Reviewing the Plan for Purbeck's future

Purbeck Local Plan Review

- **Strategic Flood Risk Assessment (SFRA) Level 1, January 2018**

Purbeck District Council

Thriving communities in balance with the natural environment

Contents

List of maps

Introduction

Background

1. This Strategic Flood Risk Assessment (SFRA) has been prepared by Purbeck District Council with guidance from the Environment Agency and Lead Local Flood Authority. This Level 1 SFRA provides a broad scale assessment of flood risk across Purbeck.

2. This SFRA has been published after the examination and adoption of the Swanage Local Plan. It has been updated to incorporate flood risk information relating to Swanage but should be considered together with the Level 1 and 2 SFRAs which have been prepared for Swanage[1]. The Level 2 SFRA for Swanage relates to town center development sites allocated through the Swanage Local Plan that are located in areas of flood risk - Flood Zones 2 & 3 (the Level 2 SFRA can be downloaded from the Council's website at: https://www.dorsetforyou.gov.uk/swanage-flood-risk-assessment).

3. The Level 1 SFRA for Purbeck summarises, and collates, the risks arising from known sources of flooding so that this information can be used in the sequential approach to allocating land for development through the Local Plan, when assessing planning applications and when developing appropriate strategies for managing and mitigating flood risk. Together with Environment Agency and Lead Local Flood Authority this SFRA has been prepared in consultation with the Council's Engineer, and Wessex Water.

4. It should be read in conjunction with national policy in the National Planning Policy Framework (NPPF) (2012), Planning Practice Guidance: Flood Risk and Coastal Change (PPG) (2014), and evidence/information provided by the Lead Local Flood Authority (Dorset County Council) in the Local Flood Risk Management Strategy (2014).

What is flood risk?

5. Flood risk is a 'combination of the probability and the potential consequences of flooding from all sources – including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources' (Planning Practice Guidance, 'Flood Risk and Coastal Change', paragraph ID: 7-002-20140306).

National planning policy on flood risk

6. The National Planning Policy Framework states that councils should: assess, avoid, and where necessary address the risks from flooding. Further guidance on flood risk (and on preparing SFRAs') is found in Planning Practice Guidance: 'Flood Risk and Coastal Change'.

7. The National Planning Policy Framework and Planning Practice Guidance set strict tests to protect people and property from flooding. The policies state that

[1] The Level 2 SFRA for Swanage was prepared by JBA consultants.

development should not be permitted at a site where there is risk from flooding if there are better alternative sites in terms of flood risk, or if they cannot be made safe.

8. Planning Practice Guidance also state that:

- **To assess flood risk** councils should prepare a SFRA to fully understand the flood risk from all sources in their area. The SFRA should be used to prepare Local Plans and for assessing planning applications.

- **To avoid flood risk** councils should apply a sequential approach when selecting sites through a Local Plan so that development is, as far as reasonably possible, located where the risk of flooding (from all sources) is lowest. Councils should also take account of climate change and the vulnerability of future uses to flooding as part of this approach. In plan-making, and when assessing planning applications, this involves using the information on flood risk in this SFRA (and from other relevant sources including Environment Agency and Lead Local Flood Authority) to apply 'The Sequential Test', and, where necessary, 'The Exception Test'.

- **To address flood risk,** where the risks from flooding cannot be avoided, councils should manage and mitigate these risks and look for opportunities to reduce the causes and impacts from flooding.

Flood risk management and Flood Risk Management Authorities in Dorset (including Purbeck)

9. Outside the planning system other organisations have responsibilities for flood risk management. Flood risk management can reduce the probability of flooding through the way land and river systems are managed and flood defences. It can also reduce the effects of flooding through flood warning and emergency response (Frome and Piddle Catchment Flood Management Plan (CFMP), 2008). The Flood and Water Management Act 2010 sets out the organisations that are 'Flood Risk Management Authorities' that have a duty to share information and work in partnership with each other when performing functions connected with flood and coastal risk management.

10. In Dorset, Dorset County Council is the Lead Local Flood Authority (LLFA) for the administrative area. Bournemouth Borough Council and Borough of Poole are the LLFAs for their own administrative areas. Dorset County Council acting as LLFA has prepared the 'Dorset Local Flood Risk Management Strategy' (2014) (LFRMS) (https://www.dorsetforyou.com/localfloodrisk) which describes which organisations have responsibility for managing the risks from flooding. It states that:

- **Lead Local Flood Authority (LLFA)** is responsible for investigating flooding from 'ordinary watercourses', surface water and groundwater.

- **District Councils** (including: Christchurch Borough Council, East Dorset District Council, North Dorset District Council, Purbeck District Council, West Dorset District Council and Weymouth and Portland Borough Council) are Flood Risk Management Authorities (FRMA's).

- **The Environment Agency** (local offices based in Blandford Forum) is responsible for managing the risk of flooding from the sea and main rivers, and also for regulating the safety of reservoirs. Where there is an interface between

the sea and main rivers with local flood risk sources (for example, tide locking) it is the responsibility of the LLFA to consider the impacts and consequences of flooding and agree who will lead.

- **Water and sewage companies**(most of Dorset is serviced by Wessex Water, there is a small area to the West of the county which is covered by South West Water plc, and a small area to the East which is covered by Sembcorp Bournemouth Water) are responsible for sewer flooding and systems they manage.

- **Highways Authorities** (The Highways Agency manages: the A31, A35 and A303 trunk roads, and Dorset County Council manages all other public highways in Dorset) are responsible for the management of surface water from rainfall on the highway. ('Dorset LFRMS (2014), paragraph 1.1.1)

11. The roles and responsibilities for the FRMAs in relation to different sources of flooding are summarised in Table 1 of the Dorset LFRMS (DCC, 2014) as follows:

Flood Source	Environment Agency	Lead Local Flood Authority (DCC)	District Council (PDC)	Water Company***	Highways Authority
Main river*	✓				
Ordinary watercourse**		✓			
Surface water		✓			
Surface water on highway					✓
Sewer flooding				✓	
The sea	✓		✓		
Groundwater		✓			
Reservoirs	✓				

* A Main River is a river that has been designated as such by the Environment Agency. These tend to be the larger arterial watercourses that are considered to pose a significant flood risk.

**Ordinary watercourses include all rivers and streams not designated as a Main River and all ditches, drains, cuts, culverts, sluices, sewers (other than public sewers) and passages, through which water flows.

*** Highways authorities include the Highways Agency and Dorset County Council Highways team.

12. The EA established a Regional Flood and Coastal Committee (RFCC) in 2010. The RFCC is formed from experienced independent members and those appointed by the LLFA. It has three purposes:

- to ensure there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines;

- to encourage efficient, targeted and risk-based investment in flood and coastal erosion risk management that represents value for money and benefits local communities; and

- to provide a link between the Environment Agency, LLFAs, other risk management authorities, and other relevant bodies to build understanding of flood and coastal erosion risks in its area.

13. The RFCC published its strategy for 2017-2021 (available at: https://www.gov.uk/government/groups/wessex-regional-flood-and-coastal-committee#papers). The strategy includes aims which link into the objectives described in the bullet points above, including flood risk management authorities working together to reduce the risk and impact of flooding and coastal erosion through Risk Management Plans.

14. The Council has worked closely with the EA, Dorset County Council LLFA, and Wessex Water to gather, collate and prepare evidence of flood risks from all sources which can be used to assess and address flood risk through the planning process.

Strategic Flood Risk Assessments (SFRAs)

15. A Strategic Flood Risk Assessment considers '…the risk to an area from flooding from all sources, now and in the future, taking account of the impacts of climate change…'. It also '…assess the impact that land use changes and development in the area will have on flood risk' (Planning Practice Guidance, 'Flood Risk and Coastal Change', paragraph ID 7-009).

What is a Level 1 SFRA?

16. A Level 1 SFRA is a basic assessment of flood risk where flooding is not a major issue. The SFRA should be used to guide development to areas of lowest risk according to Flood Zones (and other sources of information on flood risk) using The Sequential Test set out in the NPPF.

What is a Level 2 SFRA?

17. A Level 2 SFRA may be needed where there are greater risks from flooding. It should include a review of the flood hazard(s) and take into account flood risk management and mitigation measures. A number of policy proposals included in the Swanage Local Plan would result in development within areas of higher flood risk. As a result, further work has been undertaken by consultants to produce a SFRA Level 2. This takes into account wider catchment areas and potential impacts from climate change. The SFRA Level 2 also makes specific recommendations to guide the layout and use of buildings.

How should SFRAs be used in plan making?

18. Planning Practice Guidance states that a SFRA 'will be used to refine information on river and sea flooding risk shown on the Environment Agency's Flood Map' (Planning Practice Guidance, Paragraph: 010 Reference ID: 7-010-20140306, March 2014). It also lists six ways in which the SFRA should be used, as follows:

Councils should use their SFRA to:	Where in the SFRA?
Determine the variations in risk from all sources of flooding across their areas, and also the risks from flooding between other areas in the same flood catchment	Assessing flood risk - Types of flooding in Purbeck Flood risk maps and data sources Assessment of flood risk and management measures by Parish.
Inform the sustainability appraisal of the Local Plan, so that flood risk is fully taken into account when considering allocation options and in the preparation of plan policies, including policies for flood risk management to ensure that flood risk is not increased	Avoiding, mitigating and managing the risks from flooding and reducing causes and impacts of flooding Assessment of flood risk and management measures by Parish.
Apply The Sequential Test (see below) and, where necessary, The Exception Test when determining land use allocations	Avoiding, mitigating and managing the risks from flooding and reducing causes and impacts of flooding Assessment of flood risk and management measures by Parish.
Identify the requirements for site-specific flood risk assessments in particular locations, including those at risk from sources other than river and sea flooding	Avoiding, mitigating and managing the risks from flooding and reducing causes and impacts of flooding Assessment of flood risk and management measures by Parish.
Determine the acceptability of flood risk in relation to emergency planning capability	Avoiding, mitigating and managing the risks from flooding and reducing causes and impacts of flooding.
Consider opportunities to reduce flood risk to existing communities and developments through better management of surface water, provision for conveyance and of storage for flood water	Avoiding, mitigating and managing the risks from flooding and reducing causes and impacts of flooding Assessment of flood risk and management measures by Parish.

Use of this SFRA

19. The information and data contained in this SFRA is based on the most up-to-date available at the time it was prepared (autumn/winter 2017). Flood risk data and mapping is regularly reviewed as further information and modelling becomes available. The SFRA will be updated regularly to take these changes into account. The most up-to-date information on flood risk can be obtained from the various agencies and authorities involved in flood risk management, including on-line maps prepared by the Environment Agency.

What is a Sequential Test?

20. 'The Sequential Test ensures that a sequential approach is followed to steer new development to areas with the lowest probability of flooding. The Flood Zones as refined (taking account of surface water flooding and flooding from other sources) in the Strategic Flood Risk Assessment for the area provide the basis for applying the test. The aim is to steer new development to Flood Zone 1 (areas with a low probability of river or sea flooding). Where there are no reasonably available sites in Flood Zone 1, local planning authorities in their decision making should take into account the flood risk vulnerability of land uses and consider reasonably available

sites in Flood Zone 2 (areas with a medium probability of river or sea flooding), applying the Exception Test if required' (Planning Practice Guidance, 'Flood risk and Coastal Change', ID 7-019-20140306).

21. Subject to available information the Council will take account of the risks from all sources of flooding when applying the sequential approach to selecting potential development sites in its Local Plan and assessing planning applications.

Assessing flood risk: types of flooding in Purbeck

22. Dorset County Council's LFRMS states that the most significant source for flooding in Purbeck has been from main rivers (fluvial) and coastal tidal floods. Surface water flooding, highway flooding, and sewer related flooding are also noted across the District. The next sections of the SFRA describe the different sources, and causes, of flooding that affect the District.

Fluvial flooding

23. Fluvial flooding occurs when a river or stream cannot manage the amount of water draining into it from surrounding land. The largest main rivers rivers in Purbeck are the Frome and Piddle, and the catchment area of each has a long history of fluvial, flooding. Widespread flooding from these main rivers has occurred in recent years over the winters of 2000, 2001, 2012 and 2013/2014. Fluvial flooding in the Frome and Piddle Catchments often coincides with tidal, surface water and groundwater floods.

24. Other watercourses are known as ordinary watercourses, which may be rivers or streams, but can include ditches, culverts and pipes. Dorset County Council has discretionary powers regarding ordinary watercourses. The responsibility for maintenance of both main rivers and ordinary watercourses generally rests with the land owner.

Coastal and tidal flooding

25. Coastal flooding is a significant issue along parts of Dorset's coastline. It can be caused by high tides or storms, and is likely to get worse in the future because of rising sea levels caused by climate change. Along with high tides, large waves (normally caused where they break from deeper water close to the shoreline) can also cause flooding when they overtop sea defences. There are significant risks from coastal flooding in Swanage (with waves overtopping defences) and from tidal floods on the low lying land around the edges of Poole Harbour (in particular to the south and east of Wareham and around the edges of Lytchett Bay).

26. The Environment Agency maps showing the land which is affected by coastal/tidal flooding are based on still water levels. The risks for tidal/coastal flooding are likely to be greater when wave overtopping is taken into account. The Council's Engineer will be consulted on any potential allocations or planning applications that are at risk of coastal/tidal flooding so that wave overtopping can also be taken into consideration. Where appropriate the Council has also included allowances which take the effects of waves on coastal/tidal flooding into consideration.

27. In addition to land zoned at risk from flooding on the EA maps the Council's Engineer has stated that land close to the coastline may also be at risk of tidal inundation. The Council has not mapped the land which is likely to be affected by tidal inundation and there is no information on how often this land is likely to flood. The Council's Engineer has also advised that buildings directly facing, and close to the sea, may suffer wave impact damage and associated flooding. The distance between the building and the point where waves break (and any coastal defence) will affect the extent of any damage and flooding. As a precautionary approach, the Council will take wave impact damage and flooding into consideration for development that is close to and fronting the sea which is positioned below 6.0m above ordinance datum (AOD). The Council has not mapped the affected land but wave impact damage and flooding will in particular need to be considered when planning development along the coastline in Swanage.

Surface water flooding

28. People living in Swanage, Lulworth, Winfrith Newburgh, Bere Regis, Wool, Upton, Lytchett Matravers, Lytchett Minster, Wareham and Chaldon Herring are particularly affected by surface water flooding. Surface water flooding is defined as flooding on land that is not directly associated with fluvial floods from watercourses or from emerging groundwater. Surface water flooding can arise: when soils are saturated (and unable to absorb further rainfall), after particularly heavy rainfall, when rain falls upon impermeable surfaces, or when a drainage system designed to manage surface water fails. This leads to overland flows of surface water outside natural watercourses. Surface water flooding can occur many miles from a river or the sea. Rates and depths of surface water flows are effected by topography, the permeability of surfaces which the water flows over and the effectiveness of surface water drainage systems.

29. Surface water flooding is often short lived and normally triggered by heavy downpours or thunderstorms. The quantities of flood water are not normally on the scale of those associated with flooding from large rivers. Despite this surface water can cause significant flooding to buildings and infrastructure. Surface water flooding on roads causes major inconveniences to the transport network.

30. Further significant localised flooding can be caused when surface water flood routes through urban areas are obstructed or when overland flow rates of surface water are increased by new development. Development may also cause water to collect where it is not able to percolate into the ground. This development can include vehicle hard standings in front gardens and paved areas around homes. Where planning permission is needed for these types of development the Council may ask for details of a surface water drainage system to ensure that the development does not cause or worsen localised surface water flooding. The Council assesses the technical design standards for surface water drainage systems on a case by case basis taking account of what is needed to address the risks from flooding (on site and elsewhere), relevant guidance prepared by the Department for Environment, Food and Rural Affairs (Non-Statutory Technical Design Standards for Sustainable Drainage Systems March 2015) and what is reasonably practicable (including overall viability of the development). Where flooding from this source has been observed details have been noted in the descriptions of sources of flood risk for each Parish. The Council does not have detailed, or comprehensive records, showing all the land which is affected by localised surface water flooding or how often this land floods.

Highway flooding

31. Highway surface water flooding can be caused by intensive rainfall, blocked/overwhelmed drains, or blocked gullies/culverts. Dorset County Council's LFRMS notes the communities in Dorset that made the greatest number of reports of highways flooding between October 2013 and February 2014. In Purbeck this includes: Arne, Lytchett Minster and Upton, and Wareham Town. There are also three recorded incidents of flooding on Dorchester Road in Lytchett Minster between October 2013 and February 2014.

32. When existing roads are re-surfaced the top layer is not necessarily removed. This often means that the level of the road is continually raised which can make homes next to roads more vulnerable to surface water flooding (this is more common in rural areas).

Groundwater flooding

33. There are anecdotal records of ground water causing localised flooding close to Lytchett Minster (Lytchett Minster Flood Risk Study prepared by Jacobs, May 2017). Groundwater flooding usually occurs after long periods of high rainfall. Groundwater flooding is caused when groundwater levels rise (through porous ground or along fractures called aquifers) above the grounds surface. A number of communities across Dorset reported groundwater flooding to the LLFA in 2012/2013. The LFRMS (2014) notes that '…understanding of this risk [referring to the risk from groundwater flooding] is limited, restricted to a broad indication of areas that may be susceptible to groundwater floods.' (paragraph 2.1.2).

34. The Frome and Piddle CFMP states that groundwater is the source of 6% of flooding in the catchment flood management plan area (in comparison 79% of floods are caused by river flooding, 13% from surface water and 2% from tidal flooding) (The Frome and Piddle, CFMP 2008, Figure 3.3). Most of the incidences of groundwater flooding recorded in the Management Plan are in the upper parts of the catchment area.

Sewer flooding

35. Sewer flooding is often caused when a sewers capacity is exceeded because of groundwater or surface water entering the drainage network (other causes include equipment failures and blockages). Sewers are typically designed to operate up to a 1 in 30 year storm event. The drainage network includes foul sewers, surface water sewers, and combined sewers (which carry both foul and surface water). Water companies are responsible for managing flooding from sewers (Wessex Water is responsible for most of the sewers in Purbeck). Where surface, or ground, water entering sewers affects their performance Wessex Water and Dorset County Council as the LLFA will work together to seek to resolve the issue.

Canal flooding

36. There are no canals in Purbeck and this type of flooding is therefore not applicable to the rest of the SFRA.

Reservoir flooding

37. As set out in FRMS (2014), the Environment Agency is responsible for regulating large raised reservoirs under the Reservoirs Act 1975. Risk of reservoir flooding is shown on Environment Agency mapping.

Impacts of climate change on flooding

38. Climate change projections indicate that there will be an increase in average temperatures, an increase in winter rainfall, a decrease in summer rainfall and rising sea levels. The frequency and intensity of extreme weather is also likely to increase. For Purbeck areas that are already at risk of flooding will become more vulnerable and areas that are not currently at risk of flooding may flood in the future. The effects of climate change need to be taken into consideration when applying The Sequential Test to allocations in the Council's Local Plan and determining planning applications.

39. Dorset County Council's Local FRMS predicts that:

- River flood flows will increase by 20% by 2050, and 30% by the 2080s.
- River flow will vary more significantly over the seasons with winter flows increasing by up to 20% and flows across the rest of the year (most noticeably in the summer) decreasing by 50% - 80% by 2050.
- The intensity of extreme rainfall will increase by 10% by the 2050s and 20% by the 2080s.
- Sea levels will increase by almost 0.5m by the 2080s.
- The number of storm surge increases.

Assessing flood risk: flood risk maps and data

Summary table

40. The Council has used information from a number of sources to prepare this SFRA. Including detailed maps which show the land effected by flooding and how often floods are likely to occur as well as observations from members of the Public, the Council's Engineer and the Lead Local Flood Authority. Where records are based on observations it has not been possible to precisely define the risks from flooding. Records of flooding based on these observations are described as localised flooding in this SFRA. These records of localised flooding are recorded in the section of the SFRA titled 'Assessment of flood risk and management measures by Parish'.

41. The table below describes the key sources of data, including flood risk mapping, that have been presented in this SFRA to assess flood risk.

Type of map/data	Source of map/data
Fluvial	Dorset explorer – interactive flood maps and data EA interactive maps - Risk of Flooding for Land-Use Planning (Rivers and Sea) for England; Flood warning areas; groundwater

	GOV.UK – Flood map for planning and long term flood risk information
Coastal and Tidal	Dorset explorer – interactive flood maps and data EA interactive maps - Risk of Flooding for Land-Use Planning (Rivers and Sea) for England GOV.UK – Flood map for planning and long term flood risk information
Surface water	Dorset explorer – interactive flood maps and data EA surface water mapping GOV.UK – Flood map for planning and long term flood risk information Dorset County Council Highways Highways Agency
Groundwater	Dorset explorer – interactive flood maps and data
Sewer	Wessex Water
Reservoir	EA interactive maps GOV.UK - Flood map for planning and long term flood risk information
Climate change	EA
Flood risk studies and management plans	EA Frome and Piddle CFMP 2008 EA Lytchett Minster Flood Risk Study 2017 DCC LFRMS 2014 PDC Swanage Level 2 SFRA 2016 DCC Section 19 Investigations Swanage Flood Warning Study and Maps Swanage SFRA Level 2 Shoreline Management Plans

42. This part of the SFRA describes the information on flood risk for each of the sources of flooding which affect the District. Where appropriate the SFRA also makes recommendations as to how the information should be used when applying planning policy relating to flood risk. It has been prepared using the data sources/maps listed above.

Fluvial flood maps and data

43. The EA has prepared maps to show land which is at risk of flooding from main rivers. Land at risk from this source of flooding is categorised into three different zones according to how often it floods. These zones are described as:

- Flood Risk Zone 1 – land where flooding from main rivers is very unlikely, with less than a 0.1 per cent (1 in 1000 year) chance of a flood occurring each year.
- Flood Risk Zone 2 – land where there is a moderate risk of flooding from main rivers of between a 1 in 100 and 1 in 1000 year chance of a flood occurring each year.
- Flood Risk Zone 3 – land where there is a high risk of flooding from main rivers, with a 1 in 100 chance of a flood occurring each year.

44. The EA Flood Zones do not take flood defences into consideration, as these can be breached. Nor do they take account of other sources of flooding. The most up to date

flood maps for planning which show fluvial flooding from main rivers can be accessed through the government's website: https://flood-map-for-planning.service.gov.uk/ . The Flood Risk Zones shown on these maps should be taken into consideration when applying The Sequential and Exceptions Test. The EA's maps do not show the fluvial flood risk from ordinary watercourses.

45. The EA's fluvial flood maps show the current flood risks from main rivers and not future risks from flooding. The EA's map can therefore only be a guide to future flood-risk. If a development site is close to a flood risk zone today, further site specific assessment work may be required to assess the potential impacts of flooding over the lifetime of the development (100 years-time) which take account of the effects of climate change.

46. To fully assess the impacts from flooding the EA maps on the government website also show depth, flow and velocity estimates of flood water; and flood risk from reservoirs (this data also includes the extent, depth and speed of flooding).

Coastal and tidal flood maps and data

47. The EA has mapped coastal/tidal flooding. This information is displayed on the same maps which show fluvial flooding from main rivers. Land is categorised according to how often it floods into the following zones:

- Flood Risk Zone 1 – land where the risks from coastal flooding from the sea is very unlikely, with less than a 0.1 per cent (1 in 1000 year) chance of a flood occurring each year.

- Flood Risk Zone 2 – land where there is moderate risk from coastal flooding of between 1 in 200 and 1 in 1000 year chance of a flood occurring each year.

- Flood Risk Zone 3 – land at the highest risk from coastal flooding, with a 1 in 200 year chance of a flood occurring each year.

48. The Flood Risk Zones shown on these maps should be taken into consideration when applying The Sequential and Exceptions Test. Land close to the coastline, at levels below 6 metres AOD, may also be at risk from flooding caused by tidal inundation. The Council has not mapped these areas. Despite this the flood risks from tidal inundation need to be taken into account when planning development in coastal areas of the District and when applying The Sequential and Exceptions Test.

Surface water flood maps and data

49. The EA has also prepared surface water flooding maps (the most up to date maps can be accessed on the government's website - https://flood-warning-information.service.gov.uk/long-term-flood-risk). The maps show which land is at risk from surface water flooding. Land at risk of flooding is categorised into four different risk types according to how often it floods. These risk types correspond with the Flood Risk Zones which describe the probability of flooding from main rivers and coastal/tidal flooding. The risk types for surface water flooding are:

- 'Very low each year' – land in this category has a 1 in 1000 chance of flooding each year (the same probability as land at risk from fluvial/coastal flooding in Flood Risk Zone 1).

- ‘Low each year’ - land in this category has a chance of flooding between 1 in 100 and 1 in 1000 each year (the same probability as land at risk from fluvial/coastal flooding in Flood Risk Zone 2).

- ‘Medium each year’ - land in this category has a chance of flooding between 1 in 30 and 1 in 100 each year (the same probability as land at risk from fluvial/coastal flooding in Flood Risk Zone 3).

- ‘High each year’ - land in this category has a chance of flooding of greater that 1 in 30 each year (the same probability as land at risk from fluvial flooding in Flood Risk Zone 3).

50. The flood risk maps in this part of the SFRA include EA maps showing the likelihood of flooding from surface water. Government guidance and understanding about using this data states that these maps do: ‘not contain sufficient information for it to be used to determine flood risk to individual properties…’ The guidance goes onto state that the maps ‘give you an indication of whether your area may be affected by surface water flooding and to what extent.’ (Risk of flooding from surface water, Understanding and using the map, 2013, https://www.gov.uk/government/publications/flood-risk-maps-for-surface-water-how-to-use-the-map).

51. Notwithstanding the advice in these guidance notes Planning Practice Guidance states that ‘A Strategic Flood Risk Assessment should identify areas at risk from surface water flooding and drainage issues, taking account of the surface water flood risk published by the Environment Agency and any other available evidence…’ (Planning Practice Guidance, Paragraph: 013 Reference ID: 7-013-20140306).

52. The surface water Flood Risk Zones shown in the EA maps have been incorporated into the maps showing flood risk by settlements in this SFRA. These maps should be taken into consideration when applying The Sequential and Exceptions Test in the manner described in this SFRA. Where necessary an applicant/landowner promoting development, or the Council through allocations in a local plan, may consider carrying out a more detailed assessment to precisely show the flood risk at a site specific scale.

Groundwater flood maps and data

53. Groundwater Flood Warning Maps 2015 are mapped on Dorset Explorer Website - https://explorer.geowessex.com/ . The Ground Water Flood Warning Maps 2015 have been prepared by the EA and show land which may be susceptible to groundwater because of underlying geology. They identify land which is susceptible to flooding but do not clarify how often the land is likely to flood. The information in these maps should be taken into consideration when applying The Sequential and Exceptions Tests, but it cannot be used to directly compare flood risk from other sources.

54. The Council also has access to British Geological Survey (BGS) which shows susceptibility of groundwater occurring at the surface. This data does not identify areas at flood risk from groundwater but the Council has been able to cross reference this data with other records to identify land at risk from flooding (for example the Council has used BGS data and Wessex Water records to prepare maps showing flood risk from sewers). To avoid creating flood risk at sites, or elsewhere, as part of

the Local Plan Review the Council is also considering whether it would be appropriate to develop a criteria based development plan policy for managing surface water from new development in those sites where the BGS data indicates that groundwater is susceptible to occurring at the surface.

Sewer flood maps and data

55. Wessex Water notified the Council that there was a risk from sewer flooding (caused by groundwater inundation into existing sewers) in two broad areas in the District. Working together the Council, LLFA and Wessex Water have prepared maps which identify land which is at risk from sewer flooding caused by groundwater inundation into sewers.

56. The maps which identify the land which is effected by sewer flooding have been prepared using:

- Data from the BGS. This data gives an indication of the land which is susceptible to groundwater occurring at the surface. BGS used information relating to ground levels, underlying geology and estimated 'high' groundwater levels[2] to create maps showing land where groundwater is susceptible to occurring at the surface.

- Wessex Water's records (between 2008 and 2017) of sewer flooding caused by groundwater inundating sewers.

57. The maps which show the land which is at risk from flooding have been created by cross referencing Wessex Water's records of sites where sewer flooding (caused inundation) has occurred with BGS data of land which is susceptible to groundwater occurring at the surface (i.e. land where there is also evidence of high groundwater levels). Evidence of existing ground levels, from Ordinance Survey contour lines, has also been used to exclude higher land next to these areas. This has been based on the assumption that both ground water and sewer discharge would flow to the lower ground levels.

58. Wessex Water holds records indicating that land in and around the settlements of Bere Regis and Lytchett Matravers has historically been effected by sewer flooding caused by groundwater inundation. Wessex Water's records note that between 2008 and 2017:

- there have been 21 incidents of sewer flooding or backing up in Bere Regis caused by groundwater inundation into sewers; and

- there have been 92 incidents of sewer flooding or backing up in Lytchett Matravers caused by groundwater inundation into sewers.

59. Using Wessex Water's records of the number of recent incidents of sewer flooding in Bere Regis and Lytchett Matravers the LLFA and the Council have agreed that there is a moderate risk (the same probability as land at risk from fluvial/coastal flooding in

[2] Where an applicant to a planning application or landowner/developer promoting a site for development which the flood risk maps in this SFRA suggest are at risk from sewer flooding has detailed site specific information which indicates that the land which they are promoting for development is not susceptible to groundwater occurring at the surface they should submit this to the Council to consider through a flood risk assessment (FRA). The Council will take any site specific information into consideration when assessing flood risk and applying the sequential approach in national planning policy.

Flood Risk Zone 2) of sewer flooding on land identified in the sewer flood risk maps in this SFRA.

60. The evidence which has been prepared to show flood risk from sewers should be taken into consideration when applying The Sequential and Exceptions Tests.

Reservoir flood maps and data

61. The long term flood risk information website (https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?map=SurfaceWater) identifies areas at risk of flooding from reservoirs. The maps identify the maximum extent of flooding, but not how often the land is likely to flood. The information in these maps should be taken into consideration when applying The Sequential and Exceptions Test, but it cannot be used to directly compare flood risk from other sources.

Records of localised flooding

62. The County Council has collated records of flood investigations (including those investigations under section 19 of The Flood and Water Management Act 2010) along with some earlier investigations carried out by the District Council, and presented these records on a geographic information system (GIS) mapping layer. The mapping layer shows areas (and individual sites) that have previously been effected by flooding, but does not clarify how often the land floods. The LLFA also publishes section 19 investigations and provides information on local flooding incidents across the District. Further information can be found at the following sites:

    https://www.dorsetforyou.gov.uk/article/424482/Managing-Local-Flood-Risk

    https://www.dorsetforyou.gov.uk/article/424483/Flood-Investigations

63. The land effected by flooding as identified through these investigations is displayed on the flood risk maps for each parish and should be taken into account as a consideration when applying the Sequential and Exceptions Tests, but it cannot be used to directly compare flood risk from other sources.

Climate change flood maps and data

64. The Frome and Piddle CFMP (2008) states that climate change is likely to have a significant impact on flood risk over the District, both through increased flows in the rivers and rising sea levels. It also notes that although there is much uncertainty as to the effects of climate change on groundwater, it is possible that decreased annual average rainfall will mean that flooding arising from this source becomes less significant. Despite this the risks from surface water flooding are expected to increase with more high-intensity rainfall events in the future.

65. The current data on fluvial, surface water, groundwater, and coastal/tidal flooding does not take account of future risks from flooding. Because of the uncertainties over future climate, and rainfall, the Council has not modelled the land which is likely to be at risk from fluvial, surface water, and groundwater flooding. Using evidence prepared by the EA the Council has modelled the land which is likely to be affected by tidal flooding in the future because of rising sea levels caused by climate change.

66. Rising sea levels will have different effects on different parts of the coastline. The EA have advised that in 100 years from the date of the Council's Local Plan (currently being reviewed for the plan period between 2016 and 2033) land in the vicinity of the shoreline around the edges of Poole Harbour, at ground levels of 3.24 metres AOD, is likely to be at annual risk of flooding from the sea of between 1 in 200 and 1 in 1000 years. This is the same probability of flooding as land currently categorised as Flood Risk Zone 3 for coastal/tidal flooding.

67. With a 600mm free board contingency (the 'free board' is a contingency which makes some allowance for wave overtopping) all land in the vicinity of the shoreline around the edges of Poole Harbour with ground levels at or below 3.84 metres AOD is at a high future risk from tidal flooding. Using contour lines[3] prepared by the Ordinance Survey the Council has mapped the land which will be affected by future tidal flooding. The information is presented in the maps showing flood risk by Parish and in the map showing flood risk across the District. These maps should be taken into account when applying the Sequential and Exceptions Tests and managing/mitigating the risks from flooding. Using a separate key the maps displaying flood risk by Parish also show land which may be susceptible to flooding because of ground levels and proximity to the edge of Poole Harbour. Unless there is other corroborating evidence of flood risk the maps showing land which is susceptible to tidal flooding should not be used when applying The Sequential and Exception Test.

Flood risk and surrounding areas

68. Purbeck District Council forms part of the wider catchment area for the Rivers Frome and Piddle. As well Purbeck the catchment areas includes parts of West Dorset, North Dorset and the Borough of Poole. The catchments covers an area of around 892 square kilometers. The Frome and Piddle Catchment Flood Management Plan (CFMP) (2008) divides the catchment into three areas: upper, middle and lower. Purbeck District Council's administrative boundaries correspond with the middle and lower parts of the catchment. Homes are concentrated in the lower part of the catchment area with over 70% of the catchments population concentrated in the towns of Poole, Wareham and Swanage.

69. Surface water entering watercourses in the upper parts of the catchment has a direct effect on the volumes of water in the main river channels in the middle and lower parts of the catchment. Flood risk is effected by the speed at which surface water reaches a river channel. This is influenced by topography (steep sided valleys cause fast surface run-off), vegetation (lack of vegetation increases the speed of run-off), and geology (impermeable geology prevents water from percolating into the ground and increases the speed of run-off). Watercourses for the Rivers Frome and Piddle in the upper parts of the catchment are set in steep incised channels. Fluvial flooding occurs in the lower parts of the catchment when the capacity of natural channels for water courses are exceeded. High tides exacerbate flooding by slowing/preventing water from rivers being discharged into Poole Harbour.

[3] Where an applicant to a planning application or landowner/developer promoting a site for development which the flood risk maps in this SFRA suggest are at risk from future tidal flooding has detailed site specific information which indicates that the land which they are promoting for development is not risk from this source of flooding (because existing ground levels across the site exceed 3.84 AOD) they should submit this to the Council to consider through a flood risk assessment (FRA). The Council will take any site specific information into consideration when assessing flood risk and applying the sequential approach in national planning policy.

70. Groundwater flows toward the center of the catchment area through underlying chalk which feeds the Rivers Frome and Piddle. There is a complex interaction between baseflow levels of these watercourses and groundwater in the middle and lower section of the catchment because of changes to the underlying geology. Flood risk across the entire catchment area is likely to be greater when the groundwater system is fully charged after heavy rainfall. At these times groundwater entering water courses elsewhere in the catchment is likely to increase the risk of flooding in Purbeck (in the middle and lower sections of the catchment).

