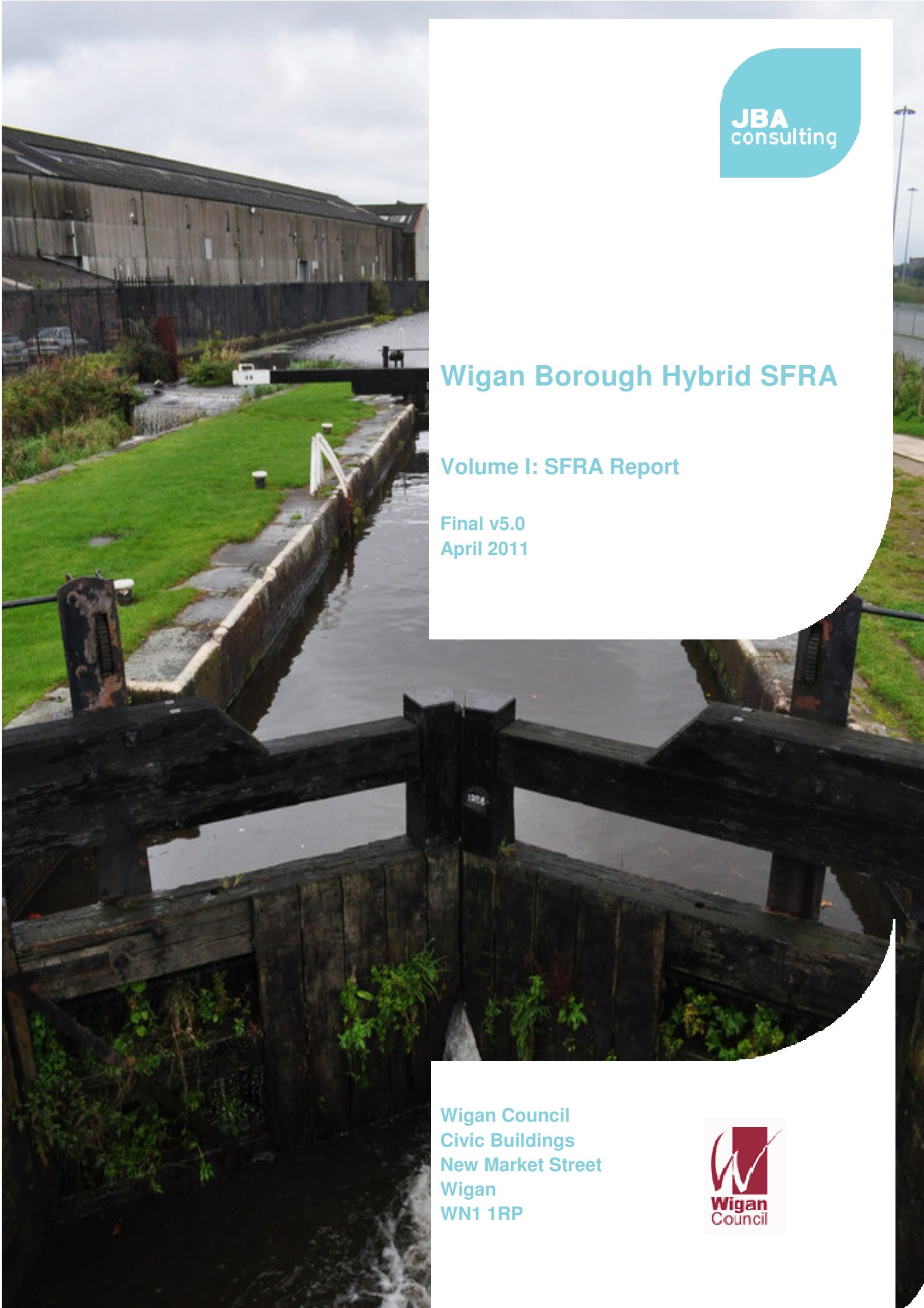

Wigan Borough Hybrid SFRA

Volume I: SFRA Report

Final v5.0
April 2011

Wigan Council
Civic Buildings
New Market Street
Wigan
WN1 1RP

JBA Office

JBA Consulting
South Barn
Broughton Hall
Skipton
North Yorkshire
BD23 2ET

JBA Project Manager

Howard Keeble MPhil BEng BSc CEng CEnv CWEM CSci MICE MCIWEM MCMI

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Contract

This report describes work commissioned by Wigan Council awarded 11 January 2010. Wigan Council's representative for the contract was Damian Garner. Howard Keeble and Rosalind Whitham of JBA Consulting carried out this work.

Prepared by Rosalind Whitham BSc
Analyst
Howard Keeble MPhil BEng BSc CEng CWEM CEnv CSci MCIWEM MICE
Principal Engineer

Reviewed by Hannah O'Callaghan BSc CWEM MCIWEM
Senior Analyst

David Stark BSc CEng MICE
Principal Engineer

Approved by Gary Deakin BEng CEng MICE
Divisional Manager

Purpose

This document has been prepared as a report for Wigan Council. JBA Consulting accepts no responsibility or liability for any use that is made of this document other than by the Client for the purposes for which it was originally commissioned and prepared.

The modelling undertaken for the SFRA is of a strategic nature and more detailed FRAs should seek to refine the understanding of flood risk from all sources to any particular site.

JBA Consulting has no liability regarding the use of this report except to Wigan Council.

Acknowledgments

JBA would like to acknowledge the support of the SFRA project manager Damian Garner (Wigan MBC), and Chris Scott and Helen Telfer (Environment Agency).

We would also like to thank Neil D'Arcy at British Waterways for his contribution in understanding the risk of flooding from canals.

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Executive Summary

Introduction

Wigan Council is required to undertake a Strategic Flood Risk Assessment (SFRA) as an essential part of the evidence gathering stage of the Local Development Framework (LDF) and in the preparation of the Local Development Documents (LDDs). The SFRA provides baseline information for use in the preparation of the Sustainability Appraisal (SA).

The requirement for the preparation of SFRAs is outlined in Planning Policy Statement 25 Development and Flood Risk (PPS25) and its Practice Guide. This requires Local Planning Authorities (LPAs) to take a lead role in local flood risk and development planning. This is required in order to demonstrate that sufficient consideration has been given to flood risk at all stages of the planning process. This is required to avoid inappropriate development in higher risk areas.

Local authority planners need to demonstrate that a risk based and sequential approach to development planning and flood risk has been adopted throughout the evaluation process and applied during preparation of development plans. This is achieved through the application of the Sequential and Exception Test as outlined in PPS25.

The SFRA comprises relevant data, guidance and recommendations for flood risk issues at a local level. It is a planning tool that enables the LPA to carry out Sequential and Exceptions Testing and to select and develop sustainable site allocations at lower risk of flooding.

The SFRA provides an integrated approach to strategic and local Flood Risk Management (FRM). The SFRA also provides links to other policy documents such as Catchment Flood Management Plans (CFMPs), Regional Flood Risk Appraisals (RFRAs) and Surface Water Management Plans (SWMPs).

The Wigan Level 2 Hybrid Strategic Flood Risk Assessment (SFRA) is presented as two reports.

Sequential Test Spreadsheet and Mapping

This SFRA includes the Sequential Test spreadsheet for all sites identified by the Council as being potentially suitable for future development in accordance with their perceived development needs. The Council has, as part of the SFRA process, already rejected sites that are unsuitable based on significant flooding issues. In addition to the report, particular focus need to be given to the Sequential Test spreadsheet, included as Appendix A and the associated mapping in Appendix C.

Structure of the Wigan SFRA

The Wigan SFRA is supplied as two Volumes, described in the table below. Readers should refer to Wigan Council for guidance on how to use the information provided in the SFRA.

SFRA Volume	Title of volume	Contents
I	Level 2 SFRA	This Volume provides evidence on a key community basis. It provides more detailed information on flood risk from the River Douglas, Calico Brook and Wigan Brooks, the Leeds Liverpool Canal and surface water. The additional detail can also inform a sequential approach to development allocation within flood risk areas and mitigation options where appropriate.
II	SFRA User Guide	For additional information on the SFRA process and requirements for Sequential and Exceptions Testing please refer to the SFRA User Guide.

Understanding flood risk from a planning perspective

This Level 2 SFRA provides an overview of flood risk from a planning perspective to aid the council when undertaking the Exception Test. The SFRA presents a summary of flood risk from all sources to groups of strategic development sites within the borough. An outline mitigation strategy for Wigan has been prepared, which provides advice on how development could proceed in flood risk areas and be compliant with the requirements of PPS25. The SFRA has assessed the likelihood of strategic development sites passing the Exception Test.

Recommendation for further work

The SFRA has made the following recommendation for further work:

1. A Scoping SWMP in partnership with United Utilities, British Waterways and the Environment Agency to identify particular hotspots where surface water solutions can be identified or more detailed modelling is needed.
2. A Drainage Strategy should be undertaken as part of or alongside this for key development areas to identify locations suitable for SUDS and how flood risk can be managed and reduced downstream. The SWMP may be usefully undertaken as part of an AGMA wide SWMP.

SFRA Mapping

A suite of strategic flood risk maps have been produced for the SFRA. In keeping with PPS25 and the associated Practice Guide, these maps should be used to locate development away from areas at high risk of flooding.

Future development planning also needs to make reference to this suite of strategic flood risk maps, as well as any updated information provided by the LPA and Environment Agency.

Use of SFRA Data

Whilst all data used in the preparation of this SFRA has been supplied to the LPA (including, for example, reports, mapping, GIS and modelled data) there is a need to maintain controls over the data and how it is applied and modified. It is anticipated that the SFRA and associated maps will be published on the Council's website as PDFs. As the central source of SFRA data, these maps will be available to download.

The LPA will be able to use the modelled output (depths, hazards and outlines) for internal use. The use of this information must consider the context within which it was produced. The use of this data will fall under the license agreement between the LPA and the Environment Agency as it has been produced using Environment Agency data. It should be remembered that the modelling undertaken for the SFRA is of a strategic nature and more detailed FRAs should seek to refine the understanding of flood risk from all sources to any particular site.

SFRA data should not be passed on to third parties outside of the LPA. Any third party wishing to use existing Environment Agency flood risk datasets should contact External Relations in the Environment Agency North West Region. A charge is likely to apply for the use of this data.

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Abbreviations

ABD	Areas Benefiting from Defences
AEP	Annual Exceedance Probability
AGMA	Association of Greater Manchester Authorities
CFMP	Catchment Flood Management Plans
CLG	Communities and Local Government
COW	Critical Ordinary Watercourses
CRR	Community Risk Register
CSO	Combined Sewer Overflow
DPDs	Development Plan Documents
DTM	Digital Terrain Model
EA	Environment Agency
ELA	Employment Land Availability
EU	European Union
FCERM	Flood and Coastal Erosion Risk Management
FRA	Flood Risk Assessment
FRM	Flood Risk Management
GMRF	Greater Manchester Resilience Forum
LDDs	Local Development Documents
LDF	Local Development Framework
LIDAR	Light Detection and Ranging
LPAs	Local Planning Authorities
NFCDD	National Fluvial and Coastal Defence Database
PPS	Planning Policy Statement
RFRA	Regional Flood Risk Assessment
RBMP	River Basin Management Plans
RPB	Regional Planning Bodies
RPG	Regional Planning Guidance
SA	Sustainability Appraisal
SCI	Statement of Community Involvement
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SHLAA	Strategic Housing Land Availability Assessment
SMP	Shoreline Management Plans
SoP	Standard of Protection
SUDS	Sustainable (Urban) Drainage Systems
SWMP	Surface Water Management Plan
UDP	Unitary Development Plan
UU	United Utilities
WCS	Water Cycle Study
WFD	Water Framework Directive

For a full glossary of terms, please refer to the accompanying SFRA User Guide.

1 Introduction

1.1 Background

JBA Consulting was commissioned in November 2009 by Wigan Council to undertake a Level 2 Hybrid Strategic Flood Risk Assessment (SFRA) following on from the Greater Manchester Sub-Regional SFRA completed in August 2008.

The SFRA has been prepared in accordance with current best practice, Planning Policy Statement 25 Development and Flood Risk (PPS25)[1] and the PPS25 Practice Guide[2].

The SFRA is presented across two separate report volumes:

- Volume I: The Level 2 SFRA
- Volume II: The Practice Guide

This document supports the application of the Sequential Test and an assessment of the likelihood of a site passing the Exception Test by providing an understanding of the variability of risk in flood risk areas.

1.2 General scope and objectives of SFRAs

Flooding is a natural process and does not respect political demarcations or administrative boundaries; it is influenced principally by natural elements of rainfall, tides, geology, topography, rivers and streams and man made interventions such as flood defences, roads, buildings, sewers and other infrastructure. As was seen in the summer of 2007, flooding can cause massive disruption to communities, damage to property and possessions and even loss of life.

For this reason it is best to try and avoid developing in flood risk areas in the first instance. Where this is not possible then the vulnerability to flooding of the proposed land use should be considered and measures taken to minimise flood risk to people, property and the environment. This is the thrust of the risk based sequential approach to managing flood risk and it is the backbone of PPS25.

Current Government policy requires local authorities to demonstrate that due regard has been given to flood risk in the planning process. It also requires that flood risk is managed in an effective and sustainable manner and where new development is necessary in flood risk areas (exceptionally), the policy aim is to make it safe and not increase flood risk elsewhere. Where possible, flood risk should be reduced overall.

A SFRA is a planning tool that enables a council to select and develop more vulnerable site allocations away from areas susceptible to flooding. The assessment focuses on the existing site allocations within the borough but also sets out the procedure to be followed when assessing additional sites for development in the future.

It is recognised that considerable pressures for regeneration, inward investment and economic growth exist across the borough. This SFRA will guide the council in their strategies, policies and decision making in respect of their Local Development Framework (LDF) and Local Development Documents (LDDs).

In addition to informing the assessment of existing site allocations, the Level 1 and Level 2 SFRAs will inform decision making on non-allocated planning applications and flood management measures to reduce flood risk to existing development and emergency planning.

[1] Communities and Local Government (2006) Planning Policy Statement 25: Development and Flood Risk
[2] Communities and Local Government (2008) Planning Policy Statement 25: Development and Flood Risk – Practice Guide

The key objectives of a SFRA are to:

- Investigate and identify the extent and severity of flood risk to the area at present and in the future, under the terms of PPS25,
- Contribute to the Council's Sustainability Appraisal (SA) and LDF,
- Enable the Council to apply the Sequential Test and assess the likelihood of development passing the Exception Test,
- Provide strategic flood risk guidance and advice to planners and developers,
- Help LPAs to identify specific locations where further and more detailed flood risk data and assessment work is required. This includes the scope for Surface Water Management Plans (SWMPs) and/or Water Cycle Studies (WCSs),
- Identify the level of detail required for site-specific Flood Risk Assessments (FRAs),
- Inform the emergency planning process,
- Improve stakeholder joint working and the sharing of data, information and the understanding of flood risk, and
- Provide a reference document.

There is a trend developing since the publication of the PPS25 Practice Guide in 2008 for SFRAs to be more than a land use planning tool and provide a broader and inclusive vehicle for integrated, strategic and local flood risk management assessment and delivery. Since publication of the Pitt Review, it is apparent that SFRAs will provide the central store for data, information and consideration for all flood risk issues from all sources at a local level and provide the linkage between Catchment Flood Management Plans (CFMPs), Shoreline Management Plans (SMPs), Regional Flood Risk Appraisals (RFRAs), SWMPs and appropriate sustainable land uses over a number of planning cycles.

SFRAs need to be fit for the future to help inform communities to meet the considerable flood risk management and climate change related challenges ahead.

1.3 Level 2 SFRA scope and objectives

The Level 2 SFRA provides a detailed understanding of flood risk across Wigan borough from all sources to help support the application of the Sequential Test and provide an assessment of the likelihood of a site passing the Exception Test. This document provides an understanding of actual risk (taking into account the presence of flood defences) and identifies residual risk. Residual risks are the risks that remain after all risk avoidance, substitution, control and mitigation measures have been taken into account. The residual risks in Wigan are therefore related to the occurrence of events of low probability, such as extreme flood events greater than the design capacity of the constrained river system or failure of flood defences or other assets (e.g. culverts, canals).

It is the assessment of residual risk associated with low probability but high impact events that is central to the Level 2 SFRA work and the impacts they have on the spatial development in Wigan. By facilitating the application of the Exception Test, the Level 2 SFRA technical work also provides evidence to support the allocation of land for specific uses within individual developments in flood risk areas, including providing a range of possible mitigation measures that could enable development to proceed.

Whilst the application of the Exception Test may make it possible to strategically plan the type and form of the development, it must not be used as a tool to place inappropriate development in flood risk areas.

The Level 2 SFRA is structured as follows:

1. **Introduction**.
2. **Flooding from rivers**. Provides an assessment of the risk at key development sites along the River Douglas, Calico Brooks and Wigan Brooks
3. **Flooding from canals**. Provides an assessment of areas that could potentially be affected by overtopping or breach from the Leeds Liverpool Canal and Bridgewater Canal.
4. **Flooding from reservoirs**. Due to implications for national security, the flood risk associated with reservoir failure has not been considered in the Level 2 SFRA.
5. **Flooding from surface water and sewers**. Contains a detailed assessment of flood risk from surface water, which provides an indication of areas that may be affected by sewer flooding if the network were to surcharge. This chapter also introduces Critical Drainage Areas and provides recommendations for Surface Water Management Plans.
6. **Cumulative impacts**. Provides an understanding of the impact that development could have on flood risk both within Wigan and downstream.
7. **Hydraulic interactions**. Understanding the potential interactions between different sources of flood risk in Wigan is critical. These have been mapped and tabulated in the Level 2 SFRA.
8. **Summary of flood risk**. The risk of flooding from all sources has been summarised for key communities.
9. **Outline Mitigation Strategy**. This provides advice on how development could proceed in flood risk areas and be compliant with the requirements of PPS25.

1.4 Sequential Test spreadsheet and associated mapping

This SFRA includes the Sequential Test spreadsheet for all sites identified by the Council as being potentially suitable for future development in accordance with their perceived development needs. The Council has, as part of the SFRA process, already rejected sites that are unsuitable based on significant flooding issues. In addition to the report, particular focus need to be given to the Sequential Test spreadsheet, included as Appendix A and the associated mapping in Appendix C.

2 Flooding from Rivers

A detailed assessment of fluvial flood risk has been undertaken throughout the borough to ascertain areas of high flood risk and where there is a focus for future development. This has been undertaken using the 2D modelling package JFLOW.

2.1 Introduction

The Wigan Level 2 SFRA presents the risk of flooding from watercourses across the borough. It focuses on those areas at greatest risk, where strategic development sites have been proposed by the Council. The river modelling that has been developed for the SFRA is of a strategic nature. Detailed studies should seek to refine the understanding of flood risk from all sources where a specific site risk assessment is being prepared.

An assessment of the depth and hazards associated with flooding from rivers, including consideration of residual risk behind flood defences has been undertaken where there is a known risk of flooding and where there is a pressure for future development. Within the borough the majority of this development is contained within the existing urban areas.

Potential developments within the borough can be split into two classifications; Employment Land Allocation (ELA) and Strategic Housing Land Availability Assessments. These are listed in Appendix A of this report.

To help determine the extent and severity of flood risk a number of linked 1D (river) and 2D (floodplain) models have been assessed in order to determine the risk to future development. River modelling, developed for this SFRA, is strategic in nature.

2.2 Terminology - Flood Zone Definitions

Flood Zone 1: Low Probability

Definition: This zone comprises land assessed as having a less than 1 in 1000 annual probability of river and sea flooding in any year (<0.1% AEP).

Flood Zone 2: Medium Probability

Definition: This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1% AEP).

Flood Zone 3a: High Probability

Definition: This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1% AEP)

Flood Zone 3 with climate change: High Probability

Definition: This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1% AEP), with a climate change sensitivity allowance.

Flood Zone 3b: The Functional Floodplain

Definition: 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% AEP) or greater in any year or is designed to flood in an extreme (0.1% AEP) flood.

2.3 Flood Defences

The Environment Agency's National Flood and Coastal Defence Database (NFCDD) was used to establish the existing flood defences along the main rivers in the borough (see Table 2-1). It established that all assets are raised (man-made) defences.

It is important for these assets to be considered as an overall entity for the borough rather than individual actions for each asset across the catchment. The performance of local authorities in delivering agreed actions in the form of Catchment Flood Management Plans is being monitored by National Indicator 189 - Flood and coastal erosion risk management.

However, it should be noted that the CFMP is a strategic document that sets the direction of FRM for operating authorities over the next 50 to 100 years. Development in flood risk areas should always seek to reduce risk wherever possible; following the principles in PPS25. The residual risk of flooding in an extreme flood event or from the failure of defences should always be carefully considered.

Raised embankments are located along the Leeds Liverpool canal and Bridgewater canal throughout the borough. In the event of a defence failing the canal could flood into one of the following watercourses:

1. Astely Brook
2. Bedford Brook
3. Westleigh Brook
4. Common Lane Brook
5. Hey Brook
6. River Douglas
7. Ince Brook
8. Barley Brook
9. Clarington Brook

This will increase flood hazard. Therefore it is important to understand the interaction between canals and rivers.

The condition of existing flood defences and whether they will continue to be maintained and/or improved in the future is an issue that needs to be considered as part of the risk based sequential approach and in the light of this, whether proposed land allocations are appropriate and sustainable. In addition, detailed Flood Risk Assessments (FRAs) will need to explore the condition of defences thoroughly, especially where these defences are informal and contain a wide variation of condition grades. It is important that all of these assets are maintained in a good condition.

The NFCDD was reviewed to identify key Environment Agency and privately owned defence assets across the borough, as outlined in Table 2-1.

Table 2-1: NFCDD Defence Assets in the Wigan Borough

Unique ID	Watercourse	Description	Location	Maintainer	Design Standard (Return Period In Years)
01323ATHL0101L06	Atherton Brook	Raised poured concrete flood wall	Spill weir to Lilford Park Basin	Environment Agency	50
01323ATHL0101L07		Flood bank. Raised earth embankment	Reservoir embankment To Lilford Park Basin	Environment Agency	50
01212DOUG0501L12	Douglas	Channel Bed & Embankment	Corporation Street	Environment Agency	40
01212DOUG0501R06		Channel Bed & Wall	A49 Wallgate to Footbridge rear of Bus Depot	Environment Agency	40
01212DOUG0501R09		Channel Bed & Wall	Swan Meadow Road	Private	40
01212DOUG0501R10		Channel Bed & Embankment	Deromas	Environment Agency	40
01212DOUG0501R16		Channel Bed & Wall	A577-MILLGATE (B5238)	Environment Agency	40
01323GLAZ0201R03	Glaze	Flood Bank - Raised earth embankment		Environment Agency	50
01323GLAZ0209R10		Flood bank	Flood bank downstream of Hawkhurst Bridge (Jennets Lane road bridge)	Environment Agency	50
01323HIND0101L01	Hindsford Brook	Flood bank - Raised earth embankment		Environment Agency	50
01323PENT0101R03	Pennington Brook	Earth flood bank		Environment Agency	50
01323PENT0101R01		Earth flood embankment linked to Pennington Bank	From confluence with Bedford Brook upstream to Pennington Bridge	Environment Agency	50
01323PENT0101L06		Earth embankment linked to Pennington Bank	From Pennington Bridge upstream to Breaston Bridge	Environment Agency	50
01323PENT0101R06		Earth flood embankment linked to Pennington Bank	From Pennington Bridge	Environment Agency	50

Unique ID	Watercourse	Description	Location	Maintainer	Design Standard (Return Period In Years)
			upstream to Breaston Bridge		
01323PENT0102R07		Flood Bank		Environment Agency	50
01323PENT0103R11		Flood Bank	Very low embankment	Environment Agency	50
01323PENT0101L05		Earth flood embankment linked to Pennington Bank	From confluence with Bedford Brook upstream to Pennington Bridge.	Environment Agency	50
01323PENT0101L02		Flood banks earth on both sides. Embankment linked to Pennington Bank	Upstream Warrington Road	Environment Agency	50
01323PENT0101L01		Earth flood embankment linked to Pennington Bank	From confluence with Bedford Brook upstream to Pennington Bridge	Environment Agency	50
01323PENT0101R02		Earth flood embankment linked to Pennington Bank		Environment Agency	50

A GIS layer was produced which contained the following information:

- NFCDD reference
- Asset type
- Maintainer
- Asset description and location
- Asset length and height
- Asset condition
- Standard of protection
- The design standard of the defence defined as a return period in years
- Watercourse
- Design level
- Defence maintenance

2.4 Areas Benefiting from Defences

The Environment Agency Flood Map shows that areas of Wallgate and Poolstock in central Wigan benefit from the Douglas defences in a flood with a 1% (1 in 100) chance of occurring in any year. These areas would flood if the defences were not present, but do not flood because of the presence of the defence structure. Map number D015-001 in Appendix C displays all Areas Benefiting from Defences in the Wigan area.

2.5 Douglas CFMP Account of Historical Flooding

"The Douglas catchment has a history of flooding but the most notable events were in August 1987 and October 2000 when Croston village flooded affecting around 200 properties. The flow in 2000 was recorded and estimated to be the equivalent of a 0.5% APE or 1 in 200 year event. The Yarrow broke out of its banks upstream and the defences stopped the water returning to the river. There have been flood events in Chorley, Wigan and Leyland but recent flood alleviation works have mitigated the level of property damage after more damaging floods in the past".

The main sources of flooding in the Douglas catchment are as follows:

"River flooding is mainly from three rivers; the Douglas affects Wigan, the Yarrow affects Croston and Chorley and the Lostock affects Leyland and Whittle Le Woods. Rivington Reservoirs play an important role in regulating flow. When they are not full they trap water flow from the upper catchment and when full they slow the water flow. This reduces flood peaks on the Yarrow and Douglas. In urban areas, culverts and other flow restrictions can make the flooding worse as flow backs up behind these obstacles and flow out of bank or channel. Parts of the catchment are tidally influenced; fluvial flood risk can be made worse by tide locking. River water cannot flow out to sea due to a high tide."

2.6 Defended Flood Zone 3 areas

The EA maps provide an indication of the likely extent of flooding in the absence of flood defences. The flood limiting impact of defences can be determined with reference to the "Areas Benefiting from Defences" mapping. In Wigan, existing defences generally assist in managing flood water to a 2% or 2.5% AEP event scenario.

The EA do not have any detailed mapping that defines areas of functional floodplain (Zone 3b). The SFRA includes mapping of potential FZ3b areas (and associated hazard mapping data) **in the absence of defences**. Flood mapping of a potential 5% AEP event, in the absence of defences is included as drawing number D001_010a. All other mapping includes for the presence of flood defences in accordance with the design maintenance outlined in the EA NFCDD database.

Inspection of the defence asset data provided by the EA indicates that the majority of watercourses within the Wigan area are defended to some extent in excess of the 5% AEP criteria. It should be noted that issues such as structural integrity of these defences, variations in crest levels and levels of maintenance have not been considered as part of the SFRA.

Areas of low-lying land behind defences, which are defended to a level in excess of the 5% AEP criteria, have been classified as FZ3. The FZ3 categorisation allows the Council to considered development proposals within existing defended areas. Residual risks associated with proposed development, located behind defences, needs to be considered in detail as these risks are potentially significant due to the rate and depth of inundation if a defence were to fail.

Inspection of the mapping including "Areas Benefiting from Defences" indicates that the maximum extent of Flood Zone 3 is not influenced, to any significant extent, by the presence of existing defences.

2.7 Understanding flood risk from a planning perspective

This Level 2 SFRA provides an overview of flood risk from a planning perspective to aid the Council when undertaking the Exception Test. The SFRA presents a summary of strategic sites within Flood Zone 3, summarised in Table 2-2 below. A full list of the Council's strategic sites and their flood risk issues can be found in Appendix A .

