliers Way	Old Park	Page 13	-
391	Priorslee E Phase III	York Road	Priorslee	Page 13	-
394	Land at Orleton Park School - edited	Powder Lane/West Road	Wellington	Page 13	-
395	Land west of Tee Lake	Donnerville Close	Wellington	-	Page 2
396	Car Park off	Trench Road	Trench	Page 13	-
397	Land at rear Social Club	Holyhead Road	Oakengates	Page 13	-
398	Former Church	Main Road	Ketley Bank	Page 13	-
399	Land south of Police Station	Legges Way/Hills Drive	Madeley	Page 13	-
400	Land north of Moor Farm	Lightmoor Road	Lightmoor	Page 13	-
401	Land at Cordingley Hall/adjacent to Scout Hut	Wellington Road	Donnington	Page 13	-
402	Land at rear of The Church Wickets Public House & 17	Church Road	Dawley	Page 13	-
403	Land adjacent Rose Villa	Fence Road	Dawley	Page 13	-
406	Land to the South of St. Michaels Church	-	Waters Upton	Page 14	-
407	Land to the north of	Granville Road	Donnington Wood	Page 14	-
408	Car park off	Tan Bank	Wellington	Page 14	-

Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Appendix A	Appendix B
409	Land at	Heath Hill Roundabout	Dawley	Page 14	-
414	Land at Wheat Leasows	North Hadley Park / St Lukes Road	Wheat Leasows	-	Pages 6 and 10
416	Land north east (Site 41)	Meadow View Road	Newport	Page 14	-
419	Land off	Park Road	Malinslee	Page 14	-
421	Land north of	Grove Road	Overdale	Page 14	-
423	Land west	Bratton Road	Bratton	Page 14	-
424	Land off	Admaston Road/Donnerville Gardens	Wellington	-	Page 2
425	Land south of	West Centre Way	Malinslee	Page 14	-
426	Cottage Hospital	Haygate Road	Wellington	Page 14	-
428	Land north - edited (enlargened)	Hartshill Avenue	Oakengates	Page 14	-
429	Land at Lightmoor, west	Burroughs Bank	Lightmoor	Page 14	-
430	Land fronting south side	Water Lane	Newport	Page 14	-
431	Land at	High Street	Wellington	Page 14	-
432	Land north Bucks Head	Haybridge Road	Wellington	-	Page 7
433	Land north	Station Road	Dawley	Page 14	-
434	Land north	Walton Avenue	High Ercall	Page 14	-
435	Land at Lawley Furnaces	Dawley Road/New Works Lane	Lawley	Page 14	-
436	Land north east	Pool Hill Road	Dawley	Page 14	-
437	Land at 9	Cow Wood	Red Lake	Page 15	-
439	Land off	Audley Avenue	Newport	Page 15	-
440	Land adjoining Stafford St car-park - edited	Stafford Street	Newport	Page 15	-
441	Land west of	Hadley Park Road	Hadley	-	Page 7
443	Land off	Eider Drive	Leegomery	-	Page 7
444	Land off	Furnace Lane	Donnington	Page 15	-
445	Lawley Village Phase II (Site 51840)	Arleston Lane	Lawley	Page 15	-
446	Land off	Muxton Lane	Muxton	Page 15	-
447	Land south	Saltwells Drive	Muxton	Page 15	-
450	Land at Barnfield House	North east of M54 Junction 7	Wellington	Page 15	-
452	Land at	Bridgnorth Road	Madeley	Page 15	-
453	Parsons Barn, Aqualate Manor	Stafford Road (A518)	Newport	Page 15	-
454	Land at Arleston	Arleston Lane/Dawley Road	Arleston	Page 15	-
456	Land at Wrekin View Farm	Chetwynd End/Green Lane	Newport	Page 15	-
457	Plantation - 5	Back Lane/Plantation Fields	Tibberton	Page 15	-
459	Land adjoining	Limekiln Lane	Wellington	Page 16	-
460	Land at TCAT	Bennetts Bank	Wellington	-	Page 7
461	Site at	Lees Farm Road	Madeley	Page 16	-
462	Land off	Colliers Way	The Rock	Page 16	-
463	Land off	Church Road	Snedshill	Page 16	-
464	Land off (Phase 2)	Priorslee Road	Snedshill	Page 16	-
471	Land at Capewell Works	Sommerfeld Road	Trench Lock	-	Page 10
472	Concrete works/former Audco site	Avenue Road	Newport	Page 16	-
473	Land off	Reynards Meadow	Sutton Hill	Page 16	-
474	Homelands Mobile Home Park & Ketley Industrial Estate	Mossey Green/Shrubbery Road	Ketley Bank	Page 16	-
476	Land known as Wyre Croft	Shepherds Lane/Shrubbery Road	Red Lake	Page 16	-
478	Kings Head Mobile Homes Park	Green Lane	Newport	Page 16	-
481	Land at Vauxhall	Longford Road	Newport	Page 16	-
482	Land east	Station Road	Lilleshall+Donngtn	-	Page 13
484	Depot Land	Red Lees	Ketley	Page 16	-
485	Land south of Beechfields Way	Beechfields Way	Newport	Page 16	-
486	Land east of railway, adjacent to Cheshire Cheese Pub	St Lukes Road	Doseley	Page 16	-
487	Land at Adamaston Farm east Bratton Road	Bratton Road	Shawbirch	Page 16	-
488	Land off	Colliers Way	Old Park	Page 17	-
490	Land South of Woodlands Farm	-	Lightmoor	Page 17	-
491	Land at Johnstons Pipes/East of Lightmoor	Frame Lane	Lightmoor	Page 17	-
492	Land at Lightmoor, south	Lightmoor Road	Lightmoor	Page 17	-
493	Land off	Hadley Park Road	Hadley	-	Page 7
494	Land at Barnfield House north east	M54 Junction 7	Cluddley	Page 17	-
499	Land off	The Crest	Old Park	Page 17	-
500	Maxwell Expansion Land between	Whitchurch Drive/Queensway	Shawbirch	Page 17	-
501	Paddock Mount/Town Park	Hinkshay Road	Dawley	Page 17	-
502	Land at - edited (adjacent 371)	Shepherds Lane/ Mossey Green	Ketley	Page 17	-
504	Land at Donnington Farm - edited (edge of 144)	New Trench Road	Donnington	-	Page 13
505	Land at Moor Farm (residual of sites 564 and 567)	Bratton Road	Admaston	Page 17	-
506	Land at Apley Home Farm	Apley Castle	Leegomery	Page 17	-
507	Land at Barnfield Farm	Holyhead Road	Wellington	Page 17	-
508	Land at 'The Humbers' north	New Trench Road	Donnington	-	Page 13
509	Land off	Mill Lane	Tibberton	Page 17	-
510	Land at transport depot - edited (edge of 491)	Holywell Lane	Doseley	Page 18	-
511	Land north west	Station Road	Admaston	Page 18	-
512	Land at	195 Holyhead Road	Wellington	Page 18	-
513	Land off	Shepherds Lane	Red Lake	Page 18	-
514	Madeley Academy	Parkway	Madeley	Page 18	-
516	Land to rear Wrekin View	-	Tibberton	Page 18	-
517	Land at Bratton Hall Farm off	BrattonRoad	Bratton	Page 18	-
518	Land off A442 - edited	A442 Queensway	Wappenshall	Page 18	-
519	Land at Eyton upon the Weald Moors	-	Eyton on Weald Moors	-	Page 7
520	Gateway site to the south of Newport, rear of	Wallshead Way	Newport	Page 18	-
522	Land at Mossey Green	Waterloo Road	Hadley	Page 18	-
523	Sunny Croft	Shrewsbury Road	High Ercall	Page 18	-
524	Land adjacent The Garage House	Wellington Road	Donnington	Page 18	-
525	Land at 88-102 Potters Bank	Holyhead Road	Red Lake	Page 18	-
526	Land at Southwater South	St. Quentin Gate	Telford Town Centre	Page 18	-
527	Land at The Ley	Balls Hill	Heath Hill	Page 18	-
528	Land at The White Horse PH	Balls Hill	Heath Hill	Page 18	-
530	The Swan Hotel - edited	Watling Street	Wellington	-	Page 8
531	Cherry Tree Hill - edited	St. Marys Street	Newport	Page 18	-
532	Plough Farm Nursery, Newport - edited	Forton Road/Plough Lane	Newport	Page 18	-

Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Appendix A	Appendix B
536	Land off adj. 176	Haygate Road	Wellington	Page 18	-
539	Land at Riverside Coaches/Shropshire Pine Co. - edited	Heath Hill	Dawley	Page 19	-
541	Land at Lawley Furnaces	Dawley Road	Lawley	Page 19	-
542	Land at Redhill Claypit/Wrockwardine Wood	Rookery Road	Donnington Wood	Page 19	-
543	Land at Redhill Claypit/Wrockwardine Wood	Frome Way	Donnington Wood	Page 19	-
544	Land off New Road	New Road	Madeley	Page 19	-
548	Land adjacent to Arleston Manor - edited	Arleston Lane	Arleston	Page 19	-
549	Ketley Business Park	Waterloo Road	Ketley	Page 19	-
552	Land at	Sutherland Farm	Tibberton	Page 19	-
555	Centre of Newport, Water Lane - edited	St Marys Street	Newport	Page 19	-
556	Land off - edited	Newcomen Way	Woodside	Page 19	-
558	Land between	Park Street / South Drive	Madeley	Page 19	-
559	Land between Roberts Road/Madeley Road/Harris's Way, Madeley	Whitchurch Drive	Wellington	Page 19	-
560	Land at Woodside Primary School and Nursery	Mound Way/Ironbridge Road, Madeley	Madeley	Page 19	-
562	Former EverReady site	Hinkshay Road	Dawley	Page 19	-
563	Land south Moor House Farm	Cheshire Coppice Lane	Bratton	Page 19	-
564	Land east Moor Farm	Bratton Road	Telford	Page 19	-
565	MOD Donnington	Humber Lane	Donnington	Page 19	-
567	Land at Moor House Farm, to rear	Brattton Road	Bratton	Page 19	-
569	Land at Lawley Furnaces (Lawley Village North - Phase IV)	Dawley Road	Lawley	Page 19	-
570	Land at Lawley Furnaces New Works Farm	New Works Lane	Lawley	Page 20	-
571	Land at Johnstons Pipes/East of Lightmoor, east	Burroughs Bank	Lightmoor	Page 20	-
574	Hollies Farm	The Hollies Cherrington Road	Tibberton	Page 20	-
576	Land at Johnstons Pipes/East of Lightmoor (adj. transport depot)	Holywell Lane	Lightmoor	Page 20	-
577	Land at Johnstons Pipes/East of Lightmoor	Woodlands Lane	Lightmoor	Page 20	-
578	Land off (adjacent site 576)	Holywell Lane	Lightmoor	Page 20	-
580	Land at (Plantation - 1)	Back Lane/Plantation Fields	Tibberton	Page 20	-
581	Land at (Plantation - 2)	Back Lane/Plantation Fields	Tibberton	Page 20	-
582	Land at (Plantation - 3)	Back Lane/Plantation Fields	Tibberton	Page 20	-
583	Land at (corner plot)	Back Lane/Plantation Fields	Tibberton	Page 20	-
587	Land off Lightmoor Road	Lightmoor Road/Burroughs Bank	Lightmoor	Page 20	-
588	Former Johnstone Pipes expansion land, nr.	Wellington Road	Lightmoor	Page 20	-
589	Land east	Maynards Croft	Newport	Page 21	-
590	Car park at Webb House	King Street	Dawley	Page 21	-
591	Land north (opp. Community Centre) Lawley Village North - Phase III	Glendale	Lawley	Page 21	-
592	Land East of St John's Church	Highfield	Lawley	Page 21	-
593	Land at	Dawley Road/New Works Lane	Arleston	Page 21	-
595	Farm land north of Admaston Village	Coppice Lane	Bratton	Page 21	-
596	Land at The Vicarage	Church Walk	Wellington	Page 21	-
597	Land at	Audley Avenue	Newport	Page 21	-
601	Land at Muxton Lane, Muxton	Muxton Lane	Muxton	Page 21	-
602	Land south east (adj. railway)	Lightmoor Road	Lightmoor	Page 21	-
603	Land adjacent to The Beeches Hospital	Lincoln Hill	The Gorge	Page 21	-
604	Land west (Priorslee F)	York Road	Priorslee	Page 21	-
605	The Hem Phase I	Hem Lane	Nedge Hill	-	Page 15
606	South Nedge - residual site	Hem Lane	Nedge Hill	-	Page 15
607	The Hem Phase IV	Hem Lane	Nedge Hill	-	Page 15
608	The Hem Phase III	Hem Lane	Nedge Hill	-	Page 15
609	Land north west	off Wappenshall Lane	Hadley	-	Page 8
610	Land off	Wappenshall Lane	Wappenshall	Page 21	-
611	Racecourse Site	Wappenshall Lane	Wappenshall	-	Page 8
612	The Hem Phase II	Hem Lane	Nedge Hill	-	Page 15
612	Land adj. Brook Cottage Plot A - Arleston	Arleston Lane	Arleston	Page 22	-
613	Lawley Village West - Phase II to rear	Glendale Gardens	Lawley	Page 22	-
614	Land off	Peregrine Way	Apley	-	Page 8
615	Land off	Wrockwardine Wood Way/Kenwray Drive	Donnington Wood	Page 22	-
617	Land north	Plough Lane	Newport	Page 22	-
621	Land adjacent to 44 Cherrington Road	Cherrington Road	Tibberton	Page 22	-
622	Land to rear 44	Back Lane	Tibberton	Page 22	-
628	Land adjoining	Haygate Road	Wellington	Page 22	-
629	Land north (adj. Cemetery Lodge)	Beech Road	Ironbridge	Page 22	-
630	Land off Merrington Road	Merrington Road	Lilleshall and Donngtn	Page 22	-
631	Land north/west	Beech Road	Ironbridge	Page 22	-
632	Land north/east	Beech Road	Ironbridge	Page 22	-
633	Land south Village Hall	-	Waters Upton	Page 22	-
634	Land south St Michaels Church/White House Farm	-	Waters Upton	Page 22	-
635	Land east White House Farm	-	Waters Upton	Page 22	-
636	Land east of Hanford Terrace	Catbritch Lane	Waters Upton	Page 22	-
637	Land to rear of 9	Bratton Road	Wellington	Page 22	-
638	Telford Town Centre	Woodhouse/Lawn/Grange/Coach Central	Telford	Page 22	-
639	Land off (owned by T&WC)	Limekiln Lane/M54	Arleston Brook	Page 23	-
648	Newdale primary School	Marlborough Way	Overdale	Page 23	-
656	St Patricks Primary School	North Road	Wellington	-	Page 2
658	Land north of Redhill	Watling Street/Redhill Way	St George's	Page 23	-
660	Land at Highfield House	Wrekin Road	Wellington	Page 23	-

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
1	Car Park adj DLLC	St. Matthews Road	Donnington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
3	Rear of Swan Hotel	Watling Street	Wellington	Part of Hurley Brook assessment		
4	Land at Brittania Way	Brittania Way	Hadley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
5	Land off	Hadley Park Road/Parkdale	Hadley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
6	Land at Lower House Farm, adjacent rear	Orchard Close	Waters Upton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
7	Land at Grove Farm	Wellington Road	Newport	Site lies fully in Flood Zone 1	North eastern corner of site is bordered by a drain. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
8	Land off	Park Lane	High Ercall	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
10	The Wrockwardine Wood School	Holyhurst Road	Oakengates	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
13	Midlands Electricity	Waterloo Road	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
16	Bratton Farm	B5063	Wellington	Part of Hurley Tributary assessment		
19	Land off	Ben Jones Avenue (Stafford Road)	Newport	Site lies substantially in Flood Zone 1, though it is affected slightly by Flood Zones 2 and 3 to the north of the site	Strine Brook flows to the north east of the site, and Flood Zones 2 and 3 encroach the site slightly	Flood Zones 2 and 3 should remain as open space Flood Zones derived using JFLOW - FRA should verify extents and levels
20	Land at	Longford Road	Church Aston	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
21	Land south	Trinity Road	Dawley Hamlets	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
24	Land at	Glebe Street	St. Georges	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
26	Land adjacent to The Fields Bungalow	The Fields	Donnington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
29	Tweedale Industrial Estate off	Bridgnorth Road	Madeley	Part of Mad Brook assessment		
33	Land Opposite 39	Mill Lane	Tibberton	Site lies fully in Flood Zone 1	Site lies just south of the River Meese, and while Flood Zones 2 and 3 do not encroach site, Flood Zone 2 lies immediately north of the site.	Flood Zone derived from JFLOW - FRA should verify extents and levels.
36	Land at The Grange	Catsbritch Lane	Waters Upton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
40	north of The Grange	Park Lane	High Ercall	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
43	Land east of Hanford Terrace - Site 4	Catsbritch Lane	Waters Upton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
56	Land adjoining	Haygate Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
63	Land at	Old Park Roundabout	The Rock	Site lies fully in Flood Zone 1	Drain flows through centre of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
64	Plot at Arleston Brook, near	Lawley Drive	Arleston	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
65	Land off	Majestic Way	Aqueduct	Site lies fully in Flood Zone 1	Drain exists to the south west of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed Fluvial flooding has been recorded to the north of the site	A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1 FRA should assess local flood risk issues
67	Land at	Beveley Road/Holyhead Road	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
68	Land at	Crowdale Road	Bratton	Part of Hurley Tributary assessment		
69	Land at	Okehampton Road	Hadley Castle	Part of Hurley Brook assessment		
71	Land at	Marshbrook Way/ Dorchester Drive	Muxton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
72	Land off	Marshbrook Way	Muxton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
73	Paddock at	Church Road	Donnington	Site lies fully in Flood Zone 1	Minewater flooding has been recorded within the site	Sites which are located in Flood Zone 1 without recorded flood incidents should be developed in preference to this site. If development does go ahead, an FRA will be required to assess the local flood risk issues
74	Land at Ketley Dingle	Whitchurch Drive	Ketley Brook	Part of Hurley Brook assessment		
77	Land at	Redhill Way	Donnington Wood	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
79	Land south of M54	Park Lane	Old Park	Site lies fully in Flood Zone 1	Drain exists to the south of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
80	Land at	Forge Junction	Telford	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
81	Land off	Wrockwardine Road	Wellington	Part of Hurley Tributary assessment		
84	Land off	Crowdale Road	Bratton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
90	Land at Loamhole Dingle, off	Darby Road	Coalbrookdale	Site lies substantially in Flood Zones 2 and 3	Loamhole Brook lies to the west of the site, and enters a culvert to the south of the site, posing residual risk of blockage and/or collapse. A tributary of the brook flows from the east but appears to be culverted beneath the site	Given the degree of flood risk posed to this site, alternative sites in lower risk Flood Zones, preferably Zone 1, should be developed in preference to this site. Only if it can be demonstrated that the Sequential Test has been carried out and the Exception Test (in accordance with Table D3 of PPS25) can be satisfied, should this site be developed in accordance with Table D3 of PPS25, where the most vulnerable elements of the development are placed in the lowest risk Flood Zone. Ideally, Flood Zones 2 and 3 should be left as open space. Flood Zones derived using JFLOW and are deemed to be of poor quality in this area - modelling of the watercourse through this site is required to determine the actual level of risk posed.

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
91	New Pool	Rough Park Way	Coalbrookdale	Site is affected by Flood Zones 2 and 3	A tributary of Loamhole Brook flows from west to east through the site. The Flood Zone information in this area is misaligned from the channel	Modelling of the watercourse through this site is required to determine the actual level of risk posed.
93	Land off	Whitchurch Drive	Wellington	Site lies fully in Flood Zone 1	Drain exists along north western boundary of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
95	Hall Park car park off	Hall Park Way	Telford Town Centre	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
96	Car park west of County Courts	Hall Park Way	Telford Town Centre	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
99	Land north of Apley Castle off	Sparrowhawk Way	Apley Castle	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
101	Land at	Lodge Road	Donnington Wood	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
102	Car Park off	Manse Road	Hadley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
103	Land off	Cappoquin Drive	St Georges	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
104	Land off	Telford Way	St Georges	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
105	Rampart Way North	Rampart Way	Telford Town Centre	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
106	Rampart Way South	Rampart Way	Telford Town Centre	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
111	Stirchley Avenue A (Site 52360)	Stirchley Avenue	Randlay	Part of Wesley Brook Tributary assessment		
112	Stirchley Avenue B (Site 52340)	Stirchley Avenue	Randlay	Part of Wesley Brook Tributary assessment		
117	Lord Silkin School/Three Oaks Primary School	Grange Avenue	Stirchley	Part of Mad Brook assessment		
118	Sutherland School	Gibbons Road	Trench	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
119	The Paddock	Arleston Lane	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
125	Blessed Robert Johnson Phase II	Whitchurch Drive	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
127	Land at Ketley Grange	Bank Way	Ketley Bank	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
128	Land at (Plots 1-6)	Mossey Green	Ketley Bank	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
129	Priorslee East D3 Phase II	Gatcombe Way	Priorslee	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
130	Priorslee East E Phase I	Gatcombe Way	Priorslee	Site lies fully in Flood Zone 1	Drain exists along western boundary of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
131	Priorslee East E Phase II	Gatcombe Way	Priorslee	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
132	Land at Priorslee East J1/J2	Gatcombe Way	Priorslee	Site lies fully in Flood Zone 1	Drain exists within site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
133	Land at	Shifnal Road	Priorslee	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
134	Land at	Park Road	Dawley Bank	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
135	Farm Lane II	Farm Lane	Horsehay	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
136	Land between (Plot E)	Doseley Road/Pool Hill	Horsehay	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
137	Land between	St. Georges Road/Wrockwardine Wood Way	St. Georges	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
138	Land at Sinclair Works	Holyhead Rd / Whitchurch Drive	Ketley	Part of Hurley Brook assessment		
143	Land east/west	Rock Road	Overdale	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
144	Land south	New Trench Road/A518	Muxton	Part of Wall Brook (also cited as Donnington Watercourse) assessment		
153	Shawbirch Campus Site off	Shawbirch Roundabout A442/Queensway	Shawbirch	Site lies fully in Flood Zone 1	Drain exists at north eastern side of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
155	Land south/west	Dale Acre Way/Darliston	Hollinswood	Part of Wesley Brook Tributary assessment		
156	Land south/immediately west	Dale Acre Way/Darliston	Hollinswood	Part of Wesley Brook Tributary assessment		
157	Playing field off	Wrockwardine Wood Way/Stafford Rd	Wrockwardine Wood	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
158	Langley County Junior & St. Leonards Infant School	Spout Lane	Malinslee	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
159	Part of playing field Aqueduct County Primary School, west	Castlefields Way	Aqueduct	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
160	Playing field adj. Hills Lane Play Centre	Hills Lane	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
162	Nursery School and Hall off	Holyhead Road	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
163	Land at	Pinewood Avenue	Trench	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
164	Land at Teagues Bridge Community Centre	Teagues Crescent	Trench	Part of Crow Brook assessment		
165	Playing field between	Burnell Road/Wellington Road	Admaston	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
166	Station Car Park	The Parade	Wellington	Part of Hurley Brook assessment		
167	Tan Bank Car Park	Victoria Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
168	Health Centre Car Park	Victoria Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
171	Land off	Victoria Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
172	Recreation Ground	Union Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
173	Mount Car Park west	Wrekin Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
174	South Car Park	Victoria Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
175	North Car Park	Victoria Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
176	Market Car Park	Market Street	Wellington	Part of Hurley Tributary assessment		
177	Tea Tree Car Park	Charlton Street	Wellington	Part of Hurley Tributary assessment		
178	Land to rear of Masonic Hall	Constitutional Hil	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
179	Land west, adj. railway	Wellington Road	Admaston	Part of Hurley Tributary assessment		
180	Land west, rear	Whitchurch Road, Dee Close	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
181	Land east, rear	Wellington Road. Donnerville Gardens	Admaston	Part of Hurley Tributary assessment		
182	Land west , opposite	Wellington Road, Donnerville Gardens	Admaston	Part of Hurley Tributary assessment		
183	Land south/east	Shawbirch Road/Admaston Spa	Shawbirch	Part of Hurley Tributary assessment		
184	Land east/south	Wellington Road/Spa Crescent	Admaston	Part of Hurley Tributary assessment		
185	Land between	Wellington Road railway	Admaston	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
186	Land west/rear	Whitchurch Road/Arrow Road	Shawbirch	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
187	Land	Glade Way	Shawbirch	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
188	Land north	Coney Way Green	Shawbirch	Site lies fully in Flood Zone 1	A drain exists in the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
189	Land off	Grainger Drive	Leegomery	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
190	Land off	Barnes Drive	Leegomery	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
191	Land off	Leegate Avenue	Leegomery	Part of Hurley Brook assessment		
192	Land east Wrekin College	Whitchurch Drive	Wellington	Part of Hurley Brook assessment		

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
193	Land off	Giles Close	Arleston	Part of Hurley Brook assessment		
194	Land off	Wombridge Road A	Wrockwardine Wood	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
195	Land south	Capewell Road	Trench	Part of Crow Brook assessment		
196	Land off	Hadley Road	Wombridge	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
197	Land off	Wombridge Road B	Wombridge	Site lies fully in Flood Zone 1	Drain exists within the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
198	Land off	Stafford Road	Wrockwardine	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
199	Land east	St. Georges Road	St. Georges	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
200	Land off	The Nabb	St. Georges	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
201	Land off	St. Matthews Road	Donnington Wood	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
202	Land off	Celadine Way/Goodyear Way	Donnington Wood	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
204	Land west	Grange Lane	Lilleshall+Donngtn	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
205	Land at	Pool Side	Horsehay	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
206	Land east	Fence Road	Horsehay	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
207	Land east/rear	Rock Road/Cedar Close	The Rock	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
208	Land east/rear	Rock Road/Lower Wood	The Rock	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
211	Land between	Heath Hill/Captain Webb Drive	Heath Hill	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
212	Car Park	Burton Street	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
213	Car Park	George Street	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
214	Land south	Springhill Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
215	Car Park	Captain Webb Drive	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
217	Land east (L33)	Royal Way	Malinslee	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
218	Land between	Holyhead Road/Church Road	Snedshill	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
220	Car Park off	Stirchley Avenue	Randlay	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
221	Land north	Stirchley Avenue	Randlay	Part of Wesley Brook Tributary assessment		
222	Land south/rear	St. Georges Bypass/Westcroft Walk	St. Georges	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
223	Land rear of St. Georges Church	Church Street	St. Georges	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
224	Land off	Snedshill Way	Snedshill	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
225	Hadley car park north	Britannia Way	Hadley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
226	Hadley Car Park south	Brittania Way	Hadley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
227	Land north of dismantled railway	Copper Beech Road	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
228	Land west	Margaret Court	Ketley	Part of Hurley Brook assessment		
229	South Nedge	Hem Lane	The Nedge	Part of Wesley Brook Tributary assessment		
230	West Woods	Woodside Avenue/Newcomen Way	Woodside	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
231	Land south west	Roberts Road	Ironbridge	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
232	Land east	Orchard Lane	Ironbridge	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
233	Land west	Ironbridge Road	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
234	Land north	Hodgebower	Ironbridge	Site lies fully in Flood Zone 1	Flooding has been recorded just south of the site, though the source is unknown	FRA to assess flood risk from all sources
235	Land rear	Hodgebower	Ironbridge	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
236	Land north/west	Belmont Road/Orchard Lane	Ironbridge	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
237	Land south	Wrekin View	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
238	Land west	Jiggers Bank	Coalbrookdale	Site lies equally in Flood Zones 1, 2 and 3	Loamhole Brook is located to the west of the site Flood Zone information in this area is misaligned from the channel	Given the degree of flood risk posed to this site, alternative sites in lower risk Flood Zones, preferably Zone 1, should be developed in preference to this site. Only if it can be demonstrated that the Sequential Test has been carried out and the Exception Test (in accordance with Table D3 of PPS25) can be satisfied, should this site be developed in accordance with Table D3 of PPS25, where the most vulnerable elements of the development are placed in the lowest risk Flood Zone. Ideally, Flood Zones 2 and 3 should be left as open space. Flood Zones derived using JFLOW and are deemed to be of poor quality in this area - modelling of the watercourse through this site is required to determine the actual level of risk posed.

