Brighton & Hove City Council

BHCC Local Flood Risk Management Strategy

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1 Introduction

1.1 The purpose of the Strategy

This report sets out Brighton & Hove City Council's (BHCC) strategy for local flood risk management, in accordance with the requirements of the Flood and Water Management Act 2010.

The Flood and Water Management Act (FWMA) was introduced, in part, in response to the recommendations made by the Pitt Report, which called for changes in flood risk management following the widespread flooding in 2007.

The FWMA introduces the role of the Lead Local Flood Authority (LLFA), which is either the County Council or Unitary Authority for the region. As a result, BHCC is a LLFA. LLFAs are now responsible for local flood risk management from all sources with the exception of 'Main' rivers, reservoirs and the sea, which remain the responsibility of the Environment Agency (EA).

The FWMA places a requirement on LLFAs to *'develop, maintain, apply and monitor a strategy for local flood risk management in its area (a "local flood risk management strategy" or "Local Strategy").*

The BHCC Local Strategy aims to; raise awareness of existing flood risk issues; provide an overview of the proposed flood risk mitigation work; and set out the long term strategy for flood risk management. It will establish the priorities for managing local flood risk and identify how BHCC will work together with other Risk Management Authorities, stakeholders, and local communities to manage and mitigate local flood risk, where possible.

However, we must recognise that flooding is a natural consequence of extreme weather conditions that seem to be increasing in frequency, and which we cannot prevent. Whilst we may not be able to control the weather we can manage its consequences where they are of a particular concern. It may not be possible or indeed reasonable to direct resources towards addressing each and every flood event. Through monitoring and measuring the impacts of flooding, risk management actions can be directed to those areas where the clearest benefits through investment can be derived and prioritised.

1.2 Legislative Background

Flood and Water Management Act 2010

The FWMA has the following primary aims:

- *Update water management legislation* – to accord with the latest government strategies and to comply with EU legislation.
- *Clarify roles and responsibilities* – the EA will maintain their national role of managing Main River fluvial and coastal flood risk, whilst taking a new strategic overview role of all flood risk issues. Local Authorities will become responsible for management of local flood risk from all other sources, including ordinary watercourses, surface water and groundwater.
- *Adaptation to Climate Change* the Act includes proposals to encourage the uptake and implementation of Sustainable Drainage and protect essential water supplies

The Act identifies not only the role and responsibilities of the LLFA, but also that of Risk Management Authorities, which are the other principal bodies that have key roles when taking an integrated

approach to the management of flood risk in partnership. Further explanation is provided in Section 3.3 of this report.

The FWMA sets out the following requirements for a Local Strategy, which are specified within section 9(4) of the Act.

'The strategy must specify-

- *the risk management authorities in the authority's area,*
- *the flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area,*
- *the objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the Flood Risk Regulations 2009),*
- *the measures proposed to achieve those objectives,*
- *how and when the measures are expected to be implemented,*
- *the costs and benefits of those measures, and how they are to be paid for,*
- *the assessment of local flood risk for the purpose of the strategy,*
- *how and when the strategy is to be reviewed, and*
- *how the strategy contributes to the achievement of wider environmental objectives.'*

(FWMA 2010)

1.3 Existing Flood Risk Studies and Assessments

Figure 1.0: BHHC Authority Boundary

Strategic Flood Risk Assessment

The Strategic Flood Risk Assessment (SFRA) for BHCC was produced in 2008 and it was subsequently revised and updated in 2012.

The SFRA contains information on flood risks and hazards, planning flood risk zones, details of sequential tests requirements and assessment of proposed development allocations, in accordance with the national Planning Policy Statement 25: Development and flood Risk (PPS25) and its successor the National Planning Policy Framework (NPPF).

The SFRA is a key document in the evidence base for allocating development within the Local plan, determining planning applications, and identifying detail for site specific Flood Risk Assessments (FRAs)

Preliminary Flood Risk Assessment

The Flood Risk Regulations 2009 (FRR) placed a duty upon BHCC as a LLFA to prepare a Preliminary Flood Risk (PFRA) assessment by 22nd June 2011.

The Preliminary Flood Risk Assessment provides a high level screening exercise to facilitate flood risk management. The assessment involves collection and collation of historic and future flood risk data which facilitates the identification of Flood Risk Areas (where appropriate) and local Flood Risk Management. The PFRA is available to view on the BHCC website.

The EA issued the national Indicative Flood Risk Areas to LLFAs in December 2010 based upon a methodology provided by Defra. This identified 10 Flood Risk Areas in England, each area having more than 30,000 people at risk of flooding. The City of Brighton and Hove was ranked as the 8th highest indicative Flood Risk Area[1] in England, with 36,412 people potentially at risk.

As a result of being identified as an indicative Flood Risk Area, the Flood Risk Regulations (2009) required BHCC to prepare Surface Water Flood Risk and Flood Hazard Maps by 2013 and a Flood Risk Management Plan by 2015. The EA, in consultation with the LLFA's, have prepared national surface water flood risk and flood hazard maps for the whole country which cover the first requirement and are available to view on their website[2]. The Flood Risk Management Plan is being undertaken in partnership with the EA and it is anticipated this will be completed by the end of 2015.

Surface Water Management Plan

The Surface Water Management Plan (SWMP) process was developed by Defra to promote integrated drainage and flood risk management and is set out in the 'SWMP Technical Guidance', which was published in February 2009 and updated in March 2010.

A SWMP is a structured process for comprising four phases; preparation, risk assessment, options and implementation, which together provide a framework for identifying and understanding the nature of local flood risks and the available options for future mitigation and management.

The BHCC SWMP builds upon the 'Brighton and Hove Council Flood Defence Assessment for Downland Flooding' report which was produced by Binnie Black & Veatch (BB&V) in 2001 and the PFRA produced by PBA in 2011.

[1] Environment Agency (2011) Preliminary flood risk assessments and flood risk areas

[2] Environment Agency (2013) updated Flood Map for Surface Water

The BHCC SWMP was completed in April 2014 and the information included within its Flood Risk database will be incorporated into this local Strategy. The SWMP is available to view on the BHCC web-site.

BHCC Planning Policy

In its role as a local planning authority BHCC is required to ensure that proposed development and changes to existing development are undertaken in a safe and appropriate manner with respect to flood risk. To inform these decisions the Council is required to reflect National Policy set out in the Government's National Planning Policy Framework (NPPF). Specific guidance in respect of flood risk is included within the NPPF and this has been used as the basis for the SFRA and SWMP that in turn inform policy decisions contained in the City Plan such as local Supplementary Planning Documents, Development Plan Documents and Development Briefs.

On the 18th of December 2014, Defra published a written statement to parliament explaining how Defra will be strengthening existing planning policy so that sustainable drainage system will be provided in new developments wherever this is appropriate. This proposal is set to replace the implementation of Schedule 3 of the FWMA, which would have made the Council responsible for the approval and adoption of Sustainable Drainage Systems.

South East 7

The Lead Local Flood Authorities across the south east developed a partnership known as the South East 7 (SE7) to share knowledge and apply consistent policies with respect to flood risk. The Partnership includes seven south east local authorities plus two additional authorities (*):

- Brighton and Hove City Council
- East Sussex County Council
- Hampshire County Council
- Kent County Council
- Medway Council
- Portsmouth City Council*
- Southampton City Council*
- Surrey County Council
- West Sussex County Council

The South East 7 produced a document 'Water People Places' (2013) which aims to provide guidance for sustainable drainage at the master planning stage of development.

Coastal Strategy

The EA is primarily responsible for managing Main River fluvial and coastal flood risk and has an overarching responsibility for all coastal defence. However, BHCC are responsible for managing coastal erosion and work in conjunction with the EA to manage, monitor and maintain coastal defences.

BHCC is a member of the South East Coastal Group which includes all the district, unitary and county authorities between Selsey Bill and the Thames estuary and the EA and Natural England. The overall coastal management policies for Brighton are contained in the Southdowns Shoreline Management Plan (SMP). More detailed coastal studies follow on from the SMP and are detailed below.