For each of these sites, an outline mitigation strategy has been prepared, which provides advice on how development could proceed in flood risk areas and be compliant with the requirements of PPS25. The SFRA has assessed the likelihood of strategic development sites passing the Exception Test.

Table 2-2: Summary of Flood Risk to Development Sites in Flood Zone 3

Wigan Site Reference	Watercourse and % FZ3	Council Comment
Wig 161	River Douglas 71% Note: Extent and scale of residual risk to be determined following release of the EA modelling for the River Douglas Flood Alleviation Scheme.	This location is a major existing developed site in the Green Belt (Leyland Mill) and is a conversion opportunity. Conversion for residential use would need to be restricted to upper floors unless it can be demonstrated that flood risk can be effectively mitigated and site access maintained during the design flood event.
Wig 137	River Douglas 98% Note: Extent and scale of residual risk to be determined following release of the EA modelling for the River Douglas Flood Alleviation Scheme.	Of the sites remaining Wig 137 is the only significant site (and is already under EA consideration). The Eckersley Mills and former bus garage site is considered a key regeneration site. Large conversion opportunity of existing major mills complex with opportunity for new build at the former bus garage site. Flood defence measures are currently under review including consideration of flood compatible uses on ground floor.
Wig 131	River Douglas 82% Note: Extent and scale of residual risk to be determined following release of the EA modelling for the River Douglas Flood Alleviation Scheme.	Surface level car park at Chapel Lane, gas works and depot off Darlington Street. More Vulnerable uses, such as residential, shall be limited to the 18% of the site within Flood Zone 1. Proposals for residential development in other areas of the site shall be restricted to upper floors, unless it can be demonstrated that flood risk can be effectively mitigated and site access maintained during the design flood event.
Wig 694	Millingford 64%	There is no proposal for commercial development at this site but the Council have had previous application enquiries in the past and, as a town centre site, would strongly prefer a (Less Vulnerable) commercial development. Proposed development would ideally be an extension of the adjacent shopping centre. Commercial opportunity site on 'stilts' at level of Gerard Centre, with car parking / servicing underneath.
Wig 047	Chanters Brook 53%	Victoria Mill, Conversion for residential use would need to be restricted to upper floors. Would only be granted if EA satisfied of flood risk measures. Wig 060 is adjacent land with potential for new-build to cross-subsidise the conversion. We can assume that only 36% of site Wig 060 is available for development.
Wig 060	Chanters Brook 64%	Assume only 36% (i.e. area outside of Flood Zone 3) is

Wigan Site Reference	Watercourse and % FZ3	Council Comment
		available for development area to be used in support of Wig 047 above.
Wig 655	Has planning permission so is included on this basis only.	
Wig 740	Has planning permission with flood compatible uses on the ground floor so is included on this basis only.	
Wig 695	Site deleted from SFRA.	
Wig 140	Site deleted from SFRA Leigh Sports Village - Morrisons supermarket under-construction.	
Wig 706A	Site deleted from SFRA.	
Wig 125	Site deleted from SFRA.	
Wig 657	Site deleted from SFRA.	

2.8 Methodology and Assumptions

The modelling that has been developed for the SFRA is of a strategic nature that has been developed to inform the application of the Sequential and Exception Test by Wigan Council.

The modelling approach that has been undertaken is considered appropriate for this SFRA and modelling provides a suitably robust approach that informs the Council's strategic planning of future development. The SFRA has highlighted the need for a detailed and holistic review of flood risk from all watercourses.

2.9 River modelling scenarios

To provide the analysis required by PPS25 the scenarios defined in Table 2-3 below were modelled and the impacts of flooding assessed in further detail. Overtopping is defined in this table as floodwater that exceeds either, or both, river banks or defences. In accordance with PPS25 flood risk associated with the 1% AEP flood event, including the impact of climate change, has been considered in the SFRA.

Table 2-3: River Modelling Scenarios

River / Area	Event probability	Scenario
JFLOW County Wide Model	Zone 3b and Zone 3a with climate change	Overtopping
Douglas	Zone 3a, Zone 3b, Zone 3a with climate change and Zone 2	Overtopping
Calico Brooks	Zone 3a with climate change	Overtopping
Wigan Brooks	Zone 3b, Zone 3a and Zone 2	Overtopping
Douglas CFMP	Zone 3a, Zone 3b & Zone 3a with climate change and Zone 2	Overtopping
Leeds Liverpool Canal	NA	Overtopping and Breach
Bridgewater Canal	NA	Overtopping and Breach

2.10 Model outputs

It should be recognised that fluvial flooding could have wider implications for both existing and new development as well as wider communities located outside areas of immediate flood risk.

For example, flooding may affect key infrastructure such as transport routes and bridges that provide emergency access during flooding events. Sewer networks may also be inundated, causing flooding in locations outside the expected extent of fluvial flooding and within basements.

Hazard, velocity and depth mapping (Flood Zone 3 including climate change) have been produced as digital appendices to this report. Additional mapping developed for this SFRA are considered secondary sources of information that help to quantify the severity of flooding and risk. This addition mapping enhances the available EA data.

In general, the SFRA modelled outlines are similar to the existing EA Flood Zones. This demonstrates that fluvial flood risk is generally contained within clearly defined and low-lying areas of Wigan. As with all SFRAs, the EA's Flood Zone Maps remain the primary source of flood mapping as they relate to UK planning policy. Please refer to the User Guide for more information on how to use and prioritise the mapping data included in this SFRA.

The hazard, velocity and depth mapping associated with the study have been developed using an undefended JFLOW scenario using Environment Agency Digital Terrain Mapping and Flood Estimation Handbook catchment descriptors. This is considered a precautionary approach as the NFCDD defence database indicates that the majority of watercourses in the borough have defences maintained to a 2% to 2.5% AEP standard.

Analysis of potential flood risk without defences for a 5% AEP event indicates that the extent of flooding will be confined to the river corridor. In order to take account of the limited information on the integrity of defences, the undefended scenario represents a potential zone of rapid inundation and higher risk.

Modelling results used to define areas of high risk and rapid inundation were based on the available modelling data provided by the Environment Agency. This information has been supplemented with additional strategic modelling and mapping techniques to provide an overview of areas that are at significant flood hazard.

2.11 Flood Hazard Zones

The model outputs record the extent, depth and hazard associated with fluvial flooding. Flood Hazard describes the flood conditions that are likely to affect people. It is a combination of flood depth, velocity and includes consideration of debris and obstruction to flows within river channels. The variables used in the flood hazard rating are;

- Depth of flood water (metres)
- Velocity of flood water (metres /second)
- Debris factor (score)

The Flood Hazard Rating is calculated using the following equation:

$$HR = d \times (v + 0.5) + DF$$

Where, HR = (flood) hazard rating; d = depth of flooding (metres); v = velocity of floodwaters (metres/sec); and DF = debris factor calculated using Table 2-4.

Table 2-4: Debris Factors for Flood Depths, Velocities and Dominant Land Uses

Depths (metres)	Pasture/Arable	Woodland	Urban
0 to 0.25	0	0	0
0.25 to 0.75	0	0.5	1
d>0.75 and/or v>2	0.5	1	1

For the Wigan SFRA, flood hazard has been presented on the following scale:

Table 2-5: Scales of Flood Hazard

Hazard to people	Hazard to people classification
No Hazard	Negligible
Very Low Hazard " Flood zone with shallow flowing water or deep standing water"	Caution
Danger for some "Danger: flood zone with deep or fast flowing water"	Includes children, the elderly and infirm
Danger for most "Danger: flood zone with deep or fast flowing water"	Includes the general public
Danger for all "Danger: flood zone with deep or fast flowing water"	Includes the emergency services

2.12 River Douglas Flood Alleviation Scheme

The Environment Agency have advised that they "are currently progressing the River Douglas Flood Alleviation Scheme. Once signed off by the panel engineer and operational, it is understood that this will limit the design flow rate within the river to a 5% AEP event. This should result in water levels being contained within the bank along the Douglas through Wigan. It is anticipated that the Environment Agency flood zone mapping will be updated around March 2012 to reflect this work".

3 Flooding from Canals

The SFRA has undertaken a strategic assessment of breach from the Leeds - Liverpool Canal and Bridgewater Canal.

3.1 Introduction

The Leeds and Liverpool Canal (LLC) is fed by gravity from Foulridge reservoir, which is located at the head of the canal system. The LLC flows from Chorley to Wigan in one continuous pound (a stretch of canal between two locks) before dropping, at Top Lock, into Wigan via a series of 22 lock gates. At the bottom of the valley the canal splits with the left branch flowing eastward towards Leigh (Leigh Branch) and the right flowing westward to Liverpool.

The LLC is an important link with other waterways. The Rufford Branch connects the River Douglas and the River Ribble (via the Ribble Link) to the Lancaster Canal. The Bridgewater Canal runs east in one continuous 43 mile long pound from Leigh to Ellesmere Port. Only a small section of this pound is located within the Wigan borough as the Leeds and Liverpool canal effectively becomes the Bridgewater canal to the east of Leigh.

The interactions of the canal and the main rivers are integral to the understanding of flood risk in the area. British Waterways is a key stakeholder in the management of canals and has been consulted throughout the SFRA process.

As shown on the associated canal breach mapping, as listed in Appendix C, we have reviewed a number of potential breach failures along the Leeds Liverpool Canal through the Wigan borough. Canal breach assessments have been identified based on areas of raised embankments and do not take the structural integrity of the embankment into account or quantify a risk of failure. Flooding may occur at any location along the canal system where there is a raised embankment. Canal breach analysis is therefore indicative and digital plans only have been submitted as part of this SFRA.

3.2 Flood risk from canals

Canals do not generally pose a direct flood risk as they are a regulated water body. The residual risk from canals tends to be associated with lower probability events such as overtopping and embankment failure.

The residual risk associated with canals is more difficult to determine as it depends on a number of factors including, for example, the source and magnitude of surface water runoff into the canal, the size of the canal, construction materials and level of maintenance.

The probability of a breach is managed by continued maintenance. High embankments are known as Principal Embankments and British Waterways have more stringent management regimes in these areas.

No attempt is made in this SFRA to assess the probability of failure other than noting that such events are very rare. However, in accordance with PPS25, all sources of flooding need to be considered. If a breach event were to occur then the consequences, to people and property, could be high. In order to understand the possible impacts, a series of breach models have been generated for this SFRA. It should be noted that the canal breach locations have been identified based on areas of the canal that includes raised embankments. The mapping is intended to provide an indication of the likely impact of selected failure scenarios. It is not intended that inundation mapping provides a comprehensive analysis of all failure scenarios and further site specific analysis will need to be considered at all sites located within the vicinity of a canal system. Developers should be aware that any site that is at or below canal bank level may be subject to canal flooding and this should be taken into account when building resilience into low level properties.

In response to the increased focus on flood risk, British Waterways have issued a generic Guidance Note for Flood Risk Assessments. This states that *"The main incidents of uncontrolled loss of water from our waterways are overtopping and breaching as a result of inundation from adjacent water courses, vandalism or structural failure"*.

There are three known flooding events from the canal within the Wigan area:

- Canal breach in Abram in 1944, reported as leakage - leading to embankment failure;
- Canal breach 2002 in Shevington / Appley Bridge, reported as the failure of a culvert beneath the canal - leading to embankment failure;
- Canal overtopping at Poolstook Lock in Wigan in April 2009, reported as a result of vandalism releasing large volumes of water.

A "Canal Hazard Zone" has been created for the LLC to show areas that could potentially be affected by flooding in the event of breach of raised canal embankments. These are based on broad scale modelling techniques and should only be taken as an indication of the extent of flooding at potential risk. The methodologies used to derive the risk of canal overtopping and breach are outlined below.

There are a number of uncertainties associated with the simulation of flooding from canals in either overtopping or breach conditions. A number of assumptions have been used in the simulation of flooding from the LLC for this SFRA; generally the canal is 12-15 metres wide with a minimum width of 5.2 metres at bridges and a minimum depth of approximately 1 metre. It has been recognised that the canal is typically shallow, but has not taken into account the variability in depth, particularly along the Leigh section as past mining works in this area have caused subsidence of the canal, deepening this section and creating a need for the regarding of the banks. The assumptions behind any modelling should be considered when using and reviewing the hazard zone that has been produced.

3.2.1 Canal overtopping methodology at Poolstock Lock

In locations where surrounding ground levels are the same as or lower than average canal water levels, flooding from canal overtopping is considered to be possible. Canal bank levels and adjacent ground levels were estimated using LIDAR data.

The overtopping of Poolstock Lock in April 2009 was caused by interference with the series of controlling lock gates. BW has confirmed that this is the most likely failure scenario for this length of the canal system.

Inflows into this pound were calculated by estimating the flow rate through twin 600mm square gate paddles of an upstream lock gate. The ISIS model was then attached to the 2D modelling package TUFLOW to generate overtopping outlines and depth grids.

The Poolstock Lock model predicted a small amount of overtopping onto Poolstock Lane. The hazard from such overtopping is likely to be low.

The surface water maps can be used to identify where water appears to pass between the canal and the adjacent land and give an indication of areas potentially at risk from overtopping. Further assessment would be necessary for any site located within surface water flow paths.

3.2.2 Canal breach methodology

Canal breaches can be caused by overtopping and erosion of canal embankments. In general, failure is more commonly caused by degradation of the canal lining and erosion within the embankment slope until failure occurs.

Flooding from a breach of a canal embankment is largely dictated by canal and ground levels, canal embankment construction, breach characteristics and the volume of water within the canal that can discharge into the lower lying areas behind the embankment. For this study, the potential maximum flood extent is limited by the maximum volume of water within a pound length. .However, during a joint probability flood event or if there is an interaction between a canal and watercourse then the volume and extent of flooding may increase.

The potential breach outflow volume is either dictated by the upstream canal pound length or, for long pound lengths, how quickly the operating authorities can react to prevent further water loss. Average pound lengths were calculated for the respective canals and possible breach locations were identified. Areas lower than the estimated minimum canal water levels were assumed to be at potential risk from a canal breach. Canal water levels and surrounding ground levels were determined using LIDAR data.

A breach hydrograph was developed using a 1-D HECRAS model to represent the three stage mechanism with the starting water level as bank full. The respective pound lengths were applied to the model. The breach hydrographs obtained from HECRAS (see Figure 3-1 below) were fed into a two dimensional JFLOW model to assess potential flood inundation extents along the length of the canal. Inflows were applied to the JFLOW model along the canal at potential breach locations.

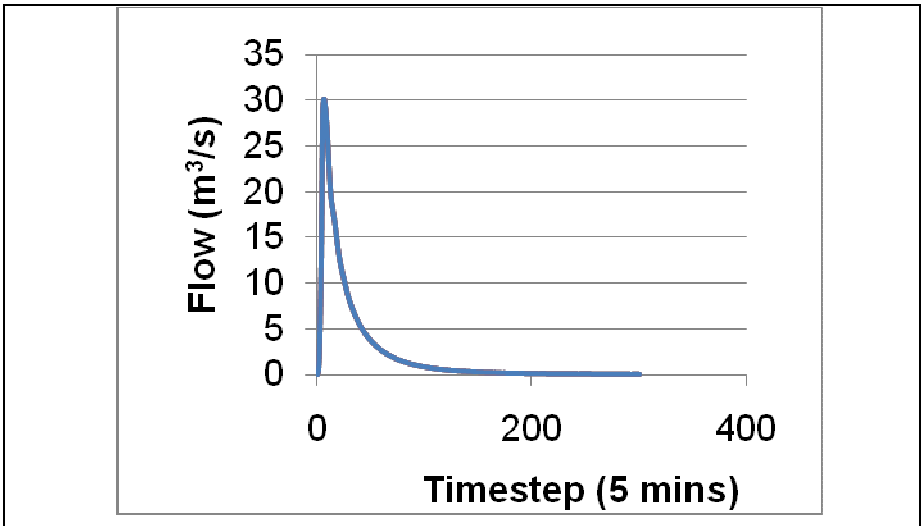

Figure 3-1: Sample Breach Hydrograph

For the known historical breach location at Abram, a simulation was also set up using an ISIS TUFLOW model. Flood inflows were estimated from a calculation of volume in the upstream pound. A breach width of 15 metres was applied.

3.2.3 Flooding from the Leeds Liverpool canal through Wigan

Canal flooding is an unlikely occurrence and so should be considered to be a residual risk. The locations where canal breach is considered most likely are summarised below:

- The River Douglas may overtop into the canal during a severe flood event in Wigan where the Leeds Liverpool canal crosses the river. However, the aqueduct in this location is raised by approximately 6-7 metres above the river level, suggesting the risk of this is low.
- Risk of blockage of the inlets of the twin siphons that pipe the River Douglas under the Leeds Liverpool Canal. It should be noted that access to view the upstream face of the siphons was restricted (no access onto third party land). These siphons have trash screens on the inlets.
- The risk of breach of canal embankments causing significant flooding to people or property within the area appears low. The most likely flooding risk along the Leeds Liverpool Canal appear to be overtopping of the Leigh branch of the canal into the low lying areas south of Poolstock.
- The greatest flood risk appears to be a reoccurrence or similar of the April 2009 event where the opening of sluice gates by third parties caused downstream flooding in the Poolstock Lane area. This scenario could potentially happen at any lock gates throughout Wigan.

3.2.4 Data availability

3.2.4.1 A series of overtopping and breach appraisal have been undertaken at selected locations along the canal system in Wigan. This mapping has been provided to the Council in digital format. Due to the potentially numerous locations for failure scenarios, the canal mapping is considered indicative only and will need to be reviewed and updated as part of any detailed site specific FRA. The location of breach scenarios were based on the location of elevated canal systems and vulnerable infrastructure. The actual risk of failure, at any location, has not be assessed in this SFRA

4 Flooding from Reservoirs

Following the recommendations of the Pitt Review, DEFRA and the Environment Agency have prepared inundation maps (at various levels of detail) of all reservoirs falling within the remit of the Reservoirs Act 1975. These inundation maps show the effects of a dam breach on the downstream area.

By December 2010 the Environment Agency website plans to offer a facility to allow members of the public to identify whether or not a property is downstream of a reservoir and may be subject to flooding.

This chapter summarises the location of key reservoirs within the Wigan area.

4.1 Reservoir locations

This SFRA was not able to obtain a copy of the Environment Agency Reservoir Register, which identifies those reservoirs under the Reservoirs Act due to "implications for national security".

However, discussions with Wigan Council and a review of OS mapping shows there a number of large reservoirs within or upstream of the borough. Table 4-1 identifies the main reservoirs and urban areas at risk immediately downstream of them.

Explicit consideration of reservoir overtopping and breach should be considered in detailed site based FRAs where the reservoir is within or in close proximity to the proposed development. Prior to undertaking an FRA, the Environment Agency should be consulted to confirm the site specific requirements.

Table 4-1: Key Reservoirs

Reservoir Name	Local Authority	Downstream Area
Adlington	Wigan Council	Chorley Road Standish, Thorn Hill, Marylebone, central Wigan, Scholes
Arley	Wigan Council	Chorley Road Standish, Thorn Hill, Marylebone, central Wigan, Scholes
Worthington	Wigan Council	Chorley road Standish, Thorn Hill, Marylebone, central Wigan, Scholes
Wrightington New Pond	West Lancashire	Appley Bridge, Shevington Vale, Holland Lees (included as a potential risk to Wigan area)
Atherton Lake FSR	Wigan Council	Leigh
Rivington Lower	Chorley / Bolton	Adlington (included as a potential risk to Wigan area)

5 Flooding from Surface Water and Sewers

The SFRA has enhanced the assessment of surface water flood risk by using both the Environment Agency National Areas Susceptible to Surface Water Flooding map and detailed flood incident records for the Wigan area. Although flood risk data was made available through United Utilities, sewer network details were not available for this study. In the absence of this data, the surface water map shows potential areas where water would flow and pond in the event that sewers surcharge.

5.1 Introduction

This section presents information on flood risk from surface water and sewers within the Wigan area. New development has the potential to increase impermeable area and unless carefully managed, may result in an associated increase in surface water runoff. An increase in the volume of surface water tends to exacerbate downstream flood risks by, for example, overloading sewers, exceeding the capacity of watercourses, culverts and other associated drainage infrastructure.

Surface water flooding in Wigan tends to be highly localised. Stakeholders have provided valuable historical flooding records that have been included in the SFRA. These records indicate areas within Wigan that are susceptible to repeated incidents of localised flooding that cannot be attributed to fluvial sources.

Managing surface water discharges from development is crucial if flood risk to new and existing development is to be reduced. Carefully planned development, and effective use of green infrastructure, can both contribute to this objective.

Local flood risk management will be an important responsibility for local authorities in the future, which includes managing the risk of flooding from surface water, groundwater and ordinary watercourses. Many of the localised flooding problems can be related to local watercourses that have been culverted as past development has taken place. The condition and standard of protection of these watercourses are unknown but they can be a significant source of flood risk. Flooding in the urban environment is difficult to separate into distinct sources and in reality surface water flooding will be from a combination of overland flows, sewers and highways gullies backing up and surcharging at manholes, local watercourses overtopping, culverts surcharging and potentially high groundwater levels. This is one reason why it is important for one body (the local authority) to take the lead in local FRM delivery.

5.2 Green Infrastructure

The suitability of the Council's green infrastructure areas have been assessed to determine those sites that may be used to provide a strategic flood mitigation function in the future. Green infrastructure sites have been assessed based on their proximity to main rivers within the borough. Green infrastructure plans are included as Appendix C, and in particular attention should be given to drawing number D0019.

5.3 Surface Water and SUDs Suitability

The Council has made clear its approach to surface water management. All proposals for development must consider surface water will be effectively controlled, and also propose valid Sustainable Drainage Systems (SUDS) techniques to fully attenuate surface water generated on the development site. The aim of this approach is to prevent any increase in surface water discharge to receiving watercourses or drainage infrastructure and prevent any increase in flood risk as a result of development.

The planning system has a key role to play in settings standards for SUDS from new developments and ensuring that developments are designed to take account of the risk from surface water flooding. Sustainable drainage and the use of SUDS is supported by the policy

direction in Future Water3, Making Space for Water4, the Pitt Review5 and the Flood and Water Management Act6 that provides for more sustainable management of the water cycle, working in partnership across different agencies and new responsibilities for local flood risk management. In particular, the Flood and Water Management Act requires developers where practical, to include sustainable drainage in new developments to reduce flood risk and improve water quality. It includes 'a requirement on developers to demonstrate that they have met national standards for the application of SUDS techniques before they can connect any residual surface water drainage to a public sewer (amending section 106 of the Water Industry Act 1991).' As part of their new responsibility for local flood risk management, local authorities will be responsible for approving SUDS for new developments and adopting and maintaining them. Table E-1 and Table E-2 (Appendix E) outline the suitability of Wigan Borough Council's proposed development sites for SUDs suitability schemes.

The choice of SUDs within a proposed development site will be determined by local ground conditions (including groundwater levels). Whilst infiltration SUDS may be the most suitable for new development, developers must also consider the risk of contamination to underlying aquifers as part of a detailed site specific FRA.

5.3.1 River Douglas CFMP Groundwater Flooding

"In the Douglas catchment there has been groundwater pumping for many years, but this has mostly ceased now. Some local flooding of property in Appley Bridge has been reported since pumping stopped. There is flood risk from the Rufford aquifer as the groundwater level would naturally be above the surface but the aquifer is covered by a thin layer of clay, which prevents the groundwater flowing to the surface."

5.4 Surface Water and Sewer Capacity Mapping

5.4.1 Surface Water Mapping

The national Areas Susceptible to Surface Water Flooding (ASTSWF) map provides a useful reference in identifying areas that could be at risk from surface water flooding. The SFRA surface water flooding results are shown in Appendix C.

5.4.2 Sewer Mapping

Most new sewers are designed to a 1 in 30 year design standard and hence sewer flooding problems will often be associated with more frequent storm events when a sewer becomes blocked or fails. In the larger events that are less frequent but have a higher consequence, surface water will exceed the sewer system and flow across the surface of the land. Surface water mapping highlights these overland flow routes.

5.4.3 Combined Surface Water and Sewer Mapping

Considering both sewer and surface water flooding together is considered an appropriate methodology when assessing surface water flooding at a strategic level. More detailed consideration of the mechanisms and locations of sewer flooding are beyond the scope of the SFRA. However, the historical mapping provides supporting evidence and patterns of flooding within Wigan. Where surface water is identified as being a significant issue, then development planning needs to focus on managing the impact of development, or to avoid development where the risk of surface water flooding is considered too high.

5.4.4 Critical Drainage Areas

[3] Defra (2008) *Future Water*
[4] Defra, Department for Transport, HM Treasury and Office of the Deputy Prime Minister (2005) *Making Space for water: Taking forward a new Government strategy for flood and coastal erosion risk management in England; First Government response to the autumn 2004 Making space for water consultation exercise*
[5] The Pitt Review (2008) *Learning lessons from the 2007 floods*
[6] Defra (2009) *Draft Flood and Water Management* Act © Crown Copyright

The Town and Country Planning Order 2006[7] defines Critical Drainage Areas as "*an area within Flood Zone 1 which has critical drainage problems and which has been notified… [to]…the local planning authority by the Environment Agency.*" However, the Environment Agency Standing Advice[8] also recognises the part that SFRAs play in identifying areas with drainage problems and in doing so highlighting areas that need a FRA to consider drainage in detail.

Certain locations are particularly sensitive to an increase in the rate of surface water runoff and/or volume from new development. There are generally known local flooding problems associated with these areas. These areas have been defined as CDAs in the SFRA.

Specific drainage requirements are required in these areas to help reduce local flood risk. These are areas with complex surface water flooding problems that would benefit from a Surface Water Management Plan and subsequent drainage strategy.

The SFRA has developed Critical Drainage Areas where:

1. There is a high risk of localised flooding from ordinary watercourses, including culverts surcharging and overland surface water flows, including the potential for flooding from the sewer network due to failure/ blockage or exceedance events when the storm return period is greater than the sewer was designed for.
2. Where there are areas of significant redevelopment planned that could have a significant impact on surface water runoff to local watercourses and the sewer network.

Screening for Critical Drainage Areas (CDAs) within the borough was undertaken using data from the following sources:

- Wigan local authority incident records
- Wigan Fire and Rescue Maps
- The national Areas Susceptible to Surface Water Flooding map
- An assessment of properties at risk based on the ASSWF map
- FEH Catchments
- United Utilities Drainage Area Catchments
- Historical records from Environment Agency and United Utilities

The historical flood records from United Utilities, the Environment Agency and Wigan council were analysed to help identify any CDAs throughout the borough. It was assumed that where a historical record exceeded an eight metre distance from a watercourse (D009_005), the event was presumed to be from surface water runoff or by exceeding sewer capacities. A map of these locations can be found in Appendix C.

United Utilities provided historical flooding records for this SFRA. Details of the sewer network were not made available for use in this assessment. The sewer network can have a significant impact on the location of surface water and sewer flooding for more frequent events. It can also affect the distribution of water throughout urban catchments during flood events, passing excess flows from the combined network into watercourses through combined sewer overflows. It was agreed that without the detailed UU data, natural catchments would be combined with UU Drainage Areas (showing where sewer systems are interconnected across the boundaries of natural catchments) to define CDA boundaries.

Using available data, screening was undertaken to identify Critical Drainage Areas. The CDAs for Wigan have been typically identified by a significant density of high vulnerability ASTSWF data, historical flooding records and United Utilities defined drainage area

[7]HMSO (2006) The Town and Country Planning (General Development Procedure) (Amendment) (No. 2) (England) Order 2006

[8] Environment Agency. Flood Risk Standing Advice for England - PPS25 National Version 2.0. Can be accessed online at http://www.environment-agency.gov.uk/research/planning/82584.aspx

boundaries. Nine key CDAs have been identified and prioritised on this basis. These are listed in Table 5-1 below and included in map number 2009s0578 - D007-001.