71. Outside the District further development, and the way land is managed, are both likely to have an impact on the risks of flooding in Purbeck. Aside from the main settlements of Dorchester, Wareham, Swanage, and Poole, the Frome and Piddle catchment is largely rural with a dispersed patchwork of communities and small villages spread across the area. Urban growth, and new settlements, in the catchment area have the potential to increase volumes and rates of surface water run-off potentially increasing flood risk elsewhere in the catchment. The Frome and Piddle CFMP (2008) suggests that the impacts of development elsewhere in the catchment can be managed and mitigated with Sustainable Drainage Systems (SuDs). Changes to the way that agricultural land is farmed (including whether land is used for grazing or crops, and the types of crops grown) are also likely to affect flood risk. These will be influenced by policies relating to agriculture, conservation/ecology, and climate change.

72. Rising sea levels, and changes to the frequency/intensity of extreme weather events, are also likely to have a particularly significant impact on flood risk in Purbeck. Rising sea levels mean the tide will have a greater influence on watercourses discharging into Poole Harbour. The impacts on flood risk from this source are likely to be greatest in Swanage, Wareham, and Stoborough (Table 4.11, Froome and Piddle CFMP (2008)).

Flood risk studies and management plans

73. A number of flood risk studies and management plans have been prepared for sites and areas in Purbeck District. The studies and plans are produced by a range of organisations, often working in partnership to identify flood issues and potential management measures. The key studies and plans are set out below.

The Local Flood Risk Management Strategy

74. Dorset County Council, in its role as LLFA, investigates flooding from local sources. It has prepared a Local Flood Risk Management Strategy (LFRMS) (2014) for surface water, groundwater and ordinary watercourses. The aim of the strategy is to manage local flood risk in Dorset communities so communities are resilient and prepared for flooding. The strategy is a source of information on local flooding incidents across the district, and complements the EA flood maps and data available via the links above.

The Frome and Piddle Catchment Flood Management Plan

75. The EA's Frome and Piddle CFMP (2008) provides additional information on flooding in the Frome and Piddle catchment areas which include much of Purbeck District. The plan identifies policy options for different sub-areas within the catchments and sets out the key flooding issues affecting the area and actions to address the issues now and into the future.

76. For Purbeck the relevant Frome and Piddle CFMP policies are:

Catchment sub-area	Policy
2: The Chalklands	**Policy 6:** Areas of low to moderate flood risk where the EA will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits. This policy will tend to be applied where there may be opportunities in some locations to reduce flood risk locally or more widely in a catchment by storing water or managing run-off. This policy has been applied to an area (where the potential to apply the policy exists), but would only be implemented in specific locations within the area after more detailed appraisal and consultation.
4: River Frome Corridor	**Policy 6:** Areas of low to moderate flood risk where the EA will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits. This policy will tend to be applied where there may be opportunities in some locations to reduce flood risk locally or more widely in a catchment by storing water or managing run-off. This policy has been applied to an area (where the potential to apply the policy exists), but would only be implemented in specific locations within the area after more detailed appraisal and consultation.
5: Wareham Forest	**Policy 6:** Areas of low to moderate flood risk where the EA will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits. This policy will tend to be applied where there may be opportunities in some locations to reduce flood risk locally or more widely in a catchment by storing water or managing run-off. This policy has been applied to an area (where the potential to apply the policy exists), but would only be implemented in specific locations within the area after more detailed appraisal and consultation.
6: Poole	**Policy 4:** Areas of low, moderate or high flood risk where the EA are already managing the flood risk effectively but where it may be necessary to take further actions to keep pace with climate change. This policy will tend to be applied where the risks are currently deemed to be appropriately managed, but where the risk of flooding is expected to significantly rise in the future. In this case we would need to do more in the future to contain what would otherwise be an increasing risk. Taking further action to reduce risk will require further appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.
7: Coastline	**Policy 2:** Areas of low to moderate flood risk where the EA can generally reduce existing flood risk management actions.
8: Swanage	**Policy 4:**

	Areas of low, moderate or high flood risk where the EA are already managing the flood risk effectively but where it may be necessary to take further actions to keep pace with climate change. This policy will tend to be applied where the risks are currently deemed to be appropriately managed, but where the risk of flooding is expected to significantly rise in the future. In this case we would need to do more in the future to contain what would otherwise be an increasing risk. Taking further action to reduce risk will require further appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.
9: Wareham	**Policy 4:** Areas of low, moderate or high flood risk where the EA are already managing the flood risk effectively but where it may be necessary to take further actions to keep pace with climate change. This policy will tend to be applied where the risks are currently deemed to be appropriately managed, but where the risk of flooding is expected to significantly rise in the future. In this case we would need to do more in the future to contain what would otherwise be an increasing risk. Taking further action to reduce risk will require further appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options.

Lytchett Minster Flood Risk Study

77. The EA also commissioned a flood study for Lytchett Minster (2017) which aims to improve the understanding of existing types of flooding and prevailing risk(s) to this community, both currently and into the future. Outcomes from the study are summarised in the part of this SFRA describing flood risk for Lytchett Minster and Upton Parish.

Swanage Flood Warning Study and Maps

78. Consultant Halcrow completed a study in 2007 on the tidal flooding in Swanage (between Peveril Point and The Mowlem) with the view of providing flood warnings for tidal flooding events. If tidal flooding coincided with severe rainfall this may impact on the discharge of the Swan Brook at the Mowlem and the Sewerage Improvement Scheme. This may cause or worsen fluvial flooding from the Swan Brook.

Swanage SFRA Level 2

79. The Swanage SFRA Level 2 was prepared by JBA consulting as part of the evidence base to guide the Swanage Local Plan. The SFRA Level 2 provides additional evidence for the second part of the Exceptions Test and relates to two proposed development sites within the town. The SFRA aims to demonstrate that proposed development on the two sites will be safe for its lifetime, will not increase flood risk elsewhere and, where possible, will reduce flood risk overall. The two sites specifically considered in the SFRA Level 2 are the main town centre redevelopment site and the Kings Court Depot site.

Poole and Christchurch Bays Shoreline Management Plan (SMP2) (2011)

80. The Shoreline Management plan covers the coastline from Hurst Spit to Durlston Head (south of Swanage). The plan assess the risks to the shoreline from coastal evolution and identifies long term objectives for different parts of the coastline to enable sustainable coastal defences. The Swanage coastline falls within several management units, each of which has its own policy as follows:

Location	Policy
Handfast Point and Ballard Common (NAI)	No Active Intervention – decision not to invest in providing or maintaining defences or natural coastline.
HTL between Ballard Common and Peveril Point (with transition to MR at New Swanage over time)	Hold The Line – decision to maintain or upgrade the level of protection provided by defences or natural coastline. Managed Realignment – decision to manage the coastal processes to realign the 'natural' coastline configuration, either seaward or landward, in order to create a sustainable shoreline position.
MR from Peveril Bay to Durlston Head (with transition to NAI over time)	Managed Realignment – decision to manage the coastal processes to realign the 'natural' coastline configuration, either seaward or landward, in order to create a sustainable shoreline position. No Active Intervention – decision not to invest in providing or maintaining defences or natural coastline.

Flood Risk Assessments (FRA)

81. A detailed site specific assessment may be needed to thoroughly consider the risks from flooding to and from a particular site. FRAs are normally required to assess flood risk (and inform flood management and mitigation) on large development sites, development sites at risk from flooding, or for vulnerable types of development. The objectives of a site specific FRA are to establish whether:

- the proposed development is likely to be affected by current or future flooding from any source;
- development will increase flood risk elsewhere;
- any measures proposed to deal with the effects and risks from flooding are appropriate; and
- the development will be safe over its lifetime.

82. An FRA must be submitted with planning applications (or an application for prior approval consent) if the application site is in Flood Risk Zones 2 or 3, or where the site area is 1ha or more (National Planning Policy Framework 2012 (footnote 20)). In accordance with the guidance in the NPPF an FRA will also be needed for development, including changes of use, to more vulnerable classes of development (Planning Practice Guidance, 2014, Table 2: Flood risk vulnerability classification) at sites which are at risk from other sources of flooding. This will include sites:

- at risk from localised flooding (as noted in this SFRA, including those sites which: have been the subject of verified flood investigation by the LLFA or the Council,

and sites positioned close to the edge of the coastline[4] with ground levels below 6m AOD); and

- with critical drainage problems (as set out in the SFRA).

83. All FRAs should include: a topographic survey of the development site with levels recorded as Ordnance Datum; and details of the capacity of the receiving discharge system. Applicants should agree the scope of a FRA with the Council, the LFFA, the EA and any other relevant bodies. The level of detail, and scope, will depend on the nature of the flood risk and the scale, type and location of the proposed development. A more detailed assessment will be needed where the proposed development is likely to increase the level of flood risk at a site. If required, applicants should complete a detailed scoping of flood risk through a FRA as early as possible when preparing their planning application to inform the layout and design of development.

Avoiding, mitigating and managing the risks from flooding and reducing causes and impacts of flooding

84. This part of the SFRA describes the sequential approach (based on relevant planning policies) that the Council has developed to avoid flood risk when: allocating land for development through its Local Plan; taking decisions on planning applications; and where needed managing and mitigating the risks from flooding.

Avoiding the risks from flooding

Strategic Housing Land Availability Assessment (SHLAA) sites

85. The Council will be publishing the latest version of its SHLAA early in 2018. The SHLAA includes a detailed suitability assessment of sites that have been submitted to the Council to consider for housing development. The assessment includes an initial site sift. This process shortlists sites which should be included or excluded from further consideration on the basis of their suitability for development. The Council has taken constraints like flood risk into account when compiling this initial shortlist. Those sites with the highest risks from flooding have been excluded from the shortlist[5].

Applying the Sequential and Exceptions tests when allocating land for development

86. National planning policy steers the Council towards favoring sites for new homes where there is little or no risk from flooding. The Council should not consider sites as suitable in Flood Zone 2, or on land where there is evidence of flooding from other sources, unless there are no reasonably available alternative sites (which are appropriate for the proposed development) with a lower probability of flooding. The Council will also take account of flood risk vulnerability classification in Planning Practice Guidance when reviewing the suitability of SHLAA sites for new homes.

87. The Council will apply a sequential approach when selecting the most suitable sites for development to meet housing need, taking account of the flood risk maps prepared in this SFRA. If there are not enough reasonably available and appropriate

[4] For these purposes coastline is defined as landward facing edge of the shoreline or coast protection line.
[5] In the first instance the Council has excluded all sites which are at the highest risk from flooding. If the District's objectively assessed housing needs cannot be addressed from shortlisted, or other, sites the Council will re-consider whether The Exceptions Test can be satisfied for sites in Flood Risk Zone 3a.

sites with a low risk from flooding to meet the District's housing needs over the plan period the Council will consider sites with a moderate (and if required a high) risk from flooding. As part of this process the Council will consider all (or parts) of sites and may adjust the developable site area so that risks from flooding can be avoided.

88. Where necessary (i.e. where there are no reasonably available alternatives) the Council will also apply the Exceptions Test to land where there is a high probability of flooding each year (equivalent to Flood Zone 3a). For the Exception Test to be passed: 1. the development must provide wider sustainability benefits to the community that outweigh the level of flood risk, and 2. information must be provided which demonstrates that the proposed development will be safe from flooding over its lifetime, without increasing the risk of flooding elsewhere and where possible reducing flood risk.

89. After applying the Sequential Test (and if needed the Exceptions Test) the Council will only allocate land for new homes through the Local Plan which is at risk from flooding if it is likely that:

- re-developing the site would not increase overall flood risk (including flood risk elsewhere);
- the risks from flooding can be limited through layout and design; and
- residual flood risk can be safely managed for its users over the developments lifetime.

90. If necessary the Council will seek further information from the land owner, or the developer, promoting a site to help assess whether it is likely that the risks from flooding can be satisfactorily managed and mitigated. The Council will consult the LLFA and Environment Agency before deciding whether to allocate land for development which is at risk from flooding through the Local Plan. Where appropriate the Council may also make recommendations to manage and mitigate flood risk through allocations policies in the Local Plan so that these can be taken into consideration when preparing site specific Flood Risk Assessments (FRA),and designing drainage systems, layouts and buildings (for example the Council is considering a criteria based policy relating to managing surface water at those sites which BGS data indicates are susceptible to ground water occurring at the surface).

91. The Council will apply a similar approach to shortlisting, sequentially comparing and selecting land promoted through an economic land availability assessment.

Flood risk and Purbeck Local Plan

92. Local plan policy for the District must address flood risk, through the allocation of sites for development and the inclusion of flood-risk related policies. This SFRA describes how the Council will apply the sequential approach when selecting sites and allocating land for development through its Local Plan.

93. The adopted Purbeck Local Plan Part 1 (PLP1) (pg. 89) includes Policy FR: Flood Risk which states that 'the impact of flooding will be managed by locating development in accordance with Purbeck's Strategic Flood Risk Assessment (SFRA)'. The policy sets out requirements for FRAs and Sustainable Drainage Systems (SuDs). The Council is conducting a Local Plan Review of PLP1. As part of

this review the Council will assess whether local planning policies are up to date with the latest version of the SFRA and current national planning policies and guidance. The Council will consult its Engineer, LLFA and EA as part of preparation of the new Local Plan.

Flood risk and Neighbourhood Plans

94. Lytchett Matravers Neighbourhood Plan was 'made' in June 2017. A number of other town and parish councils, including those in Arn, Bere Regis and Wareham, are working on preparing Neighbourhood Plans for their plan areas. These plans must address flood risk when allocating sites for development, and by including any area specific flood-risk policies that may differ from those in the adopted Local Plan.

95. As with local planning policy, Neighbourhood Plan policies must be up to date and conform to national planning policies. Site allocations must be sufficiently assessed for all types of flood risk. This process should include a consultation with the Council's Engineer, the LLFA and the EA. Applying a sequential approach sites which are at risk from flooding should be avoided.

Managing and mitigating the risks from flooding

96. This part of the SFRA focuses on the Council's approach to managing and mitigating the risks from flooding where they cannot be avoided. Applicants should consider and address potential flooding and drainage issues that may affect, or be exacerbated by development, when preparing their planning application.

97. The Council will apply The Sequential, and where necessary, Exception Tests when assessing planning applications for development which have not been allocated for development (and tested) through the local plan. Planning applications for minor development[6], changes in use[7]; or those applications relating to land where the Sequential Test has been applied and there are no alternative sites, which is at risk from flooding will not be given planning permission if:

- re-developing the site would increase overall flood risk (including flood risk elsewhere);
- the risks from flooding cannot be limited through layout and design; and
- any residual flood risk cannot be safely managed for its users over the development's lifetime.

98. On larger sites (or several smaller sites) the risks from flooding can be limited by concentrating the most vulnerable uses in the parts of the site with the lowest risk of flooding. The parts of a site which are at highest risk from flooding should be used for water-compatible (listed in Planning Practice Guidance) development and/or land uses (for example recreational open space, landscaping, Green Infrastructure etc.

[6] Minor development for these purposes includes: non-residential extensions with a footprint of less than 250 square metres, alterations, and householder development (Planning Practice Guidance, Paragraph: 046 Reference ID: 7-046-20140306, March 2014).
[7] Except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site (Planning Practice Guidance, Paragraph: 034 Reference ID: 7-034-20140306, March 2014).

Waterside areas, areas of ponding and flood storage, and flow routes (existing and dry) for flood water).

99. Mitigation measures can also limit the risks from flooding. But depending on the characteristics of the site, and nature of the flood risk, mitigation measures may not always be practical, viable, feasible, or effective over the life time of the development (taking account of the requirements for future maintenance). They will need to be considered on a case by case basis. They can include:

- sustainable drainage systems;
- modification of ground levels where there is no additional impact on existing communities and property;
- flood storage mechanisms;
- provision of flood defences;
- the use of developer contributions to support planned or new flood mitigation;
- providing flood resistance and resilience measures in development design;
- addressing local flood risk such as sewer flooding;
- providing safe access and egress during flood events;
- providing flood warning and evacuation plans; and
- restoring the functional floodplain and river/watercourse enhancements.

100. The Council may impose requirements through policies in the Local Plan, or recommendations when providing pre-application planning advice, for mitigation measures to limit the risks from flooding at particular sites.

101. The Council will consider whether there are adequate escape routes from a site when assessing whether the residual risks from flooding can be safely managed. Development may not be permitted if there is no way of safely evacuating a site in the event of a flood (E.g. if the road(s) around the site are prone to flooding and there is no other access).

Reducing the causes and impacts from flooding

102. The Council is obliged to consider the opportunities provided by new development to reduce the causes and impacts from flooding. Where there are existing risks from flooding the Council will explore opportunities with relevant flood risk management authorities (the LLFA, EA and water companies) to reduce flood risk to existing communities. This can include off site works that are required to protect and support development in the area more generally (Planning Practice Guidance, 'Flood Risk and Coastal Change', Paragraph: 050 Reference ID: 7-050-20140306). The Purbeck Infrastructure Plan and Delivery Schedule 2006-2027 does not include plans or strategies for infrastructure to address existing risks from flooding and there are no infrastructure projects which address existing risks from flooding in the Council's list of priorities for Community Infrastructure Levy (CIL) Funding.

103. Off-site infrastructure works to address a risk from flooding may be secured through a planning obligation provided the works are:

- necessary to make the development acceptable in planning terms;
- directly related to the development; and
- fairly and reasonably related in scale and kind to the development.

104. The Council is also obliged to take account of the viability of development when assessing planning applications. Planning permission should not be granted, nor land allocated for development through the local plan, if the measures needed to make the development safe from the risks of flooding, or avoiding an increase in the overall flood risk, cannot be delivered because the development is not viable.

Surface water requirements

105. LLFA guidance states that all planning applications for major development should include a Surface Water Management Scheme[8] for the development site. The LLFA advises that this should be based upon ground investigation and an assessment of the sites hydrological/hydrogeological context. The scheme should include a plan showing drainage arrangements and clarifying who will take the responsibility for maintenance and management of the scheme (including related infrastructure) over the lifetime of development. An FRA will normally be required for major development on large sites. Applicants have the discretion of combining their FRA with the Surface Water Management Scheme or presenting the FRA as a standalone document.

106. On larger development sites, or where there is a flood risk which needs to be managed or mitigated, applicants should explore the opportunities for safeguarding land (by keeping it free from development) to provide flood risk channels, areas of ponding/water storage and dry valleys as part of a surface water management scheme.

107. The Council's preference is for surface water relating to development sites to be managed through Sustainable Drainage Systems (SuDs). The LLFA provides guidance on surface water management proposals for major development[9]. If details of surface water management proposals are required by the LLFA, applicants may wish to take account of the following guidance when designing their surface water drainage scheme. The minimum requirements for an outline planning application include information relating to:

- drainage Catchment Plan;
- site Characteristics Assessment;
- surface Water Management Design Details; and
- management Plan.

108. The LLFA recommends that the plan submitted with the surface water management scheme should show all drainage features and flood exceedance/drainage failure

[8] https://www.dorsetforyou.gov.uk/article/424485/Surface-Water-Planning
[9] https://www.dorsetforyou.gov.uk/article/424485/Surface-Water-Planning

routes. The level of detail needed will be dependent on the scale of development and the nature of the flood risk. Further details of requirements can be found at: https://www.dorsetforyou.gov.uk/localfloodrisk.

109. In some areas close to the coastline as identified in the Purbeck Local Plan Part 1 and other areas of land instability, applicants will be expected to show that surface water run-off from development will not cause or worsen unstable ground conditions. As part of the Local Plan Review the Council is also considering an area specific SuDs development management policy to ensure that development on land is not susceptible to other sources of flooding does not cause, or exacerbate, flooding elsewhere.

Sewer/drainage requirements

110. Applicants for new buildings should consider the need for connections to foul and storm water sewers and drains. Where such provision is required as part of a Surface Water Management Scheme applicants should submit a plan showing details of existing and proposed connections between drainage systems and sewers together with details of management and maintenance of proposed drainage systems.

Assessment of flood risk and existing mitigation/management measures by Parish

Summary of information provided

111. The tables below provide an assessment of flood risk and existing flood management and mitigation measures for each Parish (and its main settlements) in Purbeck using the flood risk maps and data sources available at the time the SFRA was prepared. The tables include combined maps showing flood risk from:

- main rivers (where the annual probability of flooding is equivalent to Flood Risk Zones 2 and 3);
- the sea (where the annual probability of flooding is equivalent to Flood Risk Zones 2 and 3);
- surface water (where the annual probability of flooding is equivalent to Flood Risk Zones 2 and 3);
- groundwater flooding;
- modelled data prepared by the Council showing future risks from tidal flooding (where the future annual probability of flooding is equivalent to Flood Risk Zone 3);
- modelled data prepared by the Council, LLFA and Wessex Water showing flood risk from sewer flooding (where the annual probability of flooding is equivalent to Flood Risk Zone 2); and
- flood investigations carried out by the Council or the LLFA.

112. These maps also show:

- the position of watercourses (including ordinary water courses);
- land which has been safeguarded as flood storage areas; and
- low lying land around the edges of Poole Harbour.

113. The tables for each of the parishes and settlements list:

- sites that may have increased flood risk if additional development occurs;
- areas covered by EA flood warnings;
- any areas with critical drainage problems as notified by the EA;
- areas that may need surface water management plans;
- areas at risk from sewer flooding; and
- existing measures to manage flood risk, their location and effectiveness.

Use of information provided

114. The maps in this SFRA showing flood risks from main rivers, the sea, surface water, and groundwater flooding do not distinguish between the source of flooding or how often the land floods each year. Applicants using this SFRA to apply The Sequential, and Exceptions Tests, will also need to refer to the mapping data on:

- government website (https://flood-map-for-planning.service.gov.uk/); and
- Dorset Explorer (https://explorer.geowessex.com/);

to identify different sources of flooding and the annual likely hood of flooding occurring.

115. The maps in this SFRA should be taken into consideration when applying The Sequential and Exceptions Test. Where necessary an applicant/landowner promoting development, or the Council through allocations in a local plan, may consider carrying out a more detailed assessment to precisely show the flood risk at a site specific scale.

116. The information contained in this SFRA was the most up to date at the time of its preparation. Food risk mapping is regularly reviewed and new flood risk information may be available direct from the various agencies with responsibility for flood risk. Further evidence on the flood risks from groundwater and sewers in Lytchett Matravers may be published in the near future. The Council is also working on preparing a site specific map to show flood risk at a possible development site in Wool that is being considered through the Local Plan Review.

117. Any further maps that show flood risk will be presented as an addendum to this SFRA. The Council and applicants will need to take any further evidence on flood risk into consideration when applying relevant planning policies.

Information about Flood Warnings (sourced from above EA website)

118. Flood Warning Areas: If your home or business is within a flood warning area on the EA map then you can receive free flood warnings. The EA issues flood warnings to specific areas when flooding is expected. If you receive a flood warning then you should take immediate action.

119. Flood Alert Areas: If your home of business is within a flood alert area on the EA map then you can receive free flood alerts. The EA issues flood alerts from rivers, the sea and groundwater. If you receive a flood alert then you should be prepared for flooding and to take action.

Affpuddle & Turnerspuddle – Flood Risk Assessment & Management	
Policy LD Settlements	**Other village with a settlement boundary:** Briantspuddle **Other village without a settlement boundary:** Affpuddle
Number of residential properties	231
Number of business properties	23
Vulnerable infrastructure provision	Main roads: A35, and B3390
Major watercourses	River Frome River Piddle Bere Stream
Other watercourses	A number of drains, small watercourses and ponds cross areas of forest and heathland, corresponding with areas at risk from surface water flooding
Coastal areas	N/A
General flood risk	

Rivers and Flood Zones

The River Piddle runs to the north of Affpuddle, Briantspuddle and Throop, and to the south of Turnerspuddle. Flood Zones 2 & 3 extend either side of the river and affect a small number of properties.

The River Frome runs to the south of Waddock Cross and Pallington. Flood Zones 2 & 3 extend either side of the river and also affect a small number of properties.

Bere Stream runs through the very northern part of the parish, to the north of the A35 and south of Rogers Hill Farm. Flood Zones 2 & 3 extend either side of the stream but do not affect any properties or the A35.

Surface Water Flood Risk

Land at risk from surface water flooding largely coincides with areas at flood risk from the main watercourses, drains, ordinary watercourses and ponds. Some of these areas are located in heathland and forest. There is also surface water flood risk in the settlement of Briantspuddle, and to a lesser extent: Affpuddle, Turnerspuddle and Throop. In the south of the Parish, there is surface water flood risk at Waddock Cross and Pallington. More land is affected by flooding at the 1 in 100 and 1 in 1000 annual probabilities.

Further development may increase flood risks from surface water flooding in settlements where there is an existing risk including Briantspuddle, Affpuddle and the Waddock Cross area.

Groundwater

Underlying geology creates a risk from groundwater flooding in the northern part of the Parish (in the vicinity of Rogers Hill Farm).

EA Flood Warning Areas

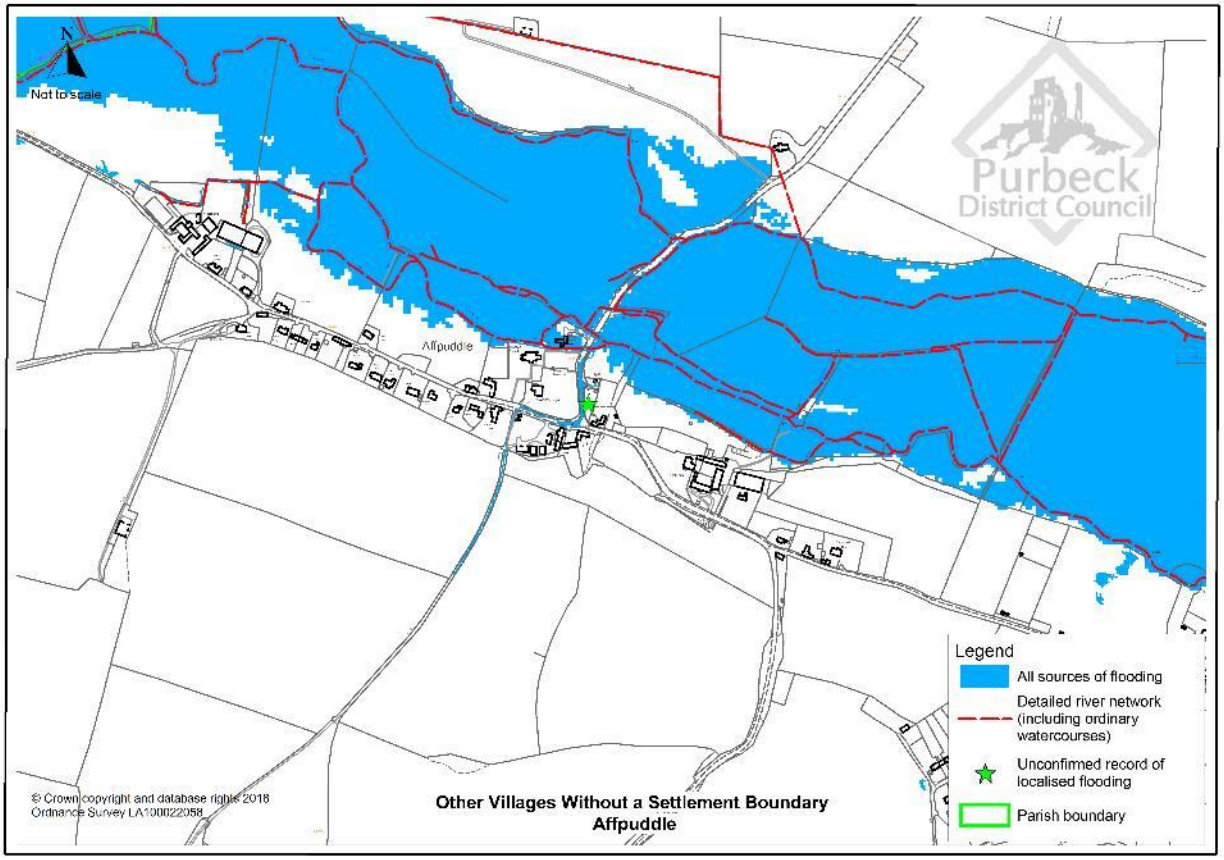
In the north of the Parish, land around the River Piddle is within EA flood warning areas as are areas around Bere Stream. In the south of the Parish, EA flood warning areas extend to both sides of the River Frome close to Waddock Cross and Pallington.

EA flood alert areas also extend across (and beyond) the northern part of the Parish encompassing: Affpuddle, Briantspuddle, Turnerspuddle and Throop. The southern part of the flood alert area covers parts of Briantspuddle and Affpuddle Heaths. In the south of the Parish flood alert areas extend along the River Frome and an area to the north-east of the river close to Waddock Farm.

Flood History

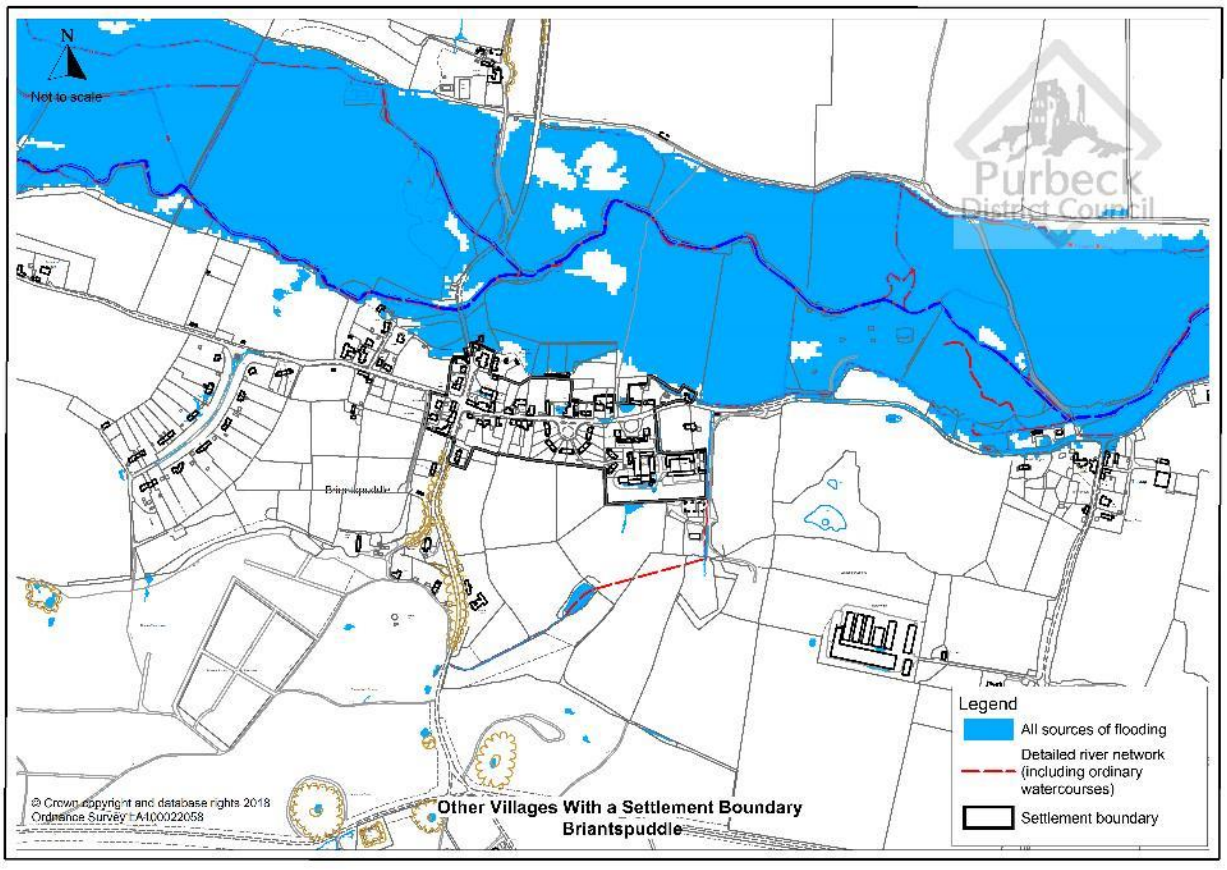
Between 2013 and 2014 Dorset County Council did not receive any reports of flooding within property. It received 2 flood reports of external property flooding in Affpuddle and Turnerspuddle (Local Flood Risk Management Strategy, 2014 – Table 22).

Settlement – Affpuddle (village without a settlement boundary)	
Risk of flooding	**Comment**
Fluvial	The River Piddle runs to the north of the village of Affpuddle with EA Flood Zones 2 & 3 either side.
Coastal and tidal	No risk.
Surface Water	Surface water flooding is concentrated in the flood plain of the River Piddle and drainage channels that feed into the River. Some surface water flooding also occurs along a track that runs downhill towards 'The Cross' and towards, and along the B3390.
Groundwater	No known risks in the village.
Sewer	No additional foul sewer flood risk for small infill development in Affpuddle with foul only connections to the public foul systems. Foul flows from Tolpuddle are pumped to Affpuddle; any significant increase in cumulative flows will require assessment.
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
Sluice gates on drain in water meadow to east of village.	
Areas covered by flood warnings	
Affpuddle is within an EA flood alert area and has an EA flood warning area to the north of the village along the River Piddle.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Operational development (including buildings and engineering /mining operations) in Affpuddle has potential to increase flood risk by increasing, or affecting flows of surface water run-off. Any development on the northern fringes of Affpuddle may be at an increased flood risk because of the impact of climate change on fluvial flooding.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear. Where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - Affpuddle	



Settlement – Briantspuddle	
Risk of flooding	**Comment**
Fluvial	River Piddle runs to north of village of Briantspuddle, with EA Flood Zones 2 & 3 either side. A number of properties on the northern edge of the village fall within Flood Zones 2 & 3.
Coastal and tidal	No risk.
Surface Water	Land at risk from surface water flooding largely coincides with areas at flood risk from the main watercourses (River Piddle), drains, and ordinary watercourses. Surface water flooding also occurs along Bladen Valley, The Hollow, the lane from Briantspuddle to Throop and from higher level land through the village towards the River Piddle.
Groundwater	No known risks in the village.
Sewer	There are current investigations in Briantspuddle concerned with the inundation of foul sewers when groundwater levels are high. No additional foul sewer flood risk for small infill development in Briantspuddle with foul only connections to the public foul systems. Any development greater than 10 dwellings or significant increase in cumulative flows will require assessment and mitigation measures (groundwater).
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	

Sluice gates relating to drains in water meadows to the east and west of the village.
Areas covered by flood warnings
Areas to north of village close to EA Flood Zones are within EA flood warning area. Large areas surrounding Briantspuddle are within EA flood alert area.
Areas with critical drainage problems
No known areas.
Areas that may need a surface water management plan
None identified.
Locations that may have increased flood risk if additional development takes place
Operational development in Briantspuddle has potential to increase flood risk by increasing, or affecting flows of surface water run-off. Any development on the northern fringes of Briantspuddle may be at an increased flood risk because of the impact of climate change on fluvial flooding.
Potential measures to manage flood risk
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.
Areas at risk of flooding - Briantspuddle



Arne – Flood Risk Assessment & Management

Policy LD Settlements	**Local Service Village:** Stoborough **Other village with settlement boundary:** Ridge **Other village without a settlement boundary:** Worgret
Number of residential properties	635
Number of business properties	46
Vulnerable infrastructure provision	Main roads: A351, A352, Corfe Road, Puddletown Road
Major watercourses	River Frome (north of Stoborough and Ridge) River Piddle (north of Worgret Heath) River Corfe (along small part of eastern parish boundary)
Other watercourses	A number of drains, small watercourses and ponds cross areas of heathland draining into the River Frome and Poole Harbour, these often correspond with areas at risk from surface water flooding.
Coastal areas	Adjoins Poole Harbour to the east.