A coastal strategy study looks in detail at a length of coast and how it will change over the next 100 years. This includes looking at how to manage any significant human and natural factors that will influence it and what kind of defensive measures are suitable and affordable. It will usually include a programme of coastal management and coast defence works for the 100-year period. Further details on the strategies described below can be found on the BHCC web-site

Brighton Marina to River Adur Strategy

Work on the Brighton Marina to River Adur strategy began in March 2012 and was completed in 2014. The study area covers sections of coast administered by Adur District Council and Brighton & Hove City Council and extends from Brighton Marina in the east to the mouth of the River Adur in the west. The study has been approved by the Environment Agency and grant aid for an initial phase of improvements to the coast defences has been allocated to the financial year 2020/21.

The study went to the Environment, Transport and Sustainability committee in July 2014.

Brighton Marina to Saltdean Strategy

The strategy recommends maintaining the current defences between Ovingdean Gap and Saltdean and reconstruction of the defences between Ovingdean Gap and the Marina. As a result there is ongoing maintenance of the Undercliff Walk throughout its length following the reconstruction of the defences between the Marina and Ovingdean Gap which was completed in 2005.

Work on a revised and updated strategy for the coast from the Marina to Newhaven has begun led by Lewes District Council. Completion is expected in April 2015.

1.4 Overview of flooding and flood risk

This section defines and explains the difference between flooding and flood risk, and provides information on the different types and sources of flooding.

What is Flooding?

The FWMA defines a ’flood’ as ‘any case where land not normally covered by water becomes covered by water’ including :

- Heavy rainfall
- A river overflowing or its banks being breached
- A dam overflowing or being breached
- Tidal water
- Groundwater
- Anything else (including any combination of factors).

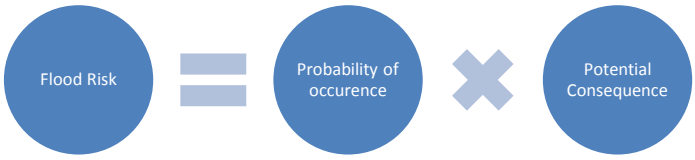
An Objective of the Strategy will be to provide further information and clarification on BHCC's definition of flooding in the future.

The FWMA also states that a flood does not include:

- a flood from any part of a sewerage system, unless wholly or partly caused by an increase in the volume of rainwater (including snow and other precipitation) entering or otherwise affecting the system, or
- a flood caused by a burst water main (within the meaning given by section 219 of the Water Industry Act 1991).'

What is Flood Risk?

The FWMA defines flood risk as a 'combination of the probability of the occurrence with its potential consequences.'



Consequences of a flooding event affect the following:

- Human Health
- Social and economic welfare
- Infrastructure
- Environment

The likelihood of flooding is either expressed as a chance, for example a 1 in 100 chance of flooding in any given year, or a probability, for example a 1% annual probability of flooding. A 1 in 100 year flood return period is also used to express this same event storm, but it should be noted that, as previously mentioned, this is still a probability and therefore a 1 in 100 year flood has the same potential to occur in any given year.

What are the effects of climate change on flooding?

Climate changes can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability.

Wetter winters and more rain falling in wet spells may increase river and / or overland flooding, especially in the rapidly responding catchments draining the South Downs and Weald. More intense rainfall causes more surface runoff, increasing localised flooding and erosion. In turn, this may increase pressure on drains, sewers and water quality. The intensity of storms in summer could increase even in drier summers, so we need to be prepared for these expected changes.

Rising sea or river levels may increase local flood risk inland or away from major rivers because of interactions with drains, sewers and smaller watercourses.

There is a risk of flooding from groundwater in the Brighton & Hove city. Recharge and ground water levels may increase in wetter winters, or decrease in drier summers.

Understanding different types of flooding

Surface Water Flooding

Surface water flooding is typically caused by heavy rainfall, which is not readily absorbed into the ground and can create overland flows which bypass or overwhelm drainage systems and cause ponding. Surface water flooding can occur in both urban and rural locations with the latter being as a result of saturated ground and / or intense storms. Rural surface water flooding has historically occurred in Brighton and Hove in the downland areas which prompted a number of city flood defences to be constructed. This is discussed in more detail in chapter 2 of this report.

Groundwater Flooding

Groundwater flooding is the emergence of groundwater above the surface or sub surface of buildings. Groundwater flooding occurs when the groundwater rises from the normal water table level and is typically associated with permeable aquifers (such as chalk or sandstone). This typically occurs after a prolonged period of rainfall and has historically occurred in Brighton and Hove on a number of occasions. Specific locations where this has occurred in Brighton and Hove are discussed in more detail in chapter 2 of this report.

Sewer Flooding

There are generally three types of sewer in a drainage network:

- Foul sewers – these are designed to convey wastewater only from connected properties.
- Surface water sewers – these are designed to convey rainwater only arising in storm conditions where the rainwater is from roofs, yards and highways which are legitimately connected to the surface water sewers.
- Combined sewers – these are normally in the older parts of towns where wastewater and surface water is conveyed in the same pipe.

Sewer flooding occurs when the drainage network becomes overwhelmed and surcharges or cannot manage the volume of water entering the system. This occurs during heavy rainfall or if the sewer is under capacity. Water then emerges from the sewer causing flooding. Sewer flooding can also occur due to blockages or failure to the system; or when outfalls are surcharged owing to the sea levels.

Sewer flooding can be aggravated by groundwater flooding which gets into the systems as either surface water entering through gullies or through infiltration through damaged pipes.

There may be times when sewer flooding is not overly disruptive or problematic. However, the majority of the sewers in Brighton and Hove are combined sewers, which convey both foul and surface water. These are predominantly located in the southern part of the city. Therefore, when these sewers flood the resulting water may contain foul effluent. In these situations, the consequences can be greater particularly when public health can be affected. Separate foul and surface water systems are predominantly located in the northern half of the city.

In Brighton and Hove city, a significant investment has been made by Southern Water when it constructed the ”Stormwater Tunnel” that now stores flows that previously discharged to the sea during heavy rainfall. These flows are now returned to the sewer for treatment at the Wastewater Treatment Works, after the storm has passed.

Fluvial Flooding

Fluvial flooding occurs when the ‘in bank’ capacity of a river is exceeded and water overflows onto adjacent land. This type of flooding typically occurs when there has been prolonged rainfall within the river catchment causing river levels to rise.

There are no rivers within Brighton and Hove and therefore fluvial flooding has not been considered as part of this strategy.

Coastal Flooding
Flooding around the coastline can occur when the effects of weather conditions and sea level variations combine to overflow onto the land. Such impacts can be mitigated by constructing flood defences however these may be breached (due to partial or full failure) or overtopped (design standard exceeded).

Brighton and Hove's coastline extends from Portslade by Sea to Saltdean.

Reservoir Flooding
Reservoir flooding occurs when the reservoir embankment or dam are breached. A reservoir is defined as a large raised structure / lake or other area designed / used for collecting and storing water capable of holding over 25,000m^3 water. The Flood and Water Management Act 2010 proposes to reclassify above ground lakes or structures to reservoirs when their capacity exceeds 10,000m^3

The risk of reservoir flooding is nationally considered as low. There are no reservoirs within Brighton and Hove and therefore reservoir flooding does not need to be considered further as part of this strategy.

Flood Management Responsibility
Flooding can occur from a variety of sources and consequently these risks are managed by a number of responsible parties as demonstrated in figure 1.1 below. There are elements where responsibilities are shared; for example the Environment Agency is responsible for managing coastal flooding and BHCC is actively involved in coastal defence works as they have a responsibility for managing coastal erosion and protection through a comprehensive Shoreline Management Plan and Coastal Strategies.