Table 5-1: Critical Drainage Areas & Associated Development Sites

CDA	Sites	Site Type
1	Landgate	Candidate Key Strategic Site
	Stubshaw Cross	Candidate Key Strategic Site
	South Lancashire Industrial Estate	ELA
	Land r/o 42 Booths Brow Road, Ashton	SHLAA
	Low Bank Garage, Low Bank Road	SHLAA
	Site of Britannia Inn, 361 Wigan Road, Ashton-In-Makerfield, Wigan	SHLAA
	Ashton Reservoirs, Druid St/Mill St, Ashton	SHLAA
	Liverpool Road, Ashton	SHLAA
	Off Lincoln Drive, Ashton	SHLAA
	Site of Cranberry Hotel and 641-643 Wigan Road	SHLAA
	Ashton FC Ground off Golborne Road, Ashton	SHLAA
	Adjacent to 233 Wigan Road, Ashton-In-Makerfield, Wigan	SHLAA
	Corner of Princess Road/York Road, Ashton	SHLAA
	Millingford Grove, Ashton	SHLAA
	Rockleigh Hotel, 50 Bolton Road	SHLAA
	Open land north east of 612 Bolton Road, Ashton-In-Makerfield	SHLAA
2	Part of Newton Road PEA, Lowton	SHLAA
	Lowton Junior and Infant School	SHLAA
	Golborne High School	SHLAA
	Lowton High School	SHLAA
	The Bungalow and Scrap Yard, Pocket Nook Lane, Lowton	SHLAA
	Open land north of 248 Slag Lane, Lowton	SHLAA
	Land to northwest of Lowton Civic Hall, Hesketh Meadow Lane, Lowton	SHLAA
	Spruce Close, Lowton	SHLAA
	Pocket Nook, Lowton	SHLAA
	Rothwells Farm, Golborne	SHLAA
	Stirrups Farm, Golborne	SHLAA
3	Stone Cross Park	ELA
	J & E W Shimmin Transport, Ashton Road	SHLAA
	Golborne High School	SHLAA

CDA	Sites	Site Type
	St Thomas Rectory, Church Street	SHLAA
	Land off Gloucester Avenue, Golborne	SHLAA
	Land adj to 9 & 30 Rosedale Avenue	SHLAA
	Land at Millfield Farm, Nook Lane, Lowton	SHLAA
	Rothwells Farm, Golborne	SHLAA
	Stirrups Farm, Golborne	SHLAA
4	South of Hindley	Candidate Key Strategic Site
	Hindley High School	SHLAA
	Prospect Industrial Estate, Platt Lane Hindley	SHLAA
	Netto, Ladies Lane, Hindley	SHLAA
	Hill Top Farm, Off Ravenswood Drive, Hindley	SHLAA
	Templeton Road, Platt Bridge	SHLAA
	Land off Ravenswood Drive, Hindley	SHLAA
	Springbank Industrial Estate, Liverpool Road, Platt Bridge	SHLAA
	Land at Woodcock Drive, Abram	SHLAA
5	South of Hindley	Candidate Key Strategic Site
	Crossdale Road, Hindley Green	SHLAA
	Hindley High School	SHLAA
	Templeton Road, Platt Bridge	SHLAA
	Land off Waldon Close, Hindley Green	SHLAA
	Land to rear of 323-333 Bickershaw Lane, Bickershaw	SHLAA
	Rear of Woodland Avenue/Athol Crescent, Hindley	SHLAA
	Land west of Hindley Sewage Works, Templeton Road, Platt Bridge	SHLAA
6	Chaddock Lane x2	ELA
	Chaddock Lane	SHLAA
	Land adjacent Holy Family RC Church, Chaddock Lane, Tyldesley	SHLAA
	Land to north of Treen Street/Bodmin Road/Cranleigh Drive	SHLAA
	'Site Of Former Dairy Adj 224 Mosley Common Road, Tyldesley	SHLAA
	Garrett Hall 2, Tyldesley	SHLAA
	Lark Hill, Astley	SHLAA
7	Land to north of Treen Street/Bodmin Road/Cranleigh Drive	SHLAA
	Land at Alma Street/Elliott Street, Tyldesley, Manchester	SHLAA
	Former Astley Works, Gin Pit Village, Ley Rd, Tyldesley	SHLAA
	Kingshill School, Elliott Street, Tyldesley	SHLAA

CDA	Sites	Site Type
	Lark Hill, Astley	SHLAA
8	Lamberhead Industrial Estate	ELA
	Martland Park x3	ELA
	Martland Park and Heinz x2	ELA
	Pemberton Park x2	ELA
	Richmond Hill Industrial Estate x2	ELA
	Warrington Road, Hawkley x2	ELA
	Westwood Park x2	ELA
	Wheatlea Industrial Estate	ELA
	Allotment Gardens off Ruskin Avenue, Marus Bridge	SHLAA
	Billinge Road/Little Lane, Newtown	SHLAA
	Bransfield Close, Hawkley	SHLAA
	Buer Avenue, Worsley Mesnes	SHLAA
	Former Scot Lane Primary, Laurel Street, Wigan	SHLAA
	Land at Lamberhead Road and Somerset Road, Norley Hall	SHLAA
	Land to east of Falconers Green, Worsley Mesnes	SHLAA
	Land to rear of 17-51 Heather Grove	SHLAA
	Land to rear of 60 Smethurst Lane, Pemberton	SHLAA
	Land to rear of Cotswold Avenue, Pemberton	SHLAA
	Mottram Drive, Worsley Mesnes	SHLAA
	Norley Quarry, Wigan	SHLAA
	Poplar Avenue, Worsley	SHLAA
	Robin Park Road, Newtown	SHLAA
	Saddleback Crescent, Norley	SHLAA
	St Johns Parsih Hall, Fleet Street, Wigan	SHLAA
	St Marks Vicarage, Victoria Street, Wigan	SHLAA
	The Green, Norley	SHLAA
	Warrington Road, Marus Bridge	SHLAA
	Wigan Pier Quarter, Wigan	SHLAA
	Wigan Pier: Sites off Swan Meadow Road and Pottery Road	SHLAA
9	Rosebridge	ELA
	Springfield and Miry Lane x4	ELA
	Westwood Park x3	ELA
	1-7 Upper Dicconson Street and 29-33 Dicconson Street, Wigan	SHLAA
	253-255 Wigan Road	SHLAA

CDA	Sites	Site Type
	Ainscough Metals, Warrington Road, Ince	SHLAA
	Alexandra Colliery, Wigan	SHLAA
	Council Tax Offices (Former Whelley Middle Sch, Moore St East, Whelley	SHLAA
	Former Police Station, Harrogate Street, Wigan	SHLAA
	Hardybutts, Wigan	SHLAA
	Kirkless Industrial Estate, Cale Lane, Aspull	SHLAA
	Lafarge Roofing Ltd, Cale Lane, New Springs	SHLAA
	Land adjacent to 48 Millgate, Wigan	SHLAA
	Land at Birkett Street, Higher Ince	SHLAA
	Land at rear of Whelley Hospital, Whelley	SHLAA
	Land at Scholes, Wigan	SHLAA
	Land between Warrington Lane, Chapel Lane and Darlington Street, Wigan	SHLAA
	Land off Wigan Road (adj to St John the Baptist School)	SHLAA
	Land off Woodhouse Lane, Wigan	SHLAA
	Land Rear of Alexandra Hotel, 213 Whelley, Wigan	SHLAA
	Leyland Mill, Wigan	SHLAA
	Riverway/Station Road, Wigan	SHLAA
	Scholefield Lane, Higher Ince	SHLAA
	Scholes/Kay Close	SHLAA
	Whelley Hospital, Bradshaw Street, Whelley, Wigan	SHLAA
	Wigan Pier Quarter, Wigan	SHLAA
	Wigan and Leigh College Pagefield Building, Bridgeman Terrace, Wigan	SHLAA
	Wigan Pier: Sites off Swan Meadow Road and Pottery Road	SHLAA
	William Street, Lower Ince	SHLAA

The CDAs of Astley, West Astley and South Astley have also been outlined for the Wigan SFRA due to their large density of historical flooding records.

From the surface water mapping it can be seen that without risk based information for the sewer network the CDAs cover an extensive area. The CDAs provided in the SFRA should be refined over time as more detailed information on flood risk and local flood management assets, including sewered catchments, becomes available. The CDAs identified here should therefore only be taken as a starting point in the identification of areas for which a SWMP would be beneficial.

5.5 Recommendations for Surface Water Management

Wigan Council and the Environment Agency should work closely with United Utilities, British Waterways and the Environment Agency, using the outputs from the SFRA as a starting point, to identify the potential locations of and priorities for SWMPs. They should identify

particular hotspots where surface water solutions can be identified or more detailed modelling is needed. A Drainage Strategy should be undertaken as part of or alongside this for key development areas to identify locations suitable for SUDS and how flood risk can be managed and reduced downstream.

The Council, as the lead for local flood risk management, should co-ordinate any future surface water management work. The recent Defra Surface Water Management Plan Guidance (2010) supports the use of SFRAs in providing the evidence base for where SWMPs are required.

Surface water management needs to take a holistic approach, taking into account all the sources of local flood risk, including from sewers, overland flow, culverted and open watercourses and groundwater. A suite of options are available for surface water management including source control, such as the implementation of SUDs, increasing the capacity of sewers or watercourses, storing excess water and managing exceedance flows through urban design and "Green Infrastructure". SWMPs should provide the opportunity to undertake detailed sewer modelling and pool together the knowledge and understanding from different organisations to help assess options to reduce surface water flood risk to new and existing development.

Options to reduce flood risk in one location should not increase risk upstream or downstream. SWMP areas may cross one or more local authority area and different local authorities, the Environment Agency and United Utilities can be brought together in a SWMP partnership to develop sustainable options to manage surface water flood risk. Where there are possible interactions with canals British Waterways should also be involved.

There is the potential for groups of development sites coming forward to share a central and integrated solution for managing surface water runoff. This is best investigated further through a SWMP or a Drainage Strategy, which may or may not be undertaken at the same time as a SWMP. Such solutions can provide great benefits besides water management, including providing recreational facilities, improving biodiversity and making communities a better place to live. Where there are several sites that would share a communal facility, such sites may be funded through developer Section 106 or Community Infrastructure Levy payments. Drainage Strategies can be particularly useful for considering, recommending the implementation of, and long term management arrangements for, SUDS and setting appropriate runoff rates from new development.

5.6 Taking Surface Water Management Plans forward

Wigan Council is one of ten Local Authorities within Greater Manchester which is one of two statutory city region pilots in the country, and the 10 local authorities work collaboratively on matters of shared interest through the Association of Greater Manchester Authorities (AGMA) and its framework of city region governance structures and delivery partnerships with key stakeholders.

Funding towards the development of a Greater Manchester wide SWMP has been secured from DEFRA. Through its nominated lead authority for this proposal, Rochdale Council, AGMA are in the process of commencing a SWMP in accordance with the DEFRA framework, as set out in "Surface Water Management Plan Guidance" (DEFRA March 2010).

6 Cumulative impacts of future development and drainage design

A strategic appraisal of the impact of development within Wigan on downstream flood risk has been undertaken.

6.1 Introduction

Carefully planned development can play a role in reducing the number of properties at direct risk from surface water flooding. The planning system has a key role to play in settings standards for sustainable drainage from new developments and ensuring that developments are designed to take account of the risk from surface water flooding.

6.2 Development Drainage Impacts

Development within upstream local authorities has the potential to adversely affect flood risk within Wigan. Likewise, if site drainage is inappropriately designed, development within Wigan itself also has the potential to affect flood risk locally and to the downstream area. This is especially the case for the smaller tributaries of the major rivers and the Leeds Liverpool Canal that are culverted in places and especially sensitive to runoff from developments.

The SFRA has undertaken an assessment of the impacts of development within Wigan on fluvial flood risk both locally and downstream. The SFRA has also considered the additional impact of development in the upstream catchments of the River Douglas catchments on fluvial flood risk in Wigan.

The management of surface water flooding within Wigan and beyond is a cross boundary issue. Flooding from canals is also a cross boundary issue, where water overtopping or breaching from a canal in one local authority could lead to flooding in another. This is discussed in relation to the Leeds Liverpool Canal in Wigan in Chapter 3.

6.3 Considering downstream impacts

Development has the potential to both increase and decrease surface water runoff and hence affect flood risk downstream. The assumptions of this SFRA are based on the supposition that after development surface water would be temporarily attenuated on the respective development sites in suitable sustainable drainage systems which mimic natural site drainage (this assumes greenfield rates). The introduction of such systems would attenuate the flows which would minimise flood risk. This is a likely scenario under current legislation and Environment Agency policy.

It is paramount that any new development in the Wigan area incorporates suitable flood storage measures in outline planning and development to avoid a scenario where after development there would be no storage of surface water on the new development sites. This has the potential to both increase the rate and volume of surface water runoff into the sewer network and local watercourses, increasing flood risk downstream. In the current legislative and policy environment this scenario is unlikely.

The impact of the development on flood risk downstream has been based on a methodology for the impact on flood risk during a 1% AEP flood event, considering climate change. Flood Estimation Handbook (FEH) methods were used to calculated flood hydrographs and flows in the river system.

6.4 Wider impacts

Whilst development control policies to reduce surface water discharges from new development could have some benefit locally, development in the wider catchments has an

important role to play in reducing flood risk in Wigan. This highlights the need for local authorities both within AGMA and in the wider River Douglas catchment to work together to reduce flood risk through the planning process.

7 Hydraulic linkages

Flood risk across the borough is present from a number of sources. The interactions between these different sources are fundamental to understanding the risk of flooding at a strategic level and recommending appropriate management measures. The SFRA has looked at the possible interactions between rivers, canals and surface water to prompt the appropriate consideration of these issues in site specific FRAs and further studies such as a SWMP and Drainage Strategies.

7.1 Introduction

In this context, hydraulic interactions are considered as potential interactions between different sources of flooding; for example, fluvial flooding (from rivers), surface water flooding and flooding from canals, drains and sewers. During a significant flood event hydraulic interactions between these systems can have an important, but often overlooked, impact on the distribution, magnitude and extent of flood risk.

Historically, flood risk management in the UK has concentrated on defining the flood extents from separate sources of flooding by treating them independently. Little consideration has been given to the fact that these flood outlines may overlap (representing a double counting of available storage) or to the fact that one system may provide a conduit for conveying water sourced from another. These effects may result in reduced flooding, where additional storage is available in another system (such as canals or sewers); or may increase the flood risk by transporting water out of previous flood extents. Critically, in urban areas where water is conveyed in many systems, often in close proximity, the traditional approach of considering flooding sources in isolation is not completely representative.

This strategic study has not concentrated on quantifying the effects of the hydraulic interactions which may occur in Wigan, nor has it tried to assign a probability to them. Instead, a desk based study has been undertaken, to try to define where these interactions may occur. At each location, potential risks have been summarised, with the intention of providing a reference for flood risk managers, planners and developers in the future. Interactions are summarised In Table 7-1 below.

It is envisaged that improving understanding of how different sources of flooding interact during a flood event and the resulting impact on flood risk will be an important component of future studies in the borough. Indeed until recently it has not really been possible to accurately model all these interactions. However, a number of software packages are now readily available which have been designed specifically to accommodate the complexities of integrated urban flood modelling. With these developments in modelling software capabilities it is likely that future studies will be better equipped to assess the relationships between drainage systems, surface water and fluvial flooding.

7.2 Canal and river interactions

Where canals pass close to rivers interactions between them are likely during large flood events. These interactions involve water either passing from the canal into the river or from the river into the canal. Situations where the former is possible are more frequent because typically canals occupy an elevated position compared to rivers, such as the Leeds Liverpool Canal around Abram. The potential impact of flood waters overtopping the canal and entering the river system are usually minor because the increased discharge is likely to be small compared to flow already being conveyed by the river. However, where a canal overtops during a flood event there is a risk of erosion of embankments and therefore the possibility of this resulting in breach of the canal banks. Should this situation arise then the influx of flow into the river may result in a significant and sudden increase in flood risk downstream.

In the reverse situation, where floodwaters from a river enter the canal network, the effects are likely to be two-fold. Firstly, the canal may be able to convey the flood waters away from the interaction site and possibly outside of the expected fluvial flood extent. This excess flood water may then spill from the canal resulting in flood risk, possibly some distance from the river. Secondly, the canal may provide additional flood storage, as well as conveying some flow. The result may well be a reduced flood extent along the river downstream of the interaction.

For this study possible interaction locations between rivers and canals have been identified using a GIS desk-based approach. The Environment Agency's Flood Zone 2 and a canal hazard zone (produced from breach and overtopping modelling scenarios) for the SFRA have been used. Local knowledge and data from OS mapping were also used to provide additional information where possible.

Table 7-1 summarises locations within the study limits where interactions between watercourse and the Leeds Liverpool and Bridgewater Canals are considered possible. Any future studies in these areas should consider how these interactions may affect their objectives.

Table 7-1: Canal River Interactions

Watercourse Name	Summary
Bedford Brook	The Bridgewater Canal passes over Bedford Brook in an aqueduct. Should this aqueduct or adjacent embankments overtop or breach then flood water from the canal would flow into Bedford Brook and into Hooten Gardens, Leigh and out across the natural floodplain (farmland). Flow from the river into the canal is not considered possible due to the elevated position of the canal.
Astley Brook	It is possible that overtopping or breach of the Bridgewater Canal would result in additional water flowing into Astley Brook, resulting in the downstream flooding of Moss Side. It is not considered possible for flow from Astley Brook to enter the canal at this location because of the elevation difference.
Whitehead Brook	It is possible that overtopping or breach of the Bridgewater Canal at Whitehead would result in additional water flowing into the Brook. It is not considered possible for flow from Whitehead Brook to enter the canal at this location because of the elevation difference.
Westleigh Brook	It is possible that breach of the Leeds Liverpool Canal at Firs Lane would result in additional water flowing across the site and into Westleigh Brook, potentially increasing flood risk at Pennington. It is not considered possible for flow from Westleigh Brook to enter the canal at this location as the canal runs along a raised embankment.
Common Lane Brook	In the event of the raised embankment of the Leeds Liverpool Canal breaching floodwaters would enter the brook, adding to the flow through The Flash at Pennington Flash Country Park. It is not considered possible for flow from Common Lane Brook to enter the canal at this location because of the elevation difference.
Hey Brook	It is possible that breach of the Leeds Liverpool Canal around the confluence with Hey Brook would result in additional water flowing into the river and Pennington Flash. It is not considered possible for flow from Hey Brook to enter the canal at this location because of the elevation difference. There has been past flooding of Hey Brook in Abram in 1944 reported as a leakage leading to embankment failure.
Ince Brook	Excess flows along the Leeds Liverpool Canal spill into Ince Brook to the west of Worsley Mesnes. It is also considered possible for flow from Ince Brook to enter the canal at this location due to the low elevation difference. Both of these scenarios would lead to the flooding of Scotsman's and Pearson's Flash.
Poolstock Brook	It is possible that overtopping or breach of the Leeds Liverpool Canal at Poolstock would result in additional water flowing into Poolstock Brook which leads to the River Douglas. There has been past overtopping at Poolstock Lock in April 2009, reported

Watercourse Name	Summary
	as a result of vandalism releasing large volumes of water from upstream. It is not considered possible for flow from Poolstock Brook to enter the canal at this location because of the elevation difference.
Clarington Brook	It is possible that overtopping or breach of the Leeds Liverpool Canal where the watercourse comes into close proximity with Clarington Brook would result in additional water flowing into Clarington Brook and increasing the flood risk in downstream Poolstock. It is also considered possible for flow from Clarington Brook to enter the canal at this location because of the small elevation difference.
River Douglas (& Smithy Brook)	It is possible that embankment breach or overtopping of the Leeds Liverpool Canal where the watercourse runs in parallel with the River Douglas (and Smithy Brook further upstream) along the canal could result in additional water flowing into the river. Canal breach in the Shevington / Appley Bridge area in 2002 was reported as failure of a culvert beneath the canal leading to embankment failure.

7.3 Hydraulic interactions resulting from reservoir breach

As outlined in Chapter 4, due to implications for national security, reservoir breach modelling and mapping was not undertaken for the SFRA. In the event that a reservoir does breach it is likely that excess water will find its way into other water bodies, including rivers and canals, increasing flood extents and depths and enhancing the effects of the hydraulic interactions between the different sources as set out in this chapter.

7.4 Hydraulic interactions affecting surface water

Compared to other sources of flooding, surface water flooding is distributed much more evenly across the catchment. Because of this it is possible that interactions can occur with most other sources of flooding. For example, surface water flow routes may discharge into canals and exacerbate flooding from other areas within the same canal pound. Conversely, if the canal is embanked then this may block potential surface water flow paths and result in ponding. Because of the highly distributed nature of surface water flooding it is not feasible to discuss specific locations in this strategic study; however, it is recommended that possible interactions are considered on a local basis during future studies. These interactions highlight the importance of representing other hydraulic systems in pluvial modelling studies.

7.5 Hydraulic interactions affecting the sewer network

Surcharging of the drainage and sewerage systems are often a cause of flooding in urban areas. The interaction between these systems and other sources of flooding such as fluvial and surface water is often highly complex. For example, increased water levels in river networks will result in reduced ability for them to convey water away from surface water drain outfalls and from combined sewer overflows. This will typically result in backing up of water levels in the pipe system until the pressure can be relieved by overflows from the lowest nearby manhole. Surcharging of this manhole will result in reduced ability to drain surface water as well as a source of flood water that may interact with surface water. Because of the highly distributed nature of sewer flooding it is not feasible to discuss specific locations in this strategic study; however, it is recommended that possible interactions are considered on a local basis through a surface water management plan.

8 Summary of risk

A summary of flood risk issues for groups of development sites is presented below. The Sequential Test Spreadsheet is included as Appendix A. Specific reference should also be made to Section 2 of the accompanying User Guide.

In accordance with the requirements of PPS25 the Council, through a process of site screening, has reviewed and rejected inappropriate sites for development. The Sequential Test Spreadsheet, summarising significant flood risks to Wigan Council's identified sites is included as Appendix A. The Sequential Test spreadsheet, undertaken for this SFRA, includes all sites currently identified for potential development by the Council. The Council has a full list of sites that have already been rejected from this process owing to high flood risk.

Development sites which are at the greatest risk of flooding have been summarised in terms of flood risk. This will help provide an evidence base for the inclusion of sites and areas within the Wigan Local Development Framework Core Strategy.

This review of sites is based on a procedure developed to provide a greater appreciation of the actual and residual risks. Evaluation of the implications of new development in the high and medium risk zones requires the Council to make informed decisions in response to the actual level of protection (and the commitment to current flood mitigation measures) as well as specific measures associated with the proposed development.

The underlying objective is to identify whether there is a need for strategic flood risk mitigation measures or whether it is possible for new development to be permitted and provisions made on a piecemeal basis (it should be noted that this is not the preferred approach according to PPS25). If it is identified that there is a requirement to provide strategic infrastructure then the requirements of PPS12 should also be addressed.

The risk to key sites has also been summarised by addressing the following range of issues.

8.1.1 Risks associated with fluvial and surface water risk

- Are the development sites in the area at significant risk during a 1% AEP event?
- Are the development sites in the area at significant risk during a 0.1% AEP event?
- Are the development sites in the area at significant risk when climate change is considered?
- Are the development sites in the area at significant risk during a 5% AEP event (Functional Floodplain)?
- Is the development site at risk of high, medium or low surface water flooding?
- Is overall residual risk significant in the area?

8.1.2 Standards of protection

- Is there a consistent asset standard of protection? (assets include culverts and canals)
- Is there a consistent asset condition?
- Is there a significant possibility of assets breaching?
- Could assets overtop during climate change or extreme events?

8.1.3 Design and Management

- Will flood risk be an urban design issue?
- Can residual risk be successfully managed?
- Could development reduce risk?

Preparing responses to these questions for each identified locations will generate a profile of:

- The implications of seeking to manage the actual risks to acceptable levels
- The effects of climate change on existing defence and the residual risk due to overtopping
- The consequences of the residual risk in the event that the defences fail

The Sequential Test Spreadsheet provides a summary of flood risks to the key sites across the borough.

8.2 Sustainability Appraisal

The Council's Sustainability Appraisal, land allocations and development control policies should be informed by the Wigan Level 2 SFRA and carried out in liaison with the Environment Agency.

Included in the Sustainability Appraisal is a flood risk objective for sustainable and integrated management of the borough's water resources.

'Spatial planning should be integrated with river basin management and strategic flood risk assessment. Therefore, we thought it appropriate to give water management greater consideration in the appraisal process. Sub-questions relating to water and flooding were removed from other objectives.

The Wigan SFRA provides information to support this objective and will provide the evidence base to help direct sustainable development.

8.3 Planning considerations

For the purpose of this SFRA and for any future planning applications the Sequential Test should be applied to all proposed development, in consultation with Wigan Council to confirm that there are no reasonable alternatives on land with a lower probability of flooding which deliver the same planning objectives.

If, following the application of the Sequential Test, it is identified that there is a requirement to place additional development in areas with a high or medium probability of flooding then the following issues must be considered:

- The level of “actual” flood risk to the strategic sites should be evaluated,
- The implications of climate change on the level of “actual” risk should be understood, and
- The implications of residual risk, as a consequence of overtopping or breach of defences should be determined.

This further review is needed to understand whether development can be made safe from flooding, including whether it has the potential to pass part (C) of the Exception Test if it is needed. In order to pass the Exception Test, the LPA must demonstrate that all of the three conditions must be passed (see paragraph D9 of PPS25):

a. *It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a SFRA where one has been prepared. If the LDD has reached the ‘submission’ stage (see Figure 4.1 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 site-specific Flood Risk Assessment must demonstrate that the development will be safe, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.*

Having followed this procedure it is then possible to consider the appropriate responses that will be required to protect the strategic sites/ locations in detail. It will be necessary to consider the full range of responses according to the type of risk being addressed and if new development is being proposed then this must be done in accordance with the guidance given in PPS25 and the associated Practice Guide.

8.4 Development sites benefitting from defences

Of the proposed development sites within Wigan, a small proportion benefit from the protection of defences. These have been defined from Environment Agency flood mapping which displays all England and Wales flood defences that have been constructed during the last five years with a standard of protection equal to or better than 1 per cent from rivers and 0.5 per cent from the sea. Some additional defences, which may be older or have been designed to a lower design standard, are also displayed.

8.4.1 Environment Land Allocation Sites

The table below displays proposed Environment Land Allocation (ELA) sites within the borough which benefit from such defences:

Table 8-1: Environmental Land Allocation Sites

PEA Name	Type of Land	Latest PLA	Proposal	Comments	Area (msq)
Hope Carr/Leigh Commerce Park	Land with planning permission	A/04/61949	To erect office and industrial development (B1, B2 & B8)	Part of larger area of land included in application A/04/61949. Proposed for Stage C of development(large industrial units)	19334.077
Hope Carr/Leigh Commerce Park	Land with planning permission	A/08/70945	To erect 9,302 square metres of business (Class B1) units	Application site goes out of the primary employment area	14576.352

These ELA sites are protected by the Environment Agency raised man-made defence ID 01323PENT0101L02 which is located upstream of Warrington Road, Leigh. The defence consists of flood banks on either side of the watercourse, linked to Pennington Bank. The Environment Agency are responsible for the maintenance of the asset. The defence is 508.4m long and 6.7m high.

8.4.2 Strategic Housing Land Availability Assessment Sites

The table below displays proposed Strategic Housing Land Availability (SHLAA) sites within the borough which benefit from defences:

- Site Ref Wig137; Wigan Pier Quarter, Wigan
- Site Ref 695; Wigan Pier: Sites off Swan Meadow Road and Pottery Road

The two SHLAA sites are protected by ABD ID ea01212Smit_001. The modelling approach used to derive the ABD was a quantitative full hydrodynamic study. The ABD is in the Flood Zone 3 fluvial event from the River Douglas.