General flood risk

Rivers and Flood Zones

The River Piddle runs to the north of Worgret Heath. Flood Zones 2 & 3 extend either side of the river but do not affect any properties in this part of the Parish.

The River Frome runs to the north of Stoborough and Ridge with Flood Zones 2 & 3 also extending either side of the River (flood water from the River covers the water meadows between the two settlements, other parts of the Parish and the edges of Poole Harbour). A number of residential and commercial properties on the northern edge of Stoborough, the eastern edge of Stoborough Green and at Ridge, also fall within Flood Zones 2 & 3.

The Rivers Frome and Piddle both discharge into Poole Harbour at Wareham and Arne. The tide influences flows on the River Piddle from the railway line downstream and from Holme Bridge downstream on the River Frome (page 95 of the Frome and Piddle Catchment Flood Management Plan (CFMP), 2008). The river flooding which occurs in Stoborough can be worsened by the tidal influence.

The small settlement of Arne is located outside the Flood Zones.

Surface Water Flood Risk

At the 1 in 30 year incidence the land at risk from surface water flooding largely coincides with areas at flood risk from watercourses and drainage channels but also includes a number of areas where ponding occurs on heathland. Some surface water flooding also takes place along roads in Stoborough, the A352, the A351 and the railway. More land is at risk (at the 1 in 100 and 1 in 1000 year incidence levels) of flooding from this source close to watercourses, Poole Harbour and on areas of heathland.

EA Flood Warning Areas

There is an EA flood warning area along the River Frome in the north of the Parish that extends south over parts of Stoborough village and Stoborough Green. A flood alert area covers similar locations to the flood warning area.

Stretches of the River Piddle that fall within the northern reaches of Arne Parish also fall within flood warning and flood alert areas.

In the south of the Parish, EA flood alert areas extend along the Corfe River, parts of which fall within Arne Parish.

Flood History
Highway flooding is a regular occurrence in Arne Parish. Several incidents are recorded for properties close to the Causeway and along Corfe Road (SWIM-geowessex).

Surface water drainage has also caused flooding in some areas of Stoborough Green. EA records of the 2012/13 flooding identifies that 9 flood incidents were reported in Arne Parish. Dorset County Council's Flood Risk Management Strategy (2014) lists Arne in its 3rd group of communities where flood risk management activities should be prioritised.

Settlement – Ridge	
Risk of flooding	**Comment**
Fluvial	The River Frome lies to the north of Ridge where it meanders through water meadows towards Poole Harbour. Large areas of water meadow fall within Flood Zones 2 & 3 with a network of drainage ditches feeding into the main river. The principal flood risk in Ridge is flooding from the River Frome combined with tidal flooding. A couple of properties in Ridge are located within the Flood Zones although the majority are not. Ridge caravan and camping site and Ridge Wharf Yachting Centre also lie within the Flood Zones. The Frome and Piddle CFMP (2008) states that river flooding effects low lying housing, amenities and main and local roads surrounding the village during 1% AEP event (represented by flood zone 3).
Coastal and tidal	The principal flood risk arises from the combined impact of fluvial flooding (where the capacity of the watercourse is exceeded) coinciding with high tides.
Surface Water	A number of properties and residential roads lie within areas of surface water flooding, particularly to the east of the village.
Groundwater	No records of ground water flooding.
Sewer	Non sewered area.
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
Flood defences stretch along the River Frome to the north of Ridge with an area to the east of Ridge Farm and Sunnyside Farm benefiting, including Slepe Heath.	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours	

warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008).

Areas to north and east of the village that are close to EA Flood Zones are within EA flood warning and flood alert areas.

Areas with critical drainage problems

No known areas.

Areas that may need a surface water management plan

None identified.

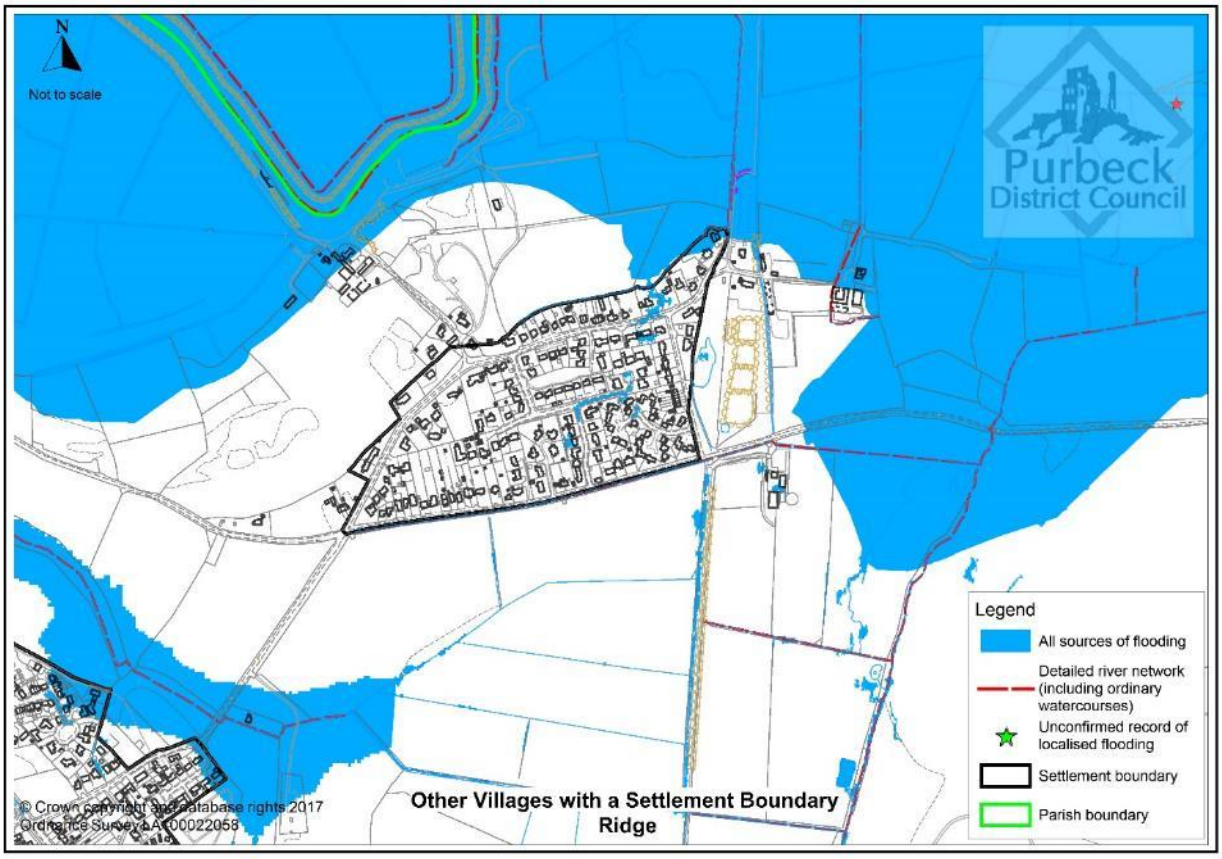
Locations that may have increased flood risk if additional development takes place

Any development on the eastern half of ridge has potential to increase flood risk through additional surface water run-off. Any development to the north and east of Ridge may have increased flood risk with climate change impacts on fluvial and tidal flooding.

Potential measures to manage flood risk

The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.

Areas at risk of flooding - Ridge



Settlement – Stoborough

Risk of flooding	Comment
Fluvial	The principal flood risk in Stoborough is flooding from the River Frome combined with tidal flooding. The problem is

	exacerbated due to the inadequate size of the flap valves through the tide banks, the height of the road and footway at South Causeway, and the lack of culverts under the road. There are risks to properties near to the river. If the River Frome overtops its banks further upstream towards the Wareham Bypass, the water flows across the water meadows between Wareham and Stoborough and the only out-let is through the tide flap at Red Cliff. This tide flap does not have sufficient capacity to take extreme flows and as a result the water meadows can still be flooded even though the tide has receded. The low land between the Frome and Piddle is predominantly agricultural and is artificially defended from tidal flooding by raised banks. The Wareham Tidal Banks Strategy (currently in its early stages) is considering the removal of these banks to allow natural flooding of the floodplain, which may reduce flooding in Wareham and Stoborough. The main areas of flood risk in Stoborough are to the north of the village and adjoining the causeway, and to the east of Stoborough Green. A number of residential properties and commercial properties are within these areas including a Petrol Station and Public House. Stoborough Primary School is located just outside the Flood Zones which run to the south and east of the school buildings. The Frome and Piddle CFMP (2008) identifies tidal-influenced flooding at Stoborough in 1990 and 2000.
Coastal and tidal	The principal flood risk in Stoborough is flooding from the River Frome combined with tidal flooding (as explained above).
Surface Water	A number of properties and residential roads lie within areas of surface water flooding, particularly to the east of the village. Corfe Road through the centre of the village and the A351 also suffer from surface water flooding, as do fields to the east and west of the village.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Stoborough with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA. Rising sea levels are likely to increase the risks from tidal flooding and its influence on fluvial flooding.
Existing measures to manage flood risk	
Flood defences stretch along the River Frome to the north east of Stoborough.	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours	

warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008).

Areas to north, east, west and central part of village close to EA Flood Zones are within EA flood warning and flood alert areas.

Areas with critical drainage problems

No known areas.

Areas that may need a surface water management plan

None identified.

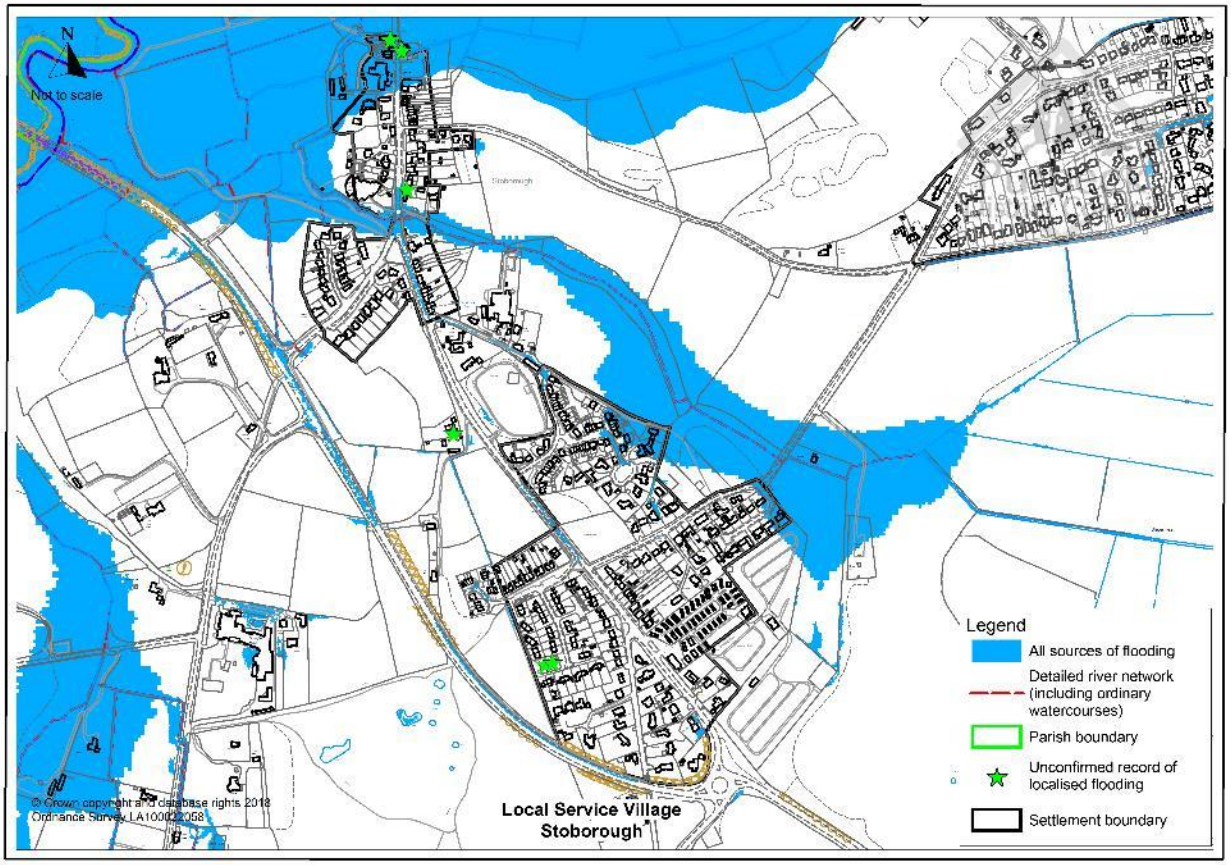
Locations that may have increased flood risk if additional development takes place

Any development at Stoborough has potential to increase flood risk through additional surface water run-off. Any development to the north, east and west of Stoborough may have increased flood risk with climate change impacts on fluvial and tidal flooding.

Potential measures to manage flood risk

The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.

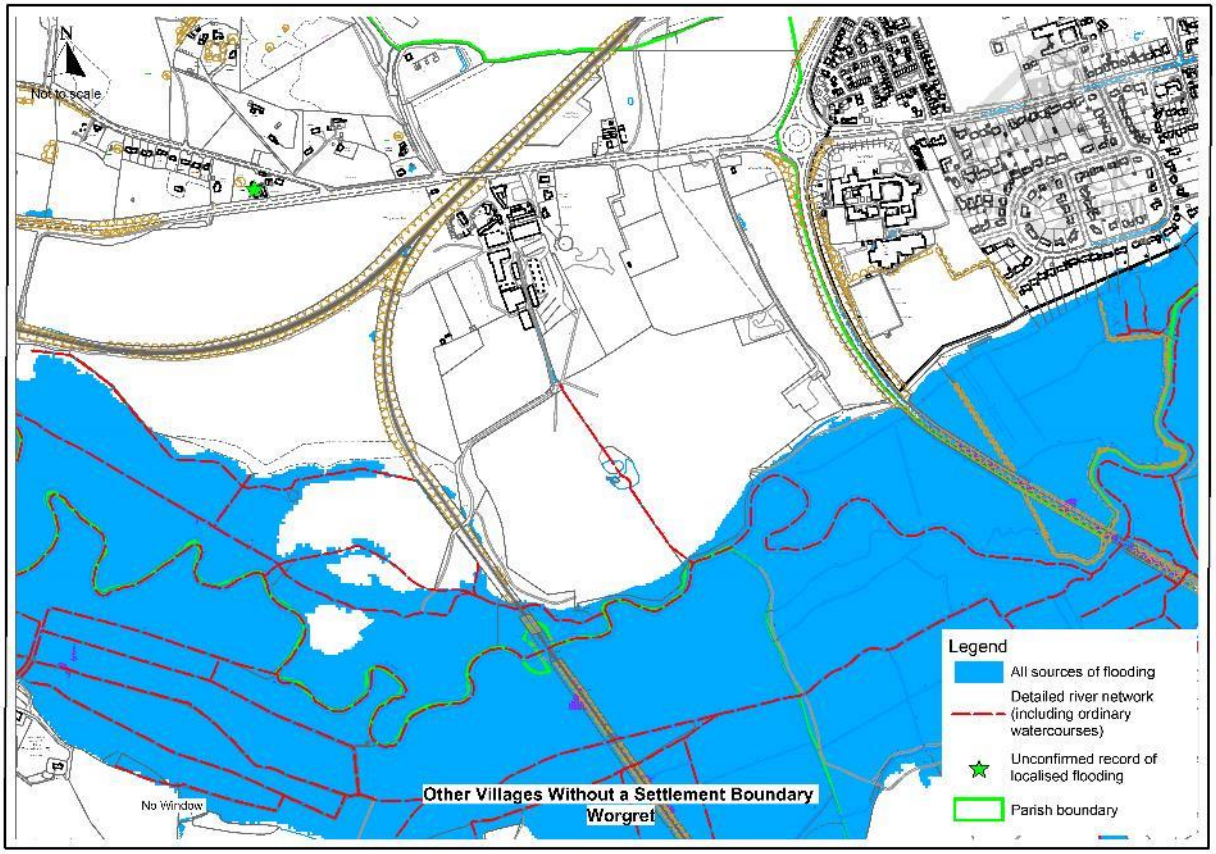
Areas at risk of flooding - Stoborough



Settlement – Worgret

Risk of flooding	Comment

Fluvial	The River Frome lies to the south of Worgret and the River Piddle to the north. Flood Zones run beside both rivers but do affect this settlement. There are no smaller watercourses affecting the village.
Coastal and tidal	Tidal influences extend up the River Piddle and River Frome into Arne Parish but do not affect Worgret village, directly.
Surface Water	There are small patches of surface water flooding across Worgret that are limited in their extent even at the 1 in 1000 year incident level.
Groundwater	No records of groundwater flooding.
Sewer	Non sewered area.
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
No records of existing measures to manage flood risk.	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008). EA flood warning and flood alert areas lie to the north and south of Worgret along the rivers Frome and Piddle.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
There may be increased flood risk from surface water run-off in the Worgret Farm area if additional development takes place.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Worgret	


N
Not to scale
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Unconfirmed record of localised flooding
Parish boundary
Other Villages Without a Settlement Boundary
Worgret
No Window

Bere Regis – Flood Risk Assessment & Management	
Policy LD Settlements	**Key Service Village:** Bere Regis
Number of residential properties	840
Number of business properties	85
Vulnerable infrastructure provision	Main roads: A35, A31, C6
Major watercourses	Bere Stream River Piddle
Other watercourses	A number of drains, small watercourses and ponds cross areas of heath and woodland draining into the Bere Stream and the River Piddle.
Coastal areas	N/A
General flood risk	

Rivers and Flood Zones

There are two major watercourses in Bere Regis Parish – the Bere Stream that flows south from Milborne St Andrew in the north through Bere Regis village, and the River Piddle that flows through the southern half of the Parish before joining the Bere Stream to the north of Bere Heath. Flood Zones 2 and 3 extend beside both rivers.

Surface Water Flood Risk

At the 1 in 30 year incidence level, areas of surface water flood risk mainly relate to the flow paths of existing watercourses as well as areas of ponding across the countryside and heathland. Between 1 in 100 and 1 in 1000 year incidence level the flood risk from surface water flooding increases significantly along the watercourses and where areas of surface water ponding merge into flow channels.

Groundwater

Underlying geology means some land to the north of the settlement of Bere Regis (around Roke Farm and Haywards Farm) is at risk from groundwater flooding.

EA Flood Warning Areas

Areas to the north-west of Bere Regis and along the River Piddle in Bere Regis parish are EA flood warning areas. An EA flood alert area also extends over Bere Regis village, south towards Lane End and along the River Piddle.

Flood History

The Bere Stream is the continuation of the stream running through Milborne St Andrew, (North Dorset District Council). Most flooding in the vicinity of Bere Regis has been around the Shitterton area between the culvert under the by-pass and Shitterton Bridge. There have also been incidents along Elder Road and Rye Hill from surface water run-off and unknown causes (SWIM-geowessex).

The River Piddle flows south-easterly through the parish close to smaller settlements of Lane End and Hyde. The Bere Stream joins the Piddle at Warren Heath.

Surface water flooding mainly relates to the watercourses, drains and ponds, but also occurs where higher land is draining to lower level watercourses.

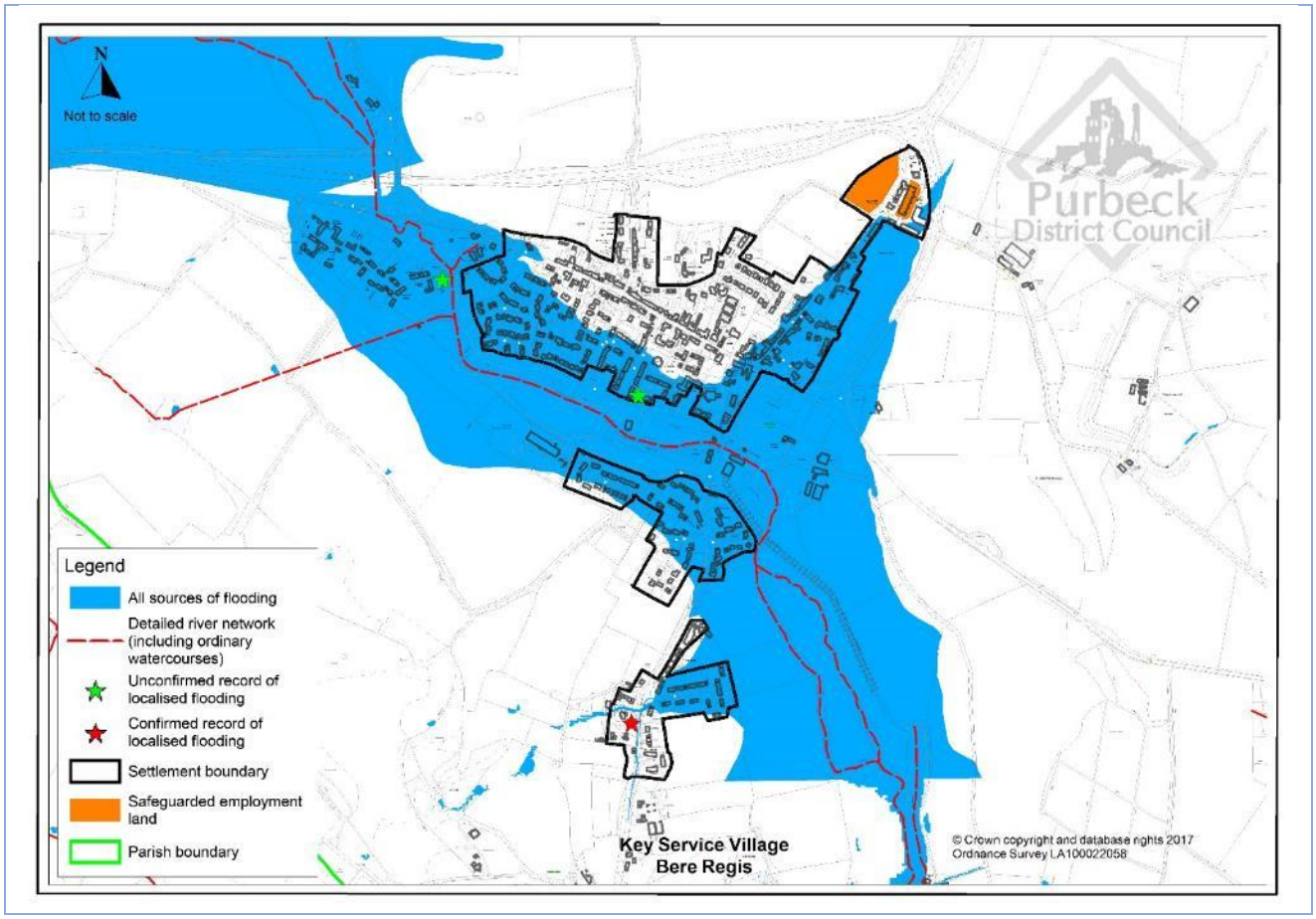
The Frome and Piddle Catchment Flood Management Plan (CFMP) does not identify any properties in Bere Regis as having a 1% annual chance of river flooding currently, Provided surface water run-off from new development is managed so that it does not increase flood risk at the site or elsewhere the sensitivity testing undertaken as part of the Frome and Piddle Catchment Flood Management Plan (CFMP) indicates that river flooding is not sensitive to changes in urban development.

Between 2013 and 2014 Dorset County Council received 1 flood report of internal property flooding and 0 flood reports of external property flooding within the community of Bere Regis (Local Flood Risk Management Strategy – Table 22).

Settlement – Bere Regis	
Risk of flooding	**Comment**

Fluvial	The village of Bere Regis sits within the chalkland sub-area of the Frome and Piddle CFMP. The River Piddle runs through the southern part of the parish. The Bere Stream, runs through the built up area of the village. It is here that the water is used to feed water cress beds before continuing south-east to join the River Piddle near Warren Heath. Bere Stream runs through Bere Regis with Flood Zones 2 and 3 beside the watercourse. A number of residential and commercial properties fall within the Flood Zones, particularly in the Southbrook area. Most flooding in the vicinity of Bere Regis has been around the Shitterton area between the culvert under the by-pass and Shitterton Bridge. Shitterton Bridge itself is too small to cater for extreme events and as such the flow has to cross the road, leading to the flooding of some properties around the bridge. The Frome and Piddle Catchment Flood Management Plan (CFMP) does not identify any properties in Bere Regis as having a 1% chance of river flooding.
Coastal and tidal	N/A
Surface Water	A number of properties and residential roads lie within areas of surface water flooding, particularly closer to Bere Stream. Surface water flooding also affects properties in an area between Black Hill and Bere Stream, particularly along Green Close and a strip of land between the village and the A35. The Frome and Piddle CFMP states that the risks from surface water flooding are likely to increase in the longer term in the Bere Regis area.
Groundwater	The Frome and Piddle CFMP considers that groundwater flooding may decrease in the Bere Regis area. High groundwater levels are linked to incidents of sewer flooding recorded by Wessex Water.
Sewer	Flood risk caused by groundwater inundation into sewers. Map below shows land at risk from sewer flooding (prepared using information relating to groundwater levels and Wessex Waters records of sewer flooding). Wessex Water have invited the Council to consider developing a strategy for managing discharge into the sewers to avoid new development in the same sewer pumping station catchment area increasing risks from sewer flooding on site or elsewhere.
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA and Frome and Piddle CFMP.
Existing measures to manage flood risk	

More recent development of the 1990s has been set at a definitive height above the stream bed level. Downstream at Snatford Bridge, Dorset County Council has repaired/improved the bridge but it reaches the limits of its capacity in extreme flows. When this happens the nearby highway may flood.
Areas covered by flood warnings
An area to the north-west of Bere Regis is an EA flood warning area. A large area that includes Bere Regis is an EA flood alert area.
Areas with critical drainage problems
See above information on groundwater flood risk.
Areas that may need a surface water management plan
The Frome and Piddle CFMP considers that surface water flooding is likely to increase in the longer term in the Bere Regis area. A surface water management plan may be required in the future.
Locations that may have increased flood risk if additional development takes place
Land around Shitterton at risk of fluvial and surface water flooding and the open land downstream of Shitterton Bridge that is within a defined flood corridor may have increased flood risk if additional development takes place. Land between North Street and the A35 may have increased surface water flooding risk if developed, as may land to the east of Rye Hill which already suffers from surface water flooding in some areas. Any additional development at Bere Regis is likely to increase the risk of groundwater induced sewer flooding due to the age of the sewerage system and capacity related issues from new connections.
Potential measures to manage flood risk
Dorset County Council is considering replacing the invert to Shitterton Bridge and suggestions have been made about increasing capacity. As development cannot be prevented from connecting to the existing Wessex Water sewerage infrastructure (providing that the drain / sewer is constructed correctly). The Council and Parish Council (through a Neighbourhood Plan) are considering policies to manage/mitigate the risks arising from sewer flooding. The policy require development to include measures for sustainably managing surface and foul water arising from development to avoid causing flooding or increasing the risks of flooding elsewhere. Infiltration drainage should be avoided unless it can be clearly demonstrated it will not have a local impact on groundwater levels. Septic tanks should also be avoided unless it can be demonstrated that they can operate successfully during periods of extreme groundwater level. The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.
Areas at risk of flooding - Bere Regis


N
Not to scale
Purbeck
District Council
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Unconfirmed record of localised flooding
Confirmed record of localised flooding
Settlement boundary
Safeguarded employment land
Parish boundary
Key Service Village
Bere Regis
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Ordnance Survey LA100022058

Bloxworth – Flood Risk Assessment & Management

Policy LD Settlements	**Other village without a settlement boundary:** Bloxworth
Number of residential properties	89
Number of business properties	7
Vulnerable infrastructure provision	Main roads: A31
Major watercourses	None.
Other watercourses	A number of drains, small watercourses, ponds and bogs across areas of agricultural land, heath and woodland.
Coastal areas	N/A

General flood risk

Rivers and Flood Zones

There are no major watercourses in Bloxworth Parish. There are many smaller watercourses particularly across the wooded areas and Bloxworth Heath. Flood Zones 2 and 3 extend along a couple of the watercourses including one that flows from Bloxworth Heath to Morden Park and another to the east of East Bloxworth.

Surface Water Flood Risk

At the 1 in 30 year incidence level areas of surface water flood risk relate to the flow paths of existing watercourses and areas of ponding, particularly in areas of heath and woodland. At the 1 in 100 and 1 in 1000 year incidence level areas of surface water flood risk increase along watercourses and as areas of ponding in woodland and heath.

Groundwater

Underlying geology means some land in northern part of Parish (in the vicinity of Botany Bay Barn) is at risk from groundwater flooding.

EA Flood Warning Areas

There is an EA flood warning area across the north of the Parish in the area of Botany Bay Barn. An EA flood alert area extends south over Bloxworth Parish to just north of the A35 and covers Bloxworth and East Bloxworth.

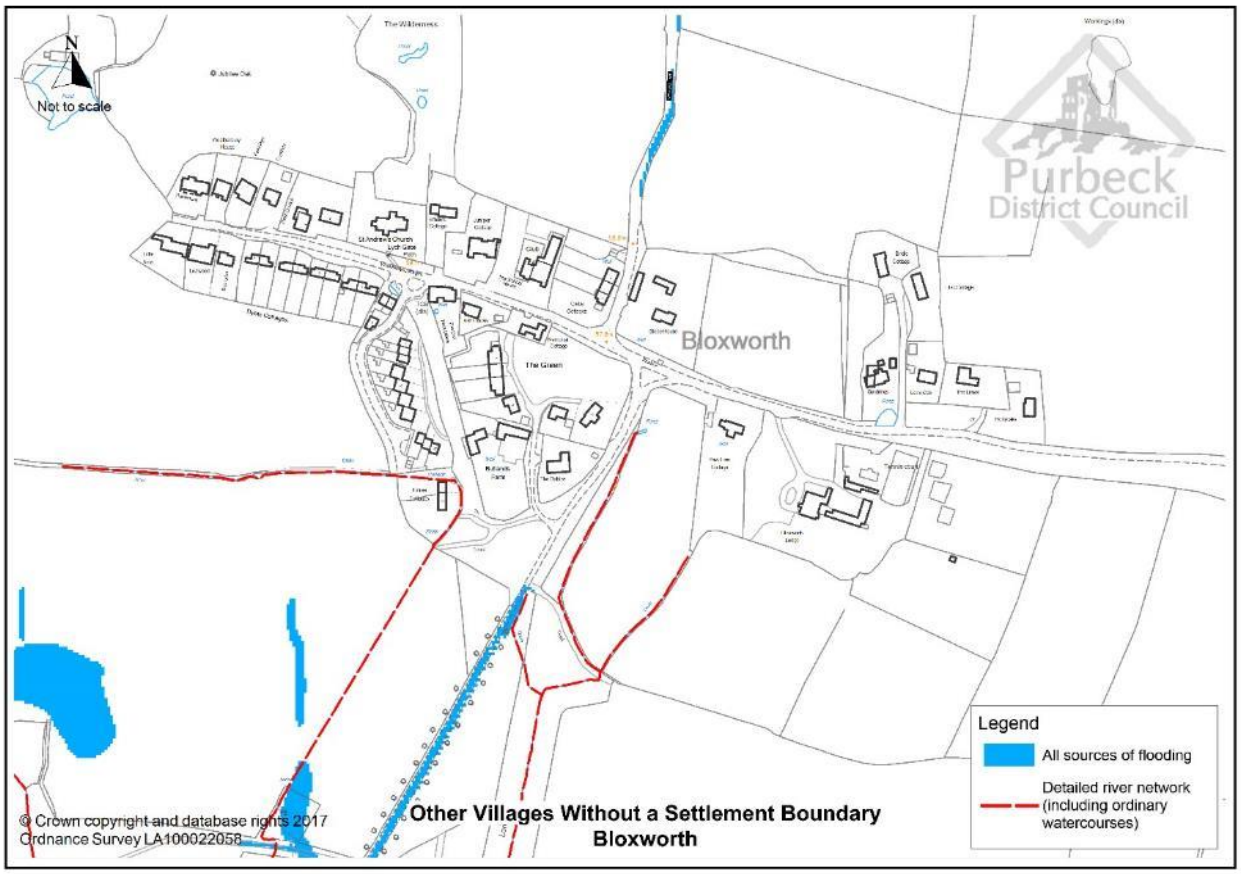
Flood History

Flood history in Bloxworth has been as a result of blocked road drainage, surface water run-off and highway flooding (SWIM-geowessex).

Settlement – Bloxworth

Risk of flooding	**Comment**
Fluvial	There are no major watercourses affecting Bloxworth village. There are a couple of smaller watercourses that flow south from the village to join watercourses and drainage ditches near the A35.
Coastal and tidal	N/A
Surface Water	Surface water flood risk around Bloxworth village is limited to highways at the 1 in 30 and 1 in 100 year incidence levels. At the 1 in 1000 year incidence level the extent of risk increases slightly but largely remains limited to roadways and tracks.

	Surface water flooding affects a number of buildings in East Bloxworth and lanes leading to the village.
Groundwater	No records of ground water flooding.
Sewer	There are current investigations in Bloxworth concerned with the inundation of foul sewers when groundwater levels are high. No additional foul sewer flood risk for small infill development in Bloxworth with foul only connections to the public foul systems. Any development greater than 10 dwellings or significant increase in cumulative flows will require assessment and mitigation measures (groundwater).
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
A large area that extends south from the River Winterborne to include Bloxworth Village, East Bloxworth and areas around both settlements including Bere Wood, is an EA flood alert area.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Any development at Bloxworth has potential to increase flood risk through additional surface water run-off onto local roads.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - Bloxworth	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Purbeck
District Council
Bloxworth
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All sources of flooding
Detailed river network (including ordinary watercourses)
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Other Villages Without a Settlement Boundary
Bloxworth

Chaldon Herring – Flood Risk Assessment & Management

Policy LD Settlements	**Other villages with a settlement boundary:** Chaldon Herring (East Chaldon)
Number of residential properties	83
Number of business properties	10
Vulnerable infrastructure provision	Main roads: A352
Major watercourses	River Win
Other watercourses	Drains/ordinary water courses to the north of River Win which feed into the main River.
Coastal areas	Yes – southern boundary from White Nothe in west to Swyre head in east

General flood risk

Rivers and Flood Zones

The River Win is a major watercourse that flows through the Parish with its source at higher land to the north of Northground Dairy. The River flows through both West Chaldon and Chaldon Herring (East Chaldon) with Flood Zones 2 and 3 running beside the river. There a number of smaller watercourses that feed into the River Win and several in the north of the Parish that feed into a watercourse at Tadnoll. Flood Zones 2 and 3 cover the very northern part of the parish around Tadnoll Mill House. This rural area of heathland is surrounded by drainage channels and ponds that drain into the River Frome to the east.