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
239	Land east The Old Wynde House	Crackshall Lane	Coalbrookdale	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
240	Land west The Old Wynde House	Crackshall Lane	Coalbrookdale	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
241	Land west	Wentworth Drive	Aqueduct	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
242	Land east	Legges Way/Coalport Road	Madeley	Site lies fully in Flood Zone 1	Drain follows eastern boundary. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
244	Land west	Coalport Road	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
249	Land north The Bridge School	Brookside Avenue	Brookside	Part of Mad Brook assessment		
250	Land east	Lake End Drive	Brookside	Part of Mad Brook assessment		
251	Land north	Ford Road	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
252	Land east Millwood Mere	Juniper Row	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
254	New Street Car Park	New Street	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
255	Overspill car park	Legges Way	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
256	Land south Moor Farm	Lightmoor Road	Lightmoor	Site lies fully in Flood Zone 1	Drain follows western boundary of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
257	Land between	Broad Meadow Lane/Briery Bank	Lightmoor	Site lies substantially in Flood Zone 1, though is marginally affected by Flood Zone 2 to the north of the site	A tributary of Loamhole Brook flows from east to west towards the north of the site, and Flood Zone 2 encroaches a very small portion of the site. Flood Zone data is misaligned from the channel in this area.	JFLOW used to produce Flood Zones 2 and 3 - FRA should verify extents and levels
258	Land West	Briery Bank	Woodside	Site lies fully in Flood Zone 1	Site lies south of a tributary of the Loamhole Brook.	JFLOW used to produce Flood Zones 2 and 3 - FRA should verify extents and levels
259	Land between	Woodside Avenue/Broad Meadow Lane	Lightmoor	Site lies fully in Flood Zone 1	A tributary of Loamhole Brook flows from east to west towards the north of the site, though Flood Zones 2 and 3 do not encroach site	JFLOW used to produce Flood Zones 2 and 3 - FRA should verify extents and levels
260	Land north	Rough Park Way	Woodside	Site lies fully in Flood Zone 1	A drain exists at the north western corner of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
261	Land between	Court Road/Park Avenue	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
262	Land west	Pool Hill	Doseley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
264	Land south	Shifnal Road	Priorslee	Site lies fully in Flood Zone 1	Drain follows southern boundary of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed Sewer flooding recorded just outside of site	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1 FRA to assess flood risk from all sources

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
265	Land south	Redhill Way	St Georges	Site lies fully in Flood Zone 1	Drain lies just outside eastern boundary of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
266	Clay pit - east	Redhill Way	St Georges	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
267	Land south/east (south west Silkin Way)	Stirchley Lane/Cooke Drive	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
268	Land west (Jiggers Bank)	Jiggers Bank Roundabout	Lightmoor	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
269	Land west Silkin Way	Stirchley Lane	Stirchley	Site lies fully in Flood Zone 1	Drain follows eastern boundary. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
272	Morrisons Supermarket car park	Bridge Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
273	Land adjacent to The Wickets Inn	Holyhead Road	Wellington	Site lies fully in Flood Zone 1	Fluvial flooding has been recorded within the site A drain exists to the south of the site, though appears to enter a culvert just outside of the site.	Site which are located in Flood Zone 1 without recorded flood incidents should be developed in preference to this site. If development does go ahead, an FRA will be required to assess the local flood risk issues, especially the effect of the drain to the south of the site and possible culvert capacity issues. Follow guidance for develop in Flood Zone 1
274	Former Wellington Service Station	King Street	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
275	Land at rear 31	High Street	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
276	Land Between	St. John Street & Glebe Street	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
277	Land west	Priory Close/Rosthwaite	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
278	Supermarket car park (Aldi)	Grooms Alley	Wellington	Part of Hurley Tributary assessment		
279	Land west	Fowler Close	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
280	Land rear	Furnace Lane	Donnington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
282	Open Space	The Common	Donnington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
290	Open Space adjacent	Grainger Drive	Hadley	Part of Hurley Brook assessment		
292	Scout Hall	High Street	Hadley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
293	Land at rear of The Queens Arms	Bank Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
294	Land north Heath Hill Industrial Estate	Heath Hill	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
295	Land adjacent to Engineering Works	Heath Hill	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
296	Land west of No. 5	Dawley Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
297	Land south	Doseley Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
299	Land south east of Mount Gilbert School	Hinkshay Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
300	Land rear of Library	Walker Street	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
301	Land east Donnington St Matthews CE Prim. School	St Matthews Road	Donnington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
305	Car park rear of Duke of York	Stafford Road	Oakengates	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
306	Central car park between	Slaney Street and New Street	Oakengates	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
307	Open space south of	Athol Drive	Oakengates	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
309	Land adjacent Robert Moore Flats	Church Street	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
310	Land to rear Clews Wood Court	Station Road	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
311	Land rear The Barley Mow	Court Street	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
312	Land east	Hanover Court	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
313	Land south	High Street	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
314	Waste Recycling Centre	Hills Lane	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
317	Land adjacent to Newport Junior School	Upper Bar	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
318	Scout hut and playing field to rear	Boughey Road	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
319	Builders Yard	Upper Bar	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
321	Land at rear Charlton Arms Hotel	Church Street	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
322	Former Wrekin Roadways	Holyhead Road	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
323	Old Park 1	Old Park Way	Old Park	Site lies fully in Flood Zone 1	2 drains exist within site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed Flooding from unknown source recorded just outside site	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1 FRA to assess flood risk from all sources
324	Town Centre 7	Southwater Way	Telford Town Centre	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
325	Land off	Rampart Way	Telford Town Centre	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
326	West Southwater	Southwater Way	Telford Town Centre	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
327	Land forming part of Lower House Farm	-	Waters Upton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
329	Land adjacent The Barns	Dark Lane	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
330	Land north Leasowe Green	Lightmoor Road	Lightmoor	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
332	Land adj Chetwynd Knoll	Edgmond Road	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
335	Land at Hill Top Farm	Waterloo Road	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
336	Land at The Humbers	Humber Lane	Donnington	Part of Wall Brook (also cited as Donnington Watercourse) assessment		
339	Land adj The Old Rectory	River Lane	Waters Upton	Site lies fully in Flood Zone 1	River Tern runs from north to south to the west of the site. Flood Zone 3 is immediately outside the site. Flood Zone 2 has not been modelled, it has been derived from JFLOW.	An FRA should be carried out to verify the extent and levels of Flood Zone 2. This might show that the site, in whole or in part, is affected by Flood Zone 2
341	Land south (Site C)	Pool Hill Road	Horsehay	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
342	Land at Church Aston adj.	Highfield	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
343	Land west	Jiggers Bank	Horsehay	Site lies predominantly in Flood Zone 1, though Flood Zones 2 and 3 encroach the site on the south western side	Lyde Brook flows from the north west to south east on the south western side of the site. Flood Zone are misaligned from the channel in some places within the site	Flood Zones 2 and 3 should remain as open space Flood Zones produced using JFLOW - FRA should verify extents and levels
344	Land west	Wellington Road	Horsehay	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
348	Land to rear	Quarry View	Waters Upton	Site lies fully in Flood Zone 1	River Tern runs from north to south to the west of the site. Flood Zone 2 has not been modelled, it has been derived from JFLOW.	An FRA should be carried out to verify the extent and levels of Flood Zone 2. This might show that the site, in whole or in part, is affected by Flood Zone 3
349	Land to north	Shepherds Lane	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
350	Land adjacent to Mobile Home Park, north of	Wellington Road	Muxton	Part of Wall Brook (also cited as Donnington Watercourse) assessment		
351	Residential Park to north	Wellington Road	Muxton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
352	Land south (Site 34)	Edgmond Road (Chetwynd End)	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
355	Land off	Hartbridge Road	Oakengates	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
356	Bus Depot	Vineyard Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
357	Land south Blockleys (Hadley Quarry) - edited	Hadley Road	Hadley	Site lies fully in Flood Zone 1	Drain exists to the east of the site. No Flood Zone information exists in this area, though in reality, some degree of risk is posed.	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
359	Former Concrete Works	Lightmoor Road	Dawley Hamlets	Site lies substantially in Flood Zone 1 but is affected on its southern side by Flood Zones 2 and 3	A tributary of Loamhole Brook is culverted through the site, though Flood Zones 2 and 3 affect the site due to the nature of Flood Zone derivation (JFLOW).	Flood Zones 2 and 3 produced using JFLOW - FRA should verify extents and levels. Options for de-culverting and restoration of the natural channel should be explored. Areas of Flood Zones 2 and 3 which affect the site should be left as open space.
360	Land at rear	Candleberry Meadow	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
361	Land at Wappenshall, near	A442 Queensway	Hadley	Part of Hurley Brook assessment		
366	Land adjacent The Hollies	Back Lane	Tibberton	Site 365 is marginally affected by Flood Zones 2 and 3 on the northern side of the site	The River Meese runs to the north of the site, and encroaches site.	The area of Flood Zones 2 and 3 which affect the site should be left as open space. Flood Zone derived from JFLOW - FRA should verify extents and levels.
367	Land east	Churchill Drive	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
368	Land fronting	Stirchley Road	Brookside	Part of Mad Brook assessment		
371	Land off	Garfield Road / Mossey Green	The Rock	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
372	Land at	Pool Hill Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
373	Land at The Old Showground off	Fallow Deer Lawn/Deer Park Drive	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
374	Land off (Site 42)	Plough Lane	Newport	Site lies almost entirely in Flood Zone 1, with the south east tip of the site falling in Flood Zones 2 and 3	Strine Brook flows from east to west at the south of the site (its Flood Zones 2 and 3 encroach the south eastern tip of the site)	The area of the site affected by Flood Zones 2 and 3 should be left as open space Flood Zones for produced using JFLOW. FRA should verify extents and levels.
375	Beeches Hospital	Beech Road/Lincoln Grange	The Gorge	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
377	Land at Cheshire Coppice Cottages to rear	Meadowdale Drive	Admaston	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
378	Land south	Newcomen Way	Woodside	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
379	Land at Nedge Hill (land around Nedge Building)	Naird Lane	The Nedge	Part of Wesley Brook Tributary assessment		
380	Land west/north	Brandon Avenue/ Shawbirch Road	Shawbirch	Part of Hurley Tributary assessment		
381	Land east	Brandon Avenue	Shawbirch	Part of Hurley Tributary assessment		
382	Land at Hadley Castle West	A442	Hadley	Part of Hurley Brook assessment		

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Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
385	Land between	Lightmoor Road/A4169	Lightmoor	Site lies partly in Flood Zone 1 though Flood Zones 2 and 3 affect half of the site	A tributary of Loamhole brook flows through the south western end of the site. Flood Zones 2 and 3 encroach site.	Flood Zones produced using JFLOW - FRA should verify extents and levels. If Flood Zones 2 and 3 are shown to affect the site then these should be left as open space. If this is not possible, sites fully in lower risk Flood Zones (i.e. Flood Zone 1) should be considered in preference to this site. Only if the Sequential Test is carried out and the need to carry out the Exception Test is identified (in accordance with Table D3 of PPS25) should the site be developed in accordance with Table D3 of PPS25.
386	Land at East Priorslee off	Castle Farm Way	Priorslee	Site lies substantially in Flood Zone 1. Southern tip of site is marginally affected by Flood Zones 2 and 3a. Drain exists to the west of the site.	Wesley Brook flows just outside the southern tip of the site, though Flood Zones 2 and 3a marginally encroach the site. 3a derived from modelling while Flood Zone 2 derived from JFLOW.	Flood Zone 2 produced using JFLOW - FRA should verify extents and levels. The area of Flood Zones 2 and 3 which are shown to affect the site should be left as open space. A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m)
387	Central Park	Holyhead Road	Snedshill	Site lies fully in Flood Zone 1	Some drains exist within the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
389	Old Park Mound	Colliers Way	Old Park	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
391	Priorslee E Phase III	York Road	Priorslee	Site lies fully in Flood Zone 1	Drain borders the western boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
394	Land at Orleton Park School - edited	Powder Lane/West Road	Wellington	Site lies fully in Flood Zone 1	Drain exists along the southern boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
395	Land west of Tee Lake	Donnerville Close	Wellington	Part of Hurley Tributary assessment		
396	Car Park off	Trench Road	Trench	Site lies fully in Flood Zone 1	Drain follows the northern boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
397	Land at rear Social Club	Holyhead Road	Oakengates	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
398	Former Church	Main Road	Ketley Bank	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
399	Land south of Police Station	Legges Way/Hills Drive	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
400	Land north of Moor Farm	Lightmoor Road	Lightmoor	Site lies fully in Flood Zone 1	Drain borders the western boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
401	Land at Cordingley Hall/adjacent to Scout Hut	Wellington Road	Donnington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
402	Land at rear of The Church Wickets Public House & 17	Church Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
403	Land adjacent Rose Villa	Fence Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

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Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
406	Land to the South of St. Michaels Church	-	Waters Upton	Site lies fully in Flood Zone 1	A drain runs along the southern boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
407	Land to the north of	Granville Road	Donnington Wood	Site lies fully in Flood Zone 1	A number of drains exist within the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
408	Car park off	Tan Bank	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
409	Land at	Heath Hill Roundabout	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
414	Land at Wheat Leasows	North Hadley Park / St Lukes Road	Wheat Leasows	Part of Hurley Brook assessment		
416	Land north east (Site 41)	Meadow View Road	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
419	Land off	Park Road	Malinslee	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
421	Land north of	Grove Road	Overdale	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
423	Land west	Bratton Road	Bratton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
424	Land off	Admaston Road/Donnerville Gardens	Wellington	Part of Hurley Tributary assessment		
425	Land south of	West Centre Way	Malinslee	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
426	Cottage Hospital	Haygate Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
428	Land north - edited (enlargened)	Hartshill Avenue	Oakengates	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
429	Land at Lightmoor, west	Burroughs Bank	Lightmoor	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
430	Land fronting south side	Water Lane	Newport	Site lies fully in Flood Zone 1	The River Strine lies to the north of the site, and while Flood Zones 2 and 3 do not encroach the site, Flood Zone 2 lies to the immediate north west of the site	Flood Zones produced using JFLOW - FRA should verify extents and levels. The River Strine's interaction with the disused section of the Newport Brach of the Shropshire Union Canal should also be assessed as part of the FRA.
431	Land at	High Street	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
432	Land north Bucks Head	Haybridge Road	Wellington	Part of Hurley Brook assessment		
433	Land north	Station Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
434	Land north	Walton Avenue	High Ercall	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
435	Land at Lawley Furnaces	Dawley Road/New Works Lane	Lawley	Site lies fully in Flood Zone 1	A number of drains flow through the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
436	Land north east	Pool Hill Road	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

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Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
437	Land at 9	Cow Wood	Red Lake	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
439	Land off	Audley Avenue	Newport	Site lies fully in Flood Zone 1	There is a drain running from south to north through the centre of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
440	Land adjoining Stafford St car-park - edited	Stafford Street	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
441	Land west of	Hadley Park Road	Hadley	Part of Hurley Brook assessment		
443	Land off	Eider Drive	Leegomery	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
444	Land off	Furnace Lane	Donnington	Site lies fully in Flood Zone 1	Flooding has been recorded within the site and has been attributed to Furnace Lane Brook (Upper) which appears to be culverted in the area.	Site which are located in Flood Zone 1 without recorded flood incidents should be developed in preference to this site. If development does go ahead, an FRA will be required to assess the local flood risk issues, especially possible culvert capacity issues.
445	Lawley Village Phase II (Site 51840)	Arleston Lane	Lawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
446	Land off	Muxton Lane	Muxton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
447	Land south	Saltwells Drive	Muxton	Site lies fully in Flood Zone 1	Drain runs through centre of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed Drain exits site through a long culvert, which may pose residual risk if culvert became blocked or collapsed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1 FRA should assess the residual risk posed from a blockage/collapse of the culvert and put forward mitigating measures for the development. The structural integrity of the culvert should also be assessed and any remedial work carried out prior to the development taking place
450	Land at Barnfield House	North east of M54 Junction 7	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
452	Land at	Bridgnorth Road	Madeley	Site lies fully in Flood Zone 1	Drain runs along eastern boundary. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
453	Parsons Barn, Aqualate Manor	Stafford Road (A518)	Newport	Site lies fully in Flood Zone 1	A drain runs from south to north along the western boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
454	Land at Arleston	Arleston Lane/Dawley Road	Arleston	Site lies fully in Flood Zone 1	Drain exists within the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
456	Land at Wrekin View Farm	Chetwynd End/Green Lane	Newport	Site lies almost entirely in Flood Zone 1, with the south east tip of the site falling in Flood Zones 2 and 3	The River Strine lies to the south of the site, though Flood Zones 2 and 3 only encroach the site slightly	Flood Zones 2 and 3 should remain as open space Flood Zones produced using JFLOW - FRA should verify extents and levels, as well as the interaction with the disused canal (Shropshire Union Canal - Newport Branch).
457	Plantation - 5	Back Lane/Plantation Fields	Tibberton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

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Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
459	Land adjoining	Limekiln Lane	Wellington	Site lies fully in Flood Zone 1	Drain flows south to north through the centre of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
460	Land at TCAT	Bennetts Bank	Wellington	Part of Hurley Brook assessment		
461	Site at	Lees Farm Road	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
462	Land off	Colliers Way	The Rock	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
463	Land off	Church Road	Snedshill	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
464	Land off (Phase 2)	Priorslee Road	Snedshill	Site lies fully in Flood Zone 1	Drain flows through site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
471	Land at Capewell Works	Sommerfeld Road	Trench Lock	Part of Crow Brook assessment		
472	Concrete works/former Audco site	Avenue Road	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
473	Land off	Reynards Meadow	Sutton Hill	Site lies fully in Flood Zone 1	Disused canal exists to the north and west of the site	FRA should assess the local drainage interaction with the disused canal, and the level of flood risk posed
474	Homelands Mobile Home Park & Ketley Industrial Estate	Mossey Green/Shrubbery Road	Ketley Bank	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
476	Land known as Wyre Croft	Shepherds Lane/Shrubbery Road	Red Lake	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
478	Kings Head Mobile Homes Park	Green Lane	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
481	Land at Vauxhall	Longford Road	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
482	Land east	Station Road	Lilleshall+Donngtn	Part of Wall Brook (also cited as Donnington Watercourse) assessment		
484	Depot Land	Red Lees	Ketley	Site lies fully in Flood Zone 1	Flooding has been recorded just outside the development site along Hutchinson Way, and has been attributed to fluvial sources. No watercourses can be identified in the area on the OS Tiles.	FRA should assess local flood risk issues
485	Land south of Beechfields Way	Beechfields Way	Newport	Site lies fully in Flood Zone 1	Strine Brook lies to the south east of the site, though Flood Zones 2 and 3 do not encroach the site A small drain flows from south to north along the eastern boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	Flood Zones produced using JFLOW - FRA should verify extents and levels, as well as the interaction with the disused canal (Shropshire Union Canal - Newport Branch). For the drain, a development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m)
486	Land east of railway, adjacent to Cheshire Cheese Pub	St Lukes Road	Doseley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
487	Land at Adamaston Farm east Bratton Road	Bratton Road	Shawbirch	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
488	Land off	Colliers Way	Old Park	Site lies fully in Flood Zone 1	Numerous drains exist within the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
490	Land South of Woodlands Farm	-	Lightmoor	Site lies fully in Flood Zone 1	Drain follows western boundary of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
491	Land at Johnstons Pipes/East of Lightmoor	Frame Lane	Lightmoor	Site lies fully in Flood Zone 1	Drain exists at southern tip of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
492	Land at Lightmoor, south	Lightmoor Road	Lightmoor	Site lies fully in Flood Zone 1	Tributary of Loamwhole Brook lies to the east of the site, though Flood Zones 2 and 3 do not encroach the site.	Flood Zones 2 and 3 produced using JFLOW - FRA should verify extents and levels.
493	Land off	Hadley Park Road	Hadley	Part of Hurley Brook assessment		
494	Land at Barnfield House north east	M54 Junction 7	Cluddley	Site lies fully in Flood Zone 1	Drain runs through western side of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
499	Land off	The Crest	Old Park	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
500	Maxwell Expansion Land between	Whitchurch Drive/Queensway	Shawbirch	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
501	Paddock Mount/Town Park	Hinkshay Road	Dawley	Site lies fully in Flood Zone 1	Drain exists at north eastern corner of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
502	Land at - edited (adjacent 371)	Shepherds Lane/ Mossey Green	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
504	Land at Donnington Farm - edited (edge of 144)	New Trench Road	Donnington	Part of Wall Brook (also cited as Donnington Watercourse) assessment		
505	Land at Moor Farm (residual of sites 564 and 567)	Bratton Road	Admaston	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
506	Land at Apley Home Farm	Apley Castle	Leegomery	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
507	Land at Barnfield Farm	Holyhead Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
508	Land at 'The Humbers' north	New Trench Road	Donnington	Part of Wall Brook (also cited as Donnington Watercourse) assessment		
509	Land off	Mill Lane	Tibberton	Site lies mainly in Flood Zone 1 but is affected by Flood Zones 2 and 3 to the north of the site	The River Meese lies to the north of the site. Flood Zones 2 and 3 encroach the site.	Flood Zones produced using JFLOW - FRA should verify extents and levels. If Flood Zones 2 and 3 are shown to affect the site then these should be left as open space. If this is not possible, sites fully in lower risk Flood Zones (i.e. Flood Zone 1) should be considered in preference to this site. Only if the Sequential Test is carried out and the need to carry out the Exception Test is identified (in accordance with Table D3 of PPS25) should the site be developed in accordance with Table D3 of PPS25.

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
510	Land at transport depot - edited (edge of 491)	Holywell Lane	Doseley	Site lies fully in Flood Zone 1	Drain lies to the east of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
511	Land north west	Station Road	Admaston	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
512	Land at	195 Holyhead Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
513	Land off	Shepherds Lane	Red Lake	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
514	Madeley Academy	Parkway	Madeley	Site lies fully in Flood Zone 1	Drain borders the north west boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
516	Land to rear Wrekin View	-	Tibberton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
517	Land at Bratton Hall Farm off	BrattonRoad	Bratton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
518	Land off A442 - edited	A442 Queensway	Wappenshall	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
519	Land at Eyton upon the Weald Moors	-	Eyton on Weald Moors	Part of Hurley Brook assessment		
520	Gateway site to the south of Newport, rear of	Wallshead Way	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
522	Land at Mossey Green	Waterloo Road	Hadley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
523	Sunny Croft	Shrewsbury Road	High Ercall	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
524	Land adjacent The Garage House	Wellington Road	Donnington	Site lies fully in Flood Zone 1	Drain lies along southern boundary of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
525	Land at 88-102 Potters Bank	Holyhead Road	Red Lake	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
526	Land at Southwater South	St. Quentin Gate	Telford Town Centre	Site lies fully in Flood Zone 1	Drain lies at the south eastern tip of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
527	Land at The Ley	Balls Hill	Heath Hill	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
528	Land at The White Horse PH	Balls Hill	Heath Hill	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
530	The Swan Hotel - edited	Watling Street	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
531	Cherry Tree Hill - edited	St. Marys Street	Newport	Site lies substantially in Flood Zone 1, but is affected on the southern side by Flood Zones 2 and 3	A tributary of Loamhole brook flows to the south of the site. Flood Zones 2 and 3 encroach site.	Flood Zones 2 and 3 should remain as open space Flood Zones produced using JFLOW - FRA should verify extents and levels
532	Plough Farm Nursery, Newport - edited	Forton Road/Plough Lane	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
536	Land off adj. 176	Haygate Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
539	Land at Riverside Coaches/Shropshire Pine Co. - edited	Heath Hill	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
541	Land at Lawley Furnaces	Dawley Road	Lawley	Site lies fully in Flood Zone 1	Ketley Brook runs from south to north through the centre of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
542	Land at Redhill Claypit/Wrockwardine Wood	Rookery Road	Donnington Wood	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
543	Land at Redhill Claypit/Wrockwardine Wood	Frome Way	Donnington Wood	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
544	Land off New Road	New Road	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
548	Land adjacent to Arleston Manor - edited	Arleston Lane	Arleston	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
549	Ketley Business Park	Waterloo Road	Ketley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
552	Land at	Sutherland Farm	Tibberton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
555	Centre of Newport, Water Lane - edited	St Marys Street	Newport	Site lies fully in Flood Zone 1	The River Strine lies to the north of the site, and while Flood Zones 2 and 3 do not encroach the site, both lie immediately north of the site	Flood Zones produced using JFLOW - FRA should verify extents and levels. The River Strine's interaction with the disused section of the Newport Brach of the Shropshire Union Canal should also be assessed as part of the FRA.
556	Land off - edited	Newcomen Way	Woodside	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
558	Land between	Park Street / South Drive	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
559	Land between Roberts Road/Madeley Road/Harris's Way, Madeley - edited	Whitchurch Drive	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
560	Land at Woodside Primary School and Nursery	Mound Way/Ironbridge Road, Madeley	Madeley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
562	Former EverReady site	Hinkshay Road	Dawley	Site lies fully in Flood Zone 1	Drain flows through centre of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
563	Land south Moor House Farm	Cheshire Coppice Lane	Bratton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
564	Land east Moor Farm	Bratton Road	Telford	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
565	MOD Donnington	Humber Lane	Donnington	Site lies substantially in Flood Zone 1, but is affected along the eastern side by Flood Zones 2 and 3	Humber Brook flows from south to north along the eastern side of the site. Flood Zones 2 and 3 encroach parts of the eastern side of the site, particularly the northern tip. Flood Zones are misaligned from the channel in some places.	Flood Zones 2 and 3 should remain as open space Flood Zones produced using JFLOW - FRA should verify extents and levels
567	Land at Moor House Farm, to rear	Brattton Road	Bratton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
569	Land at Lawley Furnaces (Lawley Village North - Phase IV)	Dawley Road	Lawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
570	Land at Lawley Furnaces New Works Farm	New Works Lane	Lawley	Site lies fully in Flood Zone 1	A small section of a drain exists to the north of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
571	Land at Johnstons Pipes/East of Lightmoor, east	Burroughs Bank	Lightmoor	Site lies substantially in Flood Zone 1 but is affected on parts of its eastern side by Flood Zones 2 and 3	Site lies to the west of a tributary of Loamhole Brook. Flood Zones 2 and 3 encroach parts of the eastern side of the site. Fluvial flooding has also been recorded within the Zone 1 area of the site. Flood Zones appear mis-aligned and do not take the presence of the culvert into account.	Flood Zones 2 and 3 should remain as open space Flood Zones produced using JFLOW - FRA should verify extents and levels
574	Hollies Farm	The Hollies Cherrington Road	Tibberton	Site lies substantially in Flood Zone 1 but is affected on the northern side by Flood Zones 2 and 3.	The River Meese flows from west to east along the northern boundary of the site. Flood Zones 2 and 3 encroach the site here.	Flood Zones 2 and 3 should remain as open space Flood Zones produced using JFLOW - FRA should verify extents and levels
576	Land at Johnstons Pipes/East of Lightmoor (adj. transport depot)	Holywell Lane	Lightmoor	Site lies fully in Flood Zone 1	A tributary of the Loamhole Brook lies immediately west of the site and Flood Zones 2 and 3 lie immediately south west of the site.	Flood Zones 2 and 3 should remain as open space Flood Zones produced using JFLOW - FRA should verify extents and levels
577	Land at Johnstons Pipes/East of Lightmoor	Woodlands Lane	Lightmoor	Site lies substantially in Flood Zone 1, but is affected on its eastern boundary by Flood Zones 2 and 3.	A tributary of the Loamhole Brook lies immediately east of the site and Flood Zones 2 and 3 affect the eastern boundary.	Flood Zones 2 and 3 should remain as open space Flood Zones produced using JFLOW - FRA should verify extents and levels
578	Land off (adjacent site 576)	Holywell Lane	Lightmoor	Site lies mainly in Flood Zone 1, but is affected on its western boundary by Flood Zones 2 and 3. Flood Zones 2 and 3 are of poor resolution in this location.	A tributary of the Loamhole Brook lies immediately west of the site and Flood Zones 2 and 3 affect part of the south western end of the site. The watercourse follows the north eastern boundary of the site, but the Flood Zone information is mis-aligned in this area and the flood risk is not accurately depicted.	Flood Zones produced using JFLOW - An FRA should be carried out to verify the extent and levels of Flood Zone 2. This might show that the site is more affected by Flood Zones 2 and 3 than currently depicted. Flood Zones 2 and 3 should be left as open space. If this is not possible, sites fully in lower risk Flood Zones (i.e. Flood Zone 1) should be considered in preference to this site. Only if the Sequential Test is carried out and the need to carry out the Exception Test is identified (in accordance with Table D3 of PPS25) should the site be developed in accordance with Table D3 of PPS25.
580	Land at (Plantation - 1)	Back Lane/Plantation Fields	Tibberton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
581	Land at (Plantation - 2)	Back Lane/Plantation Fields	Tibberton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
582	Land at (Plantation - 3)	Back Lane/Plantation Fields	Tibberton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
583	Land at (corner plot)	Back Lane/Plantation Fields	Tibberton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
587	Land off Lightmoor Road	Lightmoor Road/Burroughs Bank	Lightmoor	Site lies substantially in Flood Zones 2 and 3	A tributary of the Loamhole Brook is culverted through the entire site. The effect of the culvert has not been modelled and Flood Zones 2 and 3 are shown to affect the entire site.	Building over exiting culverts should be discouraged. As part of the development of the surrounding area, developers should seek to restore the natural watercourse. Therefore sites in lower risk Flood Zones should be developed in preference to this site. Only if the Sequential Test is carried out and the need to carry out the Exception Test is identified (in accordance with Table D3 of PPS25) should the site be developed in accordance with Table D3 of PPS25.
588	Former Johnstone Pipes expansion land, nr.	Wellington Road	Lightmoor	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
589	Land east	Maynards Croft	Newport	Site lies fully in Flood Zone 1	A disused canal (Shropshire Union Canal - Newport Branch) lies just outside the northern boundary of the site. Beyond this lies Strine Brook. Flood zones 2 and 3 do not affect the site.	Flood Zones produced using JFLOW - FRA should verify extents and levels, as well as the interaction with the disused canal (Shropshire Union Canal - Newport Branch).
590	Car park at Webb House	King Street	Dawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
591	Land north (opp. Community Centre) Lawley Village North - Phase III	Glendale	Lawley	Site lies fully in Flood Zone 1	Ketley Brook runs from south to north outside the western boundary of the site. No Flood Zone information exists in this area, but in reality some degree of risk will be posed.	An FRA should assess the risk posed to the site from Ketley Brook - extents and levels of Flood Zones 2 and 3 should be defined. If Flood Zones 2 and 3 are shown to affect the site, these should remain as open space.
592	Land East of St John's Church	Highfield	Lawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
593	Land at	Dawley Road/New Works Lane	Arleston	Site lies fully in Flood Zone 1	Ketley Brook runs from south to north outside the eastern boundary of the site. No Flood Zone information exists in this area, but in reality some degree of risk will be posed.	An FRA should assess the risk posed to the site from Ketley Brook - extents and levels of Flood Zones 2 and 3 should be defined. If Flood Zones 2 and 3 are shown to affect the site, these should remain as open space.
595	Farm land north of Admaston Village	Coppice Lane	Bratton	Site lies fully in Flood Zone 1	A small section of a drain exists to the north of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
596	Land at The Vicarage	Church Walk	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
597	Land at	Audley Avenue	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
601	Land at Muxton Lane, Muxton	Muxton Lane	Muxton	Site lies fully in Flood Zone 1	A drain flows through the centre of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
602	Land south east (adj. railway)	Lightmoor Road	Lightmoor	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
603	Land adjacent to The Beeches Hospital	Lincoln Hill	The Gorge	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
604	Land west (Priorslee F)	York Road	Priorslee	Site lies fully in Flood Zone 1	A drain lies just outside the western boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
605	The Hem Phase I	Hem Lane	Nedge Hill	Part of Wesley Brook Tributary assessment		
606	South Nedge - residual site	Hem Lane	Nedge Hill	Part of Wesley Brook Tributary assessment		
607	The Hem Phase IV	Hem Lane	Nedge Hill	Part of Wesley Brook Tributary assessment		
608	The Hem Phase III	Hem Lane	Nedge Hill	Part of Wesley Brook Tributary assessment		
609	Land north west	off Wappenshall Lane	Hadley	Part of Hurley Brook assessment		
610	Land off	Wappenshall Lane	Wappenshall	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
611	Racecourse Site	Wappenshall Lane	Wappenshall	Part of Hurley Brook assessment		
612	The Hem Phase II	Hem Lane	Nedge Hill	Part of Wesley Brook Tributary assessment		
612	Land adj. Brook Cottage Plot A - Arleston	Arleston Lane	Arleston	Site lies fully in Flood Zone 1	Ketley Brook lies along the eastern boundary of the site. No Flood Zone information exists in this area, though in reality some degree of risk is posed. The watercourse flows beneath the Ketley Dingle Interchange at the north eastern part of the site.	An FRA should assess the risk posed to the site from Ketley Brook - extents and levels of Flood Zones 2 and 3 should be defined. If Flood Zones 2 and 3 are shown to affect the site, these should remain as open space. The nature of the passage of the watercourse beneath the interchange should be assessed. The potential for any blockage should be assessed as well as the resultant residual risk areas on the site.
613	Lawley Village West - Phase II to rear	Glendale Gardens	Lawley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
614	Land off	Peregrine Way	Apley	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
615	Land off	Wrockwardine Wood Way/Kenwray Drive	Donnington Wood	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
617	Land north	Plough Lane	Newport	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
621	Land adjacent to 44 Cherrington Road	Cherrington Road	Tibberton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
622	Land to rear 44	Back Lane	Tibberton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
628	Land adjoining	Haygate Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
629	Land north (adj. Cemetery Lodge)	Beech Road	Ironbridge	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
630	Land off Merrington Road	Merrington Road	Lilleshall and Donngtn	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
631	Land north/west	Beech Road	Ironbridge	Site lies fully in Flood Zone 1	A drain lies to the north of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
632	Land north/east	Beech Road	Ironbridge	Site lies fully in Flood Zone 1	A drain lies to the east of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
633	Land south Village Hall	-	Waters Upton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
634	Land south St Michaels Church/White House Farm	-	Waters Upton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
635	Land east White House Farm	-	Waters Upton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
636	Land east of Hanford Terrace	Catbritch Lane	Waters Upton	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
637	Land to rear of 9	Bratton Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
638	Telford Town Centre	Woodhouse/Lawn/Grange/ Coach Central	Telford	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Level 2 SFRA Site Assessment
Potential Housing Sites

