Roles and Responsibilities for Local Flood Risk Management

Overview

Under the Flood and Water Management Act 2010 West Sussex County Council has the responsibility for developing, maintaining and applying a local flood risk management strategy within the county. It is intended that local authorities should reflect the content, guiding principles, aims and objectives of the national strategy in the development of their local flood risk management strategies.

West Sussex County Council will not be working in isolation. A range of partner authorities known as risk management authorities also have flood and coastal erosion management duties, powers and responsibility. The development of the local flood risk management strategy required input from designated 'flood management authorities'. In West Sussex the other flood risk management authorities are the Environment Agency, the five Internal Drainage Boards (Upper Medway, Ouse, Arun, Adur and South West Sussex), the Highways Agency, Southern Water Services Ltd, Thames Water Utilities Ltd and the seven District and Borough Councils.

In West Sussex, Southern Water Services Ltd and Thames Water Utilities Ltd are responsible for managing public sewers, and for resolving flooding issues where there is no significant interaction with other types of flooding. The seven District and Borough Councils in the county are an important part of flood risk management are risk management authorities in their own right, and, all take an active role in assisting the Lead Local Flood Authority in performing some Flood and Water Management Act duties.

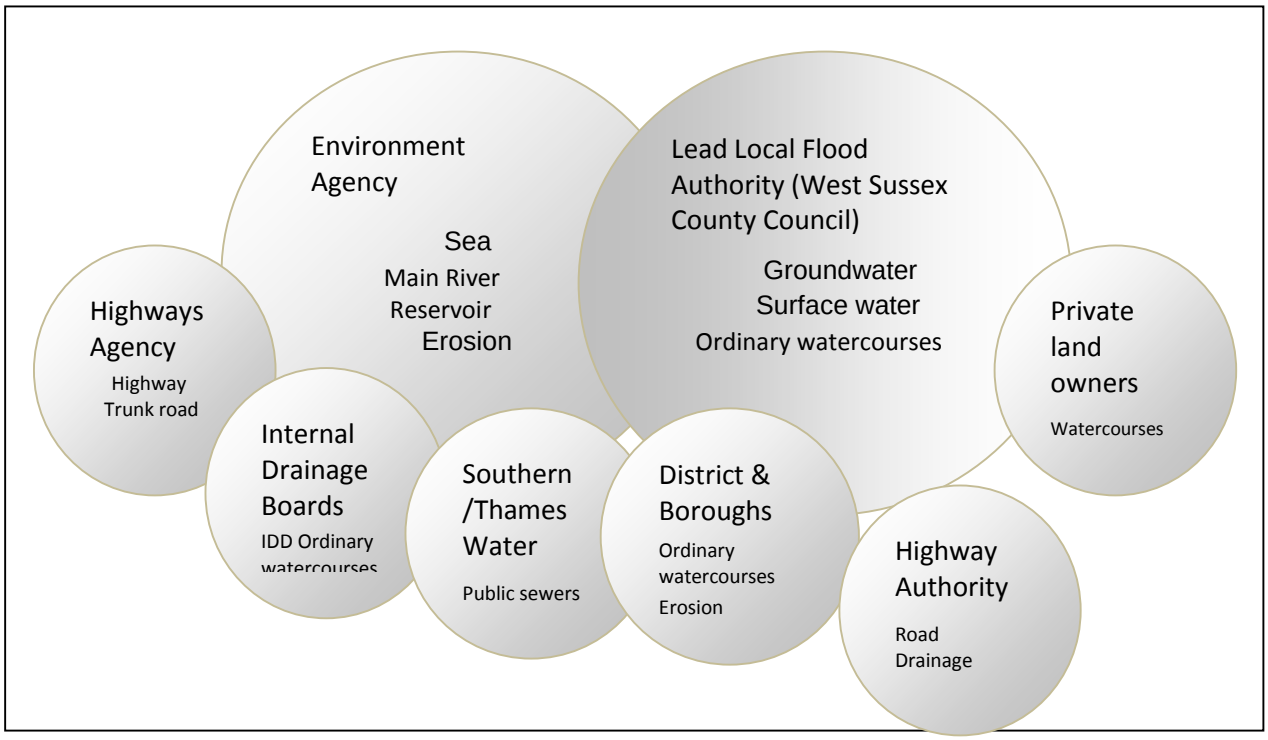


Figure 9: Who manages what within West Sussex?

The Internal Drainage Boards (IDBs) carry out maintenance works within their Internal Drainage District (IDD). Four of the five IDBs are operated by the Environment Agency (the Ouse, Arun, Adur and South West Sussex). The fifth IDB (Upper Medway) covers a small area within the county near East Grinstead and is

independently managed. At the time of writing in 2013 an Environment Agency review into the management of Internal Drainage Districts was underway which may change the current set up.

Under the provisions of the Flood and Water Management Act the following duties are common to all risk management authorities:

- Duty to cooperate with other risk management authorities
- Duty to act consistently with the national and local strategies
- Powers to take on flood risk functions from another risk management authority
- Duty to contribute towards the achievement of sustainable development
- Duty to be subject to scrutiny from the Lead Local Flood Authority's democratic process.

Responsibilities of different organisations

West Sussex County Council (Lead Local Flood Authority)

The responsibilities of the county council as Lead Local Flood Authority and as a risk management authority are to:

- Provide leadership of local flood risk management authorities;
- Develop, maintain, apply and monitor a strategy for local flood risk;
- Permissive power to do works to manage flood risk from surface water runoff or groundwater;
- Permissive power to request information from any person in connection with the authorities flood risk management functions;
- Permissive power to exercise the Land Drainage Act 1991;
- Perform as a Category 1 responder to flood incident under the Civil Contingencies Act 2004, including dealing with recovery and resulting homelessness;
- A duty to investigate and publish reports on flood incidents in West Sussex (where appropriate and necessary) to identify which authorities have relevant flood risk management functions, and what they have done or intend to do;
- A duty to maintain a register of structures or features that have a significant effect on flood risk;
- Permissive power to designate structures and features with flood risk significance;
- Responsibility (once enacted) for the sustainable drainage systems approving body with responsibility for approval, adoption, inspection and maintenance of new sustainable drainage systems;
- Decision making and enforcement responsibility for whether third party works on ordinary watercourses by third parties, that may affect water flow, can take place;
- A duty to contribute towards the achievement of sustainable development in the exercise of flood risk management functions and to have regard to any ministerial guidance on this topic.

West Sussex Highways Authority (part of West Sussex County Council)

The responsibility of the West Sussex Highways Authority is to:

- Undertake routine and reactive maintenance on all roads (except the A27 and M23/A23 that are the responsibility of the Highways Agency), including associated drainage provided by gullies, drains and culverts.
- Provide advice on road and road drainage issues associated with proposed development, ensuring any impact on the road network is taken into account;
- Decide whether improvements to the transport network are needed, based on access to local facilities, and the possible effects of a development on road safety and congestion.

Environment Agency

The Environment Agency has the following roles and responsibilities as a risk management authority:

- A strategic overview of all types of flooding;

- Responsible for flood risk management on main rivers and the coast;
- A coastline erosion risk management authority, under the Flood and Water Management Act 2010;
- Responsible for Environment Agency reservoirs, and, to regulate and enforce the Reservoirs Act 1975 on other reservoirs with capacity over 10000m^3;
- Duty to be subject to scrutiny from Lead Local Flood Authorities;
- Carrying out flood risk management functions in a consistent manor with the national and local strategies, reporting to ministers on flood risk management and implementation of strategies;
- Permissive power to request information for any person in relation to flood risk management concerning Environment Agency functions;
- Permissive power to designate structures and features with flood risk significance;
- To be a statutory consultee to the Sustainable Drainage Systems Approving Body;
- To be a statutory consultee to local planning authorities on flood risk matters;
- Perform as a Category 1 responder to flood incident under the Civil Contingencies Act;
- Consent and enforce applications for works on main river;
- A duty to contribute to sustainable development through flood risk management functions.

Internal Drainage Boards

Internal Drainage Boards have the following roles and responsibilities as a risk management authority:

- Carry out maintenance work to maintain drainage;
- Use statutory powers to ensure those responsible maintain the flow of water in a watercourse and to modify or remove inappropriate structures within channels. Take the appropriate action against those who inappropriately modify the watercourse;
- Responsible for reservoirs over 10000m^3 capacity;
- Permissive power to exercise the Land Drainage Act 1991;
- A duty to contribute towards sustainable development;
- Permissive power to undertake flood risk management works;
- Undertake consenting on ordinary watercourse within their boundary;
- Be a statutory consultee on the Sustainable Drainage Systems Approving Body;
- Work alongside and together with neighbouring Internal Drainage Districts;
- Duty to be scrutinised from Lead Local Flood Authority democratic processes;
- Duty to act consistently with the Local and National Strategy;
- Permissive power to designate structures and features with flood risk significance.

Southern Water and Thames Water

Southern Water and Thames Water have the following roles and responsibilities as a risk management authority:

- Duty to adopt new build sewers;
- Manage public sewer flooding;
- Duty to subject to scrutiny from Lead Local Flood Authority democratic process;
- Duty to have regard for the National and Local Strategies;
- Perform as a Category 2 responder to flood incidents under the Civil Contingencies Act.

The District and Borough Councils (Second Tier Authorities)

The Districts and Boroughs have the following roles and responsibilities as a risk management authority:

- Permissive power to designate structures and features with flood risk significance;
- Duty to act consistently with the Local and National Strategy;
- A coastline erosion risk management authority, under the Coastal Protection Act 1949;
- Duty to be subject to scrutiny from Lead Local Flood Authority democratic process;

- Permissive power to exercise parts of the Land Drainage Act 1991 (except in an Internal Drainage District) area;
- Perform as a Category 1 responder to flood incidents under the Civil Contingencies Act 2004, including dealing with recovery and resulting homelessness;
- Perform as the local planning authority and a duty to encourage the appropriate development and promote sustainable development;
- Under delegated powers, use statutory powers to ensure those responsible maintain the flow of water in a watercourse and to modify or remove inappropriate structures within channels. Take the appropriate action against those who inappropriately modify the watercourse.

Highways Agency

The Highways Agency has the following roles and responsibilities as a risk management authority:

- Duty to have regard for the National and Local Strategies;
- Responsibility to maintain the highway trunk road network under the Highways Act (in West Sussex the A23, M23 and A27) and for these roads;
- Duty to regularly inspect and maintain highways structures;
- Permissive powers to deliver works to protect the highway from flooding (for example, draining roads into private watercourses);
- Carry out maintenance and improvement works to maintain existing standards of protection for highways;
- A duty to contribute towards sustainable development.

Other Stakeholders

While not designated flood risk authorities, stakeholders such as infrastructure providers, riparian owners, parishes and residents have a key part to play in flood risk management.

Utility and infrastructure providers

While not risk management authorities, utility companies play an important role in flood risk management. Many assets of utility companies are in areas prone to flooding. Ensuring that the service the company provides is resilient to flooding can save the company money in the long term, so flooding is an important factor in investment and planning. Companies can achieve savings if they contribute to partnership schemes. This approach provides mutual benefit for those involved and ensures services for the public and businesses are more resilient.

Riparian Owners

Home or business owners that live close to a river or ditch are likely to be riparian owners with maintenance rights and responsibilities. If the watercourse borders the property it is normal for the boundary of responsibility to extend to half way across the channel. Maintenance responsibilities include keeping the channel clear of obstructions, and maintaining a free flow of water in the watercourse. Land drainage management and maintenance is vital to ensuring that surface water is adequately managed across the county.

The key message to riparian owners is, you must let water flow through your land without any obstruction that may affect the rights of others. Importantly, you should keep the banks and bed of the ditch clear of anything that could cause an obstruction and increase flood risk. More details can be found on the West Sussex County Council or Environment Agency websites by searching for ‘riparian ownership’. The Environment Agency’s ‘Living on the Edge’ document provides a full guide and is available online.

Risk management authorities take every opportunity to communicate publically about riparian responsibilities. The Parish and Town Councils can play a key role in supporting local knowledge and communicating the rights and responsibilities to communities. If you have a watercourse within your

property boundary, such as river, brook, beck, ditch, mill stream or culvert, and are unsure on its maintenance please seek advice via the Living on the Edge document. Full contact details are available should you wish to speak to an advisor.

Any works to construct in or over a watercourse or alter the channel may require Ordinary Watercourse Consent. Please contact your local District or Borough Council for more information, or visit the West Sussex County Council website.

Parish and Town Councils

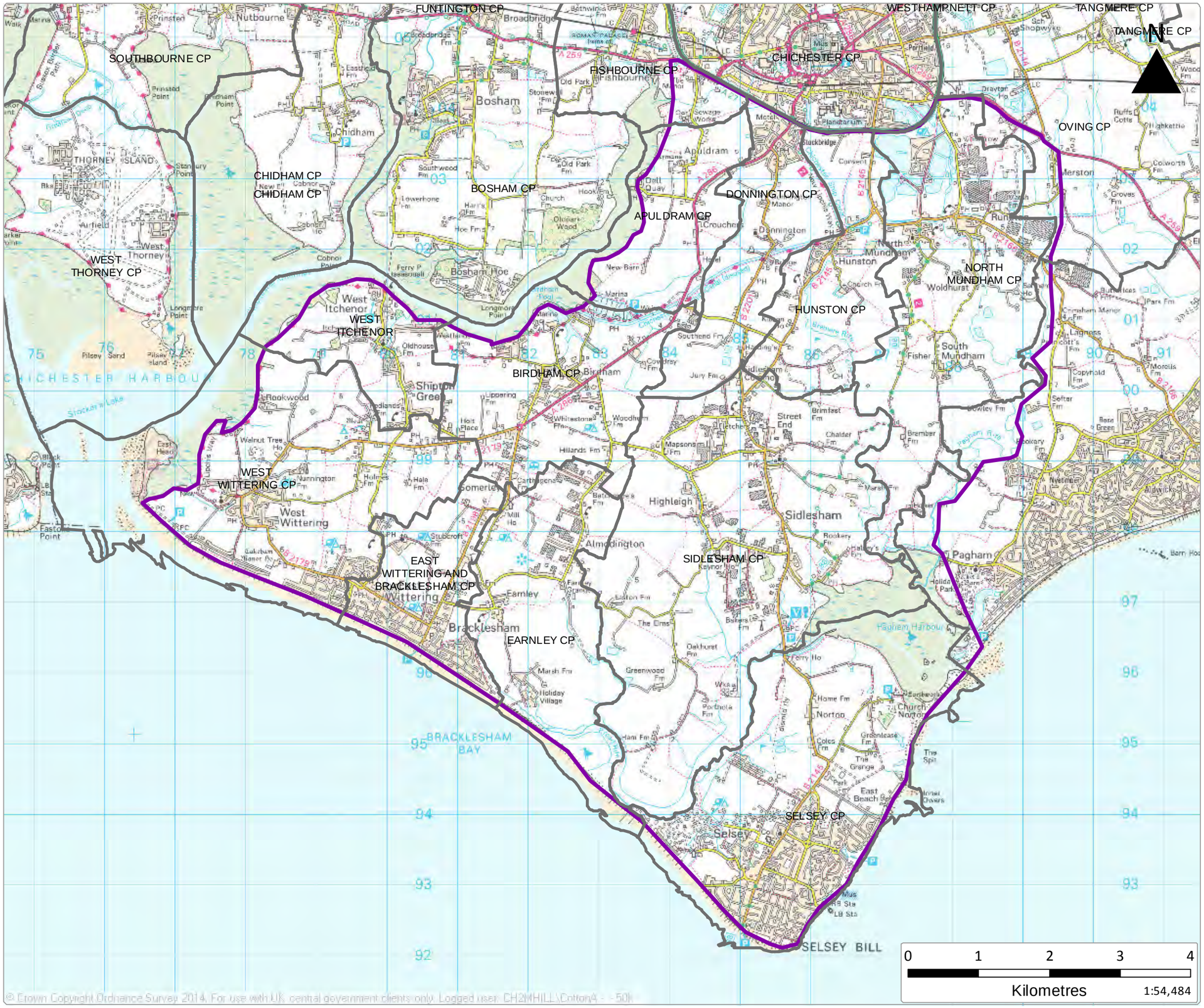
Town and Parish Councils can make a significant contribution before and during a flood event. Coordinated assistance can be critical in supporting local residents and in providing the shelter for neighbours who have experienced flooding. Parish and Town Council members can also play a crucial role in the dissemination of flood alerts and flood warnings, as they have the local knowledge of the community. This local knowledge can also be used to inform the District or Borough Council or County Council about sources of flooding.

An affective Parish or Town Council will have an emergency plan, and an agreed process in place to react to a natural disaster. For more information please contact your District or Borough Emergency Planning Officer who will be able to provide guidance. For other advice please contact the West Sussex County Council Community and Economic Development Team (please see page 60 for areas covered) who will direct your query to the appropriate lead officer.

Property owners and residents

It is home owners and business owner's responsibility to protect their property from risks, including flood water protection. It's impossible to completely flood-proof a property but there are lots of things that can be done to reduce flood damage. More details can be found on the Environment Agency website by searching for 'prepare your property for flooding'.

Manhood Peninsula SWMP



Legend

- Parish Boundaries
- Manhood Study Boundary

Manhood Peninsula SWMP Study Boundary

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PREPARED FOR: West Sussex County Council

COPY TO:

PREPARED BY: Mike Barker

DATE: 20th February 2015

PROJECT NUMBER: Manhood Peninsula SWMP – Geology and Hydrogeology

1 Introduction

There is a perception that groundwater flow and groundwater levels may contribute to the causes of flooding and flood risk within the Manhood Peninsula SWMP study area. As a result, a more in depth analysis of the groundwater regime has been carried out and is presented here. This encompasses:

- A summary of data used for the analysis
- A description of the geological setting, both regional and site specific that dictate the occurrence, movement and potential emergence of groundwater
- A description of the hydrogeological regime
- An analysis of available groundwater and other relevant data
- The development of a hydrogeological conceptual model to express characteristics and processes inherent to the groundwater system incorporating a description of groundwater flooding processes

2 Data collection and Collation

The data sources specifically referenced for this study are identified in Table 2.1 below.

TABLE 2.1

Data sources used for geology and hydrogeology assessment

Source Organisation	Data type	Nature of record and coverage	Location (NGR)	Comments
British Geological Survey (BGS) Website	Geological mapping (online)	Regional	N/A	1:50,000 Geological mapping. Bedrock and superficial strata
	BGS Borehole record (online)	Variable, local	N/A	Well logs available to download, variable quality of historic information
	Hydrogeological Mapping	Regional	N/A	1:100,000 scale mapping, published 1978
Environment Agency	Rainfall data	South Mundham Farm. Fishbourne	SU 87884 00194 SU 84282 03812	Daily rainfall record (Tipping bucket rain gauge, TBR). January 2000 – May 2014 (patchy record and missing data 2001 and Oct 2002- June 2005 hence not used in analysis) Daily rainfall record (TBR). January 2001 – October 2014

	River Flow Data	Pagham Rife Gauging Station	SZ 88236 98761	Daily flow record July 2004-May 2014
	Groundwater level data	Lagness (data logger)	SU 9010 0137	Daily record , September 2006 to March 2014 Water levels from Chalk aquifer to NW of Bognor Regis

3 Geology and Hydrogeology

3.1 Geological Setting

a) Solid Strata

The regional geological setting of the Manhood Peninsula is significantly influenced by its geological structure. The general southerly dip of the Chalk is subject to significant folding comprising primarily the "downfold" of the Chichester syncline and the associated "upfolds" of the Portsdown and Littlehampton anticlines. This is illustrated in Figure 3.1 below.

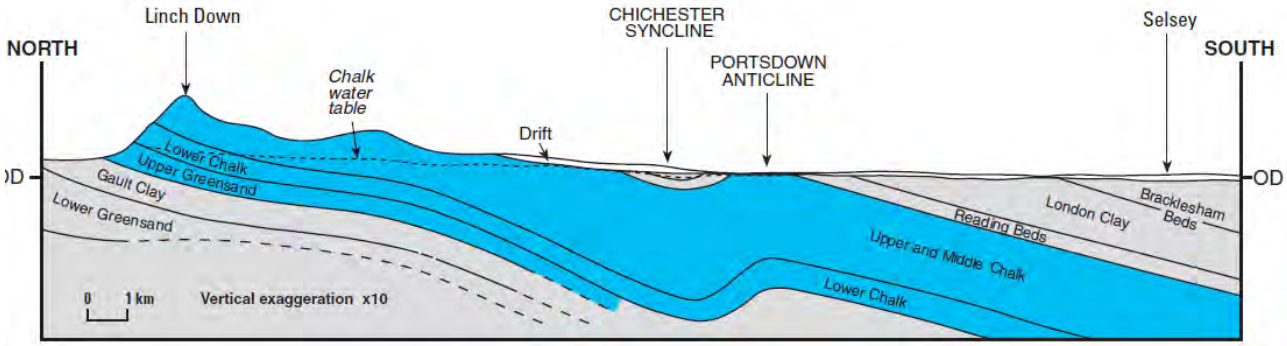


Figure 3.1 Generalised regional geological section through Chichester and across the Manhood peninsula. Note that some of the geological nomenclature used on the cross section has now been superceded. (From: "The Chalk Aquifer of the South Downs". Hydrogeological Report Series of the British Geological Survey. British Geological Survey 1999).

As a result of this structure the extreme northern part of the study area is underlain by Chalk strata of Cretaceous age, where it has been brought to the surface by folding. In this area the Chalk near the surface is overlain by superficial River Terrace Gravel and Alluvial Fan deposits (see below). The Chalk mapped in this area is undifferentiated between the various different chalks of the White Chalk Sub Group, as described in Table 3.1 below.

The Chalk is overlain in turn by younger Palaeogene rocks of the Lambeth Group (Reading Formation), the Thames Group (London Clay Formation) and the Bracklesham Group. The BGS 1:50,000 geological map (Figure 3.2) shows the disposition and distribution of these strata across the peninsula, with the youngest beds occurring beneath the southern part of the peninsula.

TABLE 3.1

Solid geological strata encountered beneath the Manhood Peninsula

Formation	Lithological Description
Selsey Sand Formation (Bracklesham Group)	Formed in a shallow sea environment the Selsey Sand Formation comprises silty sand, silty clay and sandy clayey silt, up to about 25m thick. Occurs in the Selsey area at the tip of the peninsula.
Marsh Farm Formation (Bracklesham Group)	Formed in a shoreline environment the Marsh Farm Formation comprises laminated clays, interbeded with fine sands and silts, about 10-15m thick.
Earnley Sand Formation (Bracklesham Group)	The Earnley Sand Formation comprises greenish silty sands and sandy silts, formed in a shallow sea environment, up to about 25m thick.
Wittering Formation (Bracklesham Group)	The Wittering Formation is a greyish brown laminated clay with interbedded fine sand and silt. Up to about 40- 50m thick. It occurs across the southern central part of the peninsula.
London Clay Formation (Thames Group)	The London Clay Formation is a uniform blue marine clay although there may be pebble beds near it's base. It occurs in the area around Chichester and across most of the northern and central part of the peninsula, where it may be in excess of 80m deep. There is a narrow band of shelly. Calcareous sandstone (the Bognor Sand Member) that occurs east –west across the north central part.
Reading Formation (Lambeth Group)	Lambeth Group strata (formerly Woolwich and Reading Beds) occur in the northern part of the area, directly overlying Chalk. The Reading Formation comprises vertically and laterally variable clays, silts and fluviatile fine sands with some sands and gravels. They may be about 30m thick in the Chichester area.
Tarrant Chalk Member, Culver Chalk Formation (White Chalk Sub Group)	The Tarrant Chalk comprises soft, white homogeneous chalks with nodular flint courses; marl seams are absent except in the basal few metres. Hardgrounds and phosphatic chalks may also occur.
Newhaven Chalk Formation (White Chalk)	The Newhaven Chalk is characterised by nodular chalks and sponge beds, with well-developed layers of nodular flint. There is considerable variation in thickness and lithology, with marl seams most strongly developed in the thicker sequences.
Seaford Chalk Formation (White Chalk Sub Group)	The Seaford Chalk is a soft chalk with frequent hard bands and beds of large flint nodules. Some marl seams and nodular chalks are present in the lower part.

b) Superficial (drift) deposits

The underlying strata are not exposed at outcrop, and throughout the peninsula are covered by younger, unconsolidated drift (superficial) deposits. These are the result of more recent geological and geomorphological processes (Quaternary age up to circa 3 Million years ago) and comprise a number of different deposits, as described in Table 3.2 below. The age relationships between these deposits is not always clear, particularly between alluvium and tidal flat deposits, although the Table below is arranged in presumed age order (youngest at the top).

TABLE 3.2

Superficial (Drift) deposits beneath the Manhood Peninsula study area

Deposit	Description
Alluvial Fan Deposits	Clay, silty, sandy. Fine silt and clay from overbank floods forming floodplain alluvium. Derived primarily from the discharged fluvial deposits of the River Lavant. Found across the northern part of the study area to the south and south east of Chichester.
Beach and Tidal Flat Deposits (undifferentiated)	Clay, silt, sand and gravel from a shoreline environment (as above). Occur in a thin strip along the coastline, from West Wittering to Pagham
Raised Marine Deposits	Clay, silt, sand and gravel. Superficial Deposits formed in a shallow sea environment, associated with a period of higher sea levels (see also Raised Beach). Primarily associated with the courses./ immediate area of the Pagham and Earnley Rife.
Raised Beach Deposits	Sands and gravels from former shoreline deposits associated with higher sea levels from interglacial periods. Found close to the Chichester Harbour shoreline and up into the lower lying areas occupied by the rifes.
River Terrace Deposits (undifferentiated)	Sand, silt and clay. Coarser deposits derived from river channel detrital material from both existing and fossil river channels. Relatively thin and very permeable. These are found across most the study area, blanketing over the underlying strata.
Head	Clay, silt, sand and gravel formed primarily as erosional products from subaerial slopes as accumulated material from down slope movements including landslides, debris flow, solifluction, soil creep and hill wash. Isolated occurrence, primarily to the north and east of Birdham and Birdham pool, running south west- north east toward Donnington, with some other small exposure.

The BGS 1:50,000 geological map showing the drift deposits occurring across the study area is provided as Figure 3.3.