Flood Zone 2 also extends along the coast with Flood Zone 3 covering an area near Bat's Head.

Surface Water Flood Risk

At the 1 in 30 year incidence level, surface water flood risk largely relates to the flow paths of the watercourses, the River Win and also flow paths of run-off from fields and steep slopes, particularly to the south of the River Win. In the north of the Parish surface water flood risk also relates to watercourses although there are also a number of areas of ponding around Tadnoll and the heathland. At the 1 in 100 and 1 in 1000 year incidence level the extent of surface water flood risk increases with more flow paths and area of ponding to the north. In the south of the Parish, the flow paths increase in their extent but remain linked to existing watercourses and areas of field run-off from higher levels.

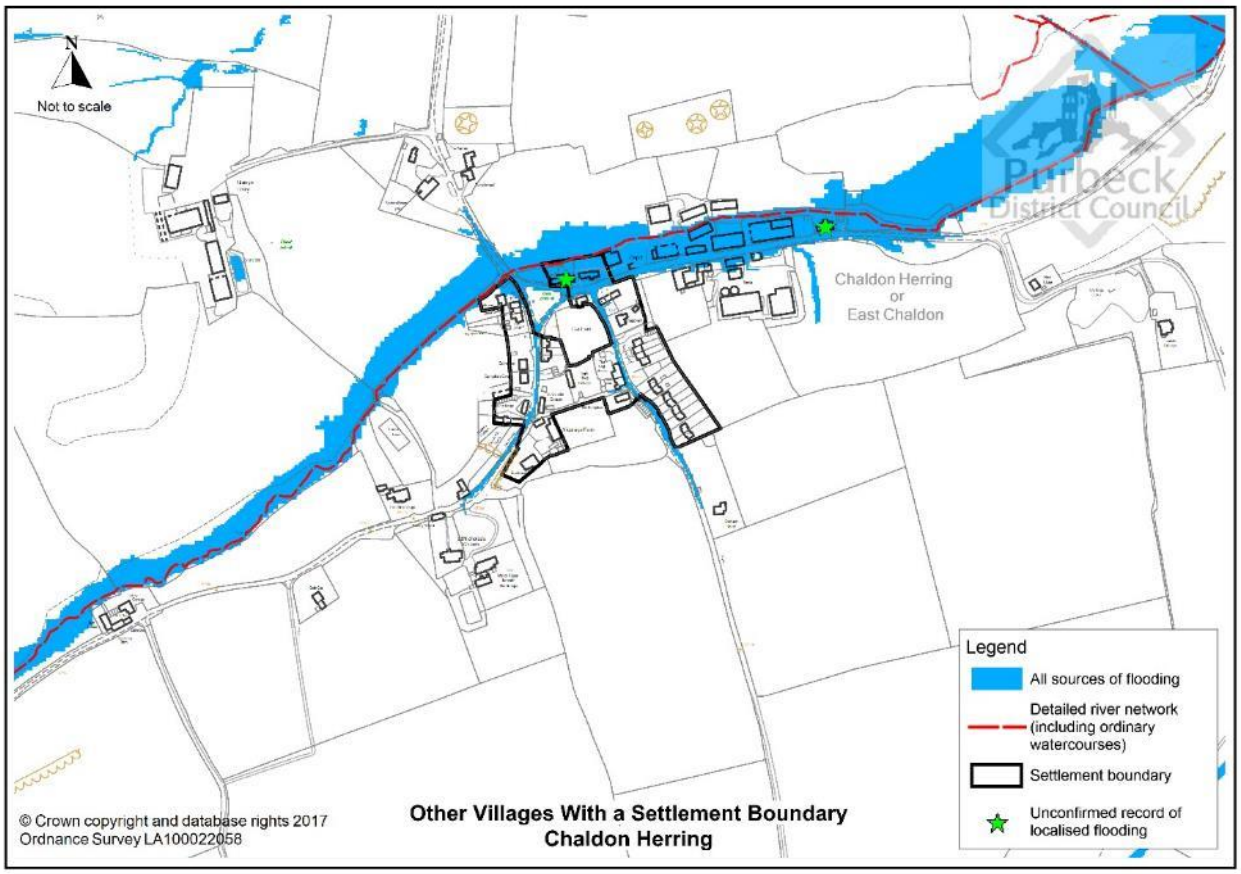
EA Flood Warning Areas

There are no EA flood warning areas in the Parish. An EA flood alert area extend over southern parts of the parish including parts of Chaldon Herring village and large areas south of the village from Chaldon Down to the coast. Northern parts of the Parish around Tadnoll also fall within an EA flood alert area.

Flood history

The village of Chaldon Herring (East Chaldon) is in the catchment of the River Win which has a history of flooding. The underlying geology of the Win is permeable. However, when the land is saturated, flash flooding can occur. The most significant event was on 5 June 1983. This affected Winfrith Newburgh, East Stoke and Chaldon Herring. There have been several recorded flood incidents in West Chaldon although the sources of flooding are unclear (SWIM-geowessex).

Settlement – Chaldon Herring	
Risk of flooding	**Comment**
Fluvial	The major watercourse of the River Win runs through Chaldon Herring with many properties on the northern edge of the village being located in Flood Zones 2 and 3. There is also overland flow from fields and roads to tributaries of the Frome that results in some river flooding. (Frome and Piddle CFMP, 2008)
Coastal and tidal	No risk.
Surface Water	Surface water flood-risk in Chaldon Herring relates to the Flood Zones of the River Win, overland flow from adjacent valleys and overtopping of rivers, and also field and road related run-off. The village has experienced run-off from saturated agricultural fields that has resulted in mud and slurry being deposited onto roads and properties. Ponding also takes place on hard standing and impermeable surfaces (Frome and Piddle CFMP, 2008).
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in East Chaldon with foul only connections to the public foul systems; any significant increase in cumulative flows will require assessment.
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
An EA flood alert area extend over southern parts of the parish including parts of Chaldon Herring village and large areas south of the village from Chaldon Down to the coast.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
Dorset County Council's Local Flood Risk Management Strategy 2014 (table 20) ranks the community of Chaldon Herring 43rd in Dorset according to the risk of flooding from surface water. Chaldon Herring may require a surface water management plan.	
Locations that may have increased flood risk if additional development takes place	
Any development at Chaldon Herring has potential to increase flood risk through additional surface water run-off and increased risk of fluvial flooding.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - Chaldon Herring	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or
East Chaldon
Purbeck
District Council
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Settlement boundary
Unconfirmed record of localised flooding
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Other Villages With a Settlement Boundary
Chaldon Herring

Church Knowle – Flood Risk Assessment & Management

Policy LD Settlements	**Other village with a settlement boundary:** Church Knowle
Number of residential properties	158
Number of business properties	17
Vulnerable infrastructure provision	Main road running through village.
Major watercourses	None
Other watercourses	Several
Coastal areas	N/A

General flood risk

Rivers and Flood Zones

There are no major watercourses in Church Knowle Parish. The Corfe River flows through the Parish to the south of Church Knowle Village. Watercourses in the north of the Parish feed into Poole Harbour. Flood Zones 2 and 3 run beside the length of Corfe River.

Surface Water Flood Risk

At the 1 in 30 year incidence level surface water flood risk largely relates to the flow paths of existing watercourses in the Parish. There are also pockets of surface water flooding in the north of the Parish where there are a number of clay pits. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flooding increases, particularly in areas that feed into watercourses and areas of ponding to the north of the Parish.

EA Flood Warning Areas

There are no flood warning areas in Church Knowle Parish. An EA flood alert area extends through the Parish and includes Church Knowle village.

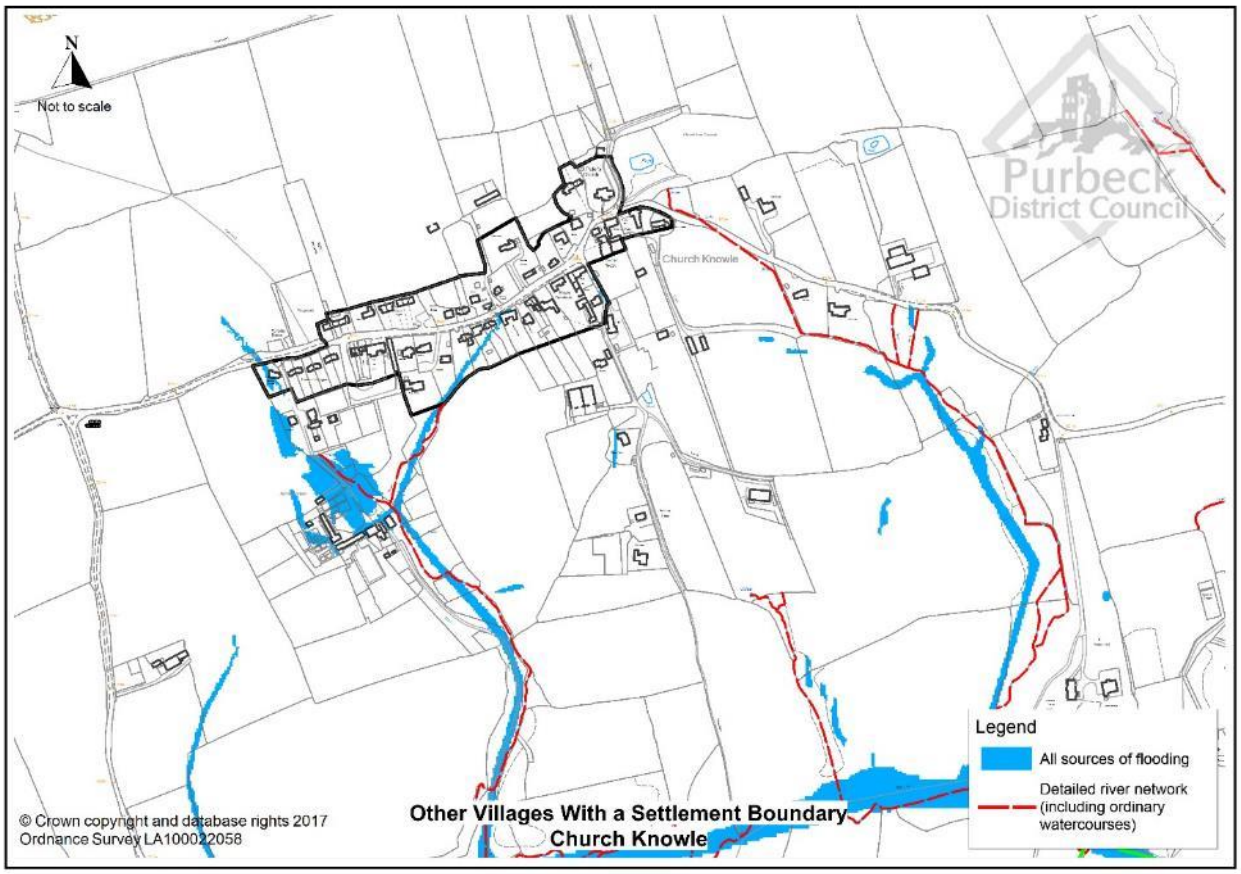
Flood History

Flood history is limited in Church Knowle Parish.

Settlement – Church Knowle

Risk of flooding	Comment
Fluvial	There are no major watercourses in Church Knowle village. A couple of smaller watercourses flow south from the village to feed into the Corfe River.
Coastal and tidal	N/A
Surface Water	At the 1 in 30 year incidence level surface water flood risk relates to existing watercourses that flow south to Corfe River and are concentrated on areas south of the village, with ponding at the Animal Sanctuary. Where there the annual risk from flooding is 1 in 100 and 1 in 1000 more land is affected by flooding. Areas of ponding around the animal sanctuary and to the east of the village along the watercourse that flows south from the road, also increase in their extent.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Church Knowle with foul only connections to the public foul systems. Foul flows from Kimmeridge are pumped to Church

	Knowle; any significant increase in cumulative flows will require assessment.
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
An EA flood alert area extends through the Parish and includes Church Knowle village.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
There may be increased flood risk to the south west of the village around the animal sanctuary if additional development was to take place in the village.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - Church Knowle	



Coombe Keynes – Flood Risk Assessment & Management

Policy LD Settlements	**Other village without a settlement boundary:** Coombe Keynes
Number of residential properties	38
Number of business properties	2
Vulnerable infrastructure provision	Main Road: Church Lane and main road to the east of the village.
Major watercourses	None
Other watercourses	A couple of smaller watercourses
Coastal areas	N/A

General flood risk

Rivers and Flood Zones

There are no major watercourses in Coombe Keynes Parish. There are a couple of smaller watercourses in the east of the Parish. One smaller watercourse lies on the boundary with East Lulworth Parish and has Flood Zones 2 and 3 along much of its extent.

Surface Water Flood Risk

At the 1 in 30 year incidence level surface water flood risk related to existing watercourses and surface water flow paths, particularly from higher to lower gradients. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flooding increases as more flow paths are created and join together to feed into watercourses.

EA Flood Warning Areas

There are no EA flood warning areas affecting Coombe Keynes Parish. However there is a flood alert area that extends over Coombe Keynes and parts of the south west of the Parish.

Flood History

None identified (SWIM-geowessex)

Settlement – Coombe Keynes

Risk of flooding	Comment
Fluvial	There is no risk of fluvial flooding in Coombe Keynes village.
Coastal and tidal	There is no risk of coastal or tidal flooding in Coombe Keynes village.
Surface Water	Surface water flooding affects areas to the east of the village with small pockets of flood risk on roads within the village centre. At the 1 in 1000 years incidence level there is increased surface water flood risk along village roads.
Groundwater	No records of groundwater flooding.
Sewer	Non sewered area.
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.

Existing measures to manage flood risk

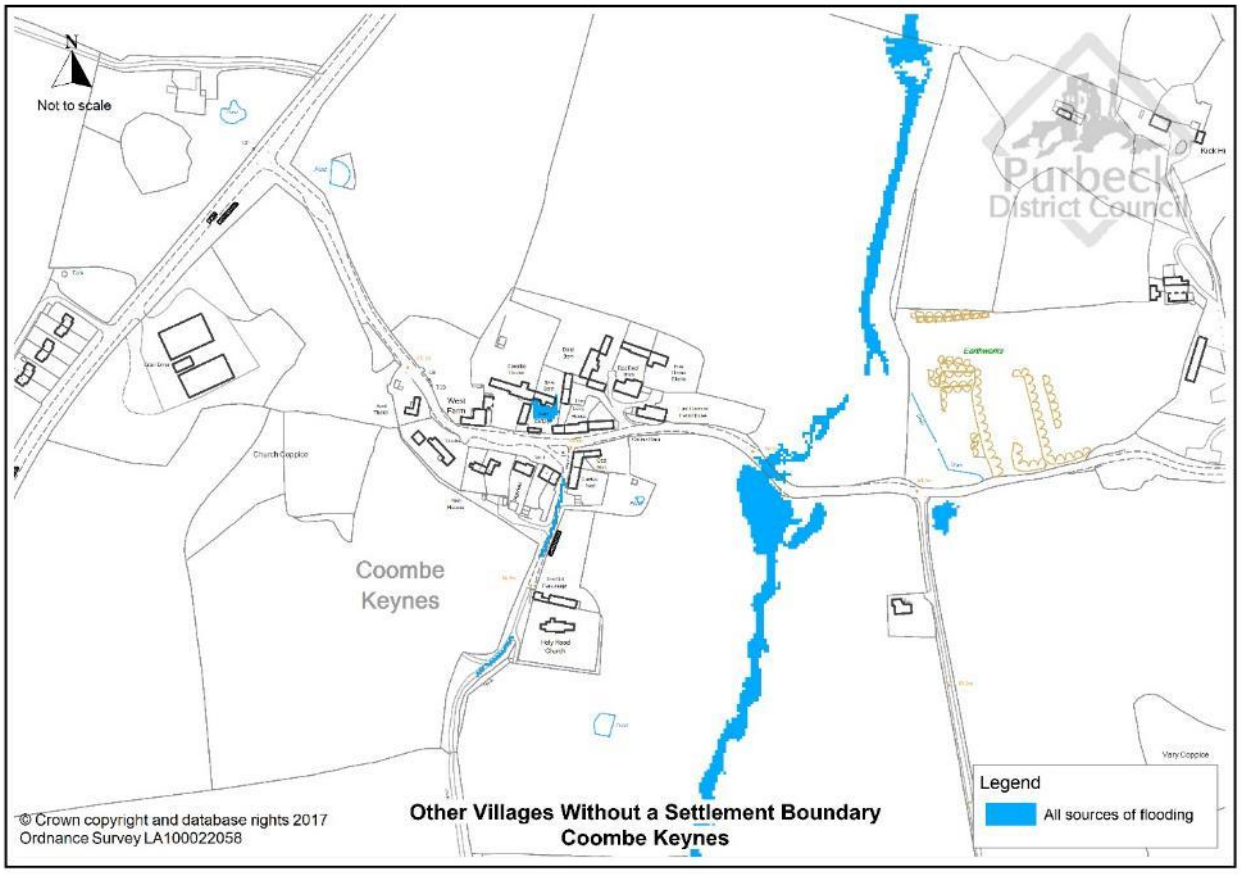
No known measures.

Areas covered by flood warnings

There is a flood alert area that extends over Coombe Keynes village.

Areas with critical drainage problems

No known areas.
Areas that may need a surface water management plan
None identified.
Locations that may have increased flood risk if additional development takes place
There is potential for some increased flood risk from surface water flooding if additional development takes place in the village.
Potential measures to manage flood risk
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.
Areas at risk of flooding - Coombe Keynes



Corfe Castle – Flood Risk Assessment & Management

Policy LD Settlements	**Key service village:** Corfe Castle **Other village with a settlement boundary:** Kingston
Number of residential properties	707
Number of business properties	117
Vulnerable infrastructure provision	Main Road: A351 to the North of Corfe Castle and West Streeet, and Swanage Railway Line, and doctors surgery.
Major watercourses	Corfe River Byle Brook
Other watercourses	Several smaller watercourses
Coastal areas	From Rope Lake Head in west to Chapmans Poole in east. Poole Harbour.

General flood risk

Rivers and Flood Zones

There are two major watercourses in Corfe Castle Parish – Corfe River and Byle Brook – both of which flow through the village toward Poole Harbour. Flood Zones 2 and 3 extend along both rivers. There are also several smaller watercourses that feed into the main rivers and Poole Harbour, some of which also fall within Flood Zones 2 and 3. Flood Zones 2 and 3 also extend along the edges of Poole Harbour.

Surface Water Flood Risk

At the 1 in 30 year incidence level surface water flood risk relates largely to the routes of existing watercourses and drainage ditches, field run-off and areas of ponding. The extent of flooding increases at the 1 in 100 and 1 in 1000 year incidence levels with many new flow paths across the Parish.

EA Flood Warning Areas

There are no EA flood warning areas in Corfe Castle Parish. There is an EA flood alert area that runs through the Parish and Corfe village.

Flood History

Flooding incidents in the Parish have related to highway flooding, flooding from unknown sources, vehicle flooding and property flooding (SWIM-geowessex).

Between 2013 and 2014 Dorset County Council received 2 flood reports of internal property flooding and 2 flood reports of external property flooding within the community of Corfe Castle (Local Flood Risk Management Strategy – Table 22).

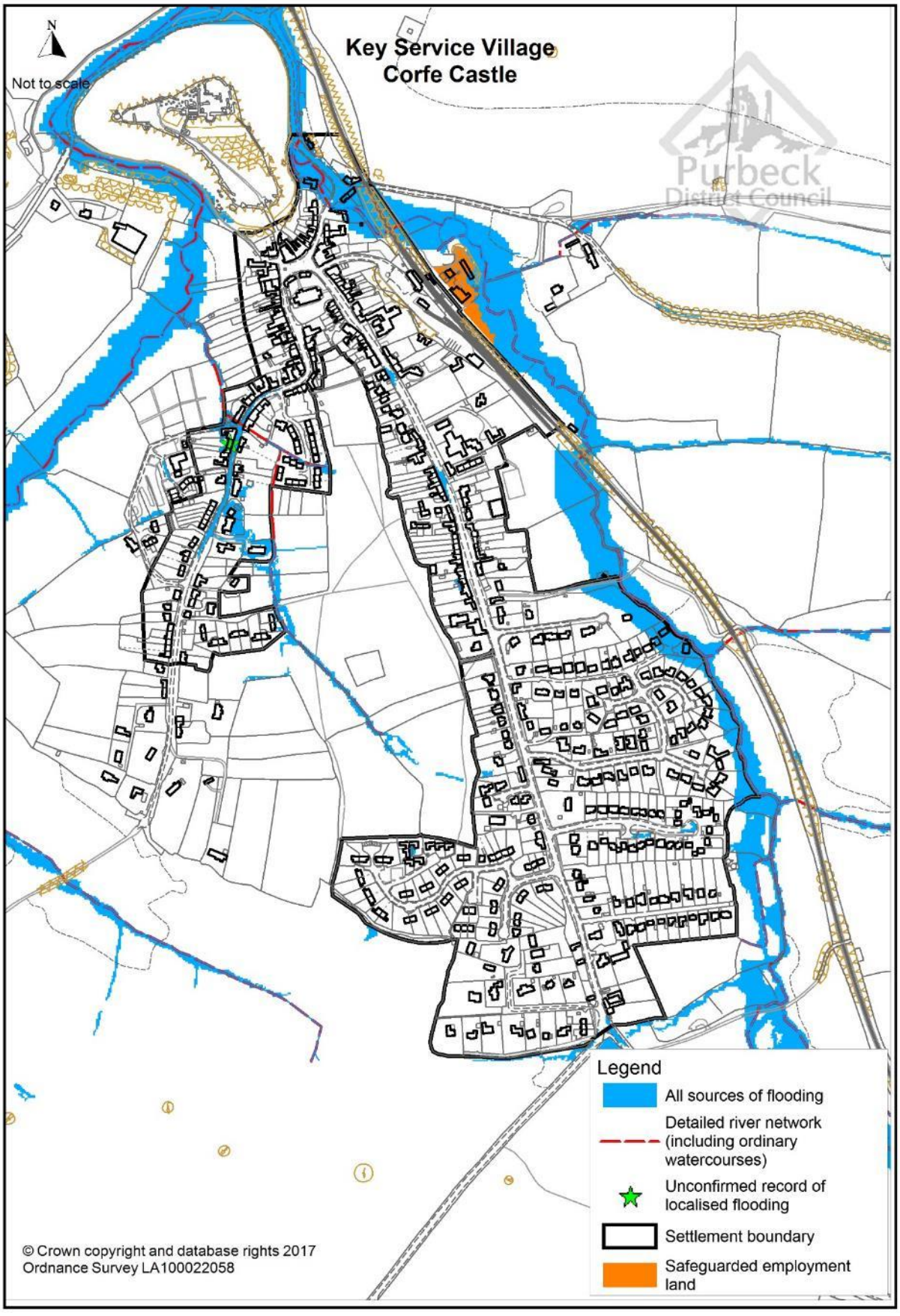
Properties adjacent to the Byle Brook have been affected on a number of occasions by the stream overtopping its banks. However, the principal problem in this area is associated with the flooding event in 1990 when properties upstream and downstream of the bridge at the millpond were flooded. This was due to two factors: 1: The sluice gates to the millpond were in a dilapidated condition and were not capable of being opened fully. These became blocked and the millpond overflowed. 2: Upstream, although there was a raised bank behind the properties, it was not continuous with the railway embankment and water flowed around the back of the raised bank. Subsequently permission was sought to link the bank with the railway embankment. This has reduced the flood risk to these properties.

The tributary which runs to the north of the Castle principally affects the road. A study was carried out by Ian Howick Associates following the 1990 flooding and concluded that the two bridges under and adjacent to the A351 near the Castle were too small to cope with the 1990 event.

A particular problem with one of the inputs into the river comes from the Halves Cottages area. This route, partly in pipe and culvert and partly open watercourse, is routed along West Street. The system is not capable of coping with extreme events and there is no satisfactory overland route for water to reach the lower ground. As a result some properties in West Street are at significant risk of flooding. However, some improvements have been made to this system in association with recent development and this has significantly reduced the flood risk.

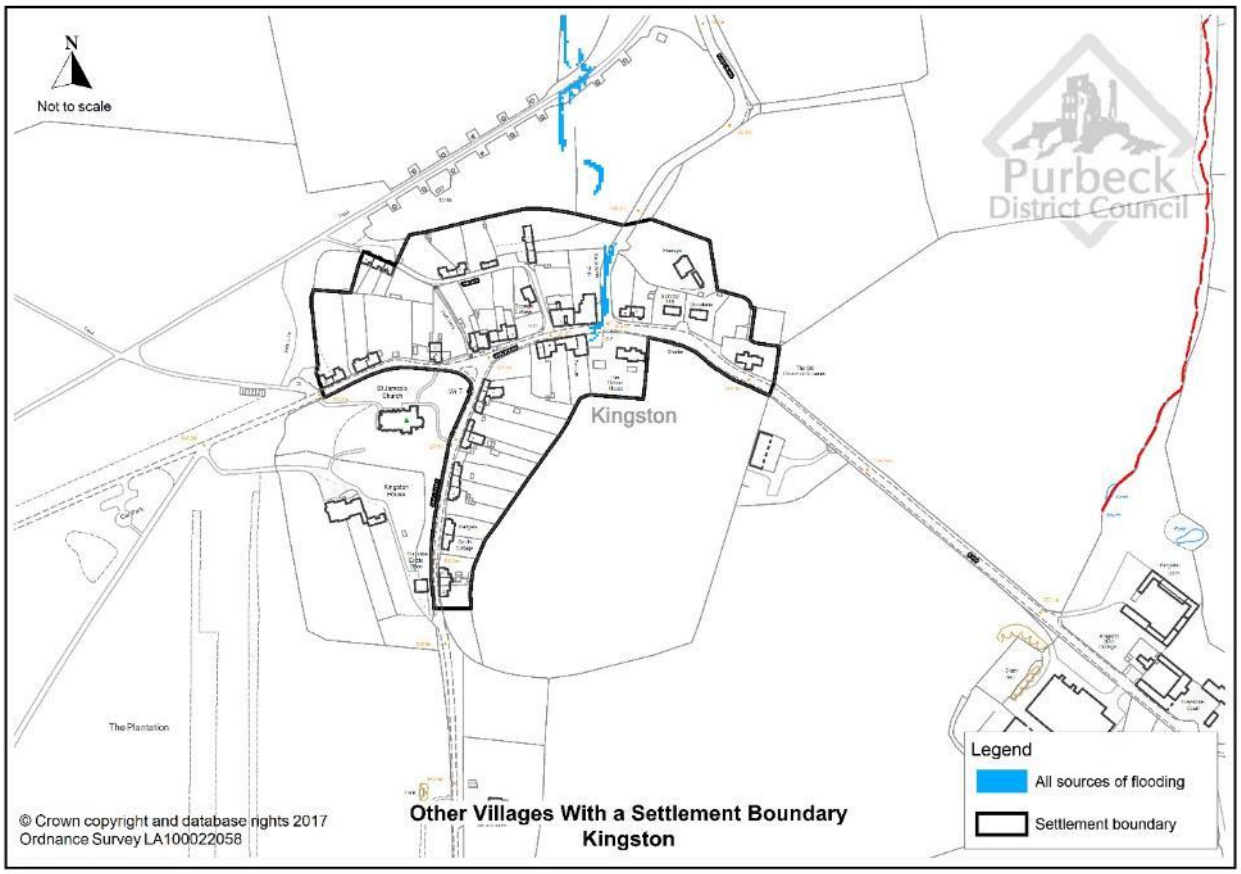
Settlement – Corfe Castle	
Risk of flooding	**Comment**
Fluvial	There has been some historic main river flooding and surface water flooding which was partly attributed to the lack of a surface water drainage system. River flooding relates to Corfe River and Byle Brook, both of which flow through the village, the land beside the watercourse is designated as part of Flood Zones 2 and 3. Historic river flooding in Corfe Castle village is highlighted above.
Coastal and tidal	The Frome and Piddle CFMP (2008) identifies tidal-influenced flooding at Corfe Castle in 1999. Flood Zone 2 extends along the coastline in the south of the Parish with flood Zone 3 also extending inland from Chapman's Pool. In the north of the Parish, Flood Zones 2 and 3 extend along the edges of Poole Harbour and inland along a couple of smaller watercourses.
Surface Water	There has been some historic main river flooding and surface water flooding which was partly attributed to the lack of a surface water drainage system. At the 1 in 30 year incidence level surface water flooding largely coincides with Corfe River and Byle Brook, however there are other areas within the village that are affected for example, some areas of open space and roads. At the 1 in 100 and 1 in 1000 year incidence level the extent of surface water flooding increases, particularly expanding along watercourses and forming new flow paths to feed into watercourses. Surface water flooding is a concern between built development and the railway on the eastern side of the village, to the west of development along West Street and Hollands Close and along the watercourse to the east of West Street.
Groundwater	No records of ground water flooding.
Sewer	No additional foul sewer flood risk for small infill development in Corfe Castle with foul only connections to the public foul systems. Foul flows from Kimmeridge and Church Knowle are pumped to Corfe Castle; any significant increase in cumulative flows will require assessment.

Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
An EA flood alert area runs through Corfe village.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Areas of Flood Zone 2 & 3 of Byle Brook and Corfe River also correlate with surface water flood risk areas. Within the village there are a number of surface water flow paths that feed into the main watercourses and which result in some areas of potential ponding. Locations that may have increased flood risk from surface water run-off if additional development was to take place include: • along the southern boundary of the village, south of Towsend Mead, along a track between the A351 and the railway and in areas where drainage channels feed into Byle Brook; • along the eastern edges of the village between existing developed area, Byle Brook and Swanage Railway; • between the railway, station and Sandy Hill Lane; • areas of open land between West Street and East Street where surface water flow paths feed into Corfe River; • areas of flow paths on Corfe Common; • areas of flow path from the playing field and car park of Hollands Close that feed into Corfe River; • land between B3351 and A351 to the north of the village.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Corfe Castle	



Settlement – Kingston

Risk of flooding	**Comment**
Fluvial	There are no major watercourses or smaller watercourses in Kingston village.
Coastal and tidal	N/A
Surface Water	There is very limited surface water flooding in Kingston village at the 1 in 30 year incidence level. At the 1 in 100 year and 1 in 1000 year incidence level there is some surface water flooding as downhill flow paths are formed from the village to the north. Areas most at risk are the village roads.
Groundwater	No records of groundwater flooding.
Sewer	Non sewered area.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
Kingston village is not affected by any flood warnings.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified	
Locations that may have increased flood risk if additional development takes place	
None identified.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - Kingston	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Not to scale
Purbeck
District Council
Kingston
The Plantation
Legend
All sources of flooding
Settlement boundary
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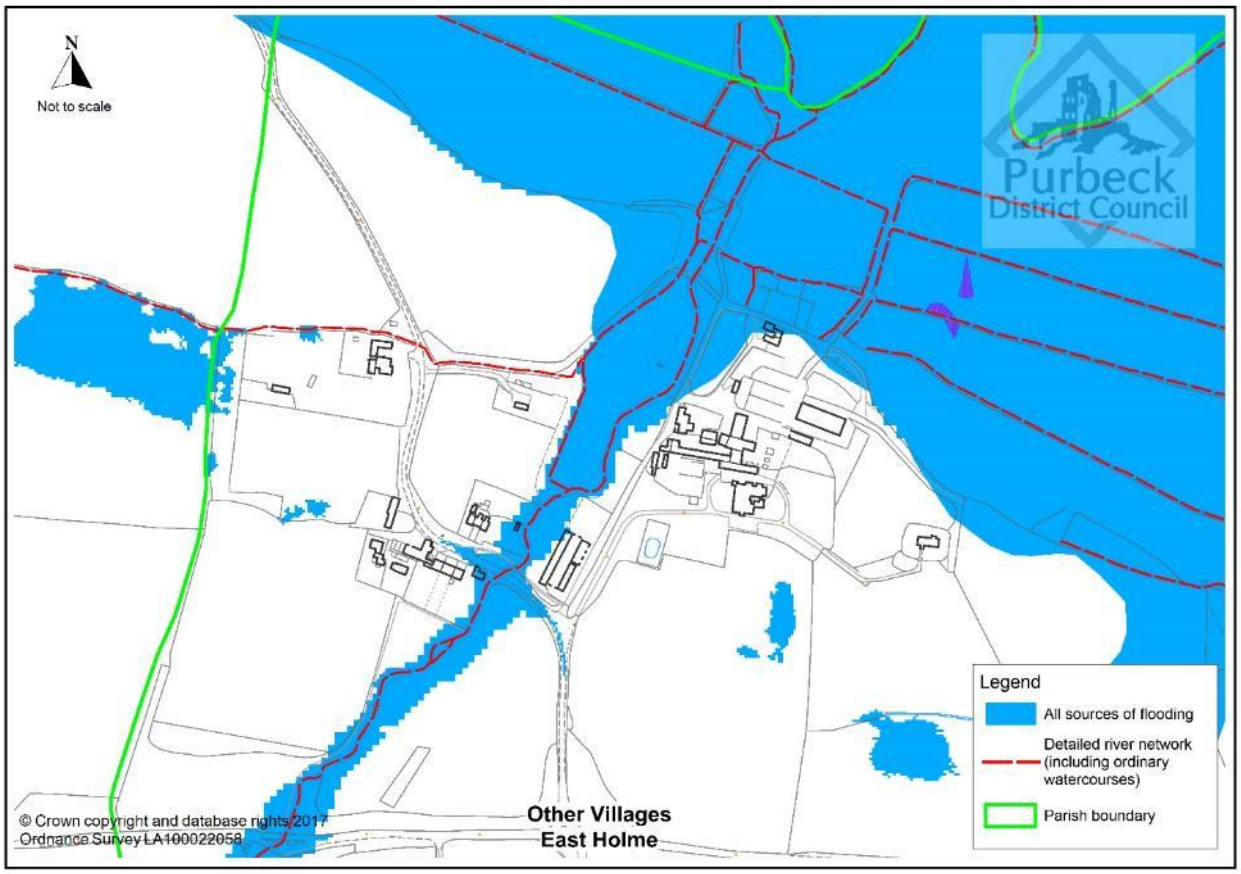
Other Villages With a Settlement Boundary
Kingston

East Holme – Flood Risk Assessment & Management	
Policy LD Settlements:	There are no Policy LD settlements in East Holme. East Holme village is a small hamlet.
Number of residential properties	22
Number of business properties	2
Vulnerable infrastructure provision	Main Roads: Holme Lane (connecting West Lane and B3070).
Major watercourses	River Frome along northern boundary
Other watercourses	Numerous small streams/channels (including a series of interconnected drains in water meadows to the east of Holme Priory) to the north and south of the River Frome, all flowing into the main River
Coastal areas	N/A
General flood risk	
Rivers and Flood Zones The major watercourse of the River Frome lies on the northern boundary of the Parish. There are several small watercourses in the Parish that flow northwards and feed into the River Frome. Flood Zones 2 and 3 run beside the River Frome and also along the watercourse that flows through East Holme village feeding into the River Frome. Surface Water Flood Risk At the 1 in 30 year incidence level, surface water flooding relates to the smaller watercourses, drainage ditches and some areas of ponding across the Parish. At 1 in 100 and 1 in 1000 years incidence levels the extent of surface water flooding increases, particularly to the north of the Parish and around the watercourses. EA Flood Warning Areas An EA flood warning area covers northern parts of the Parish that fall within the influence of the River Frome. An EA flood alert area also extends along the River Frome and along the watercourse that flows through East Home to feed into the Frome in the north of the Parish. Flood History There is some history of flooding at the Ford in East Holme (SWIM-geowessex).	
Settlement – East Holme	
Risk of flooding	**Comment**
Fluvial	The River Frome lies to the north of East Holme. Large areas of land beside the river is designated as part of Flood Zones 2 and 3. Flood Zones 2 and 3 also run beside the smaller watercourse (which includes a ford) that flows through East Holme village.
Coastal and tidal	N/A
Surface Water	At the 1 in 30 year incidence level surface water flooding affects central areas of East Holme hamlet as well as land to the north and west. The hamlet is surrounded by many small watercourses and ditches that flow into the River Frome to the north, including the ford that runs through the centre of the hamlet. Surface water flooding is largely linked to the smaller

	watercourses and the ford. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flooding increases to also include some additional areas of ponding and roads.
Groundwater	No records of groundwater flooding.
Sewer	Non sewered area
Reservoir	Flood risk from reservoirs to the north of East Holme village along River Frome (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA. Rising sea levels mean that the tide is likely to have a greater influence on flooding from the Frome.
Existing measures to manage flood risk	
Sluice on drains to the east of Holme Priory.	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008). An EA flood warning area lies to the north of East Holme village. An EA flood alert area extends along the River Frome to the north of the village and along the watercourse that flows through East Home.	
Areas with critical drainage problems	
No known areas	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
East Holme is a very small settlement, parts of which fall within Flood Zones 2 and 3, or are within close proximity of Flood Zones 2 and 3. There are also areas of surface water flooding that correlate with the Flood Zones. Development in the village may increase the risk of flooding from this source.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - East Holme	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Purbeck
District Council
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Parish boundary
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Other Villages
East Holme

East Lulworth – Flood Risk Assessment & Management

Policy LD Settlements	**Other villages with a settlement boundary:** East Lulworth
Number of residential properties	85
Number of business properties	10
Vulnerable infrastructure provision	Main Road: B3070 (connecting Holmebridge with East Lulworth and Lulworth Camp)
Major watercourses	None
Other watercourses	Several smaller watercourses – including those discharging into the sea at Arish Mell in the south and along the valleys to the north east of the settlement
Coastal areas	From Black Rock in west to Worbarrow Bay in east

General flood risk

Rivers and Flood Zones

There are no major watercourses in East Lulworth Parish. However, there are several smaller water courses that feed into the sea to the south and larger tributaries of the Frome to the north. Flood Zones 2 and 3 run beside part of the length of two watercourses in the north of the Parish. Flood Zone 2 also extends along parts of coastline, with Flood Zones 2 and 3 extending inland along a watercourse from Arish Mell.