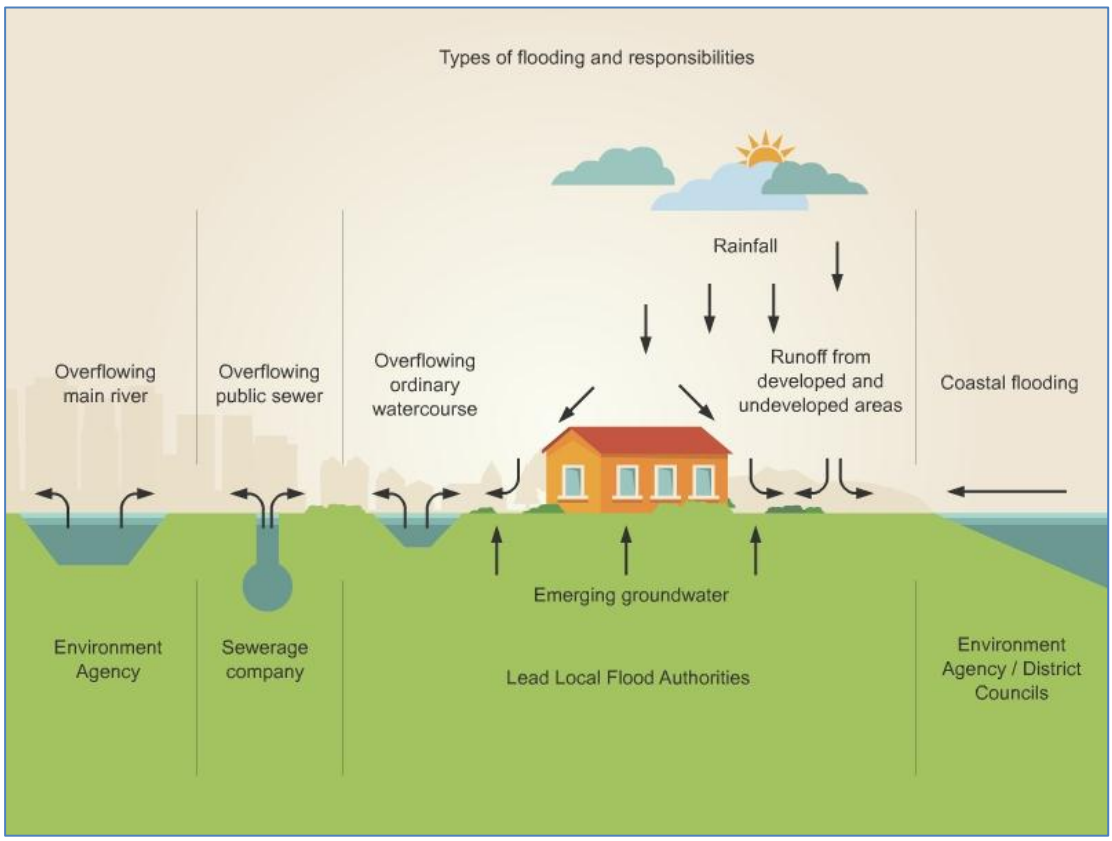


Figure 1.1: Types of flooding and responsibilities (Source EA Capacity building website)

2 Local Flood Risk

2.1 Historical Flooding

Information relating to recorded historical flood incidences is detailed in the PFRA (2011). It identifies each location or area that has been affected by flooding and establishes the likely cause.

Coastal Flooding

The PFRA was published in June 2011 and at that time there were no recorded incidences of flooding within the City owing to direct flooding from the sea. Since that time however there have been two incidences where the beach has been overtopped. The most recent event (14th February 2014) resulted in property damage to a number of commercial units that front directly onto the beach walk (arches to the south of King's Road).

Groundwater flooding

Predicting when and where groundwater emergence will occur is very difficult with any degree of accuracy because the hydrogeology of city is very complex and dependant on not only the receiving rainfall but the abstraction rates and groundwater flow.

However, groundwater flooding has historically occurred in Brighton where the Downs meet with the northern edge of the City. There are records of groundwater flooding in the Patcham area going back to 1877. The last groundwater flooding occurred in February 2014. Prior to 2014, the last occasion the City significantly flooded was during the winter of 2000/2001. In 2000/2001 this event resulted in widespread groundwater flooding throughout the City. Data contained in the SWMP and PFRA provides further detail of these groundwater flooding incidences.

BHCC work in partnership with the other local Risk Management Authorities (for further details refer to section 3.4) and have developed a Multi Agency Flood Plan for the Patcham area to respond to future groundwater flooding events which may occur. It is intended that this plan will be extended into a city wide plan in the future.

It should be noted that where surface water is unable to enter the ground it will result in surface water flooding; however, where groundwater emerges at the same location identifying the primary source of the flood is not always possible. Analysis of flood events increases knowledge of where groundwater is likely to emerge.

Surface water flooding

The BHCC SWMP aims to identify and understand flooding on the surface, which can manifest from all (and combined) local sources including, sewer flooding, groundwater, springs and overland flows. This holistic approach to understanding flooding from a number of sources enables a structured approach to be taken towards managing flood risk. Historically seven flooding hotspots areas across the City were identified in the BB&V Flood Defence Assessment report and a set of actions aimed at reducing the likelihood of flooding and consequences was proposed. As part of the SWMP assessment it was considered that where actions offer between a 1 in 75 to 1 in 100- year level of protection (or higher) the area was considered to no longer be at significant risk of flooding, having been satisfactorily mitigated to the desired standard. This SWMP analysis concluded that following 6 potential flooding hotspots remained.

- Bevendean

- London Road, Patcham
- Mile Oak
- Westdene
- Ovingdean
- Lewes Road

As part of the later PFRA process further anecdotal evidence collected for 42 flood instances were analysed and determined to be either 'resolved', 'low risk' or 'high risk'. Incidents which only affected the highway were deemed to be 'Low Risk' and those which flooded properties were classified as 'high risk'.

From this further assessment the list of potential flooding hotspots was increased to 7 and ranked in order of the highest flood risk based on a numerical analysis of flood occurrences, properties affected and predicted flood risk. The hotspots were ranked as follows (highest risk to Lowest):

- Mile Oak
- Bevendean
- Patcham
- Carden Avenue / Warmdene Road
- Moulsecoomb Primary School
- Ovingdean – Kett's Ridge
- Blatchingham Mill School

Hotspot maps are contained within Appendix C

In July 2014, there was an event, which highlights the risk of surface water flooding in Brighton and Hove. A high intensity rainfall event occurred over Hove and Portslade, 73.5mm of rainfall were recorded over the day. The Environment Agency Hydrocast data showed that the majority of this rainfall fell in the first two hours of the storm. Over 100 properties were affected, these were predominantly basements.

Further surface water flooding was observed in October 2014 in Preston Park, Parkfield Crescent. Following significant and localised rainfall in Saltdean surface runoff from a field led to a number of residential properties being affected by flooding and soil build up in gardens.

2.2 Predicted Flood Risk

In the PFRA, the predicted flood risk was assessed by using the EA's Flood Map for Surface Water (FMfSW) and the National Receptors database.

The FMfSW represents the 2nd generation mapping produced by the EA. The mapping shows where surface water runoff would be likely to pond from a 1 in 30 or 1 in 200 year rainfall event for a 1.1 hour storm duration for a 50% summer rainfall profile using a Digital Terrain Model (DTM).

The National Receptors database provides property points and classifications, which can be used to identify the number and type of property which lie within the FMfSW.

The mapping has two bandings; Surface Water Flooding (0.1m flood depth) and Deeper Surface Water Flooding (0.3m depth). Guidance on the FMfSW suggests that the deeper Surface Water Flooding (0.3m depth) is the depth at which property damages become significant and property flooding commences. Therefore, the FMfSW deeper flooding has been used for the numerical assessment of property flooding.

The FMfSW is the locally agreed surface water flood information (as defined in the BHCC PFRA report, 2011). The FMfSW map extracted from the PFRA produced at the time is contained in Appendix B for reference only. Up-to-date mapping can be obtained from the EA's website link here.

Since 2011, the EA have produced the updated Flood Map for Surface Water (uFMfSW). The uFMfSW represents the 3rd generation mapping produced by the EA.

The updated Flood Map for Surface Water[3] assesses flooding scenarios as a result of rainfall with the following chance of occurring in any given year (annual probability of flooding is shown in brackets):

- 1 in 30 (3.3%)
- 1 in 100 (1%)
- 1 in 1000 (0.1%)

It provides the following data for each flooding scenario:

- Extent
- Depth
- Velocity (including flow direction at maximum velocity)
- Hazard (as a function of depth and velocity)

It also includes information about the source of the data (i.e. whether it was from the nationally produced modelling or locally produced modelling) and the confidence in the data outputs.

This data (as modified and updated) has been used in the production of this Strategy.

[3] Environment Agency (2013) What is the updated Flood Map for Surface Water?- Report Version 1.0

3 Roles and Responsibilities

3.1 Lead Local Flood Authority

The principle responsibilities of the LLFA as defined by the Flood and Water Management Act, 2010 are as follows:

- Section 9 — Requirement to develop, apply, maintain and monitor a **Local Strategy** for Flood Risk Management.
- Section 19 — Requirement to Investigate Floods, where appropriate, and to publish the findings.
- Section 21 — Duty to maintain a Register of Structures, which affect flood risk.
- Section 30 — Power to Designate third party assets, which affect flooding.
- Section 31 — Requirement to consent works to ordinary watercourses under the Land Drainage Act 1991.

