

# Manhood Peninsula Surface Water Management Plan (SWMP)

## Non Technical Summary

### What is a SWMP?

Surface Water Management Plans, or SWMPs for short, look at flooding that occurs in response rainfall when:

- Sewers and drains become inundated
- Waterlogged ground leads to runoff from land
- Small rivers and/or ditches overflow
- Water contained within rocks under the ground rises up above the surface (this is called groundwater flooding).

A SWMP sets out a long-term action plan for dealing with types of flooding.

### The Manhood Peninsula SWMP

The SWMP for the Manhood Peninsula has been prepared by CH2M HILL on behalf of West Sussex County Council. Work began in July 2014 and the final report was issued in August 2015.

The study area is shown in Figure 1 below. The A27 forms the northern boundary of the study area while the Pagham Rife forms the eastern boundary. To the west the study boundary is determined by Chichester Harbour. Drainage in the Manhood Peninsula discharges either to Chichester Harbour, Pagham Harbour or direct to the sea.

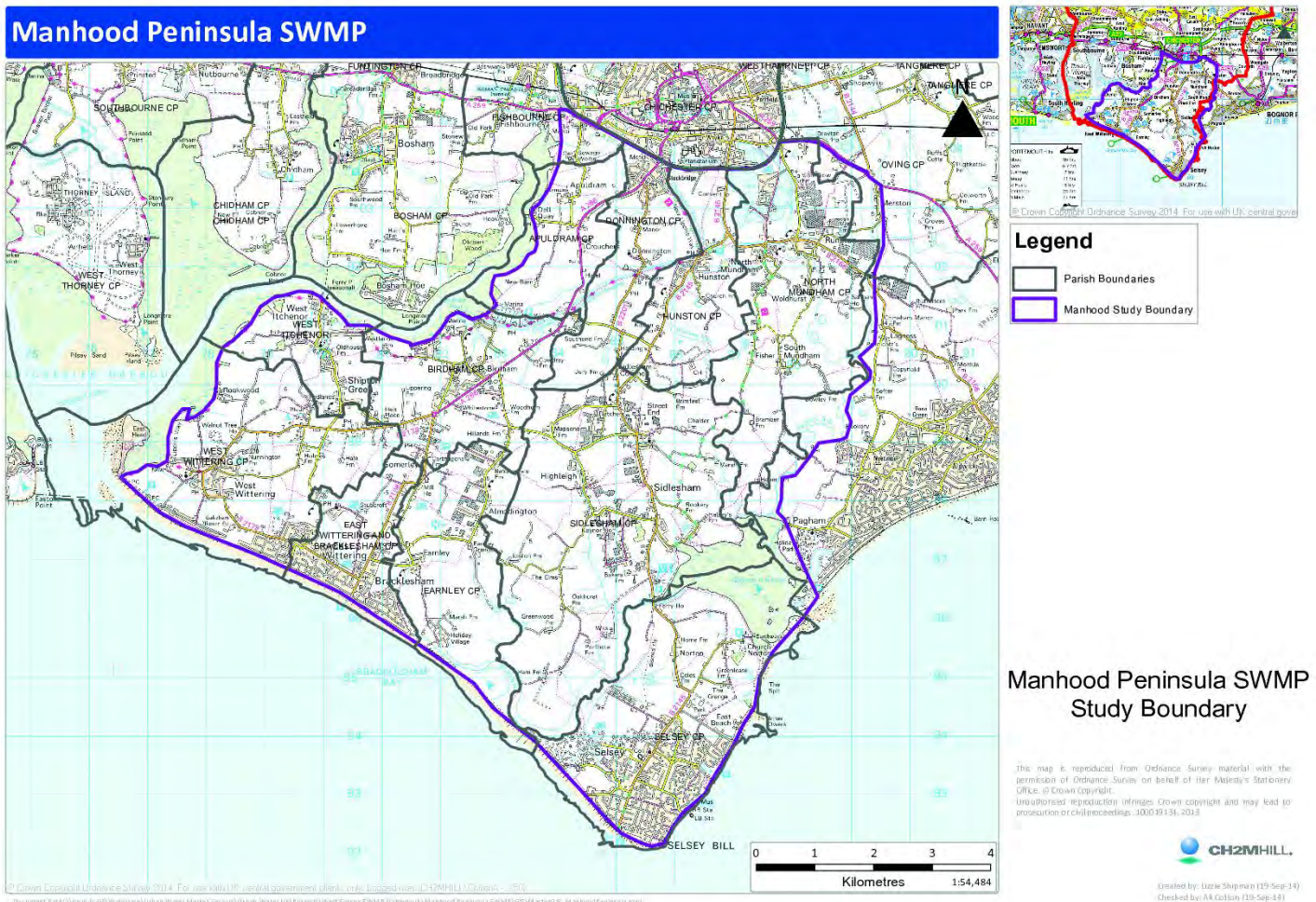


Figure 1 – Manhood Peninsula SWMP Study Area

# Manhood Peninsula Surface Water Management Plan (SWMP)

Throughout the development of the SWMP there has been close engagement with key stakeholders, including West Sussex County Council (WSCC), Chichester District Council, The Environment Agency, Southern Water, parish councils and local flood action groups, Manhood Peninsula Partnership and Manhood Wildlife and Heritage Group (MHWG).

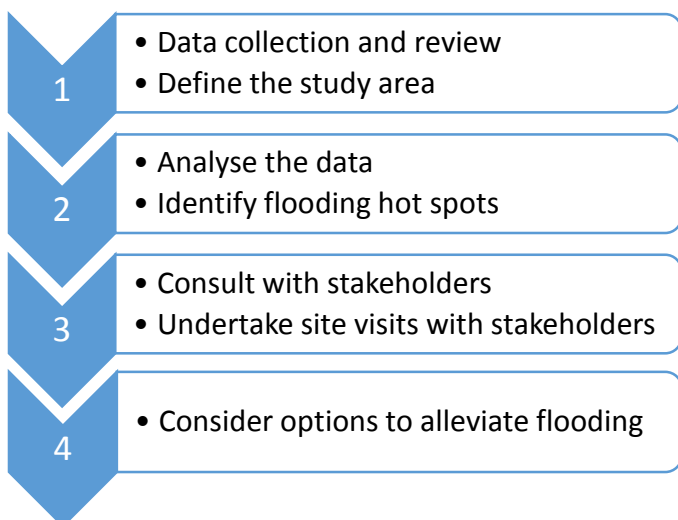
## Objectives

The objectives of the Manhood Peninsula SWMP were to:

- understand the surface water drainage in this area and gather additional data to reduce gaps in knowledge;
- identify pinch points in the network and connectivity issues;