Surface Water Flood Risk

At the 1 in 30 year incidence level, surface water flood risk across the Parish relates mainly to the routes of existing watercourse and drainage channels and run-off from fields. There are also a few areas of ponding, particularly where watercourses merge in the north of the Parish.

EA Flood Warnings

There are no EA flood warning areas in the Parish. However, there is an EA flood alert area that extends over parts of the Parish from the west to include areas along the coast and around Lulworth Camp. Flood alert areas also extend along two larger watercourses in the north of the Parish that discharge into Luckford Lake at East Holme.

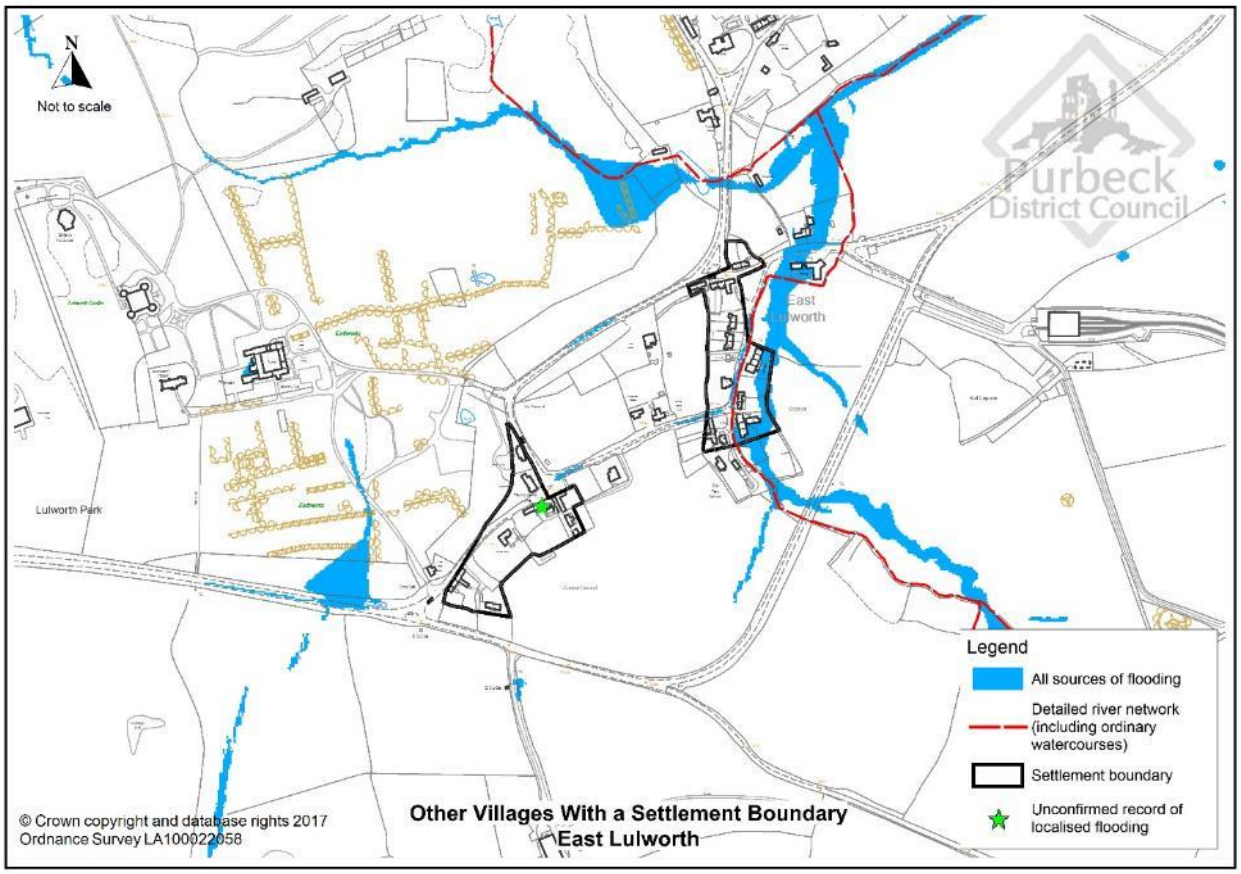
Flood History

East Lulworth has history of localised highways flooding and some overtopping of watercourses and roadside ditches, which has caused flooding to some properties. The watercourse discharges into Luckford Lake at East Holme.

Settlement – East Lulworth

Risk of flooding	**Comment**
Fluvial	There are no main watercourses affecting the village although a number of smaller watercourses run through the village and join together to the north. There are no Flood Zones affecting the village.
Coastal and tidal	N/A
Surface Water	At the 1 in 30 year incidence level surface water flooding

	affects the village along its eastern edge passing through the playing field and to the south of Mount Pleasant. There is also an area of ponding to the west of the village where a number of drainage ditches feed into a drainage network. Areas of surface water flooding increase for the 1 in 100 and 1 in 1000 year scenario, and cover larger areas of the village in the same broad locations.
Groundwater	No records of groundwater flooding.
Sewer	Non sewered area
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA
Existing measures to manage flood risk	
No known measures	
Areas covered by flood warnings	
East Lulworth village is not covered by any flood warnings.	
Areas with critical drainage problems	
No known areas	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Any additional development in East Lulworth village has potential to increase flood risk from surface water run-off.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - East Lulworth	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Not to scale
Purbeck District Council
East Lulworth
Lulworth Park
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All sources of flooding
Detailed river network (including ordinary watercourses)
Settlement boundary
Unconfirmed record of localised flooding
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Other Villages With a Settlement Boundary
East Lulworth

East Stoke – Flood Risk Assessment & Management

Policy LD Settlements	**Other village without a settlement boundary:** East Stoke
Number of residential properties	180
Number of business properties	91
Vulnerable infrastructure provision	Main Roads: A352, and Bindon Lane, and Weymouth – London Railway Line
Major watercourses	River Frome River Piddle (along parts of northern boundary)
Other watercourses	Many smaller watercourses (including Holy Stream) and drainage channels feeding into the River Frome
Coastal areas	N/A

General flood risk

Rivers and Flood Zones

The River Frome is a major watercourse that flows through the Parish from Wool in the west to Wareham in the east. There are many smaller watercourses that feed into the Frome. Flood Zones 2 & 3 run beside the length of the River Frome and several of the larger watercourses that feed into it.

The River Piddle lies along the northern boundary of the Parish. The land beside the river is also designated as Flood Zones 2 & 3.

Surface Water Flood Risk

At the 1 in 30 year incidence level surface water flood risk relates mainly to existing watercourses and drainage channels with some areas of ponding elsewhere. At the 1 in 100 year and 1 in 1000 year incidence levels the extent of surface water flooding increases significantly across areas to the south of the A352 that are close to watercourses feeding into the River Frome and areas of ponding also increase in extent.

EA Flood Warning Areas

An EA Flood Warning Area extends through East Stoke Parish along the River Frome and to the south of the A352. An EA Flood Alert Area also extends along the River Frome to the south of the A352 and a number of smaller watercourses feeding into the Frome from the south of the Parish.

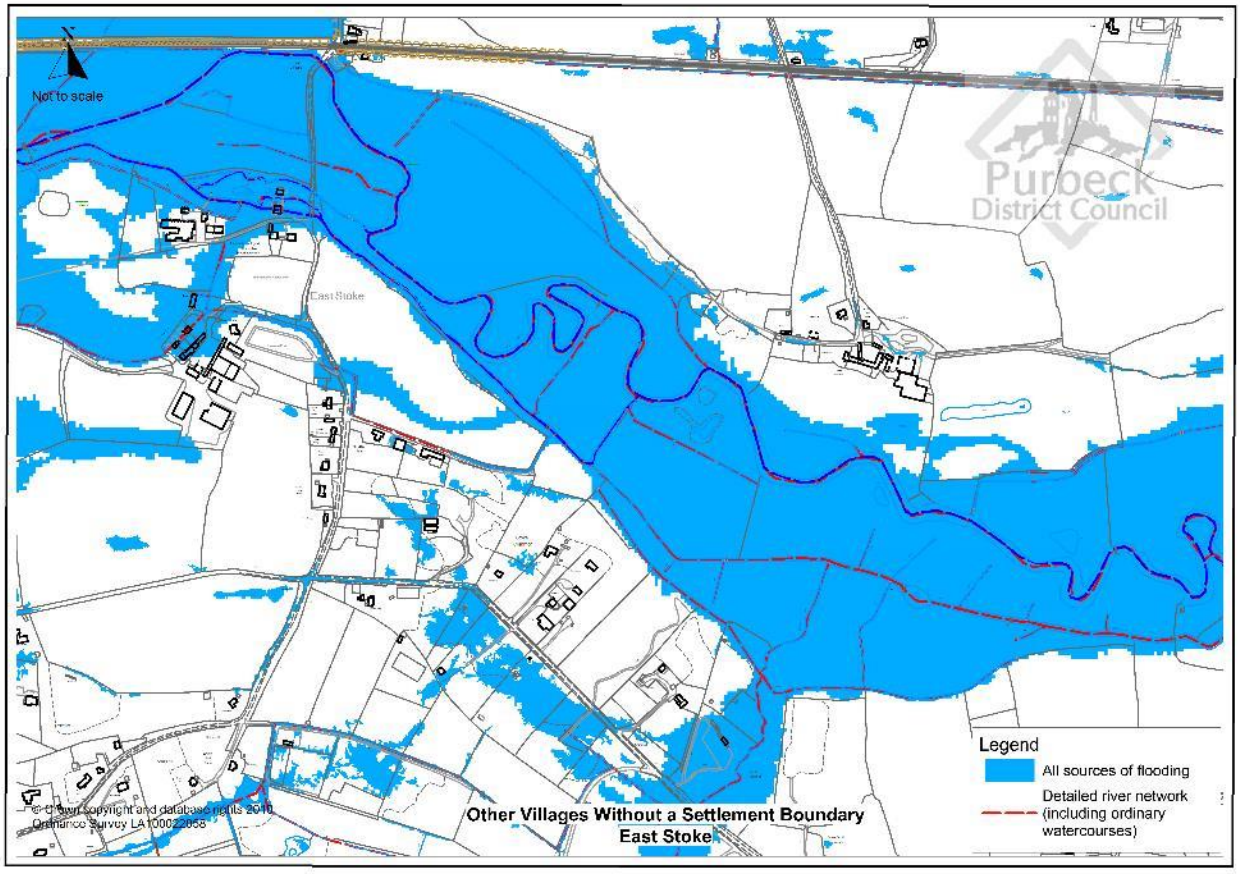
Flood History

EA records of the 2012/13 flooding state that 11 flood incidents were reported in East Stoke parish. There is flood history relating to highway flooding,

Settlement – East Stoke (Binnegar, Stokeford and north of railway)

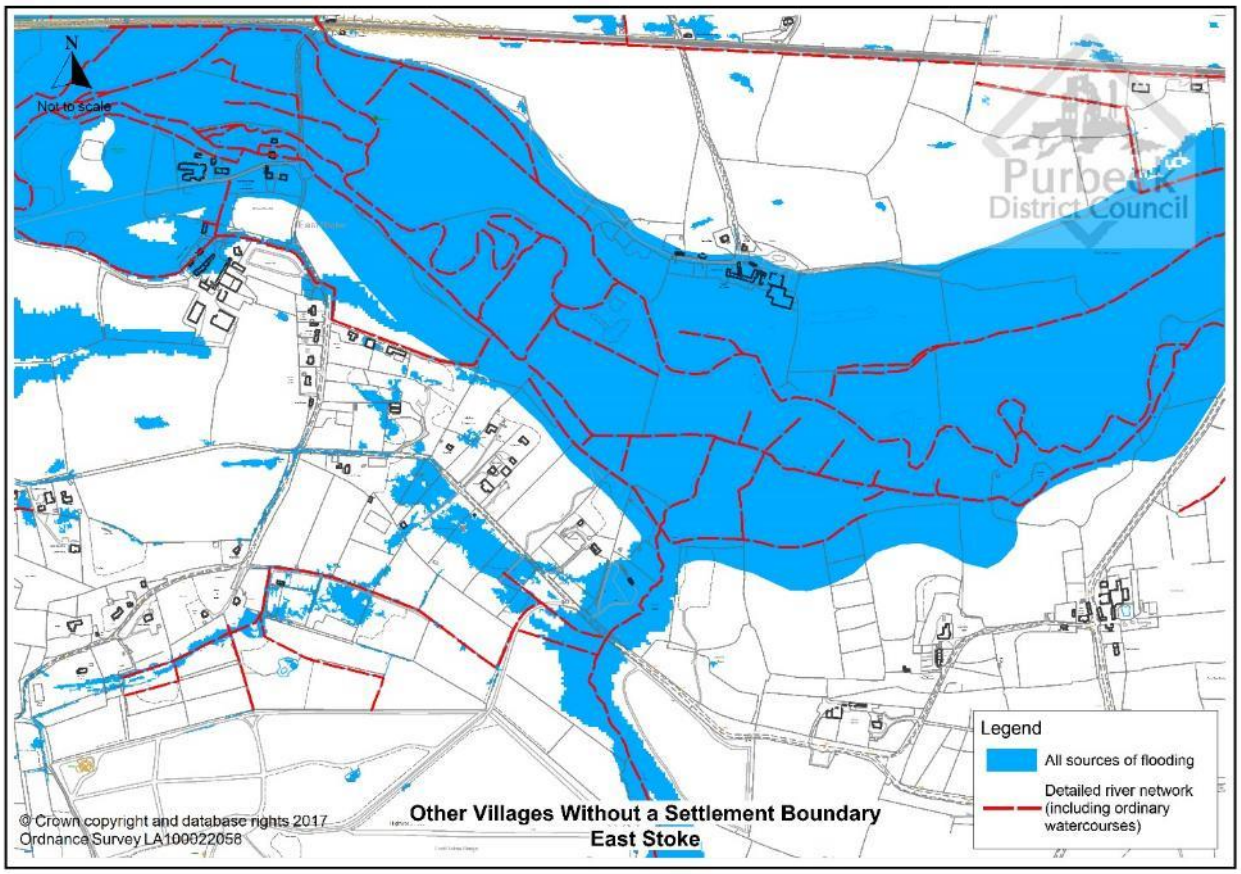
Risk of flooding	Comment
Fluvial	The River Frome flows through the Parish of East Stoke to the south of the road and railway. Flood Zones 2 & 3 lie to either side of the river and cross the railway at Stoke Crossing covering an area to the west of the old church and school. A number of smaller watercourses flow south from the Stoke Heath area towards the main road and the River Frome. Overland flow from fields and roads to tributaries of the River

	Frome also causes some flooding (Frome and Piddle CFMP, 2008).
Coastal and tidal	N/A
Surface Water	The area of East Stoke and Binnegar to the north of the railway is located at a higher level than areas to the south of the railway and does not suffer from significant surface water flood risk. However, at the1 in 100 and 1 in 1000 year incidence level, increased risk of surface water flooding is identified between the road and the railway and also along areas of the road, particularly where other watercourses drain south from higher land to the north.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Withy Bed with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA. Rising sea levels mean that the tide is likely to have a greater influence on flooding from the River Frome.
Existing measures to manage flood risk	
No known measures	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008). The EA flood warning areas do not extend north of the A352.	
Areas with critical drainage problems	
No known areas	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Any development that takes place between the main road and the railway line may increase flood risk from surface water run-off. North of the road, there may be increased flood risk from surface water flooding, if additional development took place to the east of Binnegar Hall, along Binnegar Lane, in the ‘Middlefield’ area and in the Stokeford Common area.	
Potential measures to manage flood risk	
Dorset County Council’s Flood Risk Management Strategy identifies East Stoke in its 3rd group of communities where flood risk management activities should be prioritised. The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - East Stoke (Binnegar and north of railway)	



Settlement – East Stoke (south of railway)	
Risk of flooding	**Comment**
Fluvial	The River Frome flows toward Poole Harbour to the south of the main road and has extensive areas of water meadow to either side. Large parts of these areas also fall within Flood Zones 2 & 3 as do some areas adjacent to other watercourses, ditches and ponds. There are many smaller watercourses and drainage channels around East Stoke, The Frome and Piddle CFMP (2008) identifies river flooding impacts on riverside dwellings, a caravan park, main road, railway line and several local roads for a 1% AEP event (represented by Flood Zone 3).
Coastal and tidal	N/A
Surface Water	At the 1 in 30 year incidence level, surface water flooding affects areas to the south of the railway in areas of drainage channels, ditches, ponds, other watercourses and the water meadows of the River Frome. At 1 in 100 and 1 in 1000 years, significantly larger areas to the south of the railway line are at risk of surface water flooding.
Groundwater	No records of groundwater flooding.
Sewer	Non sewered area
Reservoir	Flood risk from reservoirs along River Frome (Long term flood risk information – gov.uk)

Climate change	See general guidance in SFRA. Rising sea levels mean that the tide is likely to have a greater influence on flooding from the River Frome.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008). An EA Flood Warning Area extends through East Stoke Parish along the River Frome and to the south of the A352. An EA Flood Alert Area also extends along the River Frome to the south of the A352 and a number of smaller watercourses feeding into the Frome from the south of the Parish.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
A surface water management plan may be required.	
Locations that may have increased flood risk if additional development takes place	
East Stoke is a dispersed village and many parts of it lie within, or within close proximity to, areas of Flood Zone or surface water flood risk. Any additional development may increase flood risk from surface water run-off in this area.	
Potential measures to manage flood risk	
Dorset County Council's Flood Risk Management Strategy identifies East Stoke in its 3rd group of communities where flood risk management activities should be prioritised. The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - East Stoke (south of railway)	


N
Not to scale
Purbeck
District Council
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
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Other Villages Without a Settlement Boundary
East Stoke

Kimmeridge – Flood Risk Assessment & Management	
Policy LD Settlements	**Other village with a settlement boundary:** Kimmeridge
Number of residential properties	55
Number of business properties	13
Vulnerable infrastructure provision	Main road running through centre of village
Major watercourses	None
Other watercourses	A number of smaller watercourses flow south from higher land to Kimmeridge Bay.
Coastal areas	From Gaulter Gap in west to Rope lake Head in east

General flood risk

Rivers and Flood Zones

There are no major watercourses in Kimmeridge Parish. There are several smaller watercourses that flow south from higher land and discharge into the sea. There are no Flood Zones along the smaller watercourses.

Surface Water Flood Risk

At the 1 in 30 year incidence level surface water flood risk mainly relates to the flow paths of existing watercourses and some flooding on roads and tracks. There are also a number of small areas of ponding across the Parish. At the 1 in 100 year and 1 in 1000 year incidence levels the extent of surface water flooding increases but remains linked to watercourses, new flow paths to the sea, roads and tracks.

EA Flood Warning Areas

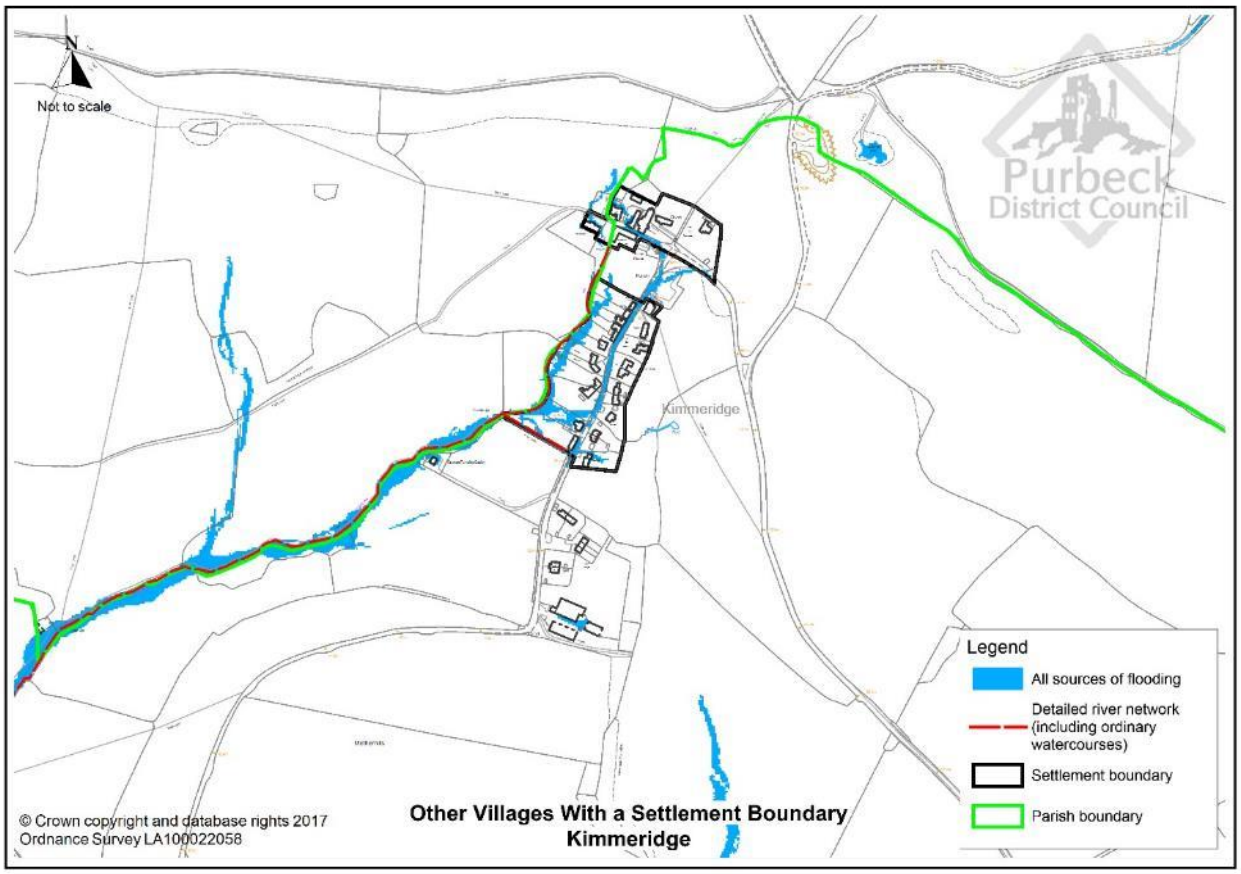
There are no flood warning areas in Kimmeridge Parish. There is a flood alert area around the edges of Kimmeridge Bay.

Flood History

None identified.

Settlement – Kimmeridge	
Risk of flooding	**Comment**
Fluvial	There are no major watercourses in proximity of Kimmeridge village. There is a small watercourse that runs along the western boundary of the village and flows south to Gaulter Gap and Kimmeridge Bay.
Coastal and tidal	Flood Zone 2 extends along the coastline of Kimmeridge Bay.
Surface Water	At the 1 in 30 year incidence level, surface water flooding in and around Kimmeridge village relates to the small watercourse to the east of the village. There is also a risk of surface water flooding along the main street through the village. At the 1 in 100 and 1 in 1000 year incidence levels the risk increases but remains linked to the flow paths of smaller watercourses from higher ground to the sea.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Kimmeridge with foul only connections to the public foul

	systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA
Existing measures to manage flood risk	
No known measures	
Areas covered by flood warnings	
Kimmeridge village is not covered by any flood warnings.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
As mentioned above, there are a number of surface water flow paths through Kimmeridge Village that feed into a larger flow path that flows south west towards Gaulter Gap and Kimmeridge Bay. Any additional development at Kimmeridge Village could increase surface water flood risk, particularly if flow paths are not kept clear.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - Kimmeridge	



Langton Matravers – Flood Risk Assessment & Management

Policy LD Settlements	**Local Service Village:** Langton Matravers
Number of residential properties	480
Number of business properties	56
Vulnerable infrastructure provision	Main Roads: A 351 Valley Road, and B3069, and Swanage Railway Line
Major watercourses	None
Other watercourses	Several smaller watercourses
Coastal areas	From Seacombe Cliff in west to Blackers Hole in east

General flood risk

Rivers and Flood Zones

There are no major watercourses in Langton Matravers Parish. There are several smaller watercourses in the northern half of the Parish that feed into Swan Brook and Godlingston Stream in Swanage Parish. Flood Zones 2 & 3 extend along one of the larger watercourses that follows Swanage railway and feeds into Swan Brook.

Surface Water Flood Risk

At the 1 in 30 year incidence level, the majority of surface water flood risk is in the northern half of the Parish and largely relates to the flow paths of smaller watercourses. There are also several areas of ponding around these watercourses, particularly adjacent to Swanage railway line, at Langton West Wood and around the junction of the A351 with Crack Lane. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flooding increases, again largely related to watercourses and new flow paths as areas of ponding join together.

EA Flood Warning Areas

There are no flood warning areas in Langton Matravers Parish. There is a flood alert area along part of the watercourse that follows the Swanage railway line and feeds into Swan Brook in Swanage.

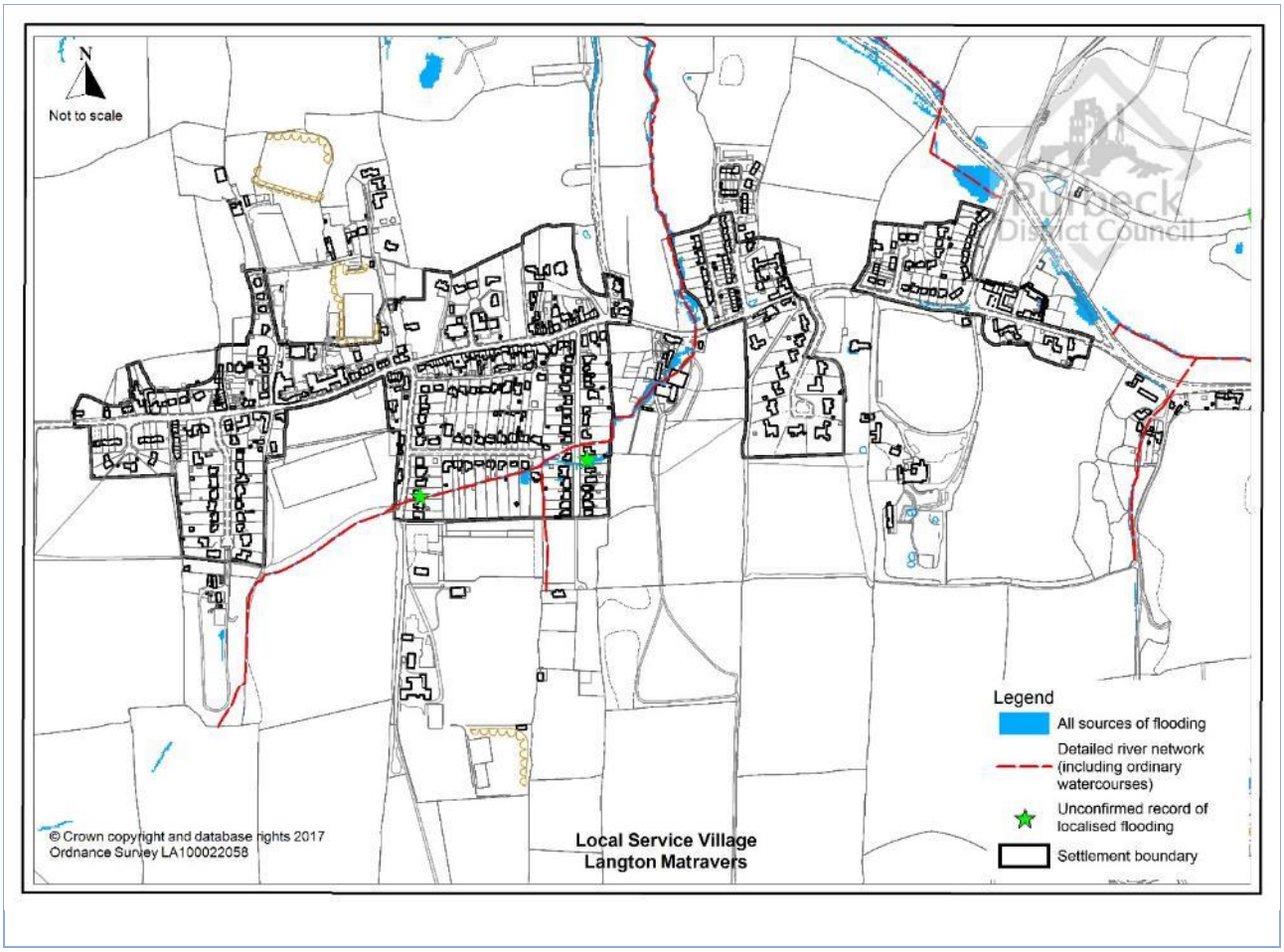
Flood History

There is some flood history in Langton Matravers relating to blocked drainage channels, surface water run-off from fields and highways.

Settlement – Langton Matravers

Risk of flooding	Comment
Fluvial	There has been localised flooding events in Langton Matravers from fluvial sources that discharge in lower ground in the Corfe Valley (properties in The Hyde have been particularly affected in recent years).
Coastal and tidal	N/A
Surface Water	There have been localised flooding events in Langton Matravers from surface water. Flood risk is related to water courses that drain into the valley to the north of the village, feeding into Swan Brook. Level of risk can increase if drainage channels become blocked. At the 1 in 30 year incidence level, surface water flood risk is highest from the watercourse than flows north-east wards through Tom's Field to Putlake

	Adventure Farm and to the west of Steppes, Lower Steppes and Farm Wood. At the 1 in 100 and 1 in 1000 year incidence levels there is also some risk of surface water flooding along Valley Road, Crack Lane and Coombe Lane.
Groundwater	Anecdotal evidence indicates that some localised flooding in Langton Matravers has been caused by ground water.
Sewer	No additional foul sewer flood risk for small infill development in Langton Matravers with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
There are no flood warnings affecting Langton Matravers village.	
Areas with critical drainage problems	
No known areas	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
There are a couple of surface water flow paths running northwards through Langton Matravers village to join tributaries of Swan Brook to the north of Valley Road. Additional development that does not allow for retention of the flow paths could result in additional flood risk to the village. Locations include between Toms Field Road and Durnford Drove, through East Acton Field, between The Hyde and Putlake Adventure Farm, to the west of Lower Steppes, along Crack Lane, between Steppes and Three Acre Lane and around Coombe Farm.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Langton Matravers	


N
Not to scale
Ryedale
District Council
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Unconfirmed record of localised flooding
Settlement boundary
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Ordnance Survey LA100022058
Local Service Village
Langton Matravers

Lytchett Matravers – Flood Risk Assessment & Management

Policy LD Settlements	**Key Service Village:** Lytchett Matravers
Number of residential properties	1497
Number of business properties	67
Vulnerable infrastructure provision	Main Roads: Parts of High Street, Lime kiln Road Road, Middle Road, and Wareham Road.
Major watercourses	None
Other watercourses	Several smaller watercourses
Coastal areas	N/A

General flood risk

Rivers and Flood Zones

There are no major watercourses in Lytchett Matravers Parish. There are a number of smaller watercourses, the majority of which feed into the river Sherford to the south of the Parish. There are no Flood Zones within the Parish.