This ABD has been created from the following defences:

Table 8-2: Areas Benefiting from Defences

Asset ID	Description	Location	Owner	Length (m)	Height (m)	Design Standard
01212DOUG 0501L12	raised defence (man-made) - Channel Bed & Embankment	Corporation Street.	EA	252.8	3.75	2.5% AEP Event
01212DOUG 0501R06	raised defence (man-made) - Channel Bed & Wall	A49 Wallgate to Footbridge rear of Bus Depot	EA	245.1	3.1	2.5% AEP Event
01212DOUG 0501R09	raised defence (man-made) - Channel Bed & Wall	SWAN MEADOW ROAD	Private	74.9	3.15	2.5% AEP Event
01212DOUG 0501R10	raised defence (man-made) - Channel Bed & Embankment	Deromas	EA	244.9	3.75	2.5% AEP Event

9 Outline Mitigation Options

Chapter 9 proposes an outline mitigation strategy by highlighting the mitigation measures that should be considered in accordance with PPS25.

9.1 Introduction

There are a range of planning considerations and mitigation strategies available for flood risk, outlined below. In addition, a "flood risk balance sheet" (Appendix B) has been prepared, which is designed to facilitate the Exception Test and demonstrate the acceptability and soundness of the proposed development sites.

9.2 Planning considerations

9.2.1 Site layout and design

Flood risk should be considered at an early stage in deciding the layout and design of a site to provide an opportunity to reduce flood risk within the development.

The PPS25 Practice Guide states that a sequential, risk-based approach should be applied to try to locate more vulnerable land use to higher ground, while more flood-compatible development (e.g. car parking, recreational space) can be located in higher risk areas.

Waterside areas, or areas along known flow routes, can be used for recreation, amenity and environmental purposes, allowing the preservation of flow routes and flood storage, and at the same time providing valuable social and environmental benefits contributing to other sustainability objectives. Landscaping should ensure safe access to higher ground from these areas and avoid the creation of isolated islands as water levels rise.

9.2.2 Modification of ground levels

Modifying ground levels to raise the land above the required flood level is a very effective way of reducing flood risk to the site in question.

However, in most areas of fluvial flood risk, floodplain volume would be reduced by raising land above the floodplain, often adversely affecting flood risk in the vicinity and downstream. Compensatory flood storage must be provided, and should be on a level for level, volume for volume basis on land that does not currently flood but is adjacent to the floodplain (in order for it to fill and drain). It should be in the vicinity of the site and within the red line of the planning application boundary (unless the site is strategically allocated) and based on a level for level compensation for any loss of floodplain.

Where the site is entirely within the floodplain it is not possible to provide compensatory storage at the maximum flood level and this will not be a viable mitigation option. Compensation schemes must be environmentally sound.

9.2.3 Local flood storage

Where development reduces the volume of floodplain storage it will be necessary to provide compensatory storage locally. This could be an environmental wetland area, designated washland (designed to flood) or a flood basin. This can also be considered within urban design if areas are designated to flood in a flood event (e.g. ground floor of a development with residential on first floor).

On a strategic catchment-wide scale, appropriately located flood storage basins and washlands can not only provide a reduction in flood risk, but can also enhance and contribute to wetland restoration and habitat creation, as well as potentially increasing the recreational value of many river corridors. For upstream flood storage schemes to maximise benefits downstream, they need to be located in suitable areas of the catchment. Locating flood storage basins too high in the catchment could mean that a large proportion of a flood event is still able to travel downstream from other areas in the catchment.

The need for compensatory storage must been discussed at the earliest stage of planning as this will be a major constraint as this requirement may have significant implications for the yields achieved for individual sites due to the associated land take this may require.

9.2.4 Raised defences

Construction of raised floodwalls or embankments to protect new development is not a preferred option, as a residual risk of flooding will remain. Compensatory storage must be provided where raised defences remove storage from the floodplain.

Temporary or demountable defences are not acceptable flood protection for a new development unless flood risk is residual only.

9.2.5 Temporary barriers

Temporary barriers consist of moveable flood defences which can be fitted into doorways and/or windows. The permanent fixings required to install these temporary defences should be discrete and keep architectural impact to a minimum. On a smaller scale temporary snap-on covers for airbricks and air vents can also be fitted to prevent the entrance of flood water.

9.2.6 Permanent barriers

Permanent barriers can include built up doorsteps, rendered brick walls and toughened glass barriers.

9.2.7 Developer contributions to flood defences

In some cases, it may be necessary for the developer to make a contribution to the improvement of flood defence provision that would benefit both the development in question and the local community.

9.2.8 Building design

The raising of floor levels within a development avoids damage occurring to the interior, furnishings and electrics in times of flood. If it has been agreed with the Environment Agency that, in a particular instance, the raising of floor levels is acceptable, they should be raised to 600mm above the maximum water level during a 1% AEP flood event plus climate change. This additional height that the floor level is raised is referred to as the 'freeboard'. The flood depth maps provide an indication of the scale of land raising that may be necessary.

Making the ground floor use of a building water compatible (for example a car park), is an effective way of raising living space above flood levels.

Putting a building on stilts is not considered an acceptable means of flood mitigation for new development. However it may be allowed in special circumstances if it replaces an existing solid building, as it can improve flood flow routes. In these cases attention should always be paid to safe access and egress and legal protection should be given to ensure the ground floor use is not changed.

9.2.9 Resistance and resilience

There may be instances where flood risk remains to a development. For example, where the use is water compatible, where an existing building is being changed, where residual risk remains behind defences, or where floor levels have been raised but there is still a risk in a 1 in 1000 year event. In these cases (and for existing development in the floodplain), additional measures can be put in place to reduce damage in a flood and increase the speed of recovery. These measures should not be relied on as the only mitigation method.

The 2007 document '*Improving the Flood Performance of New Buildings'* provides further details on possible resistance and resilience measures[9].

This involves designing interiors to reduce damage caused by flooding, for example:

- Electrical circuitry installed at a higher level with power cables being carried down from the ceiling rather than up from the floor level

[9] Communities and Local Government (2007) Improving the Flood Performance of New Buildings – Flood Resilient Construction

- Water-resistant materials for floors, walls and fixtures

Resilience measures will be specific to the nature of flood risk, and as such will be informed and determined by the FRA.

9.2.10 Making development safe

Safe access and egress

The developer must ensure that safe access and egress is provided to an appropriate level for the type of development. This may involve raising access routes to a suitable level. Environment Agency guidance suggests that all development should have a dry access and egress in the 1% AEP event with climate change.

As part of the FRA, the developer should review the acceptability of the proposed access in consultation with the Environment Agency. For the purpose of the SFRA it is considered appropriate to provide a low hazard environment in access and egress routes associated with new housing developments.

Flood warning and evacuation

Emergency/evacuation plans should be in place for all properties, large and small, at residual risk of flooding; those developments which house vulnerable people (i.e. care homes and schools) will require more detailed plans.

9.3 Summary

Appendix B provides a flood risk balance sheet, which is designed to facilitate the Exception Test and demonstrate the acceptability and soundness of the proposed development sites.

Refer to Appendix C Open Space mapping for areas of potential strategic mitigation based on the Council's defined Green Infrastructure areas.

Refer to Appendix G of the accompanying User Guide for more detailed explanation of SUDs and source control techniques. These measures can either be implemented on a site specific basis or as a larger flood mitigation or sewer enhancement scheme. The benefit of assessing larger mitigation strategies is that they may afford additional benefit to existing communities as well as proposed development by reducing the current levels of demand on existing utilities and drainage networks.

Appendices

A . Wigan Council - Sequential Test

Reference	Wigan Council Reference	Name	Development Type SS/SHLAA/ ELR/UDP	Area (ha)	Flood Zones: Flood Zone 2 Area (ha)	Flood Zone 2 % of total site area	Flood Zone 3 Plus Additional Climate Change Area (ha)	Flood Zone 3 Plus Additional Climate Change % of total site area	Flood Zone 3 Plus Climate Change Area (ha)	Flood Zone 3 Plus Climate Change % of total site area	Flood Zone 3a Area (ha)	Flood Zone 3a % of total site area	Indicative flooded area based on defence not being maintained above 5% AEP event standard: Indicative Area (ha)	Indicative % of total site area	Total % of site area %	Surface Water: Low Area (ha)	Low % of total site area	Intermediate Area (ha)	Intermediate % of total site area	High Area (ha)	High % of total site area	Total % of site area %	Action Taken (Wigan Comment)	SFRA text	Mapping Action	Removed from Mapping	Flood Zone 3 / 3b Classification
779	Wig 563	Guest Street/Drummond Way, Leigh	SHLAA	3.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	8.53	0.14	3.98	0.00	0.00	12.52	Site now fully built out therefore should be removed from SFRA		Remove from SFRA	y	NA
778	Wig 550	Land at 20 Pickley Green (The Lawns), Atherleigh	SHLAA	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	18.43	0.00	0.00	0.00	0.00	18.43					NA
804	Wig 834	Bedford High School	SHLAA	2.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	8.71	0.02	0.71	0.00	0.00	9.42					NA
654	Wig 066	Wigan and Leigh College, Railway Road, Leigh	SHLAA	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
642	Wig 025	Wilding Street	SHLAA	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	13.86	0.02	0.38	0.00	0.00	14.24					NA
734	Wig 711	Land to east of Falconers Green, Worsley Mesnes	SHLAA	1.29	0.47	36.56	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	36.78	0.10	8.05	0.09	6.87	0.00	0.00	14.92	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			A proportion of this site is Flood Zone 3a
808	Wig 838	Riverway/Station Road, Wigan	SHLAA	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	6.60	0.04	19.76	0.01	4.84	31.20	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
746	Wig 728	Wigan and Leigh College Pagefield Building, Bridgeman Terrace, Wigan	SHLAA	3.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	17.18	0.00	0.00	0.00	0.00	17.18					NA
858	Wig 824	St Johns Parish Hall, Fleet Street, Wigan	SHLAA	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
817	Wig 661	Land r/o 42 Booths Brow Road, Ashton	SHLAA	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
754	Wig 739	Land to rear of 60 Smethurst Lane, Pemberton	SHLAA	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
668	Wig 507	Low Bank Garage, Low Bank Road	SHLAA	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
757	Wig 743	Land behind Laburmum Avenue, Lower ince	SHLAA	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
849	Wig 815	Site of Britannia Inn, 361 Wigan Road, Ashton-In-Makerfield, Wigan	SHLAA	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
769	Wig 764	Crossdale Road, Hindley Green	SHLAA	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
775	Wig 800	Part of Newton Road PEA, Lowton	SHLAA	1.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
762	Wig 754	Woodhouse Drive, Standish Lower Ground	SHLAA	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	19.99	0.50	22.71	0.18	8.26	50.96	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
851	Wig 817	Lowton Heath Home, Stone Cross Lane North, Lowton, Warrington	SHLAA	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.81	0.07	8.83	0.70	90.30	99.94	Site has planning permission, therefore should be removed from SFRA		Remove from SFRA	y	NA
830	Wig 512	Land adj 8 Meadowvale Drive, Wigan	SHLAA	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Site now fully built out therefore should be removed from SFRA		Remove from SFRA	y	NA
675	Wig 339	Land to rear of 17-51 Heather Grove	SHLAA	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
819	Wig 664	Ashton Reservoirs, Druid St/Mill St, Ashton	SHLAA	0.37	0.11	31.44	0.00	0.00	0.01	2.74	0.24	65.82	0.24	65.82	100.00	0.12	31.65	0.00	0.00	0.00	0.00	31.65	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
713	Wig 161	Leyland Mill, Wigan	SHLAA	1.81	0.00	0.00	0.00	0.00	0.02	1.24	1.28	70.92	1.28	70.92	72.16	0.09	4.74	0.19	10.60	1.02	56.11	71.45	This location is a major existing developed site in the Green Belt (Leyland Mill) and is a conversion opportunity. Conversion for residential use would need to be restricted to upper floors unless it can be demonstrated that flood risk can be effectively mitigated and site access maintained during the design flood event.	River Douglas 71% Flood Zone 3. Extent and scale of residual risk to be determined following release of the EA modelling for the River Douglas Flood Alleviation Scheme.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
844	Wig 810	Former Platt Bridge Clinic, Victoria Street, Platt Bridge	SHLAA	0.25	0.03	11.23	0.02	9.66	0.19	75.64	0.00	1.77	0.00	0.22	98.30	0.05	18.60	0.20	81.40	0.00	0.00	100.00	Site has planning permission		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
835	Wig 725	Bridgewater Business Park, Siddow Common, Leigh	SHLAA	9.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	19.93	0.00	0.00	0.00	0.00	19.93					NA
646	Wig 074	Liverpool Road, Ashton	SHLAA	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	1.46	0.00	0.00	0.00	0.00	1.46					NA
750	Wig 735	Bell Lane/Grange Avenue/Langdale Road/Heysham Road, Pemberton	SHLAA	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	1.36	0.00	0.00	0.00	0.00	1.36					NA
747	Wig 731	Land to rear of Oakfield Crescent, Haigh Road, Aspull	SHLAA	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.03	7.54	0.03	7.54	7.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
786	Wig 613	'Land At Junction Of Brown Street And Bickershaw Lane, Abram	SHLAA	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
671	Wig 322	Council Yard r/o Roydale House, Prescott Street	SHLAA	0.35	0.35	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.35	98.41	0.01	1.59	100.00	Site has planning permission, therefore should be removed from SFRA		Remove from SFRA	y	NA
729	Wig 706a	Templeton Road, West of Sewage Works, Platt Bridge	SHLAA	1.03	0.00	0.31	0.00	0.24	0.07	6.95	0.94	91.77	0.94	91.42	99.27	0.00	0.00	0.06	5.46	0.97	94.54	100.00	Site retained in SHLAA with capacity unchanged due to the sites contribution to key regeneration objectives	Full development to go forward, Exception Test required	Remove from SFRA	n	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
726	Wig 702	Land to west of Lovers Lane, Howe Bridge, Atherleigh	SHLAA	6.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
800	Wig 830	Hindley High School	SHLAA	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
715	Wig 169	Orica Ltd UK Site, Shevington	SHLAA	29.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.97	6.70	0.35	1.18	0.19	0.65	8.53					NA
665	Wig 051	Land adjacent Holy Family RC Church, Chaddock Lane, Tyldesley	SHLAA	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
744	Wig 726	Land at Scholes, Wigan	SHLAA	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
784	Wig 610	Warrington Road (Holme Park), Abram/Ince	SHLAA	10.89	2.60	23.87	0.00	0.00	0.00	0.00	3.52	32.29	0.37	3.44	56.17	0.88	8.05	1.19	10.91	0.05	0.44	19.40	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
811	Wig 655	Prospect Industrial Estate, Platt Lane Hindley	SHLAA	0.74	0.00	0.00	0.00	0.00	0.04	5.52	0.70	94.48	0.70	94.48	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Site has outline planning permission but this may lapse, therefore needs to be retained in SFRA. Site included on this basis only.	If planning permission lapses then this site will require sequential testing			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
862	Wig 828	1-7 Upper Dicconson Street and 29-33 Dicconson Street, Wigan	SHLAA	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
752	Wig 737	Saddleback Crescent, Norley	SHLAA	1.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
768	Wig 763	Netto, Ladies Lane, Hindley	SHLAA	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
816	Wig 660	Land at Hindleys Farm, Wigan Road, Atherton	SHLAA	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	5.31	0.00	0.00	0.00	0.00	5.31					NA
850	Wig 816	St Marks Vicarage, Victoria Street, Wigan	SHLAA	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	21.01	0.00	0.00	0.00	0.00	21.01					NA
702	Wig 141	Hope Carr 2, Pennington	SHLAA	1.74	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.35	20.11	0.00	0.00	0.00	0.00	20.11					NA
738	Wig 715	Mottram Drive, Worsley Mesnes	SHLAA	0.56	0.31	55.65	0.00	0.24	0.12	21.48	0.11	18.64	0.11	18.64	96.02	0.10	18.26	0.45	79.60	0.00	0.00	97.86	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
660	Wig 125	Land west of Hindley Sewage Works, Templeton Road, Platt Bridge	SHLAA	2.29	0.04	1.59	0.01	0.23	0.11	4.89	2.08	90.79	2.01	87.90	97.51	0.01	0.45	0.39	16.81	1.89	82.64	99.90	Site retained in SHLAA with capacity unchanged due to the sites contribution to key regeneration objectives	Full development to go forward, Exception Test required	Remove from SFRA	n	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
766	Wig 760	Land to rear of Hemfield Road, Higher Ince	SHLAA	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
859	Wig 825	Carlton House, Johnson Street, Tyldesley	SHLAA	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
846	Wig 812	DAG Service Station, Haigh Road, Aspull, Wigan	SHLAA	0.26	0.00	0.00	0.00	0.00	0.00	0.16	0.02	6.96	0.02	6.96	7.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
861	Wig 827	Land adjacent to 48 Millgate, Wigan	SHLAA	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
680	Wig 530	Haulage Depot, Wigan Lower Road	SHLAA	0.75	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
736	Wig 713	Buer Avenue, Worsley Mesnes	SHLAA	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	5.15	0.00	0.00	0.00	0.00	5.15					NA
645	Wig 044	Johnson Close	SHLAA	0.29	0.09	30.73	0.00	1.42	0.00	1.16	0.17	58.98	0.10	35.59	92.29	0.05	16.23	0.02	8.51	0.00	0.00	24.74	Remove from SHLAA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
694	Wig 146	Smiths Lane, Hindley Green	SHLAA	8.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	4.65	0.04	0.45	0.00	0.00	5.10					NA
839	Wig 674	Chaddock Lane, Astely	SHLAA	1.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
704	Wig 147	Hooten Gardens, Leigh	SHLAA	9.11	0.13	1.42	0.02	0.23	0.12	1.28	0.98	10.76	0.77	8.43	13.69	0.34	3.69	0.46	4.99	0.00	0.00	8.68	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
647	Wig 083	Collier Brook Farm, Bag Lane, Atherton	SHLAA	0.67	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.39	0.09	14.16	0.01	1.45	0.00	0.00	15.61					NA
743	Wig 723	Mather House, Mather Lane, Leigh	SHLAA	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.90					NA
783	Wig 609	Worthington Fold, Crowther Drive, Winstanley	SHLAA	1.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	3.24	0.00	0.00	0.00	0.00	3.24	Site now fully built out therefore should be removed from SFRA		Remove from SFRA	y	NA
827	Wig 680	Kirkless Industrial Estate, Cale Lane, Aspull	SHLAA	12.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	5.85	0.19	1.54	0.00	0.00	7.38					NA
678	Wig 527	253-255 Wigan Road	SHLAA	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
767	Wig 762	Land to rear of Dorning Street, Tyldesley	SHLAA	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	1.00	0.02	2.25	0.00	0.11	3.36					NA
787	Wig 615	Church Inn, 184 Westleigh Lane, Leigh	SHLAA	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
745	Wig 727	Land at rear of Whelley Hospital, Whelley	SHLAA	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
856	Wig 822	Land adjacent to 234 Orrell Road, Orrell, Wigan	SHLAA	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
701	Wig 145	Hope Carr, Pennington	SHLAA	7.74	0.00	0.00	0.01	0.10	0.03	0.34	0.35	4.49	0.35	4.49	4.93	1.65	21.31	0.19	2.43	0.28	3.62	27.37	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
841	Wig 807	Adjacent to 20 Hope Street, Ince	SHLAA	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
725	Wig 701	Land to north of Treen Street/Bodmin Road/Cranleigh Drive	SHLAA	6.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.37	21.51	0.04	0.67	0.00	0.00	22.17					NA
793	Wig 626	Land adj to Bekaert Fencing, Woodhouse Lane, Wigan	SHLAA	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
763	Wig 755	Land at Birkett Street, Higher Ince	SHLAA	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
803	Wig 833	Lowton Junior and Infant School	SHLAA	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	23.78	0.37	14.91	0.00	0.00	38.69	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
796	Wig 635	Site of former Atherton Day Nursery * Two Porches, Gloucester St, Atherton	SHLAA	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	1.12	0.00	0.00	0.00	0.00	1.12					NA
782	Wig 607	Chorley Road (Worthington Park) (Bleachworks), Worthington	SHLAA	5.59	0.23	4.18	0.01	0.13	0.13	2.28	3.80	67.94	2.24	40.09	74.54	0.26	4.66	2.31	41.37	1.02	18.21	64.23	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
758	Wig 744/745	William Street, Lower Ince	SHLAA	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
737	Wig 714	Cricket Ground, Tipping Street, Worsley Mesnes	SHLAA	1.59	1.50	94.33	0.00	0.00	0.09	5.58	0.00	0.08	0.00	0.08	100.00	0.06	4.08	0.00	0.00	0.00	0.00	4.08	Not in SHLAA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
749	Wig 733	Garage adj to 277 Preston Road, Standish	SHLAA	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
820	Wig 666	Land at Coal Pit Lane, Atherleigh	SHLAA	2.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	6.32	0.08	2.72	0.00	0.00	9.05					NA
670	Wig 316	J & E W Shimmin Transport, Ashton Road	SHLAA	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	9.44	0.00	0.00	0.00	0.00	9.44					NA
852	Wig 818	Land at Liverpool Road and Harper Street, Hindley, Wigan	SHLAA	0.37	0.00	0.05	0.00	0.00	0.01	2.25	0.01	1.42	0.01	1.42	3.72	0.09	23.81	0.00	0.00	0.00	0.00	23.81	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
771	Wig 766	Robin Park Road, Newtown	SHLAA	5.01	0.78	15.62	0.00	0.01	0.00	0.05	0.07	1.42	0.00	0.00	17.11	0.10	1.98	0.00	0.00	0.00	0.00	1.98	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			A proportion of this site is Flood Zone 3a
719	Wig 691	Alexandra Colliery, Wigan	SHLAA	11.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59	4.95	1.40	11.77	0.23	1.94	18.67					NA
669	Wig 528	Rear of 22-68 Preston Road	SHLAA	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	24.97	0.09	9.87	0.00	0.00	34.84	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
764	Wig 756	Scholefield Lane, Higher Ince	SHLAA	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
659	Wig 130	Off Lincoln Drive, Ashton	SHLAA	4.84	2.05	42.26	0.06	1.31	0.84	17.29	1.81	37.31	1.81	37.31	98.17	0.89	18.36	3.13	64.60	0.13	2.62	85.59	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
791	Wig 624	Land North of Hewitt Business Park, Winstanley Road, Billinge	SHLAA	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	6.12	0.15	38.99	0.07	18.15	63.26	Site has planning permission, therefore needs to be removed from SFRA (site will also be transferred to SHLAA aggregate total as capacity is 9 or less)		Remove from SFRA	y	NA
741	Wig 718	Allotment Gardens off Ruskin Avenue, Marus Bridge	SHLAA	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
653	Wig 120	Land opp 150-164 Kirkhall Ln and parallel to Robertshaw St, Leigh	SHLAA	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	3.01	0.00	0.00	0.00	0.00	3.01					NA
677	Wig 532	Dicconson Mill, Mill Lane	SHLAA	1.19	0.10	8.45	0.00	0.21	0.01	1.18	0.67	56.31	0.08	6.46	66.15	0.06	4.70	0.34	28.65	0.56	46.76	80.11	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
739	Wig 716	Bransfield Close, Hawkley	SHLAA	1.18	0.01	0.62	0.00	0.16	0.02	1.75	0.25	21.41	0.25	21.39	23.94	0.24	20.43	0.00	0.00	0.00	0.00	20.43	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
860	Wig 826	Land at Alma Street/Elliott Street, Tyldesley, Manchester	SHLAA	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
730	Wig 706b	South of Templeton Road and Sewage Works, Platt Bridge	SHLAA	1.23	0.03	2.47	0.01	0.61	0.19	15.43	0.54	43.97	0.53	43.34	62.47	0.12	9.63	0.38	30.57	0.34	27.92	68.12	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
772	Wig 767	Actons Walk, Wigan	SHLAA	1.30	0.00	0.00	0.14	11.05	0.15	11.32	0.26	20.00	0.26	20.00	42.37	0.00	0.28	0.00	0.29	0.00	0.00	0.57	Site not in SHLAA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
785	Wig 611	Maypole Industrial Estate (Parklands), Park Lane, Abram	SHLAA	10.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.31	0.00	0.00	0.00	0.00	0.31					NA
801	Wig 831	Golborne High School	SHLAA	9.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	8.47	0.08	0.86	0.00	0.00	9.33					NA
683	Wig 535	Site of Cranberry Hotel and 641-643 Wigan Road	SHLAA	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
781	Wig 595	Hill Top Farm, Off Ravenswood Drive, Hindley	SHLAA	1.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
740	Wig 717	Warrington Road, Marus Bridge	SHLAA	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	28.65	0.00	0.00	0.00	0.00	28.65					NA
853	Wig 819	Glover House Farm, Hand Lane, Leigh	SHLAA	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	34.38	0.00	0.00	0.00	0.00	34.38					NA
735	Wig 712	Eliot Drive, Worsley Mesnes	SHLAA	0.44	0.12	28.58	0.00	1.15	0.05	12.14	0.25	58.13	0.25	58.13	100.00	0.05	10.72	0.06	14.58	0.00	0.00	25.30	Site removed from SHLAA (100% affected by surface water flooding).		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
676	Wig 354	St Thomas Rectory, Church Street	SHLAA	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
802	Wig 832	Lowton High School	SHLAA	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	12.79	0.00	0.00	0.00	0.00	12.79					NA
838	Wig 687	Parsonage, Leigh	SHLAA	2.52	0.01	0.44	0.00	0.00	0.00	0.00	0.04	1.48	0.00	0.00	1.92	0.00	0.05	0.00	0.05	0.00	0.00	0.10	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			A proportion of this site is Flood Zone 3a
733	Wig 710	Land off Edgeway Road, Worsley Mesnes	SHLAA	2.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	9.57	0.15	5.42	0.00	0.00	14.99	Site not in SHLAA		Remove from SFRA	y	NA
797	Wig 646	Land off Primrose Lane, Standsh	SHLAA	1.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Site now fully built out therefore should be removed from SFRA		Remove from SFRA	y	NA
831	Wig 604	Barlows Farm, Bickershaw Lane, Bickershaw	SHLAA	6.99	0.16	2.33	0.00	0.06	0.01	0.16	0.15	2.15	0.02	0.22	4.70	0.40	5.66	0.23	3.27	0.01	0.20	9.13	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
765	Wig 758	Land at Patterdale Place, Higher Ince	SHLAA	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	22.04	0.00	0.00	0.00	0.00	22.04					NA
847	Wig 813	Site of Nottingham Place, Durham Street, Wigan	SHLAA	1.26	0.00	0.00	0.01	0.40	0.06	4.58	0.08	6.21	0.08	6.21	11.19	0.07	5.47	0.00	0.00	0.00	0.00	5.47	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
728	Wig 705	Land off Gloucester Avenue, Golborne	SHLAA	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	3.57	0.00	0.00	0.00	0.00	3.57					NA
751	Wig 736	The Green, Norley	SHLAA	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
679	Wig 539	Billinge Hospital, Upholland Road	SHLAA	6.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
814	Wig 658	Ashton FC Ground off Golborne Road, Ashton	SHLAA	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.63	0.00	0.00	0.00	0.00	0.63					NA
655	Wig 118	West Bridgewater Street/St. Helen's Road, Leigh	SHLAA	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	8.72	0.00	0.00	0.00	0.00	8.72					NA
674	Wig 324	Culraven Garage, Haigh Road	SHLAA	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
720	Wig 693	Land at Leopold Street, Pemberton	SHLAA	5.03	0.31	6.25	0.00	0.00	0.03	0.64	0.48	9.61	0.48	9.52	16.50	0.29	5.78	0.11	2.26	0.35	6.88	14.92	Site not in SHLAA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
673	Wig 320	Land off Wigan Road (adj to St John the Baptist School)	SHLAA	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03					NA
664	Wig 084	Land to rear of 61-95 High Street, Standish	SHLAA	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
716	Wig 681	Land at Frith Street, Wigan	SHLAA	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.83	100.00	0.18	21.72	100.00	0.07	7.89	0.28	33.12	0.34	41.06	82.07	Site not in SHLAA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
648	Wig 063	Rosedale Avenue/Water Street, Atherton	SHLAA	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
836	Wig 761	Land at rear of Hemfield Road, Higher Ince	SHLAA	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
689	Wig 140	Leigh Sports Village	SHLAA	1.44	0.04	3.01	0.01	0.62	0.07	4.92	1.16	80.51	1.16	80.51	89.07	0.36	25.03	0.11	7.52	0.00	0.00	32.54	Site retained in SHLAA with capacity unchanged due to the sites contribution to key regeneration objectives.	Full development to go forward, Exception Test required	Remove from SFRA - Leigh Sports Village - Morrisons supermarket under construction.	n	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
832	Wig 508	Hardybutts, Wigan	SHLAA	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
776	Wig 801	Part of Moss Industrial Estate PEA, Lowton	SHLAA	2.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
821	Wig 667	Lafarge Roofing Ltd, Cale Lane, New Springs	SHLAA	6.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.93	0.00	0.00	0.00	0.00	0.93					NA
703	Wig 144	Hope Carr 3, Pennington	SHLAA	5.15	0.00	0.01	0.00	0.05	0.73	14.17	4.18	81.31	4.18	81.29	95.54	1.31	25.51	2.65	51.54	0.06	1.23	78.28	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
799	Wig 649	Leigh Sports Village, Atherleigh Way, Leigh	SHLAA	2.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	5.17	0.40	13.68	0.00	0.00	18.85	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	NA
825	Wig 675	The Bungalow and Scrap Yard, Pocket Nook Lane, Lowton	SHLAA	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
777	Wig 803	Welch Hill Mill, Leigh	SHLAA	0.84	0.03	3.62	0.00	0.00	0.00	0.00	0.14	16.97	0.00	0.00	20.60	0.14	16.47	0.00	0.00	0.00	0.00	16.47	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			A proportion of this site is Flood Zone 3a
709	Wig 162	Former Leigh CE High School, Leigh	SHLAA	0.72	0.53	73.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
805	Wig 835	Abraham Guest High School	SHLAA	2.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
840	Wig 806	Open land south of 12 Car Street, Platt Bridge	SHLAA	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
824	Wig 671	Land at Green Lane, Standish	SHLAA	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
794	Wig 628	Open land north of 248 Slag Lane, Lowton	SHLAA	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
789	Wig 622	Walkers Higher Farm, Scot Lane, Aspull	SHLAA	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
681	Wig 494	Land adj to 9 & 30 Rosedale Avenue	SHLAA	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
843	Wig 809	Land off Platt Street and Walthew Lane, Platt Bridge	SHLAA	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.21	100.00	0.21	100.00	100.00	0.00	0.00	0.00	0.00	0.21	100.00	100.00	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
756	Wig 742	Spindlewood Road/Junction Terrace, Lower Ince	SHLAA	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
684	Wig 520	Samuel Street, Atherton	SHLAA	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	2.43	0.03	9.79	0.02	6.06	18.28	Site has planning permission, therefore needs to be removed from SFRA		Remove from SFRA	y	NA
826	Wig 676	South East of Hindley Wastewater Treatment Works, Abram	SHLAA	2.45	0.70	28.70	0.01	0.46	0.15	6.15	1.49	60.82	1.18	47.92	96.13	0.22	8.91	0.75	30.70	0.97	39.51	79.12	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
641	Wig 013	Scholes/Kay Close	SHLAA	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
742	Wig 722	Chapel Street/Brown Street/Queen Street, Leigh	SHLAA	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
643	Wig 081	Hall House Lane	SHLAA	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
792	Wig 625	Premier House, High Street, Leigh	SHLAA	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
667	Wig 092	Land Rear of Alexandra Hotel, 213 Whelley, Wigan	SHLAA	1.78	0.00	0.00	0.00	0.28	0.04	2.06	1.11	62.65	1.11	62.65	64.99	0.06	3.65	0.06	3.27	0.00	0.00	6.92	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a ... (as above)
788	Wig 617	'Site Of Former Dairy Adj 224 Mosley Common Road, Tyldesley	SHLAA	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA

658	Wig 095	Knowles Yard off Ratcliffe Road, Aspull	SHLAA	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
663	Wig 064	Coronation Drive/Royal Drive, Leigh	SHLAA	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
833	Wig 659	Land off Woodhouse Lane, Wigan	SHLAA	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
~~790~~	~~Wig 623~~	~~Heatons Bakery, Boundary Street, Wigan~~	~~SHLAA~~	0.36	0.00	0.00	0.00	0.66	0.02	6.79	0.30	82.56	0.30	82.56	90.01	0.00	0.45	0.26	72.46	0.09	26.14	99.06	~~Site has planning permission, therefore needs to be removed from SFRA~~		~~Remove from SFRA~~	~~y~~	~~This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.~~
809	Wig 650	Bispham Hall Brick and Terracotta Works, Smethurst Rd, Billinge	SHLAA	4.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	5.39	0.11	2.53	0.00	0.00	7.92					NA
823	Wig 670	Land at Millfield Farm, Nook Lane, Lowton	SHLAA	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	3.53	0.08	5.09	0.01	0.75	9.37	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
770	Wig 765	Land off Waldon Close, Hindley Green	SHLAA	0.85	0.00	0.20	0.02	2.07	0.14	16.85	0.23	27.62	0.23	27.46	46.74	0.39	45.53	0.45	53.20	0.00	0.00	98.73	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
699	Wig 143	Garrett Hall 2, Tyldesley	SHLAA	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
837	Wig 127	Millingford Grove, Ashton	SHLAA	4.32	0.17	3.83	0.01	0.23	0.06	1.39	2.15	49.76	1.76	40.66	55.22	0.30	6.90	0.23	5.25	0.17	4.02	16.17	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
812	Wig 656	Ainscough Metals, Warrington Road, Ince	SHLAA	1.12	0.00	0.00	0.00	0.00	0.00	0.45	0.02	1.57	0.02	1.57	2.02	0.01	0.50	0.00	0.05	0.00	0.00	0.55	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
672	Wig 321	Rockleigh Hotel, 50 Bolton Road	SHLAA	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
724	Wig 700	Lancaster Avenue, Tyldesley	SHLAA	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
761	Wig 752	Land at Ascroft Avenue, Beech Hill	SHLAA	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
810	Wig 651	Former Astley Works, Gin Pit Village, Ley Rd, Tyldesley	SHLAA	4.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	4.56	0.01	0.15	0.00	0.00	4.71					NA
753	Wig 738	Land to rear of Cotswold Avenue, Pemberton	SHLAA	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
755	Wig 740	Former Police Station, Harrogate Street, Wigan	SHLAA	0.78	0.22	28.63	0.02	2.58	0.07	8.94	0.46	59.86	0.46	59.86	100.00	0.00	0.00	0.00	0.00	0.78	100.00	100.00	Has planning permission with flood compatible uses on the ground floor so is included on this basis only.	Full development to go forward, Exception Test required			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
855	Wig 821	21-25 Wilkinson Street, Leigh	SHLAA	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
760	Wig 749	Land at Ince Brook, Manchester Road, Higher Ince	SHLAA	0.52	0.00	0.00	0.00	0.00	0.00	0.47	0.01	1.89	0.01	1.89	2.36	0.06	10.81	0.00	0.00	0.00	0.00	10.81	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
828	Wig 057	Land to rear of 323-333 Bickershaw Lane, Bickershaw	SHLAA	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
661	Wig 131	Land between Warrington Lane, Chapel Lane and Darlington Street, Wigan	SHLAA	5.56	0.18	3.20	0.00	0.01	0.25	4.50	4.57	82.21	4.57	82.21	89.91	0.29	5.21	1.15	20.68	3.38	60.80	86.69	Surface level car park at Chapel Lane, gas works and depot off Darlington Street. More Vulnerable uses, such as residential, shall be limited to the 18% of the site within Flood Zone 1. Proposals for residential development in other areas of the site shall be restricted to upper floors, unless it can be demonstrated that flood risk can be effectively mitigated and site access maintained during the design flood event.	River Douglas 82% Flood Zone 3. Extent and scale of residual risk to be determined following release of the EA modelling for the River Douglas Flood Alleviation Scheme.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
651	Wig 090	Rear of Woodland Avenue/Athol Crescent, Hindley	SHLAA	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
~~829~~	~~Wig 444~~	~~Corner Lane Garage, Corner Lane, Hindley Green~~	~~SHLAA~~	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	21.02	0.16	70.04	0.00	0.00	91.06	~~Site has planning permission, therefore needs to be removed from SFRA (site will also be transferred to SHLAA aggregate total as capacity is 9 or less)~~		~~Remove from SFRA~~	~~y~~	~~NA~~
~~685~~	~~Wig 536~~	~~Site of Sherwood House, Sherwood Crescent~~	~~SHLAA~~	1.05	0.03	2.41	0.00	0.00	0.07	7.04	0.02	1.97	0.02	1.70	11.42	0.30	28.53	0.39	37.35	0.00	0.00	65.88	~~Site has planning permission, therefore needs to be removed from SFRA~~		~~Remove from SFRA~~	~~y~~	~~This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.~~
652	Wig 055	Land between 47 and 51 Westleigh Lane, Leigh	SHLAA	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
854	Wig 820	Bulls Head, 3-5 Warrington Road, Leigh	SHLAA	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
~~818~~	~~Wig 663~~	~~Land at Lomax Street, Abram~~	~~SHLAA~~	0.38	0.01	1.91	0.00	0.00	0.01	1.50	0.27	70.10	0.26	68.77	73.51	0.03	7.05	0.05	13.60	0.18	47.05	67.70	~~Site removed from SHLAA~~		~~Remove from SFRA~~	~~y~~	~~This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.~~
727	Wig 704	Land to northwest of Lowton Civic Hall, Hesketh Meadow Lane, Lowton	SHLAA	5.31	0.00	0.00	0.07	1.30	1.04	19.51	2.62	49.20	2.62	49.20	70.01	2.25	42.27	0.03	0.47	0.00	0.00	42.74	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
649	Wig 060	Land adjacent to Victoria Mill, Bolton Old Road, Atherton	SHLAA	0.74	0.00	0.00	0.00	0.04	0.02	2.82	0.47	63.65	0.47	63.58	66.52	0.06	7.97	0.12	16.42	0.04	5.38	29.76	Assume only 36% (i.e. area outside of Flood Zone 3) is available for development area to be used in support of Wig 047.	Full development to go forward, Exception Test required. Chanters Brook 64% Flood Zone 3.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
732	Wig 709	Spruce Close, Lowton	SHLAA	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
842	Wig 808	Open land north east of 612 Bolton Road, Ashton-In-Makerfield	SHLAA	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
731	Wig 708	Liverpool Road, Platt Bridge	SHLAA	6.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	4.93	0.00	0.00	0.00	0.00	4.93					NA
798	Wig 648	Site of former Leigh Harriers Athletics Club, Charles St, Leigh	SHLAA	1.64	0.01	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.19	11.73	0.00	0.00	0.00	0.00	11.73					NA
686	Wig 136	Bickershaw Colliery, Leigh	SHLAA	18.88	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.85	4.49	0.46	2.42	0.12	0.61	7.51					NA
815	Wig 805	Land at Parsonage Farm, Westleigh Lane, Leigh	SHLAA	0.71	0.02	2.57	0.00	0.00	0.00	0.35	0.03	4.43	0.03	4.35	7.35	0.02	2.76	0.05	6.32	0.00	0.04	9.12	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
650	Wig 047	Victoria Mill, Bolton Old Road, Atherton	SHLAA	0.33	0.00	0.00	0.00	0.76	0.04	11.24	0.18	53.24	0.18	53.24	65.24	0.03	9.86	0.00	0.14	0.00	0.00	10.00	Victoria Mill, Conversion for residential use would need to be restricted to upper floors. Would only be granted if EA satisfied of flood risk measures. Wig 060 is adjacent land with potential for new-build to cross-subsidise the conversion. We can assume that only 36% of site Wig 060 is available for development.	Full development to go forward, Exception Test required. Chanters Brook 53% Flood Zone 3.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
~~780~~	~~Wig 565~~	~~Bowling Green to rear of 71-79 Leigh Road, Leigh~~	~~SHLAA~~	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	~~Site now fully built out therefore should be removed from SFRA~~		~~Remove from SFRA~~	~~y~~	~~NA~~
656	Wig 048	Land at junction of Alma Street/Elliott Street, Tyldesley	SHLAA	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
848	Wig 814	Adjacent to 233 Wigan Road, Ashton-In-Makerfield, Wigan	SHLAA	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
834	Wig 113	Templeton Road, Platt Bridge	SHLAA	1.76	0.12	6.96	0.01	0.43	0.11	6.30	0.29	16.47	0.22	12.73	30.15	0.05	2.75	0.26	14.58	0.18	10.25	27.58	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
~~795~~	~~Wig 632~~	~~Orrell West Sidings, Ld r/o Sandbrook Service Stn, Sandbrook Rd, Orrell~~	~~SHLAA~~	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	36.96	0.08	18.19	0.03	6.33	61.48	~~Site has planning permission, therefore needs to be removed from SFRA~~		~~Remove from SFRA~~	~~y~~	~~NA~~
807	Wig 837	Land off Ravenswood Drive, Hindley	SHLAA	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
682	Wig 351	St Nathaniel's Primary School & Land btwn, 525-539 Liverpool Road	SHLAA	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.56	0.00	0.05	0.00	0.00	0.61					NA
~~692~~	~~Wig 142~~	~~Crown Chemicals, Appley Bridge~~	~~SHLAA~~	1.83	0.00	0.00	0.00	0.00	0.00	0.00	0.16	8.99	0.00	0.00	8.99	0.02	0.93	0.00	0.00	0.00	0.00	0.93	~~Site not in SHLAA~~		~~Remove from SFRA~~	~~y~~	~~A proportion of this site is Flood Zone 3a~~
759	Wig 746	Land to rear of 15-41 Westwood Lane, Lower ince	SHLAA	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
857	Wig 823	Former Farmoor Residential Home, Church Street, Orrell, Wigan	SHLAA	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
662	Wig 135	Norley Quarry, Wigan	SHLAA	27.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.72	13.40	1.82	6.55	5.20	18.75	38.70	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
~~657~~	~~Wig 033~~	~~Car park between Harrogate Street and Riverway, Wigan~~	~~SHLAA~~	0.27	0.23	86.85	0.00	0.00	0.02	6.00	0.00	0.18	0.00	0.18	93.03	0.01	2.33	0.11	41.83	0.15	55.84	100.00	~~Site removed from SHLAA~~		~~Remove from SFRA~~	~~y~~	~~This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.~~
687	Wig 137	Wigan Pier Quarter, Wigan	SHLAA	9.48	0.09	1.00	0.02	0.20	0.09	0.90	9.28	97.90	6.73	70.97	100.00	0.63	6.61	0.78	8.18	0.77	8.15	22.94	Of the sites remaining Wig 137 is the only significant site (and is already under EA consideration). The Eckersley Mills and former bus garage site is considered a key regeneration site. Large conversion opportunity of existing major mills complex with opportunity for new build at the former bus garage site. Flood defence measures are currently under review including consideration of flood compatible uses on ground floor.	Full development to go forward, Exception Test required. River Douglas 98% Flood Zone 3. Extent and scale of residual risk to be determined following release of the EA modelling for the River Douglas Flood Alleviation Scheme.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
~~863~~	~~Wig 829~~	~~Open land at end of Tan House Drive, Winstanley, Wigan~~	~~SHLAA~~	4.23	0.06	1.45	0.00	0.00	0.00	0.00	0.01	0.19	0.00	0.00	1.64	0.18	4.25	0.11	2.56	0.00	0.00	6.80	~~Site has planning permission, therefore needs to be removed from SFRA~~		~~Remove from SFRA~~	~~y~~	~~A proportion of this site is Flood Zone 3a~~
774	Wig 769	Poplar Avenue, Worsley	SHLAA	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
717	Wig 685	Land between Crankwood Road and Leeds/Liverpool Canal	SHLAA	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	2.83	0.06	4.89	0.10	7.64	15.36	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
~~722~~	~~Wig 695~~	~~Wigan Pier: Sites off Swan Meadow Road and Pottery Road~~	~~SHLAA~~	0.58	0.07	12.43	0.00	0.57	0.02	2.60	0.49	84.40	0.48	82.50	100.00	0.02	4.06	0.18	30.62	0.32	54.74	89.43	~~Site retained in SHLAA with capacity unchanged due to the sites contribution to key regeneration objectives~~	~~Full development to go forward, Exception Test required~~	~~Remove from SFRA~~	~~n~~	~~This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.~~
748	Wig 732	St Maries RC Primary School, Standish	SHLAA	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
644	Wig 107	Pennington Lane	SHLAA	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	12.92	0.17	14.65	0.00	0.00	27.56	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
666	Wig 043	Land rear of 39-61 Samuel Street, Tyldesley	SHLAA	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	11.00	0.02	7.21	0.00	0.00	18.22	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
845	Wig 811	Springbank Industrial Estate, Liverpool Road, Platt Bridge	SHLAA	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
773	Wig 768	Billinge Road/Little Lane, Newtown	SHLAA	3.81	0.00	0.00	0.13	3.46	0.14	3.61	0.22	5.86	0.22	5.86	12.93	0.66	17.28	0.02	0.47	0.00	0.00	17.76	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
721	Wig 694	Corner of Princess Road/York Road, Ashton	SHLAA	0.66	0.03	4.60	0.00	0.38	0.02	3.44	0.46	69.75	0.46	69.75	78.17	0.10	15.08	0.33	50.56	0.00	0.00	65.65	There is no proposal for commercial development at this site but the Council have had previous application enquiries in the past and, as a town centre site, would strongly prefer a (Less Vulnerable) commercial development. Proposed development would ideally be an extension of the adjacent shopping centre. Commercial opportunity site on 'stilts' at level of Gerard Centre, with car parking / servicing underneath.	Full development to go forward, Exception Test required. Millingford 64% Flood Zone 3.			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
806	Wig 836	Shevington High School	SHLAA	4.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.13	0.01	0.16	0.00	0.00	0.29					NA
~~697~~	~~Wig 155~~	~~East of Atherton~~	~~SHLAA~~	2.95	0.00	0.00	0.00	0.00	0.02	0.53	0.00	0.00	0.00	0.00	0.53	0.15	5.24	0.47	15.98	0.25	8.47	29.69	~~Part of East of Atherton Key site so this portion can be removed from SFRA~~		~~Remove from SFRA~~	~~y~~	~~NA~~
695	Wig 150	Westleigh Lane, Hindley Green	SHLAA	9.18	0.22	2.39	0.01	0.08	0.08	0.89	3.30	36.00	3.20	34.90	39.36	0.35	3.78	0.70	7.62	2.54	27.68	39.08	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
822	Wig 668	Land at Corner Lane and Tiverton Avenue, Hindley Green	SHLAA	2.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	8.04	0.00	0.00	0.00	0.00	8.04					NA
690	Wig 154	Almond Brook, Standish	SHLAA	50.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.71	9.34	3.68	7.31	4.08	8.10	24.75	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
1297	Wig 842	Ashfield House, Off Park Drive, Standish, Wigan	SHLAA	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
710	Wig 168	Industrial Area off Edge Green Road, Golborne	SHLAA	5.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	11.48	0.11	2.03	0.00	0.00	13.51					NA
714	Wig 165	Kilhey Court, Standish	SHLAA	3.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	1.71	0.00	0.00	0.00	0.00	1.71					NA
1335	Wig 849	Kingshill School, Elliott Street, Tyldesley	SHLAA	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
1955	Wig 858	Land at 230-256A York Street, Leigh	SHLAA	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
1341	Wig 855	Land at Cherry Tree Grove, Leigh	SHLAA	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	9.76	0.00	0.00	0.00	0.00	9.76					NA
1985	Wig 865	Land at Lamberhead Road and Somerset Road, Norley Hall	SHLAA	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
1981	Wig 864	Land at Woodcock Drive, Abram	SHLAA	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
1954	Wig 857	Land off Bracken Road, Leigh	SHLAA	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	12.28	0.01	1.41	0.00	0.00	13.69					NA
~~1334~~	~~Wig 848~~	~~Land rear of Coronation Avenue, Atherton~~	~~SHLAA~~	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	6.88	0.17	50.67	0.06	16.95	74.50	~~Site removed from SHLAA site tables. Capacity now 9 units or less after reduction due to flood risk so added to small sites aggregate total~~		~~Remove from SFRA~~	~~y~~	~~NA~~
1953	Wig 856	Land rear of Eden Grove, Lune Grove and Ribble Grove, Leigh	SHLAA	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
705	Wig 148	Lark Hill, Astley	SHLAA	13.60	2.83	20.80	1.04	7.66	0.64	4.70	1.60	11.76	1.08	7.95	44.92	0.66	4.86	2.80	20.58	2.35	17.25	42.70	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
~~718~~	~~Wig 688~~	~~Pemberton Colliery~~	~~SHLAA~~	44.52	1.53	3.44	0.26	0.59	0.02	0.04	2.30	5.17	1.29	2.91	9.24	1.41	3.16	1.76	3.95	1.04	2.33	9.45	~~Planning permission granted subject to completion of s106 agreement~~		~~Remove from SFRA~~	~~y~~	~~This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.~~
708	Wig 157	Pocket Nook, Lowton	SHLAA	68.47	0.92	1.34	0.03	0.05	0.44	0.64	6.67	9.74	6.18	9.02	11.77	6.50	9.49	6.72	9.81	0.88	1.29	20.59	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
691	Wig 158	Rectory Lane, Standish	SHLAA	110.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.75	4.29	4.48	4.05	3.32	3.01	11.35	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development with FZ3 areas and areas identified at either intermediate of high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only.			NA
706	Wig 149	Rothwells Farm, Golborne	SHLAA	17.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	7.78	0.00	0.00	0.00	0.00	7.78					NA
696	Wig 156	South of Atherton	SHLAA	60.07	0.10	0.17	0.03	0.05	0.73	1.21	4.12	6.86	3.63	6.05	8.29	4.63	7.71	2.31	3.85	0.23	0.39	11.94	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
711	Wig 164	St John Rigby College, Orrell	SHLAA	2.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	2.34	0.00	0.00	0.00	0.00	2.34					NA
707	Wig 151	Stirrups Farm, Golborne	SHLAA	26.65	0.00	0.00	0.07	0.26	1.19	4.48	0.84	3.16	0.84	3.16	7.90	1.02	3.82	1.43	5.37	1.41	5.29	14.48	Capacity reduced to area outside flood zone 3/intermediate and high surface water flooding	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
~~813~~	~~Wig 657~~	~~Westleigh Cricket CWB, Twist Lane, Leigh~~	~~SHLAA~~	1.28	0.01	1.04	0.00	0.00	0.00	0.00	1.27	98.95	0.78	60.62	99.99	0.01	0.86	0.04	3.33	1.19	92.83	97.03			~~Remove from SFRA~~	~~n~~	~~This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.~~
961	Wig 839	Whelley Hospital, Bradshaw Street, Whelley, Wigan	SHLAA	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
712	Wig 166	Winstanley College, Winstanley	SHLAA	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.49	0.00	0.00	0.00	0.00	0.49					NA
1329	Wig 843	Between Norfolk Road, Tarleton Ave and Somerset Road	SHLAA	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	32.76	0.00	0.00	0.00	0.00	32.76					NA
1331	Wig 845	Betwen 27 and 37 Everest Road	SHLAA	0.25	0.00	0.00	0.00	0.00	0.07	26.14	0.00	0.00	0.00	0.00	26.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
979	Wig 841	Council Tax Offices (Former Whelley Middle Sch, Moore St East, Whelley	SHLAA	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
977	Wig 840	Former Scot Lane Primary, Laurel Street, Wigan	SHLAA	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
370	EM1A33	Wheatlea Industrial Estate	ELA	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	8.74	0.04	9.74	0.00	0.00	18.48					NA
343	EM1A18 b	Dobson Park Industrial Estate	ELA	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	23.05	0.11	26.54	0.00	0.00	49.58	Part of site has intermediate surface water. Constraint noted in ELA	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			NA
1722	EM1A14 a	West of Leigh Road	ELA	19.95	0.02	0.12	0.02	0.12	0.22	1.12	1.00	5.03	0.97	4.85	6.38	2.69	13.48	0.33	1.64	0.05	0.23	15.35	Small area in FZ3b. Constraint noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
333	EM1A15 a	Swan Lane	ELA	2.88	0.00	0.00	0.00	0.09	0.40	13.77	0.00	0.00	0.00	0.00	13.86	0.01	0.34	0.00	0.03	0.00	0.00	0.37					NA
1722	EM1A14 b	West of Leigh Road	ELA	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.58	0.00	0.00	0.00	0.00	0.58					NA
366	EM1A30 b	Pemberton Park	ELA	11.76	0.04	0.33	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.38	0.03	0.28	0.00	0.01	0.00	0.00	0.29	Small area in FZ3a. Constraint noted in ELA	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			A proportion of this site is Flood Zone 3a
22	EM1A1	Stone Cross Park	ELA	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	9.67	0.26	53.79	0.17	35.38	98.85	Site has intermediate and high surface water. Constraint noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			NA
349	EM1A24 d	Springfield and Miry Lane	ELA	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	53.35	0.00	0.00	0.00	0.00	53.35					NA
341	EM1A16 d	Makerfield Way	ELA	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	62.40	0.03	2.75	0.00	0.00	65.15					NA
27	EM1A6 c	Parsonage	ELA	6.82	1.14	16.65	0.00	0.00	0.00	0.02	0.15	2.17	0.00	0.00	18.85	0.08	1.20	0.00	0.00	0.00	0.00	1.20	Small area in FZ3a. Constraint noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			A proportion of this site is Flood Zone 3a
368	EM1A32 a	Warrington Road, Hawkley	ELA	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
341	EM1A16 b	Makerfield Way	ELA	2.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91	40.22	0.01	0.22	0.00	0.00	40.45					NA
373	EM1A36	South Lancashire Industrial Estate	ELA	4.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	1.17	0.00	0.00	0.00	0.00	1.17					NA
359	EM1A c	Bradley Lane	ELA	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
357	EM1A25 e	Martland Park	ELA	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.04					NA
333	EM1A15 c	Swan Lane	ELA	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
~~322~~	~~EM1A8 b~~	~~Hope Carr/Leigh Commerce Park~~	~~ELA~~	1.93	0.06	3.24	0.01	0.65	0.05	2.65	1.76	90.96	1.45	74.91	97.50	0.57	29.73	0.13	6.63	0.04	2.29	38.66	~~Site has planning permission, therefore needs to be removed from SFRA~~		~~Remove from SFRA~~	~~y~~	~~This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.~~
24	EM1A5 b	Moss Industrial Estate	ELA	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
342	EM1A18 a	Dobson Park Industrial Estate	ELA	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	93.19	0.00	0.00	0.00	0.00	93.19					NA
4946	EM1A12 b	Gibfield	ELA	1.40	0.00	0.00	0.00	0.18	0.06	4.58	0.04	3.04	0.04	3.04	7.79	0.24	17.24	0.00	0.00	0.00	0.00	17.24	Small area in FZ3b. Constraint noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
4946	EM1A12 c	Gibfield	ELA	0.81	0.00	0.00	0.00	0.37	0.00	0.18	0.00	0.00	0.00	0.00	0.55	0.04	4.67	0.11	13.04	0.22	27.45	45.17	Parts of site have intermediate and high surface water. Constraint noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			NA
362	EM1A28 b	Richmond Hill Industrial Estate	ELA	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
27	EM1A6 a	Parsonage	ELA	10.48	0.22	2.07	0.00	0.02	0.01	0.09	1.07	10.24	0.60	5.69	12.43	0.68	6.53	1.62	15.46	1.06	10.09	32.08	Small area in FZ3b. Constraint noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
357	EM1A25 b	Martland Park	ELA	2.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
2029	EM1A25 c	Martland Park and Heinz	ELA	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	6.91	0.00	0.00	0.00	0.00	6.91					NA
359	EM1A25 b	Bradley Lane	ELA	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	27.19	0.19	18.58	0.08	7.80	53.58	Parts of this site have intermediate and high levels of surface water. Constraint noted in ELA	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			NA
345	EM1A19	Rosebridge	ELA	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
329	EM1A9 b	Chaddock Lane	ELA	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
359	EM1A27 d	Bradley Lane	ELA	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	1.09					NA
366	EM1A30 a	Pemberton Park	ELA	4.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	9.60	0.00	0.00	0.00	0.00	9.60					NA
333	EM1A15 d	Swan Lane	ELA	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
359	EM1A27a	Bradley Lane	ELA	1.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	15.73	0.00	0.00	0.00	0.00	15.73					NA
~~322~~	~~EM1A8 a~~	~~Hope Carr/Leigh Commerce Park~~	~~ELA~~	1.46	0.47	32.18	0.04	2.84	0.20	13.82	0.58	40.10	0.46	31.37	88.94	0.57	39.36	0.08	5.26	0.02	1.63	46.26	~~Site has planning permission, therefore needs to be removed from SFRA~~		~~Remove from SFRA~~	~~y~~	~~This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.~~
1013	EM1A25 a	Martland Park and Heinz, Wigan	ELA	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	8.11	0.23	14.45	0.00	0.00	22.56	Part of site has intermediate surface water. Constraint noted in ELA	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			NA
27	EM1A6 b	Parsonage	ELA	0.88	0.36	40.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.94	0.15	16.52	0.53	60.52	0.00	0.00	77.04	Part of site has intermediate surface water. Constraint noted in ELA	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			NA
329	EM1A9 c	Chaddock Lane	ELA	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
349	EM1A24 b	Springfield and Miry Lane	ELA	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	43.66	0.17	28.92	0.00	0.00	72.58	Part of site has intermediate surface water. Constraint noted in ELA	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			NA
349	EM1A24 c	Springfield and Miry Lane	ELA	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	24.55	0.01	2.11	0.00	0.00	26.66					NA
333	EM1A15 b	Swan Lane	ELA	2.94	0.00	0.00	0.06	2.18	0.19	6.47	0.56	19.11	0.56	19.11	27.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Small area in FZ3b. Constraint noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
24	EM1A5 a	Moss Industrial Estate	ELA	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
4946	EM1A12 a	Gibfield	ELA	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	18.69	0.02	4.01	0.00	0.00	22.69					NA
368	EM1A32 b	Warrington Road, Hawkley	ELA	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	8.56	0.08	9.75	0.00	0.00	18.31	Part of site has intermediate surface water. Constraint noted in ELA	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			NA
341	EM1A16 a	Makerfield Way	ELA	1.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05					NA
364	EM1A29	Lamberhead Industrial Estate	ELA	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					NA
348	EM1A20 a	Westwood Park	ELA	13.29	0.00	0.00	0.00	0.00	0.01	0.11	0.03	0.19	0.03	0.19	0.30	0.08	0.62	0.00	0.00	0.00	0.00	0.62	Small area in FZ3b. Constraint noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only			This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
357	EM1A25 d	Martland Park	ELA	2.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.95	0.00	0.00	0.00	0.00	0.95					NA