3.2 Sustainable drainage systems (SuDS)[4]

On the 18th of December 2014, Defra published a written statement to parliament explaining how Defra will be strengthening existing planning policy so that sustainable drainage system will be provided in new developments wherever this is appropriate. This proposal is set to replace the implementation of Schedule 3 of the FWMA, which would have made the Council responsible for the approval and adoption of Sustainable Drainage Systems (SuDS).

Initially this decision will apply to major development - developments of 10 dwellings or more; or equivalent non-residential or mixed development). Planning Applications will need to ensure that sustainable drainage systems for the management of run-off are put in place, unless demonstrated to be inappropriate.

These changes will take effect on from sixth of April 2015.

At the time of writing this report, Defra are consulting on a proposal[5] to make LLFAs a statutory consultee on planning applications for surface water management; and to makes changes to the statutory consultee role of the Environment Agency to better reflect the Agency's strategic expertise and reflect the new responsibilities for local flood management exercised by lead local flood authorities.

The maintenance of SuDS Assets in perpetuity will need to be defined by the Developer and agreed with the LLFA and Planners. Each SuDS asset that is deemed to perform a flood defence function will need to be recorded on the LLFA's asset register.

[4] Defra (2014) Written statement to Parliament Sustainable drainage systems

[5] Defra (2014) Consultation on measures aimed at ensuring more effective provision of advice to local planning authorities in relation to surface water drainage management.

3.3 Risk Management

The FWMA sets out a risk based approach to the management of flood risk through the development of a National Strategy by the EA and Local Strategies by the LLFAs, with a partnership working principle with other Risk Management Authorities (RMA).

Definition of Risk Management

The FWMA defines Risk Management as *'anything done for the purpose of*

a) Analysing a risk
b) Assessing a risk
c) Reducing a risk
d) Reducing a component in the assessment of a risk
e) Altering the balance of factors combined in assessing a risk, or
f) Otherwise taking action in respect of a risk ore a factor relevant to the assessment of a risk (including action for the purpose of flood defence).

3.4 Risk Management Authorities (RMA)

The FWMA defines the following organisations as Risk Management Authorities (RMA), those in bold can be identified within the Brighton and Hove area. It is a requirement of the Local Strategy to identify the risk management authorities for the area.

- **The Environment Agency**
- **Lead Local Flood Authority (BHCC)**
- The District Council for an area for which there is no unitary authority
- Internal Drainage Board (IDB)
- **The Water and Sewerage Company (WaSC) - Southern Water**
- **Highway Authority (BHCC and the Highways Agency)**

RMA Responsibilities

The FWMA places a number of duties on Risk Management authorities when they undertake a flood risk management function. These include:

- Contributing towards achieving sustainable development.
- Acting consistently with national strategies.
- Acting consistently with local strategies (except Water Company).
- Co-operating with other relevant authorities.

During the production of the earlier BHCC SWMP, a Flood Risk Partnership was established between BHCC, Southern Water and the Environment Agency. This good working relationship facilitates knowledge sharing of local area information and flood defence assets. This approach also builds upon the recommendations contained in the Pitt Review and the requirement of the FWMA (section 13) for cooperation and information sharing with between RMAs. A key function of the LFRMS is to extend collaborative working and information sharing partnership to include addition stakeholders such as local business, land owners, residents, individuals and groups that each are influenced by flooding.

Figure 3.1: BHCC Flood Risk Partnership

RMA Consultation

LLFAs are required to consult with relevant Risk Management Authorities (RMA) and the Public about their local flood risk management strategy (LFRMS).

4 Objectives and Actions

4.1 National Strategy

The FWMA states that "the Environment Agency must 'develop, maintain, apply and monitor a strategy for flood and coastal erosion risk management in England' as part of its strategic overview role for flood and coastal erosion risk management. To meet this requirement the EA has produced a National Flood and Coastal Erosion Management strategy (NFCERM) for England.

The overall aim of the NFCERM is "to ensure the risk of flooding and coastal erosion is properly managed by using the full range of options in a co-ordinated way". This will be achieved through a partnership approach between the Government, the EA, LLFAs, communities and organisations by:

- understanding the risks of flooding and coastal erosion, working together to put in place long-term plans to manage these risks and making sure that other plans take account of them;
- avoiding inappropriate development in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks;
- building, maintaining and improving flood and coastal erosion management infrastructure and systems to reduce the likelihood of harm to people and damage to the economy, environment and society;
- increasing public awareness of the risk that remains and engaging with people at risk to encourage them to take action to manage the risks that they face and to make their property more resilient;
- improving the detection, forecasting and issue of warnings of flooding, planning for and co-ordinating a rapid response to flood emergencies and promoting faster recovery from flooding.

4.2 Local Strategy Objectives

The FWMA requires Local Strategies to be consistent with the National Flood and Coastal Erosion Risk Management Strategy (NFCERMS) to ensure that flood and coastal erosion risk management activities are co-ordinated, facilitate sustainable risk management and make it easier to deliver multiple benefits. The NFCERMS identifies the need for careful planning to help ensure that appropriate, sustainable options are selected when considering flood risk management at a local level. This approach to managing flood risk recognises that at any given time resources are limited and it may be necessary to prioritise risk management solutions based on outcomes delivered. To obtain real benefits it must be shown that the chosen risk management options and measures are in keeping with the NFCERMS through the setting of clear objectives.

Objectives

The BHCC Local Strategy objectives were developed through a workshop with internal council stakeholders and consultation with the RMAs, to better understand the local issues and how they might addressed. The planned actions identified in this strategy will help realise the NFCERMS aims and the Government's Vision for sustainable development.

Objective 1: 'Work with Partners, Stakeholders and Local Community Groups to Understand and manage flood risk'.

- By sharing data between Risk Management Authorities and holding information in in a single location – a flooding and drainage information service – this will provide a key point of reference for understanding each potential flood risk that exists in relation to a particular area.

Objective 2: 'Continue to improve BHCC knowledge and evidence base of local flood risk'.

- Regular updating of the flood and drainage information service will enable trends or irregularities in instances of flooding to be established and where required incorporate future actions into the Strategy. It is intended that this data be used to ensure that development is provided in appropriate locations.

Objective 3: 'Work with Partners and Funders to implement sustainable measures to reduce flood risk'

- By adopting an inclusive approach to understand flood risk and the mechanisms available to finance flood reduction measures, sustainable and achievable development plans can created.

Objective 4: 'Manage development impact on flood risk through land allocation and development control policy'.

- It is recognised that flood defences require maintenance and additional long term benefits can be gained by ensuring that the 'correct development' occurs 'in the correct place' at the 'right time. Development should be directed using planning policy towards locations that derive the greatest benefit from the selected flood reduction measures. This will be reflected through policies steered by this Strategy.

Objective 5: 'Raise public awareness and resilience to flooding'.

- Where development in an area of flood risk is considered justified (for example household extensions) it will be necessary to ensure that existing and potentially future residents are made aware of any potential flood risk. This is an important aspect of the Strategy.

Objective 6: 'Undertake annual inspection, maintenance and improvement, where necessary of flood defence assets'

- To ensure that flood defence assets continue to provide a level of performance it is important to establish a continual programme of maintenance. Allowing assets to deteriorate until such time that maintenance must be undertaken following failure can have a range of consequences not limited to the defence structure itself. Funding a programme will provide greater long term benefits where it can be demonstrated that the flood asset protects a greater number of people.

Objective 7: 'Work with Partners and Funders to implement sustainable public health protection measures'

- The Strategy aims to manage the known consequences of flooding and provide an active system to monitor and report any effects of flooding. It may not be possible to derive benefits from sustainable development for all existing residents. Where engineered actions to reduce flood risk are considered financially unviable then it may be necessary to establish other measures to protect the public including educational and advisory information, support and / or property level protection. The reactive measures will require careful monitoring and planning if they are to succeed and Partners and Funders will provide an important role in shaping these strategies.

Objective 8: 'Ensure the likely environmental effects of the Local Strategy are considered and understood and any potentially adverse effects are avoided, reduced or minimised'

A Strategic Environmental Assessment (SEA) will be required to determine the overall benefits that can be achieved from the Strategy. The outcomes of the SEA will be used to implement measures identified in the Strategy in a timely fashion to ensure that development pressure cannot overtake the implementation of measures needed to prevent undue impact to the environment.