Surface Water Flood Risk

At the 1 in 30 year incidence level the majority of surface water flood risk related to the flow paths of smaller watercourses and drainage ditches. However there are some pockets of surface water flooding in the rural areas and some highway flooding. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flood risk increases but continues to be related to existing watercourses and the joining up of areas of ponding. There is also some additional highway flooding.

Groundwater

Underlying geology means some land in the northern part of the Parish (to the west of Dullar Farm and High Wood) is at risk from groundwater flooding.

EA Flood Warning Areas

There is an EA Flood Warning Area to the north west of the Parish that extends south-east towards Highwood and West Park Farm. There is also an EA Flood Alert Area to the west and north-west of the Parish that extends towards the western boundary of Lytchett Matravers village.

Flood History

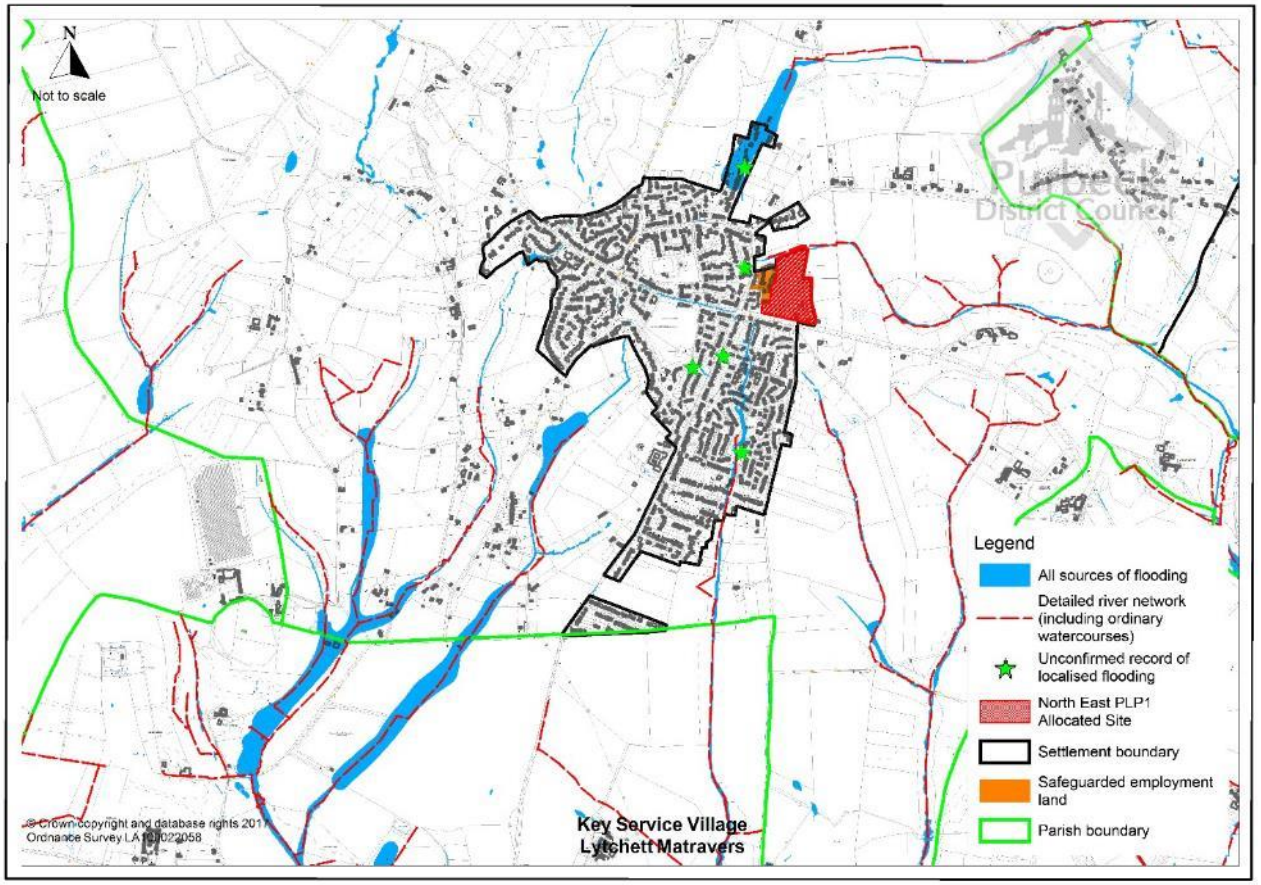
Flood history mainly relates to blocked drainage, ditches and culverts, highway run-off, and flooding from unconfirmed sources (SWIM-geowessex).

Between 2013 and 2014 Dorset County Council received 4 reports of external property flooding within the community of Lytchett Matravers (Local Flood Risk Management Strategy – Table 22).

Settlement – Lytchett Matravers

Risk of flooding	Comment
Fluvial	There are no main rivers affecting Lytchett Matravers. However, there are a number of smaller watercourses and drains that flow from within the village towards the Sherford River and Poole Harbour.
Coastal and tidal	N/A
Surface Water	Surface water flooding in and around Lytchett Matravers

	generally relates to the flow paths of smaller watercourses and drainage channels. At 1 in 100 years and 1 in 1000 years the risk increases and also extends to some areas of highway. Areas of surface water flood risk include Flowers Drive road, to the south of Hopmans Close, land between Eldons Drove and Middle Road, along the watercourse located between Wareham Road and Foxhills Road, along the watercourse to the south of Windy Ridge, along the watercourse to the north of the Huntick Road allocation.
Groundwater	No records of groundwater flooding.
Sewer	Flood risk caused by groundwater inundation into sewers. Map below shows land at risk from sewer flooding (prepared using information relating to groundwater levels and Wessex Waters records of sewer flooding). As with Bere Regis the Council may wish to consider developing a strategy for managing discharge into the sewers to avoid new development in the same sewer pumping station catchment area increasing risks from sewer flooding on site or elsewhere.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
In some developments in the 1980s and 1990s, surface water attenuation tanks were used. This has reduced the risk of flooding to downstream properties.	
Areas covered by flood warnings	
There is an EA Flood Alert Area to the west and north-west of the Parish that extends towards the western boundary of Lytchett Matravers village.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
There are a number of surface water flow paths that run south through small valleys from Lytchett Matravers towards the Sherford River. Additional development within Lytchett Matravers may increase the surface water run-off into these flow paths with potential increased flood risk both around Lytchett Matravers and further south towards the A35. Any new development proposed around the edges of Lytchett Matravers should ensure that the paths are kept free to allow normal flow to continue.	
Potential measures to manage flood risk	
Any discharge to a watercourse in Lytchett Matravers may need to be attenuated due to downstream flooding problems for example at the Bakers Arms roundabout. However, the soils in Lytchett Matravers are formed from clay and may be unsuitable for standard soakaways. The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where possible managed to reduce causes and impacts of flooding. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Lytchett Matravers	


N
Not to scale
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Unconfirmed record of localised flooding
North East PLP1 Allocated Site
Settlement boundary
Safeguarded employment land
Parish boundary
Key Service Village
Lytchett Matravers
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Lytchett Minster & Upton – Flood Risk Assessment & Management	
Policy LD Settlements	**Town:** Upton **Other village with a settlement boundary:** Lytchett Minster **Other village without a settlement boundary:** Organford
Number of residential properties	3581
Number of business properties	119
Vulnerable infrastructure provision	Main Roads: A35, and B3067, and Sewage Works
Major watercourses	River Sherford
Other watercourses	Lytchett Minster Stream Lytchett Minster Drain Hill Farm Stream Western Stream
Coastal areas	Lytchett Bay, Poole Harbour

General flood risk

Rivers and Flood Zones

The River Sherford is the only major watercourse in Lytchett Minster and Upton Parish. This river flows along the southern boundary of the Parish and discharges into Lytchett Bay. There are a number of smaller watercourses and drainage ditches in the Parish that feed into the River Sherford or Lytchett Bay. Flood Zones 2 & 3 run beside the River Sherford, a number of smaller water courses, and the edges of Lytchett Bay Low lying land to the south of Lytchett Minster is also affected by tidal flooding.

Surface Water Flood Risk

Surface water flood risk at the 1 in 30 year incidence levels extends along sections of the River Sherford and a number of smaller ordinary watercourses (including Western Stream, Hill Farm Stream and Lytchett Minster Stream and Drain). It also pools in areas that are low lying and subject to barriers, for example, south-east of Bere Farm along the A35, around Bakers Arms roundabout, between Lytchett Minster and the A35, several areas on the southern fringes of Upton and a number of roads in and around both settlements. At the 1 in 100 year incidence level the extent of surface water flooding increases, particularly in the areas mentioned above, and at the 1 in 1000 year incidence level there is another significant increase particularly in the following areas:

- along the River Sherford
- watercourses feeding into the River Sherford
- ponding and flooding along watercourses to the west of Slepe Farm
- ponding to the south-west of Holly Hedge Farm
- ponding south of the A35 opposite Newton Farm and around Pikes Farm
- ponding around Bere Farm and to the south-east of Bere Farm along the A35
- ponding around the Baker's Arms roundabout (all sides)
- along the watercourse to the west of Hill Farm
- south of the A35 around Wareham Meadows Nature Reserve
- between Dorchester Road and Lytchett Minster village and the A35
- along Post Green Road
- along watercourses and drainage channels to the north-east of Lytchett Minster village
- along Policemans Lane and Watery Lane, upton
- to the south and east of Beach Road, Upton

- around the sewage pumping station, to the north and east of the sewage pumping station including Sandy Lane,
- around Saltings Road, Lytchett Way and Furzey Road, Upton
- around Sandy Close, Border Drive and Shore Lane, Upton
- around the B3067, Redwood Road and A35
- around Douglas Close
- around Palmerston road
- parts of Upton Wood
- around Upton Park Farm.

Groundwater

Underlying geology creates a risk of flooding around the settlement and nearby roads.

EA Flood Warning Areas

There are no flood warning areas in the Parish. However, there is an EA Flood Alert Area to the south of Lytchett Minster between the village and the A35, around the Baker's Arms roundabout, to the north west of the Baker's Arms roundabout, south of the A35 along the Sherford River and along the southern fringes of Upton and Lytchett Bay.

Flood History

The LLFA flood records indicate that Lytchett Minster and Upton Parish is at significant risk of flooding from various sources including: fluvial, tidal, surface and groundwater flooding.

There are a number of historic flooding incidents in Upton although the source of flooding has not always been confirmed (SWIM-geowessex). There are records of surface water, drainage ditch, sewer related flooding and flooding from unconfirmed causes in Lytchett Minster Village and around the Baker's Arms roundabout (SWIM-geowessex).

Between 2013 and 2014 Dorset County Council received 2 flood reports of internal property flooding and 7 flood reports of external property flooding within the community of Lytchett Minster and Upton (Local Flood Risk Management Strategy – Table 22).

Settlement – Lytchett Minster	
Risk of flooding	**Comment**
Fluvial	The Lytchett Minster Flood Risk Study (May 2017) notes that the river Sherford flows eastwards to Lytchett Bay to the south of the A35. The Sherford interacts with tides from Poole Harbour. Other 'ordinary watercourses' which flow around and through Lytchett Minster include the: Lytchett Minster Stream and Lytchett Minster Drain (to the North-East), Hill Farm Stream, and Western Stream (to the North-West). To the east of Lytchett Minster there is an area of flood risk from Lytchett Minster Drain and areas of higher flood risk associated with the watercourses south of Watery Lane. As noted in the flood risk study, flooding occurs in Old Watery Lane and around Ashbrook Walk associated with Lytchett Minster Stream and Drain, and at the Bakers Arms Roundabout, which is associated with Hill Farm Stream and is influenced by tidal water levels downstream.

	Many of the ordinary watercourses are constrained by pipes, culverts and channels that limit their water flow capacity and may result in overtopping and localized flooding. Based on available modelling data, ordinary watercourse flooding could potentially affect between 24 and 71 buildings within the village. Ordinary watercourse flooding currently presents the greatest flood risk within the village.
Coastal and tidal	The Lytchett Minster Flood Risk Study (May 2017) states that high tides in Lytchett Bay cause flood water to pass under the A35 and affect the flows of watercourses to the north of the road. In isolation, whilst a significant risk, high tides have not been a principal cause of flooding in the area. Where high tides coincide with high rainfall or storm events, then 'storm surge' may have a cumulative effect on flood risk. Flooding in Lytchett Minster and at the Baker's Arms roundabout may arise from a number of different sources including fluvial (from main rivers and ordinary water courses), surface water and tidal. Tidal flooding has been identified as a significant direct risk to lower lying areas of the Baker's Arms Roundabout and lower lying areas to the north of the A35. Extreme high tides influence the risk of flooding from the Sherford River and ordinary watercourses by reducing discharge rates into Poole Harbour through a backwater effect on culvert and channel capacity. Based on available modelling data, tidal flooding could potentially affect between 2 and 28 buildings within the village.
Surface Water	The Lytchett Minster Flood Risk Study (May 2017) states that surface water flooding (often operating in conjunction with flooding originating from water courses) is a significant risk for the local community. The report notes frequent and persistent problems of surface water flooding in multiple locations, including Old Watery Lane, Ashbrook Walk and Baker's Arms Roundabout. Some parts of the Lytchett Minster area are low-lying, and the natural overland route for surface water to discharge to Poole Harbour has been cut off in places. High tide levels together with surface water cause local flooding (particularly at Old Watery Lane). To the west of Lytchett Minster, there is an area at high risk of surface water flooding that is associated with Hill Farm Stream to the west of Charity Farm and near the confluence of Hill Farm Stream and the Western Stream. This results in surface water flow beneath the A35 but also over Dorchester Road and through the grounds of the Baker's Arms Public House. There is an area of high risk to the north of Dorchester Road between Charity Farm and Post Green Road. The Lytchett Minster Flood Risk Study (May 2017) notes overland flow paths for surface water runoff in the upper catchment of Lytchett Minster

	Drain and Lytchett Minster Stream, flows in a southerly direction down Post Green Road and New Road with flooding at the junction of New Road and Dorchester Road and to the south of Dorchester Road. There is a high risk of surface water flooding in Lytchett Minster village from the Lytchett Minster Drain. Lytchett Minster Stream is linked to surface water flooding to the east of the village and other high-risk areas are associated with watercourses south of Old Watery Lane. Dorchester Road in Lytchett Minster is also subject to flooding. The combination of flooding, and in particular the role of tidal flooding, in the Lytchett Minster areas has caused flooding on the A35 and at the Baker's Arms Roundabout on many occasions which has resulted in restricted use and even closure of the A35 and Baker's Arms Roundabout. At the 1 in 1000 year incidence level there is a significant increase in flood risk from this source at the following areas: • watercourses feeding into the River Sherford • ponding to the south-west of Holly Hedge Farm • ponding around the Baker's Arms roundabout (all sides) • along the watercourse to the west of Hill Farm • between Dorchester Road and Lytchett Minster village and the A35 • along Post Green Road • along watercourses and drainage channels to the north-east of Lytchett Minster village.
Groundwater	The Lytchett Minster Flood Risk Study (May 2017) states that to the north of Dorchester Road underlying geology (clay and sand layers) allows groundwater to emerge after prolonged periods of rainfall. This groundwater then travels over land towards the A35 and contributes towards flood risk in the vicinity of Dorchester Road and Old Watery Lane. It may also contribute to flooding at Post Green Road. Groundwater emergence close to Dorchester Road could affect up to 10 properties and also contribute to surface water and ordinary watercourse flood risk elsewhere. Evidence also suggests the emergence of groundwater in ephemeral springs that contribute to property and highway flooding, particularly during the wet winter months.
Sewer	There is a Wessex Water sewage treatment works at Lytchett Minster. The Lytchett Minster Flood Risk Study (May 2017) states that sewer flooding in the area can be related to prolonged rainfall over the winter months or blockages. The study indicates that the sewer capacity is limited or easily overwhelmed during periods of high rainfall, and that localised events may occur relatively frequently in the future. Despite this sewers and artificial drainage do not pose a significant flood risk to the village.

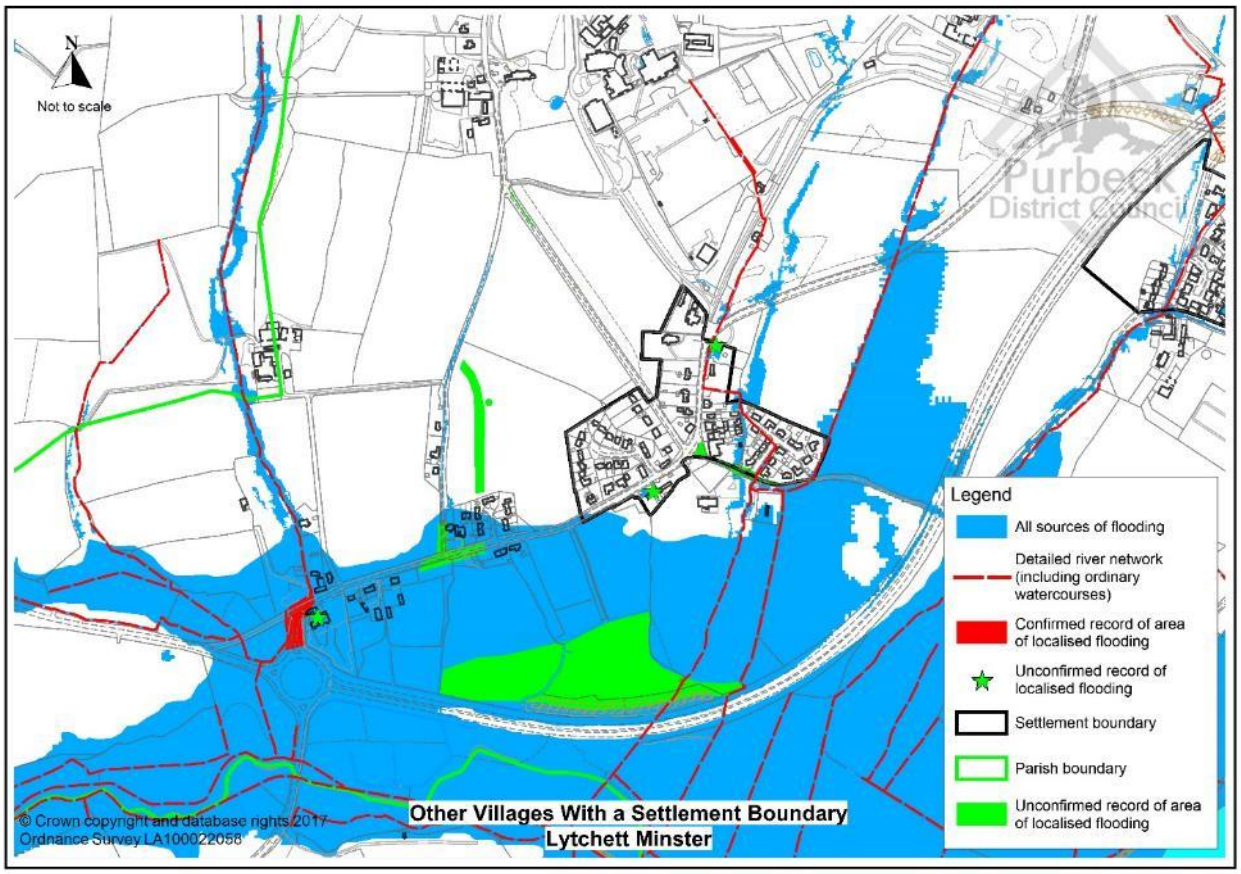
Reservoir	There are no canals within the vicinity of the village and EA Reservoir Inundation Mapping does not identify any potential sources of reservoir flood risk.
Climate change	Climate change is predicted to increase the mean sea level, peak river flows and rainfall intensity. The combination of these effects will result in an increase in the frequency and extent of flood risk areas within the village. The Lytchett Minster Flood Risk Study (May 2017) notes that up to 28 properties are currently at risk from tidal flooding. By 2110 up to 74 properties could be affected. Within Lytchett Minster, the study identifies that 54 buildings may be affected by surface water/ordinary watercourse flooding for the extreme climate change event in 2110 compared to the baseline figure of 14. Limitations of the modelling must be noted. Climate change is likely to change the balance of flood risk in Lytchett Minster so that tidal flooding becomes the principal source of flood risk. Tidal flood risk increases significantly post 2030 and within the next 100 years there will be significant numbers of properties that are at tidal flood risk events as frequently as once every year.
Existing measures to manage flood risk	
The Lytchett Minster Flood Risk Study (May 2017) states that there are no formal flood defences within the local area. There are embankments along the north bank of the Sherford River that are part of a private land-drainage system, although there is some doubt that they provide any protection against tidal inundation in the majority of conditions. In some developments in the 1980s and 1990s, surface water attenuation tanks were used. This has reduced the risk of flooding to downstream properties.	
Areas covered by flood warnings	
There is an EA Flood Alert Area to the south of Lytchett Minster between the village and the A35, around the Baker's Arms roundabout and to the north west of the Baker's Arms roundabout.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
Dorset's Surface Water Management Plan identifies the need for a study into the impact of sea level rise on the surface water drainage in Upton and Upton by-pass drainage.	
Locations that may have increased flood risk if additional development takes place	
Development in and around the settlement may affect rates and directions of surface water flow, and is likely to put a further demand on the existing sewer system. This could have the effect of increasing the risks from flooding in the settlement.	
Potential measures to manage flood risk	
The Environment Agency has been working in partnership with Dorset County Council (Highways and Lead Local Flood Authority), Purbeck District Council and Wessex Water in the preparation of the Lytchett Minster Flood Risk Study (May 2017). The study concludes that flooding arising from high tides, groundwater, surface water and watercourses all contribute to flood risk in Lytchett Minster. The study does not assess the flood risks arising from multiple sources acting together at the same time. Despite this it suggests that it may be possible to use the existing evidence to develop localised flood management measures to address some of the existing flood risk. These flood management measures could include:	

1. Install non-return flap valves on culverts beneath the A35 to reduce the tidal inflows through the embankment to the north of the road.
2. Improve the capacity of culverts at key locations in the ordinary watercourses.
3. Improve (re-direct) overland flow routes for groundwater.

The study concludes that further investigation and analysis is needed before a comprehensive model could be prepared that would give a more complete understanding of: the combined effects of flooding from different sources, climate change, the evolution of estuary and changing patterns of land use. This model could be used to assess the feasibility, and viability, of reducing flood risk to properties and infrastructure over the long term.

The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where possible managed to reduce causes and impacts of flooding. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.

Areas at risk of flooding - Lytchett Minster



Settlement – Upton

Risk of flooding	Comment
Fluvial	The Sherford River flows into Lytchett Bay, Poole Harbour to the south of Upton. A number of smaller watercourses flow into the

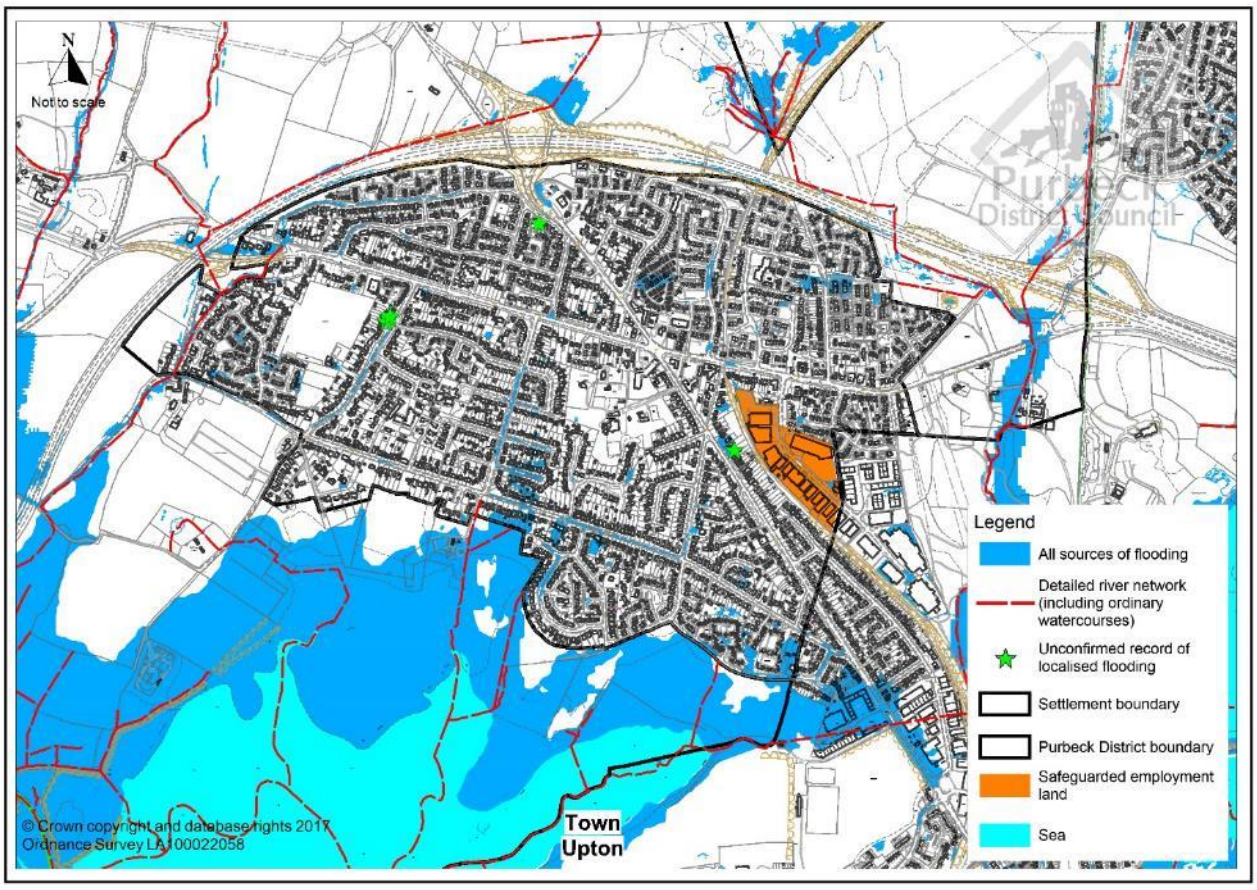
	harbour from the southern edges of Upton and also along the western edge from Marsh Lane south to Watery Lane.
Coastal and tidal	Areas on the southern edges of Upton that adjoin Lytchett Bay are at risk of coastal and tidal flooding. Flood Zones 2 & 3 extend up towards the southern fringes of Upton affecting a number of properties and their gardens.
Surface Water	Upton suffers from a lack of adequate watercourses and surface water sewers. Some parts are low-lying, and the natural overland route for surface water to discharge to the harbour has been cut off in some places. Land around: Sandy Lane, Watery Lane, and Dorchester Road is at risk of flooding from surface water. Surface water flooding is also a risk on a number of other roads in the town. At the 1 in 1000 year incidence level there is a significant increase particularly in the following areas: • along Policemans Lane and Watery Lane, upton • to the south and east of Beach Road, Upton • around the sewage pumping station, to the north and east of the sewage pumping station including Sandy Lane, • around Saltings Road, Lytchett Way and Furzey Road, Upton • around Sandy Close, Border Drive and Shore Lane, Upton • around the B3067, Redwood Road and A35 • around Douglas Close • around Palmerston road • parts of Upton Wood • around Upton Park Farm.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Upton with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA. Rising sea levels will increase the risks from tidal flooding (including the influence of the tide on watercourses discharging into the harbour) around the edge of Poole Harbour.
Existing measures to manage flood risk	
No known measures	
Areas covered by flood warnings	
There is an EA Flood Alert Area south of the A35 along the Sherford River and along the southern fringes of Upton and Lytchett Bay.	
Areas with critical drainage problems	
No known areas	
Areas that may need a surface water management plan	
Dorset's Surface Water Management Plan identifies the need for a study into the impact of sea level rise on the surface water drainage in Upton and Upton by-pass drainage.	
Locations that may have increased flood risk if additional development takes place	

Development in and around the settlement may affect rates and directions of surface water flow, and is likely to put a further demand on the existing sewer system. This could have the effect of increasing the risks from flooding in the settlement.

Potential measures to manage flood risk

Development in this settlement should include measures to manage surface water run-off from development. Where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area. The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where possible managed to reduce causes and impacts of flooding. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.

Areas at risk of flooding - Upton



Morden – Flood Risk Assessment & Management

Policy LD Settlements	**Other villages without a settlement boundary:** East Morden West Morden
Number of residential properties	151
Number of business properties	8
Vulnerable infrastructure provision	Main Road: A35
Major watercourses	River Winterbourne along parts of northern boundary
Other watercourses	Several smaller watercourses
Coastal areas	N/A

General flood risk

Rivers and Flood Zones

The River Winterbourne flows along the northern boundary of the Parish. A number of smaller watercourses feed into the river through the northern part of the Parish. In the south of the Parish tributaries feed into the River Sherford. Flood Zones 2 & 3 run beside the length of the River Winterbourne and one of its tributaries in Morden Parish. Flood Zones 2 & 3 also extend along a couple of the larger watercourses in the south of the Parish.

Surface Water Flood Risk

Surface water flooding mainly relates to existing watercourses in the Parish and a number of areas of ponding in fields and on roads. At the 1 in 1000 year incidence levels the extent of flooding increases although it continues to relate mainly to watercourses.

Groundwater

Underlying geology means that some land in the northern part of the Parish (in the vicinity of Winterborne Zelston) is at risk from ground water flooding.

EA Flood Warning Areas

There is an EA Flood Warning Area in the north of the Parish which extends along the River Winterbourne and several of its tributaries. An EA Flood Alert Area extends from the north of the Parish south to include East and West Morden and surrounding areas.

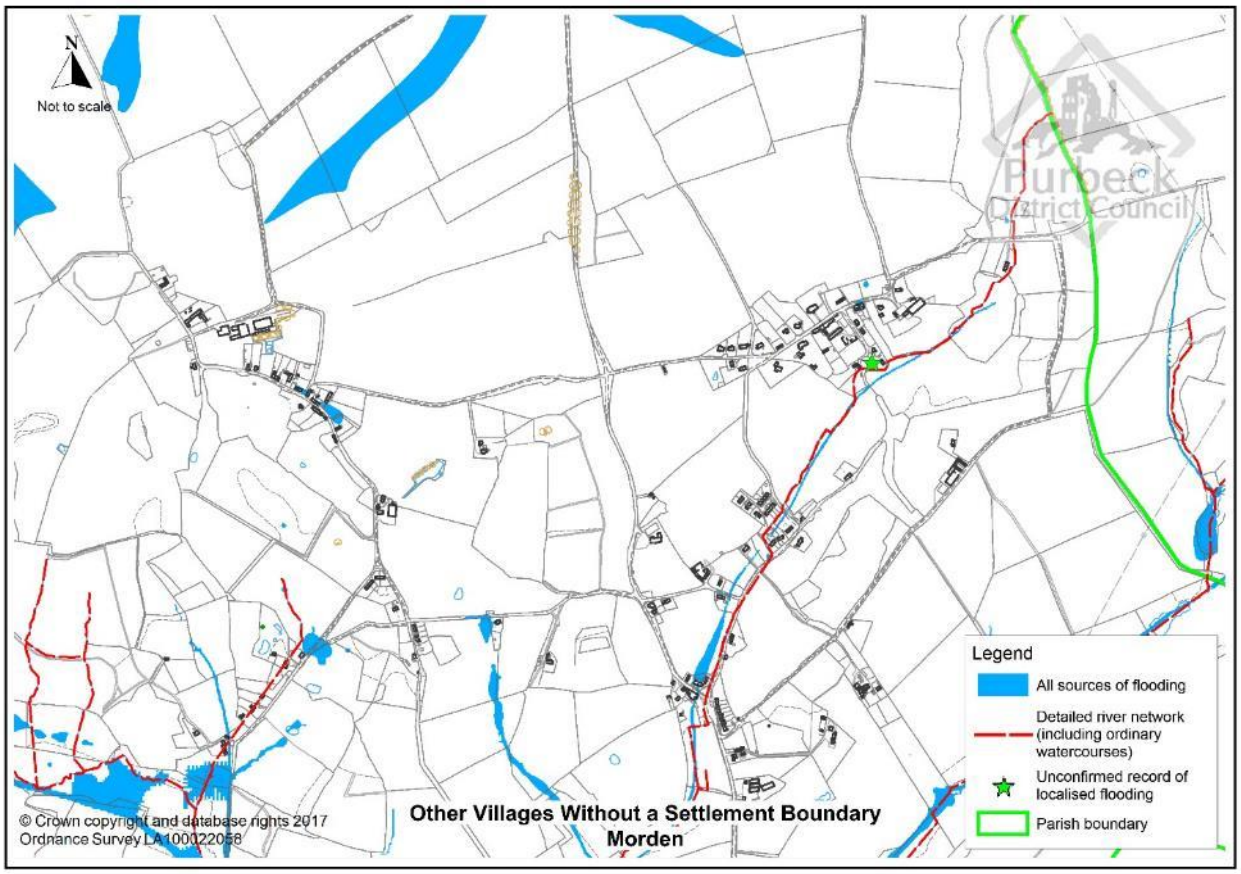
Flood History

There are flooding problems associated with the stream at East Morden which has insufficient capacity to cope with extreme events (SWIM-geowessex). Development near the Cock and Bottle was designed with raised levels to mitigate/manage the risks from flooding.

Settlement – Morden

Risk of flooding	Comment
Fluvial	Morden village has several small watercourses flowing through the dispersed properties. There are no major watercourses and no Flood Zones affecting the main built areas of the village (East and West Morden).
Coastal and tidal	Not applicable.
Surface Water	Areas at risk of surface water flooding relate to the smaller watercourses. These areas increase in extent at the 1 in 100

	and 1 in 1000 year incidence periods. Some areas of surface water flood risk affect development in East Morden (along Lower Street) and West Morden.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in East & West Morden with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA
Existing measures to manage flood risk	
No known measures	
Areas covered by flood warnings	
East Morden and West Morden are both within an EA Flood Alert area. A Flood Warning Area lies across the north of the Parish but does not extend south across the villages.	
Areas with critical drainage problems	
No known areas	
Areas that may need a surface water management plan	
None identified	
Locations that may have increased flood risk if additional development takes place	
There may be increased flood risk relates to surface water in West Morden if additional development takes place, particularly on the southern fringes of the village. There may also be increased flood risk from additional development close to the watercourse in East Morden, particularly along Lower Street, Gallop's Lane, and around the junction of Lower Street with the B3075.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - Morden	


N
Not to scale
Burbeck
District Council
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Unconfirmed record of localised flooding
Parish boundary
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Ordnance Survey LA100022056
Other Villages Without a Settlement Boundary
Morden

Moreton – Flood Risk Assessment & Management

Policy LD Settlements	**Other village with a settlement boundary:** Moreton Station **Other village without a settlement boundary:** Moreton Village
Number of residential properties	166
Number of business properties	15
Vulnerable infrastructure provision	Main Road: B3390, and Weymouth – London Railway Line
Major watercourses	River Frome River Frome North Channel
Other watercourses	Several smaller watercourses – tributaries of the River Frome.
Coastal areas	N/A

General flood risk

Rivers and Flood Zones

There are two major watercourses in Moreton Parish – the River Frome and the River Frome North Channel. Both lie to the north of the Parish and flow south eastwards towards Wool. There are a number of smaller watercourses across the Parish which largely feed into the River Frome to the north. Flood Zones 2 & 3 run beside the River Frome and the Frome North Channel. Flood Zones 2 & 3 also run beside the watercourse that flows northwards through Tadnoll Heath towards the River Frome along the southern boundary of Moreton Parish.