Site ID	SHLAA Site	SHLAA Name	SHLAA LOCAL	Site Description	Local Site Issues?	Recommendations
639	Land off (owned by T&WC)	Limekiln Lane/M54	Arleston Brook	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
648	Newdale primary School	Marlborough Way	Overdale	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
656	St Patricks Primary School	North Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1
658	Land north of Redhill	Watling Street/Redhill Way	St George's	Site lies fully in Flood Zone 1	Drain lies to north of site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m) Follow guidance for development in Flood Zone 1
660	Land at Highfield House	Wrekin Road	Wellington	Site lies fully in Flood Zone 1	None	Follow guidance for development in Flood Zone 1

Potential Employment, Education, Health and Mixed Use Sites

Ref	Also (Housing)	ADB_NUMBER	FULL_REF	Site Name	Appendix A	Appendix B
EMP8-POR		60010	TF60060010	Halesfield (land north Siemens Halesfield 1)	-	Page 15
EMP8-POR		60050	TF60060050	Halesfield (Plot 9 Halesfield 24 (N Quest))	-	Page 15
EMP8-POR		60060	TF60060060	Halesfield (land east Quest Petroleum HA23)	-	Page 16
EMP8-POR		60090	TF60060090	Halesfield (Halesfield 23)	-	Page 17
EMP8-POR		60200	TF60060200	Halesfield (Plot 1 Halesfield 18)	-	Page 17
EMP8-POR		60220	TF60060220	Halesfield (Halesfield 17)	-	Page 18
452-SHLAA		60301		Land off Kemberton Road/Kemberton Drive (EP 05.08)	Page 24	-
385-SHLAA	385	60470	TF60060470	Land between Lightmoor Rd/A4169 Lightmoor (EP)	Page 24	-
588-SHLAA	588	60520	TF60060520	Former Johnstone Pipes expansion land	Page 24	-
CTAAP14-POR	425	60820		Park Road, Malinslee	Page 24	-
CTAAP6-POR	323	60850	TF60060850	Old Park West	Page 24	-
CTAAP8-POR	Part of 389	60864	TF60060864	Central Old Park	Page 24	-
96-SHLAA	96	60960	TF60060960	Car park west of County Courts-Telford Town Centre	Page 24	-
EMP7-POR	Part of 379	61290	TF60061290	Nedge Hill 1 (Mitac - Expansion Land)	Page 24	-
EMP7-POR	Part of 379	61300	TF60061300	Nedge Hill 2	Page 24	-
EMP7-POR	Part of 379	61310	TF60061310	Nede Hill 3	Page 24	-
EMP7-POR	Part of 379	61320	TF60061320	Nedge Hill 5	Page 24	-
EMP7-POR	Part of 379	61330	TF60061330	Nedge Hill 4	Page 24	-
EMP7-POR	Part of 379	61360	TF60061360	Nedge Hill 6 - East	Page 25	-
EMP5-POR	Part of 407	61540	TF60061540	Donnington Wood Campus - Site 2 (Granville Road)	Page 25	-
EMP5-POR	Part of 407	61560	TF60061560	Donnington Wood Campus - Site 1	Page 25	-
EMP6-POR	No	61650	TF60061650	Donnington Wood Business Park - Site 1	Page 25	-
EMP6-POR	No	61700	TF60061700	Donnington Wood Business Park - Site 2	Page 25	-
EMP4-POR	No	61900	TF60061900	Hortonwood 35 - Plot 8	-	Page 10
EMP4-POR	No	61950	TF60061950	Hortonwood - Hortonwood 40	-	Page 10
EMP4-POR	No	62000		Hortonwood 1	-	Page 10
EMP4-POR	No	62060	TF60062060	Hortonwood - Plot 6 & 7 Hortonwood 60	-	Page 10
EMP4-POR	No	62070	TF60062070	Hortonwood - Plot 1 Hortonwood 65	-	Page 10
EMP4-POR	No	62090	TF60062090	Hortonwood - Plot 2 Hortonwood 66	-	Page 11
EMP4-POR	No	62200	TF60062200	Hortonwood - Site E (Horton Lane)	-	Page 11
EMP4-POR	No	62200	TF60062200	Hortonwood - Site D (Horton Lane)	-	Page 11
EMP4-POR	No	62200	TF60062200	Hortonwood - Site B (Horton Lane)	-	Page 11
EMP3-POR	No	62300		Hadley Park East (aware some devt. on site 06.08)	-	Page 11
EMP3-POR	No	62300	TF60062300	Hadley Park East - A Ph2 (aw devt. @front 06.08)	-	Page 11
EMP3-POR	No	62310	TF60062310	Hadley Park East - B	-	Page 11
EMP3-POR	No	62321	TF60062321	Plot C2 Hadley Park East	-	Page 11
EMP3-POR	No	62330	TF60062330	Hadley Park East - D	-	Page 11
EMP3-POR	No	62340	TF60062340	Hadley Park East - E	-	Page 12
EMP2-POR	382	62360	TF60062360	Hadley Park West	-	Page 8
EMP1-POR	153	62650	TF60062650	Shawbirch (East Campus)	Page 26	-
122-SHLAA	No	62670	TF60062670	Site 5B Halesfield 9	Page 26	-
EMP3-POR	No	62680	TF60062680	Hadley Park East - Plot C3	Page 26	-
EMP9-POR	No			Audley Avenue - Newport 1	Page 26	-
EMP8-POR	No			Halesfield (Halesfield 24)	-	Page 18
EMP9-POR	No			Audley Avenue - Newport 1	Page 26	-
CTAAP2-POR	324			Malinslee Link	Page 26	-
CTAAP10-POR	Part of 387	61200	TF60061200	Telford Way	Page 26	-
CTAAP9-POR	Part of 387			Central Park Core	Page 26	-
CTAAP1-POR	326, 638, 256			Southwater	Page 26	-
CTAAP4-POR	No			Euston Way Park and Rail/Walk	Page 26	-
CTAAP3-POR	325	61100	TF60061100	Rampart Way	Page 26	-
CTAAP5-POR	Part of 95	60950	TF60060950	Hall Car Park	Page 26	-
638-SHLAA	638			Telford Town Centre (part Southwater)	Page 26	-
141-SHLAA	No		E01155/002	Land to south of Stirchley Road (Brookfield)	-	Page 18
100-SHLAA	No		83070	Land off Horton Road, Trench	-	Page 12
383-SHLAA	No		61900	Land adjacent Oakland House, Hortonwood	-	Page 12
432-SHLAA	432		53devs2004	Land off Haybridge Road, Wellington	-	Page 9
192-SHLAA	192		W47	East of Wrekin College (West Whitchurch Drive)	-	Page 9
471-SHLAA	471			Capewell Works, Trench Lock	-	Page 12
138-SHLAA	138		E01814/001	Sinclair Works, south of Holyhead Road	-	Page 9
117-SHLAA	117		E01953/002	Lord Silkin School/Three Oaks Primary School, Stir	-	Page 19
501-SHLAA	501		E1953/001	Paddock Mount, Dawley	Page 27	-
140-SHLAA	No			Oakengates Leisure Centre	Page 27	-
EDTN1	No			Land at Blessed Robert Johnson Catholic College	Page 27	-
EDTN2	No			Land at Abraham Darby School	Page 27	-
113-SHLAA	No			Land north Watling Street Grange	Page 27	-
597-SHLAA	597			Land at Audley Avenue, Newport	Page 27	-
439-SHLAA	439			Land off Audley Avenue, Newport	Page 27	-
124-SHLAA	No			Harper Adams University College, Edgmond	Page 27	-
616-SHLAA	No			Land east of Station Court, Newport	Page 27	-
411-SHLAA	No			Land at Princess Royal Hospital, Leegomery	Page 27	-
491-SHLAA	491			Johnston Pipes, Doseley	Page 27	-
331-SHLAA	No			Area north of Allscott Inn	Page 27	-
541-SHLAA	541			Land at Lawley Furnaces	Page 27	-
435-SHLAA	Part of 435			Land west of Dawley Road	Page 27	-
588-SHLAA	588	60520	TF60060520	Former Johnstone Pipes expansion land	Page 27	-
449-SHLAA	No			Land off Hadley Park Roundabout, Hadley	Page 27	-
597-SHLAA	597			Land off Station Road, Newport	Page 28	-
352-SHLAA	352			Site 34, Land at Chetwynd End, Newport	Page 28	-

Potential Cemetery Sites

ID	Also	SITE_ADD	Appendix A	Appendix B
1	Housing sites 605, 612 and part of 229	Land north Halesfield 1, Halesfield/Nedgehill (EP)	-	Page 16
2	Employment site EMP8-POR (Halesfield 24)	Land west of Heslop, Halesfield	-	Page 19
3	Housing site 395	Land at Donnerville Close, Wellington	-	Page 3
4	-	Land at Moor Farm, Lightmoor	Page 29	-

Level 2 SFRA Site Assessment
Potential Cemetery Sites

ID	Also	SITE_ADD	Site Description	Local Site Issues?	Recommendations
1	Housing sites 605, 612 and part of 229	Land north Halesfield 1, Halesfield/Nedgehill (EP)	Part of Wesley Brook Tributary assessment		
2	Employment site EMP8-POR (Halesfield 24)	Land west of Heslop, Halesfield	Part of Mad Brook assessment		
3	Housing site 395	Land at Donnerville Close, Wellington	Part of Hurley Tributary assessment		
4	-	Land at Moor Farm, Lightmoor	Site lies fully in Flood Zone 1	A drain exists along the western boundary of the site. No Flood Zones have been produced for this watercourse, though in reality, some risk will be posed	This site would be suitable as a cemetery (on flood risk grounds) but Environment Agency requirements are as follows: It is recommended that a suitable grave should: ● be located more than 10m from standing/running water and more than 50m from a well, borehole or spring supplying potable water for human consumption; ● have no standing water at the bottom when it is first dug ● not be dug in very sandy soil; ● be deep enough to prevent foraging animals from disturbing the body.

Level 2 SFRA Site Assessment
Potential Sites along Hurley Brook Tributary

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
16	Bratton Farm	B5063	Wellington	Site is approximately 65% in Flood Zone 1. Affected on the south western and western side by Flood Zones 2, 3a and 3b.	Depths are generally quite shallow for most of the affected areas (<30cm) though in some localised points the depths range up to 80cm. For each return period depth increases by around 10cm and there are minor differences between the 100 year and climate change events.	Velocities are generally in the order of up to 50m/s for the 20 year event and for each return period this increases by around 10m/s. The difference in velocity is not significant between the 100 year and 100 year plus climate change events. The localised deep areas generally coincide with areas of higher velocity, >1.5m/s.	The flood hazard is generally around the 'danger for most category', though produces a larger 'danger for all' area for 1000 year event. The hazard is not significantly different between the 100 year and 100 year plus climate change scenarios.	n/a	The extent and nature of Flood Zones 3b, 3a and 2 is very similar and the site is generally not susceptible to a major change in flood risk for the climate change event. This site is suitable for development provided that Flood Zones 3b, 3a and 2 remain as undeveloped open space, and if it can be demonstrated that there are no available sites fully in Flood Zone 1. The uniform nature of flood risk between zones 3b, 3a and 2 and the general 'danger for most' flood hazard largely inhibits development within any one of these zones. The recommendations for development in Flood Zone 1 should be followed, with the most vulnerable parts of the development directed towards the eastern side of the site.
68	Land at	Crowdale Road	Bratton	Site is affected almost entirely by Flood Zone 3b. Flood Zones 3a and 2 affect almost the rest of the site.	Depths are typically in excess of 1m, particularly to the north and east of the site, typically increasing by around 10cm for each event. Centre part of site is relatively shallower but still deep (up to 90cm for 20 year).	The velocity of water is relatively slow, generally around 0.2m/s for the 20 year event and increasing to around 50m/s for the 1000 year event. At the southern end of the site there is a significant rise in depth from the 100 year (0.2m/s) to 100 year plus climate change (1.5m/s) event.	For all events the prevalent hazard classification is 'danger for most'.	n/a	The flood hazard, for all return periods, is too high to enable reasonable and adequate mitigation measures. This site should not be developed and alternative sites in lower risk areas should be developed in preference.
81	Land off	Wrockwardine Road	Wellington	Site lies mainly in Flood Zone 1 but is affected on the south eastern tip by Flood Zones 3a, 3a plus climate change and 2. The western side of the access road, Wrockwardine Road, is flooded from all modelled return periods.	The range of depths across all return periods is shallow.	Velocities are very slow; <0.1m/s	The flood hazard is generally 'danger for some' though at the far eastern side the hazard is greater.	n/a	Depths of flooding on the road are up to 1m (but the hazard is low), therefore access/exit will be difficult for some vehicles here (but access/exit to the east is clear). The site is suitable for development provided the flood affected areas remain as open space.
179	Land west, adj. railway	Wellington Road	Admaston	Site lies fully in Flood Zone 1. The railway line to the south of the site is acting as a retaining structure for flood flows from the Hurley Brook Tributary. Drain exist to south of site.	n/a	n/a	n/a	n/a	This assessment has assumed that there are no gaps in the railway line which would allow the passage of flood water on to the site. This should be investigated prior to the identification of this site for development. The FRA for this site will need to investigate the ability of the railway line to hold back water (see para 7.16 of the PPS25 Practice Guide (2006)) and may require breach analysis.
181	Land east, rear	Wellington Road. Donnerville Gardens	Admaston	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
182	Land west , opposite	Wellington Road, Donnerville Gardens	Admaston	Site lies fully in Flood Zone 1. Drain exists along northern boundary.	n/a	n/a	n/a	n/a	A development easement from the top of the banks of the drain and the Hurley Brook Tributary should be negotiated with the EA (typically 8m). Follow requirements for development in Flood Zone 1.
183	Land south/east	Shawbirch Road/Admaston Spa	Shawbirch	Site is almost entirely in Flood Zone 1, affected marginally by Flood Zones 3b, 3a and 2 from Hurley Trib (the extent of these events is almost the same in this area). For the 1000 year event, flood water from Hurley Brook finds its way to the drain on the eastern side of the site and encroaches a small area.	Negligible impact on site from Hurley Tributary. Depth of 1000 year event along drain is very shallow, 10-20cm	Negligible impact on site from Hurley Tributary. The maximum depth of 1000 year event along drain is 1.5m/s but generally the water is quite slow.	Negligible hazard on site from Hurley Tributary. Hazard along drain for 1000 year event is low, 'danger for some'.	Part of this site is affected along the eastern edge by flooding from the Hurley Brook when a blockage scenario is run. The extent of flooding is slightly less than the 1000 year event confirming the recommendation to leave the affected part of the site as open space. The depth of flooding within the affected area is shallow (<30cm) and velocities are slow, typically <0.5m/s. The flood hazard is low, with 'danger for some.'	A development easement from the top of the banks of the drain and the Hurley Brook Tributary should be negotiated with the EA (typically 8m). The north eastern corner of the site (affected during the 1000 year event) should ideally be left as open space. This area could be developed for housing if it can be demonstrated that there are no other sites fully in Flood Zone 1, given the low probability and flood hazard, though the housing in this area would need appropriate raised floors (see recommendations for development in Flood Zone 2). Follow requirements for development in Flood Zone 1.

Level 2 SFRA Site Assessment
Potential Sites along Hurley Brook Tributary

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
184	Land east/south	Wellington Road/Spa Crescent	Admaston	Site lies almost entirely in Flood Zone 1, with negligible parts of the eastern edge of site falling in Flood Zones 2, 3a and 3b (the extent of these events is almost the same in this area). Drain exists along southern boundary.	Negligible impact on site	Negligible impact on site	Negligible hazard on site	n/a	A development easement from the top of the banks of the drain and the Hurley Brook Tributary should be negotiated with the EA (typically 8m). Follow requirements for development in Flood Zone 1.
380	Land west/north	Brandon Avenue/Shwbirch Road	Shawbirch	Site lies fully in Flood Zone 1	N/A	N/A	N/A	n/a	Follow requirements for development in Flood Zone 1.
381	Land east	Brandon Avenue	Shawbirch	Over 50% of site is affected by Flood Zone 3b. Flood Zones 3a and 2 affect most of site, with only the part of the site which protrudes to the west falling in Flood Zone 1.	Significant depths occur at the north eastern end of the site (>2m) which generally increase by around 10cm for each event. Depths are generally shallower at the centre of the site (up to 30cm).	The north eastern part of the site is slow, only with general velocities of up to 0.1m/s for all events. The southern half of the site has comparatively very fast water for each return period.	The prevalent hazard category affecting this site is 'danger for some' although for the higher return periods the hazard at the north of the site and along the eastern side is 'danger for all'. There is minimal difference between the 100 and 100 plus climate change events.	n/a	The hazard within Flood Zones 3b, 3a and 2 is generally high and the nature of the site means there are only small 'slithers' in Flood Zone 1 which could be developed. It is recommended that alternative sites are considered in preference to this one. The protruding part at the centre of the site could be developed as it lies in Flood Zone 1 (follow requirements for development in Zone 1), though the most vulnerable parts of the development should be located to the west.
395	Land west of Tee Lake	Donnerville Close	Wellington	Site lies mainly in Flood Zone 1 but is affected by flooding from Hurley Brook for the 1000 year event, along the eastern side of the site where the drain exists.	Flooding from the Hurley Brook 1000 year is generally shallow (10-20cm) but at the northern tip of the site is rather deeper (~90cm).	The velocity is generally 0.3-0.7m/s and only exceeds 1m/s in a few small areas.	The flood hazard is generally low, 'danger for some'.	Part of this site is affected along the eastern edge by flooding from the Hurley Brook when a blockage scenario is run. The extent of flooding is slightly less than the 1000 year event confirming the recommendation to leave the affected part of the site as open space. The depth of flooding within the affected area is shallow (<30cm) and velocities are slow, typically <0.5m/s. The flood hazard is low, with 'danger for some.'	The site is suitable for development provided the flood affected areas can be left as open space, which should be achievable given the size. Follow requirements for development in Flood Zone 1.
424	Land off	Admaston Road/Donnerville Gardens	Wellington	Site lies approximately 90% in Flood Zone 1, with Flood Zones 3b, 3a and 2 affecting site through the centre where the Hurley Tributary flows. There is very little difference between each return period.	There is very little difference between the depths for each return period and generally they are very shallow (<30cm). On the left bank, as the watercourse flows out of the site, the depths are rather deeper, up to 90cm.	There is very little difference in velocities between each return period. Velocities are closest near the channel (~0.4-0.9m/s) with peripheral areas up to 0.2m/s.	The flood hazard is generally low, 'danger for some', though for the 1000 year event the hazard is higher to the north of the watercourse as it leaves the site.	n/a	The site is suitable for development provided the flood affected areas can be left as open space, which should be achievable given the size. Follow requirements for development in Flood Zone 1.
656	St Patricks Primary School	North Road	Wellington	Site lies mainly in Flood Zone 1 but is affected on the south western corner by flooding from the 100 year plus climate change and 1000 year events from Hurley Brook.	Depths from the 1000 year are minimal, generally (10-20cm).	The south western corner has the fastest velocities; around 1m/s for the 100 year plus climate change event and 1.5m/s for the 1000 year event.	The hazard for both the 100 year plus climate change and 1000 year events is low, 'danger for some'.	The site is affected on the south western corner by the 100 year event when a blockage is applied to the culvert on the Hurley Brook. This reinforces the recommendation to leave the parts of the site affected by flooding as open space. The depth of flooding is shallow (<30cm) and velocities are generally <1.0m/s. The flood hazard is low, with 'danger for some.'	The south western corner of the site should ideally be left as open space. This area could be developed for housing if it can be demonstrated that there are no other sites fully in Flood Zone 1, given the low probability and flood hazard, though the housing in this area would need appropriate raised floors (see recommendations for development in Flood Zone 2). Follow requirements for development in Flood Zone 1.

Level 2 SFRA Site Assessment
Potential Sites along Hurley Brook Tributary

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
Cemetery Site 3	(Also part of site 395)		Land at Donnerville Close, Wellington	Site lies mainly in Flood Zone 1. The Hurley Tributary flows along the western boundary of the site and as such, is marginally affected by Flood Zones 2, 3a and 3b. The difference between the extent of the modelled Flood Zones, particularly between the 100 year and 100 year plus climate change events, are minimal.	Depths for all return periods are generally shallow.	Velocities for all return periods are quire fast, especially with close proximity to the channel.	The flood hazard for all return periods is generally low, meaning 'danger for some'.	n/a	The use of the site as a cemetery would only be appropriate if the flood-affected areas remain free of burials. Further, it is recommended that a suitable grave should: ● be located more than 10m from the edge of Flood Zone 2 and more than 50m from a well, borehole or spring supplying potable water for human consumption; ● have no standing water at the bottom when it is first dug ● not be dug in very sandy soil; ● be deep enough to prevent foraging animals from disturbing the body.