348	EM1A2d c	Westwood Park	ELA	1.89	0.00	0.00	0.01	0.77	0.07	3.75	0.08	4.43	0.08	4.43	**8.95**	0.04	2.15	0.00	0.18	0.00	0.00	**2.32**	Small area in FZ3b. Constraint noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
348	EM1A2d b	Westwood Park	ELA	5.38	0.00	0.00	0.07	1.28	1.58	29.35	0.39	7.31	0.39	7.31	**37.94**	0.45	8.31	0.29	5.31	0.00	0.00	**13.62**	Small area in FZ3b and area of intermediate surface water. Constraints noted in ELA.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
349	EM1A24 a	Springfield and Mry Lane	ELA	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.01	0.47	0.00	0.00	0.00	0.00	**0.47**			NA
362	EM1A28 a	Richmond Hill Industrial Estate	ELA	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**			NA
150	SP6	Northleigh	Candidate Key Strategic Sites	75.17	0.24	0.32	0.01	0.01	0.08	0.11	3.21	4.27	3.10	4.13	**4.70**	5.10	6.79	4.30	5.73	3.39	4.50	**17.02**	Constraint noted. Size of site means that development in flood zone can be avoided/mitigated.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
11	SP4	The Bell, Orrell	Candidate Key Strategic Sites	62.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	6.84	10.98	3.25	5.22	0.05	0.08	**16.27**	Constraint noted. Size of site means that development in surface water can be avoided/mitigated.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only	NA
9	SP8	Firs Lane/Plank Lane Canalside	Candidate Key Strategic Sites	21.08	7.07	33.53	0.01	0.07	0.05	0.23	2.57	12.20	1.78	8.44	**46.03**	1.78	8.46	2.19	10.41	1.79	8.50	**27.36**	Constraint noted. Size of site means that development in flood zone can be avoided/mitigated.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
8	SP10	Garrett Hall, Tyldesley	Candidate Key Strategic Sites	45.25	0.50	1.11	0.05	0.11	0.24	0.54	2.12	4.69	2.01	4.45	**6.45**	1.03	2.27	2.66	5.88	1.81	3.99	**12.14**	Constraint noted. Size of site means that development in flood zone can be avoided/mitigated.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
7	SP9	East of Atherton/Shakerley Lane, Tyldesley	Candidate Key Strategic Sites	42.13	0.00	0.00	0.14	0.33	0.66	1.56	0.00	0.00	0.00	0.00	**1.89**	1.71	4.05	1.16	2.75	0.24	0.10	**6.00**			NA.
5	SP5	South of Hindley	Candidate Key Strategic Sites	109.21	0.02	0.02	0.01	0.00	0.07	0.07	0.83	0.76	0.78	0.71	**0.85**	4.49	4.11	3.89	3.56	0.23	0.21	**7.89**	Constraint noted. Size of site means that development in flood zone can be avoided/mitigated.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only	This site has been removed from the Functional Floodplain (Flood Zone 3b) and re-classified as Flood Zone 3a because the minimum standard of defence at the site has been assessed to be 5% AEP or greater (taking into account both Environment Agency and other defences). This re-classification assumes that a minimum standard of defence of 5% AEP or greater is maintained for the lifetime of the proposed development, including an allowance for climate change. If this minimum standard of defence is not maintained for the lifetime of the proposed development, a proportion of the site (Column Z) would be re-designated as Flood Zone 3b.
4	SP11b	Stubshaw Cross	Candidate Key Strategic Sites	32.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	1.33	4.09	0.08	0.24	0.00	0.00	**4.33**			NA
3	SP11a	Landgate	Candidate Key Strategic Sites	45.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	2.47	5.44	5.26	11.56	2.14	4.69	**21.69**	Constraint noted. Size of site means that development in surface water can be avoided/mitigated.	No development within FZ3 areas and areas identified at either intermediate or high risk of surface water flooding. These areas are to be designated as public open space/water compatible uses only	NA

B . Wigan Council - Flood Risk Balance Spreadsheet

Table B-1: Flood Risk Balance Sheet

Indicator						
A	B	C	D	E	F	G
Is the development within existing flood-risk area?	What are the scale and nature of flood risks?	What scale of residual risk measures will be required?	How will egress and access be assured? What will the emergency planning impact?	Will there be a change in number of people at risk? **After scheme (if known)**	Will there be a change in number of properties at risk? **After scheme (if known)**	Will there be an impact of the mitigation measures elsewhere?
+ No risk - Risk area within resilient communities - - Vulnerable community, which would struggle to recover	+ + Benign, and understood - Risk is significant but understood - - Difficult to warn, unpredictable, may result in operational failure of defences, from multiple sources	++ None required + Measures could reduce risk to existing development - Standard, no major alteration to layout and form - - Flood resistance is dominant in design	+ No special provisions, safe - Needs to be managed, should be safe, must be proven in FRA - - Special provision, natural response will not be obvious. Safety not guaranteed, and may not convince LPA/EA when examined in detail	+ Reduction = Neutral impact - Increase	+ Reduction (preferable outcome in PPS25) = Neutral impact - Increase	+ Reduction = Neutral impact - Increase in flood risk elsewhere (Exception test requires no impact)

C . Wigan Borough Council - SFRA Maps

Map Name	Map Reference	Map Title	Description
Set A - Flood Zones	2009s0578 - D001_001	FLOOD ZONE MAP	**Environment Agency Flood Zones in Standish and Shevington**
Set A - Flood Zones	2009s0578 - D001_002	FLOOD ZONE MAP	**Environment Agency Flood Zones in Aspull and Haigh**
Set A - Flood Zones	2009s0578 - D001_003	FLOOD ZONE MAP	**Environment Agency Flood Zones in Orrell, Winstanley and Wigan West & South**
Set A - Flood Zones	2009s0578 - D001_004	FLOOD ZONE MAP	**Environment Agency Flood Zones in Wigan North & East**
Set A - Flood Zones	2009s0578 - D001_005	FLOOD ZONE MAP	**Environment Agency Flood Zones in Golborne, Lowton and Ashton-in-Makerfield**
Set A - Flood Zones	2009s0578 - D001_006	FLOOD ZONE MAP	**Environment Agency Flood Zones in Hindley and Leigh North & West**
Set A - Flood Zones	2009s0578 - D001_007	FLOOD ZONE MAP	**Environment Agency Flood Zones in Atherton, Tyldesley and Astley**
Set A - Flood Zones	2009s0578 - D001_008	FLOOD ZONE MAP	**Environment Agency Flood Zones in Leigh East & South**
Set A - Flood Zones	2009s0578 - D001_009	FLOOD ZONE MAP	**Environment Agency Flood Zones in Wigan Borough**
Set A - Flood Zones	2009s0578 - D001_010	FLOOD ZONE MAP	**Environment Agency Flood Zones & Q20 outline in Wigan Borough.** These maps show Flood Zones 2, 3a, 3b and proposed development allocations. These maps enable application of the Sequential Test by Spatial Planners and

Map Name	Map Reference	Map Title	Description
			Development Management officer
Set A - Flood Zones	2009s0578 - D001_010a	FLOOD ZONE MAP	**Environment Agency / other defences held in NFCDD (National Flood and Coastal Defence Database).** The flood extents shown represent the risk of flood if these defences were not maintained to 5% AEP or greater. In the absence of flood defences, sites covered by this extent would be designated as Flood Zone 3b.
Set B - Flood Zone 3 Depth Map	2009s0578 - D002_001	FLOOD DEPTH MAP	**Digital Terrain Model (DTM) of Flood Zone 3 in Wigan Borough and location of potential development sites** This will show likely depths of Flooding within Flood Zone 3 - at presents the DTM shows land height above sea level and therefore we are assuming low areas of land within Flood Zone 3 are more likely to flood than those areas of land that are higher. It also displays proposed development sites within the borough. A strategic depth grid has been created using the extent of Flood Zone 3 and topographic data. These maps enable identification of variation in flood risk throughout the Flood Zone.
Set B - Flood Zone 3 Depth Map	2009s0578 - D002_002	FLOOD DEPTH MAP	**Digital Terrain Model (DTM) of Flood Zone 3 in Wigan Borough** This will show likely depths of Flooding within Flood Zone 3 - at presents the DTM shows land height above sea level and therefore we are assuming low areas of land within Flood Zone 3 are more likely to flood than those areas of land that are higher. A strategic depth grid has been created using the extent of Flood Zone 3 and topographic data. These maps enable identification of variation in flood risk throughout the Flood Zone.
Set B - Flood Zone 3 Depth Map	2009s0578 - D002a_001	FLOOD DEPTH MAP	**Depth of flooding in Flood Zone 3 in Wigan Borough using JFLOW + modelling and location of potential development sites** This map provides an indication of the depths of flooding within Flood Zone 3 obtained from JFLOW+ modelling outputs undertaken by JBA Consulting in 2010 for the Wigan Borough Council Level 2 SFRA. It also displays proposed development sites within the borough. A strategic depth grid has been created using the extent of Flood Zone 3

Map Name	Map Reference	Map Title	Description
			and topographic data. These maps enable identification of variation in flood risk throughout the Flood Zone
Set B - Flood Zone 3 Depth Map	2009s0578 - D002a_002	FLOOD DEPTH MAP	**Depth of flooding in Flood Zone 3 in Wigan Borough using JFLOW + modelling** This map provides an indication of the depths of flooding within Flood Zone 3 obtained from JFLOW+ modelling outputs undertaken by JBA Consulting in 2010 for the Wigan Borough Council Level 2 SFRA. A strategic depth grid has been created using the extent of Flood Zone 3 and topographic data. These maps enable identification of variation in flood risk throughout the Flood Zone.
Set C – Flood Hazard Map	2009s0578 - D003_001	FLOOD HAZARD MAP	**Digital Terrain Model (DTM) of Hazard rating within Flood Zone 3 in Wigan Borough** The map displays the hazard rating within Flood Zone 3 using a DTM to assess areas at highest risk compared to areas at lowest risk in Flood Zone 3. The analysis is based on lower DTM measurements being areas at higher risk.
Set C – Flood Hazard Map	2009s0578 - D003a_001	FLOOD HAZARD MAP	**Flood Hazards in Wigan Borough during 1% AEP storm event using JFLOW + modelling** This map provides an indication of strategic flood hazards during a 1% AEP storm event. The hazard grid was obtained from JFLOW+ modelling outputs undertaken by JBA Consulting in 2010 for the Wigan Borough Council Level 2 SFRA.
Set D - Flood Risk Management Measures	2009s0578 - D004_001	FLOOD RISK MANAGEMENT MEASURES	**Flood risk management measures in Wigan Borough** Flood risk management measures, including the location of Environment Agency, Local Authority and privately owned defence assets. It also indicates the Environment Agency Flood Warning Areas. These maps provide the location of current Flood Risk Management (FRM) measures within the area including defences and areas benefiting from defences (1% standard of protection). This map can be used to identify communities that are currently protected to some level.
Set E - Areas Vulnerable to	2009s0578 - D005_001	SURFACE WATER MAPS	**Surface water maps in Wigan Borough** Environment Agency Surface Water Mapping at borough level. These maps have

Map Name	Map Reference	Map Title	Description
Surface Water Flooding			been produced from the Environment Agency Areas Susceptible to Surface Water Flooding map. Surface water flooding has been classified as high, intermediate and low susceptibility. These maps are supplemented by the wealth of historical flooding data that is available in the Wigan area.
Set F - Climate Change Sensitivity	2009s0578 - D006_001	FLUVIAL CLIMATE CHANGE SENSITIVITY	**Fluvial areas sensitive to climate change in Wigan Borough** 1% AEP + cc outlines from Environment Agency models at borough level. These maps provide early indication of areas in which fluvial flooding is likely may increase over the next 50 years. These maps are useful when carrying out a sweep of sites that may require the Exception Test by Spatial Planners, Development Management and developers in assessing possible future fluvial risks. Emergency planners may also find them useful when designating access routes.
Set G - Critical Drainage Areas	2009s0578 - D007_001	CRITICAL DRAINAGE AREAS	**Critical Drainage Areas in Wigan Borough** Displays Critical Drainage Areas, Flood Zones, Historical Flooding Records and Surface Water Flooding. These maps have been produced showing the boundary of Critical Drainage Areas based on known historical flood events, the refined surface water mapping and natural catchment boundaries. These maps should be used to scope site-specific FRAs and as a starting point in the identification of areas for SWMPs.
Set G - Critical Drainage Areas	2009s0578 - D007_002	CRITICAL DRAINAGE AREAS	**Critical Drainage Areas and Flood Zones in Wigan Borough** Displays Critical Drainage Areas and Flood Zones. These maps have been produced showing the boundary of Critical Drainage Areas based on known historical flood events, the refined surface water mapping and natural catchment boundaries. These maps should be used to scope site-specific FRAs and as a starting point in the identification of areas for SWMPs.
Set G - Critical Drainage Areas	2009s0578 - D007_003	CRITICAL DRAINAGE AREAS	**Critical Drainage Areas, Flood Zones and Surface Water Flooding in Wigan Borough** Displays Critical Drainage Areas, Flood Zones and Surface Water Flooding. These

Map Name	Map Reference	Map Title	Description
			maps have been produced showing the boundary of Critical Drainage Areas based on known historical flood events, the refined surface water mapping and natural catchment boundaries. These maps should be used to scope site-specific FRAs and as a starting point in the identification of areas for SWMPs.
Set G - Critical Drainage Areas	2009s0578 - D007_004	CRITICAL DRAINAGE AREAS	**Critical Drainage Areas and Historical Flooding in Wigan Borough** Displays Critical Drainage Areas and Historical Flooding Records. These maps have been produced showing the boundary of Critical Drainage Areas based on known historical flood events, the refined surface water mapping and natural catchment boundaries. These maps should be used to scope site-specific FRAs and as a starting point in the identification of areas for SWMPs.
Set G - Critical Drainage Areas	2009s0578 - D007_005	CRITICAL DRAINAGE AREAS	**Critical Drainage Areas and Surface Water Flooding in Wigan Borough** Displays Critical Drainage Areas and Surface Water Flooding. These maps have been produced showing the boundary of Critical Drainage Areas based on known historical flood events, the refined surface water mapping and natural catchment boundaries. These maps should be used to scope site-specific FRAs and as a starting point in the identification of areas for SWMPs.
Set H - Other Sources of Flooding	2009s0578 - D008_001	OTHER SOURCES OF FLOODING	**Other sources of flooding in Wigan Borough** Displays key water features in Wigan including reservoirs, canals and other water features. The reservoirs located within the council area have been mapped. This map should not influence the spatial placement of development during the Sequential Test; however, should inform the need for emergency planning to take account of the risk within community plans.
Set I - Historical Flooding	2009s0578 - D009_001	HISTORICAL FLOODING	**Historical Flood Data from 2002 and Wigan Council Hotspot data. Including EA historical fluvial flood records and Flood Warning Areas.**
Set I - Historical Flooding	2009s0578 - D009_002	HISTORICAL FLOODING	**Displays Historical Flooding Data provided by Wigan Council. It displays Historical Flood Data from 2002 - 2009 that is within 8 metres of a main river.**

Map Name	Map Reference	Map Title	Description
Set I - Historical Flooding	2009s0578 - D009_003	HISTORICAL FLOODING	**Displays Historical Flood Data from 2002 and Wigan Council Hotspot data as well as Greater Manchester Fire and Rescue Records for Flood Call Outs.**
Set I - Historical Flooding	2009s0578 - D009_004	HISTORICAL FLOODING	**Displays potential development sites and Historical Flood Data provided by Wigan Council and United Utilities Records. Key areas at risk of flooding have been derived where there is a high concentration of both sets of data.**
Set I - Historical Flooding	2009s0578 - D009_005	HISTORICAL FLOODING	**Displays Historical Flood Data from 2002 - 2009 and Wigan Council Hotspot data that is within 5 metres of a main river, and potential development sites that intersect with this.**
Set I - Historical Flooding	2009s0578 - D009_006	HISTORICAL FLOODING	**Displays Historical Flood Data from 2002 that is within 8m of a main river and Wigan Council Hotspot data. The map also displays potential development sites within the borough.**
Set I - Historical Flooding	2009s0578 - D009_007	HISTORICAL FLOODING	**Displays Historical Flood Data originating from Surface Water Flooding from 2002 to present day and Wigan Council Hotspot data.**
Set I - Historical Flooding	2009s0578 - D009_008	HISTORICAL FLOODING	**Displays Historical Flood Data supplied by United Utilities for the borough.**
Set I - Historical Flooding	2009s0578 - D009_009	HISTORICAL FLOODING	**Displays potential development sites intersecting DG5 historical flood records supplied by United Utilities at borough level and also with specific sites in greater detail.**
Set I - Historical Flooding	2009s0578 - D009_010	HISTORICAL FLOODING	**Displays potential development sites intersecting DG5 historical flood records supplied by United Utilities at borough level.**
Set J - Open Space	2009s0578 - D010_001	OPEN SPACE	**Displays sites of Open Space in Wigan, as provided by Wigan Council, as well as the Environment Agency Flood Zones and Wigan development sites.**
Set J - Open Space	2009s0578 - D010_002	OPEN SPACE	**Displays sites of Open Space in Wigan, as provided by Wigan Council.**
Set J - Open Space	2009s0578 - D010_003	OPEN SPACE	**Displays sites of Open Space in Wigan, as provided by Wigan Council, as well**

Map Name	Map Reference	Map Title	Description
			as proposed Wigan development sites.
Set J - Open Space	2009s0578 - D010_004	OPEN SPACE	**Displays sites of Open Space in Wigan, as well as new development sites that intersect Open Space that is within 5 metres of a main river.**
Set J - Open Space	2009s0578 - D010_005	OPEN SPACE	**Displays sites of Open Space in Wigan, as provided by Wigan Council, which could potentially be used for Flood Alleviation. It also shows New Development Sites that intersect Potential Flood Alleviation Sites.**
Set J - Open Space	2009s0578 - D010_006	OPEN SPACE - FLOOD ALLEVIATION SITES	**Displays areas of Open Space which are within 5m of a Main River and Potential Flood Alleviation Sites.**
Set K - Strategic Sites	2009s0578 - D011_001	STRATEGIC SITES	**Displays key strategic sites in Wigan.**
Set L - Flood Velocity Map	2009s0578 - D012_001	FLOOD VELOCITY MAP	**Displays strategic flood velocities during a 1% AEP storm event obtained from JFLOW+.**
Set M - Canal Breach Velocity Grids	2009s0578 - D013_001	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_002	CANAL BREACH VELOCITY	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop

Map Name	Map Reference	Map Title	Description
		GRID	or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_003	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_004	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_005	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of

Map Name	Map Reference	Map Title	Description
			development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_006	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_007	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_008	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate

Map Name	Map Reference	Map Title	Description
			the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_009	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_010	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_011	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed

Map Name	Map Reference	Map Title	Description
			investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_012	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_013	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_014	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design

Map Name	Map Reference	Map Title	Description
			finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_015	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_016	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_017	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the

Map Name	Map Reference	Map Title	Description
			residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_018	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_019	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_020	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.

Map Name	Map Reference	Map Title	Description
Set M - Canal Breach Velocity Grids	2009s0578 - D013_021	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_022	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_023	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal	2009s0578 - D013_024	CANAL	Indicates potential breach failure velocity rates of canal pounds along the Leeds

Map Name	Map Reference	Map Title	Description
Breach Velocity Grids		BREACH VELOCITY GRID	Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_025	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set M - Canal Breach Velocity Grids	2009s0578 - D013_026	CANAL BREACH VELOCITY GRID	Indicates potential breach failure velocity rates of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_001	CANAL BREACH	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been

Map Name	Map Reference	Map Title	Description
		DEPTH GRID	generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_002	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_003	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_004	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop

Map Name	Map Reference	Map Title	Description
			or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_005	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_006	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_007	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of

Map Name	Map Reference	Map Title	Description
			development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_008	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_009	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_010	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate

Map Name	Map Reference	Map Title	Description
			the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_011	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_012	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_013	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed

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			investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_014	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_015	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_016	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design

Map Name	Map Reference	Map Title	Description
			finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_017	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_018	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_019	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the

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			residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_020	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_021	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_022	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.