4.3 Local Strategy Action Plan

The Local Strategy must be consistent with the National Strategy to ensure "the risk of flooding and coastal erosion is properly managed by using the full range of options in a coordinated way". Resources available to manage flood risks are finite and therefore any measures proposed will need to be proportionate to the benefits achieved. This approach will enable measures to be prioritised in order of benefits / outcomes.

In line with the objectives identified in the NFCERM, the BHCC Local Strategy considers a range of actions that will be applied.

Through completion of the surface Water Management Plan for Brighton & Hove, the LLFA has developed a wide understanding of the existing areas and sources of flood risk within the authority area. As part of the council's ongoing investment in flood risk management a number of schemes have been identified to mitigate local flooding problems as well as areas for further study and investigation.

The current and proposed flood risk management activities are detailed in the summary Action Plan Table below. This table also sets out the actions, which are proposed in order to help achieve the objectives of the Strategy and will be progressed by Brighton & Hove together with the other Risk Management Authorities.

The indicative timeframes for delivery of the actions and initiatives are detailed within the table below, which will be reviewed on an annual basis and priorities will be re-assessed as necessary.

Table 4.1 BHCC Summary Action Plan

BHCC Action Plan

Objectives	Actions	Outcomes	Delivery Partners	Time Frame
Objective 1 'Work with Partners, Stakeholders and Local Community Groups to Understand and manage flood risk'.	Develop data and information sharing protocols.	a) Complete any necessary agreements between Risk Management Authorities b) Create a flooding and drainage information service	LLFA Southern water EA Highways Agency Network Rail Local Action Teams	2014 - 2016
	As LLFA hold quarterly partnership meetings with the EA and Southern Water.	Produce and disseminate meeting minutes.	LLFA EA Southern Water	Ongoing
	BHCC to attend the regional South East 7 flood group.		LLFA SE7	Ongoing
Objective 2 'Continue to improve BHCC knowledge and evidence base of local flood risk'.	Define BHCC's description of flooding and the associated sources.	Incorporate into the Local Flood Risk Management Strategy document	LLFA	2015
	Investigate and record all instances of internal property flooding under Section 19 Duties of the FWMA.	Publish reports on BHCC website	LLFA EA Southern Water	Ongoing
	Undertake a study into groundwater flooding in Brighton and improve monitoring levels throughout the city.	Publish the findings of the study to all parties.	LLFA	2014 - 2019
	Investigate and define local SW flood risk areas with drainage infrastructure constraints.	Develop comprehensive drainage infrastructure plans through survey of flood risk hotspots.	LLFA Southern Water	2014 -2019
Objective 3 'Work with Partners and Funders to implement sustainable measures to reduce flood risk'	Identify priority flood risk areas for investigation.	Publish a list of significant high risk areas	LLFA	2014
	Continue to implement and improve the beach replenishment programme.	Apply for Flood Defence Grant funding for the Strategy findings and implement scheme.	LLFA EA	Ongoing
	Implement the Action Plan from the BHCC SWMP.	Subject to funding.	LLFA EA Southern Water	2014 – 2019

Objectives	Actions	Outcomes	Delivery Partners	Time Frame
	Assess the potential for short term flooding of open space areas as mitigation, for example use of parkland as temporary flood storage areas	Undertake a feasibility study to investigate this possibility.	LLFA	Ongoing
Objective 4 'Manage development impact on flood risk through land allocation and development control policy'.	Establish development control policies for 'city plan' – part 2.	Produce and publish developer guidance to drainage / flood risk design.	LLFA	2015/2016
	Establish protocol for consulting the LLFA on planning applications using flood risk evidence base (GIS database) as mandatory development control check / consultation.	Develop a GIS flood risk resource for the BHCC GIS platform.	LLFA	2015/2016
	Implement Schedule 3 of FWMA in accordance with DEFRA national standards and guidance.	Establish new surface water drainage approval policy and process, as necessary	LLFA Defra	Timescales are dependent on implementation of the secondary legislation.
Objective 5 'Raise public awareness and resilience to flooding'.	Provide guidance on interpreting flood risk data.	Produce leaflets and guidance documents for distribution and inclusion within the flood risk information resource.	LLFA EA	Ongoing
	Provide self-help advice on flood resilience.		LLFA	Ongoing
	Provide advice and support establishment of local community groups.		LLFA Local Community/ Local Action Team	Ongoing
Objective 6 'Undertake annual inspection, maintenance and improvement, where necessary of flood defence assets'.	Produce a consolidated flood defence asset register.	Publish the register of schemes affecting flood risk.	LLFA	2015/2016
	Define What constitutes a Flood Defence asset.	Add statement within register to clearly define this term.	LLFA	2015/2016
	Prioritise and implement maintenance budgets.	Produce and publish an annual inspection schedule of defence assets	LLFA	2014/2015
	Undertake ecological surveys of assets prior to any maintenance or improvement works.	Publish ecological survey reports.	LLFA Southern Water EA	Ongoing
Objective 7 'Work with Partners and Funders to implement sustainable public health	Assess the public health implications from flooding.	Review the consequences of flooding in line with DEFRA guidance on public health.	LLFA	Ongoing

Objectives	Actions	Outcomes	Delivery Partners	Time Frame
protection measures'.	Identify and implement measures to protect public health during flood events	Include at risk areas, properties and people within the emergency plan.	LLFA	Ongoing
Objective 8 Ensure the likely environmental effects of the LFRMS are considered and understood and any potentially adverse effects are avoided, reduced or minimised	Undertake a SEA of the draft LFRMS	Public the Strategic Environmental Assessment of the LFRMS.	LLFA	2014/2015
	Prepare an SEA Report to accompany the adopted LFRMS		LLFA	2014/2015
	Implement monitoring according to the SEA Report		LLFA	2015/2016

5 Funding options

5.1 Funding Flood Risk Management

Operating, maintaining, repairing and renewing Flood Defences in the UK is funded by the Flood and Coastal Erosion Risk Management Grant in Aid (FCERM GiA). This can be supplemented by local levies raised through the Regional Flood and Coastal Committees (RFCCs). Funding for flood defence is also supported by Revenue Support Grant.

> Following announcements on 6 February 2014 and the Budget on 19 March 2014*, Defra is on course to invest more than £3.2 billion in flood and coastal erosion risk management over the five years of this Government from April 2010 to March 2015.
>
> (*The Budget announcement on 19 March 2014 included £60 million for 2015/16. Full details of the resources and capital allocations for 2015/16 will be published in due course)
>
> Going forward, Defra is committed to a six-year programme of capital investment to improve defences right up to 2021; more than £370m in 2015/16 rising to over £400m in 2020/21

Under the existing system, outcomes (for example, houses protected and economic benefits achieved) are given financial figures; the more outcomes the higher the financial benefit. These are compared with the costs of proposed schemes. Funding is prioritised nationally for those schemes with the highest outcome: cost ratio.

The BHCC action plan set out a series of objectives that taken together form the Flood Risk Management system. Achieving these objectives will require resources to drawn from National and Local funding streams.

Flood and Coastal Erosion Risk Management Grant in Aid (FCERM GiA)

The level of funding available from Central Government to promote Flood and Coastal Erosion Risk Management is derived from a consistent formula that determines the level of contribution available to deliver specific planned actions. It is important to note that no scheme will receive 100% funding and the outcome: cost ratio will be increase where high levels of alternative funding and local contributions are secured.

This methodology measures present value whole life costs and balances it against present value benefits achieved from the actions. The calculation considers benefits to the environment and businesses, and benefits are weighted to provide protection to households in less affluent areas that cannot afford sufficient protection.

This direct calculation is designed to ensure that each scheme is considered fairly based on the outcomes achieved / benefits gained. Whilst this has led to a reduction in spending commitment from Central Government towards individual schemes, it is intended that overall the number of schemes being promoted in this way will have greater certainty to proceed.

The type of schemes which can qualify for FCERM GiA Partnership Funding include:

- Flood alleviation projects for houses at risk from fluvial (river), tidal (coastal), ground and surface water sources, and projects to implement property level protection measures.
- Schemes to reduce coastal erosion and / or benefit wildlife through the delivery of the FCERM works.