Level 2 SFRA Site Assessment
Potential Sites along Hurley Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
3	Rear of Swan Hotel	Watling Street	Wellington	Site is almost entirely in Flood Zone 1. A small part of the southern extent of the site lies in Flood Zones 3b, 3a and 2. This is a result of the surcharging of the culvert on the Hurley Brook upstream of Watling Street.	Negligible impact on site. Depth of 1000 year event is very shallow, typically <20cm	Velocities in the affected areas is generally slow (<0.5m/s) for the range of return periods. Towards the southern boundary of the site velocities increase to approximately 0.8m/s for the 100 year, 100 year plus climate change and 1000 year events.	The flood hazard is low, 'danger for some' in the affected area of the site.	There is little difference between the extent of flooding between the 1% AEP (1 in 100 year) event and the 1% AEP (1 in 100 year) with blockage. The difference in the depth and velocity of flooding and flood hazard to the site is also minimal between the modelled events.	The site is suitable for development provided the flood affected areas can be left as open space, which should be achievable given the size. Follow requirements for development in Flood Zone 1.
69	Land at	Okehampton Road	Hadley Castle	Site lies fully in Flood Zone 1. There are no watercourses running through the site.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
74	Land at Ketley Dingle	Whitchurch Drive	Ketley Brook	The Ketley Brook runs along the western edge of the site and the majority of the site lies within Flood Zones 3b, 3a and 2. There is very little difference in the extent of the Flood Zone maps at this site.	The depth of flooding across the site is typically greater than 2m. Depths increase by up to 3m between the range of return periods, with depths in excess of 9m within the area affected by Flood Zone 2.	Velocities across the site are generally slow (<0.5m/s) for the range of return periods, although parts of the site exhibit velocities greater than 2m/s.	Flood hazard across the majority of the site is extreme, with 'danger for all.'	There is little difference between the extent of flooding between the 1% AEP (1 in 100 year) event and the 1% AEP (1 in 100 year) with blockage. The difference in the depth and velocity of flooding and flood hazard to the site is also minimal between the modelled events.	The flood hazard for all return periods, is too high to enable reasonable and adequate mitigation measures. This site should not be developed and alternative sites in lower risk areas should be developed in preference.
93	Land off	Whitchurch Drive	Wellington	Site lies fully in Flood Zone 1. A drain runs along the western edge of the site.	n/a	n/a	n/a	n/a	A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m). Follow requirements for development in Flood Zone 1.
138	Land at Sinclair Works	Holyhead Rd / Whitchurch Drive	Ketley	Site is almost entirely within Flood Zone 1. A small part of the south western edge of the site is affected by Flood Zones 3b, 3a and 2. There is some residual risk from the Ketley Brook where it is culverted beneath the site. The modelled flood outlines do not extend as far into the site as the JFLOW outlines. A small ponded area is located in the north eastern corner of the site.	The depth of flooding in the affected area is typically greater than 0.5m with parts of the site affected by Flood Zone 2 showing depths of up to 0.7m. In general the depth increases by approximately 0.1 to 0.2m between the return periods.	Velocities across the affected part of the site are typically <0.5m/s with the highest velocities Flood Zone 2.	Flood hazard across the affected part of the site is significant to extreme, with 'danger for most.'	There is little difference between the extent of flooding between the 1% AEP (1 in 100 year) event and the 1% AEP (1 in 100 year) with blockage. The difference in the depth and velocity of flooding and flood hazard to the site is also minimal between the modelled events.	For the parts of the site affected by Flood Zones 3b, 3a and 2 the flood hazard is too high to enable reasonable and adequate mitigation measures. Development within this site should be directed towards Flood Zone 1 and the parts of the site shown to be affected should be left as open space. It is recommended that more vulnerable development be directed away from the part of the site affected by flooding and that the requirements for development in Flood Zone 1 are followed.
166	Station Car Park	The Parade	Wellington	Site lies fully in Flood Zone 1. Flood zones 3a and 2 are located towards the northern extent of the site but do not extend into the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
176	Market Car Park	Market Street	Wellington	Site lies fully in Flood Zone 1. Flood zones 3a and 2 are located towards the northern extent of the site but do not extend into the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
177	Tea Tree Car Park	Charlton Street	Wellington	Site lies fully in Flood Zone 1. Flood zones 3a and 2 are located towards the southern boundary of the site but do not extend into the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
189	Land off	Grainger Drive	Leegomery	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
190	Land off	Barnes Drive	Leegomery	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
191	Land off	Leegate Avenue	Leegomery	JFLOW flood outlines previously showed the site to lie entirely within Flood Zones 3a and 2. Modelled outlines produced as part of this Level 2 assessment show the site to lie entirely within Flood Zone 1 with no affect from Flood Zones 3a and 2.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.

Level 2 SFRA Site Assessment
Potential Sites along Hurley Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
192	Land east Wrekin College	Whitchurch Drive	Wellington	The site lies predominantly in Flood Zone 1, with Flood Zones 3a and 2 affecting part of the south eastern extent of the site. The majority of flooding to the site is a result of flood waters which flow overland as a result of the surcharging of the entry to the culvert along the western branch of the Hurley Brook at Forester Grove (SJ 6588 1092). At the railway, water from the higher flood events flows along the railway line in a westerly direction towards Wellington Junction, and then along the northern branch of the railway towards Haybridge. The railway itself is acting as a barrier to flow. The modelled flood outlines are slightly smaller than the previous JFLOW outlines. Two drains are located in the vicinity of the site. One is located along the western boundary, the other towards the eastern extent of the site. These drains are not thought to be hydraulically connected to the Hurley Brook culvert.	The depth of flooding across the affected area is generally shallow in the southern corner (<30cm), but gradually increases towards the northern boundary of the site. Upstream of the railway flood depths range between approximately 1.6 and 2.5m. The depths for the different flood events vary considerably, particularly between the 100 year plus climate change and the 1000 year where there are differences of approximately 1.5m.	Velocities across the majority of the affected area are generally slow (<0.5m/s) for the range of return periods. In the south eastern corner of the site velocities are faster with flows of up to 1.2m/s in Flood Zone 2.	The flood hazard across the affected area is low to moderate, 'danger for some' for Flood Zone 3a, increasing to moderate to significant, with 'Danger for most' for the 1000 year event.	With the culvert along the Hurley Brook by Forester Grove blocked, the extent of flooding to this site increases slightly for the 1% AEP (1 in 100 year) event to a similar extent as the 1% AEP (1 in 100 year) plus climate change event. The depth of flooding across the site is generally similar between the 1% AEP and the blockage scenario, with the exception of the area by the northern boundary where depths have increased by up to 90cm.	The eastern side of the site (Flood Zones 3a and 2) should ideally be left as open space as the flood hazard within Flood Zone 2 is moderate to significant for a large proportion of the affected area. If this can be achieved, the use of this site for housing would be suitable. A FRA should assess local flood risk issues and the residual risk from the railway line. A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m).
193	Land off	Giles Close	Arleston	Site lies almost entirely in Flood Zone 1. Some residual risk is evident at the site due to surcharging of the culvert upstream of Watling Street, with part of Flood Zone 2 extending into a section of the north western extent of the site. The Hurley Brook itself does not flow through the site.	Depth of flooding across affected parts of the site is shallow (<30cm).	Velocities across affected area are typically slow, <0.1m/s for the 1000 year event.	The flood hazard is low, 'danger for some' across the affected area.	n/a	The north western corner of the site (affected by the 1000 year event) should ideally be left as open space. Flood hazard within Flood Zone 2 is low, with only a small part of the development site affected. However, given the low flood hazard, the entire site could be developed for housing if it could be demonstrated that there are no other sites fully in Flood Zone 1 and the Sequential Test was passed, though the housing in this area would need appropriate raised floors (see recommendations for development in Flood Zone 2).
225	Hadley car park north	Britannia Way	Hadley	Site lies fully in Flood Zone 1. Flood Zone 2 is located along the northern boundary of the site although does not extend into the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. Development should be located away from the area where Flood Zones 3a and 2 are located close to the site boundary.
228	Land west	Margaret Court	Ketley	This site partly lies in a designated flood storage area. Approximately 50% of the site is affected by Flood Zones 3b, 3a and 2. The modelled flood outlines show a greater extent of flooding than the existing JFLOW outlines. The Ketley Brook flows along the western edge of the site in a northerly direction.	Flooding across the affected parts of the site is deep across the different return periods, typically ranging from 1.5 to 4.0m.	Velocities across the affected parts of the site are generally slow, rarely rising above 0.05m/s for the range of return periods.	The flood hazard is significant to extreme for the range of return periods, with 'danger for all.'	There is little difference between the extent of flooding between the 1% AEP (1 in 100 year) event and the 1% AEP (1 in 100 year) with blockage. The difference in the depth and velocity of flooding and flood hazard to the site is also minimal between the modelled events.	This site should not be developed given its encroachment into the flood storage area, which should continue to be maintained and operated as such (as it is providing flood mitigation to properties downstream). In addition, the flood hazard for all return periods, is too high to enable reasonable and adequate mitigation measures. It is recommended that alternative sites in lower risk areas are considered in preference to this site.
272	Morrisons Supermarket car park	Bridge Road	Wellington	The majority of the site lies within Flood Zone 1. A small part of the south western corner of the site is affected by Flood Zones 3a and 2 as a result of overland flow that follows the path of the railway from a surcharged culvert on the Hurley Brook.	The depth of flooding across the affected parts of the site is generally shallow (<30cm).	Velocities across the affected parts of the site are slow, typically <0.2m/s.	The flood hazard is low to moderate for the affected part of the site, with 'danger for some.'	The flood extent for the blockage scenario is slightly greater than for the 1% AEP (1 in 100 year) event. The depth of flooding is approximately 20cm greater for the blockage scenario event when compared with the 1% AEP (1 in 100 year) event. There is minimal difference in the velocity of flood water across the site. The overall flood hazard is similar to the 1% AEP event being 'danger for some.'	It is recommended the part of the site within Flood Zone 3a and 2 should be left as open space. However, the low flood hazard means this risk could be mitigated in the identified areas, and could be developed for housing if it could be demonstrated that there are no other available sites fully in Flood Zone 1, and the Sequential Test is passed. The recommendations for development in Flood Zone 1 should be followed, with the most vulnerable parts of the development directed towards Flood Zone 1.
278	Supermarket car park (Aldi)	Grooms Alley	Wellington	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.

Level 2 SFRA Site Assessment
Potential Sites along Hurley Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
290	Open Space adjacent	Grainger Drive	Hadley	The existing JFLOW generated Flood Zone maps showed the whole site to lie within both Flood Zones 3a and 2. Based on the updated modelled Flood Zone maps of this Level 2 SFRA, the majority of the site now lies within Flood Zone 1, with only a small part of the eastern extent of the site affected by Flood Zone 2. The flooding to this site is a consequence of overland flow from a culvert surcharged at an upstream location on the Hurley Brook. A drain exists on the north western extent of the site. This drain is not thought to be connected to the Hurley Brook culvert.	The depth of flooding across the affected area is shallow (typically <30cm). There are small localised areas where the depth of flooding increases to values up to 70cm.	Velocities across the affected area are generally slow (<0.5m/s) with the exception of a small localised part of the affected area where the velocities range between 0.5 and 0.9m/s.	Flood Zone 2 is shown to affect a small part of the eastern extent of the site. Flood hazard across the affected area is predominantly low, with 'danger for some.'	n/a	The majority of the site lies within Flood Zone 1. Only a small part of the site is affected by Flood Zone 2 which should be left as open space should the site be developed. Where the drain is located in the north western part of the site a development easement for development from the top of the bank should be negotiated with the EA (typically 8m). A FRA should assess local flood risk issues.
361	Land at Wappenshall, near	A442 Queensway	Hadley	The Hurley Brook flows through the centre of the site splitting it in two. Within the section of the site located on the right bank of the Hurley Brook, approximately half of the site is affected in some way by Flood Zones 3b, 3a and 2. There is very little difference in the extent of the Flood Zones in this part of the site. For the part of the site located on the left bank of the Hurley Brook, approximately one third is affected by Flood Zones 3b, 3a and 2. Here, the flood water spills from the left bank of the Hurley Brook upstream of the site as it passes along the eastern boundary. The flood water then takes a flow path through the site, before re-joining the Hurley Brook further downstream outside of the western boundary of the site. A road also runs perpendicular to the watercourse through the centre of the development site. The road is flooded at a number of locations from all modelled return periods. Access to part of the northern section of the site by Wappenshall Bridge is restricted by flood waters.	The depth of flooding across the affected area on both the left and right banks of the Hurley Brook is generally shallow (<30cm) with localised areas at greater depths (up to approximately 1m). The depth of flooding between the different return periods is approximately 10cm.	Velocities across the site are generally classified as slow (generally <0.6m/s). There is relatively little change in the velocities between the different return periods.	The flood hazard across the affected area within the site is generally low to moderate across the range of return periods, with 'danger for some.'	n/a	The Hurley Brook passes through the centre of the site and as such a large portion of the site on the right bank of the watercourse is located within Flood Zones 3b, 3a and 2. The road running perpendicular to the watercourse is flooded across the range of return periods with part of Flood Zone 1 becoming cut off. Only small areas of the site on the right bank lie within Flood Zone 1 and as such is recommended that this part of the site is not developed. Approximately 30% of the site on the left bank of the Hurley Brook is within Flood Zones 3b, 3a and 2, with very little difference in the extent of flooding for Flood Zones 3a and 2. It is recommended that the affected area on the left bank is left as open space. Only if it can be demonstrated that the Sequential Test has been carried out and the Exception Test (where required in accordance with Table D3 of PPS25) can be satisfied, should this site be developed in accordance with Table D3 of PPS25, where the most vulnerable elements of the development are placed in the lowest risk Flood Zone. Follow requirements for development in Flood Zone 1.
382	Land at Hadley Castle West	A442	Hadley	The previous JFLOW outlines showed a small part of the western part of the site to lie within Flood Zones 3a and 2. Updated modelled flood outlines show the site to lie fully within Flood Zone 1. Flood Zones 3b, 3a and 2 lie close to the north western boundary of the site although do not encroach on the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. It is recommended that more vulnerable development is directed away from the north western edge of the site as Flood Zones 3b, 3a and 2 extend close to the edge of the site.
414	Land at Wheat Leasowes	North Hadley Park / St Lukes Road	Wheat Leasowas	The site is split into three separate parts with the majority of the site lying within Flood Zone 1. The far western third of the site is affected by the Hurley Brook and part of the site furthest east by the Crow Brook. Flood Zones 3a and 2 extend into the western extent of the site for approximately 60m. There is very little difference in the extent of Flood Zones 3a and 2. The Shropshire Union Canal Trench Branch (disused) runs along the eastern boundary of the most western area of the site. Flood Zone 2 extends into the part of the site furthest east adjacent to the Crow Brook. Flood Zones 3b and 3a remain within bank, although the 1 in 100 year plus climate change event affects part of the site.	Depth of flooding across the site is generally shallow for most of the affected area along the western third of the site (typically <0.2m). In general the depth between the 100 year event with climate change and the 1000 year event is approximately 10cm. The depth of flooding within the eastern third of the site is generally <30cm within Flood Zone 2.	Velocities for the affected area along the western third of the site are generally slow to mid-range (0.2 to 0.6m/s) for Flood Zone 2. Within the eastern third of the site, the velocities across the affected areas within Flood Zone 2 tend to be slow to mid-range and are generally <0.9m/s.	The flood hazard is generally low through the affected parts of the site (both the western and eastern thirds) across the range of return periods, with 'danger for some.'	n/a	The majority of the site is located within Flood Zone 1, apart from the far western and eastern extents. The western third of the site is affected by Flood Zones 3a and 2 and there is very little difference in the extent of the flood outlines for Flood Zones 3a and 2, therefore it is recommended that this area is left as open space. This should be achievable given the size of the site. The eastern third of the site is affected by Flood Zone 2 and the 100 year plus climate change event, from the Crow Brook, which should also be left as open space.

Level 2 SFRA Site Assessment
Potential Sites along Hurley Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
432	Land north Bucks Head	Haybridge Road	Wellington	A large percentage of the site lies within Flood Zones 3a and 2. The culvert on the western arm of the Hurley Brook surcharges at the entry to the culvert by Forester Grove (SJ 6588 1092). Water then follows an overland flow path towards the railway embankment. The culvert itself emerges immediately upstream of the railway where modelling demonstrates sufficient culvert capacity to convey discharge from the culvert. Approximately 20m downstream, the watercourse enters another culvert, before flowing beneath the railway line. The flooding at the site is a result of surcharging at the upstream face of the first culvert and not due to insufficient capacity of the railway culvert; however, increasing the capacity of the railway culvert may help to alleviate some of the flooding. Modelling has also indicated that water flows in a westerly direction along the railway towards Wellington Junction, with flows at higher return periods also flowing along the northern branch of the railway towards Haybridge. The modelled flood outlines differ from the existing JFLOW showing a slightly smaller extent for Flood Zone 3a and 2, with additional localised sections affected by Flood Zones 3a and 2. Only a small sections of the northern and south western extents of the site are affected by Flood Zone 3b.	Depths are generally quite shallow for most of the affected area (typically <30cm), however, there are localised areas where the depth of flooding ranges between 0.6-1.0m for higher flood events. This is generally at the area upstream of the culvert beneath the railway and, the area on the south western edge of the site. In general the depths increase by approximately 30cm for the different flood events.	Velocities for the affected area towards the centre of the site range between 0.3m/s and 1.7m/s, with similar velocities for the 100 year climate change and the 1000 year event.	Flood hazard across the affected parts of the site is low to moderate, 'danger for some,' for the lower return periods (Flood Zone 3b and 3a). Between the 1 in 100 year plus climate change and 1 in 1000 year event the flood hazard is classified as significant for small isolated parts of the affected area, but generally remains as low to moderate, with 'danger for some.'	With the culvert along the Hurley Brook by Forester Grove blocked, the extent of flooding to this site increases slightly for the 1% AEP (1 in 100 year) event to a similar extent as the 1% AEP (1 in 100 year) plus climate change event. The depth of flooding across the site has generally increased by approximately 10cm between the modelled scenarios. Velocities across the majority of the site are similar between the modelled events, apart from through the centre of the site where velocities have increased in localised areas by over 1.0m/s. Flood hazard has generally remained the same as with 'danger for some.'	Large parts of the site are affected by Flood Zone 3a and 2, and as such, it is recommended that alternative sites are considered in preference to this one.
441	Land west of	Hadley Park Road	Hadley	Based on the previous JFLOW outlines this site was shown to lie fully within Flood Zones 3a and 2. The updated modelled Flood Zone maps show the site to lie fully in Flood Zone 1.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
443	Land off	Eider Drive	Leegomery	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
460	Land at TCAT	Bennetts Bank	Wellington	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
493	Land off	Hadley Park Road	Hadley	Based on the previous JFLOW outlines the majority of this site was shown to lie within Flood Zones 3a and 2. The updated modelled Flood Zone maps show the site to lie fully in Flood Zone 1.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
519	Land at Eyton upon the Weald Moors	-	Eyton on Weald Moors	Approximately 50% of the site lies within Flood Zone 1, with Flood Zone 3a and 2 located through the centre of the site; and, Flood Zone 3b extending through the eastern extent of the site. There is little difference between the extent of flooding shown by Flood Zones 3a and 2. The Hurley Brook itself does not flow through the site, however, it flows across the northern boundary of the site. Modelling has indicated that water spills from the left banks of the watercourse upstream of the site, and follows a flow route through the centre of the site.	Depths are generally quite shallow for most of the affected areas (<30cm) across the site. Towards the north western extent of the site depths range between 0.4 to 1.0m. Only a small area towards the south eastern extent of the site is affected by the 20 year event with depths being relatively shallow (<30cm). For each return period depth increases by around 20 to 30cm and tend to be greatest through the centre of the site where the ground elevations are lowest.	Velocities across the site are generally classified as slow (<0.5m/s). A small section of mid range velocities is found towards the centre of the site but the velocity does not generally increase above 0.6m/s. There is relatively little change in the velocities between the different return periods.	The flood hazard across the site is generally classified as low, with 'danger for some.' A small part of the site adjacent to the eastern boundary is classified with a moderate to significant flood hazard, with 'danger for most.'	n/a	Approximately 50% of the site is located within Flood Zones 3a and 2. If the Sequential Test can be passed, the site is suitable for development provided the flood affected areas remain as open space. If development is granted, a FRA will be required. Only if it can be demonstrated that the Sequential Test has been passed and the Exception Test carried out where indicated in Table D3 of PPS25, should this site be developed in accordance with Table D3 of PPS25.

Level 2 SFRA Site Assessment
Potential Sites along Hurley Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
530	The Swan Hotel - edited	Watling Street	Wellington	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
609	Land north west	off Wappenshall Lane	Hadley	Based on the previous JFLOW outlines the whole of this site was shown to lie within Flood Zones 3a and 2. The updated modelled Flood Zone maps show the eastern half of the site to lie within Flood Zone 3a, with water spilling from the right bank of the Hurley Brook upstream of the site and following an overland flow path into the eastern extent of the site. Flood Zone 2 extends across approximately 90% of the site. The Hurley Brook itself runs along the western edge of the site. A small part of the Shropshire Union Canal Trench Branch (disused) is located in the north eastern corner of the site.	Depths are generally quite shallow across the site being typically <30cm. There is minimal difference in the depth of flooding between the different return periods.	Velocities across the site are slow (typically <0.5m/s), although the velocities tend the be greater in the area immediately adjacent to the watercourse at the north western extent of the site. There is very little difference in the velocities between the different return periods.	The flood hazard across the site is predominantly low to moderate, with 'danger for some.' there is a small localised area of extreme flood hazard with 'danger to all' along the eastern boundary of the site.	n/a	The nature of flood risk posed to this site indicates that sites which are in Flood Zone 1 are developed in preference to this site.
611	Racecourse Site	Wappenshall Lane	Wappenshall	The majority of the site lies within Flood Zone 1. The Hurley Brook enters the site in the south eastern corner, briefly flowing in a northerly direction for approximately 250m before exiting and forming the eastern boundary of the site as it continues in a northerly direction. Flood Zones 3b, 3a and 2 extend into only a small part of the site along the eastern boundary, with Flood Zone 2 extending slightly further into the site at the north eastern corner.	Depths are generally shallow for most of the affected areas (20cm) across the site with minimal difference between the depth of water between flood return periods.	Velocities across the affected areas are generally slow (<0.5m/s). Towards the south eastern extent of the site on the right bank of the Hurley Brook, there are small, localised patches where the velocities are classified as mid-range (0.6 to 0.8m/s) for the higher return periods (e.g. 1000 year). In general there are little differences in the velocities between the return period events.	Flood hazard is low across the affected area, with 'danger to some.' .	n/a	The majority of the site is located within Flood Zone 1. Where the Hurley Brook flows through and along the boundary of the site a development easement for development from the top of the bank should be negotiated with the EA (typically 8m). A FRA should assess local flood risk issues.
614	Land off	Peregrine Way	Apley	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
EMP2-POR	62360 (also housing site 382)	TF60062360	Hadley Park West	The previous JFLOW outlines showed a small part of the western part of the site to lie within Flood Zones 3a and 2. Updated modelled flood outlines show the site to lie fully within Flood Zone 1. Flood Zones 3b, 3a and 2 lie close to the north western boundary of the site although do not encroach on the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. It is recommended that more vulnerable development is directed away from the north western edge of the site as Flood Zones 3b, 3a and 2 extend close to the edge of the site.

Level 2 SFRA Site Assessment
Potential Sites along Hurley Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
432-SHLAA	(Also housing site 432)	53devs2004	Land off Haybridge Road, Wellington	A large percentage of the site lies within Flood Zones 3a and 2. The culvert on the western arm of the Hurley Brook surcharges at the entry to the culvert by Forester Grove (SJ 6588 1092). Water then follows an overland flow path towards the railway embankment. The culvert itself emerges immediately upstream of the railway where modelling demonstrates sufficient culvert capacity to convey discharge from the culvert. Approximately 20m downstream, the watercourse enters another culvert, before flowing beneath the railway line. The flooding at the site is a result of surcharging at the upstream face of the first culvert and not due to insufficient capacity of the railway culvert; however, increasing the capacity of the railway culvert may help to alleviate some of the flooding. Modelling has also indicated that water flows in a westerly direction along the railway towards Wellington Junction, with flows at higher return periods also flowing along the northern branch of the railway towards Haybrdige. The modelled flood outlines differ from the existing JFLOW showing a slightly smaller extent for Flood Zone 3	Depths are generally quite shallow for most of the affected area (typically <30cm), however, there are localised areas where the depth of flooding ranges between 0.6-1.0m for higher flood events. This is generally at the area upstream of the culvert beneath the railway and, the area on the south western edge of the site. In general the depths increase by approximately 30cm for the different flood events.	Velocities for the affected area towards the centre of the site range between 0.3m/s and 1.7m/s, with similar velocities for the 100 year climate change and the 1000 year event.	Flood hazard across the affected parts of the site is low to moderate, 'danger for some,' for the lower return periods (Flood Zone 3b and 3a). Between the 1 in 100 year plus climate change and 1 in 1000 year event the flood hazard is classified as significant for small isolated parts of the affected area, but generally remains as low to moderate, with 'danger for some.'	n/a	Large parts of the site are affected by Flood Zone 3a and 2, and as such, it is recommended that alternative sites are considered in preference to this one.
192-SHLAA	(Also housing site 192)	W47	East of Wrekin College (West Whitchurch Drive)	The site lies predominantly in Flood Zone 1, with Flood Zones 3a and 2 affecting part of the south eastern extent of the site. The majority of flooding to the site is a result of flood waters which flow overland as a result of the surcharging of the entry to the culvert along the western branch of the Hurley Brook at Forester Grove (SJ 6588 1092). At the railway, water from the higher flood events flows along the railway line in a westerly direction towards Wellington Junction, and then along the northern branch of the railway towards Haybridge. The railway itself is acting as a barrier to flow. The modelled flood outlines are slightly smaller than the previous JFLOW outlines. Two drains are located in the vicinity of the site. One is located along the western boundary, the other towards the eastern extent of the site. These drains are not thought to be hydraulically connected to the Hurley Brook culvert.	The depth of flooding across the affected area is generally shallow in the southern corner (<30cm), but gradually increases towards the northern boundary of the site. Upstream of the railway flood depths range between approximately 1.6 and 2.5m. The depths for the different flood events vary considerably, particularly between the 100 year plus climate change and the 1000 year where there are differences of approximately 1.5m.	Velocities across the majority of the affected area are generally slow (<0.5m/s) for the range of return periods. In the south eastern corner of the site velocities are faster with flows of up to 1.2m/s in Flood Zone 2.	The flood hazard across the affected area is low to moderate, 'danger for some' for Flood Zone 3a, increasing to moderate to significant, with 'Danger for most' for the 1000 year event.	With the culvert along the Hurley Brook by Forester Grove blocked, the extent of flooding to this site increases slightly for the 1% AEP (1 in 100 year) event to a similar extent as the 1% AEP (1 in 100 year) plus climate change event. The depth of flooding across the site is generally similar between the 1% AEP and the blockage scenario, with the exception of the area by the northern boundary where depths have increased by up to 90cm.	The eastern side of the site (Flood Zones 3a and 2) should ideally be left as open space as the flood hazard within Flood Zone 2 is moderate to significant for a large proportion of the affected area. If this can be achieved, the use of this site for housing would be suitable. A FRA should assess local flood risk issues and the residual risk from the railway line. A development easement for development from the top of the bank of the drain should be negotiated with the EA (typically 8m).
138-SHLAA	(Also housing site 138)	E01814/001	Sinclair Works, south of Holyhead Road	Site is almost entirely within Flood Zone 1. A small part of the south western edge of the site is affected by Flood Zones 3b, 3a and 2. There is some residual risk from the Ketley Brook where it is culverted beneath the site. The modelled flood outlines do not extend as far into the site as the JFLOW outlines. A small ponded area is located in the north eastern corner of the site.	The depth of flooding in the affected area is typically greater than 0.5m with parts of the site affected by Flood Zone 2 showing depths of up to 0.7m. In general the depth increases by approximately 0.1 to 0.2m between the return periods.	Velocities across the affected part of the site are typically <0.5m/s with the highest velocities Flood Zone 2.	Flood hazard across the affected part of the site is significant to extreme, with 'danger for most.'	There is little difference between the extent of flooding between the 1% AEP (1 in 100 year) event and the 1% AEP (1 in 100 year) with blockage. The difference in the depth and velocity of flooding and flood hazard to the site is also minimal between the modelled events.	For the parts of the site affected by Flood Zones 3b, 3a and 2 the flood hazard is too high to enable reasonable and adequate mitigation measures. Development within this site should be directed towards Flood Zone 1 and the parts of the site shown to be affected should be left as open space. It is recommended that more vulnerable development be directed away from the part of the site affected by flooding and that the requirements for development in Flood Zone 1 are followed.