Map Name	Map Reference	Map Title	Description
Set N - Canal Breach Depth Grids	2009s0578 - D014_023	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_024	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal Breach Depth Grids	2009s0578 - D014_025	CANAL BREACH DEPTH GRID	Indicates potential breach failure flooding depths of canal pounds along the Leeds Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set N - Canal	2009s0578 - D014_026	CANAL	Indicates potential breach failure flooding depths of canal pounds along the Leeds

Map Name	Map Reference	Map Title	Description
Breach Depth Grids		BREACH DEPTH GRID	Liverpool Canal through the Wigan borough. "Canal Hazard Zones" have been generated for areas which could flood if the Leeds and Liverpool canal were to overtop or breach. These hazard zones should influence the spatial placement of development during the Sequential Test and highlight the need for FRA to investigate the residual risk further during a site-specific FRA. It is recommended that detailed investigations should be carried out and results incorporated into the final design finished floor levels of the development. Site emergency plans should also take the residual risk into account.
Set O - Areas Benefiting from Defences and Defences	2009s0578 - D015-001	ABDs & DEFENCES	This map indicates key results of the Wigan Council SFRA. **It includes the location of Main Rivers, Defences and Areas Benefiting from Defences, within the local authority area.**

D . Wigan Council - Data Register

Wigan Hybrid Strategic Flood Risk Assessment

Data requests for watercourses close to development sites

Model Watercourse	Sub Watercourse	Study / Location	Q20 Model	Q20 Outline	Q100 Model	Q100 Outline	Q100cc Model	Q100cc Outline	Q1000 Model	Q1000 Outline	GIS of Model Cross Sections / Survey Data	Date Requested	Date Received	Outstanding Data to Request	Model Results Info for .xls
Douglas CFMP	NA	SFRM1	Yes (25year)	Yes (25year)	Yes	Yes	Yes	Yes (Q100+30%)	Yes	Yes	Yes	Jan - March 2010	03/12/2009	NA	NA
Calico Brook	NA	SFRM2	No	Yes (25year)	No	Yes	Q100 x 1.2 - run	Yes	Multiplied the Q100 by 10 but crashing	No	Yes	Jan - March 2010	03/12/2009	NA	NA
Douglas	NA	SFRM4	Yes (25year)	Yes (25year)	Yes	Yes	Q100 x 1.2 - run	Yes	Yes	Yes	Yes	Jan - March 2010	03/12/2009	NA	NA
Wigan Brooks	NA	SFRM4	Yes (25year)	Yes (25year)	Yes	Yes	Simulation unstable at Q100 x 1.2	No	Yes	Yes	Yes	Jan - March 2010	03/12/2009	NA	NA
Boresdane Brook	NA	Other	No	No	Got Tuflow and est file	Yes	No but can be scaled up to create	No but model could be scaled up to create	Got Tuflow and est file	Yes	Yes	Jan - March 2010	03/12/2009	NA	NA
Chanters Brook	NA	Other	No	Yes	No	Yes	Yes	No	No	Yes	No	Jan - March 2010	03/12/2009	NA	NA
Common Lane Brook	NA	Other	No	No	Yes	Yes	No	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
Dog Pool Brook	NA	Other	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
Hey Brook	NA	Other	No	No	No	Yes	Got Tuflow files but no ISIS	No	No	Yes	Yes	Jan - March 2010	03/12/2009	NA	NA
M&L Mersey	Bedford	Other	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Brookside	Other	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Carr	Other	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Collier	Other	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Glaze	Other	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Holcroft	Other	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Tyldesley	Other	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Jibcroft	Other	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Phipps	Other	No	No	No	Yes	No	No	No	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Westhoughton	Other	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Westleigh	Other	No	No	No	Yes	No	Yes	No	Yes	No	Jan - March 2010	03/12/2009	NA	NA
	Whittle	Other	No	No	Yes	Yes	Yes	No	Yes	Yes	No	Jan - March 2010	03/12/2009	NA	NA
Sankey S105	NA	Other	No	No	No	Yes	No	No	No	No	No	Jan - March 2010	03/12/2009	NA	NA

Data sent within Wigan boundary but not near development sites

Model Watercourse	Sub Watercourse	Study / Location	Q20	Q20 Outline	Q100 Model	Q100 Outline	Q100cc	Q100cc Outline	Q1000 Model	Q1000 Outline	GIS of Model Cross Sections / Survey Data	Date Requested	Date Received	Outstanding Data to Request	Model Results Info for .xls
Abbey / Eller	NA	SFRM2	Yes (25year)	NA	NA	NA	No - Got XS but no model results					Jan - March 2010	03/12/2009	Need Q100 ISIS model results	No
Twad	NA	SFRM2	Yes (25year)	NA	NA	NA	No - Got XS but no model results					Jan - March 2010	03/12/2009	Need Q100 ISIS model results	No
Lockstock	NA	SFRM3	Yes (25year)	NA	NA	NA	No - Got XS but no model results					Jan - March 2010	03/12/2009	Need Q100 ISIS model results	No
Carr	NA	SFRM3	No	NA	NA	NA	No - Got XS but no model results					Jan - March 2010	03/12/2009	Need Q100 ISIS model results	No
Chor	NA	SFRM4	Yes (25year)	NA	NA	NA	No - Need XS info to create this outline					Jan - March 2010	03/12/2009	Need XS	Y
Yarrow	NA	SFRM4	Yes (25year)	NA	NA	NA	No - Need XS info to create this outline					Jan - March 2010	03/12/2009	Need XS	Y
Astley Brook	NA	Model Outlines	No	NA	NA	NA	Y					Jan - March 2010	23/12/2009	20 year outline	No
Ellen Brook	NA	Model Outlines	No	NA	NA	NA	No					Jan - March 2010	23/12/2009	20 year outline	No
Ex_Cows	NA	Model Outlines	?	NA	NA	NA	No					Jan - March 2010	23/12/2009	20 year outline	No
Martland Avenue	NA	Model Outlines	Yes	NA	NA	NA	Y					Jan - March 2010	23/12/2009		No

Data sent outside of Wigan boundary

Model Watercourse	Sub Watercourse	Study / Location	Q20	Q20 Outline	Q100 Model	Q100 Outline	Q100cc	Q100cc Outline	Q1000 Model	Q1000 Outline	GIS of Model Cross Sections / Survey Data	Date Requested	Date Received	Outstanding Data to Request	Model Results Info for .xls
Chorlton Brook	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	Jan - March 2010	31/03/2010	NA	NA
Cringle Brook / Cringle Brook Old	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	Jan - March 2010	31/03/2010	NA	NA
Chorlton Platt Gore	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	Jan - March 2010	31/03/2010	NA	NA
Leigh Brook - Old	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Yes	Jan - March 2010	31/03/2010	NA	NA

E . SUDs Suitability

Table E-1: Proposed SHLAA Development Site SUDs Suitability

New Site Reference	Site Address	Soil Type	SUDs Suitability
Wig 681	Land at Frith Street, Wigan	Loamy and clayey floodplain soils with naturally high groundwater	Low
Wig 710	Land off Edgeway Road, Worsley Mesnes	Restored soils mostly from quarry and opencast spoil	Unknown
Wig 539	Billinge Hospital, Upholland Road	Naturally wet very acid sandy and loamy soils	Medium
Wig 823	Former Farmoor Residential Home, Church Street, Orrell, Wigan	Naturally wet very acid sandy and loamy soils	Medium
Wig 165	Kilhey Court, Standish	Freely draining slightly acid sandy soils	High
Wig 530	Haulage Depot, Wigan Lower Road	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 733	Garage adj to 277 Preston Road, Standish	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 732	St Maries RC Primary School, Standish	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 166	Winstanley College, Winstanley	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 650	Bispham Hall Brick and Terracotta Works, Smethurst Rd, Billinge	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 141	Hope Carr 2, Pennington	Naturally wet very acid sandy and loamy soils	Medium
Wig 550	Land at 20 Pickley Green (The Lawns), Atherleigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 834	Bedford High School	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 066	Wigan and Leigh College, Railway Road, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 764	Crossdale Road, Hindley Green	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 800	Part of Newton Road	Slowly permeable seasonally wet	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
	PEA, Lowton	slightly acid but base-rich loamy and clayey soils	
Wig 613	'Land At Junction Of Brown Street And Bickershaw Lane, Abram	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 702	Land to west of Lovers Lane, Howe Bridge, Atherleigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 830	Hindley High School	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 660	Land at Hindleys Farm, Wigan Road, Atherton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 044	Johnson Close	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 146	Smiths Lane, Hindley Green	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 723 (1)	Mather House, Mather Lane, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 615	Church Inn, 184 Westleigh Lane, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 833	Lowton Junior and Infant School	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 666	Land at Coal Pit Lane, Atherleigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 316	J & E W Shimmin Transport, Ashton Road	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 120	Land opp 150-164 Kirkhall Ln and parallel to Robertshaw St, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 611	Maypole Industrial Estate (Parklands), Park Lane, Abram	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 831	Golborne High School	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 819	Glover House Farm,	Slowly permeable seasonally wet	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
	Hand Lane, Leigh	slightly acid but base-rich loamy and clayey soils	
Wig 354	St Thomas Rectory, Church Street	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 832	Lowton High School	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 687	Parsonage, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 648	Site of former Leigh Harriers Athletics Club, Charles St, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 136	Bickershaw Colliery, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 805	Land at Parsonage Farm, Westleigh Lane, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 705	Land off Gloucester Avenue, Golborne	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 118	West Bridgewater Street/St. Helen's Road, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 837	Land off Ravenswood Drive, Hindley	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 801	Part of Moss Industrial Estate PEA, Lowton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 685	Land between Crankwood Road and Leeds/Liverpool Canal	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 675	The Bungalow and Scrap Yard, Pocket Nook Lane, Lowton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 803	Welch Hill Mill, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 628	Open land north of 248 Slag Lane, Lowton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 494	Land adj to 9 & 30 Rosedale Avenue	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
Wig 722	Chapel Street/Brown Street/Queen Street, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 081	Hall House Lane	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 625	Premier House, High Street, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 670	Land at Millfield Farm, Nook Lane, Lowton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 765	Land off Waldon Close, Hindley Green	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 821	21-25 Wilkinson Street, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 057	Land to rear of 323-333 Bickershaw Lane, Bickershaw	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 090	Rear of Woodland Avenue/Athol Crescent, Hindley	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 055	Land between 47 and 51 Westleigh Lane, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 820	Bulls Head, 3-5 Warrington Road, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 704	Land to northwest of Lowton Civic Hall, Hesketh Meadow Lane, Lowton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 709	Spruce Close, Lowton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 150	Westleigh Lane, Hindley Green	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 668	Land at Corner Lane and Tiverton Avenue, Hindley Green	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 168	Industrial Area off Edge Green Road, Golborne	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 858	Land at 230-256A York	Slowly permeable seasonally wet	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
	Street, Leigh	slightly acid but base-rich loamy and clayey soils	
Wig 855	Land at Cherry Tree Grove, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 857	Land off Bracken Road, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 856	Land rear of Eden Grove, Lune Grove and Ribble Grove, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 148	Lark Hill, Astley	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 157	Pocket Nook, Lowton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 149	Rothwells Farm, Golborne	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 151	Stirrups Farm, Golborne	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 051	Land adjacent Holy Family RC Church, Chaddock Lane, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 825	Carlton House, Johnson Street, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 674	Chaddock Lane, Astely	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 083	Collier Brook Farm, Bag Lane, Atherton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 762	Land to rear of Dorning Street, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 701	Land to north of Treen Street/Bodmin Road/Cranleigh Drive	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 635	Site of former Atherton Day Nursery * Two Porches, Gloucester St, Atherton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 826	Land at Alma Street/Elliott Street, Tyldesley, Manchester	Slowly permeable seasonally wet acid loamy and clayey soils	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
Wig 047	Victoria Mill, Bolton Old Road, Atherton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 048	Land at junction of Alma Street/Elliott Street, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 063	Rosedale Avenue/Water Street, Atherton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 043	Land rear of 39-61 Samuel Street, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 617	'Site Of Former Dairy Adj 224 Mosley Common Road, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 064	Coronation Drive/Royal Drive, Leigh	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 143	Garrett Hall 2, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 700	Lancaster Avenue, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 651	Former Astley Works, Gin Pit Village, Ley Rd, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 060	Land adjacent to Victoria Mill, Bolton Old Road, Atherton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 849	Kingshill School, Elliott Street, Tyldesley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 848	Land rear of Coronation Avenue, Atherton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 156	South of Atherton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 843	Between Norfolk Road, Tarleton Ave and Somerset Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 845	Betwen 27 and 37 Everest Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 025	Wilding Street	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 711	Land to east of Falconers Green, Worsley Mesnes	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 838	Riverway/Station Road, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
Wig 728	Wigan and Leigh College Pagefield Building, Bridgeman Terrace, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 824	St Johns Parsih Hall, Fleet Street, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 661	Land r/o 42 Booths Brow Road, Ashton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 739	Land to rear of 60 Smethurst Lane, Pemberton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 507	Low Bank Garage, Low Bank Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 743	Land behind Laburmum Avenue, Lower ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 815	Site of Britannia Inn, 361 Wigan Road, Ashton-In-Makerfield, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 754	Woodhouse Drive, Standish Lower Ground	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 339	Land to rear of 17-51 Heather Grove	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 664	Ashton Reservoirs, Druid St/Mill St, Ashton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 161	Leyland Mill, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 810	Former Platt Bridge Clinic, Victoria Street, Platt Bridge	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 074	Liverpool Road, Ashton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 735	Bell Lane/Grange Avenue/Langdale Road/Heysham Road, Pemberton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 726	Land at Scholes, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 655	Prospect Industrial Estate, Platt Lane Hindley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 828	1-7 Upper Dicconson Street and 29-33 Dicconson Street, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 737	Saddleback Crescent,	Slowly permeable seasonally wet	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
	Norley	acid loamy and clayey soils	
Wig 763	Netto, Ladies Lane, Hindley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 816	St Marks Vicarage, Victoria Street, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 715	Mottram Drive, Worsley Mesnes	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 760	Land to rear of Hemfield Road, Higher Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 827	Land adjacent to 48 Millgate, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 713	Buer Avenue, Worsley Mesnes	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 680	Kirkless Industrial Estate, Cale Lane, Aspull	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 527	253-255 Wigan Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 727	Land at rear of Whelley Hospital, Whelley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 822	Land adjacent to 234 Orrell Road, Orrell, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 807	Adjacent to 20 Hope Street, Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 626	Land adj to Bekaert Fencing, Woodhouse Lane, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 755	Land at Birkett Street, Higher Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 744/745	William Street, Lower Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 766	Robin Park Road, Newtown	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 691	Alexandra Colliery, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 528	Rear of 22-68 Preston Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 756	Scholefield Lane, Higher Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 718	Allotment Gardens off Ruskin Avenue, Marus Bridge	Slowly permeable seasonally wet acid loamy and clayey soils	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
Wig 716	Bransfield Close, Hawkley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 706B	South of templeton Road and Sewage Works, Platt Bridge	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 767	Actons Walk, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 535	Site of Cranberry Hotel and 641-643 Wigan Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 717	Warrington Road, Marus Bridge	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 712	Eliot Drive, Worsley Mesnes	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 758	Land at Patterdale Place, Higher Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 736	The Green, Norley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 324	Culraven Garage, Haigh Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 814	Adjacent to 233 Wigan Road, Ashton-In-Makerfield, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 113	Templeton Road, Platt Bridge	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 351	St Nathaniels Primary School & Lnd btwn, 525-539 Liverpool Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 320	Land off Wigan Road (adj to St John the Baptist School)	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 084	Land to rear of 61-95 High Street, Standish	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 761	Land at rear of Hemfield Road, Higher Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 508	Hardybutts, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 667	Lafarge Roofing Ltd, Cale Lane, New Springs	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 746	Land to rear of 15-41 Westwood Lane, Lower ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
Wig 135	Norley Quarry, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 769	Poplar Avenue, Worsley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 695	Wigan Pier: Sites off Swan Meadow Road and Pottery Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 835	Abraham Guest High School	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 806	Open land south of 12 Car Street, Platt Bridge	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 671	Land at Green Lane, Standish	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 622	WalkersHigher Farm, Scot Lane, Aspull	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 742	Spindlewood Road/Junction Terrace, Lower Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 107	Pennington Lane	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 811	Springbank Industrial Estate, Liverpool Road, Platt Bridge	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 768	Billinge Road/Little Lane, Newtown	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 694	Corner of Princess Road/York Road, Ashton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 013	Scholes/Kay Close	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 092	Land Rear of Alexandra Hotel, 213 Whelley, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 095	Knowles Yard off Ratcliffe Road, Aspull	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 659	Land off Woodhouse Lane, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 127	Millingford Grove, Ashton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 656	Ainscough Metals, Warrington Road, Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 321	Rockleigh Hotel, 50 Bolton Road	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 752	Land at Ascroft	Slowly permeable seasonally wet	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
	Avenue, Beech Hill	acid loamy and clayey soils	
Wig 738	Land to rear of Cotswold Avenue, Pemberton	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 740	Former Police Station, Harrogate Street, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 749	Land at Ince Brook, Manchester Road, Higher Ince	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 131	Land between Warrington Lane, Chapel Lane and Darlington Street, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 808	Open land north east of 612 Bolton Road, Ashton-In-Makerfield	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 865	Land at Lamberhead Road and Somerset Road, Norley Hall	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 864	Land at Woodcock Drive, Abram	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 688	Pemberton Colliery	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 164	St John Rigby College, Orrell	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 839	Whelley Hospital, Bradshaw Street, Whelley, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 841	Council Tax Offices (Former Whelley Middle Sch, Moore St East, Whelley	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 840	Former Scot Lane Primary, Laurel Street, Wigan	Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 725	Bridgewater Business Park, Siddow Common, Leigh	Naturally wet very acid sandy and loamy soils and slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 169	Orica Ltd UK Site, Shevington	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 147	Hooten Gardens, Leigh	Naturally wet very acid sandy and	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
		loamy soils and slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	
Wig 145	Hope Carr, Pennington	Naturally wet very acid sandy and loamy soils and loamy and clayey floodplain soils with naturally high groundwater	Low
Wig 714	Cricket Ground, Tipping Street, Worsley Mesnes	Loamy and clayey floodplain soils with naturally high groundwater and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 130	Off Lincoln Drive, Ashton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 595	Hill Top Farm, Off Ravenswood Drive, Hindley	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 658	Ashton FC Ground off Golborne Road, Ashton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 693	Land at Leopold Street, Pemberton	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 140	Leigh Sports Village	Loamy and clayey soils with naturally high groundwater and slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 144	Hope Carr 3, Pennington	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with naturally high groundwater	Low
Wig 142	Crown Chemicals, Appley Bridge	Loamy and clayey soils with naturally high groundwater and slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
Wig 137	Wiga Pier Quarter, Wigan	Loamy and clayey floodplain soils with naturally high groundwater and slowly permeable seasonally wet acid loamy and clayey soils	Low

New Site Reference	Site Address	Soil Type	SUDs Suitability
Wig 162	Former Leigh CE High School, Leigh	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 676	South East of Hindley Wastewater Treatment Works, Abram	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 836	Shevington High School	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 708	Liverpool Road, Platt Bridge	Slowly permeable seasonally wet acid loamy and clayey soils and restored soils mostly from quarry and opencast spoil	Low
Wig 154	Almond Brook, Standish	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 842	Ashfield House, Off Park Drive, Standish, Wigan	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 158	Rectory Lane, Standish	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and Slowly permeable seasonally wet acid loamy and clayey soils	Low
Wig 657	Westleigh Cricket CWB, Twist Lane, Leigh	Loamy and clayey soils with naturally high groundwater and slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low

Table E-2: Proposed ELA Development Site SUDs Suitability

Site Reference	Site Location	Soil Type	SUDs Suitability
EM1A24 d	Springfield and Miry Lane	Loamy and clayey floodplain soils with naturally high groundwater	Low
EM1A24 b	Springfield and Miry Lane	Loamy and clayey floodplain soils with naturally high groundwater	Low
EM1A33	Wheatlea Industrial	Restored soils mostly from quarry	Unknown

Site Reference	Site Location	Soil Type	SUDs Suitability
	Estate	and opencast spoil	
EM1A32 a	Warrington Road, Hawkley	Restored soils mostly from quarry and opencast spoil	Unknown
EM1A32 b	Warrington Road, Hawkley	Restored soils mostly from quarry and opencast spoil	Unknown
EM1A25 b	Bradley Lane	Freely draining slightly acid sandy soils	High
EM1A25 e	Martland Park	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A25 b	Martland Park	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A25 c	Martland Park and Heinz	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A25 a	Martland Park and Heinz, Wigan	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A25 d	Martland Park	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A27a	Bradley Lane	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A14 a	West of Leigh Road	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A15 a	Swan Lane	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A14 b	West of Leigh Road	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A1	Stone Cross Park	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A6 c	Parsonage	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A15 c	Swan Lane	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A5 b	Moss Industrial Estate	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low

Site Reference	Site Location	Soil Type	SUDs Suitability
EM1A6 a	Parsonage	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A15 d	Swan Lane	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A6 b	Parsonage	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A15 b	Swan Lane	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A5 a	Moss Industrial Estate	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A12 a	Gibfield	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Low
EM1A9 b	Chaddock Lane	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A9 c	Chaddock Lane	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A18 b	Dobson Park Industrial Estate	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A30 b	Pemberton Park	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A16 d	Makerfield Way	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A36	South Lancashire Industrial Estate	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A18 a	Dobson Park Industrail Estate	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A28 b	Richmond Hill Industrial Estate	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A19	Rosebridge	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A30 a	Pemberton Park	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A16 a	Makerfield Way	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A29	Lamberhead Industrial Estate	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A20 a	Westwood Park	Slowly permeable seasonally wet acid loamy and clayey soils	Low

Site Reference	Site Location	Soil Type	SUDs Suitability
EM1A20 c	Westwood Park	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A20 b	Westwood Park	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A28 a	Richmond Hill Industrial Estate	Slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A16 b	Makerfield Way	Slowly permeable seasonally wet acid loamy and clayey soils and freely draining slightly acid loamy soils	Low
EM1A c	Bradley Lane	Freely draining slightly acid sandy soils and slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Medium
EM1A12 b	Gibfield	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A12 c	Gibfield	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils and slowly permeable seasonally wet acid loamy and clayey soils	Low
EM1A27 d	Bradley Lane	Freely draining slightly acid sandy soils and slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils	Medium
EM1A24 c	Springfield and Miry Lane	Slowly permeable seasonally wet acid loamy and clayey soils and loamy and clayey floodplain soils with naturally high groundwater	Low
EM1A24 a	Springfield and Miry Lane	Slowly permeable seasonally wet acid loamy and clayey soils and loamy and clayey floodplain soils with naturally high groundwater	Low

Footnotes to Table:
1 - The soils information displayed in this table references the Cranfield University National Soil Resources Institute website available at; **http://www.landis.org.uk/soilscapes/**
2 - Where permeability is low, alternative SUDS techniques may be appropriate. Please refer to Appendix G of the User Guide for details of alternatives to infiltration SUDS.

F . Flood Zone 3 Proposed Development Site Analysis

	Design Flood Event	Fluvial Depths (m)			Surface water Depths (m)		
		Estimated minimum depth (m)	Estimated maximum depth (m)	Estimated mean depth (m)	Estimated minimum depth (m)	Estimated maximum depth (m)	Estimated mean depth (m)
Wig 161	1.3% (1 in 75)	0	2.2	0.5	0	1.1	0
	1% (1 in 100)	0	2.2	0.5			
	0.5% (1 in 200)	0	2.2	0.4	0	1.3	0
	0.1% (1 in 1000)	0	2.4	0.5	0	2.1	0.1
Wig 655	1.3% (1 in 75)	---	---	---	0	0	0
	1% (1 in 100)	---	---	---			
	0.5% (1 in 200)	---	---	---	0	0	0
	0.1% (1 in 1000)	---	---	---	0	0	0
Wig 047	1.3% (1 in 75)	---	---	---	0	0.1	0
	1% (1 in 100)	---	---	---			
	0.5% (1 in 200)	---	---	---	0	0.1	0
	0.1% (1 in 1000)	---	---	---	0	0.2	0
Wig 140	1.3% (1 in 75)	---	---	---	0	0.2	0
	1% (1 in 100)	---	---	---			
	0.5% (1 in 200)	---	---	---	0	0.2	0
	0.1% (1 in 1000)	---	---	---	0	0.4	0.1
Wig 137	1.3% (1 in 75)	0	3.6	0.4	0	0.9	0
	1% (1 in 100)	0	3.7	0.4			
	0.5% (1 in 200)	0	3.7	0.4	0	1.9	0.1
	0.1% (1 in 1000)	0	3.7	0.4	0	3.5	0.2
Wig 695	1.3% (1 in 75)	0	1.7	0.3	0	0.1	0
	1% (1 in 100)	0	1.7	0.3			
	0.5% (1 in 200)	0	1.7	0.3	0	0.4	0
	0.1% (1 in 1000)	0	1.8	0.4	0	1.8	0.1
Wig 694	1.3% (1 in 75)	---	---	---	0	0.5	0.1
	1% (1 in 100)	---	---	---			
	0.5% (1 in 200)	---	---	---	0	0.6	0.2
	0.1% (1 in 1000)	---	---	---	0	0.7	0.2
Wig 740	1.3% (1 in 75)	0	2.7	0.6	0	1.3	0
	1% (1 in 100)	0.1	2.8	0.6			
	0.5% (1 in 200)	0	2.9	0.7	0	2	0
	0.1% (1 in 1000)	0	3.1	0.8	0	3.5	0.3
Wig 131	1.3% (1 in 75)	0	3.5	1	0	1.8	0
	1% (1 in 100)	0	3.6	0.9			
	0.5% (1 in 200)	0	3.7	0.6	0	2.4	0.1
	0.1% (1 in 1000)	0	4	0.7	0	4.1	0.2
Wig 060	1.3% (1 in 75)	---	---	---	0	0.9	0.1
	1% (1 in 100)	---	---	---			
	0.5% (1 in 200)	---	---	---	0	1.1	0.1
	0.1% (1 in 1000)	---	---	---	0	1.3	0.1
Wig 657	1.3% (1 in 75)	0	1	0.4	0	0.4	0.1
	1% (1 in 100)	0	1	0.4			
	0.5% (1 in 200)	0	1.1	0.4	0	0.6	0.1
	0.1% (1 in 1000)	0	1.2	0.5	0	0.9	0.3
Wig 125	1.3% (1 in 75)	0	1.8	1.1	0	0.8	0.3
	1% (1 in 100)	0	1.8	1.2			
	0.5% (1 in 200)	0	2.1	1.4	0	1.2	0.8
	0.1% (1 in 1000)	0.2	2.3	1.7	0	2	1.5
Wig 706A	1.3% (1 in 75)	0	2.1	1	0	1	0.2
	1% (1 in 100)	0.1	2.2	1.1			
	0.5% (1 in 200)	0.3	2.4	1.3	0	1.5	0.6
	0.1% (1 in 1000)	0.6	2.5	1.6	0.5	2.3	1.4

G . Environment Agency comments on Wigan SFRA with responses from JBA

Wigan Metropolitan Borough Council
Civic Buildings (4) New Market Street
Wigan
Lancashire
WN1 1RP

Our ref: SO/2006/000257/SF-01/IS1-L01
Your ref:

Date: 11 November 2010

FAO: Damian Garner

Dear Damian

DRAFT STRATEGIC FLOOD RISK ASSESSMENT

The Environment Agency has reviewed the draft strategic flood risk assessment and would like to make the following comments.

1) Level 2 Report

Development behind Defences

Paragraph 3.65 of the PPS25 Practice Guide advises the following when considering defences within a level 2 SFRA:

- The SFRA should contain an appraisal of ***current condition of flood defence infrastructure*** and of ***likely future flood management policy*** with regards to its maintenance and upgrade.

- The SFRA should contain an appraisal of the ***probability and consequences*** of overtopping or ***failure of flood risk management infrastructure***, including and appropriate allowance for climate change.

Although the Level 2 report lists defences within the borough of Wigan, there appears to be no appraisal of defence condition or likely future management. In addition it is not clear as to whether breach analysis of the defences for strategic development is required / has been undertaken. This information will inform both the sequential and exception tests as required by PPS25.

We would welcome further discussion on this issue as the Council will need to be satisfied that strategic planning decisions are being informed on a sound basis.

Flood Hazard Mapping

The Level 2 report (Page 16) makes reference to flood hazard being presented on the following scale:

1) No Hazard
2) Very Low Hazard
3) Danger for Some
4) Danger for Most
5) Danger for All

However both flood hazard maps present the keys as the following:

1) Area of Low Hazard
2) Area of Some Hazard
3) Area of High Hazard
4) Area of Highest Hazard

We would recommend that the key on the hazard maps is amended to reflect the hazard rating as outlined within the Level 2 report. This would avoid any confusion for readers of the document.

Section 8: Summary of Risk

We would refer to the following paragraph in this section:

"..*to identify whether there is a need for strategic flood risk mitigation measures or whether it is possible for new development to be permitted and provisions to be made on a piecemeal basis* ***(it should be noted that this is not the preferred approach to PPS25)"***

We would expect the SFRA to be carried out **in accordance with PPS25** to ensure it is a sound piece of evidence to support the Council's Local Development Framework. Further clarification on this is required.

Flood Risk Guidance

The Sequential test table provides data on the extent of each flood risk zone for sites highlighted for development within Wigan. Also the supporting SFRA maps provide the baseline data for the Council to apply the Sequential and Exception test (i.e. Hazard Maps, Depth Mapping, Canal Hazard Zones etc).

In addition to this, it would be useful for the Level 2 SFRA to provide descriptive text within the Level 2 report which brings this information together within a 'flood risk summary'. This would be particularly important for strategic sites and locations within the Council's Local Development Framework. This approach is supported by paragraph 3.65 of the practice guide.

Design Standards for the River Douglas ABD

The current NFCDD indicates that the design standards used to create the ABD from the River Douglas are incorrect and have recently (July/August 2010) been updated. We would recommend that this is verified again and I would advise you to contact Gareth Hamlett (Assett Systems) on 01772 714105 to discuss in further detail.

Cont/d..

Other Comments

Barley Brook modelling is now complete and we have new flood outlines available. These will not be published on our Flood Map because they represent an element of surface water risk and risk from surcharging urban drainage, however they may be useful to incorporate within the SFRA. I would advise you to contact Ian Caunce in the Flood Risk Mapping team to discuss in further detail. (01772 714036).

2) Wigan SFRA User Guide

Paragraph 4.7.1 Allowable discharge rates

Referring to bullet point 4 - acceptance of a free discharge in advance of the peak of the river flood level seems an outdated approach to surface water management? Furthermore this doesn't appear consistent with current best practice/flood risk policy and if applied across a catchment (on a cumulative basis) could lead to an increased flood risk (by shortening and increasing the peak on the catchment hydrograph). We would suggest that this bullet point is omitted to the document.

Flood Warning Codes (Page VIII)

The Flood Warning Codes have been revised by the Environment Agency. As such the description of the flood warning system will need to be updated.

3) Flood Mapping Set A - Flood Zone Maps

It is difficult to determine the extent of functional floodplain to that of flood zone 3A as the map key indicates a similar shading of blue. We would recommend that the functional floodplain layer is strengthened on the maps provided.

I trust that you will find these comments useful, should you wish to discuss anything in further detail please do not hesitate to get in touch.