3.2 Hydrogeology

a) Groundwater Occurrence and Flow

Regionally, the Chichester Chalk aquifer is recharged by rain falling on the Lavant catchment, north of Chichester. The synclinal fold structure of the Chalk beneath Chichester, described above, is such that southerly groundwater flow from the recharge area to the north is effectively diverted in both easterly and westerly directions. Significant springs discharging this groundwater emerge at Fishbourne Springs, to the north western end of Chichester Harbour, where the Chalk lies directly beneath a relatively thin and permeable drift cover of superficial deposits. Further springs derived from this regional groundwater flow emerge as far east as Arundel and as far west as Beckhampton. This is illustrated by the conceptual section in Figure 3.4 below.

The effect of this regional groundwater flow pattern in the Chalk is discussed further below.

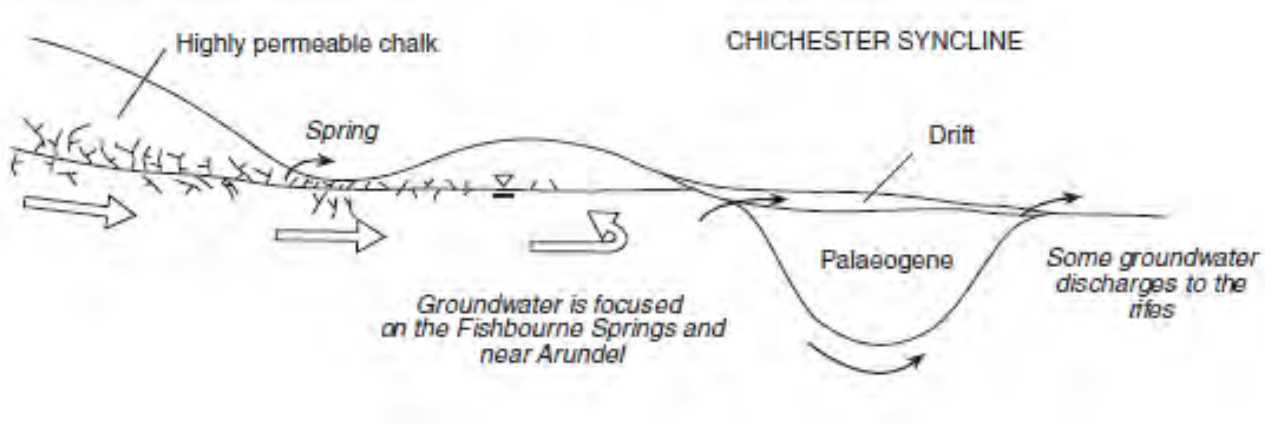


Figure 3.4. The effect of the Chichester Syncline on regional groundwater flow. (From: "The Chalk Aquifer of the South Downs". Hydrogeological Report Series of the British Geological Survey. British Geological Survey 1999).

The Lambeth Group strata may contain groundwater in limited quantities and more sandy units at the base may be in hydraulic continuity with the underlying Chalk, however it is not considered that these units are likely to generate significant flow toward the surface where they may contribute to baseflow or contribute significantly to groundwater flooding issues. However, where the Reading beds are thin and sandy they may not fully confine the Chalk and allow upward movement of regional (Chalk) groundwater flow.

Groundwater may also occur in lesser amounts in the Bracklesham Group Strata and although these formations are heavily interbedded with clays and silts and are unlikely to generate significant regional groundwater flow, there may be local occurrence of groundwater.

The London Clay Formation contains little groundwater and acts as a barrier to groundwater flow (as occurs beneath Chichester) confining the underlying Chalk.

The extensive superficial deposits that cover the peninsula (see Table 3.2) are dominated by River Terrace Deposits. Although relatively thin (typically not much more than 5m) and laterally and vertically variable, these deposits may comprise coarse sands and gravels which may contain groundwater, possibly at shallow depths (particularly where they lie directly on London Clay). Recharged locally by rainfall, these superficial deposits may contribute to baseflow in drains and channels. Where coarse superficial deposits lie directly over the Chalk, they may provide a flow path for Chalk groundwater to come to the surface (see further below)

b) Groundwater and Surface Water Level data analysis

Groundwater level information from the Chalk aquifer was available from an EA monitoring borehole at Lagness, about 2km east of South Mundham. The Chalk in this location is at about 20m depth, and the aquifer is confined by the overlying Reading Formation. The level data (groundwater hydrograph) is shown on Figure 3.5 below together with surface water flow (flow hydrograph) measured in Pagham Rife and rainfall (monitored at Fishbourne).

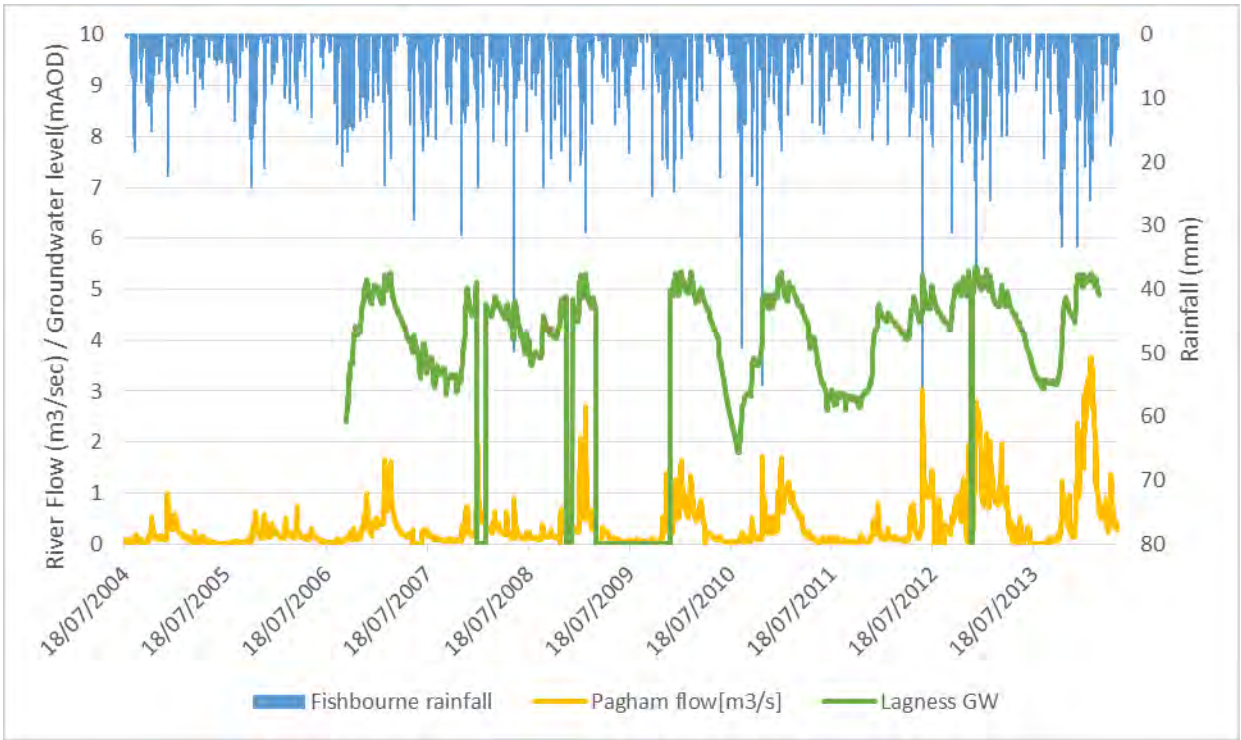


Figure 3.5 Groundwater levels at Lagness, Pagham Rife Flow and Fishbourne rainfall

Notably the maximum groundwater levels recorded (at Lagness) each winter for the period of the record appear relatively consistent during each winter, and there is no significant or anomalous peak in the data during the winter of 2013/2014, as has been recorded elsewhere in West Sussex. This is somewhat curious, but may reflect the confined condition of the groundwater in this location and the fact that significant groundwater discharge occurs further north (as described above in section 3.2a).

The surface water flow in Pagham Rife (gauged toward its downstream end) may also be compared with groundwater levels at Lagness – the correlation does not appear to be that good (e.g. winter groundwater levels in 2006, 2009, 2010 do not appear significantly different to those from 2014 whereas there is a significant difference in the winter flows in Pagham Rife for these periods (though see note below)). On this basis, it would therefore appear that flows in Pagham Rife are not that closely related to groundwater levels in the Chalk beneath the northern and eastern part of the peninsula.

The relationship between more regional groundwater flow and flows in Pagham Rife is however more revealing. If groundwater monitoring from the Graylingwell monitoring station (north east of Chichester) is compared with Pagham Rife flows, arguably there is a more direct correlation, as shown in Figure 3.6 below. For example, Graylingwell, when considered in the context of seasonal water level fluctuations, shows a markedly lower groundwater level in 2005/2006 than in 2014 (more in line with Pagham Rife Flows) and there appears to be a much better correlation throughout.

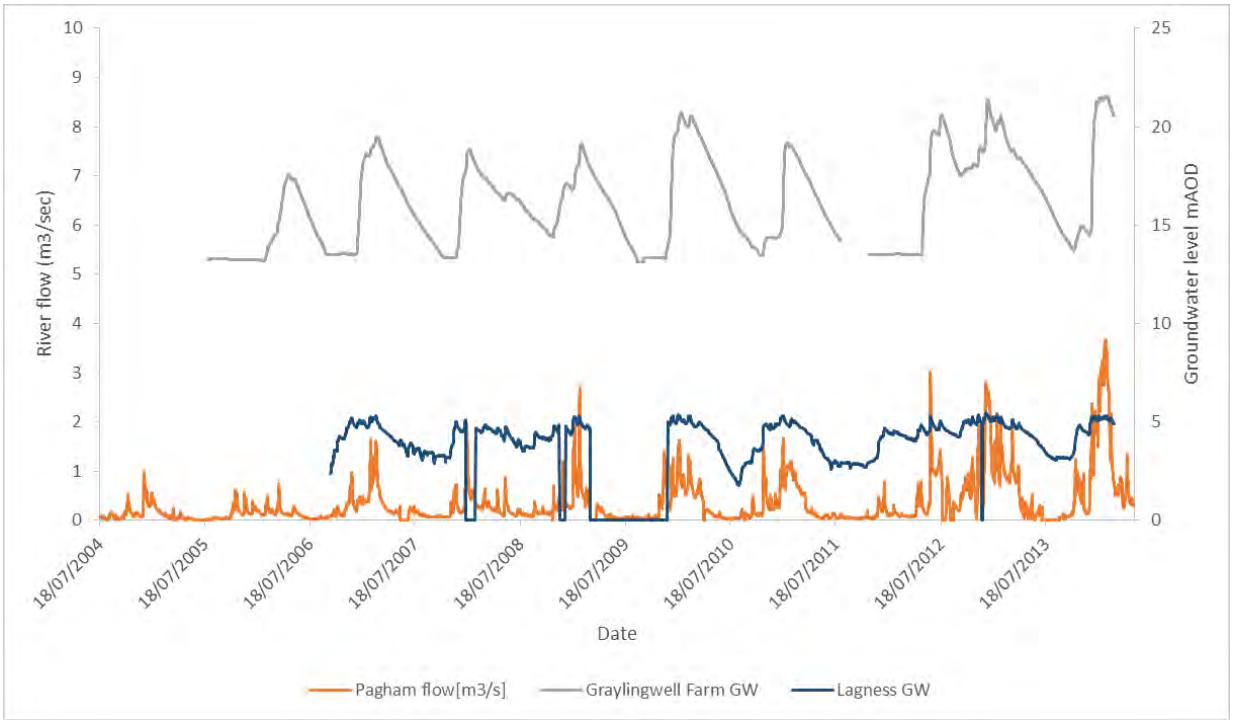


Figure 3.6 Pagham Rife Flow vs Groundwater levels at Lagness and Graylingwell

This information would seem to suggest that flows in Pagham Rife are quite closely related to the Chalk groundwater and hydrological regime to the north of Chichester and that regional Chalk groundwater flow could contribute to baseflow in the upper (north east) part of the Pagham Rife catchment (i.e. the Forebridge Rife), for example emerging through the River Terrace Gravels east of Runcton. However there does appear to be only a relatively limited reach (circa 1km) through which this could occur, so this direct baseflow contribution from the Chalk to the Forebridge Rife may be relatively limited.

This observation of the correlation of baseflow and regional groundwater level may in part relate to groundwater movement through the River Terrace Deposits, recharged by regional groundwater flow and the River Lavant. These River Terrace Deposits follow the historic course of the River Lavant, which used to discharge southward to Pagham Harbour through this route and are (at least) locally significant in maintaining shallow groundwater levels.

It is not clear whether operation of the River Lavant Flood Allevation Scheme has had any impact on the flows in the Pagham Rife (as shown in the hydrographs) although we believe that this is not the case. It is understood that under the phased implementation of the scheme, Phase 2, which is to divert flows from the lakes at Church Farm Pit and East Pit (north of the A27) into Forebridge Rife, has yet to be fully implemented. It is understood that to date scheme operation has been based solely on utilizing the attenuation storage provided by the pit lakes and the southerly diversion of the flow has yet to be introduced.

Smaller springs along Pagham Rife north of Runcton appear to relate to water in the River Terrace Gravels (underlain by London Clay at this location). These would appear to be primarily the result of local recharge, although there may be an element of regional southerly groundwater flow transmitted through the shallow deposits.

Other rifes across the peninsula are largely isolated from the underlying Chalk, although there may be contributions to baseflow in all rifes from groundwater in the superficial deposits (see below).

4 Hydrogeological Conceptual Model and Groundwater flooding

4.1 Regional Groundwater Influence

Although the Chalk is present beneath the northern part of the peninsula, it has limited influence on groundwater flow and emergence in the south and central parts of the study area where it is wholly confined by the London Clay and other younger strata.

In the north, regional groundwater flow emerges from beneath and around the Chichester syncline through:

- Large emergent springs just south of Fishbourne
- Possible discharges (through River Terrace gravels) to the Lavant to the west of Stockbridge
- Discharge to the River Terrace Deposits and other permeable drift deposits and hence a probable contribution to baseflow the upper reaches of Pagham Rife

It is considered unlikely, other than contributions to baseflow, that groundwater in the Chalk contributes significantly to flooding problems in the peninsula.

4.2 Groundwater in superficial deposits

Groundwater in the thin but very permeable superficial deposits may potentially cause local issues with groundwater flooding, although our investigations have provided little direct or anecdotal evidence for this occurring. In the central and southern part of the peninsula, this "shallow" groundwater is mostly recharged by local rainfall, and discharges through the extensive network of drainage channels. Given the highly permeable nature of most of these deposits, they are likely to respond quickly to rainfall recharge and discharge relatively rapidly (in groundwater flow terms). To the north there may be a more significant relationship between the underlying Chalk aquifer and the superficial deposits, as described above. Adjacent the main rifes, there may also be greater interaction between the permeable superficial deposits, which could contribute to baseflow, although it is not clear how much this might impact conveyance capacity.

Any groundwater derived flooding is likely to be strongly associated with fluvial flooding events (from local land drains, watercourses channels and rifes) and is it is considered unlikely it will be (or has been) reported specifically as groundwater flooding.

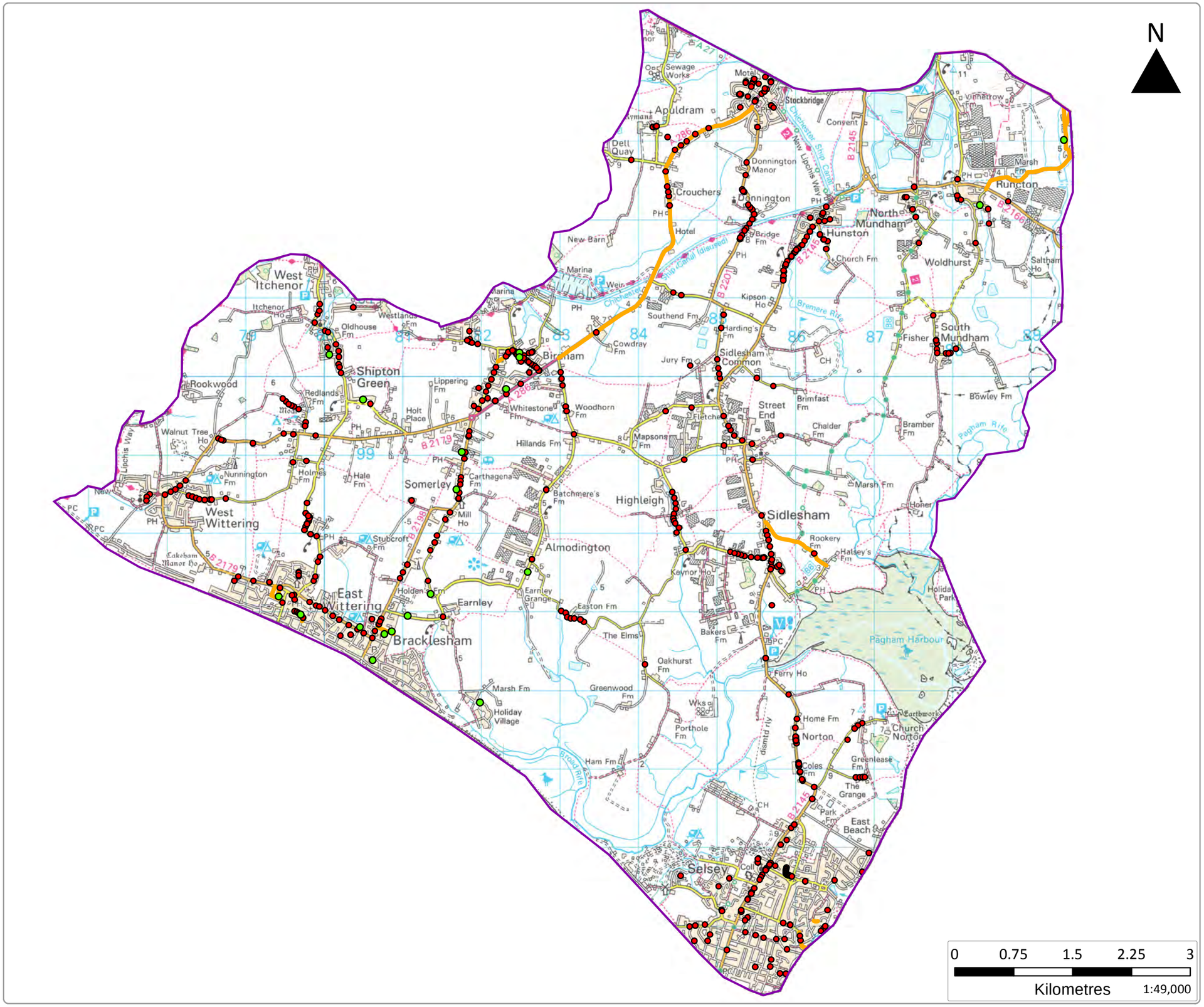
One exception to this may be the issues related to (groundwater) infiltration into Southern Water sewers in the Selsey area, which is well documented. In this area, although there may be some groundwater in the underlying Selsey Sand formation, it is most likely to be derived from the superficial River Terrace Deposits. This could also be problematic elsewhere in the peninsula, although we have had no reports that could corroborate this.

In addition, high groundwater levels in the permeable superficial deposits may prevent the effective use of soakaways and other infiltration drainage. For example, there are a number of soakaways in Stockbridge, and there have been reports of flooding in and around them. Although residents have reported the drains are blocked, potentially these failures may relate to high groundwater levels in the area. In this location, infiltration/ soakway drainage to groundwater could also be influenced by high groundwater levels in the Chalk during winter months (see above) which may prevent them functioning properly.

References

The Chalk Aquifer of the South Downs. Hydrogeological Report Series of the British Geological Survey. British Geological Survey 1999

Manhood Peninsula SWMP



Legend

- Manhood Study Boundary
- WSCC - postcode flood history
- WSCC - highways incident logs
- WSCC - flooded roads history

Incident Log Map

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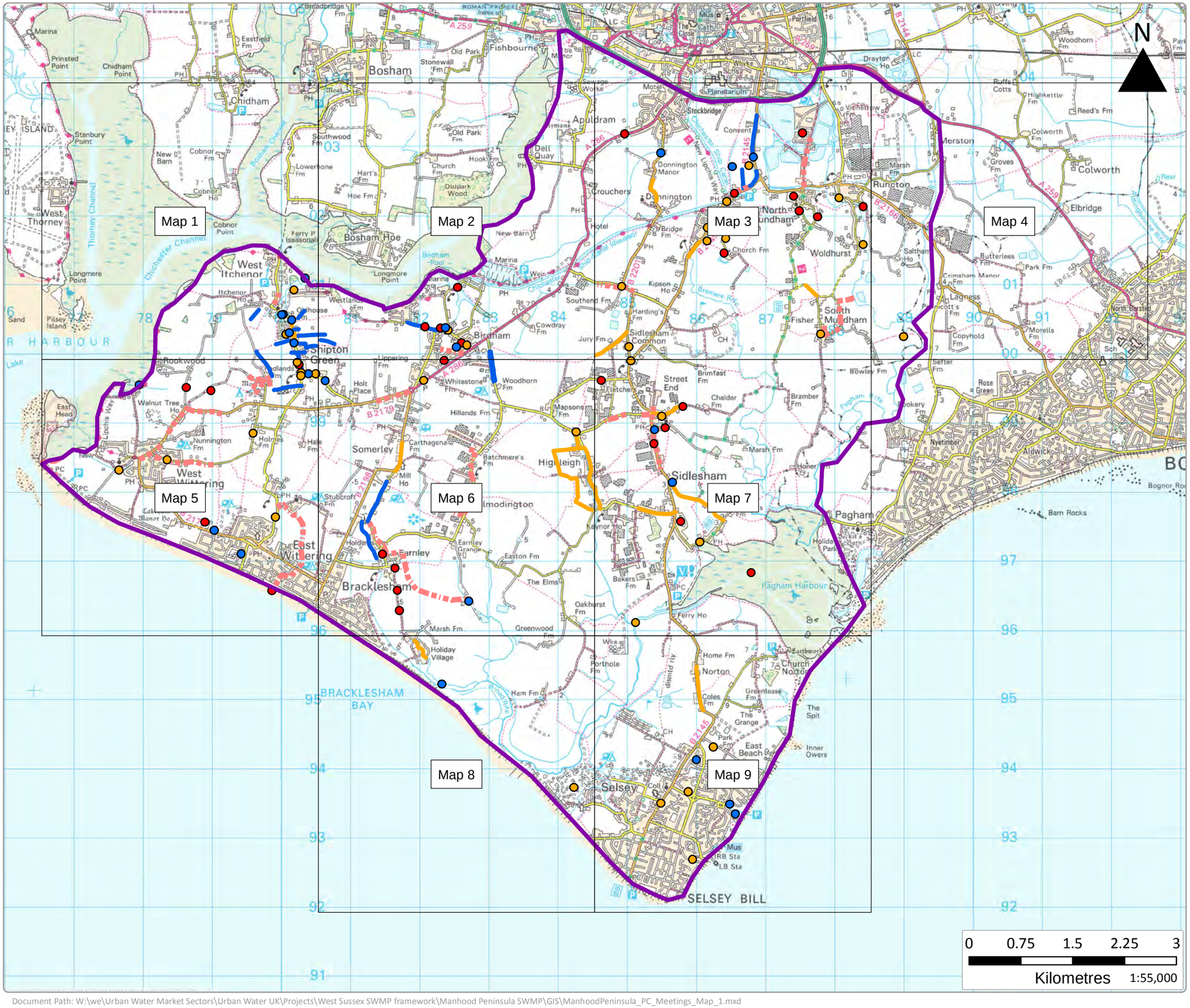
Manhood Peninsula SWMP



Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Overview

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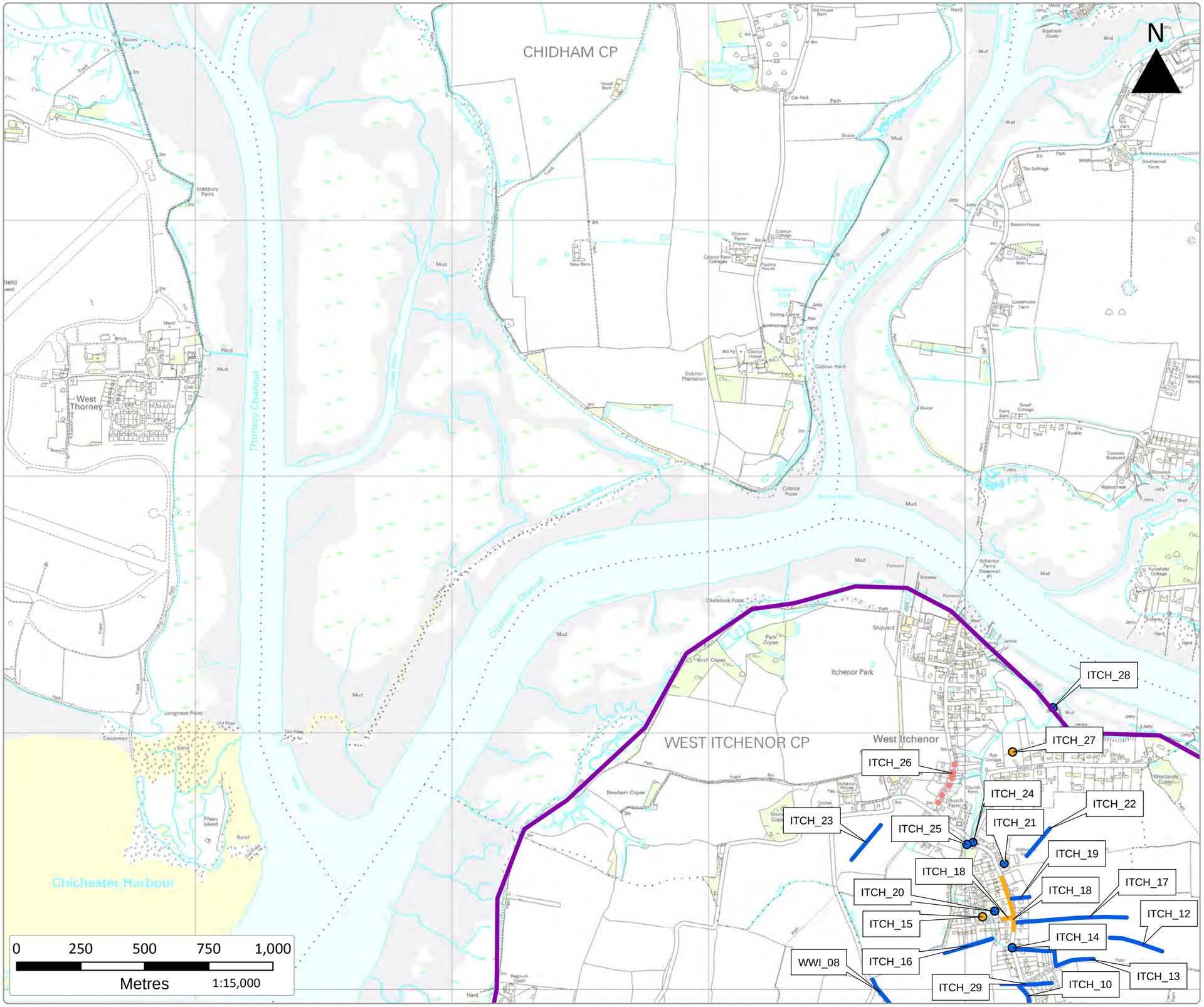
Manhood Peninsula SWMP



Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Map 1

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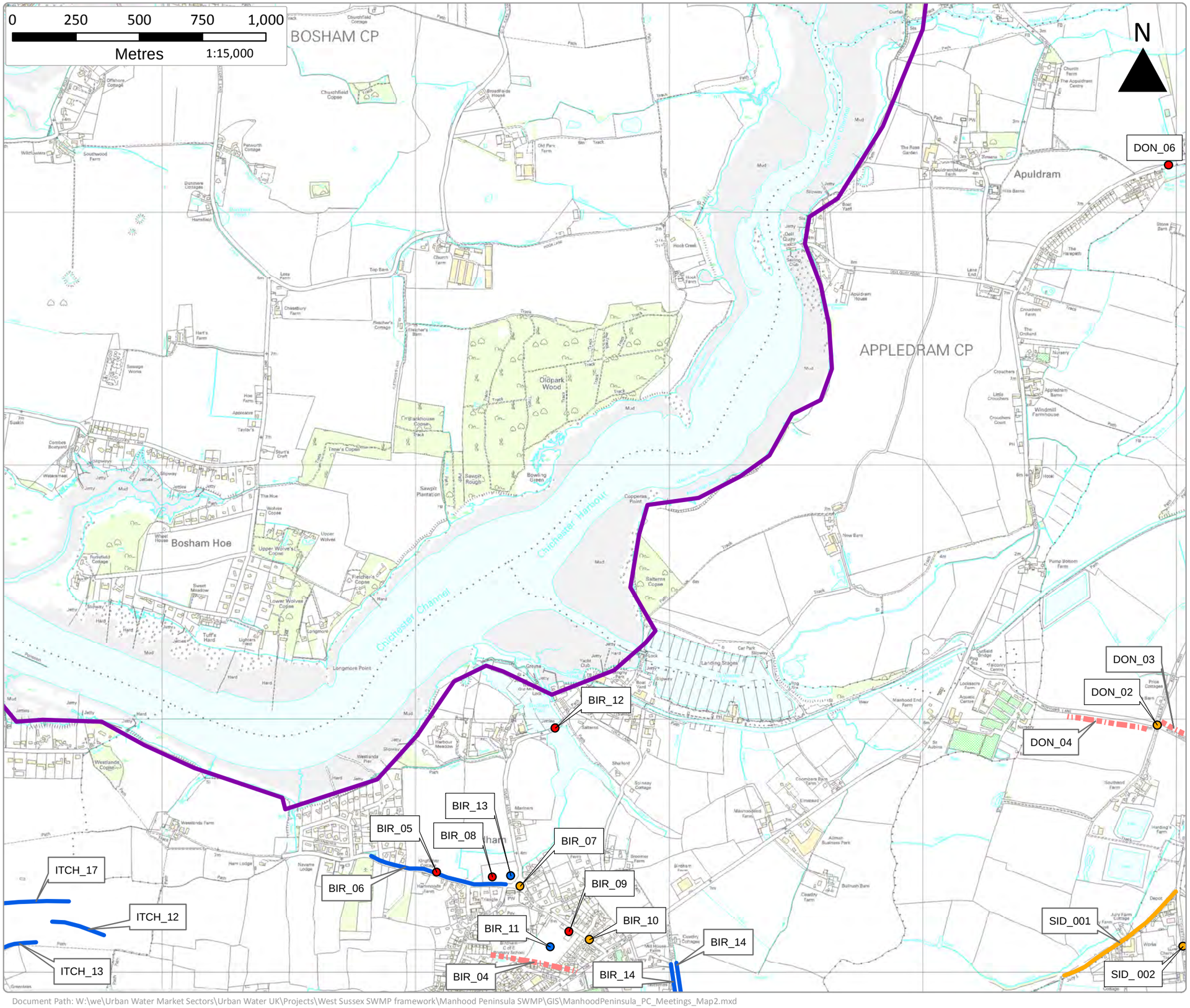
Manhood Peninsula SWMP



Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Map 2

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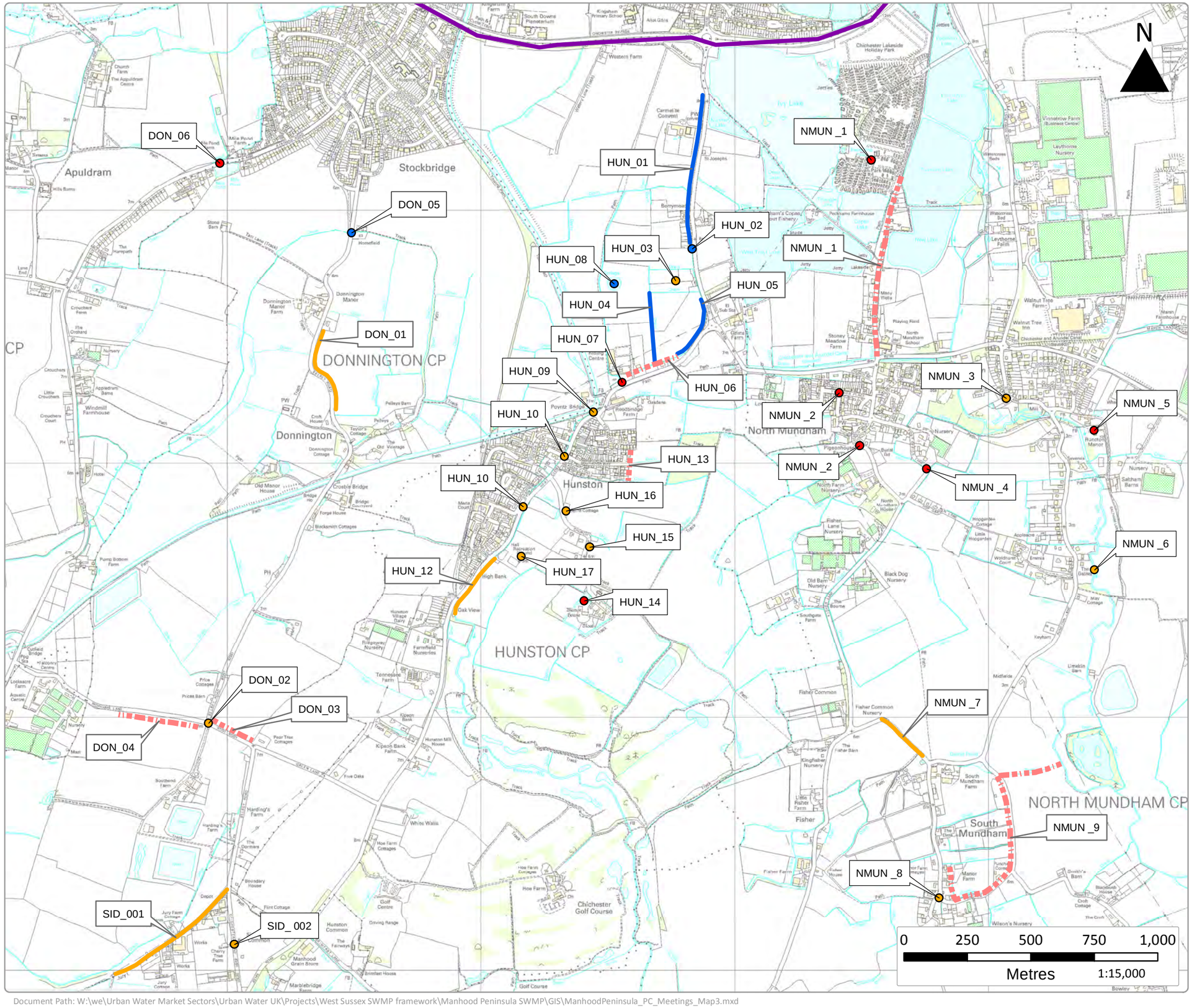
Manhood Peninsula SWMP



Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Map 3

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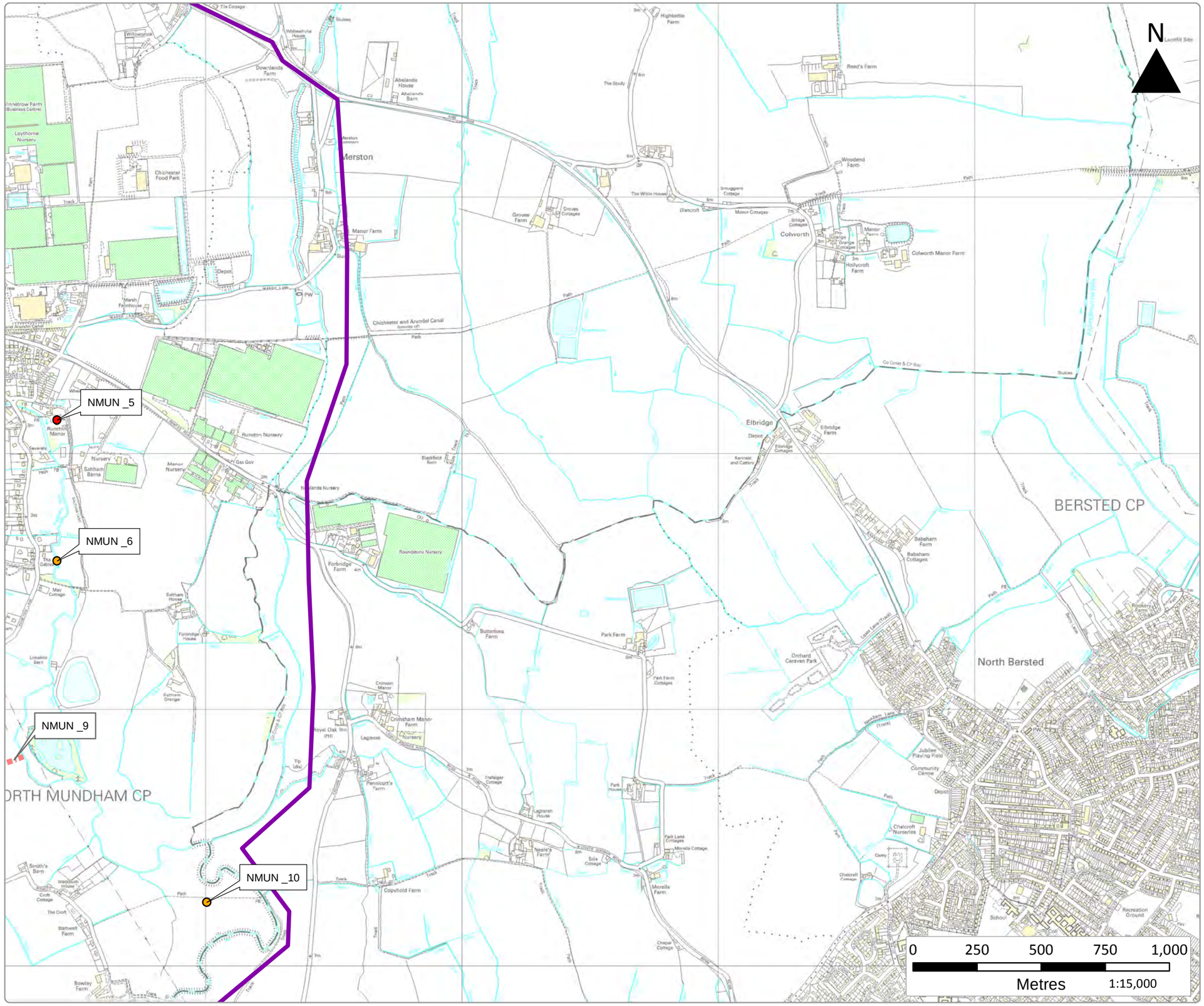
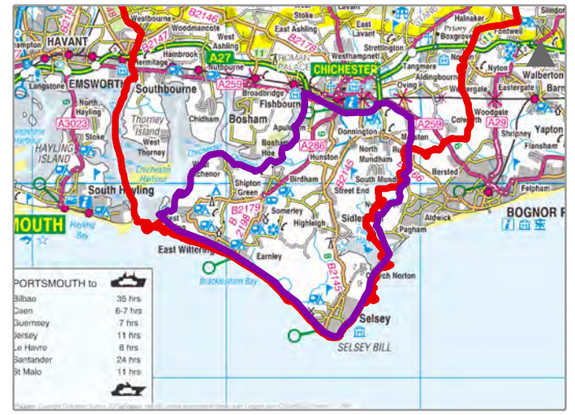
Manhood Peninsula SWMP





Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Map 4

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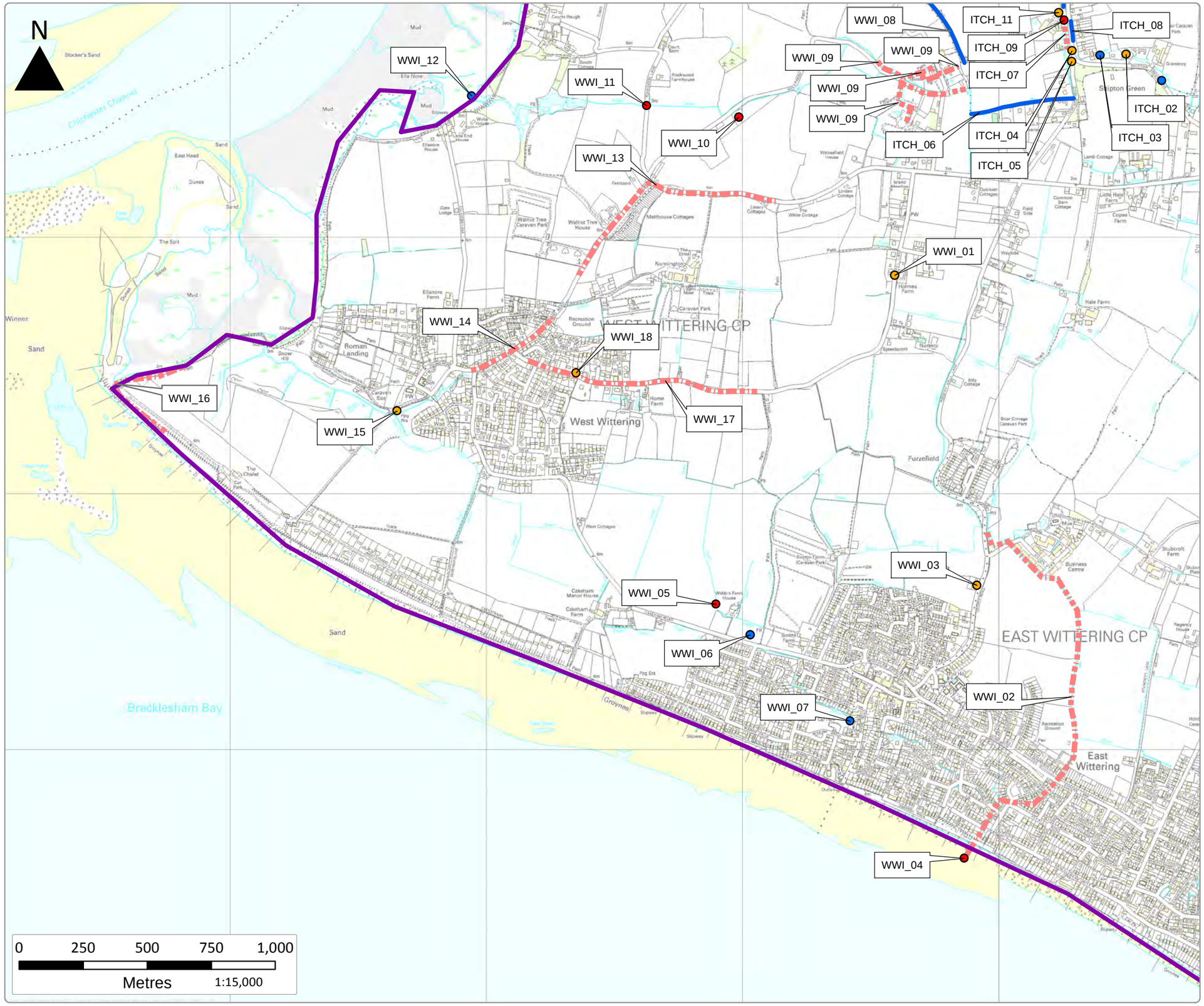
Manhood Peninsula SWMP



Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Map 5

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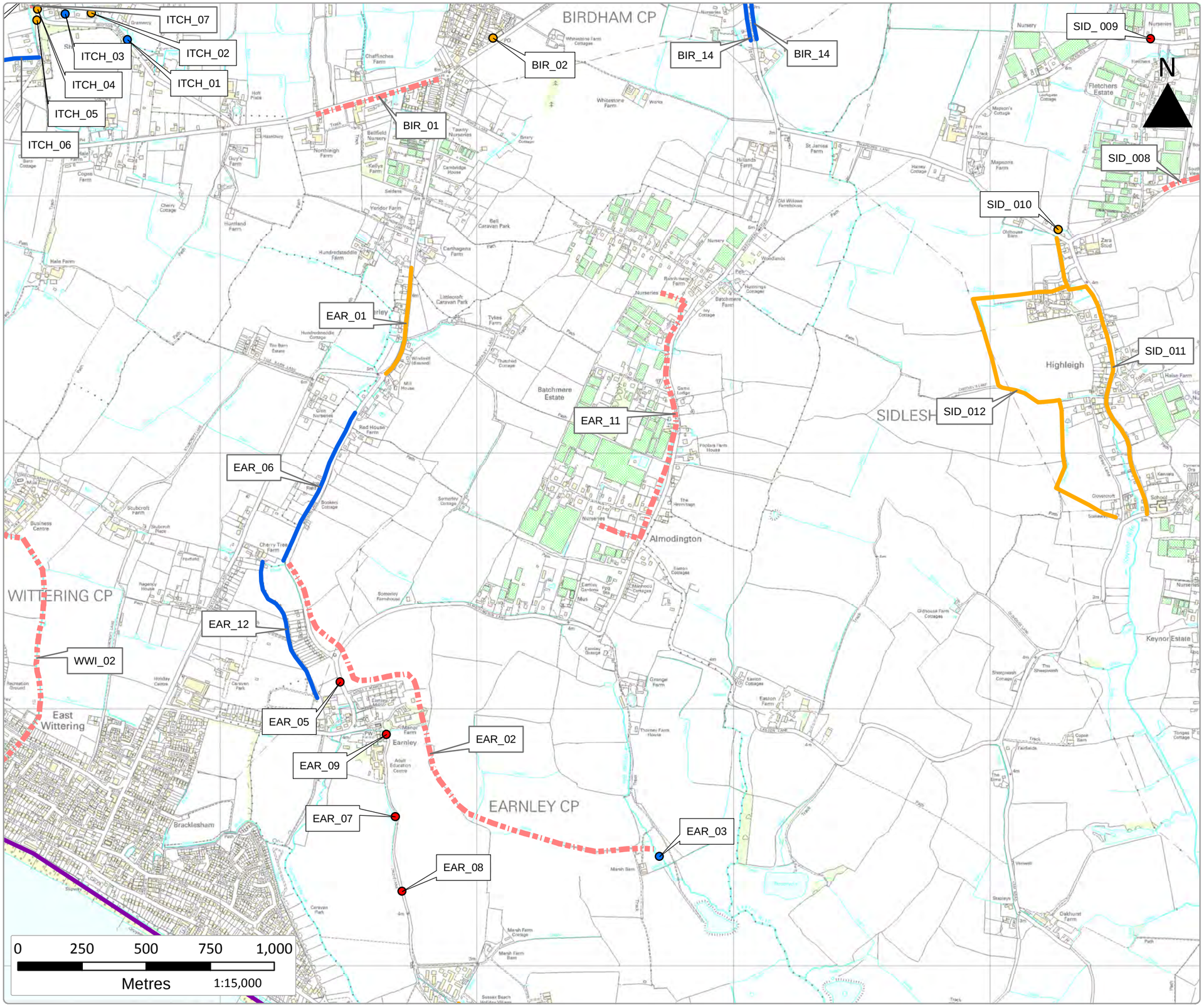
Manhood Peninsula SWMP



Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Map 6

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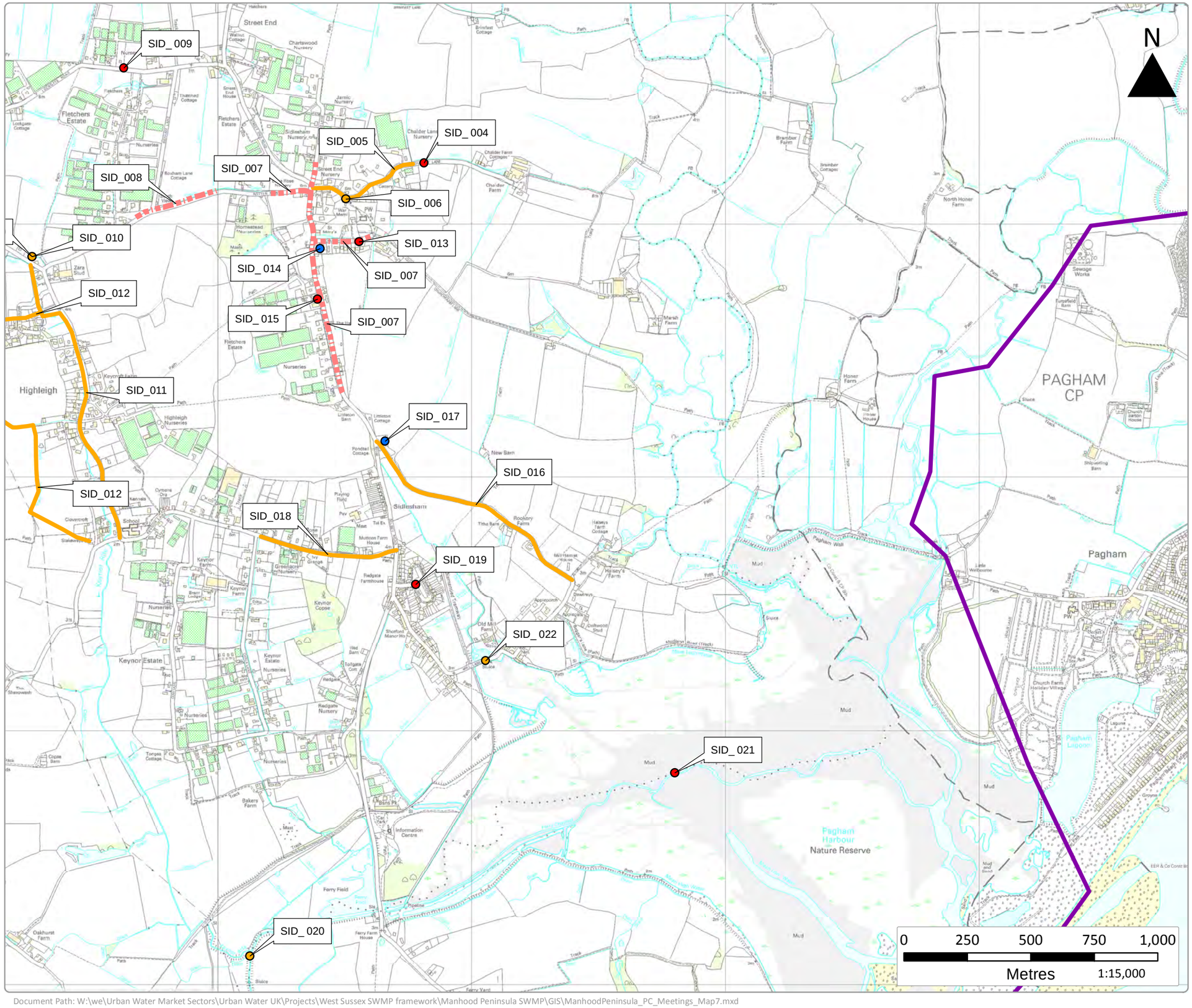
Manhood Peninsula SWMP



Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Map 7

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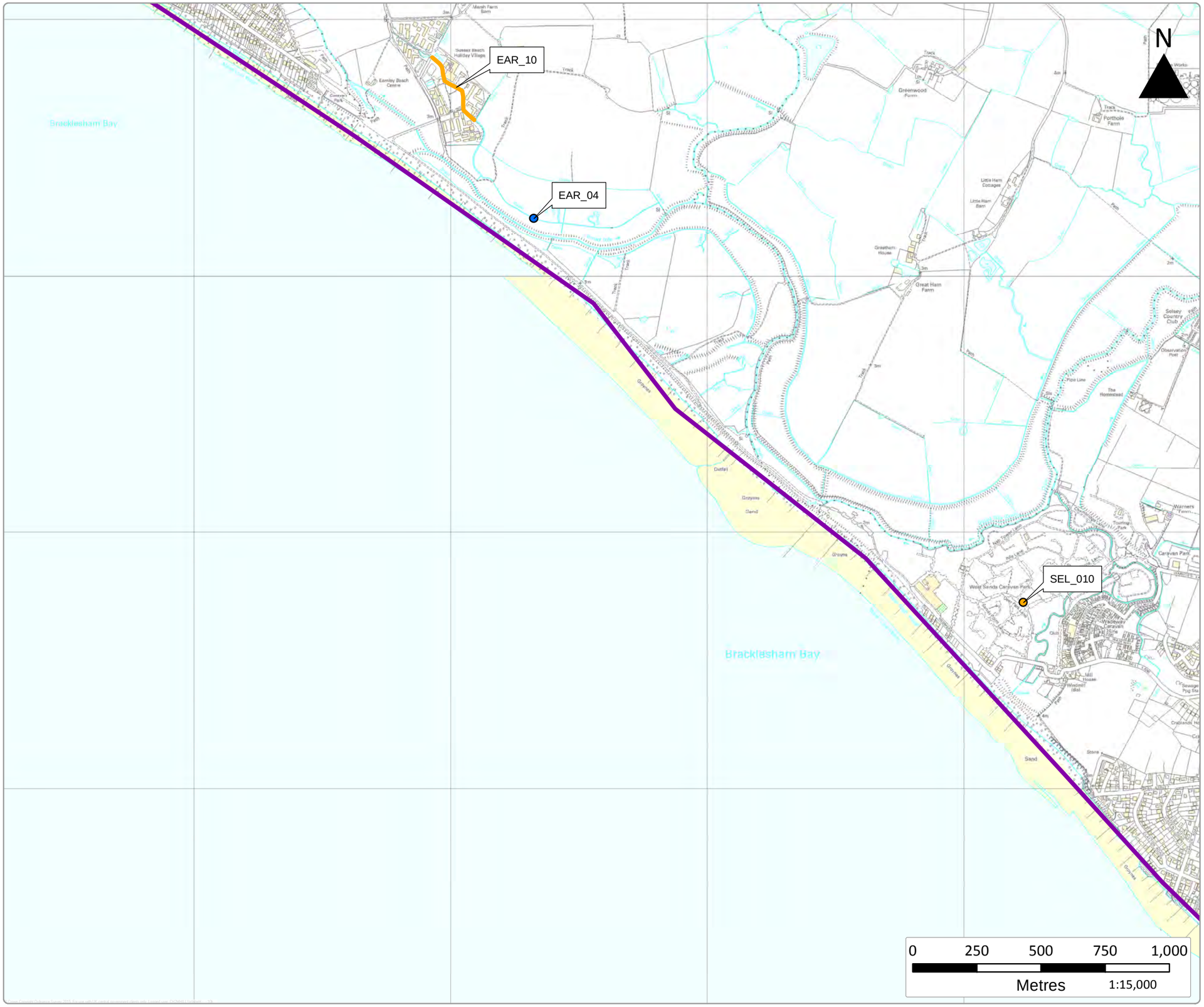
Manhood Peninsula SWMP



Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Map 8

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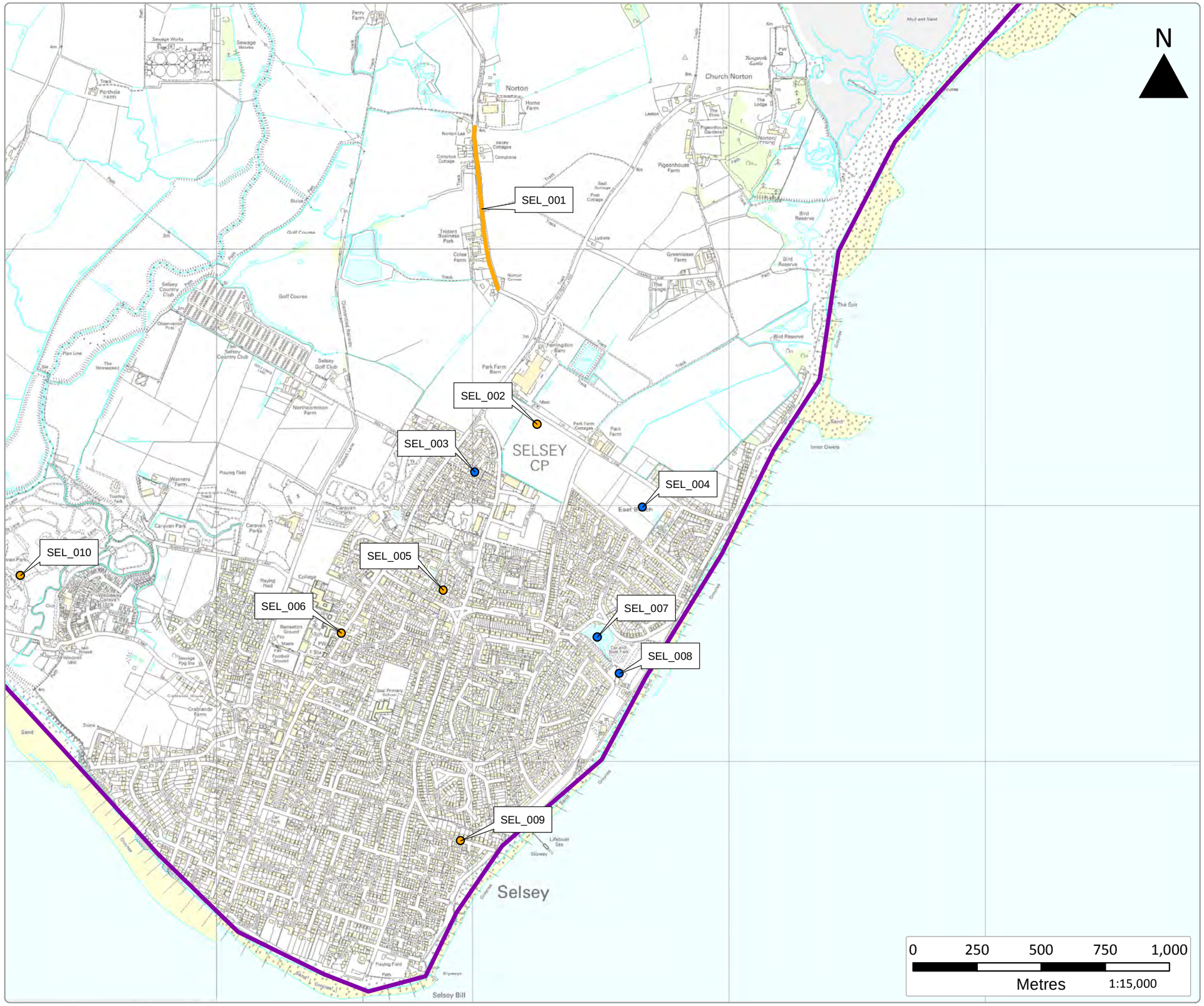
Manhood Peninsula SWMP



Legend

- Manhood Study Boundary

Manhod PC Feedback (Point)

- Action
- Flood Location
- Information

Manhood PC Feedback (Polyline)

- Action
- Flood Location
- Information

Parish Council Meeting Feedback Map 9

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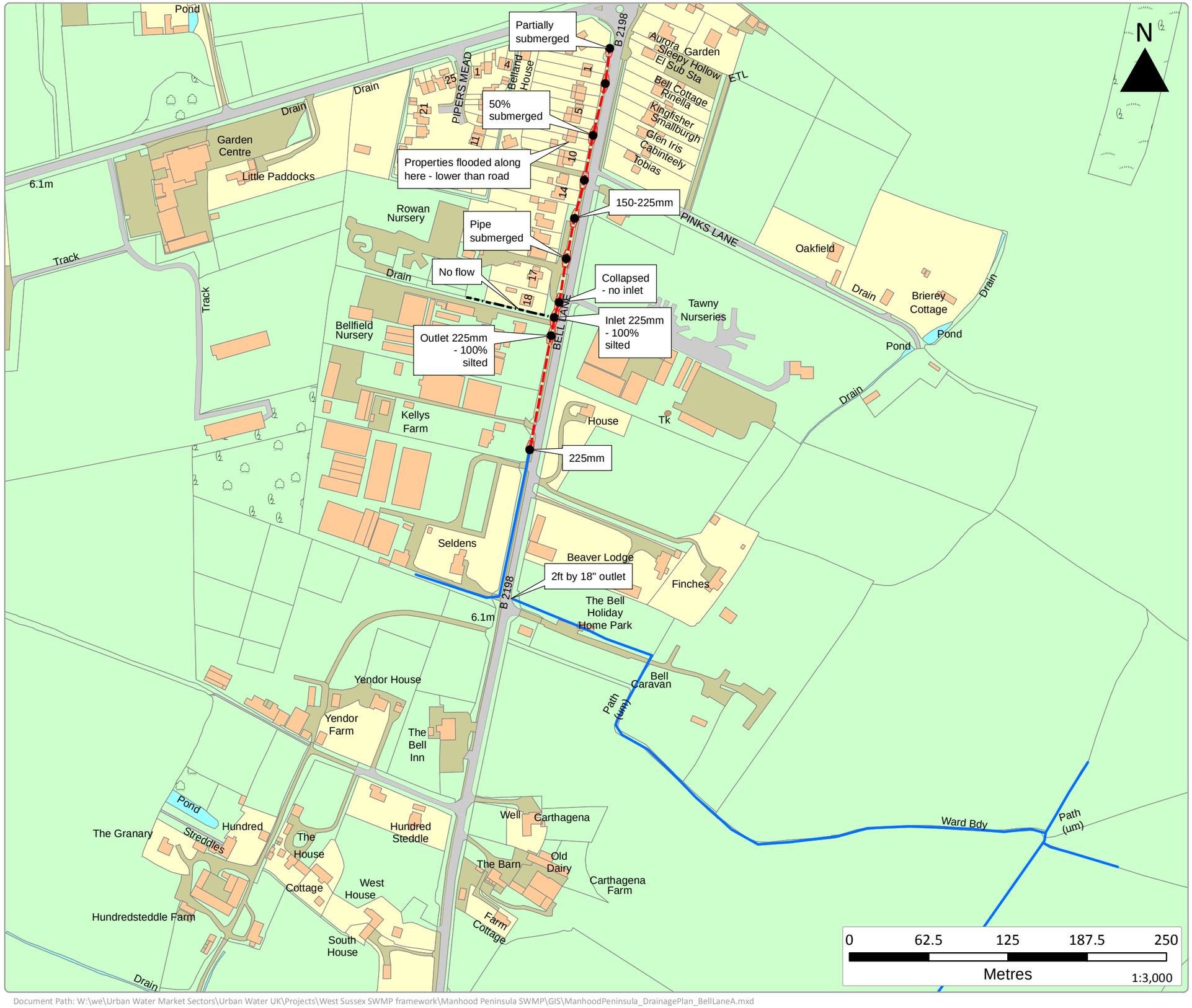
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown

Bell Lane A Drainage Plan

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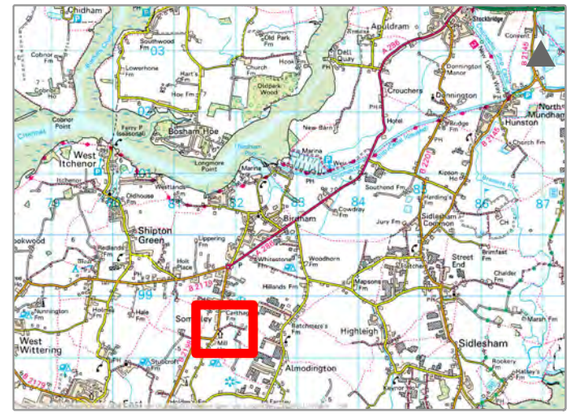
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown

Bell Lane B Drainage Plan

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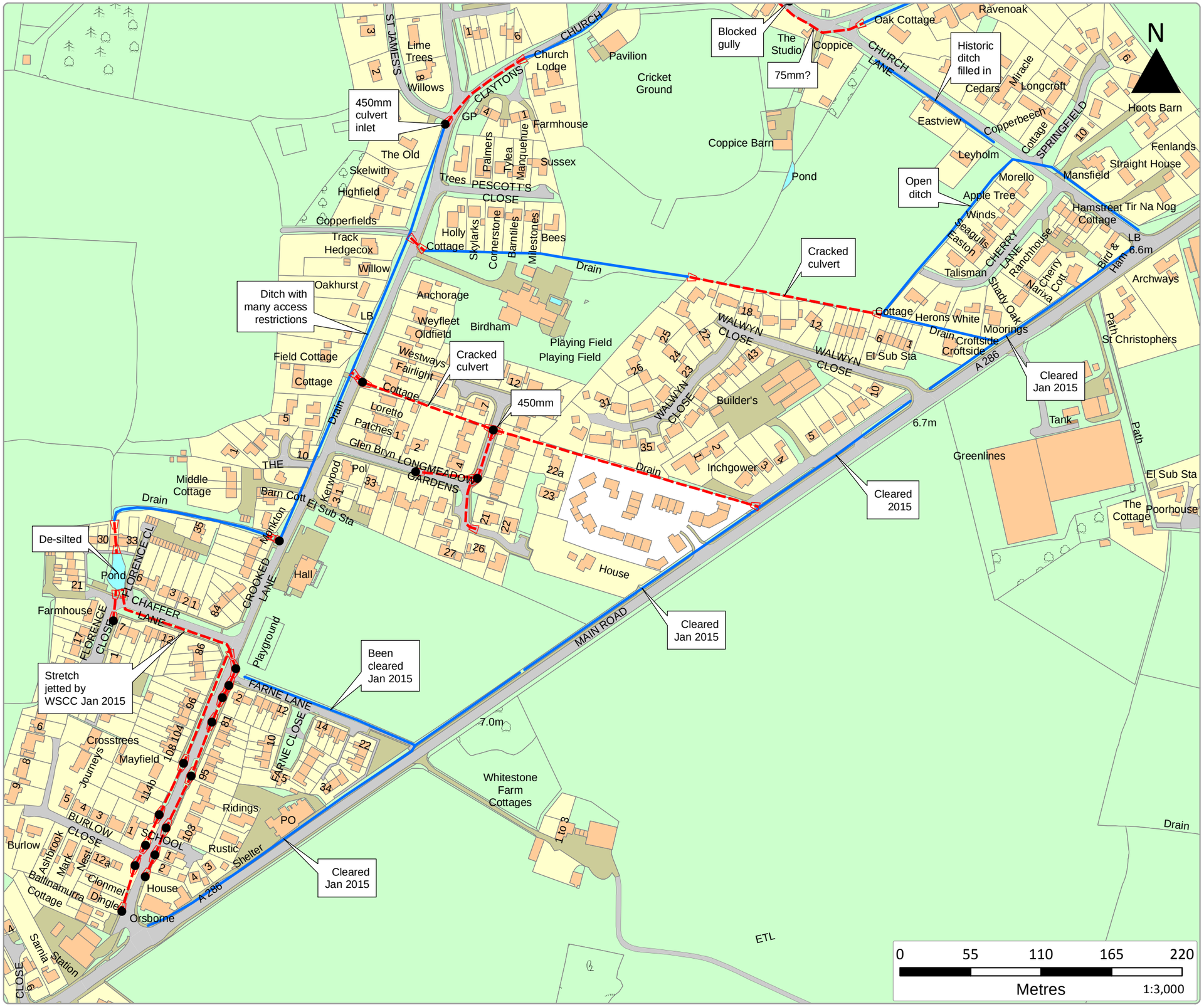
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown

Birdham A Drainage Plan

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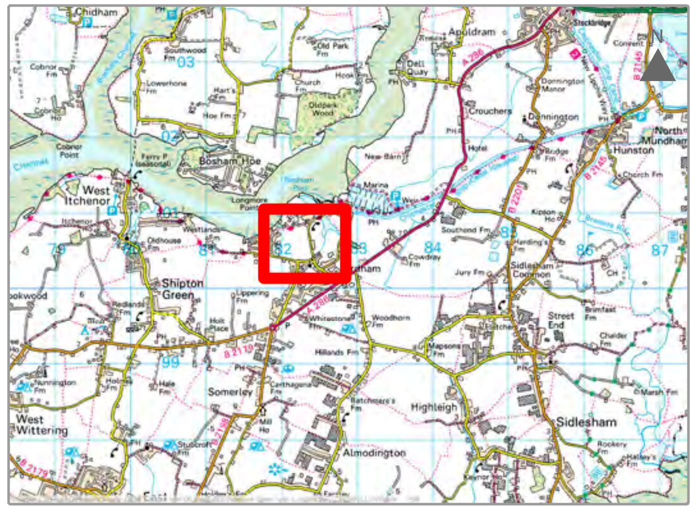
Manhood Peninsula SWMP



Legend

- ● Manholes
- Culvert
- Open channel
- Unknown
- Ponds

Birdham B Drainage Plan

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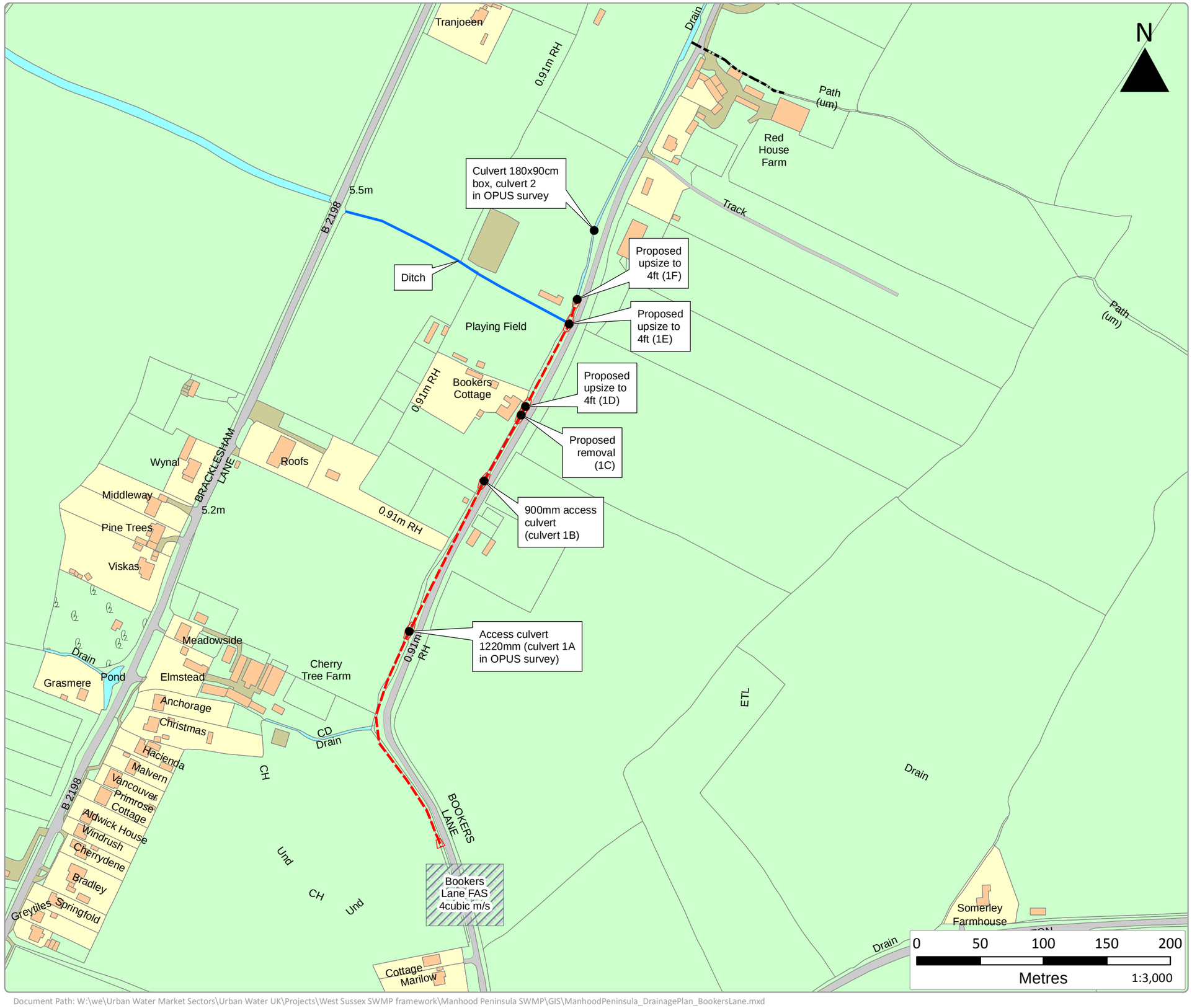
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown
- Flood Alleviation Scheme

Bookers Lane Drainage Plan

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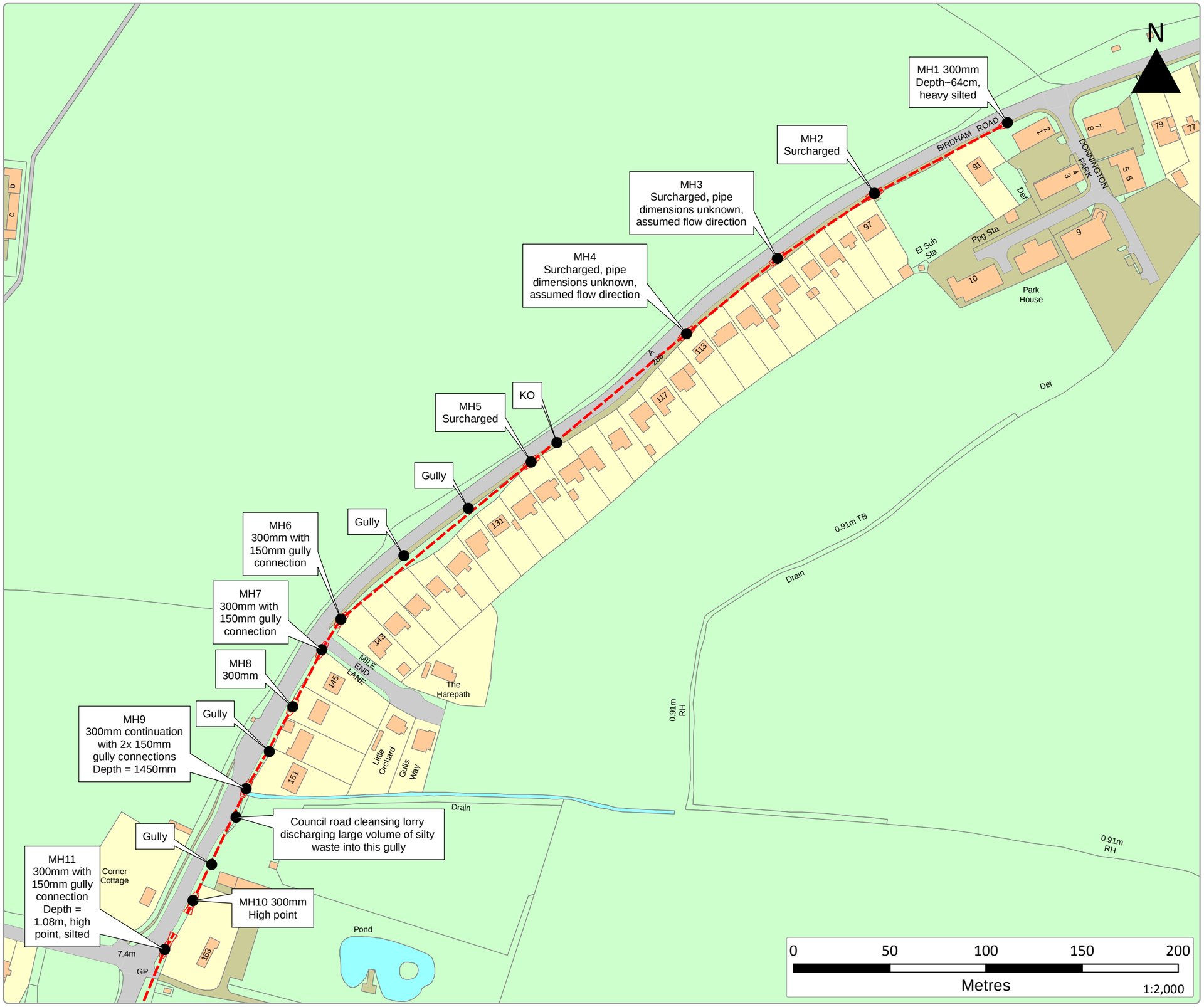
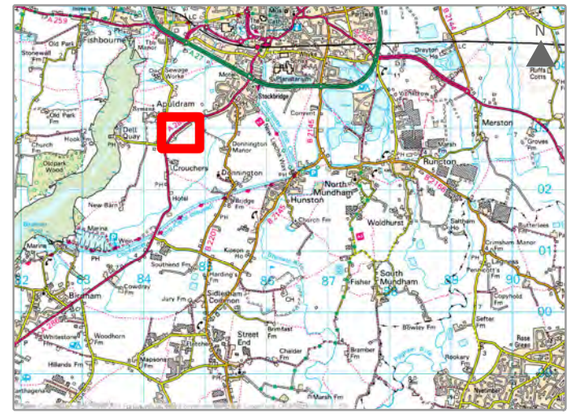
Manhood Peninsula SWMP





Legend

- Manholes
- Culvert
- Open channel
- Unknown

Crouchers A Drainage Plan

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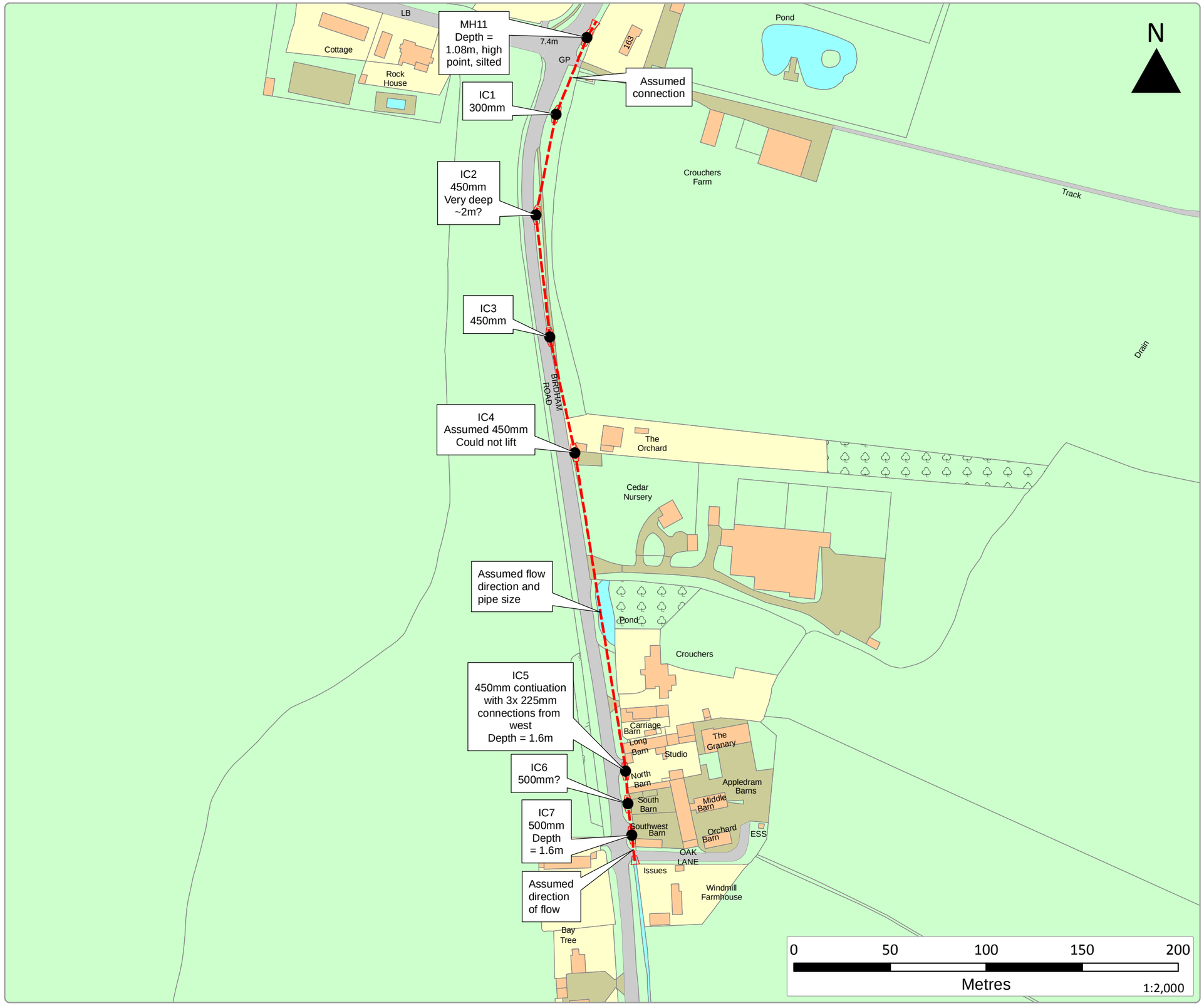
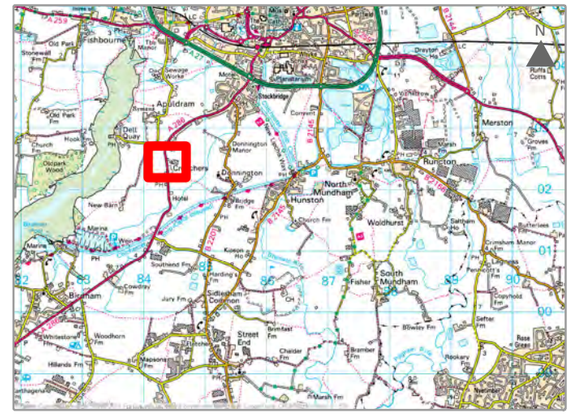
Manhood Peninsula SWMP