Level 2 SFRA Site Assessment
Potential Sites along Crow Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
164	Land at Teagues Bridge Community Centre	Teagues Crescent	Trench	Site lies fully in Flood Zone 1. Flood Zones 3b, 3a and 2 are located approximately 8m from the western boundary of the site, but do not extend into the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. It is recommended that more vulnerable development is directed away from the north western edge of the site as Flood Zones 3b, 3a and 2 extend close to the edge of the site.
195	Land south	Capewell Road	Trench	Site lies fully in Flood Zone 1.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
414	Land at Wheat Leasows	North Hadley Park / St Lukes Road	Wheat Leasows	The site is split into three separate parts with the majority of the site lying within Flood Zone 1. The far western third of the site is affected by the Hurley Brook and part of the site furthest east by the Crow Brook. Flood Zones 3a and 2 extend into the western extent of the site for approximately 60m. There is very little difference in the extent of Flood Zones 3a and 2. The Shropshire Union Canal Trench Branch (disused) runs along the eastern boundary of the most western area of the site. Flood Zone 2 extends into the part of the site furthest east adjacent to the Crow Brook. Flood Zones 3b and 3a remain within bank, although the 1 in 100 year plus climate change event affects part of the site.	Depth of flooding across the site is generally shallow for most of the affected area along the western third of the site (typically <0.2m). In general the depth between the 100 year event with climate change and the 1000 year event is approximately 10cm. The depth of flooding within the eastern third of the site is generally <30cm within Flood Zone 2.	Velocities for the affected area along the western third of the site are generally slow to mid-range (0.2 to 0.6m/s) for Flood Zone 2. Within the eastern third of the site, the velocities across the affected areas within Flood Zone 2 tend to be slow to mid-range and are generally <0.9m/s.	The flood hazard is generally low through the affected parts of the site (both the western and eastern thirds) across the range of return periods, with 'danger for some.'	n/a	The majority of the site is located within Flood Zone 1, apart from the far western and eastern extents. The western third of the site is affected by Flood Zones 3a and 2 (from Hurley Brook) and there is very little difference in the extent of the flood outlines for Flood Zones 3a and 2, therefore it is recommended that this area is left as open space. This should be achievable given the size of the site. The eastern third of the site is affected by Flood Zone 2 and the 100 year plus climate change event (from Crow Brook), which should also be left as open space.
471	Land at Capewell Works	Sommerfeld Road	Trench Lock	Flood Zones 3b, 3a and 2 extend into the central and north western parts of the site. Surcharging of the culvert on the Crow Brook results in flood waters flowing down Somerfield Road and through the centre of the site. The eastern part of the site lies predominantly in Flood Zone 1. A drain is located in the south eastern corner of the site.	The depth of water within the site is generally shallow (<30cm) with little difference between the modelled return periods. Towards the western part of the site, a small, localised area of greater depths can be found (up to 2m). Here the depth of water varies by approximately 20cm between the different modelled return periods.	Velocities vary across the range of modelled return periods. In general velocities are slow (<0.5m/s), however, through the centre of the affected area the velocities are higher, reaching velocities of approximately 1.6m/s in Flood Zone 3b.	Flood hazard is generally low to moderate for the range of modelled return period, with 'danger for some.' A small part of the site exhibits a moderate to significant flood hazard towards the western side of the affected area.	The extent, depth and velocity of flooding for the blockage scenario is similar to the existing 100 year event. The prevalent flood hazard is similar to the 100 year event with 'danger for some.'	Given the extent of flood risk posed to this site, alternative sites in Flood Zone 1 should be considered.
EMP4-POR	61900	TF60061900	Hortonwood 35 - Plot 8	Previous JFLOW outlines showed the majority of this site to lie within Flood Zones 3a and 2. Updated modelling has indicated that the site lies fully within Flood Zone 1. The site itself follows the course of a surface water drain through Hortonwood.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m)
EMP4-POR	61950	TF60061950	Hortonwood - Hortonwood 40	Site lies fully in Flood Zone 1. Two small water bodies are located within the site.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
EMP4-POR	62000		Hortonwood 1	Site lies fully in Flood Zone 1. Flood Zones 3a and 2 are located along to the west of the site boundary but do not encroach into the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. It is recommended that more vulnerable development is directed away from the western edge of the site as Flood Zones 3a and 2 extend close to the boundary of the site.
EMP4-POR	62060	TF60062060	Hortonwood - Plot 6 & 7 Hortonwood 60	Previous JFLOW modelling showed approximately 50% of this site to lie within Flood Zones 3a and 2. Updated modelling demonstrates that this site lies fully in Flood Zone 1. Two small water bodies are located at the western and eastern extents of the site. A surface water drain is located approximately 30m form the southern boundary and runs parallel to the site. A series of embankments are located between the drain and the site boundary.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. A FRA will assess local flood issues. A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m)
EMP4-POR	62070	TF60062070	Hortonwood - Plot 1 Hortonwood 65	Previous JFLOW flood outlines showed 50% of this site to lie within Flood zones 3a and 2. Updated modelling shows the site to lie fully in Flood Zone 1. A small water body is located within the site on the eastern edge.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood zone 1.

Level 2 SFRA Site Assessment
Potential Sites along Crow Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
EMP4-POR	62090	TF60062090	Hortonwood - Plot 2 Hortonwood 66	Previous JFLOW outlines showed the south western corner of the site to lie within Flood Zones 3a and 2. Updated modelling shows the site to lie predominantly in Flood Zone 1, apart from a small section of the north western corner of the site where Flood Zones 3b, 3a and 2 extend into the site.	Depth of flooding is generally <30cm within the affected parts of the site for the range of modelled return periods. Depths increase by approximately 10cm between the different modelled return periods.	Velocities across the affected part of the site are generally slow (<0.5m/s).	The prevalent flood hazard is 'danger for some' across the affected part of the site.	n/a	Site lies predominantly in Flood Zone 1. Only a small part of the north western corner of the site lies within Flood Zones 3b, 3a and 2, which should be left as open space.
EMP4-POR	62200	TF60062200	Hortonwood - Site E (Horton Lane)	Site lies fully in Flood Zone 1. A series of drains are located towards the western half of the site. A surface water drain is located approximately 30m form the southern boundary and runs parallel to the site. A series of embankments are located between the drain and the site boundary.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m)
EMP4-POR	62200	TF60062200	Hortonwood - Site D (Horton Lane)	Site lies fully in Flood Zone 1. A drain is located towards the south western corner of the site.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m)
EMP4-POR	62200	TF60062200	Hortonwood - Site B (Horton Lane)	Site lies fully in Flood Zone 1. A surface water drain is located approximately 30m form the southern boundary and runs parallel to the site. A series of embankments are located between the drain and the site boundary.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
EMP3-POR	62300		Hadley Park East (aware some devt. on site 06.08)	Part of this site is affected by Flood Zone 2 in the south western corner and along parts of the eastern and northern boundaries of the site. Surcharging of the culvert upstream may create some residual risk.	Depths across the affected parts of the site and the roads running adjacent to the site are shallow (<30cm).	Velocities across the affected parts of the site are generally slow (<0.5m/s) with some slightly higher velocities towards the northern boundary (up to approximately 0.8m/s).	The prevalent flood hazard across the affected part of the site is 'danger for some.' A small localised part of the site adjacent to the northern boundary is classified as a significant flood hazard with 'danger for most.'	n/a	Approximately 50% of this site lies within Flood Zone 2 and as such, alternative sites in Flood Zone 1 should be considered in preference to this site as part of the Sequential Test. Only if it can be demonstrated that the Sequential Test has been carried out and the Exception Test (in accordance with Table D3 of PPS25) can be satisfied, should this site be developed in accordance with Table D3 of PPS25, where the most vulnerable elements of the development are placed in the lowest risk Flood Zone. Ideally, Flood Zones 2 should be left as open space. Safe access to the site would need to be ensured given that Flood Zone 2 encroaches on a number of the surrounding roads. Follow requirements for development in Flood Zone 1.
EMP3-POR	62300	TF60062300	Hadley Park East - A Ph2 (aw devt. @front 06.08)	Approximately 50% of this site is affected by Flood Zone 2. Surcharging of the culvert upstream may create some residual risk.	Depths across the affected parts of the site and the roads running adjacent to the site are shallow (<30cm).	Velocities across the affected parts of the site are generally slow (<0.5m/s) with some slightly higher velocities towards the northern boundary (up to approximately 0.7m/s).	The prevalent flood hazard across the affected part of the site is 'danger for some.'	n/a	Approximately 50% of this site lies within Flood Zone 2 and as such, alternative sites in Flood Zone 1 should be considered in preference to this site as part of the Sequential Test. Only if it can be demonstrated that the Sequential Test has been carried out and the Exception Test (in accordance with Table D3 of PPS25) can be satisfied, should this site be developed in accordance with Table D3 of PPS25, where the most vulnerable elements of the development are placed in the lowest risk Flood Zone. Ideally, Flood Zones 2 should be left as open space. Safe access to the site would need to be ensured given that Flood Zone 2 encroaches on a number of the surrounding roads. Follow requirements for development in Flood Zone 1.
EMP3-POR	62310	TF60062310	Hadley Park East - B	Part of this site is affected by Flood Zone 2 in the south western corner and along parts of the eastern and northern boundaries of the site. Flood waters cause access to the site to be restricted with the roads running adjacent to the site affected by Flood Zone 2. Surcharging of the culvert upstream may create some residual risk.	Depths across the affected parts of the site are shallow (<30cm). The depth of flooding on the roads running adjacent to the site is shallow (<30cm).	Velocities across the affected part of the site are generally slow (<0.5m/s). Some parts of the affected area close to the A442 on the northern boundary exhibit slightly faster velocities of up to 0.8m/s.	The prevalent flood hazard across the affected part of the site is 'danger for some.'	n/a	The majority of this site lies within Flood Zone 1. Parts of the site shown to be affected by Flood Zone 2 should ideally be left as open space. However, Flood Zone 2 could be developed if it can be demonstrated that there are no other sites fully in Flood Zone 1 (see recommendations for development in Flood Zone 2). Safe access to the site would need to be ensured given that Flood Zone 2 encroaches on a number of the surrounding roads. Follow requirements for development in Flood Zone 1.
EMP3-POR	62321	TF60062321	Plot C2 Hadley Park East	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
EMP3-POR	62330	TF60062330	Hadley Park East - D	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.

Level 2 SFRA Site Assessment
Potential Sites along Crow Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
EMP3-POR	62340	TF60062340	Hadley Park East - E	Part of this site is affected by Flood Zone 2 in the south eastern corner and towards the northern extent of the site. Flood waters cause restricted access to the site with the roads shown to be affected by Flood Zone 2. Surcharging of the culvert upstream may create some residual risk.	Depths across the affected parts of the site are shallow (<30cm).	Velocities across the affected parts of the site are slow, generally being <0.5m/s.	The prevalent flood hazard across the affected part of the site is 'danger for some.'	n/a	The majority of this site lies within Flood Zone 1. Parts of the site shown to be affected by Flood zone 2 should ideally be left as open space. However, parts of the site affected by Flood Zone 2 could be developed if it can be demonstrated that there are no other sites fully in Flood Zone 1 (see recommendations for development in Flood Zone 2). Safe access to the site would need to be ensured given that Flood Zone 2 encroaches on a number of the surrounding roads. Follow requirements for development in Flood Zone 1.
100-SHLAA		83070	Land off Horton Road, Trench	Site lies fully in Flood Zone 1. Drains are located at the northern and eastern boundaries of the site, and, also through the centre of the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m).
383-SHLAA		61900	Land adjacent Oakland House, Hortonwood	Previous JFLOW outlines showed the majority of this site to lie within Flood Zones 3a and 2. Updated modelling has indicated that the site lies fully within Flood Zone 1. The site itself follows the course of a surface water drain through Hortonwood.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. A FRA will assess local flood issues. A development easement for development from the top of the banks of the drain should be negotiated with the EA (typically 8m)
471-SHLAA	(Also housing site 471)		Capewell Works, Trench Lock	Flood Zones 3b, 3a and 2 extend into the central and north western parts of the site. Surcharging of the culvert on the Crow Brook results in flood waters flowing down Somerfield Road and through the centre of the site. The eastern part of the site lies predominantly in Flood Zone 1. A drain is located in the south eastern corner of the site.	The depth of water within the site is generally shallow (<30cm) with little difference between the modelled return periods. Towards the western part of the site, a small, localised area of greater depths can be found (up to 2m). Here the depth of water varies by approximately 20cm between the different modelled return periods.	Velocities vary across the range of modelled return periods. In general velocities are slow (<0.5m/s), however, through the centre of the affected area the velocities are higher, reaching velocities of approximately 1.6m/s in Flood Zone 3b.	Flood hazard is generally low to moderate for the range of modelled return period, with 'danger for some.' A small part of the site exhibits a moderate to significant flood hazard towards the western side of the affected area.	The extent, depth and velocity of flooding for the blockage scenario is similar to the existing 100 year event. The prevalent flood hazard is similar to the 100 year event with 'danger for some.'	Given the extent of flood risk posed to this site, alternative sites in Flood Zone 1 should be considered.

Level 2 SFRA Site Assessment
Potential Sites along Wall Brook (also cited as Donnington Watercourse)

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
144	Land south	New Trench Road/A518	Muxton	Site lies almost fully in Flood Zone 1. A small portion of the northern extent of the site is affected by Flood Zones 3b, 3a and 2 from flood waters that flow down New Trench Road. There is little difference in the extent of flooding between the modelled Flood Zones.	Depth of flooding is shallow (<30cm) for the range of return periods.	Velocities are generally low to mid range across the affected part of the site (0.1 to 0.8m/s) with little difference between the range of return periods.	Flood hazard is low, with 'danger for some' across the affected part of the site for the range of modelled return periods.	With a 75% blockage applied at culverts SJ 71020 14260 and SJ 70420 14890, the extent, depth and velocity of flooding at this site are similar to the 100 year event. The flood hazard is also similar to the 100 year event with 'danger for some.'	The flood hazard across the affected part of the site is low for the range of modelled return periods. It is recommended that the affected part of the site be kept as open space. Development should be directed towards the part of the site with the lowest flood risk.
336	Land at The Humbers	Humber Lane	Donnington	The majority of the site lies within Flood Zone 1 apart from a thin corridor along the eastern edge of the site which is affected by Flood Zones 3b, 3a and 2. There is little difference in the extent of the flooding between the different modelled events. A drain runs along the southern edge of the site adjacent to Humber Lane.	The depth of flooding across the affected part of the site is shallow (<30cm) due to the flat nature of the surrounding topography in this area.	Velocities are generally low (<0.5m/s) across the affected parts of the site for the range of modelled return periods.	Flood hazard is low, with 'danger for some' across the affected part of the site.	With a 75% blockage applied at culverts SJ 71020 14260 and SJ 70420 14890, the extent, depth and velocity of flooding at this site are similar to the 100 year event. The flood hazard is also similar to the 100 year event with 'danger for some.'	The flood hazard across the affected part of the site is low for the range of modelled return periods due to the nature of the area the site is in being flat. It is recommended that the affected part of the site be kept as open space. Development located within the site should be located towards the parts of the site with the lowest flood risk.
350	Land adjacent to Mobile Home Park, north of	Wellington Road	Muxton	Site lies fully in Flood Zone 1. A watercourse/drain runs along the eastern edge of the site although this has not been modelled.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1. It is recommended a development easement for development from the top of the watercourse/drain on the eastern edge of the site be negotiated with the EA (typically 8m).
482	Land east	Station Road	Lilleshall+Donngtn	Previous JFLOW outlines showed approximately half of the site to lie within Flood Zones 3a and 2. Updated modelled flood outlines for the unnamed drain adjacent to Donnington Drive show the majority of the site to be affected by Flood Zones 3b, 3a and 2. The flat nature of the topography in this area means there is little difference between the extent of the flood outlines for the modelled return periods.	The depth of flooding across the site is generally shallow (<30cm) across the range of modelled return periods due to the flat nature of the surrounding topography. Towards the northern boundary of the site adjacent to the road, the depth of flooding increases slightly for the higher return periods (30-50cm).	Velocities across the affected parts of the site are generally slow (0.4 to 0.5m/s) for the range of modelled return periods.	Flood hazard across the affected parts of the site is generally low, with 'danger for some.' Towards the northern boundary of the site the flood hazard is low to moderate adjacent to the road, with 'danger for some.'	With a 75% blockage applied at culverts SJ 71020 14260 and SJ 70420 14890, the extent, depth and velocity of flooding at this site are similar to the 100 year event. The flood hazard is also similar to the 100 year event with 'danger for some.'	Given the degree of flood risk posed to this site, alternative sites in lower risk Flood Zones, preferably Zone 1, should be developed in preference to this site.
504	Land at Donnington Farm - edited (edge of 144)	New Trench Road	Donnington	Site lies fully in Flood Zone 1. Flood Zones 3b, 3a and 2 are located adjacent to the northern and western boundaries of the site, but do not affect the site itself.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
508	Land at 'The Humbers' north	New Trench Road	Donnington	The majority of this site lies within Flood Zone 1. Parts of the site are affected by Flood Zones 3b, 3a and 2. The culverts located along the unnamed drain adjacent to Donnington Drive become surcharged during high flow events. Flood water flows overland, following a flow route along New Trench Road in a north easterly direction, before entering the site by the eastern boundary and continuing to flow in a northerly direction along the eastern edge of the site.	The depth of flooding across the affected part of the site is shallow (<30cm). There is no difference in the depth of flooding for the different return periods due to the flat nature of the surrounding topography in this area.	Velocities are generally low (<0.5m/s) across the affected parts of the site for the range of modelled return periods.	Flood hazard across the affected parts of the site is low, with 'danger for some.'	With a 75% blockage applied at culverts SJ 71020 14260 and SJ 70420 14890, the extent, depth and velocity of flooding at this site are similar to the 100 year event. The flood hazard is also similar to the 100 year event with 'danger for some.'	The majority of the site lies within Flood Zone 1. The flood hazard across the affected parts of the site is low for the range of modelled return periods. It is recommended that the affected part of the site is kept as open space. Development should be directed towards the part of the site with the lowest flood risk.

Level 2 SFRA Site Assessment
Potential Sites along Mad Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
117	Lord Silkin School/Three Oaks Primary School	Grange Avenue	Stirchley	The majority of this site lies within Flood Zone 1. The Mad Brook flows adjacent to the western boundary of the site and Flood Zones 3b, 3a and 2 extend into part of the site along the south western boundary. There is little difference in the extent of Flood Zones 3a and 2. This site has been allocated for employment use also (117-SHLAA).	The depth of the flooding in the affected area is typically between 20cm and 1.0m across the range of modelled return periods, with parts of the site affected by Flood Zone 2 showing depths of up to 1.2m along the western boundary of the site. In general the depth increases by approximately 30cm between the return periods.	Velocities across the affected parts of the site are negligible, typically being <0.1m/s across the modelled range of return periods.	Flood Hazard low to moderate across the range of affected range of return periods, with 'danger for some.' For the 1 in 1000 year (0.1% event) the flood hazard is moderate to significant, with 'danger for most' across the affected part of the site.	With a 75% blockage applied at culvert SJ 70488 06475, the extent, depth and velocity of flooding at this site are similar to the 100 year event. The flood hazard is also similar to the 100 year event with 'danger for most.'	The majority of the site lies within Flood Zone 1. The site has been allocated for both employment and residential use. The site is suitable for both residential and employment development providing the part of the site affected by Flood Zones 3b, 3a and 2 is left as open space. It is recommended that more vulnerable development be directed away from the part of the site affected by flooding and that the requirements for development in Flood Zone 1 are followed.
249	Land north The Bridge School	Brookside Avenue	Brookside	Site lies fully in Flood Zone 1. Holmer Lake lies to the east of the site with Flood Zone maps for the Mad Brook extending to within 10m of the site.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
250	Land east	Lake End Drive	Brookside	Site lies predominantly in Flood Zone 1, though Flood Zones 3b, 3a and 2 encroach on the eastern site of the site to the west of Holmer Lake. The Mad Brook itself does not flow through the site, flowing into Holmer Lake downstream of Holmer Farm Road. Water flows out of Holmer Lake via and overflow and under Queensway (A442).	Depth of flooding in the affected part of the site is approximately 30cm for the 1% AEP (1 in 100 year) event, increasing to depths of approximately 1.4m for the 0.1% AEP (1 in 1000 year) event. Generally depths are greatest towards the eastern boundary of the site.	Velocities across the affected parts of the site are negligible, typically <0.05m/s.	Flood hazard is generally low to moderate, with 'danger for some.' For the 0.1% AEP (1 in 1000 year) event a small part of the site along the eastern boundary is classified as significant, with 'danger for most.'	With a 75% blockage applied at culvert SJ 70488 06475, the extent, depth and velocity of flooding at this site are similar to the 100 year event. The flood hazard is also similar to the 100 year event with 'danger for most.'	Site lies predominantly in Flood Zone 1, though Flood Zones 3b, 3a and 2 encroach on the eastern site of the site to the west of Holmer Lake. It is recommended that the affected parts of the site are kept as open space.
368	Land fronting	Stirchley Road	Brookside	Site lies fully in Flood Zone 1.	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
EMP8-POR	60090	TF60060090	Halesfield (Halesfield 23)	Site lies fully in Flood Zone 1	n/a	n/a	n/a	n/a	Follow requirements for development in Flood Zone 1.
EMP8-POR	60200	TF60060200	Halesfield (Plot 1 Halesfield 18)	Previous JFLOW outlines indicated that approximately 50% of the site is located within Flood Zone 3a and 2. Updated modelling has indicated that approximately 90% of the site lies within Flood Zone 2 and 50% within Flood Zone 3a (this is deemed to be predominantly surface water flood risk). The Mad Brook itself is culverted through the industrial site, however, modelling undertaken has indicated that water falling on this part of the catchment will follow a flow route through the allocated site. A drain is located to the south of the site; however, when visited it could be seen that it was not part of the Mad Brook.	Depth of flooding across the site is shallow (typically <30cm). There is little difference in the depth of water between the modelled return periods.	Velocities across the site are generally slow (<0.5m/s). Localised areas of flooding exhibit slightly faster velocities for higher return periods (up to approximately 1m/s for the 0.1% AEP (1 in 1000 year) event).	Flood hazard is categorised as danger for some across the affected parts of the site.	n/a	Flood Zones 2 and 3 affect this site, though the flood hazard is low, with low depths and velocities. Sites fully in lower risk Flood Zones (i.e. Flood Zone 1) should be considered first, but if the Sequential Test can be passed the site could be developed in accordance with Table D3 of PPS25, with more vulnerable development located in the areas of lowest risk within the site.

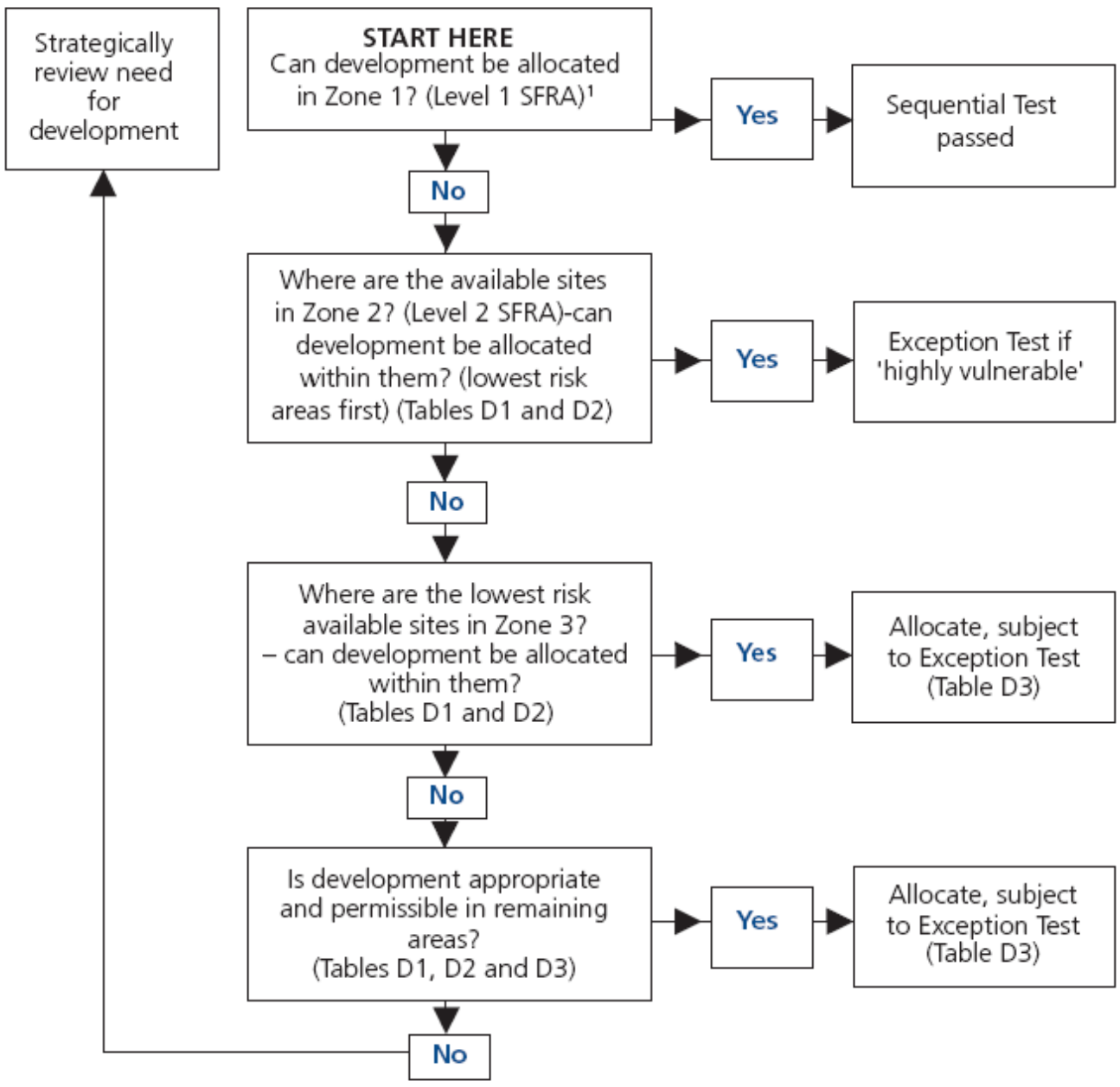
Level 2 SFRA Site Assessment
Potential Sites along Mad Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
EMP8-POR	60220	TF60060220	Halesfield (Halesfield 17)	Previous JFLOW outlines indicated that approximately 50% of the site is located within Flood Zone 3a and 2. Updated modelling has indicated that approximately 50% of this site lies within Flood Zone 2 (this is deemed to be predominantly surface water flood risk). The remainder of the site is within Flood Zone 1. The Mad Brook itself is culverted through the industrial site, however, modelling undertaken has indicated that water falling on this part of the catchment will follow a flow route through the allocated site.	Depth of flooding across the affected part of the site is negligible.	Velocities across the affected parts of the site are generally slow (<0.5m/s).	The prevalent hazard category is danger for some across the affected part of the site.	n/a	This site lies equally in Flood Zones 1 and 2, though the flood hazard is low, with low depths and velocities. Sites fully in lower risk Flood Zones (i.e. Flood Zone 1) should be considered first, but if the Sequential Test can be passed the site could be developed in accordance with Table D3 of PPS25, with more vulnerable development located in the areas of lowest risk within the site.
EMP8-POR			Halesfield (Halesfield 24)	This site is located within a purpose built flood storage area. Approximately 50% of the site is affected by Flood Zones 3b, 3a and 2. The Mad Brook is culverted beneath the Queensway (A442), with a small section of open channel before being culverted beneath the railway. The railway itself forms a barrier to flow creating a residual risk to this area. Downstream of the railway there is a small culvert which emerges from under the overflow, with three additional culverts further downstream which feed into the flood storage area. Inspection of the site during a site visit indicated that the flood storage area did not appear to have an outlet culvert, and it is therefore assumed that any floodwaters that enter here naturally drain away or dry up.	Part of the site forms a flood storage area with the depth of flooding being >1m for the range of modelled return periods. For the 0.1% AEP (1 in 1000 year) event depths reach up to approximately 4m in parts of the south western corner of the site. Depths increase by between 1m to 2m between the modelled return periods.	Velocities are generally low (<0.5m/s) across the range of modelled return periods.	The prevalent hazard category affecting this site is 'danger for most.' For the higher return periods the hazard at the south western corner of the site is 'danger for all.'	n/a	It is strongly recommended that alternative sites are considered in preference to this site as the area is acting as a purpose built storage area. It is very important that this area is maintained as such. This in addition to residual risk from the presence of the railway line across the western boundary of the site mean that the flood risk posed to the site is high.
141-SHLAA		E01155/002	Land to south of Stirchley Road (Brookfield)	The majority of the site lies within Flood Zone 1. The Mad Brook flows through the eastern extent of the site, with Flood Zones Flood Zones 3b, 3a and 2 affected part of the northern and eastern extent of the site. As the Mad Brook flows through the site it flows though two successive pools before entering a culvert and exiting the site in the south eastern corner. There may be some residual risk from surcharging of the culvert. The previous JFLOW outlines showed Flood Zones 3a and 2 as extending further into the site in comparison to the updated modelled outlines.	The depth of flooding is shallow for the range of return periods in the affected areas towards the northern boundary of the site (<30cm). Towards the eastern boundary of the site, depth of flooding is greater across the modelled events with depths of up to 1.2m for the 1% AEP (1 in 100 year) event and 1.8m for the 0.1% AEP (1 in 1000 year) event. This may be a result of surcharging of the culvert.	Velocities are relatively high in parts of the site, particularly along the eastern boundary on the left bank of the watercourse. Velocities range between 0.5 and 2.0m/s across the modelled return periods in some parts of the site.	Flood hazard is typically moderate to significant for most modelled return periods, with 'danger for most.'. For the 0.1% AEP (1 in 1000 year) event the flood hazard is predominantly significant to extreme, with 'danger for all.'	With a 75% blockage applied at culvert SJ 70488 06475, the extent, depth and velocity of flooding at this site are similar to the 100 year event. The flood hazard is also similar to the 100 year event with 'danger for all.'	The majority of the site lies within Flood Zone 1. In the affected parts of the site the flood hazard is typically moderate to significant, with some areas classified with extreme flood hazard. It is recommended that development be located within Flood Zone 1 and that the requirements for development in Flood Zone 1 are followed. For the affected parts of the site, there is little difference in the extent of Flood Zones 3b, 3a and 2; therefore, it is recommended that this area is left as open space.