- New proposed flood and coastal defences and capital maintenance on existing assets; providing the work will either re-instate the standard of service and design life of the asset or improve the standard of service and extend the design life of the asset.

Explanation and guidance has been published by the Environment Agency and includes definitions of the above terms. Follow this link to the guidance.

Funding has been allocated through the FCERM GiA in the year 2017- 2018 for potential schemes in Bevendean and Patcham, subject to approval of the detailed proposal by the Environment Agency.

Regional Flood and Coastal Committees (RFCC)

Regional Flood and Coastal Committees were first established in 2011, following the Flood and Water Management Act 2010. The Southern Regional Flood and Coastal Committee, which includes Brighton and Hove, was established:

- to ensure there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines;
- to promote efficient, targeted and risk-based investment in flood and coastal erosion risk management that optimises value for money and benefits for local communities;
- to provide a link between the Environment Agency, LLFAs, other risk management authorities, and other relevant bodies to engender mutual understanding of flood and coastal erosion risks in its area.
- to approve local levy funding for flood risk management projects

The Local Levy

Local Levy funding is raised by way of a Levy on the County Councils and Unitary Authorities within a Regional Flood and Coastal Committee (RFCC) boundaries. The Local Levy is used to support, with the approval of the relevant Committee, flood risk management projects that are not considered to be national priorities or do not attract national funding through FCERM GiA. The Local Levy allows locally important projects to go ahead to reduce the risk of flooding within the Committee area.

BHCC have been successful in obtaining £50,000 from the Local Levy in order to commission preliminary studies to inform the Patcham Flood Alleviation Scheme. Consultants have been appointed to carry out this work.

The Community Infrastructure Levy

The Community Infrastructure Levy (CIL) Regulations came into force in April 2010. The CIL allows local authorities in England and Wales to raise funds from developers undertaking new building projects in their area. The money received through CIL should be used to fund a wide range of infrastructure that is needed as a result of development. This could include, for example, new or safer road schemes, flood defences, schools, hospitals and other health and social care facilities, park improvements, green spaces and leisure centres. Planning obligations (Section 106 agreements) will remain for detailed site impacts and some infrastructure requirements where not covered by CIL.

In association with the Brighton and Hove City Plan the Council is currently assessing the potential for CIL in the City and, at the time of writing this report, has yet to take a decision to produce a CIL charging schedule. A link to BHCC developer contributions web-page is here.

Growing Places Fund

The Government is committed to promoting sustainable development growth through initiatives such as the Growing Places Fund. The objective of the fund is to:

- generate economic activity in the short term by addressing immediate infrastructure and site constraints and promote the delivery of jobs and housing
- to allow Local Enterprise Partnerships (LEPs) to prioritise the infrastructure they need, empowering them to deliver their economic strategies
- to establish sustainable revolving funds so that funding can be reinvested to unlock sites and secure investment

The Government invites Local Enterprise Partnerships to submit proposals for infrastructure projects to access part of this £500m fund. It must be shown that funding is needed to unlock development and how this will realise uplift in land values. In turn, developers would be expected to recycle a proportion of this uplift or financial receipts to repay initial funding. A link to the Governments Growing Places Fund Prospect can be followed here

Coast to Capital Local Enterprise Partnership

Coast to Capital is the LEP for Brighton and Hove as well as Croydon, Gatwick Diamond, East Surrey, Lewes and West Sussex. It was established in 2011 to create favourable conditions within the enterprise area by identifying infrastructure priorities that will drive growth and job creation. Where it can be demonstrated that Actions to reduce flood risks improve or enhance business viability then it would be reasonable to expect financial contributions to these Actions. A link to Coast to Capital's website can be found here

Additional local contributions

Contributions may be sourced from Developers and major beneficiaries; Local Authority funding from Community Infrastructure Levy, local precepts and Tax Increment Financing as well as direct contributions (such as Highways for surface water improvement schemes on roads).

In promoting new development sites Section 106 payments or contributions will be made towards extending community infrastructure (such as education, highways, leisure). These payments could can be used towards resolving existing flooding issues local and associated to the development, which were not necessarily mitigated as part of the development proposal. The NPPF also requires new development to provide opportunities to reduce flood risks from developed sites so potential may exist for developers to reduce wider flood risks without contributing towards community based schemes.

Contributions should also be sought from local residents and businesses that benefit from proposed flood relief and coastal erosion management schemes identified through the Action Plan process, who are not subject to Local Levy.

6 Environmental Assessment

6.1 Sustainable Development

Development should only proceed where impacts to people or the environment, including the effects of climate change, are given due consideration. Sustainable development "meets the needs of the present without comprising the ability if future generations to meet their own needs" (Brundtland Commission 1987).

Section 27 of the Flood and Water Management Act 2010 requires flood and coastal erosion risk management authorities to aim to make a contribution towards the achievement of sustainable development when exercising their flood and coastal erosion risk management functions. Guidance to flood risk management authorities is here.

The FWMA requires LLFAs to develop and maintain a local flood risk management strategy which specifies, amongst other things, how it contributes to the achievement of wider environmental objectives.

It is intended that the objectives and actions identified in this strategy will not only help protect existing and future residents from the consequences of flooding but provide opportunities to address wider development objectives within a coherent and sustainable development framework.

Sustainable development requires that the three 'pillars' of the economy, society and the environment are interconnected. Long-term economic growth relies on protecting and enhancing the environmental resources that underpin it, and paying due regard to social needs.

Sustainable development in the context of flood and coastal erosion risk management (FCERM) includes:

- taking account of the safety and wellbeing of people and the ecosystems upon which they depend,
- using finite resources efficiently and minimising waste,
- taking action to avoid exposing current and future generations to increasing risk, and,
- improving the resilience of communities, the economy and the natural, historic, built and social environment to current and future risks.

6.2 Strategic Environmental Assessment

The Environmental Assessment of Plans and Programmes Regulations 2004 (the Regulations), implement the requirements of the European Union (EU) Directive 2001/42/EC (known as the SEA Directive), in England.

The Regulations state;

The Environmental Report must identify, describe and evaluate the likely significant effects on the environment of implementing the plan (or in this case Strategy).

The Strategy has been identified as a plan which could give rise to significant environmental effects. The principle steps in the process are provided below;

Step 1: - Establish the current environmental conditions (i.e. the baseline) within the geographical extent of the Strategy.

Step 2: - Predict any changes/trends to the environmental conditions that are likely to occur within the temporal scope of the Strategy

Step 3: - Identify and agree the SEA objectives. These SEA objectives should take into account the following issues;

- Biodiversity
- Population
- Human health
- Soil and ground conditions
- Water resources
- Air quality
- Material assets
- Cultural heritage
- Landscape
- Climatic factors

- **Step 4:** - Consult on the scope of the SEA (i.e. steps 1-3 above) with statutory consultees.
- **Step 5:** - Assess the Strategy, against the SEA objectives in the context of the existing and future environmental conditions and determine any significant environmental effects.
- **Step 6:** Identify mitigation strategies for any likely significant effects. It is not anticipated that there will be many (if any) significant *adverse* environment effects as a result of the Strategy. If any are identified, mitigation measures to avoid reduce or compensate the effect will be recommended.
- **Step 7:** - Recommend a monitoring regime for the implementation of the Strategy.

6.2.1 To date, Steps 1-4 have been undertaken and a Scoping Report (covering these steps) has been prepared (**provided at Appendix A**). The purpose of the Scoping Report was to inform the statutory consultees of the intended approach to assessing the potential environmental effects of the Local Flood Risk Management Strategy. The statutory consultees have been consulted and have confirmed that they are in agreement with the approach proposed (provided at **Appendix A**).

6.2.2 The Draft Local Strategy is currently being assessed against the SEA objectives and an Environmental Report is being prepared for publication with the adopted Strategy.

6.2.3 The assessment will be undertaken by considering the potential effects of the Strategy on the following different aspects of the environment;

- Biodiversity
- Population
- Human health
- Soil and ground conditions
- Water resources
- Material assets
- Cultural heritage

6.2.4 By using the following objectives;

i. To protect and improve the quality and condition of water resources in Brighton and Hove.

ii. To conserve and enhance biodiversity across Brighton and Hove.

iii. To protect and conserve soils and reduce their ability to act as pollution sources and pathways.

iv. To promote the mitigation of, and adaptation to, climate change and its effects across Brighton and Hove.

v. To safeguard existing and future material assets and critical infrastructure in Brighton and Hove.

vi. To protect the health and wellbeing of local people and communities in Brighton and Hove.

vii. To safeguard and enhance sites, features and settings of cultural heritage, archaeological, historical value across Brighton and Hove.