Legend

- Manholes
- Culvert
- Open channel
- Unknown

Crouchers B Drainage Plan

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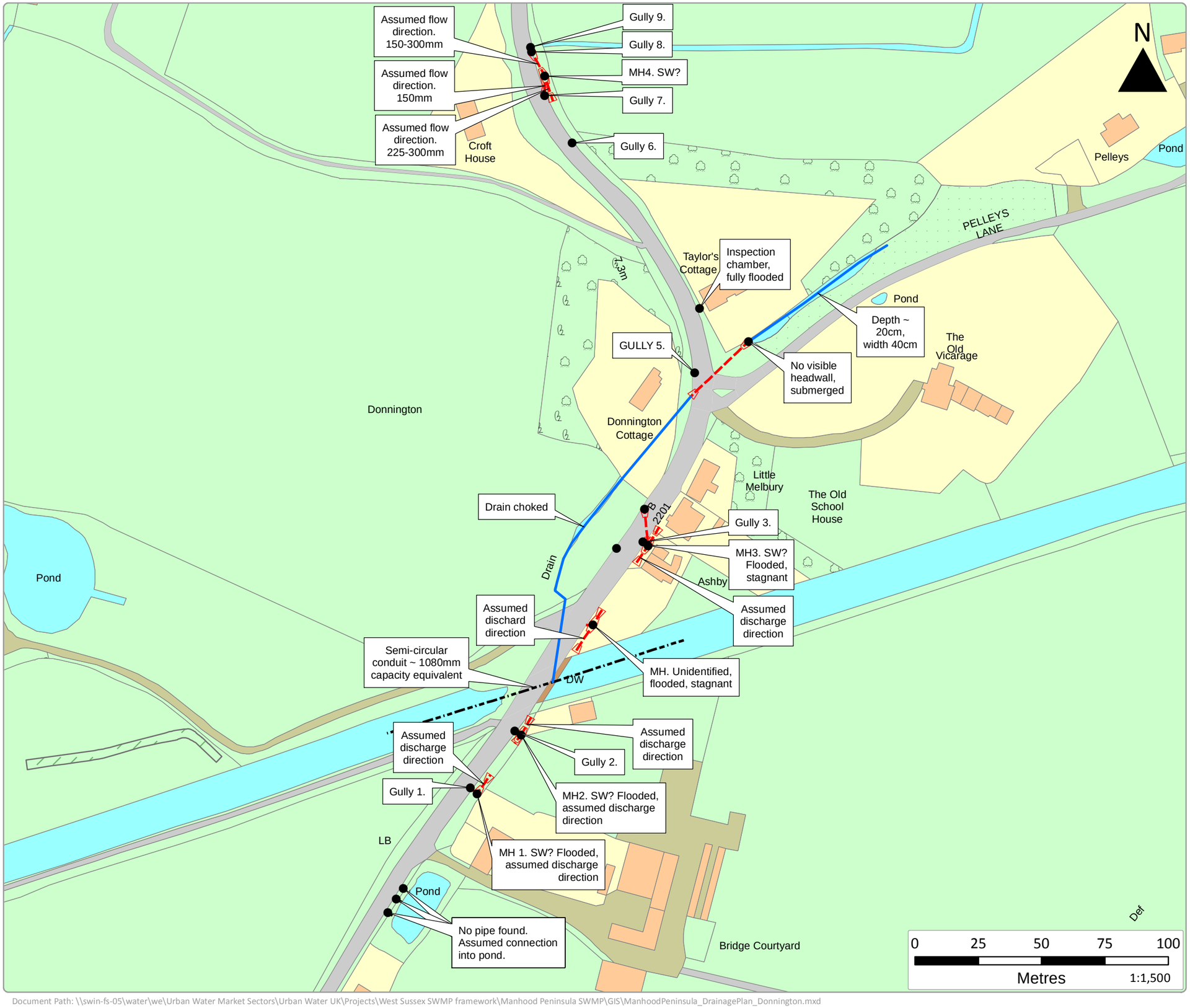
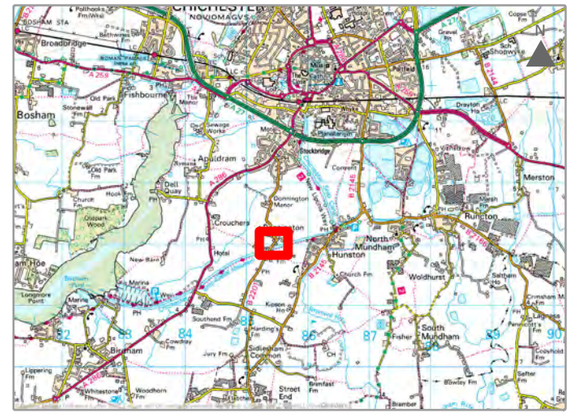
Manhood Peninsula SWMP





Legend

- Manholes
- Culvert
- Open channel
- Unknown

Donnington Drainage Plan

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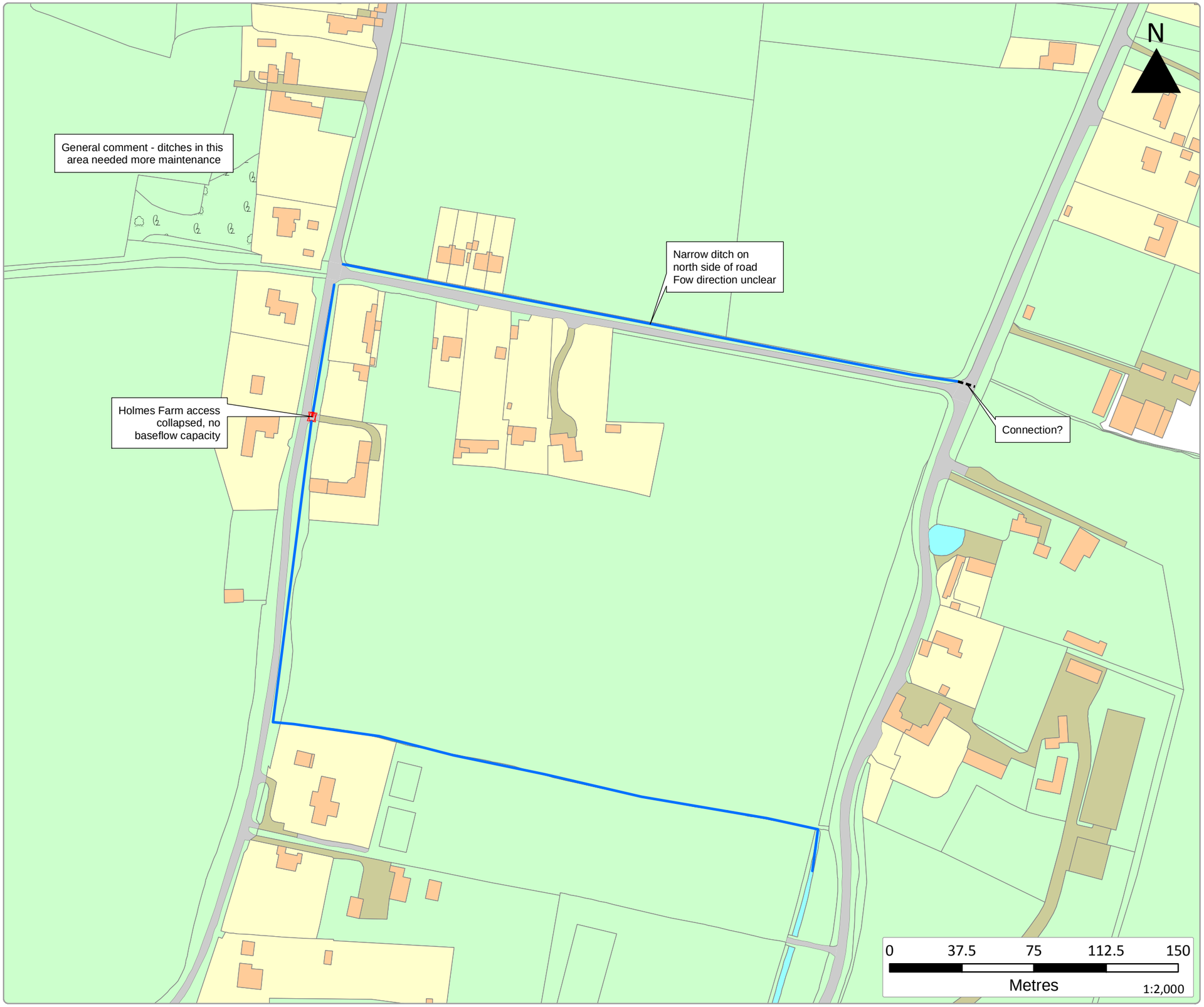
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown

East Wittering A Drainage Plan

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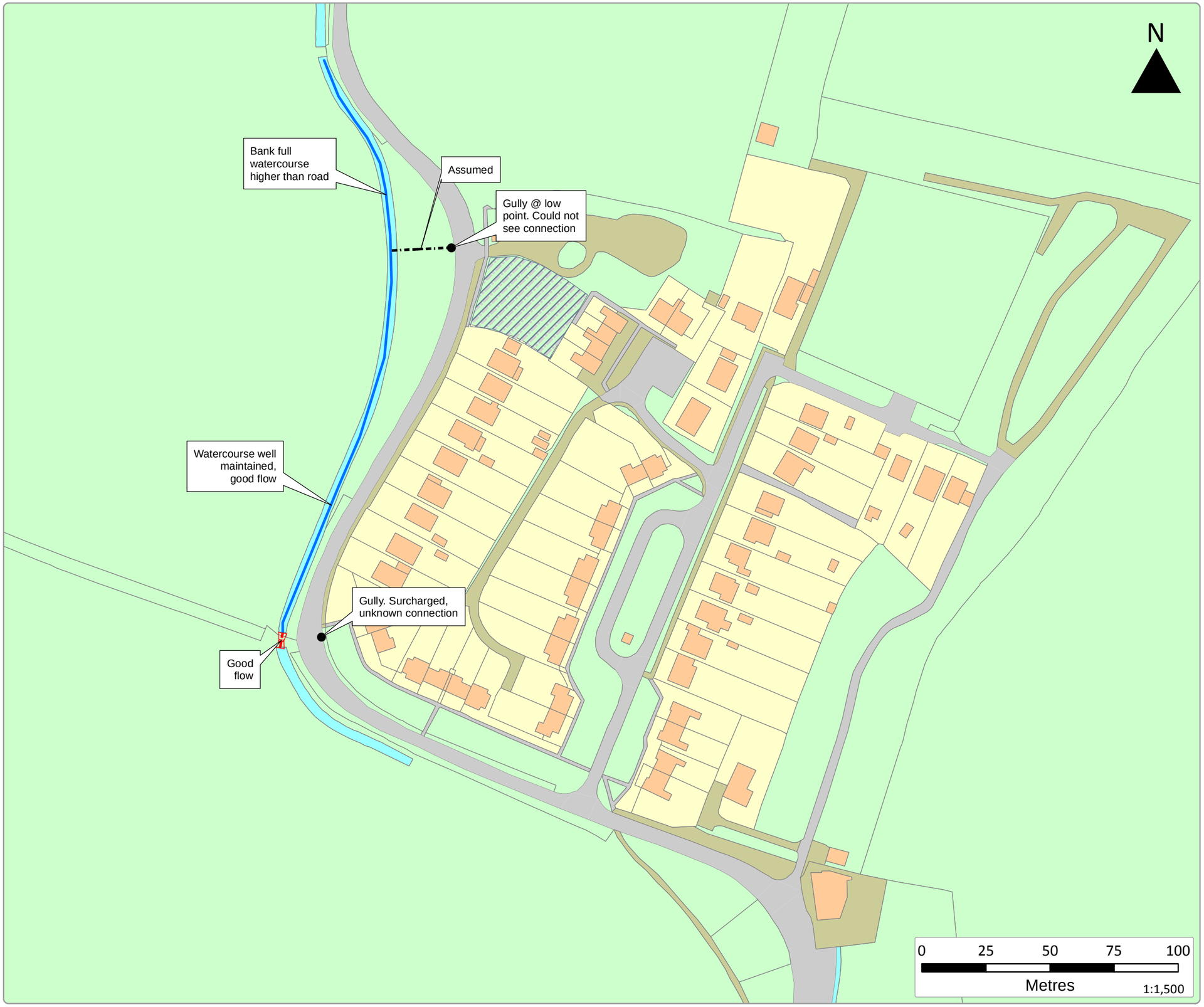
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown
- New Development

East Wittering B Drainage Plan

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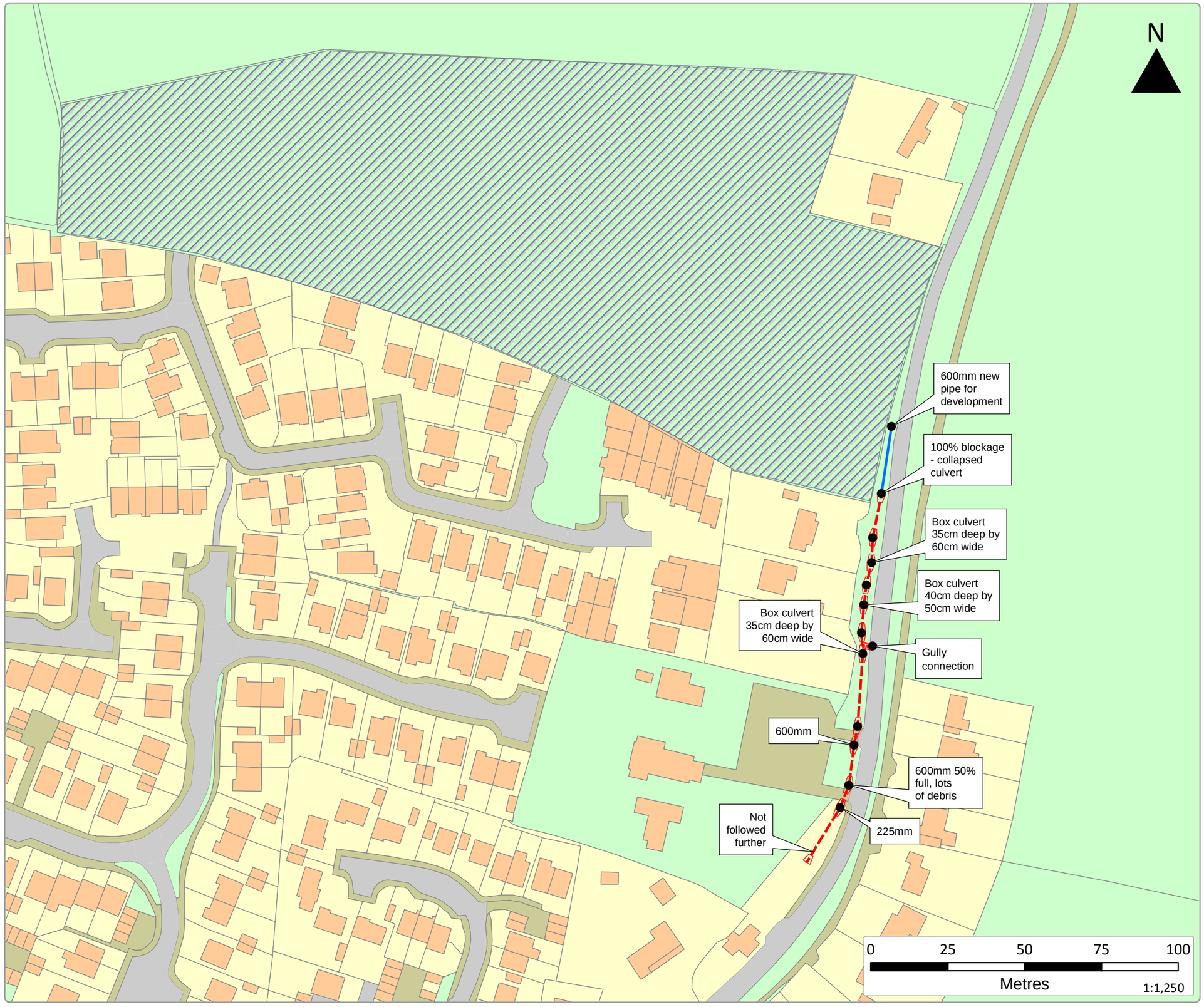
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown
- New Development

East Wittering C Drainage Plan

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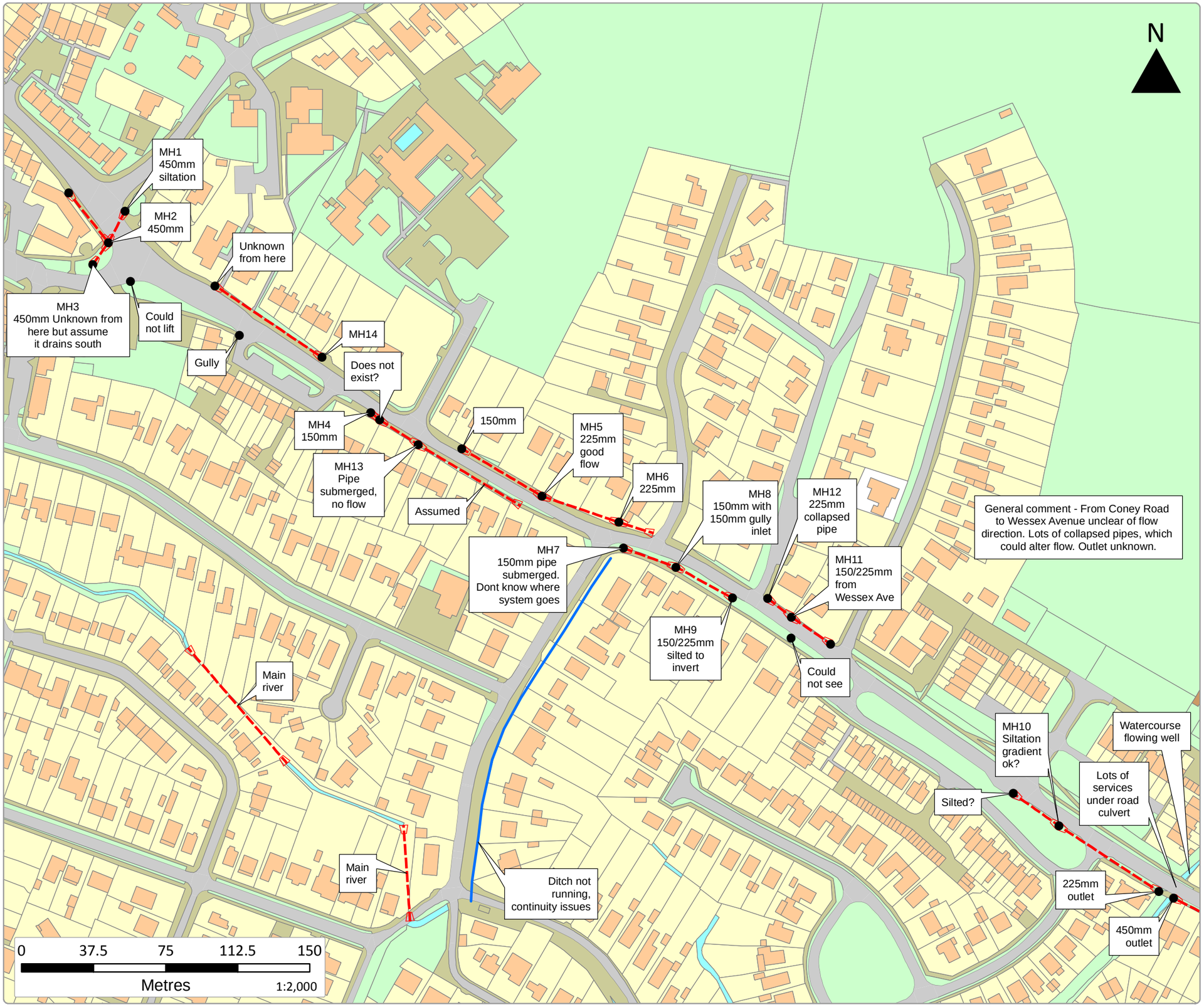
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown
- New Development

East Wittering D Drainage Plan

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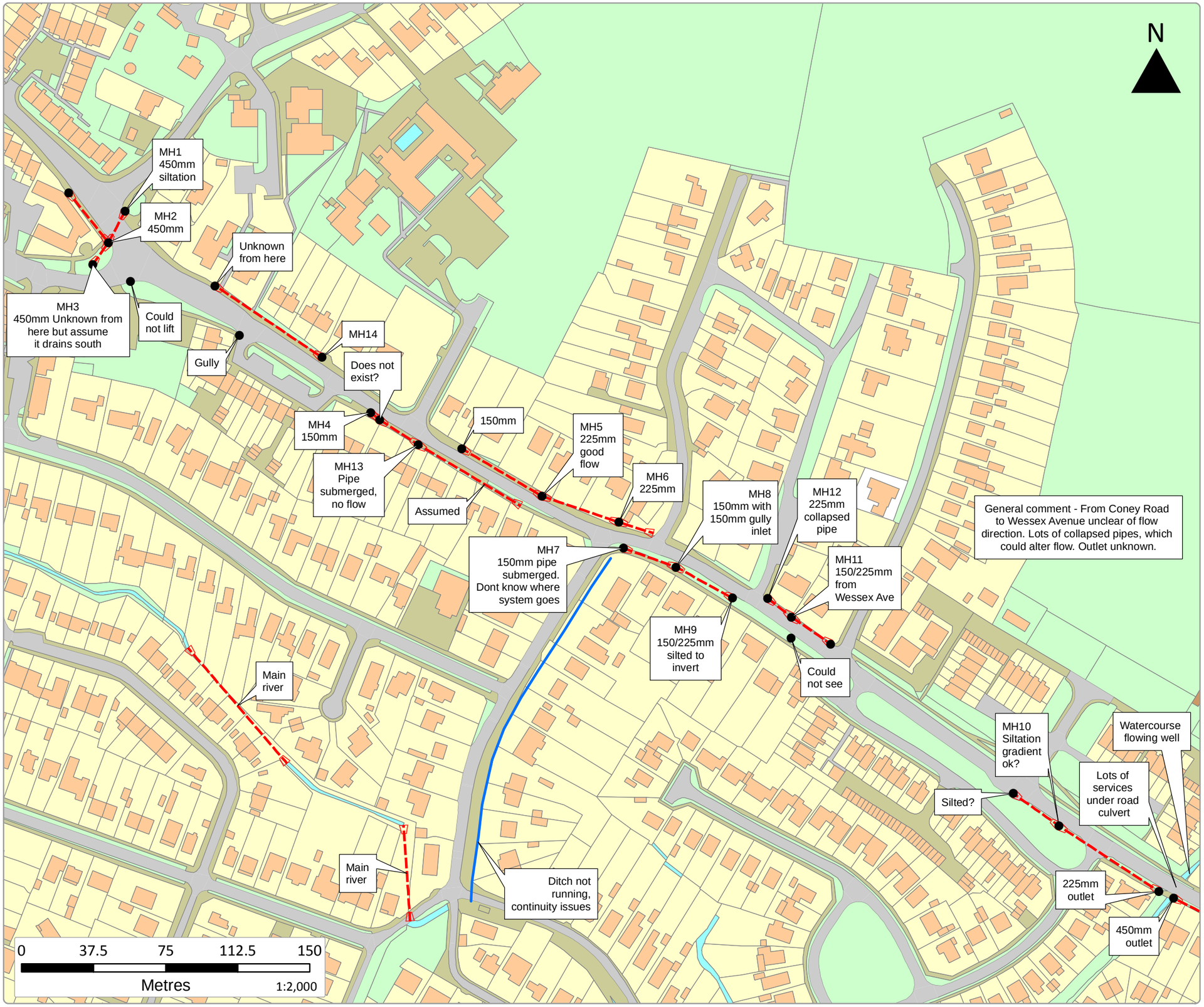
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown
- New Development