Surface Water Flood Risk

At the 1 in 30 year incidence level surface water flooding mainly relates to the routes of existing watercourses although there are also individual areas of ponding across the parish and some areas of flooding on roads. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flooding increases significantly, particularly in areas related to watercourses and where areas of ponding adjoin.

EA Flood Warning Areas

There is an EA Flood Warning Area along the River Frome and River Frome North Channel. This stretches from the north-west of the Parish to the south-east. A Flood Alert Area also covers: the River Frome and River Frome North Channel, an area to the east of Waddock Farm and areas beside the watercourse on the southern boundary of the Parish through Tadnoll Heath.

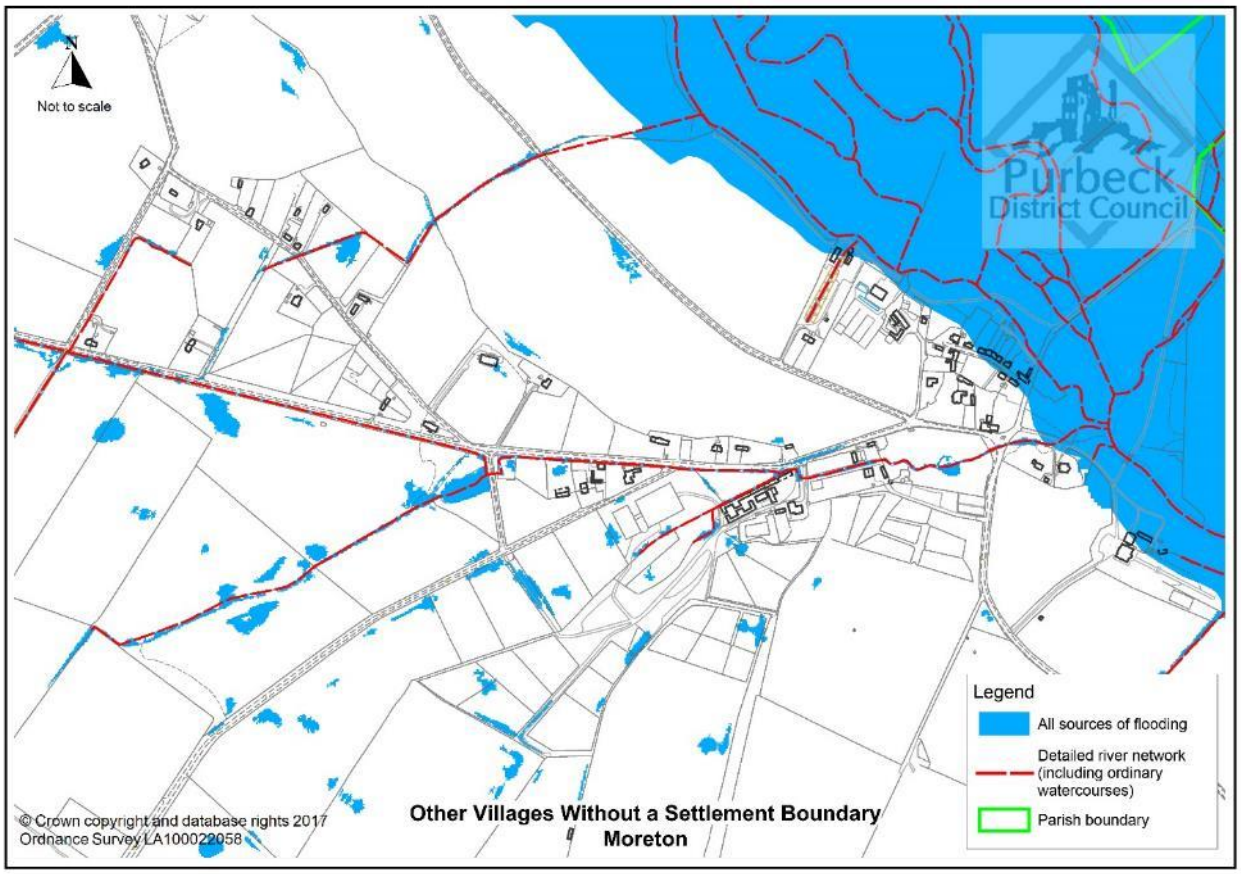
Flood History

There is one record of flooding in the north of the Parish (SWIM-geowessex).

Settlement – Moreton

Risk of flooding	Comment
Fluvial	The River Frome lies to the north of Moreton Village with Moreton Ford being a key feature of the area. There are many smaller watercourses and drainage channels that feed into the River Frome around Moreton village. Flood Zones 2 & 3 extend over large areas of water meadow to both sides of the River Frome but do not include any properties.
Coastal and tidal	N/A

Surface Water	Surface water flood risk affects the village but is generally linked to the smaller watercourses and drainage channels. The level and extent of risk increases at the 1 in 100 and 1 in 1000 year incidence periods. The Frome and Piddle CFMP (2008) notes surface water flooding at Moreton from October 2000 – January 2001.
Groundwater	No records of groundwater flooding.
Sewer	Non sewered area
Reservoir	No risk. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA
Existing measures to manage flood risk	
No known measures	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008). There is an EA Flood Warning Area along the River Frome and River Frome North Channel. This stretches from the north-west of the Parish to the south-east. A Flood Alert Area also extends along the River Frome and River Frome North Channel and covers an area to the east of Waddock Farm. The northern fringes of Moreton village fall within the Flood Warning and Flood Alert Areas.	
Areas with critical drainage problems	
No known areas	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Additional development at Moreton Village may result in increased flood risk from surface water, particularly if development is within proximity of existing flow paths towards the River Frome to the north of the village.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Moreton	



Settlement – Moreton Station	
Risk of flooding	**Comment**
Fluvial	There are no major watercourses affecting Moreton Station. However, there are several small watercourses and drainage channels in proximity of Moreton Station. The River Frome and its Flood Zones lie to the north of Moreton Station and do not affect the settlement.
Coastal and tidal	N/A
Surface Water	Surface water flooding around Moreton Station is mainly related to existing watercourses. The extent of flooding increases over the 1 in 100 and 1 in 1000 year incidence periods, with some additional surface water flooding likely on the B3390 (Station Road).
Groundwater	No records of groundwater flooding.
Sewer	Non sewered area
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA
Existing measures to manage flood risk	
No know measures	
Areas covered by flood warnings	
There are no Flood Warning or Flood Alert Areas affecting Moreton Station.	
Areas with critical drainage problems	
No known areas	
Areas that may need a surface water management plan	

None identified.

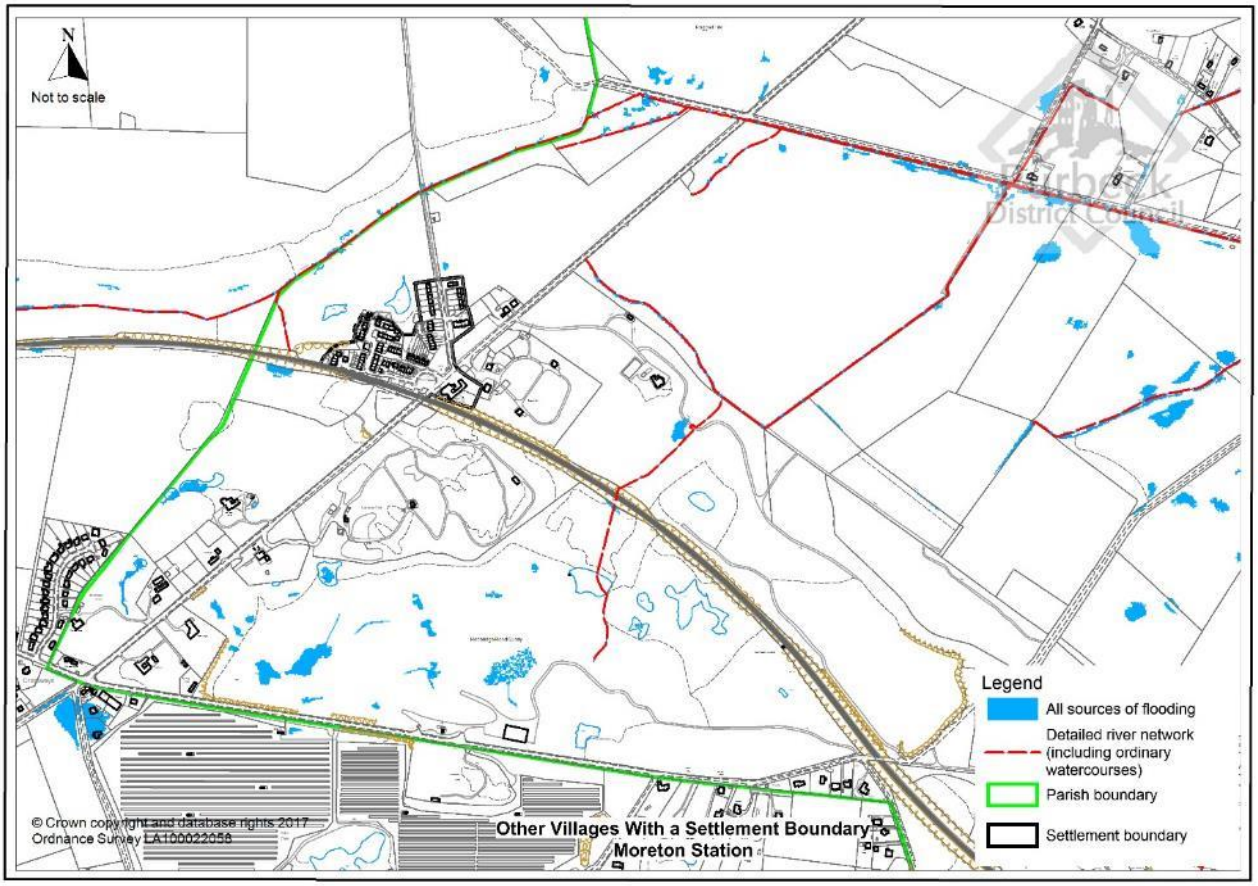
Locations that may have increased flood risk if additional development takes place

Additional development at Moreton Station may result in some increased flood risk from surface water, particularly if development was to extend along Woodsford Lane towards the Parish boundary with Woodsford Parish.

Potential measures to manage flood risk

The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.

Areas at risk of flooding - Moreton Station



Steeple with Tyneham – Flood Risk Assessment & Management	
Policy LD Settlements	There are no Policy LD settlements in this Parish. Steeple is a small hamlet in the Parish. Tyneham village is uninhabited.
Number of residential properties	41
Number of business properties	5
Vulnerable infrastructure provision	N/A
Major watercourses	None
Other watercourses	A number of small water courses in the northern part of the Parish drain into the catchment for the Rivers Frome. Small water courses in the southern part of the Parish drain toward the sea or into the catchment for the Corfe River to the east.
Coastal areas	From Worbarrow Bay in the west to Kimmeridge Bay in the east.

General flood risk

Rivers and Flood Zones

There are no major watercourses in Steeple and Tyneham Parish but there are many smaller watercourses. Flood Zones 2 & 3 run beside some of these more significant tributaries in the north and west of the Parish.

Surface Water Flood Risk

Surface water flooding is linked to the flow paths of smaller watercourses and areas of land that drain into the watercourses. There are also pockets of surface water flooding across the parish. The extent of flood risk from surface water increases at the 1 in 100 and 1 in 1000 year incidence levels, particularly next to the watercourses.

EA Flood Warning Areas

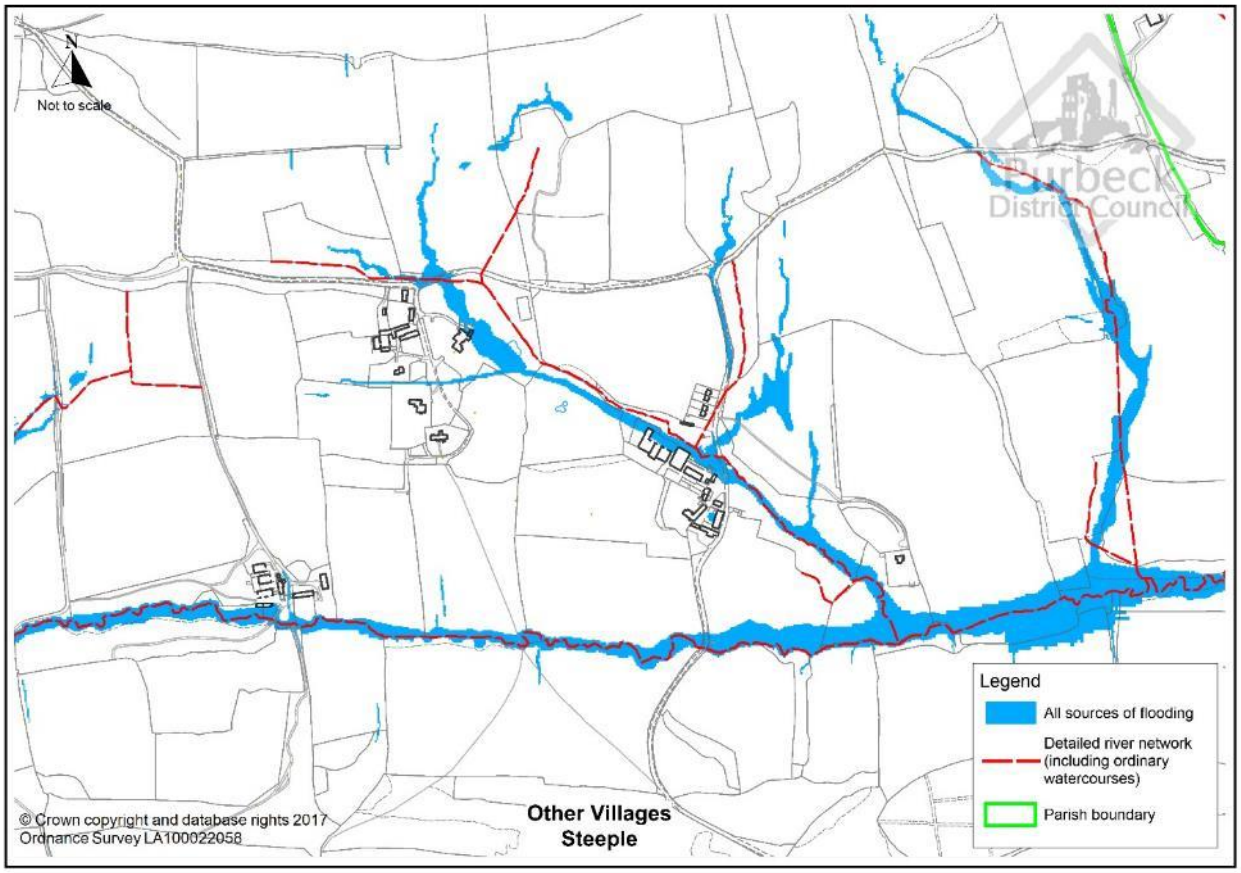
There are no Flood Warning Areas in Steeple and Tyneham Parish. There is a Flood Alert Area in the Parish that extends from Worbarrow Bay in the west, across Tyneham (uninhabited), north of Steeple and towards Church Knowle.

Flood History

No records of investigations into flooding.

Settlement – Steeple	
Risk of flooding	**Comment**
Fluvial	There are no major watercourses within the proximity of Steeple. A couple of smaller watercourses that are in proximity to the village flow south to join the Corfe River.
Coastal and tidal	N/A
Surface Water	An area of surface water flooding extends from the north of Steeple south-eastwards through Blackmanston Farm. This follows a watercourse that joins Corfe River to the south-east of the village. The extent of surface water flooding increases at the 1 in 100 and 1 in 1000 year incidence levels.
Groundwater	No records of groundwater flooding.

Sewer	Non sewered area
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
There are no Flood Warning Areas affecting Steeple. There is a Flood Alert Area that extends across the northern fringes of Steeple.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Steeple is a very small settlement with potential for surface water flood risk to increase if any additional development takes place where there is an existing risk from flooding.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area.	
Areas at risk of flooding - Steeple	



Studland – Flood Risk Assessment & Management	
Policy LD Settlements	**Other village with a settlement boundary:** Studland
Number of residential properties	263
Number of business properties	266
Vulnerable infrastructure provision	Main Road: Ferry Road
Major watercourses	None
Other watercourses	Small water courses running across the eastern and western sides of the Parish
Coastal areas	Ballard Point to Studland Bay and Poole harbour
General flood risk	

Rivers and Flood Zones

Studland Parish covers a large area extending south to Ballard Down and north to Brownsea Island. There are no major watercourses within the Parish but there are many smaller watercourses that discharge into Studland Bay to the east and Poole Harbour to the north. Flood Zones 2 & 3 run beside many of the smaller watercourses and lower lying areas of land and pooling close to Poole Harbour. Flood Zones also extend along Studland Bay from Shell Bay in the north to close to Redend Point in the south.

Surface Water Flood Risk

Areas of surface water flood risk across the parish generally relate to existing watercourses, drainage ditches and areas of pooling on heathland. Several areas are also within the village, particularly where smaller watercourses drain into the sea. The areas of surface water flooding increase in their extent at the 1 in 1000 year incidence level.

EA Flood Warning Areas

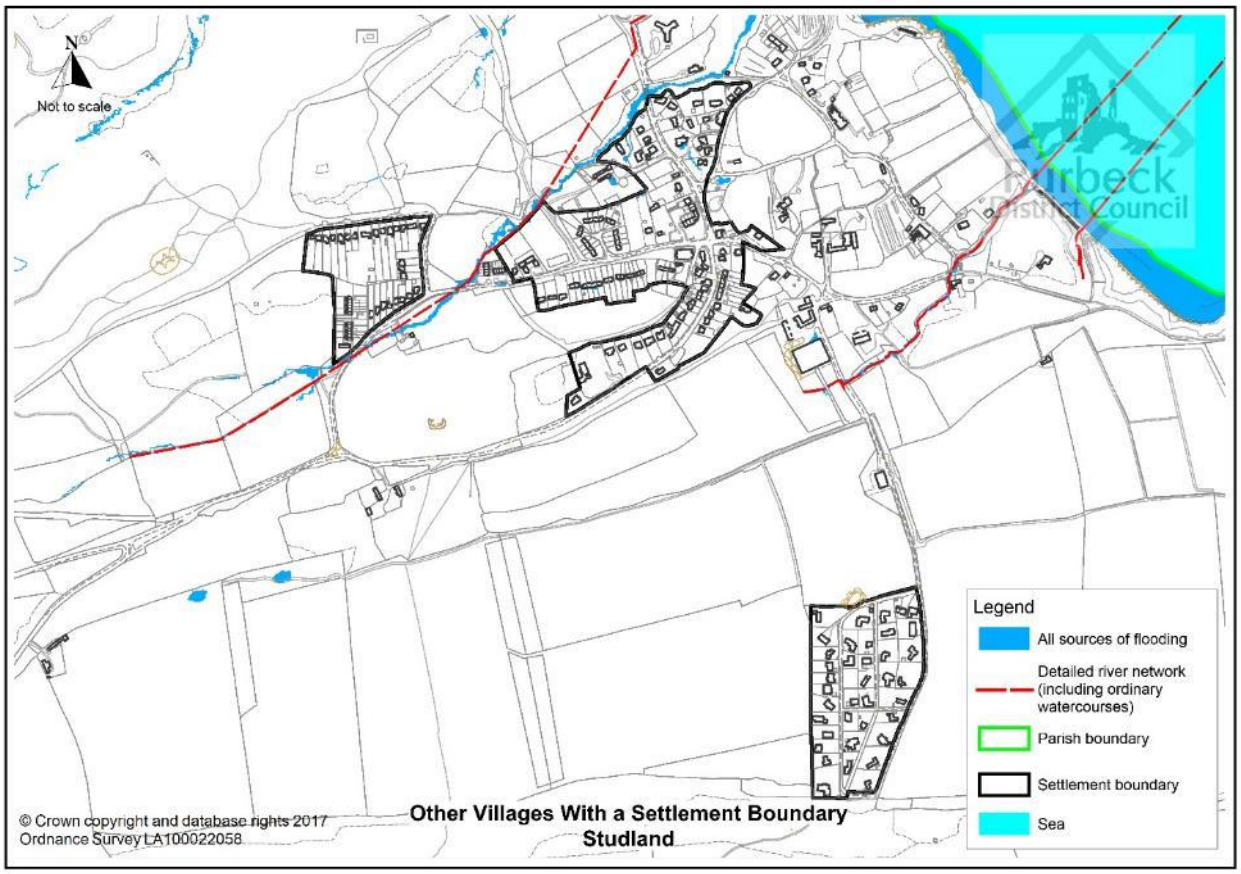
There are no EA Flood Warning Areas in Studland Parish. There is an EA Flood Alert Area across the south of Studland Parish from Woolgarston to Ballard point that also covers southern parts of Glebe Estate. There are also flood alert areas around the edges of Poole Harbour that extend inland along watercourses in some cases.

Flood History

No records of investigations into flooding.

Settlement – Studland	
Risk of flooding	**Comment**
Fluvial	There are no main rivers within proximity of Studland village. However, there are several smaller watercourses that flow from higher ground into Studland Bay to the east of the village.
Coastal and tidal	Flood Zones 2 & 3 extend along Studland Bay from Redend Point northwards to Poole Harbour. There is also an area of Flood Zones 2 & 3 to the north of Studland village surrounding the Studland Heath Little Sea area.
Surface Water	Flooding of the highways in Studland occurs in heavy rain due to surface water run-off. This particularly affects the road near the toilets at Watery Lane. Surface water flooding also relates to the flow of smaller watercourses and is more extensive at the 1 in 100 and 1 in 1000 year incidence levels.

Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Studland with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA. Rising sea levels are likely to increase flood risks from tidal flooding around the edges of Poole Harbour and Studland Bay.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
There are no EA Flood Warning Areas or Flood Alert Areas affecting Studland village. However, a Flood Alert Area extends across the southern part of Glebeland Estate.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Locations that may have increased flood risk if additional development takes place include to the north of Heatherside and Beach Road. Watery Lane, and around the public toilets at Lych Gate in the centre of the village.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Studland	


N
Not to scale
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Parish boundary
Settlement boundary
Sea
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Ordnance Survey LA100022058
Other Villages With a Settlement Boundary
Studland

Swanage – Flood Risk Assessment & Management	
Policy LD Settlements	**Town:** Swanage
Number of residential properties	5809
Number of business properties	738
Vulnerable infrastructure provision	Main Road: A351, and Swanage Railway Line, Bus Depot and Fire Station
Major watercourses	Swan Brook Swan Brook Relief Culvert Ulwell Stream Godlingston Stream Coombe Stream
Other watercourses	There are a number of smaller watercourses and drains that feed into the main watercourses above.
Coastal areas	Swanage Bay to Durlston Head and Blackers Hole

General flood risk

Rivers and Flood Zones

The major watercourses of Swan Brook, the Swan Brook Relief Culvert, Ulwell Stream, Godlingston Stream and Coombe Stream are in Swanage Parish. There are also a number of smaller watercourses that feed into the major watercourses, mostly in the northern half of the parish. Flood Zones 2 & 3 run beside the length of Swan Brook and Ulwell Stream. Flood Zones also extend along the coast from Ballard Down in the north to Blackers Hole on the southern coast.

Surface Water Flood Risk

Surface water flooding at the 1 in 30 year incidence level mostly relates to existing watercourses (and lower lying areas around them such as King Georges Field and areas south of Victoria Avenue), around Prospect Industrial Estate and flood alleviation scheme, north of Prospect Farm, a number of fields with drainage ditches and ponding and a number of roads and tracks.

EA Flood Warning Area

An EA flood warning areas runs along the extent of Swan Brook from the Prospect area to Victoria Avenue and King Georges Field, areas of the town centre and along Swanage Bay frontage from the junction with Victoria Avenue south to Peveril Point. An EA flood alert area covers a similar area to the flood warning area but extends further south than Peveril Point and further north into New Swanage along the coast and Ulwell Stream. The flood alert area also extend further west than Prospect up towards the A351 at Harmans Cross. In addition, there is a flood alert area to the north of Swanage extending from Woolgarston in the west to Ballard Down in the east.

Flood History

Sea flooding has taken place along Swanage Bay front between The Square and Marine Villas. This has resulted in the flooding of some commercial properties in this area. Sea flooding has also occurred at north Swanage. There has been some foul water and surface water flooding relating to blocked drains, ditches and sewers at various locations around the town (SWIM-geowessex).

The Frome and Piddle CFMP notes river and surface water flooding at Swanage in 1999. EA records of the 2012/13 flooding identifies that 11 flood incidents were reported

in Swanage parish. Between 2013 and 2014 Dorset County Council received 1 flood report of internal property flooding and 2 flood reports of external property flooding within the community of Swanage (Local Flood Risk Management Strategy – Table 22).

Settlement – Swanage	
Risk of flooding	**Comment**
Fluvial	The 'Swan Brook' and 'Ulwell Stream' in Swanage are classed as 'Main Rivers'. Godlingston Stream and Coombe Stream are also main rivers that both feed into Swan Brook in the Prospect area of Swanage. Flood Zones 2 & 3 run beside each of the rivers and in relation to the Swan Brook, extend over areas of King George's field, Victoria Avenue and Swanage Town Centre. These Flood Zones do not take account of the Swanage Flood Alleviation Scheme <u>Swan Brook</u> River flooding has been historically experienced from the Swan Brook. Flooding is experienced in both the low lying areas and the flood paths leading to it as a result of the rivers' capacity being exceeded and rivers overtopping their banks. The river responds quickly to rainfall because of steep valleys in the catchment and impermeable surfaces in the town. The catchment drains an area of some 15km^2. The flow reaches Swanage via three principal tributaries (Godlingston Stream, Swan Brook and Coombe Stream) as well as the localised flow from the town area itself. In the past, the centre of Swanage suffered flooding for many years. The principal cause is due to filling in of the natural estuary and the subsequent building over the Swan Brook in a piecemeal manner. The Swan Brook formerly provided the only discharge point to the sea for this catchment and is now unable to carry flood flows to the sea. The water was therefore held back, causing flooding to many properties. The lowest part of the town, around Eldon Terrace, was the most vulnerable area to suffer flooding, the road being flooded several times a year. One of the worst floods was in November 1935 when depths of flood water in the town centre rose to 3 feet (900 mm). More recently, in February 1990, floodwater rose to similar levels. This event occurred during the period of investigation and design of the Flood Alleviation Scheme (see below). A considerable amount of photographic evidence was collected, together with some video recordings, to guide the design of the Flood Aleviation Scheme. <u>Ulwell Stream</u> Ulwell Stream is a separate catchment, and lies to the north of the Swan Brook catchment, serving Ulwell and 'New Swanage'. It does not benefit from the Swanage Flood Alleviation Scheme. The stream flows predominantly in

	developed land from Ulwell Village down to the sea, the upper reach being developed on one bank only. Works to Ulwell Road in the 1970s have caused surface water to flow from the road toward nearby homes. The problem has not been resolved. The stream upstream of Washpond Lane used to form the rear boundary to the properties in Ulwell Road. Subsequently, change of use from field to gardens was granted, and a strip of the land behind was incorporated into the gardens. The stream now runs through the gardens and is crossed by numerous bridges. The bridges have increased the level of flood risk for these homes. Further downstream on James Day Mead, some sheltered accommodation was built on the left bank in the 1980s. This was constructed at a level which put them at risk of flooding, and a flood bank had to be incorporated into the design. Flood defence measures rely on this bank being maintained. The development immediately downstream (Durlston Farm) was constructed in the 1980s without retaining the open land (between the development and the stream) on the left bank, which was a requirement of the outline planning consent. This was overlooked when full planning permission was granted and the watercourse has been significantly restricted in this area. However, the right bank (looking downstream), although restricted by trees and shrubs, still remains undeveloped. Development only exists on the left bank (looking downstream) as far as the boundary of the properties fronting Seaward Road. Many of these properties have basements which have previously flooded. The stream is culverted under Seaward Rd, and the immediate upstream development has suffered periodic flooding. An old building on the corner of Ulwell Rd and Seaward Rd was converted to flats, and the former garage, built over the stream, was removed to establish an overland flood route. However, a wall was constructed across the flood route, thus negating any advantages of removing the former garage. The upstream properties at Ulwell Rd therefore remain at significant risk of flooding. Downstream, the stream is open but restricted by stone and concrete walls. It is then culverted from Clifton Road, discharging through the sea wall to the sea. This culvert does not have the capacity to cater for extreme events and as such property upstream is still at risk of flooding. <u>Flooding in the Prospect area</u>

	As part of the evidence to allow development of Prospect Business Park, an FRA was commissioned by the Environment Agency in 2005. The purpose of the FRA was to establish the performance of the Swanage Flood Alleviation Scheme in protecting the area allocated for employment development from flooding. The report noted how the Swanage Flood Alleviation Scheme had prevented fluvial flooding in an extreme event (9 September 2002). The study confirmed that the development of Prospect Park was feasible while addressing flood risk both on the site and elsewhere.
Coastal and tidal	Flood Zones 2 & 3 extend along the coastal areas of Swanage Bay and south to Peveril Point and Durlston Bay. The Swanage SFRA Level 2 identifies that tidal flooding in Swanage has historically been linked to wave overtopping. The main areas for tidal flooding (wave overtopping) have been Shore Road and the eastern end of High Street. Coastal and tidal flooding can coincide with fluvial, surface water and groundwater flooding with related combination effects, particularly in Swanage Town Centre.
Surface Water	Surface water flooding is an issue in areas which also act as flow paths of the main watercourses and also on a number of roads in the town. The extent of surface water flooding increases at the 1 in 100 and 1 in 1000 year incidence levels with increased risk on the roads that drain water from higher ground to lower levels. The Swanage SFRA Level 2 identifies that surface water flooding has generally been the cause of insufficient capacity of drains to manage runoff from intense rainfall or through surface water systems being unable to discharge due to high tides. In the urban areas of Swanage the number of vehicle hardstands and paved areas for recreational use has been increasing. Most of these have been constructed without providing any drainage facility, and as a result the rate and amount of surface water run-off has increased. Some gardens and property in Herston have flooded from surface water run-off from saturated hills to the south of the town. The drainage within this sub catchment relies on surface water sewers and highways drains which are built to significantly less than a one in 100 year standard. As a result, highway flooding occurs which spills into adjacent property.
Groundwater	No records of groundwater flooding.
Sewer	The Swanage SFRA Level 2 identifies that the sewerage system in Swanage is unlikely to have sufficient capacity in an extreme event and that sewer flooding and related water quality issues in the Swan Brook may result. Foul sewerage overflow into the Swan Brook has been a problem in Swanage and as a result Wessex Water have undertaken sewerage

	improvements in the town. However, the improvements would not have the capacity to deal with an extreme event.
Reservoir	The Swanage SFRA Level 2 refers to the EAs Risk of Flooding from Reservoirs mapping and identifies several areas of Swanage that are at risk: • Areas adjacent to Swan Brook • Victoria Avenue • Kings Road area • Town centre areas near to the seafront. The level of risk is still to be determined, although the reservoirs form part of the flood alleviation scheme and store water during flood events.
Climate change	The Swanage Level 2 SFRA identifies that existing fluvial flood defences are not expected to continue to provide a suitable level of protection into the future and that improvements will need to be made to address the effects of climate change. Tidal modelling undertaken as part of the Swanage SFRA Level 2 indicates that the tidal flood risk to Swanage is likely to significantly increase in the future. If sea levels do rise at the expected rates then additional measure may be needed to protect Swanage from coastal/tidal flooding.
Existing measures to manage flood risk	

Sewerage Improvement Scheme

Sewerage improvements were undertaken by Wessex Water to prevent foul sewage overflowing into the Swan Brook, to comply with the Bathing Water Directive. This was undertaken after the implementation of the Flood Alleviation Scheme. The sewerage improvements involved a large attenuation tunnel under the town so that storm flows could be stored and pumped out after a storm had passed. It was designed to cater for storms of approximately a 1 in 20 year standard. Part of the scheme involved the removal of storm water overflows which allowed untreated sewage to be discharged into the Swan Brook.

The sewerage improvement scheme does not have the capacity to withstand an extremely severe event and the low lying area of the centre of town is still at risk of flooding. Indeed, a recent storm in 2004 resulted in flooding in the centre of town.

Flood Alleviation Scheme

Purbeck District Council implemented a Flood Alleviation Scheme in 1996 to protect the town from flooding from the Swan Brook. There were three basic elements to the scheme: Flood Storage Areas, Channel Improvements and a Flood Relief Culvert. The Flood Alleviation Scheme was designed to protect against flooding, including the town centre, and to withstand a one in 100 year storm event. It has a design life of approximately 50 years. The EA is now responsible for the scheme and have carried out a full Flood Risk Mapping Study on the Swan Brook in order to update the flood map and establish the performance of the scheme.

Flood Storage Areas

The SFRA Level 2 identifies two separate Flood Storage Areas that store water from the Swan Brook catchment. It also notes that King George's field may provide additional flood storage in events that exceed the 1 in 100-year design standard.

Tidal Defences

Sea walls protect the built up frontage of the town from erosion and beach management has played a key role in the tidal defence strategy, including the use of groynes and beach recharge.

Beach Re-charge Scheme

Swanage Beach Re-charge Scheme was implemented in the winter of 2005-2006. It was designed to protect the developed coastline of Swanage from erosion. However, there is still a risk from flooding during extreme storms, particularly from the East. A flood warning study has been prepared for the town.

Swanage Flood Warning Study

Consultant Halcrow completed a study in 2007 relating to tidal flooding at Swanage (between Peveril Point and The Mowlem) with the view of providing flood warnings for tidal flooding events with details being provided regarding extreme events with wave overtopping and tidal surge. If such an event occurred during a severe rainfall event this could have implications for the discharge of the Swan Brook at the Mowlem and the Sewerage Improvement Scheme, and flooding would result (see appendices 3 and 4).

Areas covered by flood warnings

An EA flood warning areas runs along the extent of Swan Brook from the Prospect area to Victoria Avenue and King Georges Field, areas of the town centre and along Swanage Bay frontage from the junction with Victoria Avenue south to Peveril Point. An EA flood alert area covers a similar area to the flood warning area but extends further south than Peveril Point and further north into New Swanage along the coast and Ulwell Stream. The flood alert area also extend further west than Prospect up towards the A351 at Harmans Cross. In addition, there is a flood alert area to the north of Swanage extending from Woolgarston in the west to Ballard Down in the east.