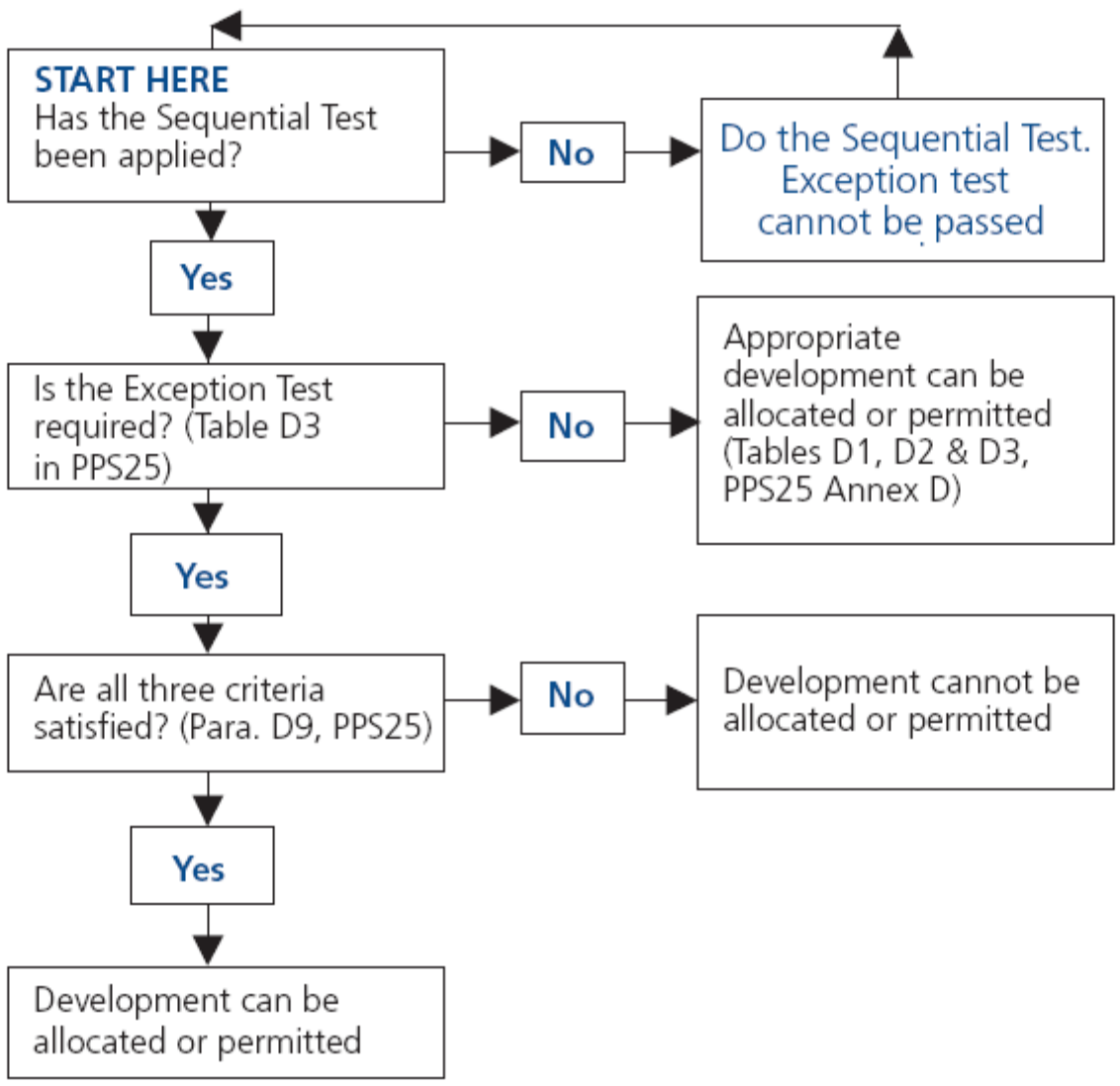
Level 2 SFRA Site Assessment
Potential Sites along Mad Brook

Site ID/Ref	SHLAA Site/ ABD Number	SHLAA Name/ Full Ref	SHLAA LOCAL/ Site Name	Site Description	Flood Depth Assessment	Flood Velocity Assessment	Flood Hazard Assessment	Blockage Scenario	Recommendations
117-SHLAA	(also housing site 117)	E01953/002	Lord Silkin School/Three Oaks Primary School, Stir	The majority of this site lies within Flood Zone 1. The Mad Brook flows adjacent to the western boundary of the site and Flood Zones 3b, 3a and 2 extend into part of the site along the south western boundary. There is little difference in the extent of Flood Zones 3a and 2. This site has been allocated for employment use also (117-SHLAA).	The depth of the flooding in the affected area is typically between 20cm and 1.0m across the range of modelled return periods, with parts of the site affected by Flood Zone 2 showing depths of up to 1.2m along the western boundary of the site. In general the depth increases by approximately 30cm between the return periods.	Velocities across the affected parts of the site are negligible, typically being <0.1m/s across the modelled range of return periods.	Flood Hazard low to moderate across the range of affected range of return periods, with 'danger for some.' For the 1 in 1000 year (0.1% event) the flood hazard is moderate to significant, with 'danger for most' across the affected part of the site.	With a 75% blockage applied at culvert SJ 70488 06475, the extent, depth and velocity of flooding at this site are similar to the 100 year event. The flood hazard is also similar to the 100 year event with 'danger for most.'	The majority of the site lies within Flood Zone 1. The site has been allocated for both employment and residential use. The site is suitable for both residential and employment development providing the part of the site affected by Flood Zones 3b, 3a and 2 is left as open space. It is recommended that more vulnerable development be directed away from the part of the site affected by flooding and that the requirements for development in Flood Zone 1 are followed.
Cemetery Site 2	(Also employment site EMP8-POR (Halesfield 24))			This site is located within a purpose built flood storage area. Approximately 50% of the site is affected by Flood Zones 3b, 3a and 2. The Mad Brook is culverted beneath the Queensway (A442), with a small section of open channel before being culverted beneath the railway. The railway itself forms a barrier to flow creating a residual risk to this area. Downstream of the railway there is a small culvert which emerges from under the overflow, with three additional culverts further downstream which feed into the flood storage area. Inspection of the site during a site visit indicated that the flood storage area did not appear to have an outlet culvert, and it is therefore assumed that any floodwaters that enter here naturally drain away or dry up.	Part of the site forms a flood storage area with the depth of flooding being >1m for the range of modelled return periods. For the 0.1% AEP (1 in 1000 year) event depths reach up to approximately 4m in parts of the south western corner of the site. Depths increase by between 1m to 2m between the modelled return periods.	Velocities are generally low (<0.5m/s) across the range of modelled return periods.	The prevalent hazard category affecting this site is 'danger for most.' For the higher return periods the hazard at the south western corner of the site is 'danger for all.'	n/a	It is strongly recommended that alternative sites are considered in preference to this site as the area is acting as a purpose built storage area. It is very important that this area is maintained as such. This in addition to residual risk from the presence of the railway line across the western boundary of the site mean that the flood risk posed to the site is high.

Application of the Sequential Test at the Local level for LDD preparation



Application of the Exception Test



Project	Telford Level 2 SFRAs	**Date**	May 2008
Note	Hydrological methodology	**Ref**	WBTWCS
Author	Rebecca Bailey		

1 Introduction

1.1 This technical note focuses on the hydrological approach taken for the Level 2 SFRA assessment of the following watercourses:

Watercourse*	Upstream Extent (OS NGR)	Downstream extent (OS NGR)
Wall Brook (also cited as Donnington Watercourse)	371210 314040	370000 315690
Wesley Brook Tributary	370361 308299	371940 306050
Hurley Tributary	363740 311880	363810 314270
Crow Brook	368590 311510	367940 314880
Mad Brook	370020 307020	371410 303830
Hurley and Ketley Brook	365752 310831	365090 315160

*It was not always possible to determine the local name for the watercourse. The names referred to here are in agreement with the proposal document.

2 Objectives

2.1 To derive flood hydrographs for the following return periods for use in the 2D hydraulic models:

- 20 (5% AEP)
- 100 (1%AEP)
- 100 plus climate change (1%AEP plus 20% increase in flows)
- 1000 (0.1% AEP)

3 Choice of Methodology

3.1 The Flood Estimation Handbook (FEH) is the current industry standard for flood estimation in the UK. There are two principle methodologies available in the FEH; the Statistical Method and the Revitalised Flood Hydrograph (ReFH) model, which has recently replaced the Rainfall-Runoff model for most applications.

3.2 The chosen methodology for the hydrological modelling is the FEH Rainfall-Runoff model, for the following reasons:

- The majority of the catchments within the study area are heavily urbanised ($URBEXT_{2000}$ 0.15 <0.600) and therefore the FEH guidance advises against the use of the ReFH approach.
- The catchments are ungauged and too small (<10km^2) for statistical method. It is unlikely that a suitable pooled group of stations could be found.
- All the catchments are within the limitations of this method.
- This approach is favoured when catchments are disparate.

4 The Rainfall Runoff Model

4.1 The Rainfall-Runoff method uses a unit hydrograph and losses model to transform a design rainfall event into runoff from the catchment. Where possible, estimates of time-to-peak (Tp), baseflow and standard percentage runoff (SPR) should be based on gauged data rather than catchment descriptors. No suitable gauged data was available for any of the catchments therefore estimates are based on catchment descriptors alone.

5 Design rainfall

5.1 Design rainfall was derived using the FEH. The design storms for each study area were determined by analysis of the whole catchment. The duration which theoretically produces the highest peak flow from the catchment was used in each case. The storm area was set as equal to the whole catchment area and the rainfall parameters were consistent between each subcatchment.

6 Climate change

6.1 Climate change was modelled by increasing the 100 year flows by 20%.

7 Surface water

7.1 A broad scale assessment has been made to judge whether the surface water network imports flows from outside the natural topographic catchment. This is based on the assumption that for up to a 5% AEP (1 in 20 year) event, surface runoff will follow the artificial drainage network and therefore may be exported/imported outside of the topographic catchment boundary. For events greater that the 5% (1 in 20 year) AEP event, the drainage network would become surcharged and surface runoff would follow the natural topography.

7.2 GIS layers of the surface water network, along with the locations of surface water outfalls, were made available by Severn Trent Water. This enabled the estimate of areas outside the topographic catchment which are served by a network of drains which would bring water into the subject catchment. Estimation of flows for these contributing areas was achieved by increasing the catchment area used for the estimation of 5% (1 in 20 year) AEP flows to include the extra contributing areas. This would have most significance for the lowest return period of interest (1 in 20 year, or 5%AEP event).

8 Assumptions applicable to each subject reach

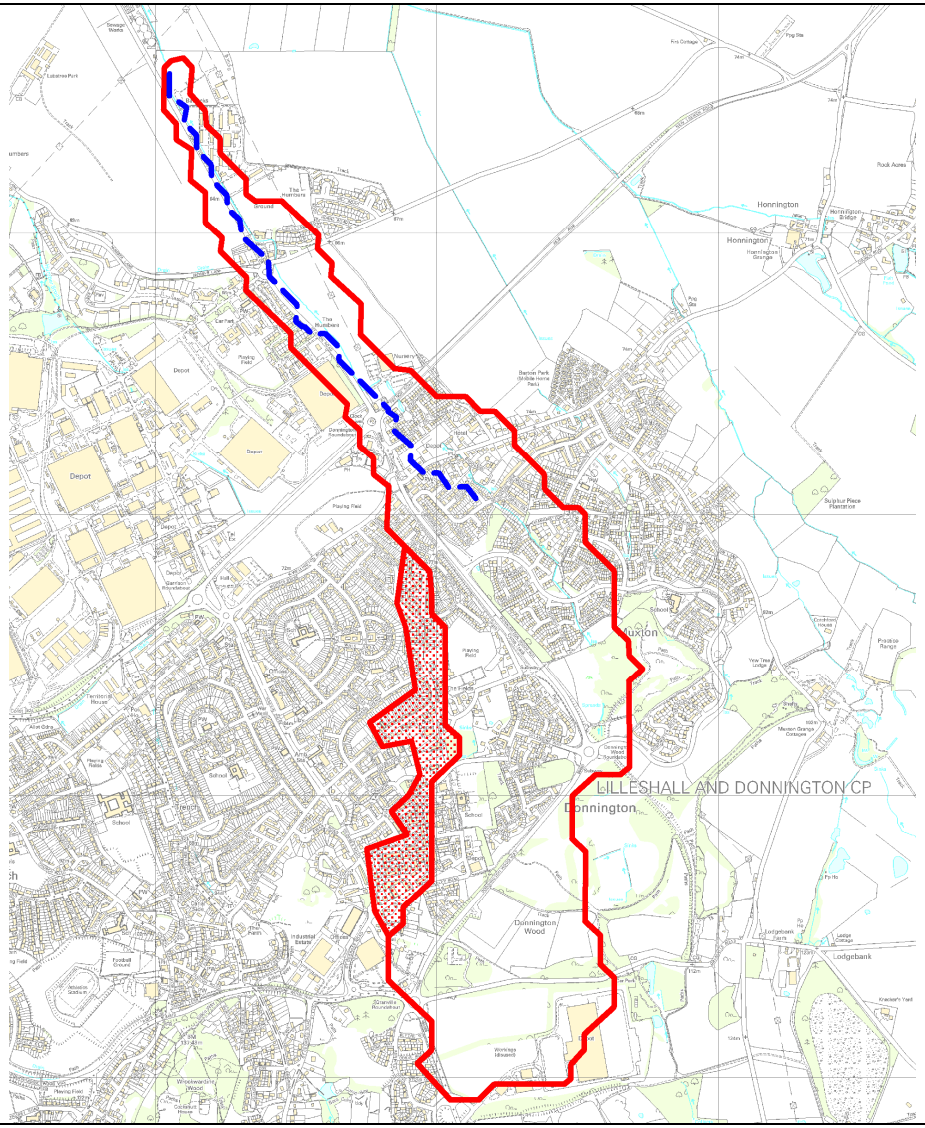
8.1 The following assumptions were made for each subject reach:

- The catchment boundaries as shown on the FEH CD-ROM v2 are correct..
- During a 20 year event or greater, surface runoff follows natural topography.
- All surface water flows converge at the drainage paths as shown on the FEH CD-ROM. Attenuation from structures has only been considered within the modelled extents.

9 Results

9.1 Each subject catchment is summarised below.

Red lines denote the catchment boundary, dotted blue line shows modelled extents and direction of watercourse and hatched red area shows imported runoff areas from drainage network.



Wall Brook
(also cited as Donnington Watercourse)

Catchment Descriptors

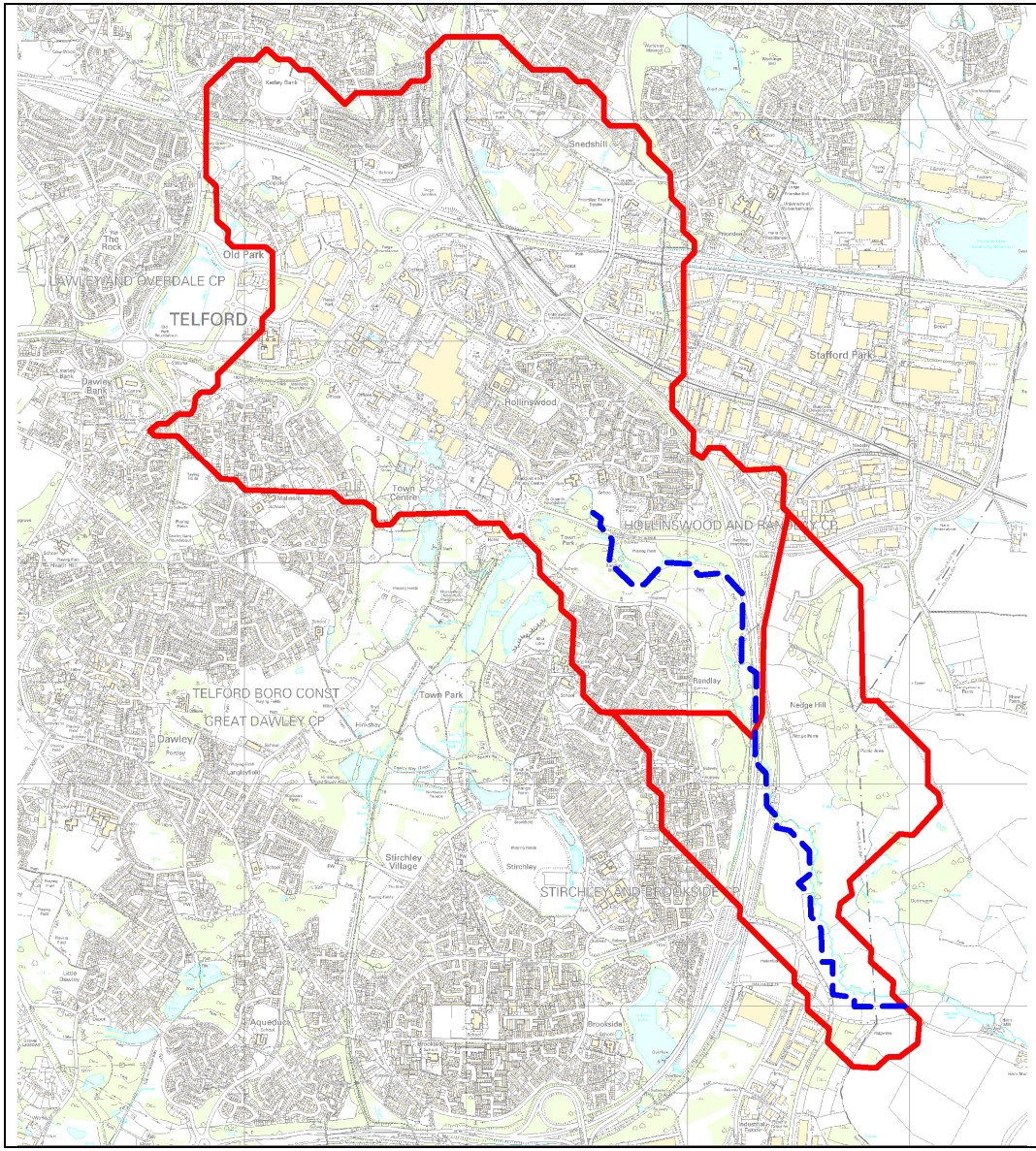
AREA: 1.82 km²
SARR: 699 mm
URBEXT$_{2008}$: 0.2278
SPRHOST: 38.53 %

Design storm duration: 2.75 hours

Model Inflow boundaries
Lumped catchment approach (1.82km²) fed into upstream model extent.

Notes

Imported runoff areas shown in hatched red = 0.19km²



Wesley Brook Tributary

Catchment Descriptors

AREA: 6.47 km^2
SARR: 733 mm
URBEXT$_{2008}$: 0.4332
SPRHOST: 36.16%

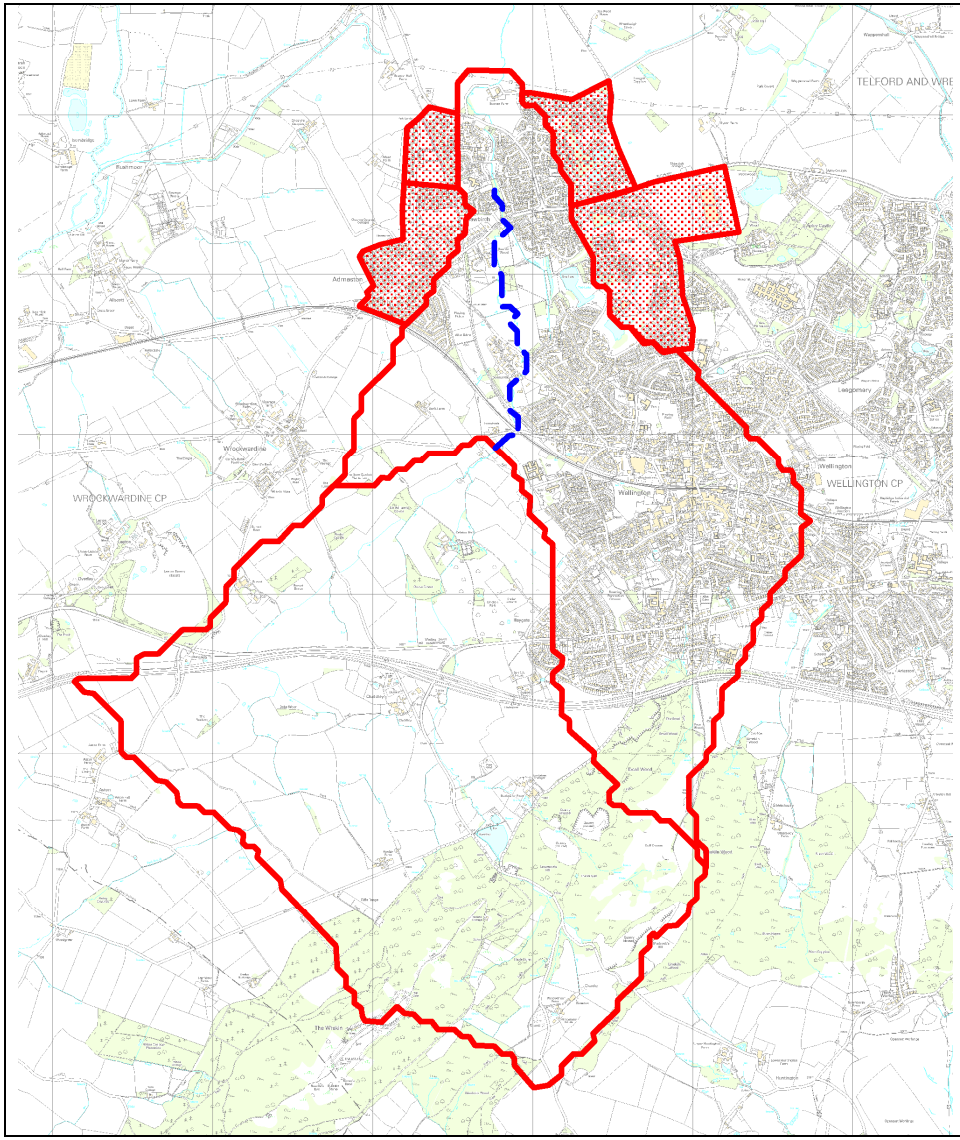
Design storm duration: 1.3 hours

Model Inflow boundaries

Flow hydrographs were derived for the whole catchment and then were distributed though the model.
77% was fed in to the upstream extent to reflect the catchment upstream of the A442 incorporating some of Ketley Bank and Snedshill north of the M54, the town centre and Hollinswood area and the more rural Randlay Wood.
23% was fed in after the A442 representing the remaining catchment through Nedge Hill.

Notes

No imported runoff areas identified; it is possible that some surface runoff from Randlay is exported into Holmer Lake via trunk sewers. The effects of this were not modelled.



Hurley Brook Tributary

Catchment Descriptors

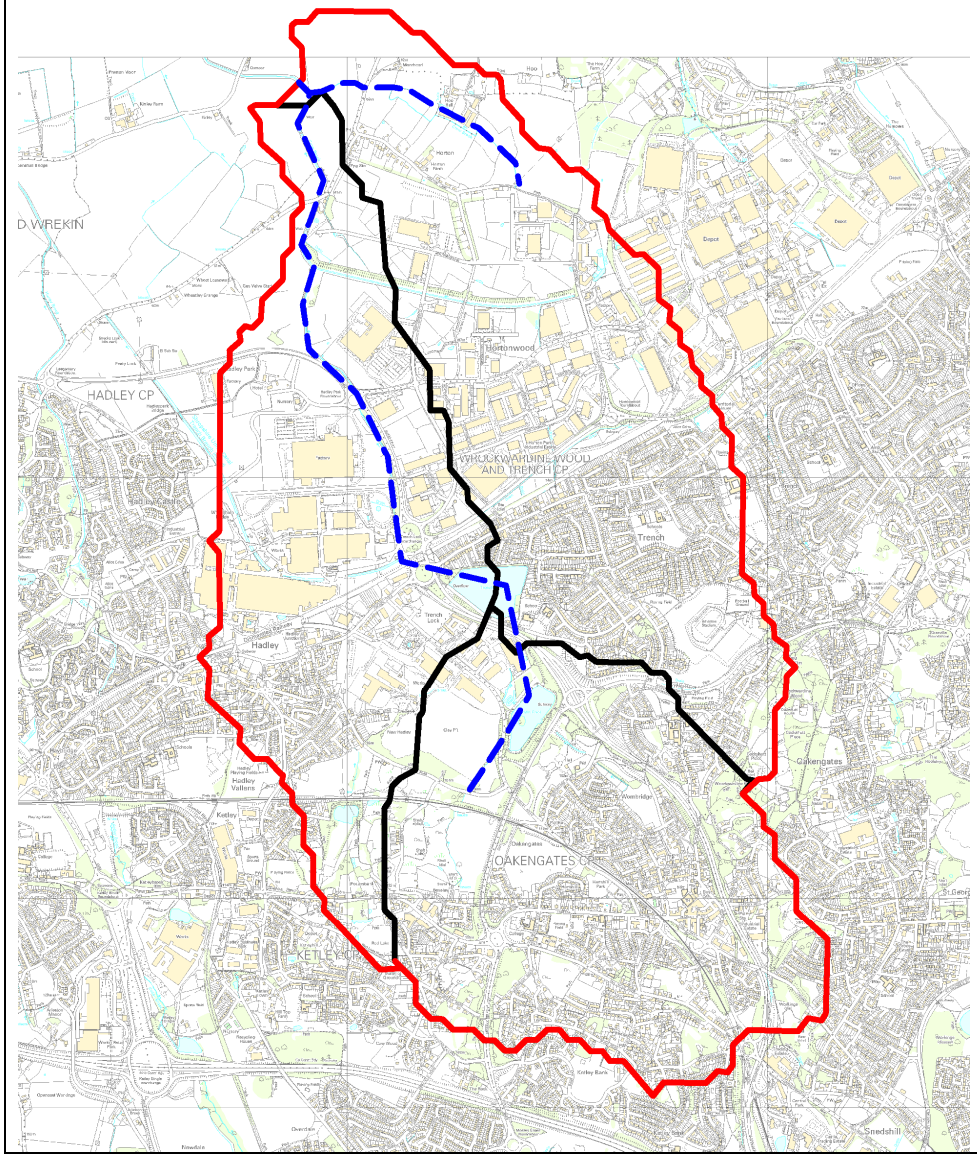
AREA: 13.71 km^2
SARR: 698 mm
URBEXT$_{2008}$: 0.01482
SPRHOST: 38.75%

Model Inflow boundaries

The upstream boundary represents the catchment to Shawbirch Road, which is predominantly rural, fed into the upstream extent of the model.
The lower boundary represents the remaining, predominantly urban area, fed in at the location of the drain on the right bank.