- identify potential improvement works to reduce flood risk to communities in the Peninsula including capital and maintenance measures, building on the work already undertaken by communities, partnerships and other organisations;
- produce up to date GIS data of the ditch network, building on the work undertaken by Royal Haskoning, based on site visits undertaken to various locations in the Peninsula

## Methodology

The methodology for the project broadly follows the SWMP Technical Guidance published by DEFRA in 2010. The key project stages were as follows:



## Data

A wide range of data was collated and analysed to help understand the local flooding issues. This included data from previous studies of the Manhood Peninsula (e.g. Royal Haskoning Land Drainage Study), historic flooding

data, and information on historic rainfall, topography and drainage. All this information was compiled and mapped using computer based Geographic Information Systems.



*Flooding in North Mundham (June 2012)*

## Recent flooding issues

The Manhood Peninsula has suffered from river and coastal flooding, such as overtopping of the coastal defences to the west of Selsey in 2005. Furthermore, during extreme rainfall events or very wet winters significant flooding occurs across the Manhood Peninsula, as was the case in autumn 2000, June 2012, Winter 2012/13 and Winter 2013/14. During these extreme rainfall events or wet winters flooding occurs from Rifes, local ditch networks and the highway drainage system as they do not have sufficient capacity to drain water away.

In addition to flooding during more extreme rainfall events or wet winters, the Manhood Peninsula is vulnerable to regular flooding due to its low-lying nature. This regular flooding is often caused by poor maintenance of ditches and culverts, discontinuity of the ditch network, or collapses/blockages in piped ditches or drainage. Flooding of this nature can emerge anywhere if ditches are blocked or there are collapses/blockages in the piped drainage network.