6.2.5 The Environmental Report will document this assessment and will be presented using a series of tables as shown in the example below;

Table 6.2: Example Assessment Table

SEA Objectives	Guide Questions	Timescale			Commentary/Explanation
		Short term	Medium term	Long term	
To protect and improve the quality and condition of water resources in Brighton and Hove	Will the Strategy impact on water resources across Brighton and Hove and beyond? Will the Strategy protect and improve surface and groundwater water	**+** Minor Positive	**+** Minor Positive	**+** Minor Positive	**Assessment of effects**: **Mitigation**: None **Assumptions**: **Uncertainties**:

SEA Objectives	Guide Questions		Timescale			Commentary/Explanation	
			Short term	Medium term	Long term		
	quality? Will the Strategy contribute towards achievement of Good Ecological Potential/Status? Will the Strategy mobilise known areas of contamination?						
Key	**++** Significant Positive Effect	**+** Minor positive effects	**0** No overall effect	**-** Minor negative effect	**--** Significant negative effect	**?** Score Uncertain	
NB: where more than one symbol is presented in a box it indicates that the SEA has found more than one score for the category. Where a box contains a ?, this indicates uncertainty over whether the effect could be a minor or significant effect. A conclusion of uncertainty arises where there is insufficient evidence for expert judgment to conclude an effect.							

A copy of the Scoping Report together with response received to date from the consultees is included within Appendix D. The Scoping report has been issued to each RMA for consideration and once agreed the SEA will be commenced.

7 Next Steps

7.1 Consultation Process

We are keen to hear the views of the local residents and businesses in Brighton and Hove City about our draft Local Flood Risk Management Strategy.

There is a legal requirement for us to consult with the public on our proposed approach to flood risk management. Brighton and Hove City Council want to make sure our Strategy meets the needs of the people and places in Brighton and Hove to ensure we can work together and reduce the risks we face.

The responses provided by the consultation will be used to shape the final version of the Strategy.

Table 6.3: Consultation Timescale

Draft Local Flood Risk Management Strategy	12 December 2014
Liaise with RMAs	15 December 2014 – 16 January 2015
Present LFRMS to Environment, Transport & Sustainability Committee	20 January 2015
Public Consultation	March 2015 – April 2015
Review consultations	April 2015
Publish Final LFRMS	April 2015

7.2 Ongoing review and Scrutiny

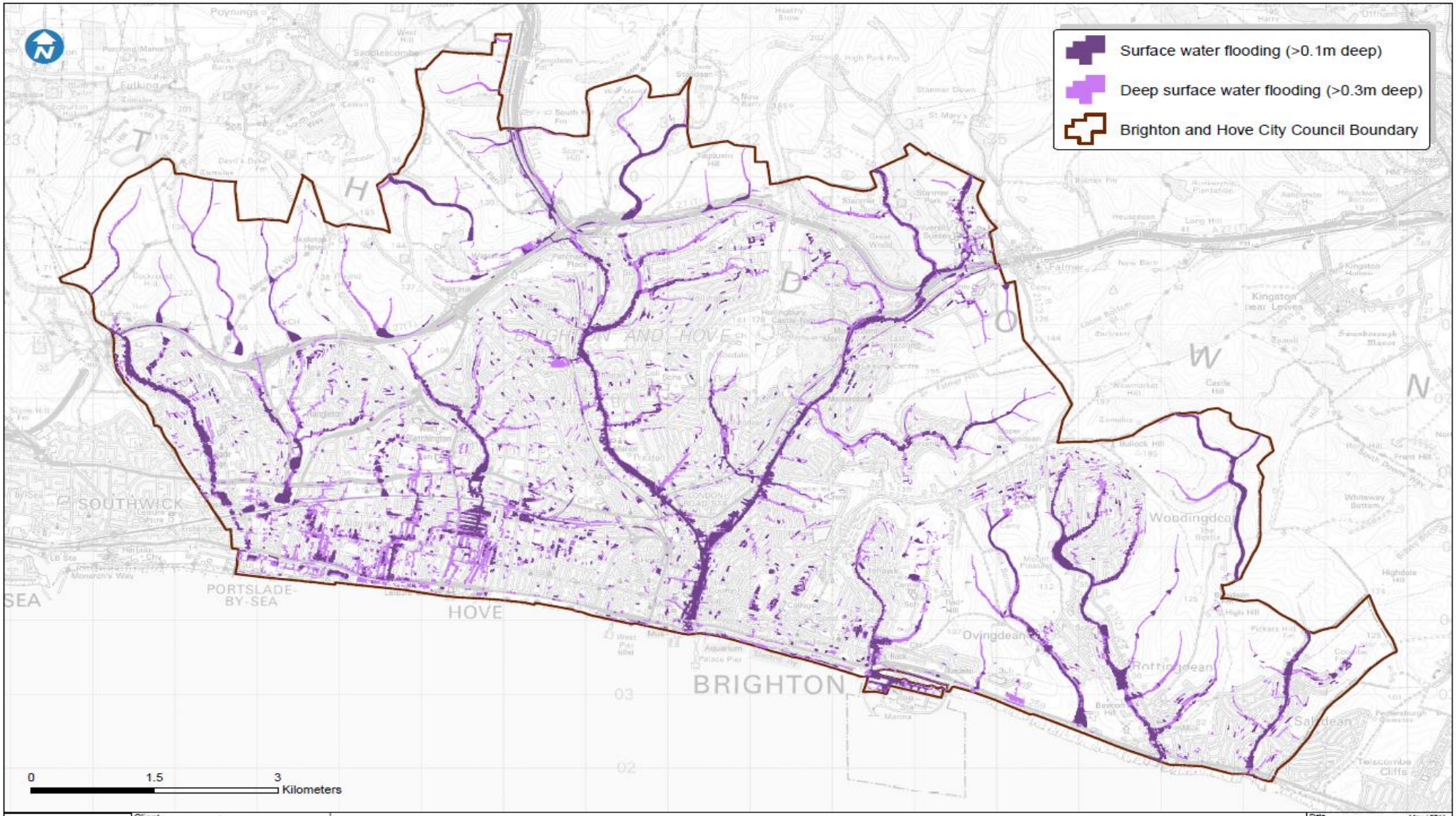
The Strategy will need to be monitored periodically to assess and account for any changes in the flood risk posed to Brighton & Hove, and consider the success of implemented measures against each objective. It is recommended that the action plan is monitored annually with an overall review of the Strategy undertaken in cycles to align with the Flood Risk Regulations review period set every 6 years.

In complying with FWMA Section 9, reviewing the Strategy at regular intervals will enable lessons learned to be reflected into the next edition of the Strategy. The Strategy should also be reviewed to ensure consistency with updated flood risk information, such as the EA's FMfSW, or where new flood data is made available. Upon reviewing new or updated data within the evidence base may require a partial or full review of the Strategy. This is particularly important because just as the weather changes so can the economy and opportunities to implement lower priority measures may increase. Conversely the circumstances that apply to a higher priority may change making it less desirous.