Notes

Imported runoff area shown in hatched red = 1.42km^2



Crow Brook

Catchment Descriptors

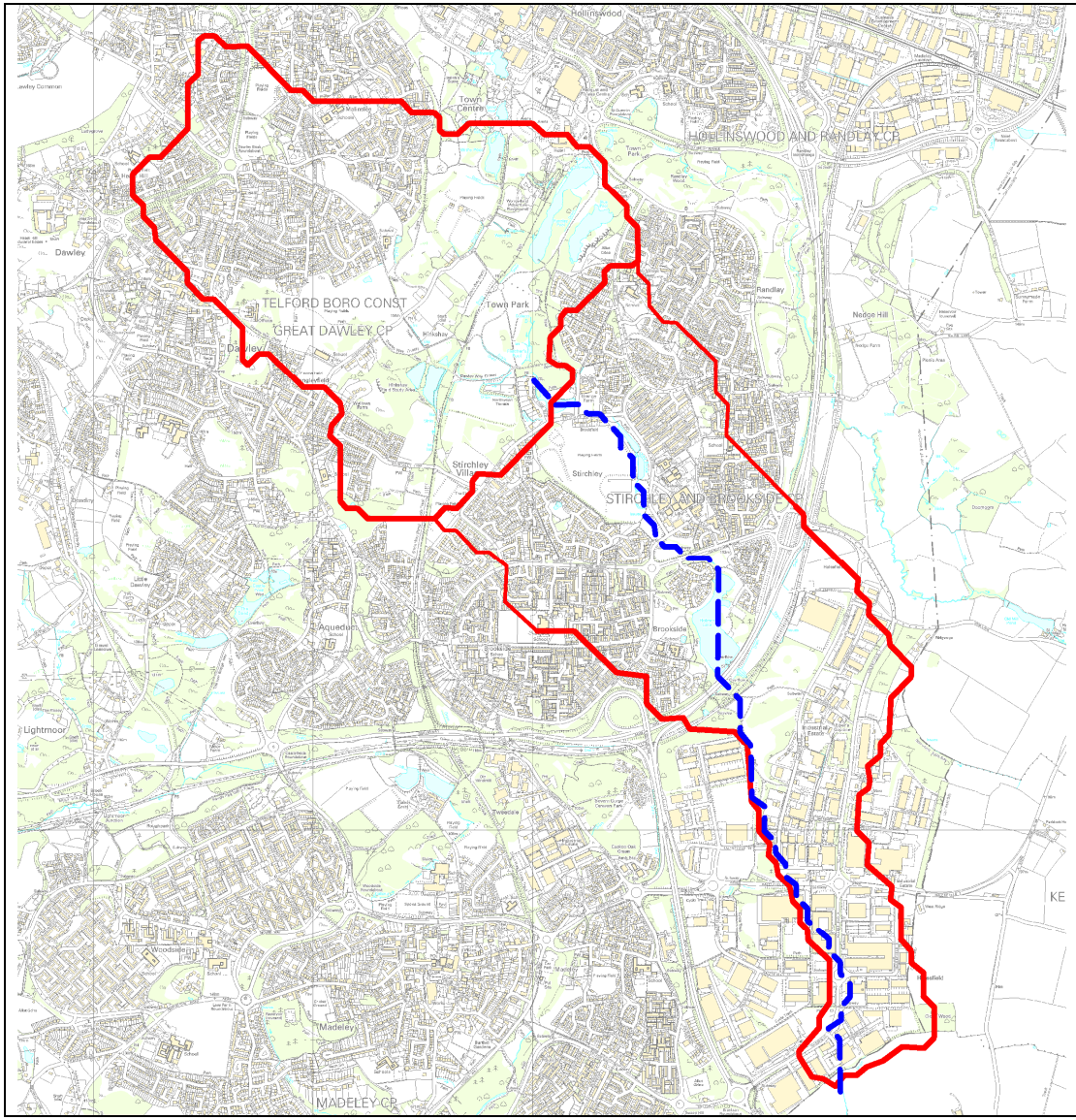
AREA: 10.03 km^2
SARR: 713 mm
URBEXT$_{2008}$: 0.3988
SPRHOST: 38.34%

Model Inflow boundaries

Three inflow boundaries were derived.
Crow Upper represents the catchment extending out through Oakengates. The surface runoff converges at Middle pool and hence feeds in to the upstream extent of the model.
The Crow East catchment area represents the surface runoff from parts of Wrockwardine Wood and Trench. This inflow feeds in to the model at the upstream extent of the small tributary reach.
The Crow inflow represents runoff from the Hadley area and north of the dismantled railway line through the industrial estate.

Notes

No imported runoff areas were identified.



Mad Brook

Catchment Descriptors

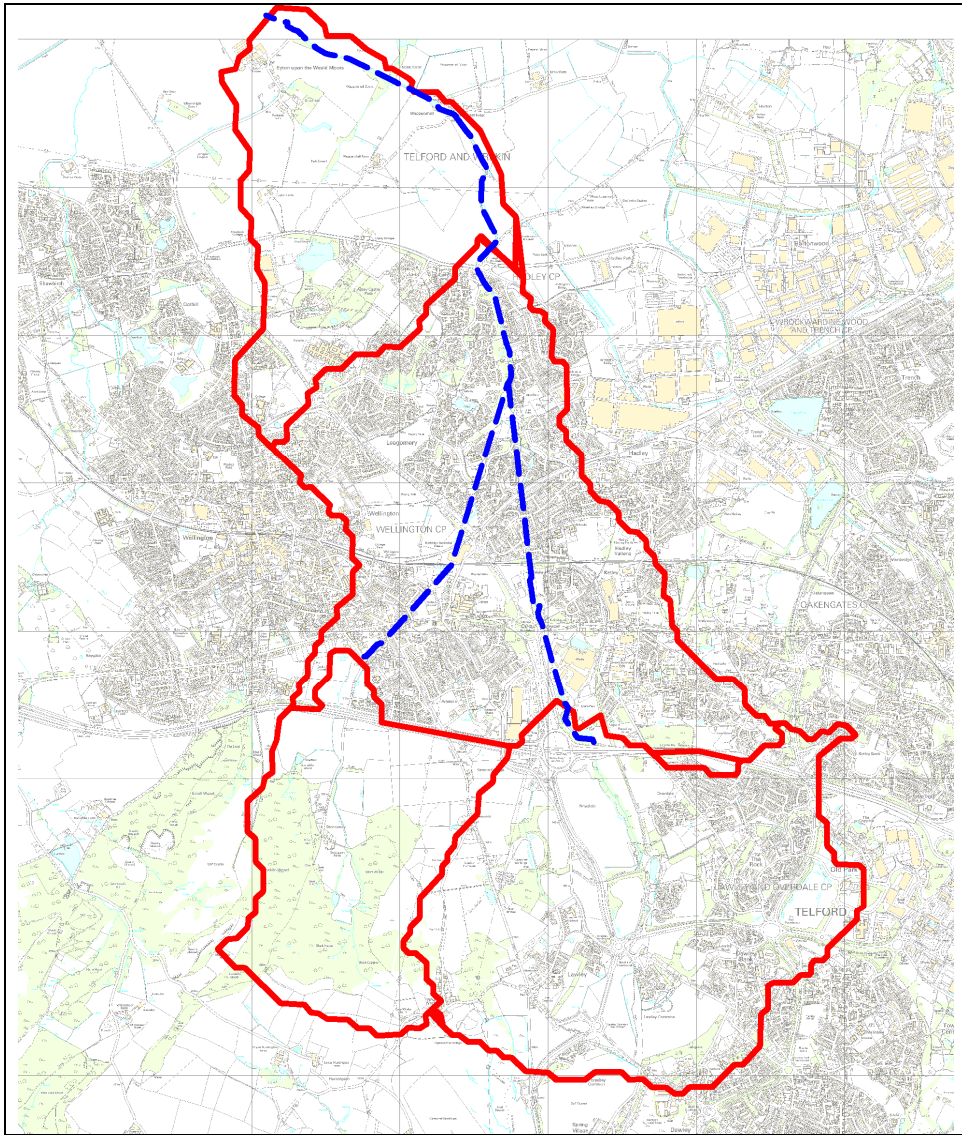
AREA: 5.87 km^2
SARR: 731 mm
URBEXT$_{2008}$: 0.4611
SPRHOST: 36.99%

Model Inflow boundaries

Two inflow boundaries were created, one representing the catchment to the upstream extent to the model including parts of Malinslee and Town Park. The other inflow boundary represents the remaining catchment around Stirchley, Brookside and the Industrial Estate. The lower boundary was fed into the model at Holmer Lake and downstream of the A442.

Notes

Imported runoff areas were difficult to determine due to the presence of trunk sewers. However, the flows derived were in agreement with values stated in a report about Holmer Lake.



Hurley and Ketley Brook

Catchment Descriptors

AREA: 17.57 km^2
SARR: 707 mm
URBEXT$_{2008}$: 0.2537
SPRHOST: 38.32%

Model Inflow boundaries

Two catchment areas were identified for the upstream model extents namely 'East' and 'West' representing the more rural southern parts of the catchment. Upper East contributes to Ketley Dingle pool and the tributary feeding in downstream of the pool. Upper West includes some extra area from the upstream side of the railway line. The remaining area was divided into Lower Urban fed in at 3 inflow locations and Lower Rural representing the remaining more rural part of the catchment.

Notes

No imported runoff areas were identified.

Watercourse	Inflow boundary	20 year peak flow (5% AEP) (m^3s^{-1})	100 year peak flow (1% AEP) (m^3s^{-1})	100 year peak flow plus climate change (m^3s^{-1})	1000 year peak flow (0.1% AEP) (m^3s^{-1})
Wall Brook	D1	2.5	4.0	4.8	9.8
	Import	0.3	0.3	0.3	0.3
Wesley	W23	4.2	6.9	8.2	14.8
	W77	14.0	23.0	27.6	49.4
Hurley Trib	HU	6.8	103.	12.4	18.6
	HL	10.7	17.0	20.5	32.7
	Import	2.9	2.9	2.9	2.9
Mad Brook	MU	12.1	19.5	23.4	38.8
	MLH	4.0	6.6	7.9	13.4
	MLL	0.0	6.6	7.9	13.4
Crow Brook	Crow	5.5	8.9	10.7	17.8
	CU20	1.9	3.1	3.7	6.1
	CU80	7.8	12.4	14.9	24.6
	CE	6.8	10.9	13.1	21.8
Hurley and Ketley	UW	2.3	3.8	4.6	7.8
	UE1	8.8	14.1	16.9	28
	UE2	2.6	4.2	5.1	8.4
	L1	2.4	3.9	4.7	7.8
	L2	2.9	4.7	5.6	9.4
	L3	3.3	5.3	6.3	10.5
	LR	2.2	3.6	4.3	7.4

Peak Flows for each watercourse and modelled return period

Project	Telford & Wrekin Level 2 SFRA	**Date**	May 2008
Note	Modelling Approach	**Ref**	WBTWCS
Author	M J Grogan		

1 Modelling Methodologies

1.1 The modelling methodology selected for this commission is a pure 2D approach, using the modelling software TUFLOW. TUFLOW is a computer program for simulating depth-averaged, 2D free-surface flows such as occurs from floods. The approach involves creating an elevation grid of the modelling area using LiDAR (ground elevation) data. Review of the LiDAR data allows determination of whether the channel has been adequately identified. The channel is appropriately represented in the grid and hydraulic structures are included to create a representative model of the hydraulic situation. This approach allows the out of bank flow paths to be easily identified and the full extents of the floodplain can be easily mapped. It also facilitates the production of hazard maps.

2 Modelled Watercourses

2.1 The commission requires the production of six separate 2D models in order to facilitate the production of improved Flood Zone maps (Flood Zones 2, 3a, 3b and 3a + 20% for climate change) for the following watercourses in Telford: Crow Brook, Hurley Brook, Hurley Brook Tributary, Wall Brook (also cited as Donnington Watercourse), Mad Brook and Tributary of Wesley Brook. Sections three to eight describe the approach taken for each.

3 Hurley Brook Tributary

3.1 The upstream extent of the model is located upstream of Wrockwardine Road (SJ 63808 11943) and the downstream extent of the model is downstream of Bratton Farm (SJ 63812 14263).

3.2 The grid resolution used for the 2D model is 4m; this grid size allows for accurate representation of the model area while keeping run times low enough to be viable.

3.3 Along the watercourse there are nine culverts. The culvert locations, type and size are tabulated overleaf.

Table 1: Hydraulic structures on the Hurley Brook Tributary

Name	Location	Type	Size	Comments
HBT01	SJ 63877 12009	Circular	1.2mØ	-
HBT02	SJ 63892 12031	Circular	1.5mØ	-
HBT03	SJ 63869 12152	Circular	1.5mØ	-
HBT04	SJ 63928 12367	Rectangular	3m x 0.75m	-
HBT05	SJ 63940 12483	Rectangular	2m x 1m	-
HBT06	SJ 63820 13341	Circular	1.5mØ	-
HBT07	SJ 63742 13704	Circular	1.5mØ	Added after model boundary revised Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
HBT08	SJ 63710 13919	Circular	1.5mØ	Added after model boundary revised Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
HBT09	SJ 63723 14175	Circular	1.5mØ	Added after model boundary revised Not visited on site visit, dimensions estimated from channel size and knowledge of culverts

3.4 Culvert dimensions were measured, wherever accessible, during site visits and where measurement was not possible the culvert sizes were estimated. Wherever possible, the level of the culvert (mAOD) was verified using a hand-held GPS system and the data was then used to QA the LiDAR data.

3.5 The channel has been represented in the 2D grid and a 'z line' has been used to reinforce the channel and eliminate any localised high points caused by inaccuracies in the LiDAR data.

3.6 The floodplain has mainly been left as it is, however where there are obvious inaccuracies in the LiDAR (such as sudden large fluctuations in ground level in a relatively flat area) these have been fixed by using 'z polygons' based on the surrounding topography to smooth them out. Similarly where there is no LiDAR data, the absence has been fixed using 'z polygons' and the surrounding topography.

3.7 There are no formal Environment Agency defences in the area.

3.8 A global value for the hydraulic roughness, based on the local land use and observations from the site visit, has been chosen this value is 0.045.

3.9 The Hurley Brook Tributary has three inflow boundaries. The first boundary (HU) goes in at the upstream extent of the model (SJ 63808 11943). The next two boundaries (HL and import) enter the model downstream of Shawbirch Road (SJ 63808 13376)

3.10 The downstream boundary of the model is represented by a normal slope calculated using the LiDAR data.

3.11 Due to the ungauged nature of the catchments and the lack of historic outlines it is not possible to calibrate or verify the model. However when results were generated for the model, flow paths were checked against LiDAR and knowledge of the local area to ensure that the results were representative of the local setting.

4 Hurley Brook

4.1 The Hurley Brook model is formed from three watercourses the Hurley Brook, Ketley Brook and Newdale Brook. As such it has three upstream extents, the Hurley Brook downstream of Limekiln Lane (SJ 65756 10829), the Ketley Brook downstream of Ketley Dingle Interchange (SJ 67102 10382) and Newdale Brook downstream of the M54 (SJ 67306 10251). The revised downstream extent of the model is located near Eyton upon the Weald Moors (SJ 65102 15161). When creating the model it was observed that a large amount of water, during the larger flood events, was flowing down the railway line bisecting the Hurley Brook. It was found that this water eventually flowed into the Hurley Brook Tributary, as such a section of the Hurley Brook Tributary model was included in the Hurley Brook model to allow for proper mapping of the flood extents of the Hurley Brook.

4.2 The grid resolution used for the 2D model is 4m, this grid size allows for accurate representation of the model area while keeping run times low enough to be viable.

4.3 Along the watercourse there are seven culverts on the Hurley Brook and two on the Ketley Brook, with the inclusion of part of the Hurley Brook Tributary model culverts HBT03-HBT09 have been included in the model as well. The culvert locations, type and size are tabulated overleaf.

Table 2: Hydraulic structures on the Hurley Brook

Name	Location	Type	Size	Comments
HB01	SJ 68579 10926	Circular	1mØ	
HB02	SJ 66341 11441	Circular	1.2mØ	
HB03	SJ 66551 13379	Rectangular	2m x 1.2m	
HB04	SJ 66522 13449	Rectangular	1m x 1m	
HB05	SJ 66358 14499	Rectangular	2m x 1m	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
HB06	SJ 65302 15058	Rectangular	2m x 1m	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
HB07	SJ 65235 15097	Rectangular	2m x 1m	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
KB01	SJ 67104 10519	Circular	1.95mØ	
KB02	SJ 66886 11363	Circular	0.5mØ	
HBT03	SJ 63869 12152	Circular	1.5mØ	Taken from Hurley Brook Tributary model
HBT04	SJ 63928 12367	Rectangular	3m x 0.75m	Taken from Hurley Brook Tributary model
HBT05	SJ 63940 12483	Rectangular	2m x 1m	Taken from Hurley Brook Tributary model
HBT06	SJ 63820 13341	Circular	1.5mØ	Taken from Hurley Brook Tributary model
HBT07	SJ 63742 13704	Circular	1.5mØ	Taken from Hurley Brook Tributary model
HBT08	SJ 63710 13919	Circular	1.5mØ	Taken from Hurley Brook Tributary model
HBT09	SJ 63723 14175	Circular	1.5mØ	Taken from Hurley Brook Tributary model

4.4 The channel has been represented in the 2D grid, a z line has been used to reinforce the channel and eliminate any localised high points caused by inaccuracies in the LiDAR data. There are two weirs along the watercourse one at Wappenshall Bridge and the other at Eyton Lock; these have been well represented in the LiDAR and do not have z lines over them.

4.5 The floodplain has mainly been left as it is, however where there are obvious inaccuracies in the LiDAR (such as sudden large fluctuations in ground level in a relatively flat area) these have been fixed by using z polygons based on the surrounding topography to smooth them out. Similarly where there is no LiDAR data the absence has been fixed using z polygons and the surrounding topography.

4.6 There are no formal Environment Agency defences in the area.

4.7 A global value for the hydraulic roughness, based on the local land use and observations from the site visit, has been chosen this value is 0.045. Based on observations of the culverts a Manning's 'n' value 0.025 has been chosen for the culverts. A short section of the Ketley Brook is comprised of an artificial concrete channel, this section has been given a roughness value of 0.02.

4.8 The Hurley Brook model has six inflow boundaries two (UW, L1) located at the upstream extent of Hurley Brook (SJ 65756 10829), two (UE2, L2) at the

upstream extent of Ketley Brook (SJ 67102 10382), one (UE1) at the upstream extent of Newdale Brook and the sixth (L3) near Leegomery Roundabout (SJ 66640 13621).

4.9 The downstream boundary of the model is represented by a normal slope calculated using the LiDAR data, the downstream boundary of the Hurley Brook Tributary has also been included in the model.

4.10 Due to the ungauged nature of the catchments and the lack of historic outlines it is not possible to calibrate or verify the model. However when results were generated for the model, flow paths were checked against LiDAR and knowledge of the local area to ensure that the results were representative of the local setting.

5 Crow Brook

5.1 Near Trench Pool the Crow Brook has, at some time in the past, been diverted from its natural course. Examining the LiDAR data, OS tiles and existing Flood Zone information indicates that the Crow Brook originally flowed in a northerly direction from the Trench Pool area. Currently the existing Flood Zones for Crow Brook follow the natural drainage path and ignore the diversion, giving an unrepresentative account of flood risk. However in reality water flows from Trench pool in a North-North-Westerly direction into the new Crow Brook channel.

5.2 The upstream extent of the Crow Brook model is located downstream of Hadley Road (SJ 68592 11510). However, there is a second upstream extent, where the original channel resumes drainage, located downstream of Horton Lane (SJ 68807 14387). The downstream extent of the model is located near Oxmoor (SJ 67761 14889).

5.3 The grid resolution used for the 2D model is 4m. This grid size allows accurate representation of the model area while keeping run times low enough to be viable.

5.4 Along the new channel of the Crow Brook there are five culverts and a further two culverts along the old channel. Table 3 gives details of the hydraulic structures in the model

Table 3: Hydraulic structures on Crow Brook

Name	Location	Type	Size	Comments
CB01	SJ 68722 11757	Circular	0.3mØ	Culvert from Crow Brook to Middle Pool
CB02	SJ 68891 12004	Circular	1.2mØ	Culvert from Middle Pool to Trench Pool
CB03	SJ 68502 12482	Rectangular	2.4m x 1.6m	Culvert from Trench Pool to Crow Brook
CB04	SJ 68058 13325	Rectangular	5m x 1.2m	Culvert under Hadley Park Roundabout Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
CB05	SJ 67858 14316	Rectangular	5m x 2m	Road bridge Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
CB06	SJ 68218 14859	Rectangular	1m x 1m	Culvert on old Crow Brook channel
CB07	SJ 67847 14837	Rectangular	1m x 1m	Culvert on old Crow Brook channel Not visited on site visit, dimensions estimated from channel size and knowledge of culverts

5.5 The channel has been represented in the 2D grid, a z line has been used to reinforce the channel and eliminate any localised high points caused by inaccuracies in the LiDAR data. There are two weirs which have been left in the channel and do not have z lines over them as they are represented in the LiDAR.

5.6 The floodplain has mainly been left as it is, however where there are obvious inaccuracies in the LiDAR (such as sudden large fluctuations in ground level in a relatively flat area) these have been fixed by using z polygons based on the surrounding topography to smooth them out. Similarly where there is no LiDAR data the absence has been fixed using z polygons and the surrounding topography.

5.7 There are no formal Environment Agency defences in the area.

5.8 A global value for the hydraulic roughness, based on the local land use and observations from the site visit, has been chosen this value is 0.045. Based on observations of the culverts a Manning's 'n' value 0.025 has been chosen for the culverts.

5.9 The Crow Brook has four inflow boundary conditions, one at the upstream extent of the model (CU20) one at Middle Pool (CU80), one just downstream of where the watercourse reappears at Trench Lock Interchange (Crow) and one where the old alignment of the watercourse appears (CE).

5.10 The downstream boundary of the model is represented by a normal slope calculated using the LiDAR data.

5.11 Due to the ungauged nature of the catchments and the lack of historic outlines it is not possible to calibrate or verify the model. However when results were generated for the model, flow paths were checked against LiDAR and knowledge of the local area to ensure that the results were representative of the local setting.

6 Mad Brook

6.1 The upstream extent of the model is located near Grange Farm View (SJ 70023 07039) and the downstream extent of the model is located downstream of Halesfield Industrial Estate (SJ 71433 03675).

6.2 The grid resolution used for the 2D model is 4m; this grid size allows for accurate representation of the model area while keeping run times low enough to be viable.

6.3 The Mad Brook flows through several pools and culverts before entering Holmer Lake, a reservoir. The reservoir has a large dam at the downstream end with an overflow structure which allows water to spill under the dam. This overflow structure also has an inlet pipe to allow water through during low flow conditions and two siphons to allow more water through as the level in the reservoir rises towards flood levels. In low flow conditions once water has passed under the dam it then flows through a smaller culvert and emerges downstream of Halesfield Industrial Estate. In flood flow conditions water flows through this culvert and any surcharged water flows down a spillway under the railway into a flood storage area downstream of the railway.

6.4 Along the watercourse there are thirteen culverts. The culvert locations, type and size are tabulated in Table 4 overleaf.

Table 4: Hydraulic structures on Mad Brook

Name	Location	Type	Size	Comments
MB01	SJ 70191 06967	Circular	1mØ	
MB02	SJ 70382 06863	Circular	0.5mØ	
MB03	SJ 70476 06723	Circular	0.5mØ	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
MB04	SJ 70483 06602	Circular	0.5mØ	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
MB05	SJ 70501 06434	Circular	0.3mØ	
MB06	SJ 70902 05761	Circular	5mØ	
MB07	SJ 07936 05733	Rectangular	0.75m x 0.3m	
MB08	SJ 70590 06348	Circular	0.5mØ	Floodplain culvert
MB09	SJ 70742 06281	Circular	0.5mØ	Floodplain culvert
MB10	SJ 70978 05699	Circular	3mØ	
MB11	SJ 71004 05670	Circular	0.3mØ	
MB12	SJ 70882 05762	Circular	0.61mØ	Pipe through overflow structure
MB13	SJ 70886 05759	Rectangular	0.838m x 1.264m x2	Siphons through overflow structure Culverts sized to be hydraulically similar to siphons

6.5 The channel has been represented in the 2D grid, the Mad Brook has very little open channel and after examining the LiDAR it was deemed unnecessary to reinforce the channel with a z line.

6.6 The floodplain has mainly been left as it is, however where there are obvious inaccuracies in the LiDAR (such as sudden large fluctuations in ground level in a relatively flat area) these have been fixed by using z polygons based on the surrounding topography to smooth them out. Similarly where there is no LiDAR data the absence has been fixed using z polygons and the surrounding topography.

6.7 The reservoir and associated dam and overflow are considered to be defences.

6.8 A global value for the hydraulic roughness, based on the local land use and observations from the site visit, has been chosen this value is 0.045. Based on observations of the culverts a Manning's 'n' value 0.025 has been chosen for the culverts. The spill between the dam and the railway line is constructed from concrete and has been given a roughness value of 0.02.

6.9 The Mad Brook model has three inflow boundaries one (MU) at the upstream extent of the model (SJ 70023 07039) and one (MLH) at the upstream end of Holmer Lake (SJ 70857 06167). The third inflow boundary (MLL) represents the water not accommodated by the surface water drains in Halesfield Industrial Estate, as such there is no flow for a 20yr event and all the other

events have had their flows reduced by the equivalent of a 20yr event (it has been assumed that the surface water drains can accommodate up to a 20yr event). This inflow enters the model on Halesfield 21 (SJ 71215 05434).

6.10 The downstream boundary of the model is represented by a normal slope calculated using the LiDAR data.

6.11 Due to the ungauged nature of the catchments and the lack of historic outlines it is not possible to calibrate or verify the model. However when results were generated for the model, flow paths were checked against LiDAR and knowledge of the local area to ensure that the results were representative of the local setting.

7 Wall Brook (also cited as Donnington Watercourse)

7.1 The model extends from SJ 71188 14077, just downstream of Fieldhouse Drive, to SJ 70031 15619, just upstream of the sewage works on Donnington Drive.

7.2 The grid resolution used for the 2D model is 4m, this grid size allows for accurate representation of the model area while keeping run times low enough to be viable.

7.3 Along the watercourse there are eight culverts and a further two culverts on the floodplain. The culvert locations, type and size are tabulated in the Table 5 below.

Table 5: Hydraulic Structures on Wall Brook

Name	Location	Type	Size	Comments
UDD01	SJ 71118 14153	Rectangular	1m x 0.4m	
UDD02	SJ 71115 14167	Rectangular	1m x 0.4m	
UDD03	SJ 71080 14216	Rectangular	1.5m x 0.5m	
UDD04	SJ 7102114254	Circular	0.8mØ	
UDD05	SJ 70863 14409	Circular	0.5mØ	
UDD06	SJ 70823 14474	Circular	0.5mØ	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
UDD07	SJ 70423 14889	Circular	0.4mØ	
UDD08	SJ 70424 14966	Circular	0.5mØ	
UDD09	SJ 71262 14790	Circular	0.75mØ	Floodplain culvert Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
UDD10	SJ 71057 15159	Circular	0.75mØ	Floodplain culvert Not visited on site visit, dimensions estimated from channel size and knowledge of culverts

7.4 The channel has been represented in the 2D grid, a z line has been used to reinforce the channel and eliminate any localised high points caused by inaccuracies in the LiDAR data.