East Wittering D Drainage Plan

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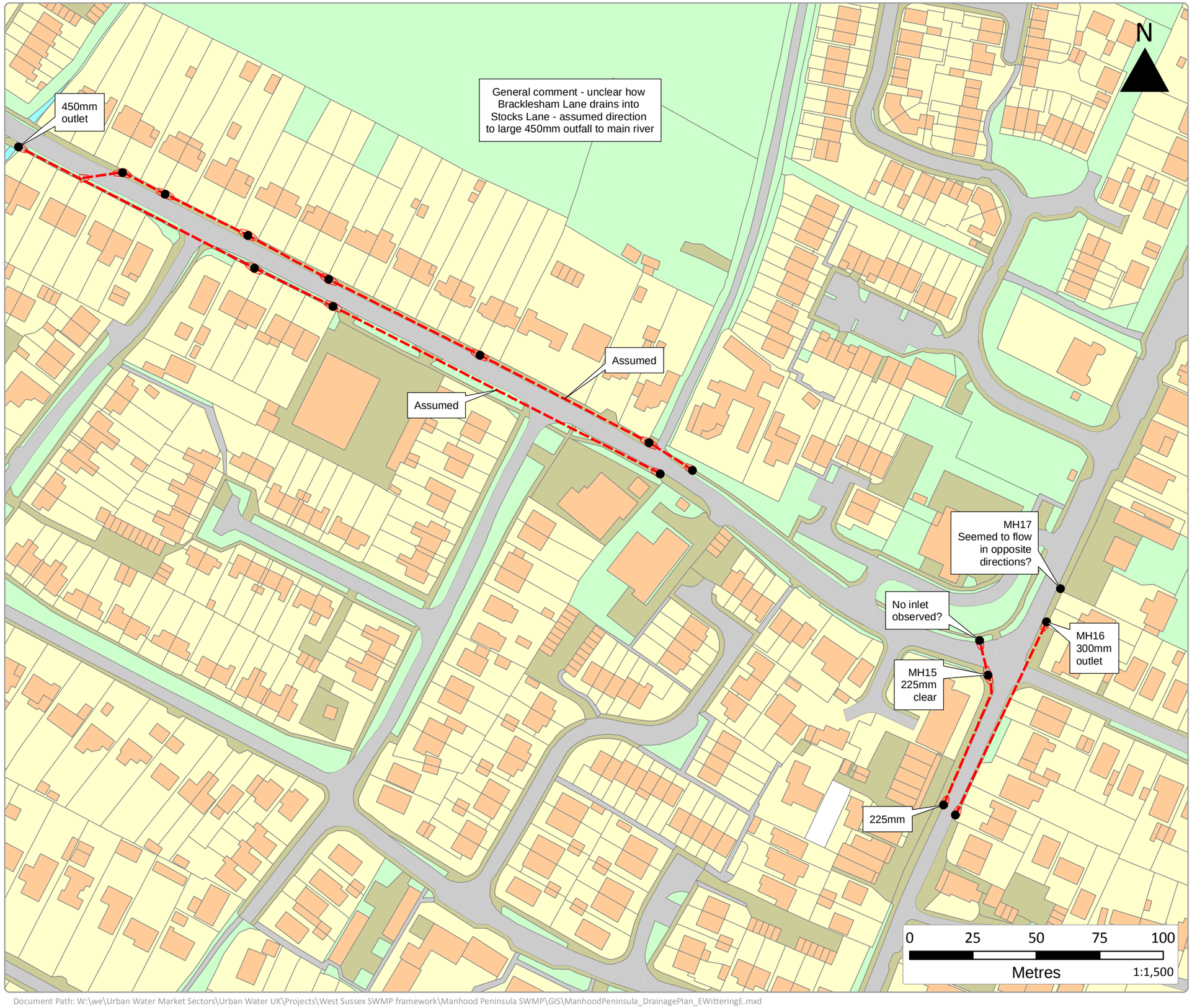
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown
- New Development

East Wittering E Drainage Plan

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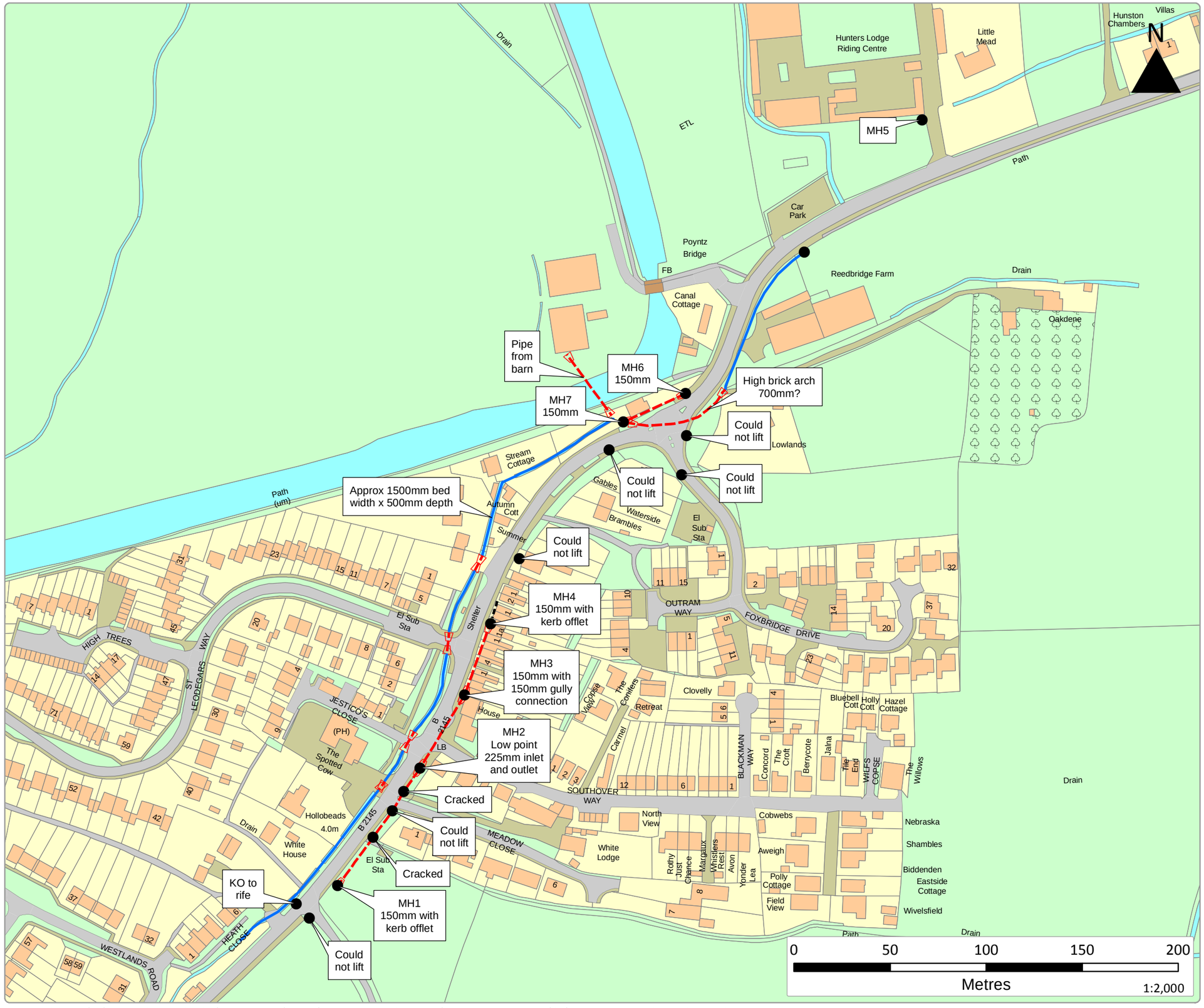
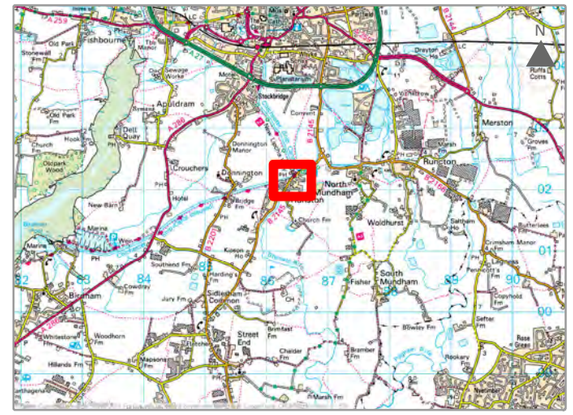
Manhood Peninsula SWMP





Legend

- Manholes
- Culvert
- Open channel
- Unknown

Hunston A Drainage Plan

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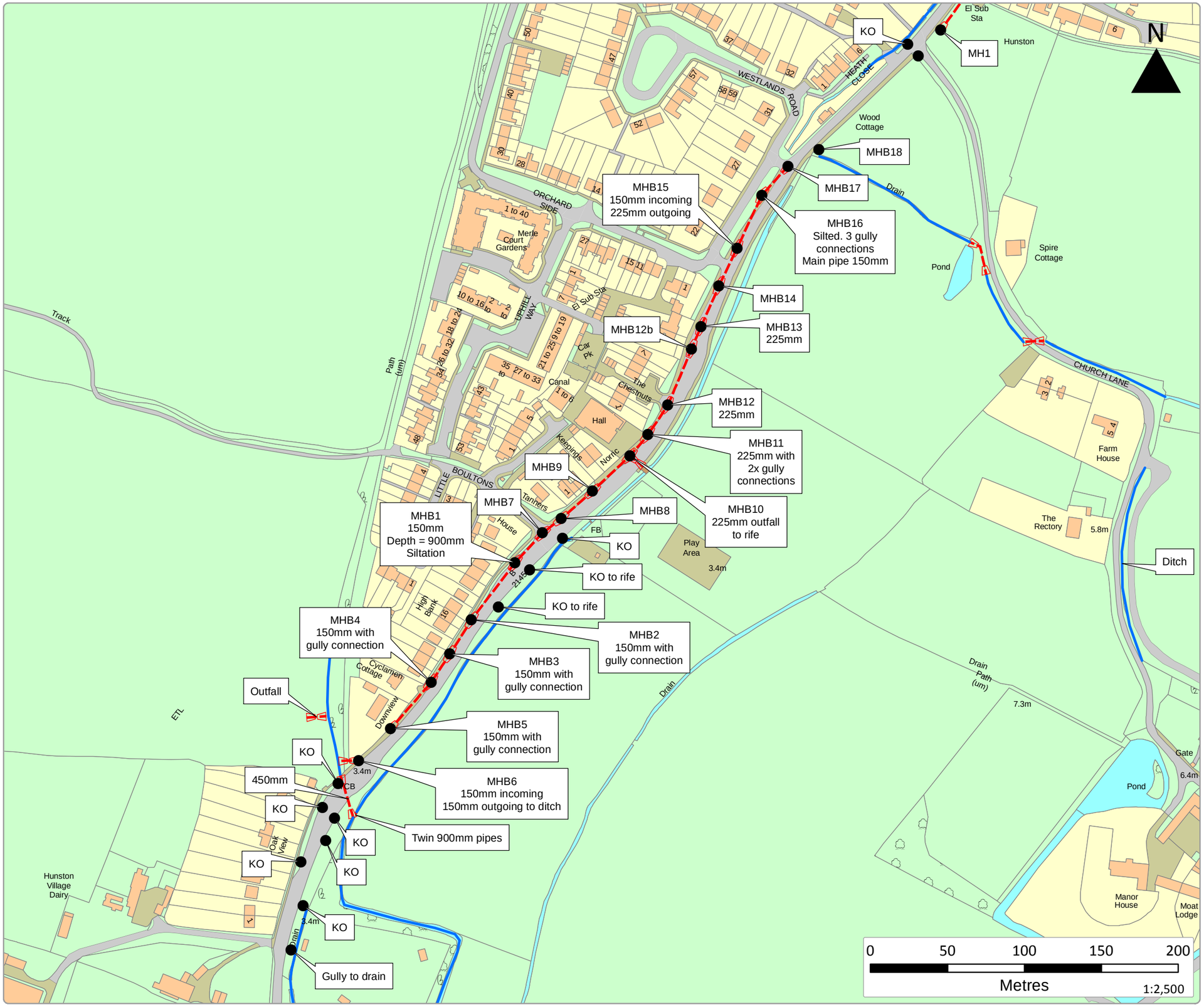
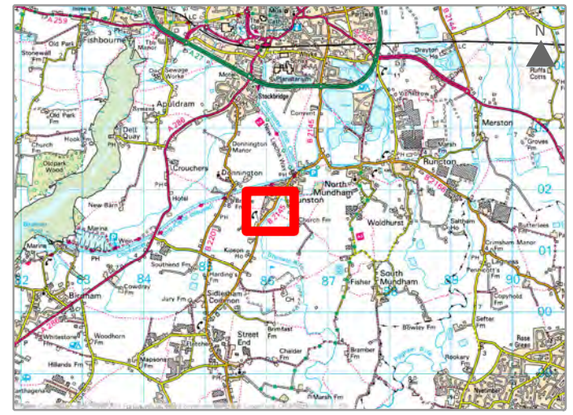
Manhood Peninsula SWMP





Legend

- Manholes
- Culvert
- Open channel
- Unknown

Hunston B Drainage Plan

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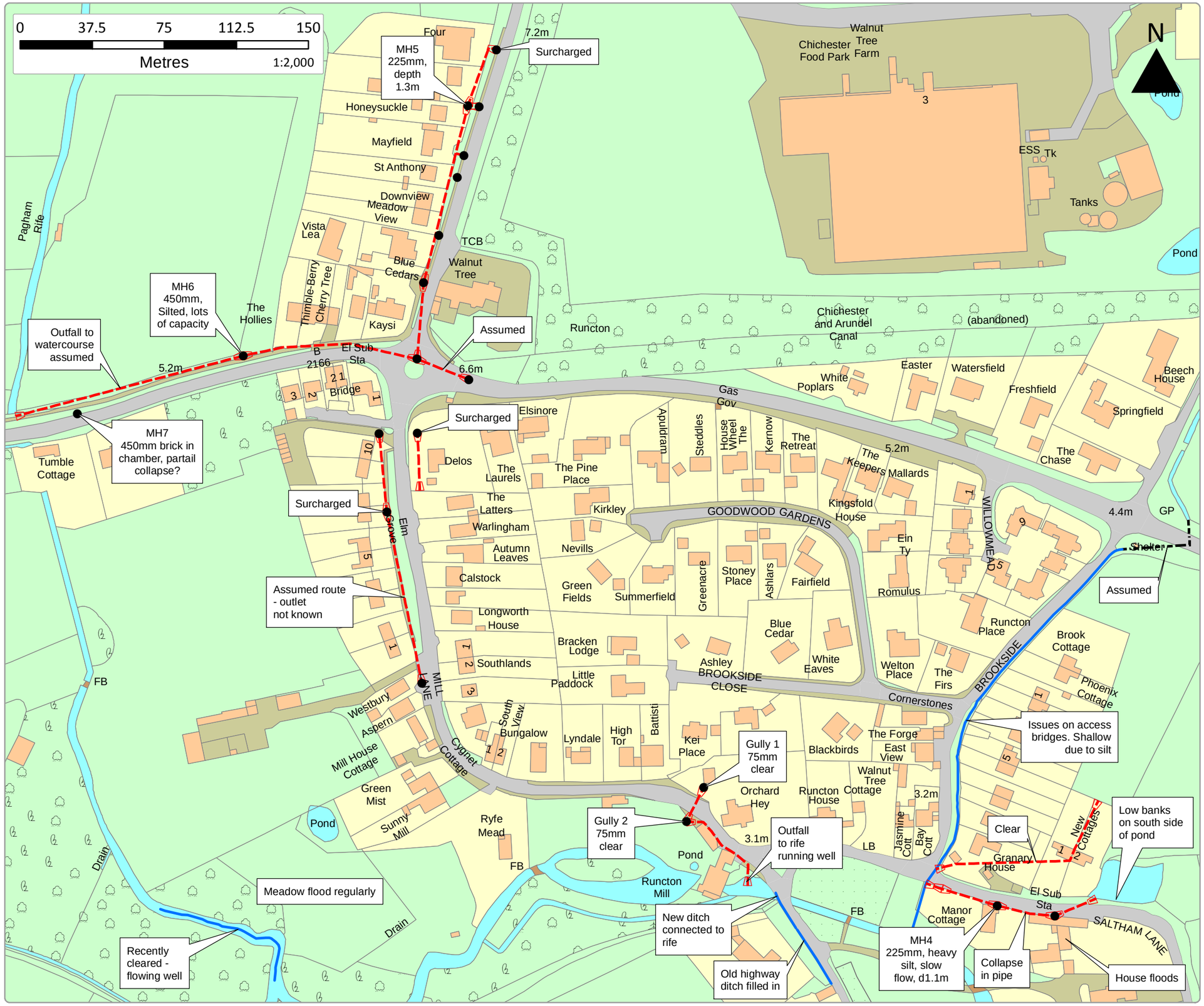
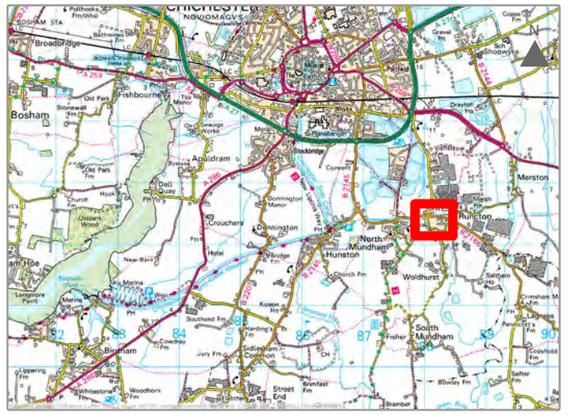
Manhood Peninsula SWMP





Legend

- Manholes
- Culvert
- Open channel
- Unknown

Runcton A Drainage Plan

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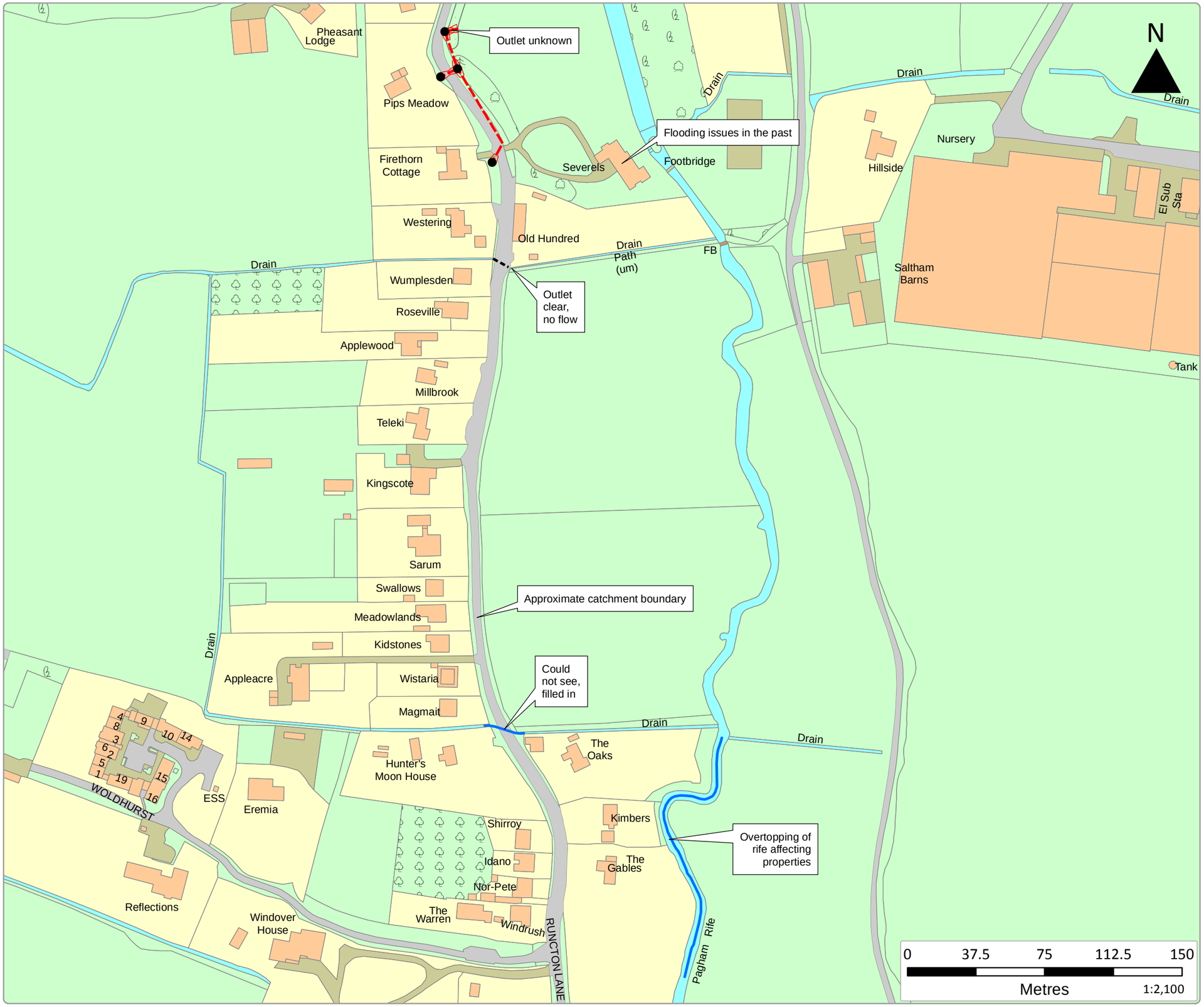
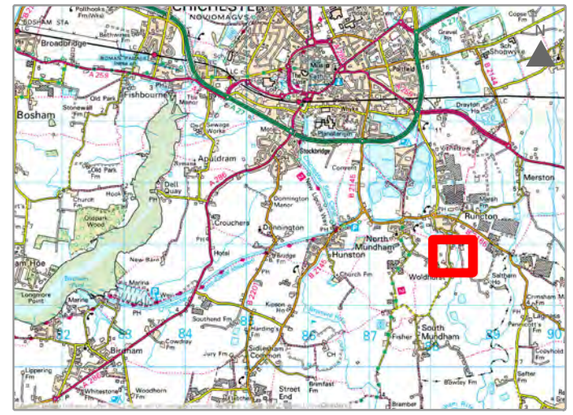
Manhood Peninsula SWMP





Legend

- Manholes
- Culvert
- Open channel
- Unknown

Runcton B Drainage Plan

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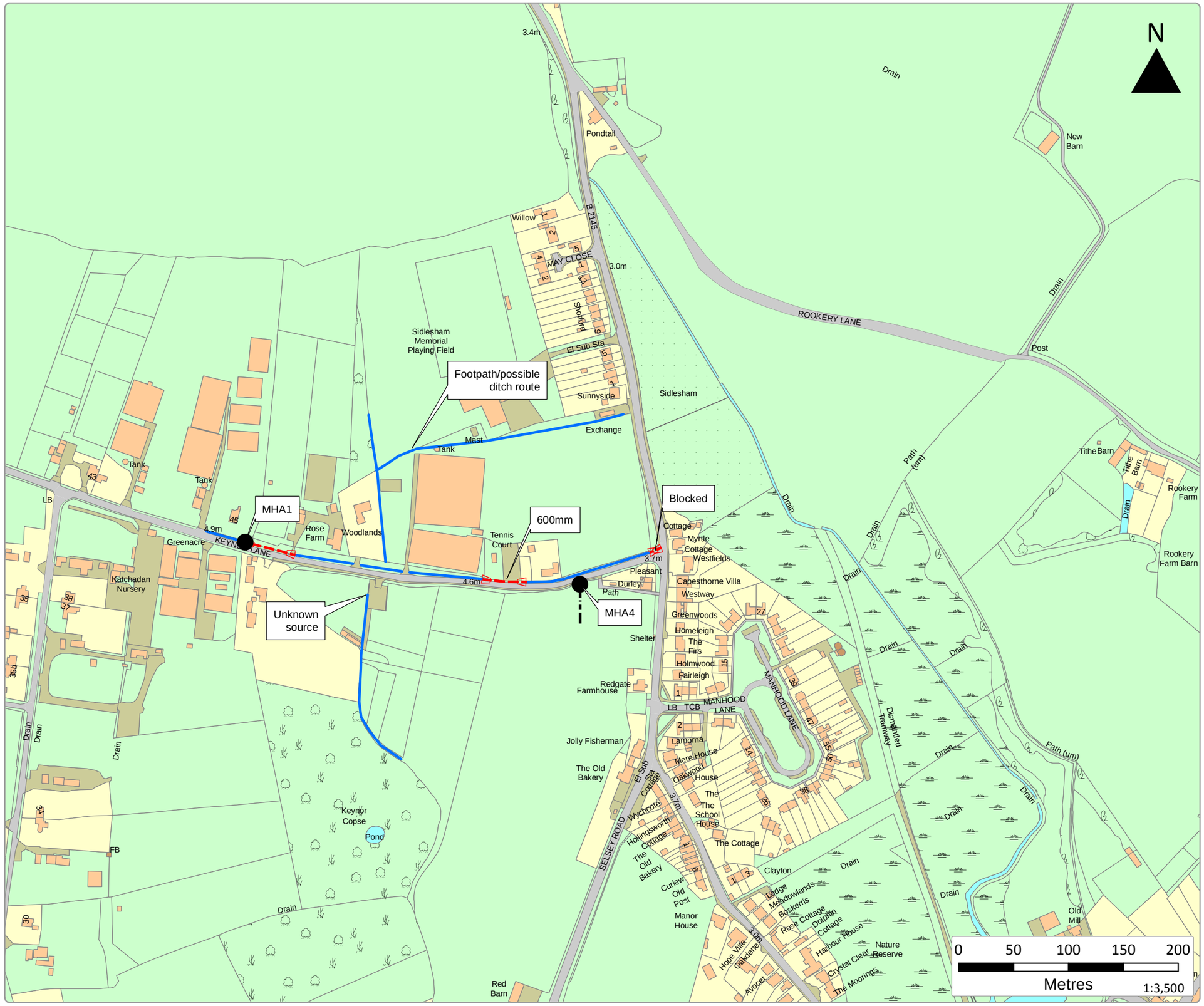
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown

Sidlesham A Drainage Plan

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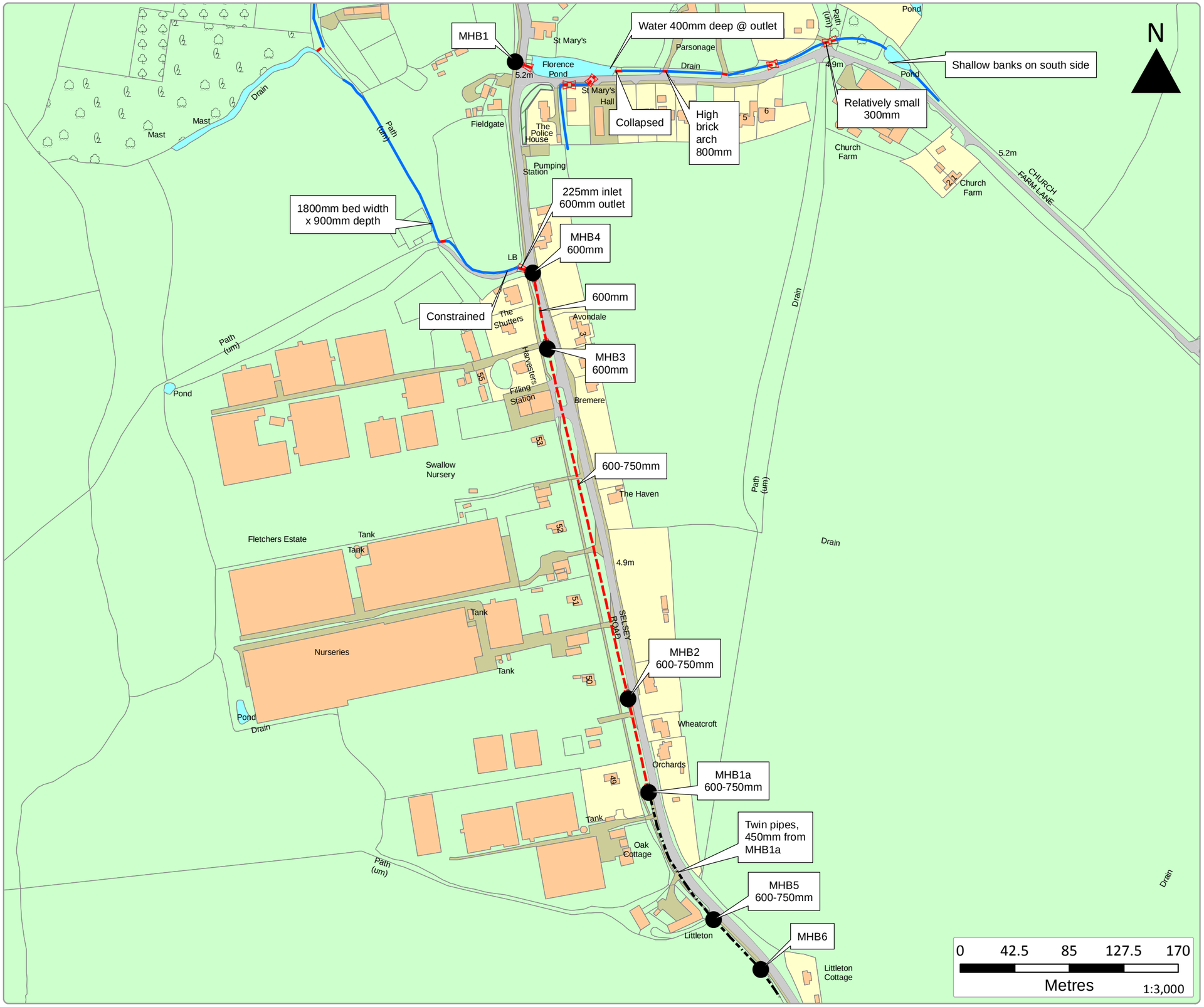
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown

Sidlesham B Drainage Plan

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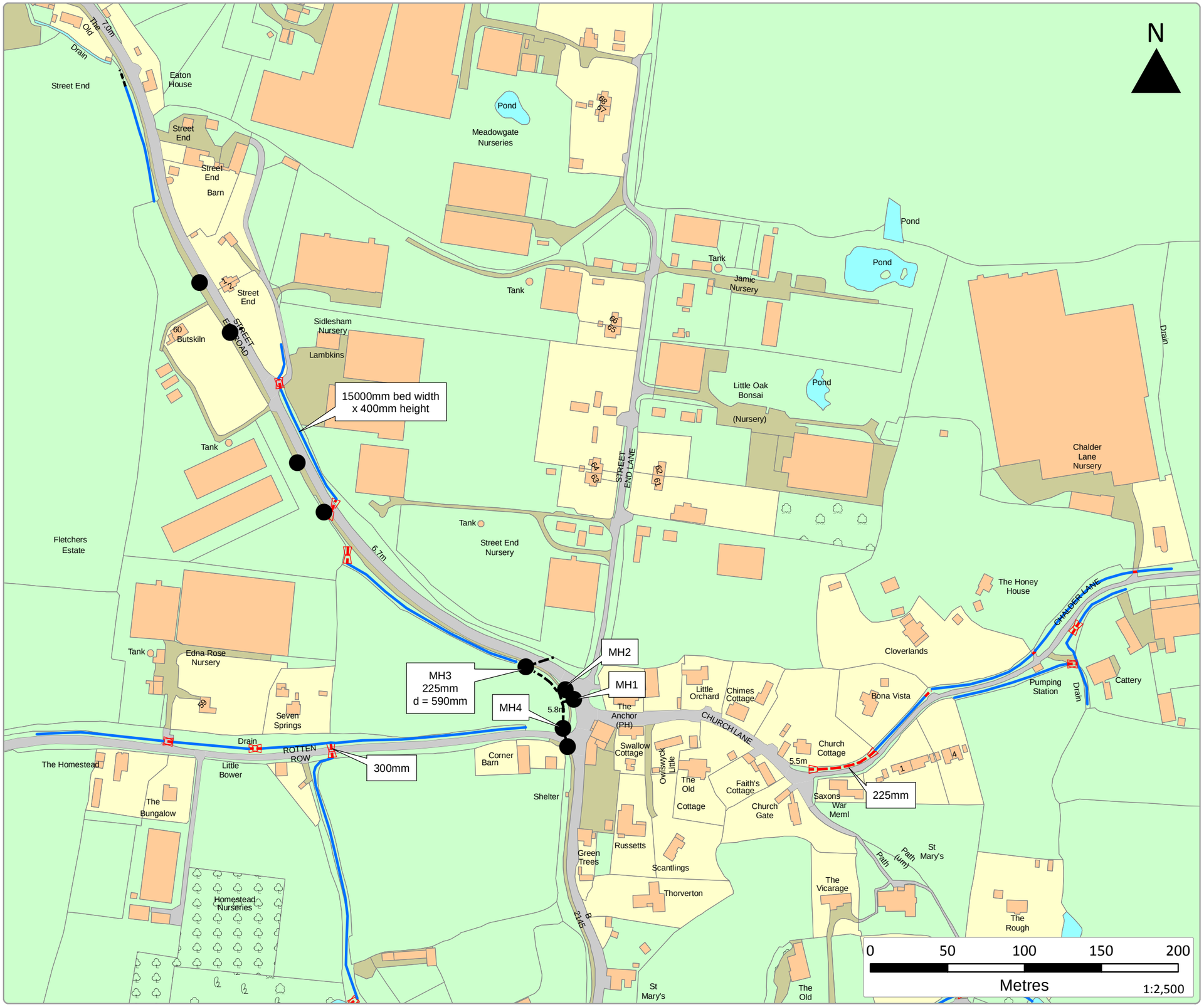

Legend

- Manholes
- Culvert
- Open channel
- Unknown

Sidlesham C Drainage Plan

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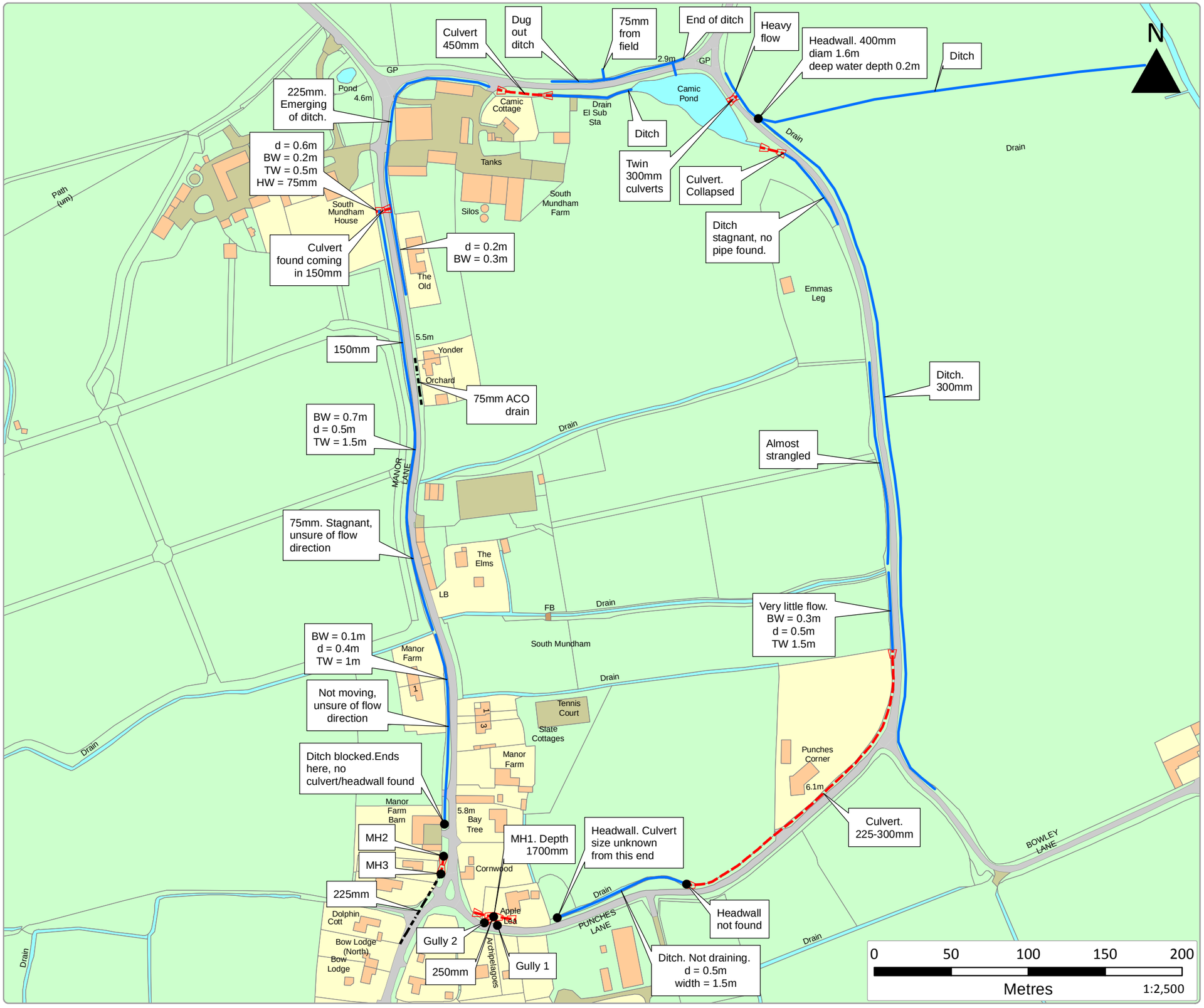
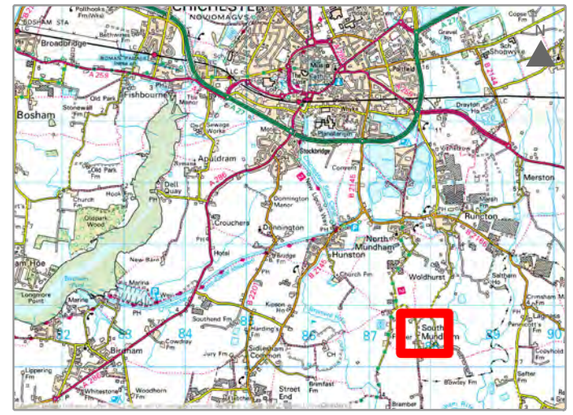
Manhood Peninsula SWMP





Legend

- Manholes
- Culvert
- Open channel
- Unknown

South Mundham Drainage Plan

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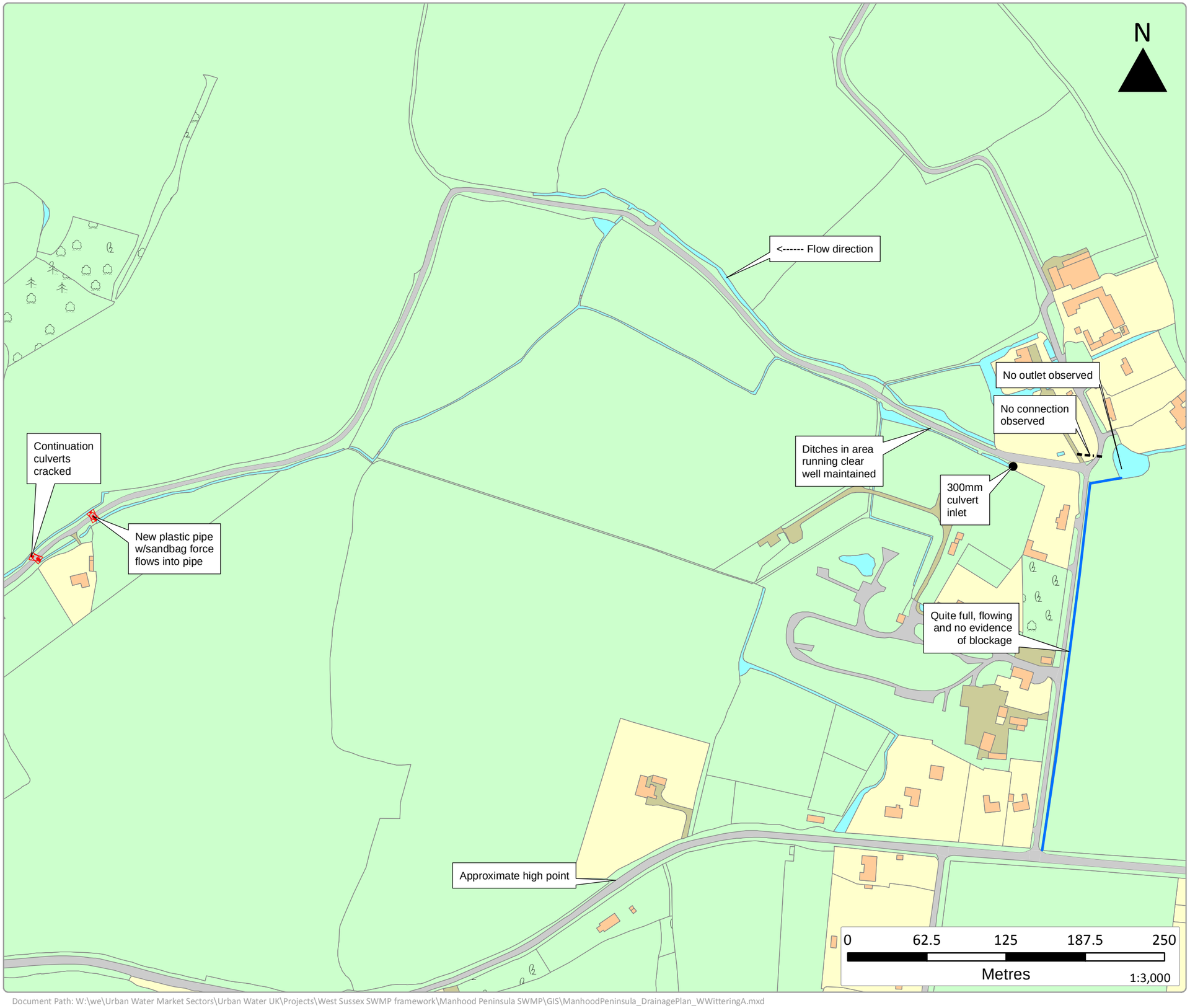
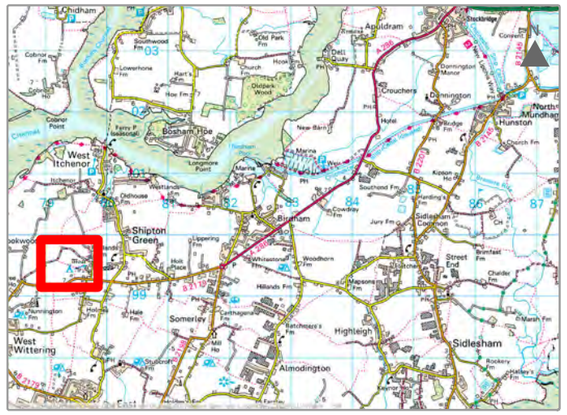
Manhood Peninsula SWMP





Legend

- Manholes
- Culvert
- Open channel
- Unknown

West Wittering A Drainage Plan

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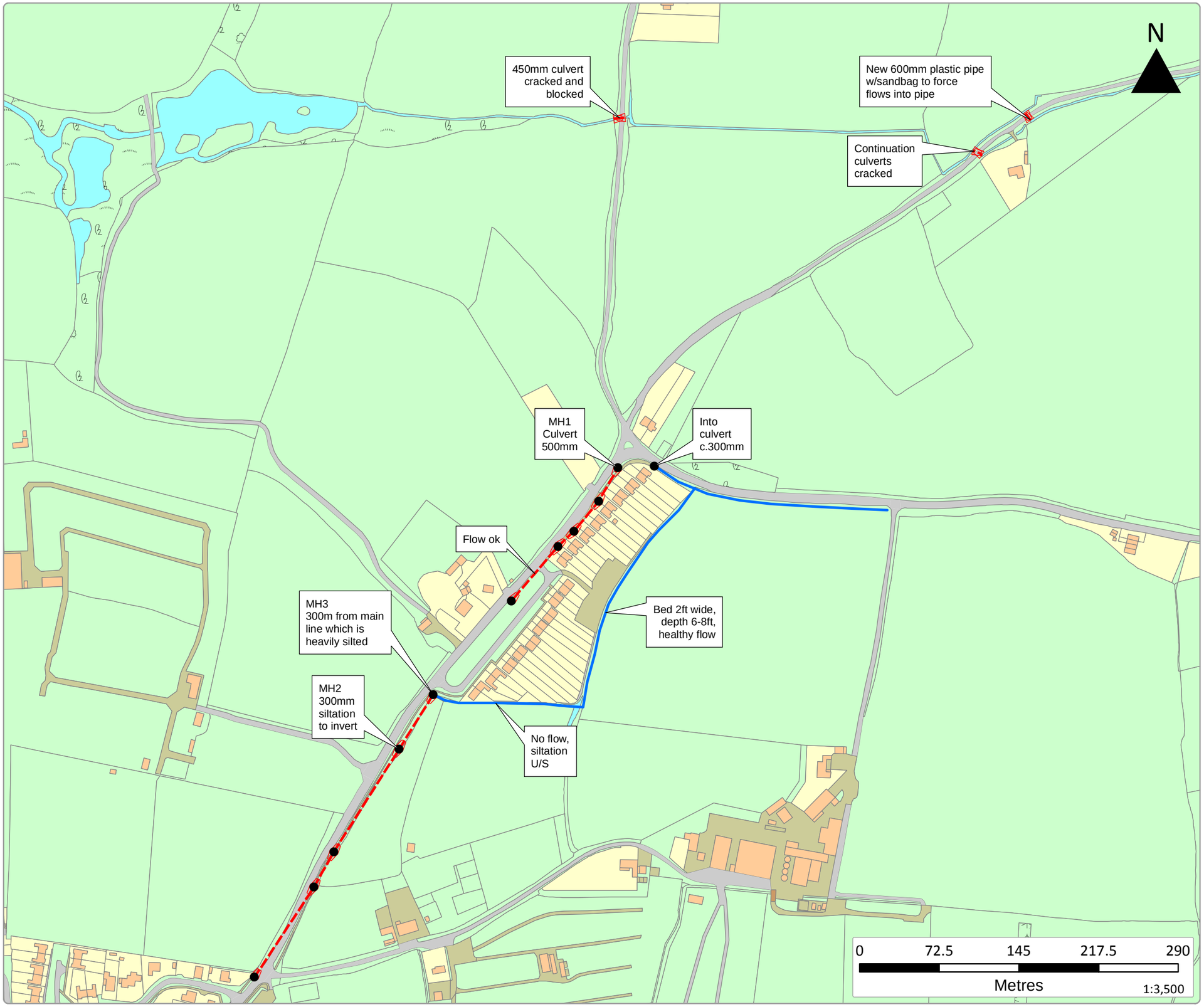
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown

West Wittering B Drainage Plan

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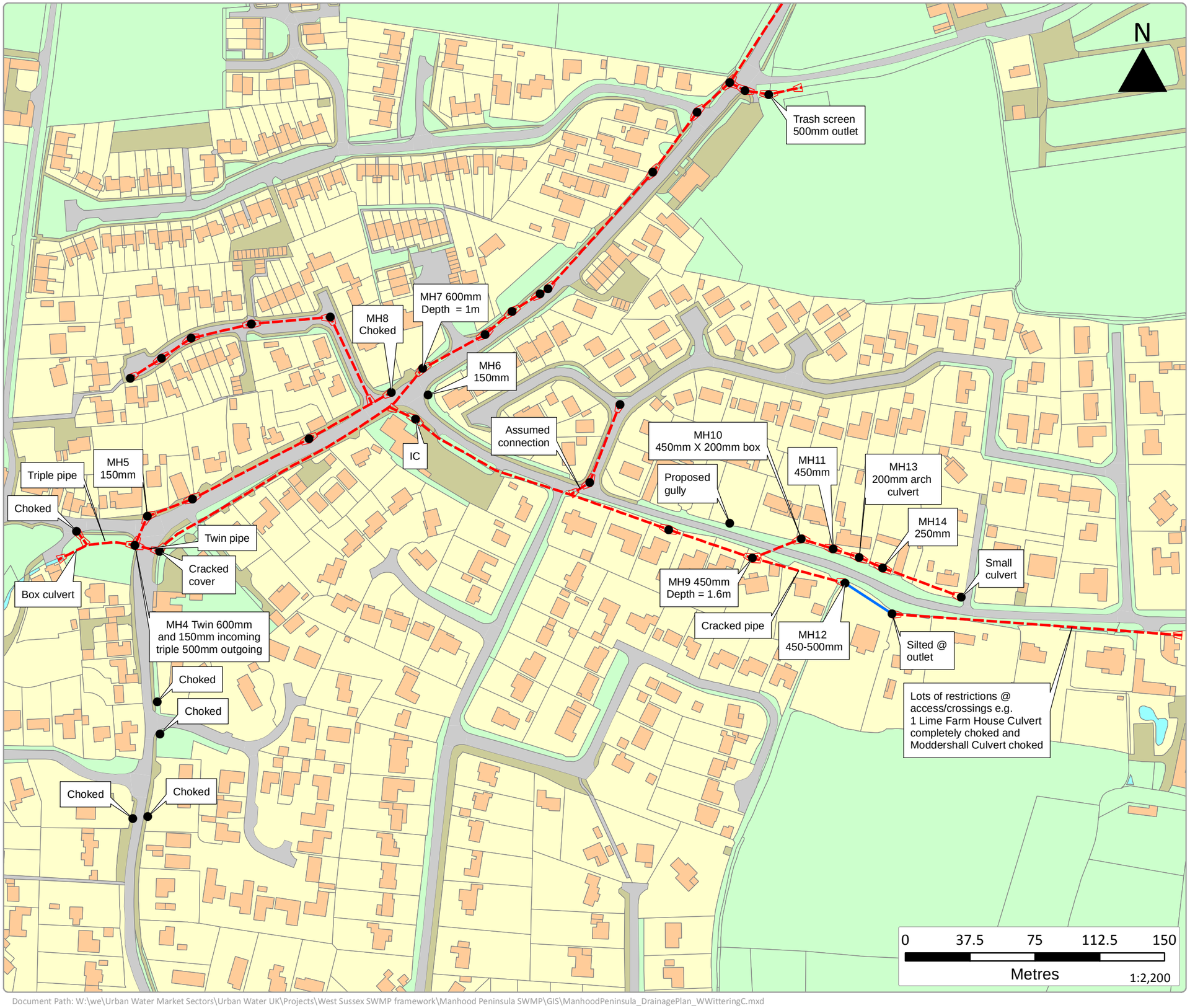
Manhood Peninsula SWMP



Legend

- Manholes
- Culvert
- Open channel
- Unknown

West Wittering C Drainage Plan

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Manhood SWMP - Parish Council Meetings 14th and 15th October 2014 - Feedback