Yours faithfully

Helen Telfer
Planning Liaison Officer

Direct dial 01925 543363
Direct fax 01925 852260
Direct e-mail helen.telfer@environment-agency.gov.uk

CC: Rosalind Whitham, JBA – Via Email

End

Planning Liaison
Environment Agency - North West Region
Appleton House
430 Birchwood Boulevard
Birchwood
WARRINGTON
WA3 7WD

For the attention of Helen Telfer

Our Ref: RW\2009s0578-S-L005-1.doc

19 November 2010

Dear Sirs,

Wigan Borough Level 2 SFRA

Thank you for your comments received by email on 15th November 2010 with regards to the Wigan Borough Council SFRA. We have included our response, on behalf of the Council, addressing each of your points below using the same subheadings as used in your letter reference SO/2006/000257/SF-01/IS1-L01 dated 11 November 2010.

1) Level 2 SFRA Report

Development behind Defences

- Current Condition of Flood Defences

Unfortunately, the NFCDD data received for this study does not contain condition ratings for flood defences in Wigan. Therefore an existing condition assessment of flood defence infrastructure has not been undertaken for this SFRA.

- Likely Future Flood Management Policy

Future maintenance of flood defences and assets should follow the policy as set down in the relevant Environment Agency flood risk management strategy. Information may also be available from the Catchment Flood Management Plan.

- Probability and Consequence of Defence Overtopping and Failure

The design standard of the 42 raised defences within the Wigan Borough is typically 40 to 50 years (6 have a 40 year design standard. The remaining 36 have a 50 year design standard). During the 1% AEP design flood event, these formal defences will therefore only provide limited protection and are therefore likely to be overtopped or flood from bank level exceedance elsewhere in the catchment. Under the climate change scenario (i.e. 1% AEP flood event + 20% peak flow) more extensive flooding would be expected to occur.

During the 1% AEP design flood event all the defences within Wigan are therefore likely to be overwhelmed. Using undefended modelling scenarios (as used in this SFRA) will most accurately represent the extent of flood risk within Wigan and specific breach modelling would not improve understanding.

To maintain consistency with other SFRA's and national guidance in PPS25, Sequential Testing has been based on undefended model scenarios. In the absence of detailed modelling in some areas of Wigan (no model files and/or associated GIS were available for many watercourses south of the Douglas), strategic mapping was used to define hazard criteria and inform the sequential test.

This approach, adopted by the Council, is therefore precautionary and all but key regeneration sites (in FZ3) have been deleted during Sequential Testing. On this basis, the Council have been able to make the informed planning decisions presented in this SFRA.

- River Douglas Flood Alleviation Scheme

As you are aware, no modelling information for the River Douglas Flood Alleviation Scheme was made available for this SFRA. We understand that design flows from the River Douglas will be restricted to the 20 year standard and that the EA intend to update the Flood Zone map to include the flood limiting effect of the Douglas scheme in due course.

It is assumed that the Council will be provided with a copy of the updated Flood Zone Map when it becomes available for them to take account of the changes in their mapping and make appropriate planning decisions at that time. It is also anticipated that the flood risk to identified Wigan town centre development areas will be reduced on completion of the Douglas Flood Alleviation Scheme. However, it should also be noted that detailed site specific Flood Risk Assessments will still be required to accompany development proposals in order to demonstrate safe and appropriate development.

Flood Hazard Mapping

The key on the mapping will be amended for continuity.

Section 8: Summary of Risk

To clarify, the SFRA includes a review of Open Space Areas that are potentially suitable (in terms of proximity to watercourses) for large-scale strategic mitigation.

However, in reality sites identified for potential development are located throughout the Wigan area and strategic flood risk mitigation, beyond the Douglas Flood Alleviation Scheme, is limited.

To prevent potential development increasing flood risk, flood mitigation measures invariably need to be close to, or preferably within the proposed development boundary (particularly where level mitigation is required).

Further strategic mitigation measures may best be located where benefit to both existing development and proposed development can be identified. In order to progress this, the SFRA includes well defined Critical Drainage Areas (CDAs), which are based on a wealth of historical flooding data provided by Wigan. This will need to form the basis of the Council's SWMP and be linked back to the Open Space Areas.

Flood Risk Guidance

Although we understand your comment suggesting a "flood risk summary" is produced, we believe the amount of information included in the SFRA and accompanying User

Guide makes further summation difficult as key aspects will invariably be omitted or explained too simplistically.

We have made the SFRA report as succinct as we can so that users may focus on the key aspects of the assessment. The further detail and explanation is provided in the SFRA User Guide.

Our aim is to encourage the user to read the appropriate sections of the report fully.

Design Standards for the River Douglas ABD

This is a question for the Council. Presumably this update has already been released under licence to Wigan Council but to date this has not been forwarded to JBA. Therefore, the GIS mapping can be easily be updated by the Council on the digital deliverables being provided by JBA with the SFRA. Unfortunately, if the Council also want to update the SFRA maps we would have to review the effort required and there may be an additional cost to change them at this late stage due to the final mapping products already being agreed.

Other Comments

Having looked at the current Barley Brook Flood outlines, there are only 4 proposed development sites in this area.

These are:

- SHLAA site Wig 728
- ELA site EM1 A24 d
- ELA site EM1 A24 b
- ELA site EM1 A24 a

These sites are currently located with in Flood Zone 1. Reference to a new EA model will be included in the Sequential Test spreadsheet for these sites.

As with our comment above, the GIS mapping can be easily be updated by the Council on the digital deliverables being provided by JBA with the SFRA. Unfortunately, if the Council also want to update the SFRA maps we would have to review the effort required and there may be an additional cost to change them at this late stage due to the final mapping products already being agreed.

2) Wigan SFRA User Guide

Paragraph 4.7.1 Allowable discharge rates

We believe the correct balance has been made here between ensuring sustainable management of surface water and developing practical solutions for surface water management particularly when existing urban development is under consideration.

When the section is read in its entirety it provides a clear emphasis and requirement for sustainable management of surface water as part of development planning. This final point actually focuses on the potential for discharge from development sites to pass downstream before the main peak flood event on the watercourse occurs. This is

included so that the Council may consider variations to surface water management, but doesn't imply acceptance or even negate the need for alternatives to be fully investigated.

The Council has stressed the need for sustainable surface water management as part of all development proposals.

Flood Warning Codes (Page VIII)

The new flood warning codes will only be used from the end of November. However, these have been updated in the User Guide in accordance with the EA's website and now read:

Flood Alert		Flooding is possible. Be prepared.
Flood Warning		Flooding is expected. Immediate action required.
Severe Flood Warning		Severe flooding. Danger to life.

3) Flood Mapping Set A - Flood Zone Maps

The digital GIS files showing the various flood zones are provided to the Council and have been agreed as final. The GIS layers can therefore be displayed by the user in any colour or zoom level to allow greater differentiation on screen if required. Therefore no change is proposed.

We trust this letter addresses all your concerns and we do not anticipate any further changes beyond those discussed above. We will therefore issue the Final version of our SFRA and issue one hard copy to yourselves for your records.

Yours faithfully,
For **Jeremy Benn Associates Limited**

PP

Howard Keeble
Project Manager
howard.keeble@jbaconsulting.co.uk

Wigan Metropolitan Borough Council
Civic Buildings (4) New Market Street
Wigan
Lancashire
WN1 1RP

Our ref: SO/2006/000257/SF-01/IS2-L01
Your ref:

Date: 08 December 2010

FAO: Damian Garner

Dear Damian

DRAFT STRATEGIC FLOOD RISK ASSESSMENT

Thank you for referring the correspondence and emails from Jeremy Benn Associates Ltd in response to the previous comments made by the Environment Agency on the above document.

We would like to make the following comments in response to the issues raised.

1) Level 2 SFRA Report

Development Behind Defences

- Current Condition of Flood Defences

JBA have confirmed that a condition assessment of flood defence infrastructure has not been undertaken. We would refer the Council to paragraph 2.7 (a) of the SFRA brief which states that the SFRA should contain the following as a **minimum**:

"A schedule of the current condition of flood defence infrastructure, both formal and informal, cross-referenced to specified policies in the Environment Agency's River Douglas CFMP and Mersey Estuary CFMP with regard to maintenance and upgrade. Supporting material for the schedule to be provided by the consultant will include walk-over survey records, as-build records where available, a directory of photos, and location plans".

We feel that this information is important to inform future development within the borough of Wigan. Currently the SFRA does not achieve this objective of the brief.

- Likely Future Flood Management Policy

JBA state that "*information may also be available from the Catchment Flood Management Plan".* We would again refer the Council to the above paragraph (2.7 a) from the brief which expects the Level 2 Report to contain links / reference to the relevant parts of both the Douglas CFMP and Mersey Estuary CFMP.

- Probability and Consequence of Defence Overtopping and Failure

We note the assumption made by JBA in the assessment of breach modeling and that the defence within the borough are likely to be overwhelmed. Whilst it would have been useful to look at breach scenarios at lower return periods, we accept that the use of the 1% AEP flood event + 20% peak flow is in line with paragraph 3.63 of the Practice Guide and we would not want to pursue this issue further.

We would agree with JBA and the assumed 'undefended scenario' for sequential testing of key regeneration sites.

However it is also noted by JBA that all but key regeneration sites have been deleted in flood zone 3. PPS25 is clear in that where development can not be located outside of high flood risk areas, the level 2 SFRA should provide further information to satisfy the 'Exception Test'. (See response to Flood Risk Guidance below).

- River Douglas Flood Alleviation Scheme

We are aware from discussions for a proposed development site within Wigan Town Centre, that the Council has already commissioned JBA to develop a breach model for the defences on the River Douglas.

The SFRA should consider the inclusion of this information or at the very least provide further guidance for proposed developments in this area.

Flood Hazard Mapping

Comments on this have been noted and we have nothing further to add.

Section 8: Summary of Risk

Comments on this are noted, however the SFRA wording should be amended in this section so not to confuse readers of the document. (I.e. the report should not be in contradiction with PPS25).

Flood Risk Guidance

The Practice Guide to PPS25 is very clear on this issue, in particular we would refer you to paragraphs 3.66 – 3.67 which state:

"In general, the SFRA should aim to provide clear guidance on appropriate risk management measures for adoption on potential sites within Flood Zones 2 and 3, which are protected from flooding by existing defences, to minimise the extent to which individual developers need to undertake separate studies of the same problem e.g. breach and overtopping studies. In some instances improvements to existing flood defences may be required to manage residual flood risks (see annex G of PPS25). Where such flood defence works are considered, the SFRA should include an appraisal

of the extent of any works required to provide or raise the flood defence to an appropriate standard.

The SFRA should provide information on the variation of risk within flood zones which are protected by flood defence infrastructure, ***draw appropriate conclusions and make recommendations for each potential development site****".*

Again we would refer the Council back paragraph 2.7 of the brief and the following sections for the Level 2 SFRA requirements:

e. Guidance on strategic flood risk assessment and management issues to be considered in policy development.

f. Guidance on the preparation of FRAs for sites of varying risk across the flood zones. Consultants should provide spatial recommendations that go beyond the general guidance in PPS25 to inform the preparation of FRAs, including:-

   i. Recommended development approach and potential end use,
   ii. Proposed development control and technical issues to be resolved to permit development,
   iii. Mitigation options required to permit development,
   iv. Supplementary design guidance including minimum floor levels, access and egress, site layout recommendations in relation to vulnerability, building materials and flood resilient construction,
   v. Residual risk management,
   vii. **Overall site-by-site summary guidance suitable for issuing to potential developers.**

i. Mitigation options, and potential delivery mechanisms should be presented as part of the Level 2 SFRA.

In light of this issue we would suggest that the level 2 SFRA has not met the requirements of PPS25 or the original brief.

Design Standards for the River Douglas ABD

Comments are noted and the Council will need to make a decision on the inclusion of this data.

Other Comments

Comments are noted and the Council will need to make a decision on the inclusion of this data.

2) Wigan SFRA User Guide

Paragraph 4.7.1 Allowable Discharge Rates

We understand from email correspondence that the Council agree with our previous comments on this issue and that JBA have been advised to change the wording.

Flood Warning Codes

Comments on this have been noted and we have nothing further to add.

3) Flood Mapping Set A – Flood Zone Maps

Comments on this have been noted and we have nothing further to add.

We would recommend that the above matters are addressed within the Level 2 SFRA to ensure a thorough understanding of flood risk to inform the Core Strategy.

Should you wish to discuss anything in further detail please do not hesitate to get in touch.

Yours faithfully

Helen Telfer
Planning Liaison Officer

Direct dial 01925 543363
Direct fax 01925 852260
Direct e-mail helen.telfer@environment-agency.gov.uk

CC: Rosalind Whitham, JBA – Via Email

End

Planning & Transport Strategy
Wigan Metropolitan Borough Council
Civic Buildings
New Market Street
WIGAN
WN1 1RP

For the attention of Damian Garner, Assistant Engineer

Our Ref: RW\2009s0578-S-L007-1.doc

10 December 2010

Dear Sirs,

Wigan Borough Level 2 SFRA

Firstly thank you for forwarding our reply to the Environment Agency (EA) comments on the Wigan Borough Council SFRA to Helen Telfer. We have carefully reviewed the EA's additional comments (retained in italics) and include our response below.

Above all the SFRA is a strategic review and having read the EA's response we consider that they are asking for information that is beyond the practical scope of the study. We feel that if the EA's comments are accepted by the Council then the SFRA risks becoming a highly prescriptive document that may stifle justifiable development and innovation in design.

The variation in EA responses to SFRAs on a regional basis is rather stark and we are particularly concerned that the EA's response, in this instance, appears to have drifted from the fundamental purpose of an SFRA to instead focus on issues that will invariably have to be assessed in detail as part of an FRA. The SFRA should not try to rigidly prescribe design and development requirements as developers and architects must be able to design proposals that are appropriate and functional.

In addition we have worked closely with you to identify the key risks and issues for development. We can only advise the Council and ensure that our comments in the SFRA reflect your aspirations as well as the likely constraints to development.

Above all the SFRA clearly specifies that:
1 development must be appropriate; and
2 flood risk associated with development must be fully mitigated.

EA comment:
Level 2 SFRA Report
Development Behind Defences and Current Condition of Flood Defences
JBA have confirmed that a condition assessment of flood defence infrastructure has not been undertaken. We would refer the Council to paragraph 2.7 (a) of the SFRA brief which states that the SFRA should contain the following as a minimum:

"A schedule of the current condition of flood defence infrastructure, both formal and informal, cross-referenced to specified policies in the Environment Agency's River

Douglas CFMP and Mersey Estuary CFMP with regard to maintenance and upgrade. Supporting material for the schedule to be provided by the consultant will include walk-over survey records, as-build records where available, a directory of photos, and location plans".

We feel that this information is important to inform future development within the borough of Wigan. Currently the SFRA does not achieve this objective of the brief.

The EA's comments here are incorrect as we have included consideration of the defence design standards in our analysis. We have also included all available details, including location plans and asset information in the SFRA.

As explained our initial response, the EA have chosen not to provide the NFCDD condition rating or any as-built records for their defences. The EA must already have significant elements of this information as part of the River Douglas FAS.

It is not the purpose of an SFRA to generate a new defence database, this after all is the EA's responsibility. As discussed in our previous letter, the key outcome of our analysis is that the proposed development sites in Wigan are not afforded protection from discreet and continuous defences. This combined with the generally low standard of defences influences significantly the mechanism of flooding at your identified sites. The implications of this and our approach to assessing risk should be the key messages that the EA focus on.

Whilst we could provide a "directory of photos" these would obviously be taken at selected locations. We are not sure what value this would add to the SFRA.

Detailed assessment, possibly including structural analysis, will be required at detailed FRA stage to confirm the level of protection during lower return periods if defences are subsequently to be relied upon. However, evaluation will need to be based on the EA's latest modelling for the Douglas FSA when this becomes available.

EA comment:

Likely Future Flood Management Policy

JBA state that "information may also be available from the Catchment Flood Management Plan". We would again refer the Council to the above paragraph (2.7 a) from the brief which expects the Level 2 Report to contain links / reference to the relevant parts of both the Douglas CFMP and Mersey Estuary CFMP.

The links to the CFMPs have been established in the SFRA and we do not intend to include further duplication. Although the CFMPs, SFRA, PFRA and SWMP are discrete documents, the recommendations of each will need to be taken into account by the Council.

EA comment:

Probability and Consequence of Defence Overtopping and Failure

We note the assumption made by JBA in the assessment of breach modeling and that the defence within the borough are likely to be overwhelmed. Whilst it would have been useful to look at breach scenarios at lower return periods, we accept that the use of the 1% AEP flood event + 20% peak flow is in line with paragraph 3.63 of the Practice Guide and we would not want to pursue this issue further.

Again, avoiding generalities, we have not simply "assumed" but have instead assessed each of the identified sites and defence locations to confirm whether or not defences provide a continuous extent of protection to individual sites. As defences are currently between a 40 and 50 year standard they will be overwhelmed during the design event scenario.

Working with the Council we have focused our assessment on avoiding, where possible, development in high risk areas. Assessment of breach scenarios for lower return periods is significantly less onerous than designing to the 100 year (including climate change) scenario. Assessment of these lower events does not alter any substantive information or the conclusions in the Sequential Test Spread sheet. The EA are correct not to pursue this issue further.

EA comment:

We would agree with JBA and the assumed 'undefended scenario' for sequential testing of key regeneration sites.

However it is also noted by JBA that all but key regeneration sites have been deleted in flood zone 3. PPS25 is clear in that where development cannot be located outside of high flood risk areas, the level 2 SFRA should provide further information to satisfy the 'Exception Test'. (See response to Flood Risk Guidance below).

Again this has been achieved in consultation with the Council. The remaining sites within higher risk areas have been identified by you as being key to regeneration within Wigan. The SFRA cannot, in itself, determine whether or not the Exceptions Test can be "satisfied". The EA is wrong to suggest that the SFRA can achieve this as considerations for the Exceptions Test are dependent on a variety of planning issues and constraints. The SFRA does, however, provide the flood risk information that the Council requires to make these informed planning decisions. There are three parts to the Exceptions Test:

The Council must demonstrate that:

a. The development provides wider sustainability benefits to the community that outweigh flood risk, informed by the SFRA…
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…

The Council/developer must also prepare

c. An FRA that demonstrates that the development will be safe, without increasing flood risk…

EA comment:

River Douglas Flood Alleviation Scheme

We are aware from discussions for a proposed development site within Wigan Town Centre, that the Council has already commissioned JBA to develop a breach model for the defences on the River Douglas.

As far I we are aware this is a breach model of one particular defence and not the "defences on the River Douglas".

EA comment:

Flood Risk Guidance

The Practice Guide to PPS25 is very clear on this issue, in particular we would refer you to paragraphs 3.66 – 3.67 which state:

"In general, the SFRA should aim to provide clear guidance on appropriate risk management measures for adoption on potential sites within Flood Zones 2 and 3, which are protected from flooding by existing defences, to minimise the extent to which individual developers need to undertake separate studies of the same problem e.g. breach and overtopping studies. In some instances improvements to existing flood defences may be required to manage residual flood risks (see annex G of PPS25). Where such flood defence works are considered, the SFRA should include an appraisal of the extent of any works required to provide or raise the flood defence to an appropriate standard.

During the design event flooding will occur when bank levels are exceeded. Raising existing defences will not prevent flooding to these sites as they would simply be bypassed. To work, flood defences would need to be extended and the associated drainage infrastructure enhanced to prevent flooding from other sources. As well as the cost implications of building new defences, the wide spatial distribution of potential sites does not lend itself to a "single" style solution that could benefit a number of sites.

The assessment addresses the Council requirements for an SFRA without becoming too prescriptive in terms of stipulating detailed design requirements, we feel that this may limit effective land use and innovative development. The guidance in the SFRA needs to be pragmatic and workable and the emphasis of the EA's comments do not appear to reflect this or recognise that the Council's approach is based on risk avoidance rather than mitigation.

EA comment:

The SFRA should provide information on the variation of risk within flood zones which are protected by flood defence infrastructure, draw appropriate conclusions and make recommendations for each potential development site".

- See mapping as this provides a comprehensive overview of depths and velocities across the borough.
- See Sequential Test Spread Sheet for site summary and recommendations.

EA comment:

Again we would refer the Council back paragraph 2.7 of the brief and the following sections for the Level 2 SFRA requirements. Guidance on strategic flood risk assessment and management issues to be considered in policy development.

We have identified open space areas that are potentially suitable for larger-scale mitigation. However, the Council's decision process is inextricably linked to the PFRA and SWMP. Also the SFRA is based on avoiding higher risk areas and a fundamental assertion that flood risk will be mitigated on site.

We are presuming that beyond the River Douglas FAS, no further capital schemes are currently proposed for Wigan.

EA comment:
Guidance on the preparation of FRAs for sites of varying risk across the flood zones. Consultants should provide spatial recommendations that go beyond the general guidance in PPS25 to inform the preparation of FRAs.

It is not for the SFRA to rewrite EA guidance on FRAs or the PPS. FRA's need to be site specific and should only be prepared by suitably qualified individuals or organisations.

In addition, it is not for the SFRA to stipulate requirements for an FRA, each one must be prepared to address the site specific constraints and impact of development proposals. Requirements for the FRA will also depend on available information and take account of improve understanding of flood risk over the next five years or so.

As a result the SFRA requires prospective developers to consult with the EA and the Council at an early stage in the development planning process so that current issues are addressed and to ensure an FRA addresses specific concerns for a site

EA comment:
Recommended development approach and potential end use.

The end use for each site is predefined by the Council and we have included and discussed the suitability of your development aspirations in terms of the PPS.

Following our discussions we have deleted all sites that were deemed unnecessary and unsuitable in terms of flood risk. Those sites that remain in higher risk areas, have been retained by the Council as key areas of regeneration. In these instances, we have included recommendations for suitable land uses including open space and water compatible purposes. These sites are still subject to Sequential Testing by the Council.

EA comment:
Proposed development control and technical issues to be resolved to permit development.

The emphasis of the SFRA is risk avoidance. It is not about finding ways to "permit" development. The SFRA makes clear that flooding must be managed and fully mitigated for. The simplest way of doing this is to avoid development in high risk areas.

Whilst we have set out the Council's overarching principles for development in the SFRA it is not our intention (nor is it the purpose of the SFRA) to be overly prescriptive and impose potentially unsuitable design constraints on developers. The technical issues can only be resolved through detailed assessment, effective design, careful planning and timely discussion with the EA and Council.

EA comment:
Mitigation options required to permit development.

This will depend on the detailed design and cannot be prejudged at a strategic level. However, consideration of mitigations measures (and requirements for full floodwater mitigation on site, safe design, and opportunities for strategic mitigation) is included in the SFRA.

EA comment:
Supplementary design guidance including minimum floor levels, access and egress, site layout recommendations in relation to vulnerability, building materials and flood resilient construction,

The SFRA mapping provides graduated depths of flooding for the entire borough. However, as previously discussed this is often based on strategic mapping techniques as the EA could not provide significant elements of detailed modelling data. This mapping provides the user with an indication of the design levels, allows identification of access issues, identifies (in accordance with the recommendations) those areas of each site that are at greatest risk and were open space and water compatible uses would be most appropriate.

Again the implied level of detail is not commensurate with the accuracy and detail provided by a high level strategic study. For instance, if a developer comes forward with proposals that avoid high risk areas, then predefining "site layout recommendations in relation to vulnerability, building materials and flood resilient construction" would clearly be inappropriate.

EA comment:
Overall site-by-site summary guidance suitable for issuing to potential developers.

As previously explained we have produced a succinct SFRA. We do not intend to try and summarise the information further as key messages will invariable become diluted.

EA comment:
Mitigation options, and potential delivery mechanisms should be presented as part of the Level 2 SFRA.

Other EA regions have recognised, more fully, the link between the SFRA, PFRA and SWMP. Opportunities for large scale mitigation have been identified in the SFRA mapping. However, the suitability or these potential locations will be primarily dependent on the outcomes and recommendations in the SWMP.

We would also like to reiterate that the EA have not provided any detail of the River Douglas FRM strategy. It is understood that this scheme will reduce further flood risk to sites within the Wigan catchment.

EA comment:
Wigan SFRA User Guide
Paragraph 4.7.1 Allowable Discharge Rates

Please advise further?

Please give me a call to discuss when you have had time to digest our response.

Yours faithfully,
For **Jeremy Benn Associates Limited**

Howard Keeble
Project Manager
howard.keeble@jbaconsulting.co.uk

RECORD OF MEETING

Status:

JBA Project Code	2009s0578
Contract	Wigan Borough Level 2 SFRA
Client	Wigan Metropolitan Borough Council
Day, Date and Time	8/03/2011 13:30
Meeting	Meeting with the Environment Agency, Wigan Borough Council and JBA
Venue	Environment Agency, Appleton House, Birchwood

Attending	Chris Waring	Environment Agency	CW (EA)
	Helen Telfer	Environment Agency	HT (EA)
	Graham Todd	Environment Agency	GT (EA)
	Rosalind Whitham	JBA Consulting	RW (JBA)
	Howard Keeble	JBA Consulting	HK (JBA)
	Mike Worden	Wigan Borough Council	MW (WBC)
	Nick Clarke	Wigan Borough Council	NC (WBC)
	Damian Garner	Wigan Borough Council	DG (WBC)
	Notes/Minutes taken by JBA		

Item		Action
1	**Introductions and original study brief limitations**	
1.1	NC introduced the SFRA. He mentioned a need to focus away from the brief as it is too detailed for the purpose of the meeting and out of date.	
1.2	MW and NC both expressed a need to look at the outstanding issues and look at how we resolve these.	
2	**Study data supply**	
2.1	HK feels the SFRA meets the requirements of PPS. He mentioned the use of strategic mapping techniques to achieve an alternative approach to flood risk in Wigan due to limited data availability for the study.	
3	**Methodology and assumptions adopted during study**	
3.1	HK outlined the Council's approach to reviewing sites and dismissing those with high risk. This has only left a handful of high risk sites to bring forward which have been recommended for open space and water compatible uses in the Sequential Test results.	
3.2		
4	**Outstanding EA issues**	
4.1	HT commented that the SFRA should provide more information on the Exceptions Test.	
4.2	CW added that the EA have no problems with what JBA have done on the study but would like to see more guidance on what issues a developer would come up against in Flood Zone 3 sites and what is the likelihood of these sites passing the Exceptions Test.	
4.3	Reference made to the Salford and Manchester SFRAs which both contain a table of sites in Flood Zone 3 with a summary of key issues at each site. HK agreed methodology but expressed a concern not to be too proscriptive.	
4.4	CN appreciation that Wigan Borough Council have reduced site areas to exclude areas of Flood Zone 3 (FZ3). Assumed that areas in FZ3 won't be brought forward.	
4.5	Brief discussion of an ongoing FRA at the Bus Depot in Wigan.	

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Item		Action
	Agreed that as this study is not finalised, it can be included in the SFRA in future when the Flood Zone mapping is updated.	
4.6	The EA confirmed that this was to only outstanding issue for the SFRA. Following additional tabulation of the Zone 3 sites and comments, the EA are prepared to sign off the Wigan SFRA	
5	**Agreed Outcomes**	
5.1	JBA will add a table to the main SFRA report listing the remaining Flood Zone 3 sites with comments on key flooding and development issues and likelihoods of passing the Exceptions Test. JBA will endeavour to present this to the Council and Environment Agency by the close of play on 11th March 2011.	JBA
5.2	JBA will add a paragraph to the report on the availability of data for the Wigan Flood Alleviation Scheme.	JBA

Offices at

Atherstone
Doncaster
Edinburgh
Haywards Heath
Limerick
Newcastle upon Tyne
Newport
Northallerton
Saltaire
Skipton
Tadcaster
Wallingford
Warrington

Registered Office
South Barn
Broughton Hall
SKIPTON
North Yorkshire
BD23 3AE

t:+44(0)1756 799919
e:info@jbaconsulting.co.uk

Jeremy Benn Associates Ltd
Registered in England 3246693

Visit our website:
www.jbaconsulting.co.uk