The most detailed evidence of flooding across the Manhood Peninsula is available from WSCC highway incident logs from June 2012 to March 2014. As the time period covers a major summer storm event (June 2012), and two extremely wet winters (2012/13 and 2013/14) it is reasonable to assume that the incident logs provide a good representation of the flooding impacts across the Manhood Peninsula. The areas which experienced the highest number of properties (>5) affected by flooding during this period included:

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- Almodington;
- Birdham;
- Earnley;
- East Wittering;
- Hunston;
- Selsey;
- Sidlesham;
- Somerley, and;
- West Wittering.

In addition, a number of key transport routes are vulnerable to flooding (e.g. A286), which affects the movements of people across the Manhood Peninsula.

## Identifying the communities most vulnerable to flooding

To identify the priority locations for the SWMP the 'key areas for drainage' identified in Phase 3 of the Royal Haskoning Land Drainage Study were considered. There were 48 key areas for drainage identified by Royal Haskoning.

Subsequently, in each of these areas it was identified whether there had been flooding to property and infrastructure based on the WSCC highway incident logs, Southern Water's sewer flooding register, and information gathered from the stakeholder meetings. Areas where no flooding was recorded were excluded from further analysis. In addition, during this stage any additional areas which suffered flooding which had not been identified as key areas for drainage were considered.

Following this process there were 21 locations short-listed for further consideration. The remaining 21 locations were prioritised into the highest, moderate, or low/other priority areas, based on:

- the number of properties at risk or flooded internally;
- the type of road affected by flooding;
- the underlying cause of flooding, and;
- whether action had already been taken to reduce flooding in a community.

Using this approach identified seven high priority locations, five moderate priority locations and nine lower priority locations (which were not considered in further detail in the SWMP). These locations are listed in the table below.

High priority	<ul style="list-style-type: none"> <li>• Birdham &amp; Westlands</li> <li>• East Wittering &amp; Bracklesham</li> <li>• Hunston</li> <li>• Selsey</li> <li>• Sidlesham</li> <li>• Somerley</li> <li>• West Wittering</li> </ul>
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Moderate priority	<ul style="list-style-type: none"> <li>• Crouchers (A286)</li> <li>• Runcton</li> <li>• South Mundham</li> <li>• Stockbridge</li> <li>• West Itchenor</li> </ul>
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## Potential measures

In the past few years there has been a concerted effort by WSCC, parish councils, local flood action groups, the Environment Agency, and the MWHG to manage drainage and flooding across the Manhood Peninsula. This has made a significant improvement to the management of flooding. Further maintenance mitigation measures are needed to reduce flooding and ensure the drainage infrastructure is functioning as intended.



*Florence Pond, Sidlesham*

However, in a low-lying area such as the Manhood Peninsula the drainage system is highly sensitive to blockages and poor maintenance which will hinder the flow of flood water. Therefore the drainage system needs to be maintained on a cyclical basis rather than relying solely on one off improvements. There is a risk that without ongoing maintenance and management the works undertaken over the past few years will prove ineffective in (say) five years' time and flooding will re-occur.

This is because without ongoing maintenance and management ditches will not be maintained, culverts and piped drainage will become blocked, and householders will continue to infill ditches without thought to flooding issues. In addition, the current approach tends to be reactive to flooding problems as they emerge. A proactive approach would reduce the risk of flooding before it began.

The SWMP has therefore identified a strategy to manage flooding in the short-term (0-2 years) and

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considers ongoing measures to reduce flooding to people, property and roads in the Manhood Peninsula over the next 10 years. Short-term action plans were developed for each of the 12 high and moderate priority locations. These action plans set out the measures required in the short-term and who is responsible for progressing each action. The action plans also consider the potential impact of measures on downstream flood risk, and the environmental considerations which should be taken into account when implementing the actions. The action plans are contained in Section 5 of the main report.

In the longer term ongoing management and maintenance will be critical to manage flooding. The SWMP identified five principles which are considered the fundamental elements to ensuring continued long term maintenance and management of the drainage system across the Manhood Peninsula:

- ditch clearance remains the responsibility of riparian owners and landowners;
- local communities have a key role to play;
- runoff into the ditch network needs to be controlled;
- the continuity of the ditch network is critical, and;
- a consequence-based approach should be adopted (i.e. focusses on the critical parts of the drainage network).