Appendix A - Glossary

BHCC	Brighton & Hove City Council
FMfSW	Flood Map for Surface Water
EA	Environment Agency
EU	European Union
FCERM	Flood and Coastal Erosion Risk Management
FRR	Flood Risk Regulations 2009
FWMA	Flood and Water Management Act 2010
HA	Highways Agency
LLFA	Lead Local Flood Authority
NR	Network Rail
NRD	National Receptor Dataset
PBA	Peter Brett Associates LLP
PPS25	Planning and Policy Statement 25: Development and Flood Risk
PFRA	Preliminary Flood Risk Assessment
RFDC	Regional Flood Defence Committee
SFRA	Strategic Flood Risk Assessment
SuDS	Sustainable Drainage Systems
SW	Southern Water
SWMP	Surface Water Management Plan

Appendix B - PFRA FMfSW



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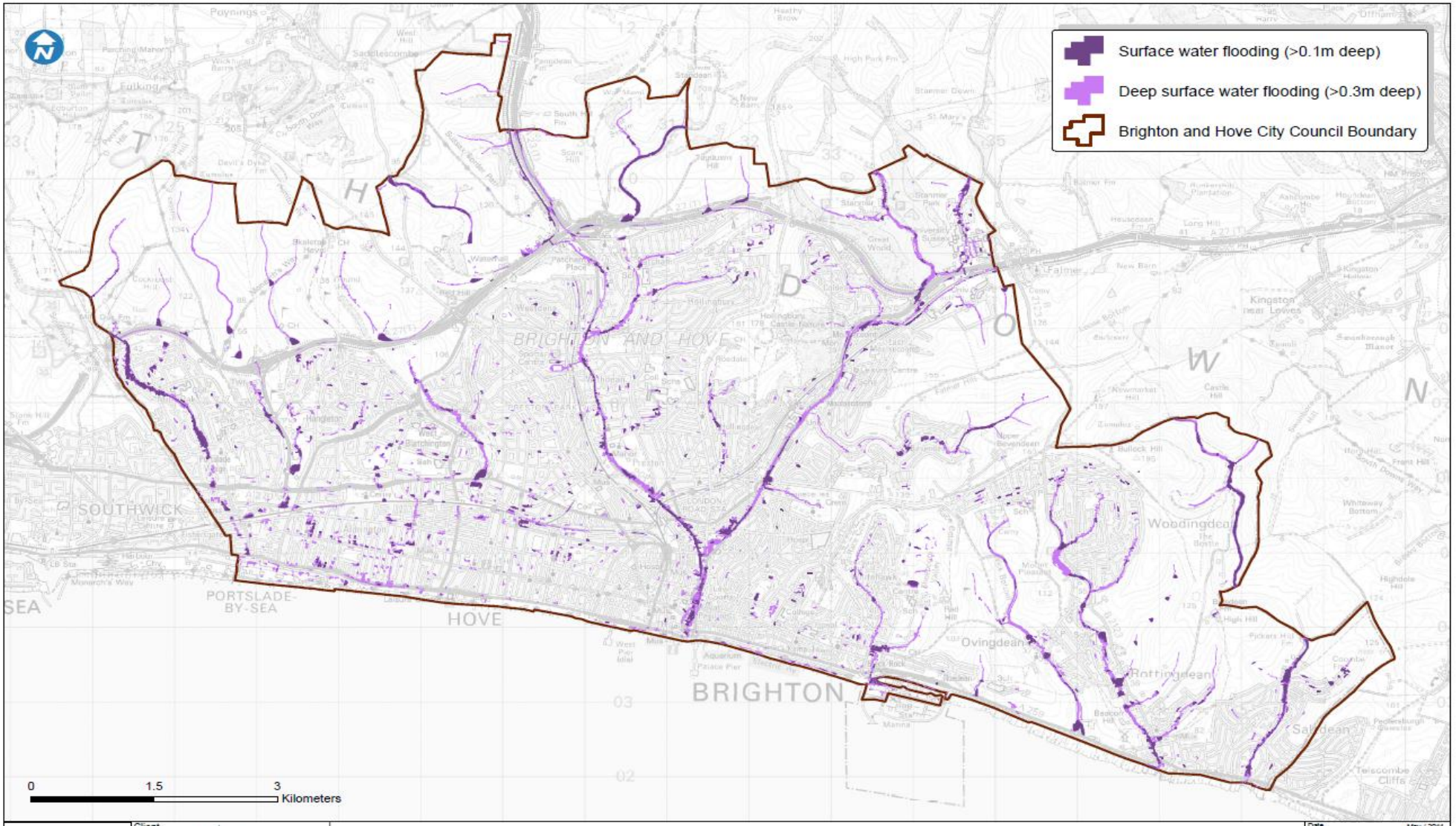
Client
Brighton & Hove City Council

EA Flood Map For Surface Water (FMfSW): 1 in 200 year chance of flooding in any year

Date	May / 2011
Scale	1:44,000 @ A3
Drawn By	FS
Checked By	VH
Figure Number	**Figure 5.1**

PBA Reading J:\23301 Brighton & Hove SWMP\GIS\Output



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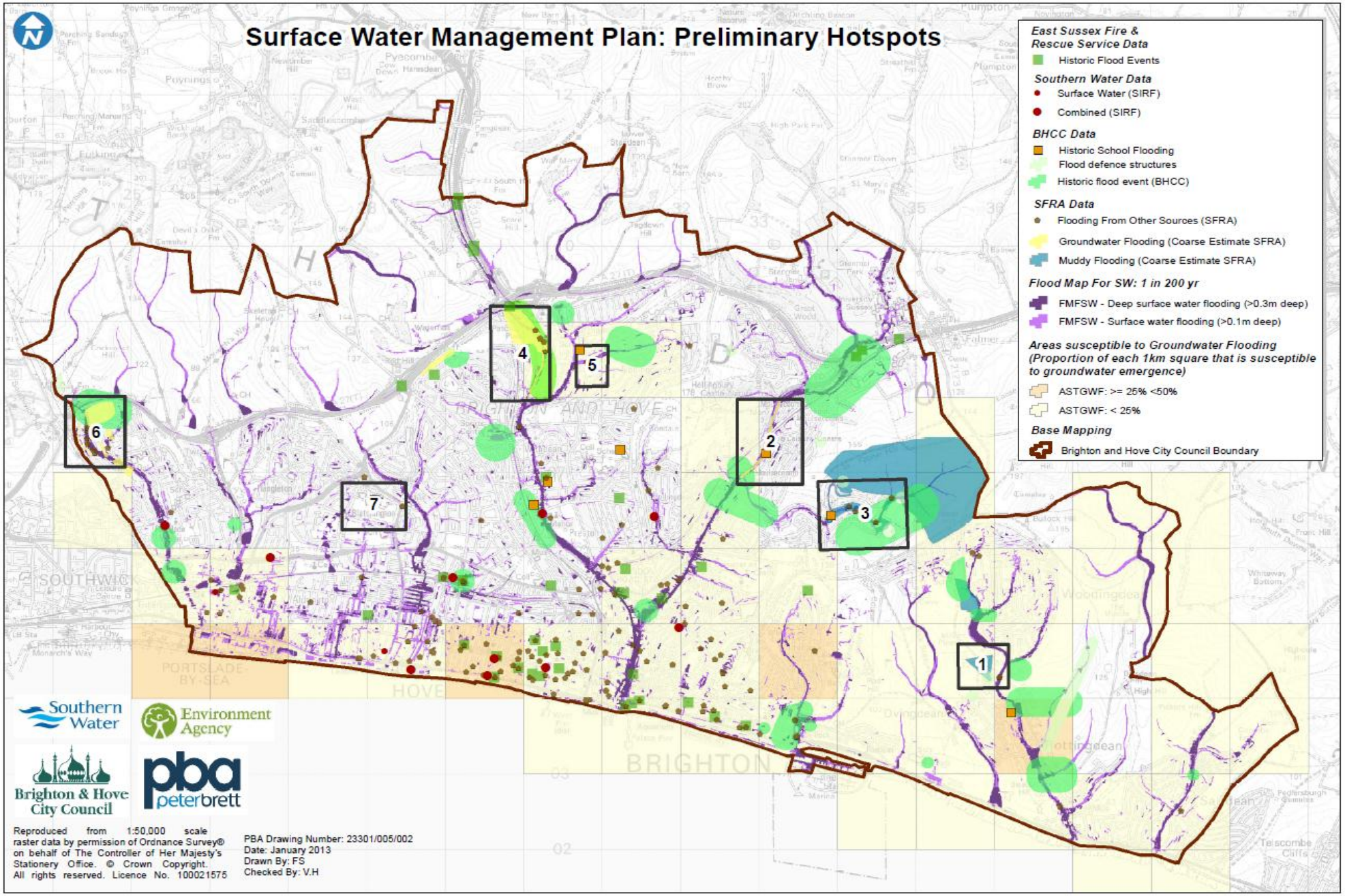
EA Flood Map For Surface Water (FMfSW): 1 in 30 year chance of flooding in any year

Date	May / 2011
Scale	1:44,000 @ A3
Drawn By	FS
Checked By	VH
Figure Number	Figure 5.2

Appendix C - SWMP flooding hotspots

Surface Water Management Plan: Preliminary Hotspots



Southern Water

Environment Agency

Brighton & Hove City Council

pba peterbrett

PBA Drawing Number: 23301/005/002
Date: January 2013
Drawn By: FS
Checked By: V.H

Appendix D - SEA scoping report