7.5 The floodplain has mainly been left as it is, however where there are obvious inaccuracies in the LiDAR (such as sudden large fluctuations in ground level in a relatively flat area) these have been fixed by using z polygons based on the surrounding topography to smooth them out. Similarly where there is no LiDAR data the absence has been fixed using z polygons and the surrounding topography.

7.6 There are no formal Environment Agency defences in the area.

7.7 A global value for the hydraulic roughness, based on the local land use and observations from the site visit, has been chosen this value is 0.045. Based on observations of the culverts a Manning's 'n' value 0.025 has been chosen for the culverts.

7.8 The watercourse has two upstream flow boundaries located at the same point. The boundary called "D1" represents the catchment upstream of the model, and the boundary called "import" represents the lateral inflows for the length of model.

7.9 The downstream boundary of the model is represented by a normal slope calculated using the LiDAR data.

7.10 Due to the ungauged nature of the catchments and the lack of historic outlines it is not possible to calibrate or verify the model. However when results were generated for the model, flow paths were checked against LiDAR and knowledge of the local area to ensure that the results were representative of the local setting.

8 Wesley Brook Tributary

8.1 The upstream extent of the Wesley Brook model is near St Quentins Roundabout (SJ 70388 08260) and extends to near Hem Lane at the downstream end (SJ 71950 06049).

8.2 The grid resolution used for the 2D model is 4m, this grid size allows for accurate representation of the model area while keeping run times low enough to be viable.

8.3 Along the watercourse there are eight culverts and one more on the floodplain. The culvert locations, type and size are tabulated in the Table 6 below.

Table 6: Hydraulic Structures on Wesley Brook Tributary

Name	Location	Type	Size	Comments
WBT01		Circular	0.2mØ	
WBT02		Circular	0.3mØ	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
WBT03		Circular	0.3mØ	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
WBT04		Circular	0.3mØ	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
WBT05		Circular	0.5mØ	Not visited on site visit, dimensions estimated from channel size and knowledge of culverts
WBT06		Circular	1.5mØ	
WBT07		Rectangular	0.5m x 0.5m	
WBT08		Circular	0.3mØ	
WBT09		Rectangular	3m x 2m	Subway under Queen Elizabeth Avenue Not visited on site visit, dimensions estimated from LiDAR and knowledge of subways

8.4 The channel has been represented in the 2D grid, a z line has been used to reinforce the channel and eliminate any localised high points caused by inaccuracies in the LiDAR data.

8.5 The floodplain has mainly been left as it is, however the road deck of Queen Elizabeth Avenue has been recreated where the filtered LiDAR removed it at the subway.

8.6 There are no formal Environment Agency defences in the area.

8.7 A global value for the hydraulic roughness, based on the local land use and observations from the site visit, has been chosen this value is 0.045. Based on observations of the culverts a Manning's 'n' value 0.025 has been chosen for the culverts.

8.8 The Wesley Brook has two inflow boundaries, the first (W77) enters the model at the upstream extent (SJ 70390 08259) and the second (W23) enters the model downstream of Queensway (SJ 71339 07108)

8.9 The downstream boundary of the model is represented by a normal slope calculated using the LiDAR data.

8.10 Due to the ungauged nature of the catchments and the lack of historic outlines it is not possible to calibrate or verify the model. However when results were generated for the model, flow paths were checked against LiDAR and knowledge of the local area to ensure that the results were representative of the local setting.

Project	Telford & Wrekin Level 2 SFRA	**Date**	4th March 2008
Note	Site Visit 21/02/2008	**Ref**	WBTWCS
Author	M Grogan		

1 Introduction

1.1 On the 21st February 2008 Halcrow visited the Hurley Brook/Ketley Brook and the Crow Brook to facilitate the hydraulic modelling exercises that will follow for the Level 2 SFRA. This Technical Note is a brief summary of the site visit and findings.

2 Ketley Brook

2.1 Ketley Brook forms an upstream tributary of the Hurley Brook. The reach of this watercourse to be modelled extends from SJ 67320 10130 to SJ 66728 12671 (where it meets the Hurley Brook). There is currently a new housing development being constructed at the upstream extent. Atkins has written a report about the flood risk in this area, which the EA thinks the Council has, and if so will be required to assist the study.

2.2 The first structure on Ketley Brook is the culvert under the M54. This is a 1m diameter circular culvert (picture 001 Appendix A). Downstream of this culvert there is a flow baffle (pictures 003-005 Appendix A) (SJ 67305 10252). The base of this appears to be just above the low flow conditions for the brook. Immediately downstream of this is a balancing pond (pictures 006, 007 Appendix A). Water from the pond flows out over a spill at the eastern side (picture 008) (SJ 67195 10276). The spill incorporates a drop of approximately 1.75m, downstream of which the channel becomes an artificial concrete channel (picture 009). At the downstream end of the artificial channel there is an inflow from the drains on the Ketley Dingle Interchange (M54 junction 6) (SJ 67112 10404). The watercourse then reverts to natural channel and flows towards the Sinclair Ironworks.

2.3 Information from the EA (based on the submitted consent for modification of the culvert) has indicated that Sinclair Ironworks has diverted a culvert (which originally flowed under the site) and replaced it as it was in poor condition. The culvert is now a 1950mm diameter pipe with an invert of 102.180m and is located at SJ 67100 10500. It was not possible to examine the inlet as it lies within the Sinclair Ironworks site and permission to enter the site had not been obtained. The culvert emerges north of Holyhead Road (A518) (pictures 10-12 Appendix A) (SJ 66950 11063). The watercourse emerges from two

culverts, a circular culvert 1m in diameter and a box culvert 1m by 2m. The watercourse flows onward to a flood storage area where it sinks into a drop culvert (pictures 13-21 Appendix A) (SJ 66885 11361). The drop culvert appears to be 2.5m deep with a plan of 2m by 2m, with two 450mm diameter culverts exiting it. The brook eventually emerges at its confluence with the Hurley Brook (pictures 22-27 Appendix A) (SJ 66728 12671).

3 Hurley Brook

3.1 The reach of Hurley Brook to be modelled extends from SJ 65703 10808 to SJ 66650 13650. At the upstream extent Hurley Brook emerges from a culvert under a new housing development site (picture 43 Appendix A). The channel is artificial at this point. It then proceeds under Limekiln Lane (pictures 42, 44-46) (SJ 65754 10828) before flowing in a natural channel for a short distance and then entering a culvert (SJ 65879 10927). It was not possible to view the entrance to this culvert due to lack of permission to enter the site. The watercourse proceeds under Telford football ground before emerging for a short distance near Arleston Lane (pictures 36-41) (SJ 66334 11431). Along this stretch the brook exits and enters through culverts of 1m in diameter. From examining OS maps of the area the brook then appears to emerge in Haybridge Industrial Estate, though this will be verified during a second site visit. N.B. second site visit has confirmed that this is just a drain and not part of the Hurley Brook. The brook then appears to sink again and proceed to the confluence with the Ketley Brook (pictures 22-27 Appendix A) (SJ 66728 12671). The watercourse then proceeds north passing under Leegate Avenue (pictures 33-35 Appendix A) (SJ 665555 13375) and Queensway (A442) (pictures 29-31 Appendix A) (SJ 66522 13447) before reaching the downstream modelled extent (picture 28 Appendix A) (SJ 66650 13650).

3.2 At this time there does not appear to be any hydraulic modelling issues with these stretches of watercourse. Halcrow require the Atkins report for the Lawley site in order to appropriately progress the hydrological analysis.

4 Crow Brook

4.1 The reach of Crow Brook examined on site extends from SJ 68590 11510 to SJ 67940 14880. This is the reach which we planned to model, based on an examination of the existing Flood Zone information and where refinement is therefore required. However, through the course of the site visit it has been concluded that the Crow Brook is likely to have been diverted from its natural course. Figure B.1 in Appendix B shows the Flood Zones following the original channel path, and a line showing where the channel is thought to have been diverted to. We hope to gather data on the diversion, as well as how the

two watercourses interact, in order to appropriately model the situation on the ground. Our approach to modelling this watercourse will need to be signed off by the Environment Agency.

4.2 At the upstream extent of the reach the Crow Brook emerges from a culvert into a natural channel (pictures 47-48 Appendix A) (SJ 68590 11510). The brook flows in a north eastern direction before entering two 400mm diameter culverts under Sommerfeld Road (pictures 54-55 Appendix A) (SJ 68723 11759). When the brook emerges the water is a red-orange colour (pictures 49-51, 53), denoting possible water quality issues, possibly due to contamination emerging from the ground, inside the culvert, or interaction with the wetland area to the east (picture 52 Appendix A) (SJ 68746 11951). The brook flows north for a short distance before entering a culvert (SJ 68772 12096). It was not possible to inspect this culvert as it was on a site and permission to enter had not been obtained. The culvert emerges again at Trench Pool (pictures 56-57, 60-63 Appendix A) (SJ 68774 12341), a large raised reservoir. Water from Trench Pool overflows at the eastern end (pictures 58-59, 64 Appendix A) (SJ 68491 12486), and it is at this point where it is assumed that the channel diverts from the old path where the Flood Zones currently exist (Figure B.1 in appendix B).

4.3 When following the assumed 'old path' and looking for possible places where the Crow Brook may emerge from the culvert, it was observed that site 61900 Land adjacent Oakland House, Hortonwood, was already being developed (picture 65 Appendix A) (SJ 68872 13641). This site also incorporates a reach of watercourse which drains east to west. The interaction of this with either the old or new Crow Brook is not known, and needs to be understood from any existing data on the diversion, to inform how it should be appropriately modelled.

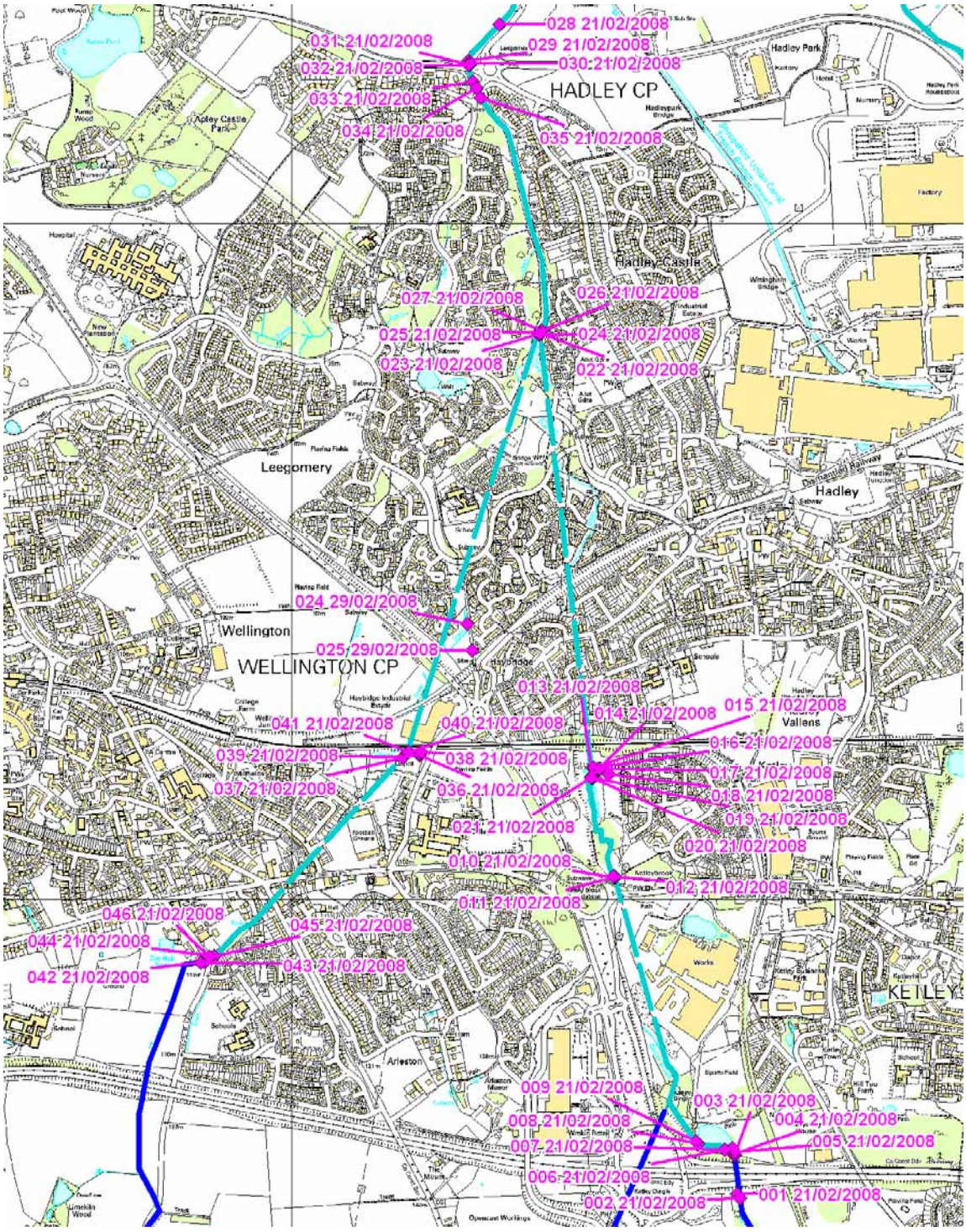
4.4 The 'old' reach of the Crow Brook reappears near Horton Lane (pictures 66-68, Appendix A) (SJ 68800 14393). The brook flows in a north westerly direction before entering a culvert near Moorhead (SJ 68218 14863), it then emerges downstream of Humber Lane (pictures 69-70) (SJ 68078 14859). It is assumed that this channel now just acts as drainage for surrounding fields, and does not drain the wider upstream catchment.

4.5 It needs to be understood if the old channel resumes as natural channel near Horton Lane, or if there is a culverted section upstream of this. Halcrow requires the Environment Agency's view on the current drainage situation of this watercourse to inform how this will be modelled. At present the Flood

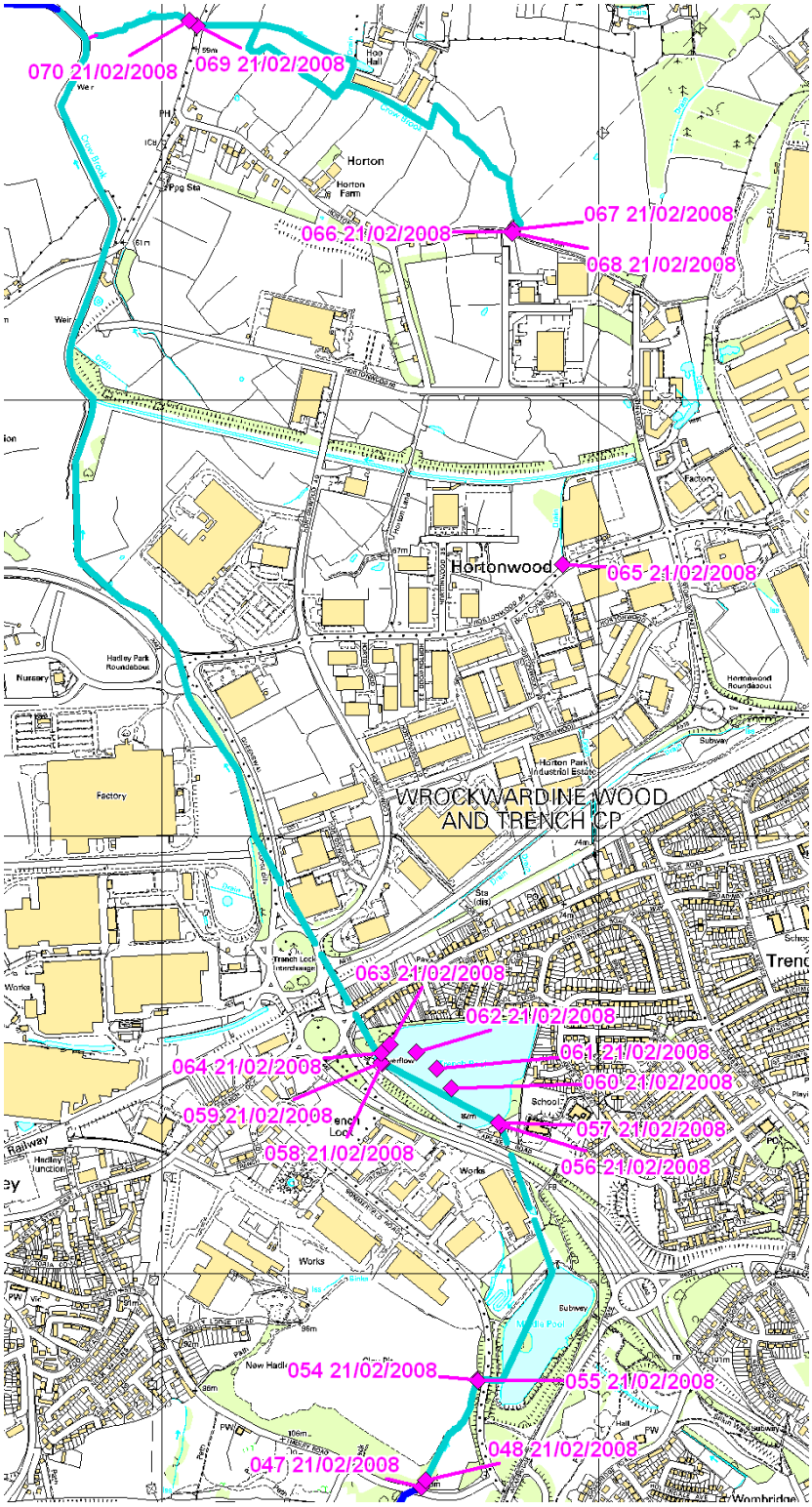
Zones for the old path are incorrect, while the new path of the channel does not have any Flood Zones. A model will be constructed to appropriately model the current drainage situation, which may result in the need to look at the Council's development sites again. From examining the OS maps of the area it does appear that the old channel has been severed from the new channel and does not connect to any other watercourses. Information on who created the channel diversion and drawings/information of the new channel will be required, as well as information on the interaction with the old channel. Ultimately agreement on how this watercourse is modelled will be required from the Environment Agency.

Appendix A

Hurley Brook Photo Location Plan (photo number and date of site visit)



Crow Brook Photo Location Plan (photo number and date of site visit)



001 Ketley Brook Culvert US Under M54

002 Ketley Brook US M54

003 Ketley Brook Culvert DS M54

004 Ketley Brook Culvert DS M54 Blind US

005 Ketley Brook Culvert DS M54 Blind DS

006 Pool On Ketley Book

007 Pool On Ketley Brook

008 Overflow From Pool On Ketley Book

009 DS Overflow From Pool On Ketley Brook

010 Ketley Brook DS Culvert DS A518 Holyhead Road

011 Ketley Brook DS A518 Holyhead Road

012 Ketley Brook DS A518 Holyhead Road

013 Ketley Brook Sink nr Wedgewood Crescent

014 Ketley Brook Sink nr Wedgewood Crescent

015 Ketley Brook Sink nr Wedgewood Crescent

016 Ketley Brook Sink nr Wedgewood Crescent

017 Ketley Brook Drain into Sink nr Wedgewood Crescent

018 Ketley Brook Drain into Sink nr Wedgewood Crescent

019 Ketley Brook Sink nr Wedgewood Crescent

020 Ketley Brook Sink nr Wedgewood Crescent

021 Ketley Brook Sink nr Wedgewood Crescent

022 Junction of Ketley Book and Hurley Brook

023 Junction of Ketley Book and Hurley Brook
Hurley Brook Culvert DS

024 Junction of Ketley Book and Hurley Brook
Ketley Brook Culvert DS

025 Junction of Ketley Book and Hurley Brook

026 Junction of Ketley Book and Hurley Brook

027 DS Junction of Ketley Book and Hurley Brook

028 Hurley Brook DS Extent

029 Hurley Brook DS A442 Queensway

030 Hurley Brook DS Culvert A442 Queensway

031 Hurley Brook DS Culvert A442 Queensway

032 Hurley Brook US Culvert A442 Queensway

033 Hurley Brook DS Leegate Avenue

034 Hurley Brook DS Culvert Leegate Avenue

035 Hurley Brook US Culvert Leegate Avenue

036 Hurley Brook nr Arleston Lane

037 Hurley Brook nr Arleston Lane

038 Hurley Brook nr Arleston Lane

039 Hurley Brook DS US Culvert nr Arleston Lane

040 Hurley Brook US DS Culvert nr Arleston Lane

041 Hurley Brook US DS Culvert nr Arleston Lane

042 Hurley Brook US Culvert Limekiln Lane

043 Hurley Brook US Limekiln Lane

044 Hurley Brook DS Limekiln Lane

045 Hurley Brook DS Culvert Limekiln Lane

046 Hurley Brook DS Culvert Limekiln Lane

047 Crow Brook DS Culvert Hadley Road

048 Crow Brook DS Hadley Road

049 Crow Brook DS Sommerfeld Road

050 Crow Brook DS Sommerfeld Road

051 Crow Brook DS Culvert Sommerfeld Road

052 Crow Brook DS Sommerfeld Road
Interaction with Area nr Middle Pool

053 Crow Brook DS Culvert Sommerfeld Road

054 Crow Brook US Culvert Sommerfeld Road

055 Crow Brook US Sommerfeld Road

056 Crow Brook DS Culvert Capewell Road Trench Pool Inflow

057 Crow Brook DS Capewell Road Trench Pool Inflow

058 Trench Pool DS Overflow

059 Trench Pool DS Overflow

060 Trench Pool

061 Trench Pool

062 Trench Pool

063 Trench Pool

064 Trench Pool DS Overflow

065 Hortonwood Development Site Mound of Earth Over Location of Drain

066 Crow Brook DS Culvert nr Horton Lane

067 Crow Brook nr Horton Lane

068 Crow Brook US Culvert nr Horton Lane

	
069 Crow Brook DS Culvert Humber Lane	070 Crow Brook DS Humber Lane

Appendix B

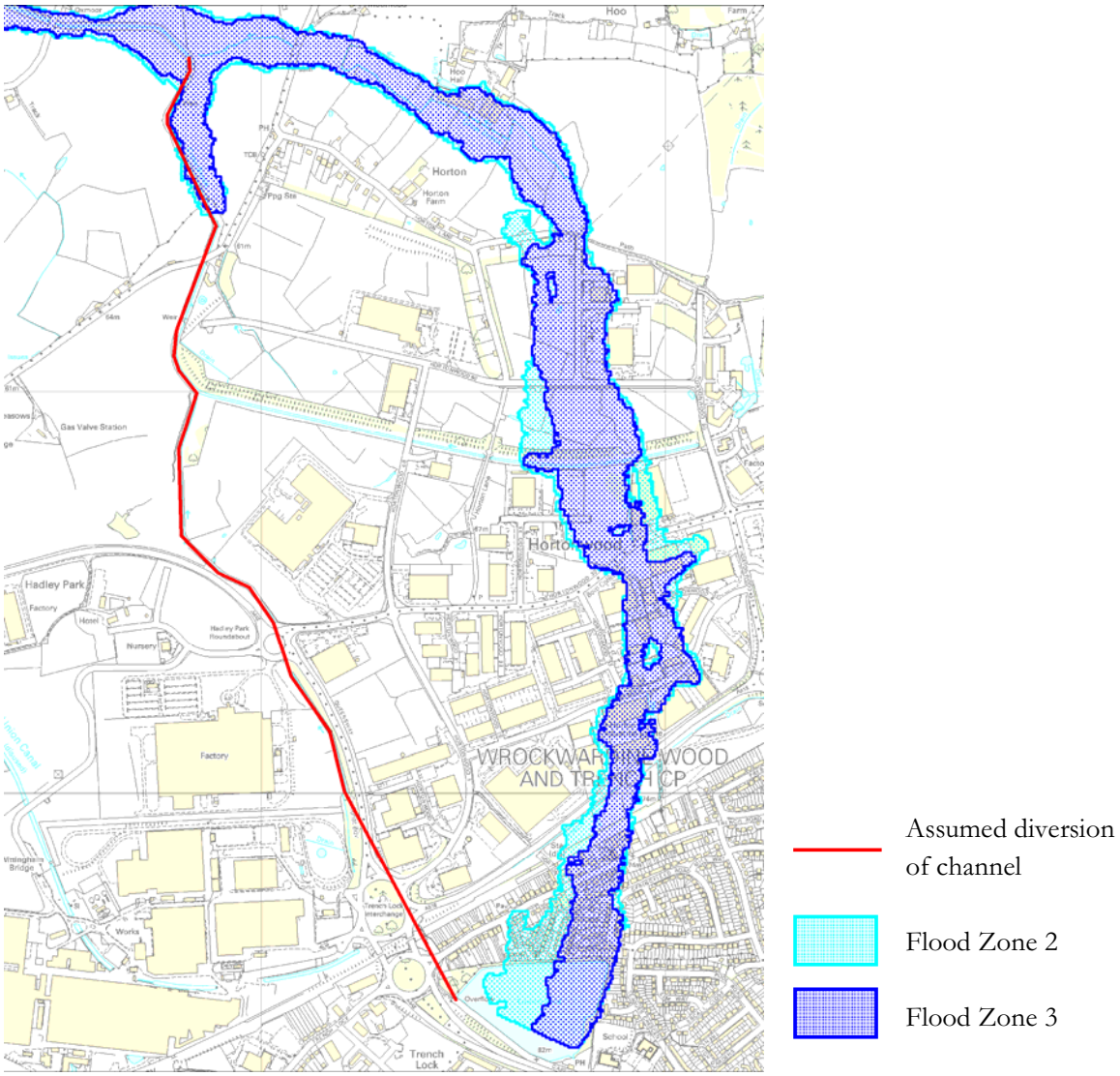


Figure B.1: Crow Brook flood zones and assumed channel diversion

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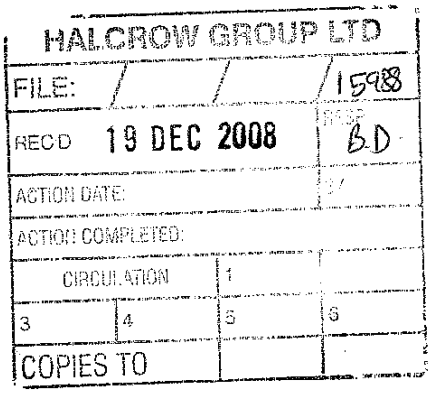
Environment Agency

Ms Beccy Dunn
WaterEngineering and Management
Halcrow Group Ltd
Lyndon House
62 Hagley Road
Edgbaston
Birmingham
B16 8PE

Our ref: TWC/SFRALevel 2/draft2
Your ref:
Date: 15 December 2008



Dear Beccy

STRATEGIC FLOOD RISK ASSESSMENT LEVEL 2 SECOND DRAFT

Following close liaison with us during the production of the SFRA, we have no major concerns with the Level 2 SFRA produced for Telford and Wrekin Council and see it as a useful document to inform planning related decisions made by Telford and Wrekin Council.

As discussed with you earlier, we have some minor editing amendments which I reiterate here for completeness ie

- p23 first para – remove word "watercourses" after access crossings.
- P67 delete the word "drainage" in last sentence of fourth bullet point.

We have concern over the apparent discrepancy between the SUDS Strategy para 5.1 which asks for a 5% reduction on brownfield sites, and the actual SFRA document where it was pushing for a 20% reduction. As mentioned to you previously we recommend the 20% figure.

We are surprised at the limited reference to historic flood data as we are aware that some information exists in the media, within the Council Drainage department and from local knowledge. T&WC's Urban Integrated Drainage Study has been completed and reference should be made to this with results included in the SFRA.

We agree that the new Level 2 SFRA Flood Zone information should be used to assist the LPA in carrying out the Sequential and Exception Tests, as we support the use of the most up to date and comprehensive data. However the last sentence of the new section 11.10 could be clarifed by adding an additional sentence "This would be supported where appropriate with a detailed FRA from the developer".

Environment Agency
Hafren House, Welshpool Road, Shelton, Shrewsbury, Shropshire, SY3 8BB.
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk
Cont/d..

In summary, subject to the above minor points, we support the Level 2 SFRA document as seen.

Yours sincerely

Mrs Hilary Berry
Senior Planning Officer

Direct dial 01743 283516
Direct e-mail hilary.berry@environment-agency.gov.uk

End