ID	Type	Funding of action	If other, specify	Action status (where relevant)	Description or details (Free text box)
BIR_01	Action	Other	Not known	Proposed	Ditch has beeen compromised and is not attached to the network - especially at the corner at the roundabout
BIR_02	Flood Location			Not Identified	Birdham stores - car park floods, gullies are blocked and the car park is lower than the road
BIR_03	Action	Other	Not known	Proposed	Possible crack in 18 inch culvert
BIR_04	Action	Operation Watershed	Flood Action Group	Proposed	Culvert crushed and not functioning. Key pinch point in the network. Flood Action Group is looking to buy the land and install new culvert/drain/ditch. Current culvert runs through ornamental gardens. OW bid in for work. Caused flooding in June 2012, and Dec 2013 to 14 properties on Church Lane
BIR_05	Action	Operation Watershed	Flood Action Group	Proposed	Proposing to re-instate pond here, which could be key to holding water back
BIR_06	Information			Not Identified	Highway drainage in a poor state, gullies completely blocked
BIR_07	Flood Location	N/A		Not Identified	Key pinch point in Birdham
BIR_08	Action	Other	Not known	Proposed	Proposal to re-instate pond in private land to alleviate flooding
BIR_09	Action	PC		Completed	Pump operating to pump excess surface water on road and in ditches into field to the immediate west (pump still present in October 2014)
BIR_10	Flood Location	N/A		Not Identified	Key pinch point in Birdham, several properties flooded June 2012 and December 2013
BIR_11	Information	N/A		Not Required	Planning application for development
BIR_12	Action	PC	Flood Action Group	Not Identified	Problem area, during spring/high tides overtops Causeway, fills the pond and floods Lock Lane (can affect discharge of SW from Birdham, if you get rainfall event at the same time). Flood Action Group proposing to investigate disused sluice by Birdham Pool. NB: when tide drops it doesn't lower levels in Birdham Pool u/s which suggests partial collapsed culvert
BIR_13	Information	N/A		Not Required	Village pond, which has water voles in it. Detailed findings in Birdham walkover dojne by MWHG
BIR_14	Information	Other	Not known	Proposed	These ditches need to be linked, they have been blocked and closed off from the network by driveways. The ditch on the field side does not appear to be connected to the ditch that goes into Mapsoms Lane
BIR_15	Action	WSCC		Underway	Continue work currently underway to improve ditch outfall from Church Lane to Crooked Lane via Birdham School playing field.
BIR_15	Action	WSCC		Completed	Locate and Jet existing culverts as per plan. Report findings and clear if possible. At J/w Springfied and adj. to Morello
BIR_16	Action	WSCC		Completed	Clear ditch. TM REQUIRED see map in sharepoint west of shipton Green Lane between eastings:481078 northings:99270 and eastings:481301 northings:99304
BIR_17	Action	WSCC		Completed	Jet and clean culverts in highlighted area to outlet if possible. The main culvert that runs under the eastern entrance to Greenacres. The main culvert that runs under the eastern entrance to Greenacres.
BIR_18	Action	Operation Watershed		Proposed	Clearance and grading of ditches with clearance of culverts under Crooked Lane
DON_01	Flood Location	N/A		Not Identified	Whole ditch missing here causing road to flood as new concrete road cut the ditch in half, and also inundates the main road with runoff
DON_02	Flood Location	N/A		Not Identified	Water build up floods the road. Work has been done here (not specified who did this)
DON_03	Action	Other	Not known	Completed	Silt from ditch clearance just piled up next to the road where it will go back into the ditch
DON_04	Action	N/A	Not known	Proposed	Ditch along the road needs to be managed to take water off the road and hold it
DON_05	Information	N/A		Not Identified	The capacity and condition of this culvert needs to be checked
DON_06	Action	N/A		Proposed	Water totally floods the road here, there is a large pond but it cannot take all the water. Houses are at huge risk of flooding because of bow waves as drivers go through standing water
EAR_01	Flood Location	N/A		Not Identified	25 properties flooded along this section of the road in June 2012. Partially caused by backing up of Rife (where Bookers Lane now is) and other culverts along the road)
EAR_02	Action	EA	Parish Council	Completed	Bookers Lane Flood Alleviation Scheme
EAR_03	Information	N/A		Not Required	Outfall into Medmerry Scheme
EAR_04	Information	N/A		Not Required	Outfall into Medmerry Scheme
EAR_05	Action	WSCC		Underway	OPUS are doing survey for WSCC of ditches in Somerley and Upper Bookers Lane
EAR_06	Information	PC		Completed	PC has done assessment of dimensions of culverts along this stretch of road. They are concerned that any upsizing of these to reduce u/s flooding could affect capacity of Bookers Lane scheme
EAR_07	Action	EA		Proposed	EA to replace collapsed culvert (this is EA land)
EAR_08	Action	EA		Proposed	EA to replace collapsed culvert (this is EA land)
EAR_09	Action	PC		Not Identified	Culvert under Drove Lane (private) is pitch fibre and there is a probable collapse, which causes problems to properties on Manor Farm. Also get backing up of small package treatment plant. Confirm whether John Smith (EA) was going to get cleared?
EAR_10	Flood Location	Other	Private Lane (holiday village)	Not Identified	Series of culvert through holiday village, one of which is under-sized which causes some localised problems to static caravans
EAR_11	Action	PC		Underway	PC have secured £172k from EA and WSCC to undertake Almodington FAS. See atatched notes from Robert Carey which has details of flooding problems and proposals

EAR_12	Information	N/A		Not Identified	Ditch at back of houses is not managed. Has water voles in it and floods. It needs to be dug out and the culverts cleared (2 small culverts). Ditch then links into the Bookers Lane system. Also suffers from dumping of garden waste and litter
EAR_13	Action	Operation Watershed		Proposed	Clearing & Re-grading a short section of the drainage channel (about 60 to 70 metres) at the back of the houses along Bookers Lane
EWIT_01	Action	WSCC		Completed	Conways to clean and jet system in highlighted area to include all gullies and associated catchpits(see conway report in links). O/S Cliffords Cottage Restaurant
HUN_01	Information	N/A		Not Required	Highway ditch, heavily silted, rarely fills with water
HUN_02	Information	N/A		Not Required	Highway gullies commence, some soakaways
HUN_03	Flood Location	N/A		Not Required	Floods NE-SW across road from fields
HUN_04	Information	Riparian Owner		Not Identified	Mapped drain no more than indentation, does not fill with water
HUN_05	Information	WSCC		Not Identified	Buried highway(?)drain, either culvert or french drain
HUN_06	Action	Riparian Owner		Completed	Section cleared by riparian owner post June 2012, flows well most of the year
HUN_07	Action	WSCC		Completed	New pipe/ culvert fitted by WSCC (Paul Cann) post June 2012. Any culvert blockage here causes back up, no grills. Corner of "canal" car park (to north of road) previously a pinch point. Car park ownership not known.
HUN_08	Information	N/A		Not Required	Active springs
HUN_09	Flood Location	N/A		Not identified	Swan cottage north side of mini roundabout, floods regularly. Start of main river (Bremere rife)
HUN_10	Flood Location	WSCC		Not Identified	Low spot along road, gullies blocked and inefficient, often floods, knee deep 2012, between Post Office and Foxbridge. Car wash causes flood issues. Assumed WSCC responsibilityy as part of highway drainage
HUN_11	Flood Location	EA		Not Identified	Box culvert under road silted and readily blocked. Wood Cottage flooded June 2012 from Rife and road. Rife adjacent to raod.
HUN_12	Flood Location	EA		Not Identified	Rife flooded road, bow waves caused issue. Where rifes swaps west to east the culvert heaviliy silted and blocked. Manual weed pull carried out annually by EA, now doing in spring? East side of rife lower than west of B2145.. Level further upstream.
HUN_13	Action	Riparian Owner		Completed	Previously heavily blocked, church commision land. New tenant farmer (10-15 year lease) has cleared old blockages and put new piped drainage. Very well maintained since then.
HUN_14	Action	Riparian Owner		Proposed	Church Lane, designated conservation area, frequently floods, drainage not functional, at top end, floods after heavy rain. Manor House and church have heavily silted overgrown ponds. Manhood Wildlife and Heritage identified work needed on ponds and blocked ditches toward Spire cottage
HUN_15	Flood Location	Riparian Owner		Not Identified	Large farm entrance (Longmeads?), concrete road, funnels floods off fields and into Church Lane. Ditch and culvertd along this length need to be cleaned , culverts too small, have no grills and block easily
HUN_16	Flood Location	Riparian Owner		Not Identified	Spire cottage. Over grown ponds, downstreanm ditch to Rife also overgrown. New culvert installed but discharges into poorly profiled ditch… just backs up. Ditch by cottage blocked by large willow that needs removal.
HUN_17	Flood Location	Other		Not Required	Playing fields flood.
HUN_18	Action	WSCC		Completed	Clear ditches/headwalls as necessary. map on sharepoint, between eastings:486341 northings:102081 and eastings:486249, northings:101928
HUN_18	Action	WSCC		Completed	Clean and jet MAIN LINE in highlighted area. From Post Office to Flagstones
ITCH_01	Information	N/A		Not Required	Posssible high point
ITCH_02	Flood Location	N/A		Not Identified	Garden flooded half way up in the past from the ditch overflowing
ITCH_03	Information	N/A		Not Required	Culverted driveway, size of culvert not specified
ITCH_04	Flood Location	N/A		Not Identified	Culvert under road blocked, probable 9 inch pipe
ITCH_05	Flood Location	N/A		Not Identified	This road floods during very heavy rainfall right across the road, up to 2 inches deep
ITCH_06	Information	N/A		Not Required	Big open ditch, local residents thought this drained west to West Wittering, but West Wittering CP disputed this evidence
ITCH_07	Action	Riparian Owner		Proposed	Ditch along west edge of road needs clearing
ITCH_08	Information	N/A		Not Required	Historic ditch on eastern edge of road, no longer existing
ITCH_09	Action	Other	Not known	Proposed	Historic pond which has been filled in. It is being re-instated
ITCH_10	Information	N/A		Not Identified	Ditch completely overgrown, unsure how it used to connect to rest of network. Does it drain north or south?
ITCH_11	Flood Location	N/A		Not Identified	Driveway floods
ITCH_12	Information	N/A		Not Required	Flow pathway across field
ITCH_13	Information	N/A		Not Required	Ditch network which drains runoff from the east
ITCH_14	Information	N/A		Not Required	Pipe under road (brick and sleeper culvert), size not specified
ITCH_15	Flood Location	N/A		Not Identified	Flooded in June 2012 to 18 inches deep. But whilst rainfall still happening the property stopped flooding indicating a sudden clearance downstream (possible culvert clearance)
ITCH_16	Information	N/A		Not Required	No water in this ditch, it is disconnected
ITCH_17	Information	N/A		Not Required	Open ditch, 4 foot deep although never more than 60cm of water even during flooding

ITCH_18	Flood Location	N/A		Not Identified	Flooding across road last winter (2013/14) about 18 inches deep. Road level at this point is 4.5m AOD, whereas further down the catchment it's 1m AOD. PC could not understand why water was ponding here
ITCH_19	Information	N/A		Not Required	Open ditch by farm track
ITCH_20	Information	N/A		Not Required	Ditch culverted through gardens, pipe sizes unspecified
ITCH_21	Information	N/A		Not Required	Low lying properties which have pumps to drain SW into ditch. Recent development believed to have blocked the drain they pump into
ITCH_22	Information	N/A		Not Required	Flow pathway across field
ITCH_23	Information	N/A		Not Required	Flow pathway across field
ITCH_24	Information	N/A		Not Required	Road at c.1m AOD
ITCH_25	Information	N/A		Not Required	Village Pond. Depsite signage this pond does not have water voles in it. It could be managed better to hold more water, there is a willow taking over
ITCH_26	Action	Riparian Owner		Completed	Houses on east side of the road much lower. Homeowners have paid for mitigation works themselves (new pipes)
ITCH_27	Flood Location	N/A		Not Identified	Sewerage flooding (common issues in West Itchenor)
ITCH_28	Information	N/A		Not Required	Sluice gate
ITCH_29	Information	N/A		Not Required	Catchment boundary disputed between West Itchenor and West Wittering
ITCH_30	Information	N/A		Not Identified	This is a drainage ditch and is full of dense vegetation. It could do with being cut back more regularly. Access is an issue because this is a private estate
NMUN _1	Action	Other	Southern Water	Proposed	700 mobile homes, foul drainage runs south down school lane. Apparent agreement to discharge at controlled rate not being honoured, overloading top end of foul drainage system
NMUN _10	Flood Location	Other	none needed	Not Required	Rife flooding….fields
NMUN _2	Action	Other	Southern Water	Proposed	Sewage backs up in heavy rain, Fletchers place and Fletchers Close. SW pump station at this location. Lots of sewer infiltration, may be shallow emergent groundwater. SW may be addressing?
NMUN _3	Flood Location	Other	Southern Water/ WSCC	Not Identified	Sewage issues in house, road flooding may get into sewers via un sealed manholes. WSCC to evaluate road drainage issues?
NMUN _4	Action	WSCC		Proposed	Post office lane.. Some flooding over road from blocked culvert PC have asked WSCC to clear culverts. Flooded but driveable
NMUN _5	Action	Riparian Owner		Not Identified	Runcton Manor - "Severalls" installed weir and water features, created their own problems
NMUN _6	Flood Location	EA		Not Identified	Flooding from rife, tree fell into Rife. Assume cleared ?
NMUN _7	Flood Location	Other	Unclear	Not Identified	Significant flooding from fields onto the road, which is lower, lots of ditch clearance carried out (not clear by whom, by landowner?)
NMUN _8	Flood Location	WSCC		Completed	Flooding from fields to the east, blocked culvert, property "Cornwood" flooded. A lot of road flooding in this area, houses OK as mostly at higher elevation
NMUN _9	Action	WSCC		Completed	Drainage runs east then north, then east again. When culvert blocked, flowed north to flood Cornwood instead (see above). WSCC highways have done a lot of work on culvrets whicha pears to have eased issue. Ongoing maintenance on outward channel needed
NMUN_11	Action	WSCC		Completed	Clear 100m of ditch and make sure gully is running. between Smith's Barn and croft cottage, between eastings488308 northings:100337 and eastings:488396 northing:100290(see map in sharepoint)
NMUN_12	Action	WSCC		Completed	Clear 10m of ditch to alleviate gully outlet. junction of Brookside/Lagness Road BETWEEN EASTINGS:488428 NORTHINGS102373 AND EASTINGS:488417 NORTHINGS102366
NMUN_13	Action	WSCC		Completed	Clean approx 5 gullies (record missing gullies marked with a star on the plan for inclusion on the WSCC inventory) clean assoc. catch pits and jet pipes to out outfall. from Little Acre to junction with puches lane, please refer to map
SEL_001	Flood Location	WSCC		Not Required	Road flooding on low spots in B2145. Passable, occurs across road after 2-3 days heavy rain. PC clerk could not remember road being closed as a result . No action
SEL_002	Flood Location	PC		Completed	Some sandbag requests along East side Manor Road (note significant amount of housing missing from our base map)
SEL_003	Information	PC		Proposed	Gardens of community centre flood frequently, rain garden being proposed by PC
SEL_004	Information	N/A		Not Required	New homes devleopment, 200 + homes plus supermarket and other commercial development Will drain vias SUDS ultimately east to East beach pond
SEL_005	Flood Location	Other	Southern Water	Not Identified	Sewage flooding, plus frequent flooding across the road. Not clear if action needed ref surface flooding
SEL_006	Flood Location	N/A		Not Identified	Bus stop lay-by regularly flooded
SEL_007	Information	Other	New development	Not Identified	East Beach pond takes drainage from "new" estate east of Manor road. Pond enlarged (historically was always point to which SW drained anyway) New development to include upgrades?
SEL_008	Information	WSCC		Not Identified	Car park frequently flooded from sea
SEL_009	Flood Location	Other	District council	Completed	James Street cul de sac - flooding from sea (overtopping) plus rainfall/ surface water ponding. (Sea wall dates from 1950's) Some sea wall collapse 2012, some associated flooding.repaired by district council
SEL_010	Flood Location	EA		Not Identified	Caravan site flooded 2012, not clear how Medmerry scheme will affect this site. No action currently identified

SEL_11	Action	WSCC		Completed	remove 2 x boltholes and replace with carriageway gullies, also change small footway gulley to 300x300. install carriageway gullies o/s 5 and 15 and install larger footway gully o/s no 9, between EASTINGS:485997 NORTHINGS:93596 AND EASTINGS:486047 NORTHINGS:93587
SEL_12	Action	WSCC		Completed	Build tarmac hump across whole of access approx 24m to alleviate water going onto access from carriageway. O/S 15 (MAP ON SHAREPOINT) between Eastings: 485788 northings:93666 and eastings:485811 and N:93651
SEL_13	Action	WSCC		Completed	AD HOC CCTV - Clean and jet system to include pipework, gullies and associated catchpits. Blocked Culvert outside the proerty called Dibidi next to Norton Lea.
SEL_14	Action	WSCC		Completed	Clean and jet system in highlighted area to include all gullies and associated catchpits. In vicinity of Norton Corner Cottages
SEL_15	Action	WSCC		Completed	Jet main line and clean assoc. catch pits to prove system. o/s 5 & 7
SEL_16	Action	WSCC		Completed	Clean and jet system in highlighted area to include all gullies, pipework, catchpits and outfall. Between No's. 46 and 60 Kingsway
SID_ 001	Flood Location	Other	Southern water? Developer?	Not Identified	Jury Lane. Foul water from traveller/ mobile home site enters open ditch system
SID_ 002	Flood Location	WSCC		Not Identified	June 2012, significant flooding of road, water flowed across golf course from Hunston (from NE). Not clear what action needed.
SID_ 003	Flood Location	WSCC		Not Identified	Major flooding - 2012
SID_ 004	Action	Riparian Owner		Completed	"Christians Barns" flooded, backed up along Chalders Lane - pond not managed properly, now being done issues reduced
SID_ 005	Flood Location	WSCC		Not Required	Church Lane/ Chalder Lane flooding, in part due to unconnected ditches and water run off from glasshouses
SID_ 006	Flood Location	Other	not clear	Not Identified	"Challons" property flooded
SID_ 007	Action	Operation Watershed		Proposed	Long period flooding June 2012. Poor culverts or no connections , roads cut off. Rotten Row floods from west and flows SE into Watery Lane (?), drainage leads to culvert under B2145. Also flooding from east along Church Farm Lane (all flooded in June 2012). Culverts near Anchor pub near collapse. Drainage catchment to this area uncertain, no CCTV done so not clear where blockages are, though culverts clear pinch points . Whole area seen as critical.OW bid in this area to address culvert issues
SID_ 008	Action	Riparian Owner		Completed	Farmer has done a fair amount of ditch clearance
SID_ 009	Action	Riparian Owner		Not Identified	Lockgate road, flooding of road, standing water in ditches, connectivity issue. Large areas of glasshouses contribute to runoff
SID_ 010	Flood Location	WSCC		Not Required	Sheep dip pond , heavily silted. Top end of Keynor Rife. Culvert under road at this point
SID_ 011	Flood Location	Operation Watershed		Proposed	See below ref proposed action.Top end of Keynor Rife floods Highleigh Road. Rife shallow, holds little water, poor flow and crossed by many driveways, restricted culverts. Floods during heavy rainfall -one of roads leading to Sidlesham Primary School which is emergency evacuation centre, which is not accessible during floods along Highleigh Road and Keynor Lane. Circa 50+ properties flooded along Highleigh Road
SID_ 012	Flood Location	Operation Watershed		Proposed	Diversion of rife to west of existing housing and through fileds proposed soulution OW funindg bid submitted 17 October 2014. New housing at north end
SID_ 013	Action	Other	Wildlif and heritage group	Underway	Selsey Road to Church Farm Road (see also 14/15 below). Drainage from main road junction along lane appears to be via ponds to a north and east direction along Church Farm Road - Wildlife and Heritage group have started ditch work, though culverts also need to be replaced. Pond restoration to be carried out to help protect property that has flooded - residents alos get cut off.
SID_ 014	Information	N/A		Not Required	Catchment and flow directions a little unclear, discontinous
SID_ 015	Action	Operation Watershed		Proposed	Property flooding this location, east of ditch . South flowing 24" pipe, collapsed in many places, 10- 15 road gullies not functioning, clogged and collapsed. Project by Wildlife and Heritage group to open up pond and reconnect to network. Not clear if already funded by OW
SID_ 016	Flood Location	WSCC		Not Required	Rookery Lane to Mill Lane. Some work done by landowners. High water Table in this area and extensive land drainage. Open dich then culvert under main road and into Rife Culvert under Rookery Lane blocked.
SID_ 017	Information	Other	Southern Water	Not Identified	Sewer flooding in this area, surcharged by surface water flow into unsealed manholes. Sw tankering 24/7 during floods Plus overpumping into drainage with no permit
SID_ 018	Flood Location	Operation Watershed		Proposed	Keynor Lane - floods extensively to Selsey Road and at junction , water in road cutting cuts off residents, blocks access to Primary school. Glasshouse drainage to ditch an issue (no attenuation). Long run of ditch where no flow due to poor culverts and lack of interconnection should take water to Chalk lane but poorly maintained ditch prevents flow. OW project identified Phase 2 to adress culverts and other issues - funding application made ?
SID_ 019	Action	Other	Unclear	Completed	Flooding in Manhood Lane now sorted
SID_ 020	Flood Location	N/A		Not Required	Backing up causes field flooding and affactes car park (?)
SID_ 021	Action	EA		Not Identified	Flap valve at exit to Pagham harbour does not work, causes tidal back up in ditch network and deposition of sediment in ditch network
SID_ 022	Flood Location	N/A		Not Required	Mill Lane - tidal surge caused flooding of 2 properties
SID_023	Action	WSCC		Completed	Clear ditches as necessary. two way lights required near to junction with rookery lane by pondtail cottage between Eastings:485615 northings:98149 and eastings:485633 and northings:98044
SID_024	Action	WSCC		Completed	Clear ditch as necessary. near eaton house between eastings:485061, northings99575 and eastings485107 northings:99479
SID_025	Action	WSCC		Completed	Repair side entry/bolthole cover (Gully ID D1982). near to junction with Church Lane see map in sharepoint eastings:485360 northings:99154
SID_026	Action	WSCC		Completed	AD HOC Jetting - Clean and jet system to include pipework, gullies and associated catchpits. O/s Willowmead, Highleigh road

SID_027	Action	Operation Watershed		Proposed	The ditches leading into the lane need to be dug out and the main culvert under the road investigated and cleared out. This culvert carries water along the lane to Chalk Lane where it opens up into a ditch that carries water south and under the B2145 and into a rife that carried the water to Pagham Harbour Local Nature Reserve. A form of attenuation needs to be explored to hold water back from the road that currently runs from glasshouses situated on Keynor Lane. Work with the Community Chalk Lane Road Management Group to ensure that their ditch is cleared and can carry water to south.
WWI_01	Flood Location	N/A		Not Identified	Flow across Holmes Lane regularly, Holmes Farm flooded in 2013. Watercourse overtops and flows onto road, watercourse not flowing well at all. Culvert under road under capacity?
WWI_02	Action	EA		Underway	EA clear one bank of watercourse once per annum
WWI_03	Flood Location	N/A		Not Identified	Villa Maria' floods frequently, flooding from field to the west which is now subject of development. Needs new drainage down the road
WWI_04	Action	Other	Unknown	Not Identified	New outfall is required at Chalmead, but unclear what is required currently
WWI_05	Action	Riparian Owner		Completed	Webb's Farm has water surrounding it every year, recent clearance by riparian owner has been completed
WWI_06	Information	N/A		Not Identified	Peter's Pond requires clearance
WWI_07	Information	N/A		Not Required	At this point the Main River believed to go down Shore Road and into the sea
WWI_08	Information	N/A		Not Required	Historically if Redlands ditches were blocked water would have backed up and flowed northwards towards West Itchenor, but because of state of West Itchenor ditches this doesn't happeny anymore
WWI_09	Action	Riparian Owner		Completed	Homeowners have paid for significant ditch clearance. Current OW bid for funding to install relief pipe at Redlands
WWI_10	Action	Operation Watershed		Proposed	Sheepwash House - water at threshold annually. Culvert is collapsing under private road (OW bid to repair culvert). There is a relief pipe further upstream which helps Sheepwash House
WWI_11	Action	Operation Watershed		Proposed	Culvert under road too small and is collapsing (NB: private road), causing problems at Sheepwash House. This is a pinch point. OW bid for funding to repair culvert
WWI_12	Information	N/A		Not Required	Flap valve
WWI_13	Action	Operation Watershed		Proposed	Emery Cottages - Rookwood Road floods annualy and is paassable with care. 80m of collapsed highway drainage needs replacing. OW bid to repair highway drainage, following CCTV survey
WWI_14	Action	WSCC		Underway	More severe problems with collapsing drainage. WSCC is currently doing repair works but PC does not think this will resolve the issue because probable further collapse downstream
WWI_15	Flood Location	N/A		Not Identified	Location of foul pumping station. New development in village was supposed to have holding tanks for foul sewerage but were never built. Causes backing up and foul flooding on Village Green
WWI_16	Action	Other	West Wittering Flood Bank Committee	Completed	Committee funded £250k of flood protection works, they have £20k left in the pot to spend. Link here to the FD Woodger estate with a capital value of £37m
WWI_17	Action	WSCC	and Operation Watershed	Underway	Elms Lane floods frequently (and Old Barn flooded a number of times). WSCC culvert under side of road which was surveyed under Ph1 of OW. Collapsed pipes, service pipes running through pipe, tree roots etc. WSCC are clearing some sections which is a short term fix. OW application for further works.
WWI_18	Flood Location	N/A		Not Identified	Ditch filled in by property owners and has flowers growing in them. Need to be re-instated

ID	Location	Comment
WWI_19	Parish-wide	Generally got to grips with landowners by working with district council, apart from one or two. Lots of ditch clearance this year and last year
WWI_20	Parish-wide	PC have employed Robert Clark (drainage consultant) to do Phase 1 OW work (e.g. surveys) and submitted Ph.2 bids
EAR_13	Bell Lane and Bookers Lane	Lots of highway grips on these roads that are blocked entirely causing localised flooding on the roads
ITCH_31	Parish-wide	PC proposals is to have a three phase approach: Ph1 = survey, Ph2 = options, Ph3 = Implement. They have a civil engineering contractor on board
ITCH_32	Parish-wide	Lots of sewerage flooding issues across West Itchenor
ITCH_33	Parish-wide	Flooding was a common occurrence pre 2012
BIR_14	Parish-wide	Flood Action Group concerned about long term maintenance of new schemes
HUN_18	Bremere Rife	Bremere Rife well maintained by EA. Regular vegetation cuts by EA through Hunston and down through golf course. Manhood Wildlife and Heritage group suggests using golf course for flood storage.
NMUN_11	North Mundham - Pagham Rife	The PC expressed concern that when Lavant diversion (Chichester relief scheme) in full operation that overspill into Paghham Rife could cause flooding in village- as far as Runcton Lane to East side of village- especially if other blockages in village. Rife near Runcton Mill becoming worse due to less and less maintenance
NMUN_12		In north of parish most of flooding is from foul drainage.. Nt much surface water flooding
NMUN_13	South Mundham	South Mundham has no mains drainage, but SW floods get into package sewage plants and septic tanks and cause foul flooding
SEL_11	Selsey	A lot of landowners clear ditches but not as regularly as they should. Most of land owned by Langmead developments
SEL_12	Selsey	Note mapping excludes housing around Manor road. Information on flooding in Selsey Village neighbourhood plan on SPC website- SEA completed by URS
SEL_13	Selsey	Town council has £100K ring fenced for coastal defence/ sea wall repairs (prevously owned by developer)
SEL_14	Selsey	2-3 years ago major sewer looding problems (East Beach Estate) . …sewer flooding with every rain event. Since SW undertook significant sediment removal/ cleansing no further problems. All pumped to Ferry Corner STW
SEL_15	Selsey	Metropole "COAST" study using Selsey/ Medmerry as case history on how to adapt to coastal changes. Kings College London… have approached Selsey PVC
SID_023	Sidlesham	PC expressed concern regarding speed of water discharging from downs and how thia may affect flows in Rifes [MB Note.. There may be regional groundwater contribution to upper parts of some rifes]
SID_024	Sidlesham	PC concerned about silting up of Pagham harbour (3-4 mm /year) and how this may impact discharge from Bremere Rife
SID_025	Sidlesham	PC undertsand there is a £3M EA scheme to sheet pile northern and western margins of Pagham Harbour for protection from tidal flooding
SID_026	Sidlesham	Ditch network in most of Street End area in poor condition (connectivity, clearance)