The ongoing management and investment should be based around four key themes:

- the **importance of land drainage consents** to prevent culverting or infilling of watercourses where it will increase flood risk;
- the **need to control runoff from new developments**;
- the requirement to **continue maintaining watercourses, culverts and highway drainage** on a cyclical basis, and;
- the **need to control runoff from glass houses** in the Manhood Peninsula.

The objective is to ensure that the drainage system is managed and maintained on a proactive, cyclical basis to ensure it is functioning as intended. This can be achieved through an annual walkover survey of the critical drainage routes to identify their condition, maintenance requirements and any land drainage consent issues. This should take place in late autumn to allow vegetation die back following the summer, but also to identify any remedial measures before the wet winter months when the Manhood Peninsula is primarily affected by flooding

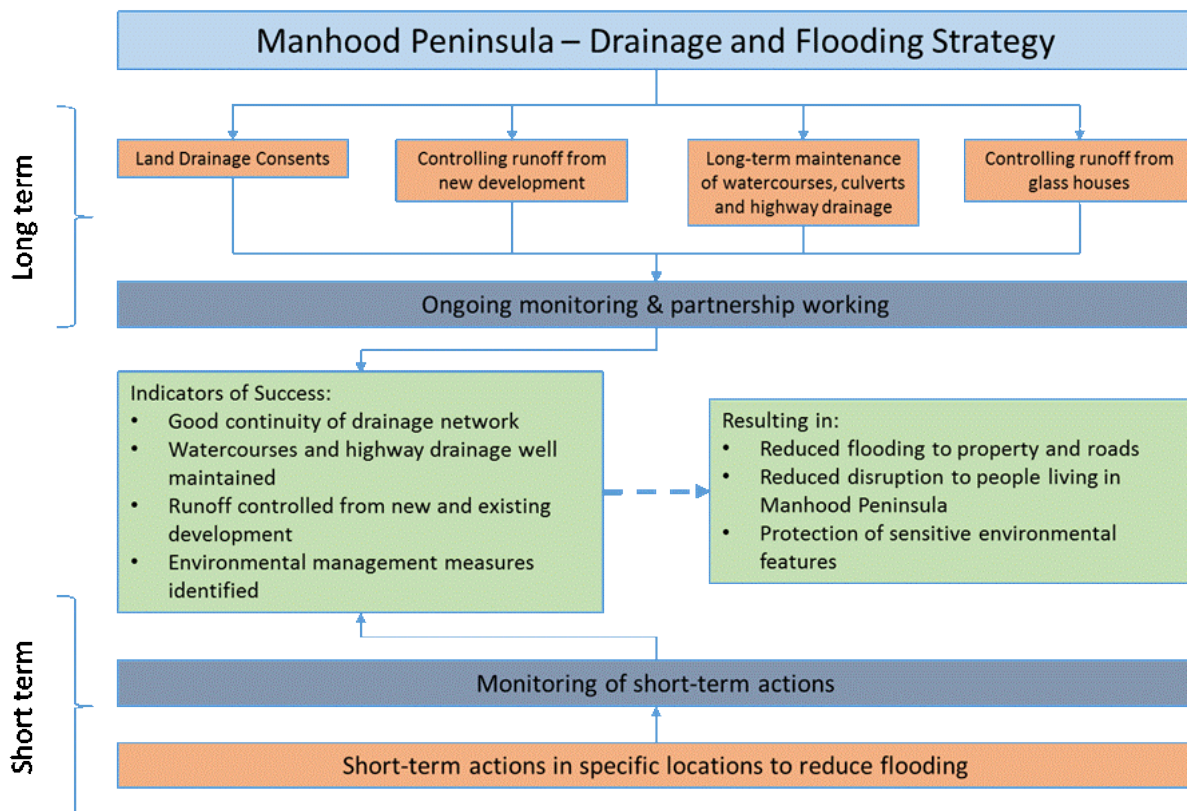


Figure 2 – Manhood Peninsula Drainage Flooding Strategy