Areas with critical drainage problems

No known areas.

Areas that may need a surface water management plan

Dorset County Council's Local Flood Risk Management Strategy (table 20) ranks the community of Swanage 9th in Dorset according to the risk of flooding from surface water. It notes that surface water flooding in Swanage in 2002 affected 12 residential and 5 commercial properties.

Dorset Surface Water Management Plan (SWMP) Strategic Assessment (2012) identifies the need for a SWMP to be completed for Swanage in order to better understand the flood risk from surface water and identify potential options to address the risk. The assessment would also need to consider the impact of sea levels on the ability of the system to discharge. A surface water management plan may be required.

Locations that may have increased flood risk if additional development takes place

There may be increased flood risk if additional development takes place within Swanage Town centre, around King George's Playing Field, areas within the Flood Zone to the west of Ulwell Stream, areas within Flood Zones at Ulwell, areas around Prospect Business Park and parts of Herston Fields and to the north of Coombe Stream at Herston.

Potential measures to manage flood risk

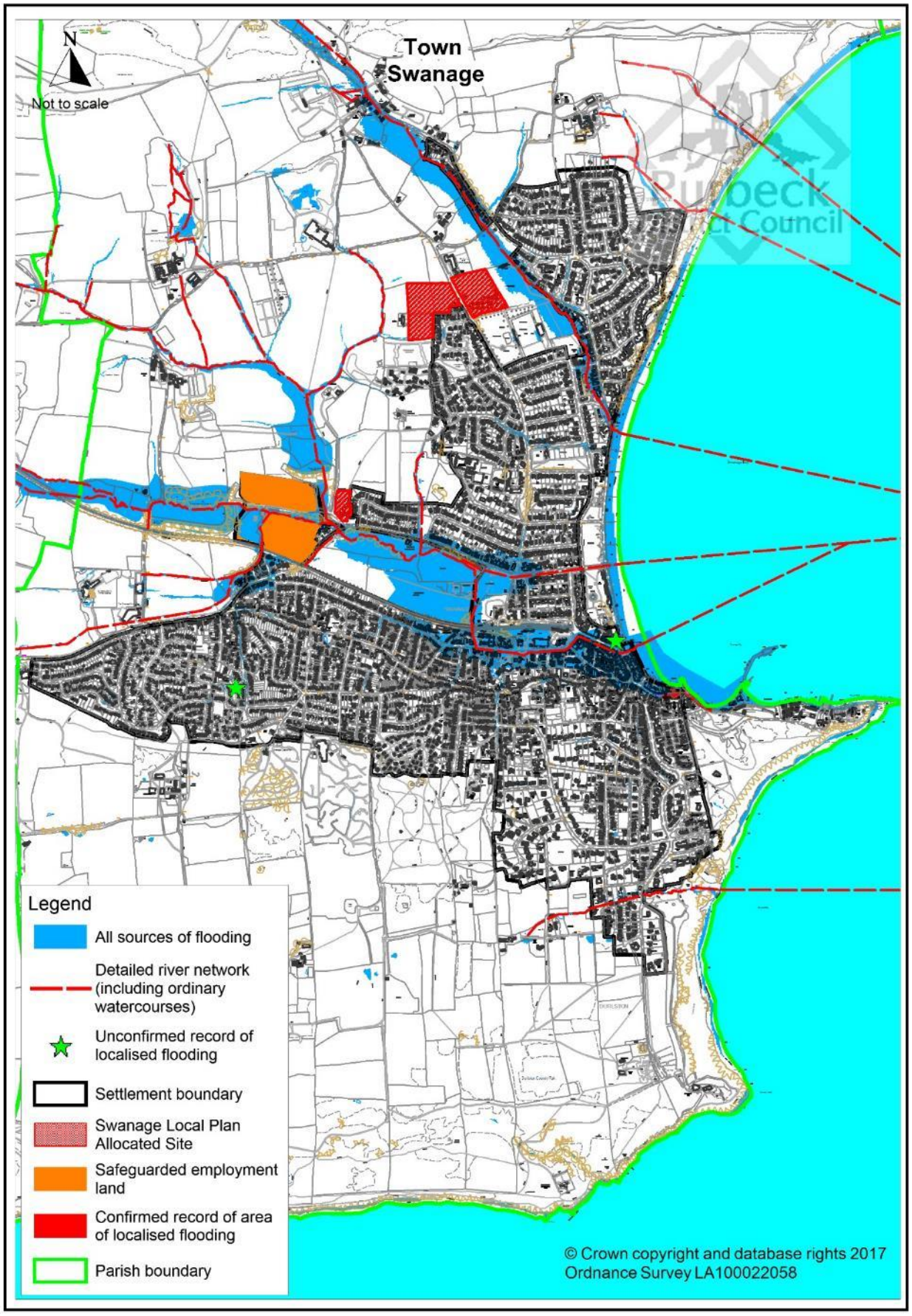
Dorset County Council's Flood Risk Management Strategy (2014) identifies Swanage in its 1st group of communities where flood risk management activities should be prioritised.

The Swanage SFRA Level 2 identifies the following potential measures to manage flood risk:

- Improvements to fluvial flood defences to address the impacts of climate change;
- Additional measures to protect against tidal flood risk related to sea level rise;
- Developers to seek to reduce or remove flows to the combined sewerage system in order to manage capacity during extreme flood events;
- Prepare a Surface Water Management Plan for Swanage to identify the risk and options to improve the risk.

The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will see opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.

Areas at risk of flooding - Swanage


N
Not to scale
Town
Swanage
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Unconfirmed record of localised flooding
Settlement boundary
Swanage Local Plan Allocated Site
Safeguarded employment land
Confirmed record of area of localised flooding
Parish boundary
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Ordnance Survey LA100022058

Wareham – Flood Risk Assessment & Management	
Policy LD Settlements	**Town:** Wareham Town North Wareham
Number of residential properties	2910
Number of business properties	311
Vulnerable infrastructure provision	Main Road: A351, and Weymouth – London Railway Line
Major watercourses	River Piddle River Frome
Other watercourses	Many smaller watercourses and drainage channels feeding into the major watercourses
Coastal areas	Around Swineham Point
General flood risk	

River and Flood Zones

The Rivers Piddle and Frome lie to the north and south respectively of Wareham Town. Flood Zones 2 & 3 run beside each river and cover large areas of water meadow. There are many smaller watercourses that feed into the Frome and Piddle, some of these watercourses and the land beside them is also in Flood Zones 2 & 3. To the east of the Parish, the Frome and Piddle both discharge into Poole Harbour.

Surface Water Flood Risk

At the 1 in 30 year incidence level surface water flooding occurs in the proximity of smaller watercourses, along several stretches of highway, residential roads, and also in a number of pockets outside the built area or within parkland. At the 1 in 100 year incidence level the extent of surface water flooding increases as pooling joins up, particularly along roads within the built area. The extent of surface water flooding increases again at the 1 in 1000 year incidence level, particularly along roads and highways and in association with watercourses and drainage ditches.

EA Flood Warning Areas

EA flood warning areas extend along the rivers Frome and Piddle to Poole Harbour. In several places the warning areas extend over the fringes of Northport and Wareham Town. Flood alert areas also extend over the same areas and include the fringes of the Northport and Wareham town.

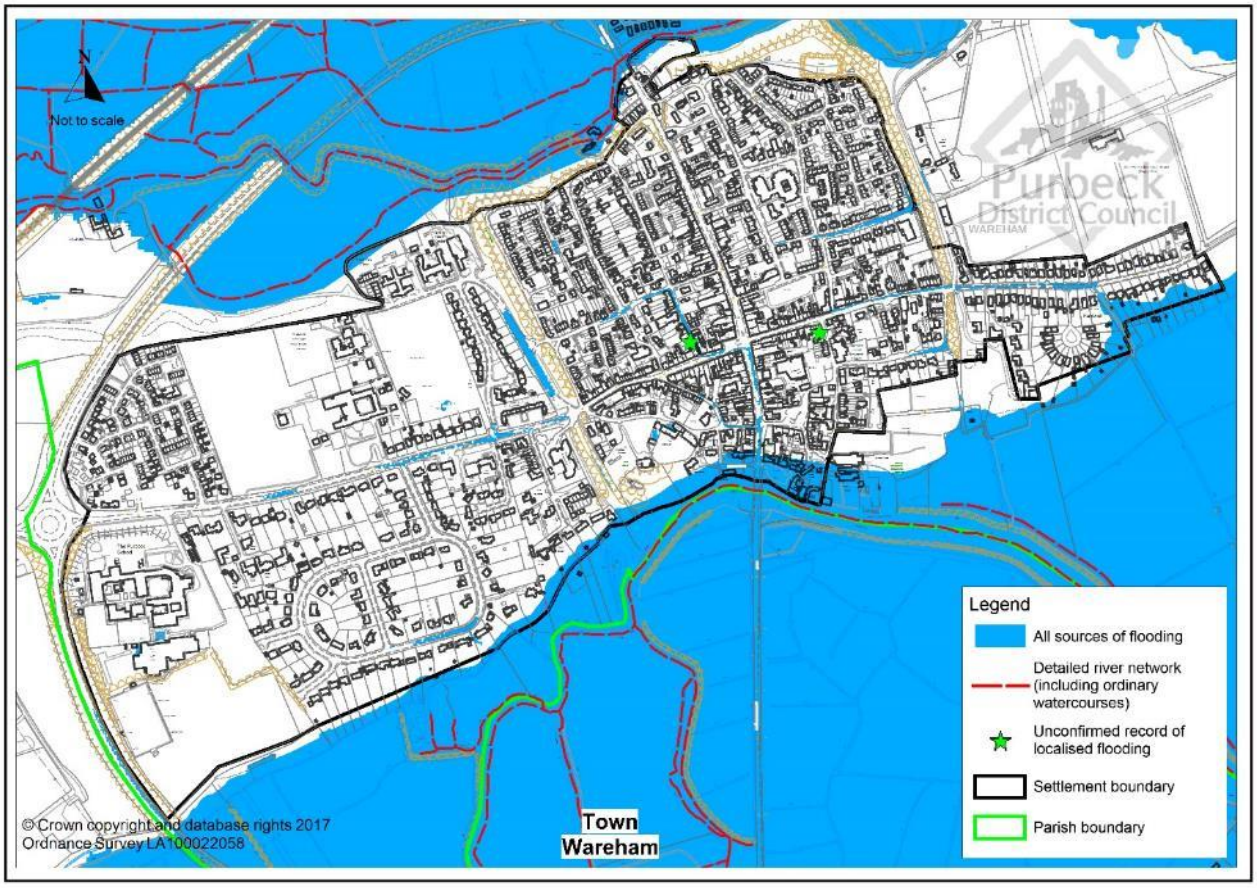
Flood History

Several historic flood incidents are recorded in Wareham Town around the Quay (fluvial/tidal flooding) and within the town itself (surface water flooding and unknown sources) (SWIM-geowessex). Between 2013 and 2014 Dorset County Council received 1 flood report of external property flooding in Wareham (Local Flood Risk Management Strategy – Table 22). EA records of the 2012/13 flooding notes that 8 flood incidents were reported in Wareham Town parish.

Settlement – Wareham Town	
Risk of flooding	**Comment**
Fluvial	The Rivers Frome and Piddle both discharge into Poole Harbour at Wareham. Flood Zones 2 & 3 cover large areas of water meadow on both sides of the rivers but only include a small number of properties and gardens in Wareham town where they are situated at lower levels.

	The principal flood risk in Wareham is flooding from the Rivers Frome and Piddle, combined with tidal flooding. The problem is exacerbated by Southern Causeway, the lack of culverts under the road and inadequate flap valves through tide banks. There are risks to properties near to these rivers. If the River Frome overtops its banks further upstream towards the Wareham Bypass, the water flows across the water meadows between Wareham and Stoborough and the only out-let is through the tide flap at Red Cliff. This tide flap does not have sufficient capacity to take extreme flows and as a result the water meadows can still be flooded over long periods (even after the tide has receded). The low land between the Frome and Piddle is predominantly agricultural and is artificially defended by raised banks against tidal flooding. The Wareham Tidal Banks Strategy (currently in its early stages) is considering the removal of these banks to allow natural flooding of the floodplain, which may reduce flooding in Wareham itself. The Frome and Piddle CFMP (2008) identifies river flooding impacts on local offices, businesses, transport infrastructure, health services, schools, and ambulance station from part of the town being cut off through a 1% AEP flood event (represented by Flood Zone 3).
Coastal and tidal	The extent of tidal influence on the River Piddle is cited as being from the railway line downstream, and on the River Frome from Holme Bridge downstream. The river flooding which occurs in Wareham, and Stoborough can be exacerbated by high tides. The problem is exacerbated due to the inadequate size of the flap valves through the tide banks and the height of the road and footway at South Causeway and the lack of culverts under the road. There are risks to properties near to these rivers. If the River Frome overtops its banks further upstream towards the Wareham Bypass, the water flows across the water meadows between Wareham and Stoborough and the only out-let is through the tide flap at Red Cliff. This tide flap does not have sufficient capacity to take extreme flows and as a result the water meadows can still be flooded even though the tide has receded. The low land between the Frome and Piddle is predominantly agricultural and is artificially defended by raised banks against tidal flooding. The Wareham Tidal Banks Strategy (currently in its early stages) is considering the removal of these banks

	to allow natural flooding of the floodplain, which may reduce flooding in Wareham itself.
Surface Water	At the 1 in 30 year incidence level, surface water flood risk relates mainly to roads. At the 1 in 100 year and 1 in 1000 year incidence levels the extent of risk increases, most along roads in the town but also in areas where run-off feeds into the rivers Piddle and Frome which lie to the north and south of the town.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Wareham with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	An area of reservoir flood risk extends along the River Frome between Wareham town and Stoborough. (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA. Rising sea levels are likely to increase the risks of tidal flooding and its influence on fluvial flooding.
Existing measures to manage flood risk	
Flood defences extend along the River Frome to the south of Wareham and the River Piddle to the north east of Wareham.	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008). EA flood warning areas extend along the rivers Frome and Piddle to Poole Harbour. In several places the warning areas extend over the fringes of Wareham Town. Flood alert areas also extend over the same areas and include the fringes of the town.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
Dorset County Council's Local Flood Risk Management Strategy (table 20) ranks the community of Wareham 41st in Dorset according to the risk of flooding from surface water.	
Locations that may have increased flood risk if additional development takes place	
There may be potential for some increased flood risk from surface water on land around the edge of Wareham that is located outside the Flood Zones.	
Potential measures to manage flood risk	
Dorset County Council's Flood Risk Management Strategy identifies Wareham in its 3rd group of communities where flood risk management activities should be prioritised. The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will seek opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Wareham	

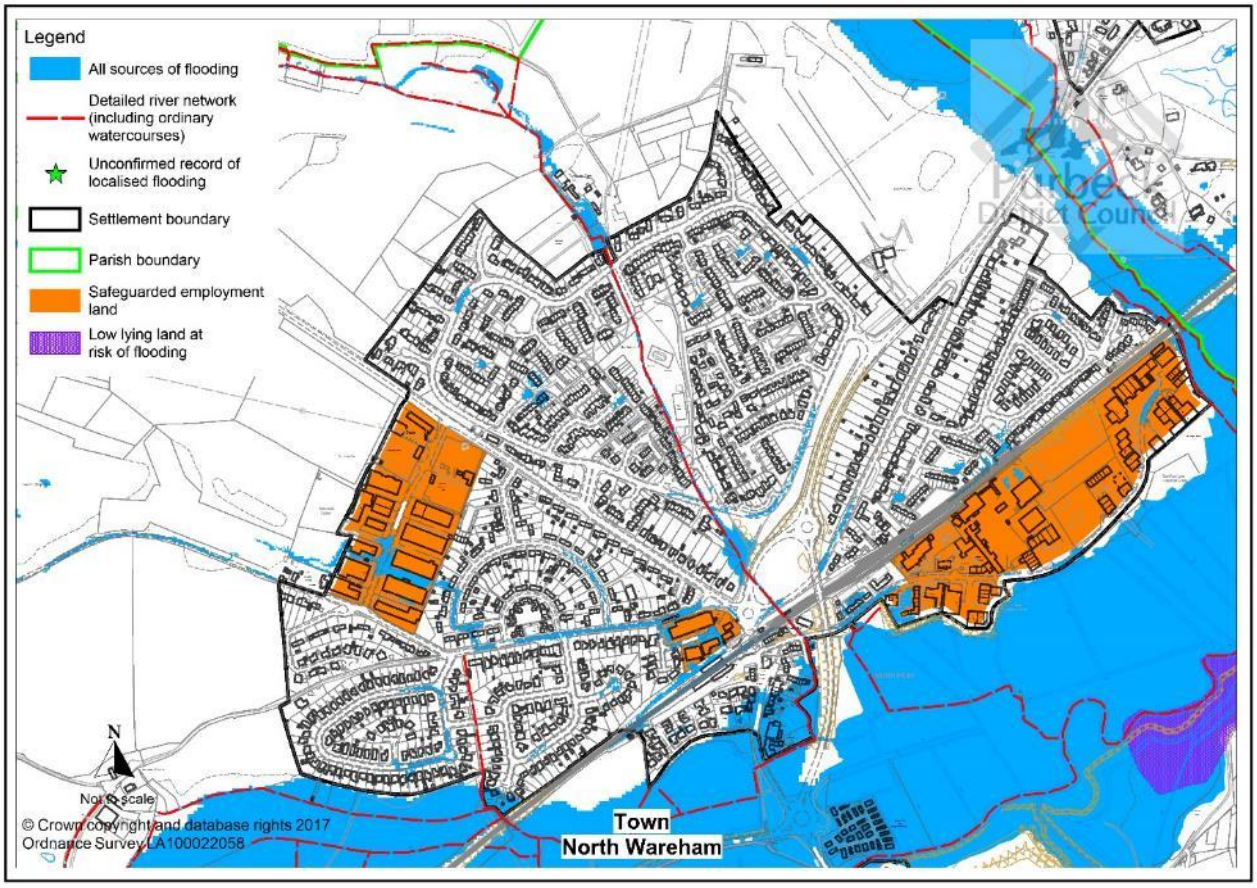


Settlement – North Wareham	
Risk of flooding	**Comment**
Fluvial	The River Piddle lies to the south of North Wareham and discharges into Poole Harbour to the east of Wareham (Wareham Channel). Flood Zones 2 & 3 cover large areas of water meadow to both sides of the river but only include a small number of properties and gardens in North Wareham where they are situated at lower levels around North Causeway. The principal flood risk in North Wareham is flooding from the River Piddle, combined with tidal flooding. The Frome and Piddle CFMP (2008) identifies river flooding impacts on local offices, businesses, transport infrastructure and related impacts on health services, schools, and ambulance station from part of the town being cut off through a 1% AEP event (represented by Flood Zone 3).
Coastal and tidal	The tide influences flows in the River Piddle from the point where it discharges into Poole Harbour up to the point where it flows beneath the railway line. The river flooding which occurs at North Wareham is exacerbated by the tidal influence.

	The low land between the Frome and Piddle is predominantly agricultural and is artificially defended by raised banks against tidal flooding. The Wareham Tidal Banks Strategy (currently in its early stages) is considering the removal of these banks to allow natural flooding of the floodplain, which may reduce flooding in Wareham itself.
Surface Water	At the 1 in 30 year incidence level, surface water flood risk relates to several roads/section of road. There is also an area of flooding that relates to a watercourse that flows from Tantinoby Farm, through Northmoor Park and south towards the River Piddle. At the 1 in 100 year and 1 in 1000 year incidence levels the extent of risk increases, most along roads but also with ponding in areas with less permeable surfaces such as Westminster Road Industrial Estate and John's Road Industrial Estate, and areas of open space close to the Northmoor Park watercourse.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in North Wareham with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA. Rising sea levels are likely to increase the risks from tidal flooding and its influenced on fluvial flooding.
Existing measures to manage flood risk	
Dorset County Council's Flood Risk Management Strategy identifies Wareham in its 3rd group of communities where flood risk management activities should be prioritised.	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008).	
Areas with critical drainage problems	
No known areas	
Areas that may need a surface water management plan	
Dorset County Council's Local Flood Risk Management Strategy (table 20) ranks the community of Wareham 41st in Dorset according to the risk of flooding from surface water.	
Locations that may have increased flood risk if additional development takes place	
Further development in an around the settlement may increase the risks from surface water flooding in the North Wareham.	
Potential measures to manage flood risk	
Dorset County Council's Flood Risk Management Strategy identifies Wareham in its 3rd group of communities where flood risk management activities should be prioritised. The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will see opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion	

as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.

Areas at risk of flooding - North Wareham



Wareham St Martin – Flood Risk Assessment & Management	
Policy LD Settlements	**Sandford:** Key Service Village **Holton Heath:** Other villages without a settlement boundary
Number of residential properties	1157
Number of business properties	310
Vulnerable infrastructure provision	Main Road: A 351, and Weymouth – London Railway Line
Major watercourses	Sherford River (along north eastern boundary) River piddle (along southern boundary)
Other watercourses	Many smaller watercourses and drainage channels feeding into the Piddle and Sherford Rivers and Poole Harbour
Coastal areas	Along Keysworth Point, Holton Heath, East Holton to Holton Point

General flood risk

Rivers and Flood Zones

Major watercourses within the Parish include the Sherford River along the north eastern boundary and the River Piddle along the southern boundary. There are many smaller watercourses and drainage channels that feed into the two major watercourses and others that flow directly into Poole Harbour. Flood Zones 2 & 3 run beside the River Piddle and Sherford River. Large areas around the edge of Poole Harbour are also designated as part of Flood Zones 2 & 3. Flood Zones 2 & 3 also run beside the length of a smaller watercourse that flows south east from Wareham Forest, between Northport and Sandford, and adjoins the River Piddle to the north-east of Wareham.

Surface Water Flood Risk

At the 1 in 30 year incidence level surface water flooding occurs in proximity of the major watercourses and smaller watercourses. There are also pockets of surface water flooding within the built areas (including highways). In the rural areas of the Parish surface water flooding occurs in pockets across the heathland and forest. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flooding increases and flow paths are likely to occur between pockets of flooding and nearby watercourses including built up areas along roads and other built areas in Sandford and Holton Heath.

EA Flood Warning Areas

EA flood warning areas related to the River Piddle extend from Wareham into Poole Harbour and northwards along the edges of the Harbour that fall within Wareham St martin Parish up to Keysworth Point.

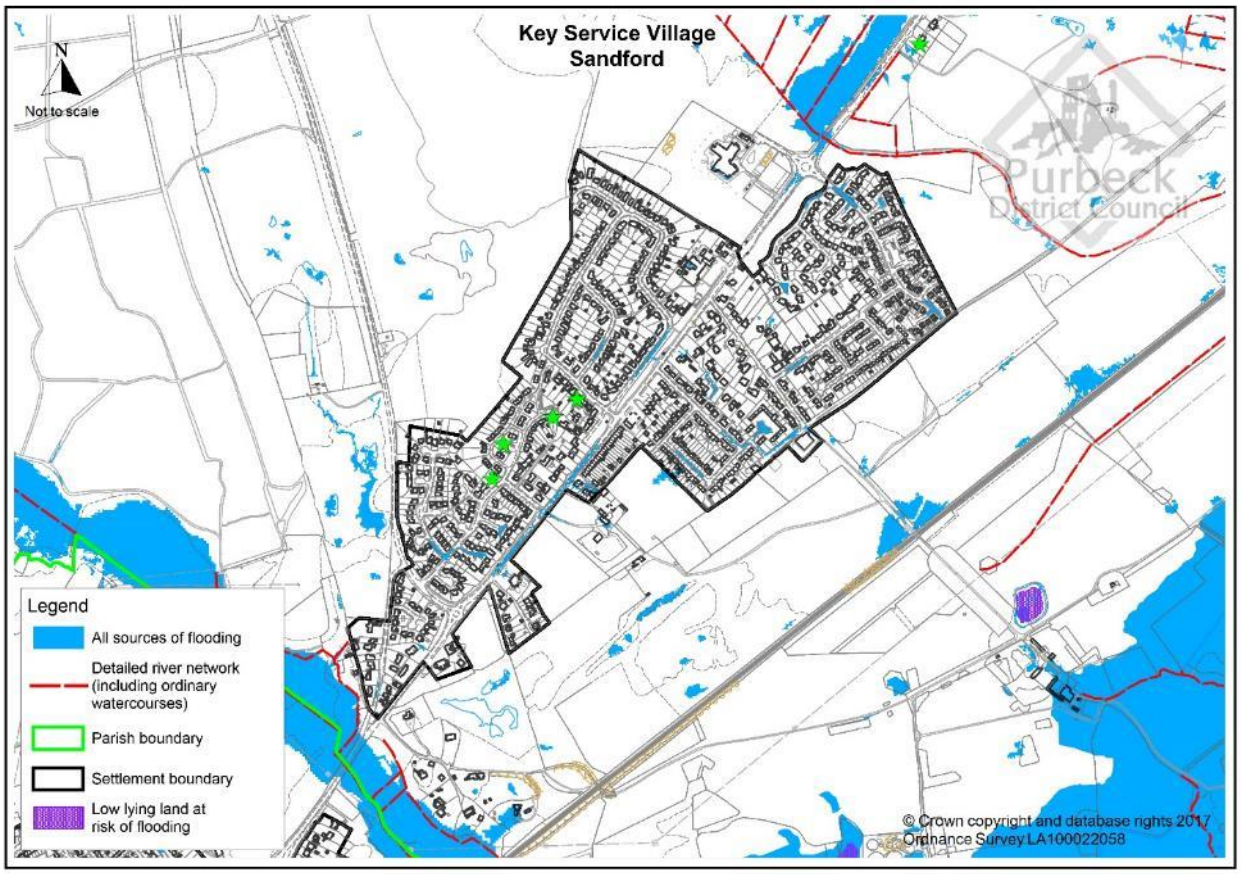
EA flood alert areas also extend from Wareham and northwards along the edges of Poole Harbour up to the north of Holton heath and the edges of Lytchett Bay. A flood alert area also extends along the smaller watercourse that flows from Wareham Forest, between Northport and Sandford and adjoins the River Piddle in Poole Harbour.

Flood History

There is some flooding history in the Gore Hill area of Sandford although causes are mostly unconfirmed (SWIM-geowessex).

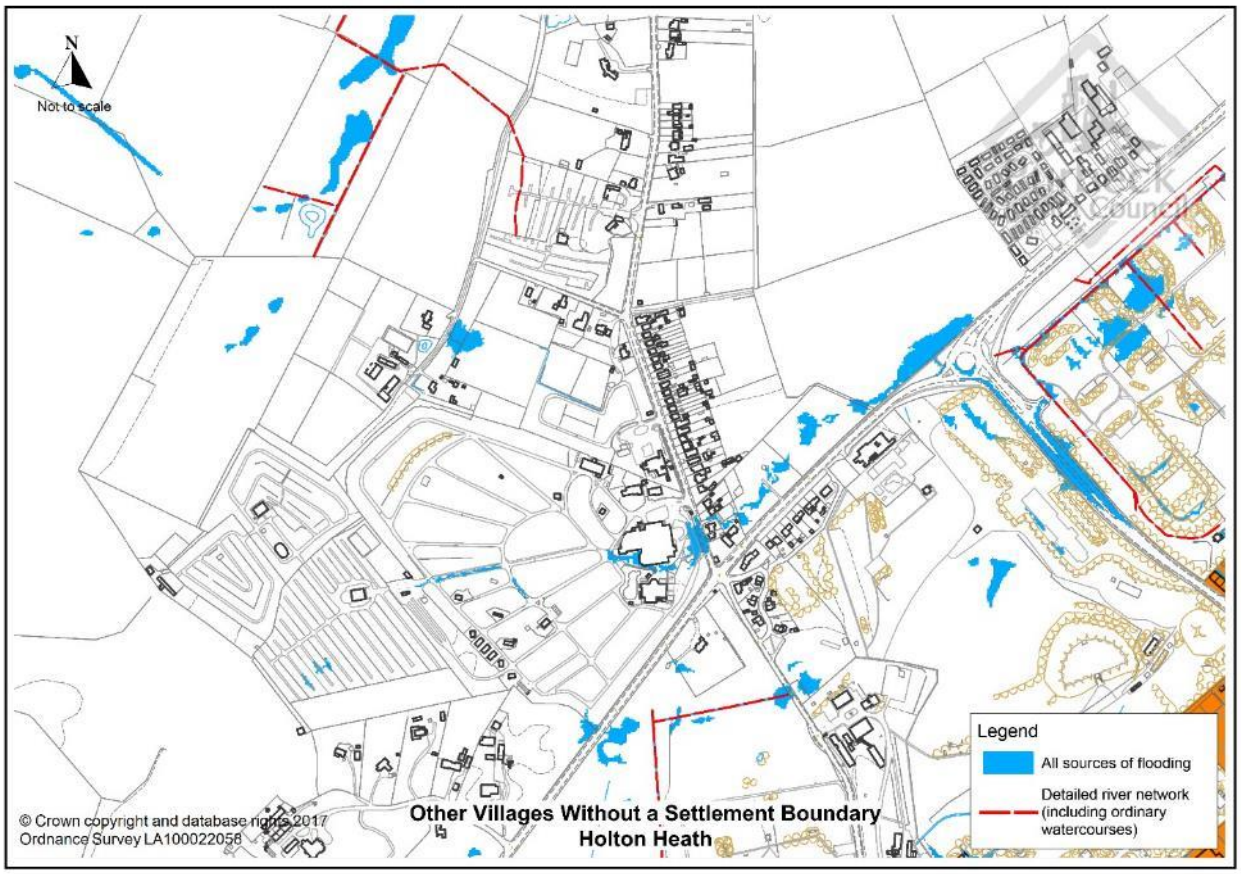
Settlement – Sandford	
Risk of flooding	**Comment**

Fluvial	The River Piddle lies on the southern boundary of Wareham St Martin Parish, to the south of Sandford. A number of smaller watercourses feed into the River Piddle from the Sandford area, with Flood Zones 2 & 3 extending across the gap between Sandford and North Wareham.
Coastal and tidal	Areas to the east of the railway line at Sandford adjoin Wareham Channel and Poole Harbour and are covered by Flood Zones 2 & 3 at lower levels.
Surface Water	At the 1 in 30 year incidence level there is little flood risk from surface water within the built area at Sandford. However, at the 1 in 100 year and 1 in 1000 year incidence levels the extent of surface water flood risk increases within the built area, particularly along roads and areas within proximity of watercourses, drainage channels and Wareham Channel/Poole Harbour.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Holton Heath with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk).
Climate change	See general guidance in SFRA. Rising sea levels are likely to increase the risks from tidal flooding and its influence on fluvial flooding.
Existing measures to manage flood risk	
Flood defences extend along the River Piddle and Wareham Channel from Wareham Town to the south-east of Admiralty Park, Holton Heath – giving protection to land between the defences and the railway line to the east of Sandford.	
Areas covered by flood warnings	
EA flood warning and flood alert areas related to the River Piddle extend from Wareham into Poole Harbour and affect the southern fringes of Sandford.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Surface water run-off from further development may contribute toward existing risks of flooding in Sandford.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will see opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Sandford	



Settlement – Holton Heath	
Risk of flooding	**Comment**
Fluvial	There are no major watercourses in and around the settlement of Holton Heath and Holton heath Industrial Estate. However, there are a number of smaller watercourses that flow through the area into Poole harbor and northwards from Holton heath Industrial Estate into the Sherford River. Flood Zones 2 & 3 extend beside Sherford River to the north of Holton Heath.
Coastal and tidal	Poole Harbour is located to the east of Holton Heath Industrial Estate and the railway line with Flood Zones 2 & 3 beside the edges of the harbour.
Surface Water	Areas of surface water flooding relate to existing watercourses and drainage channels. There are also pockets of surface water flooding within the built areas of the settlement, at Holton Heath and Admiralty Park Industrial Estates and along the railway. The extent of surface water flooding increases at the 1 in 100 and 1 in 1000 year incidence levels as pockets of flooding form flowpaths that adjoin in the urban areas or feed into watercourses and/or the harbor.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Holton Heath with foul only connections to the public foul

	systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA. Rising sea levels are likely to increase the risks from tidal flooding around the edge of Poole Harbour and its influence on fluvial flooding.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
EA flood warning areas extend northwards along the edges of Poole Harbour up to Keysworth Point at Holton Heath. EA flood alert areas also extend from Wareham and northwards along the edges of Poole Harbour up to the north of Holton heath and the edges of Lytchett Bay. A flood alert area also extends along the smaller watercourse that flows from Wareham Forest, between Northport and Sandford and adjoins the River Piddle in Poole Harbour.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Surface water run-off from further development may contribute toward existing risks from surface water flooding.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will see opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding – Holton Heath	



West Lulworth – Flood Risk Assessment & Management	
Policy LD Settlements	**West Lulworth:** Local Service Village
Number of residential properties	359
Number of business properties	74
Vulnerable infrastructure provision	Main Roads: B3070 (Main Road), Church Road, and School Lane
Major watercourses	None
Other watercourses	None
Coastal areas	From Swyre Head in the west to Black Rock in the east, including Lulworth Cove
General flood risk	

Rivers and Flood Zones

There are no major watercourses within West Lulworth Parish. A small watercourse flows south from Lulworth Camp through part of the Parish to the coast (at Arish Mell). Flood Zones 2 & 3 extend along the coast and part way up Main Road, Lulworth Cove.

Surface Water Flood Risk

At the 1 in 30 year incidence level there is some surface water flood risk along the B3070 (Main Road) in West Lulworth/Lulworth Bay and Church Road, West Lulworth. There are also small areas of surface water flood risk in Lulworth Camp and across the rural areas of the Parish. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flood risk increases to cover wider stretched of road and rural areas.

The CFMP (2008) also identifies that the continuous use of heavy vehicles over a restricted area at Lulworth Camp could have an effect on local soil structure and surface water run-off patterns over the longer-term.

EA Flood Warning Areas

There are no EA flood warning areas in West Lulworth Parish. However, an EA flood alert area covers large areas of Lulworth Parish including West Lulworth and Lulworth Cove and the majority of Lulworth Camp.

Flood History

Flooding in West Lulworth has historically taken place due to highway and field run-off flowing through the village to Lulworth Cove. Flood incidents have occurred in the museum/car park area (SWIM-geowessex) related to the run-off, exacerbated by changes to the design of the highway.

Settlement – West Lulworth	
Risk of flooding	**Comment**
Fluvial	There are no major or smaller watercourses in proximity of West Lulworth.
Coastal and tidal	Flood Zone 2 extends along the coastline and around Lulworth Cove. Flood Zone 3 extends from Lulworth Cove up onto Main Road and Coastguard Cottages.
Surface Water	Surface water flooding affects the road to the Cove and areas to the west of Main Road at the 1 in 30 year incidence level. At the 1 in 100 and 1 in 1000 year incidence levels the extent of flooding increases along Main Road, near the Museum and car park, parts of West Road, School Lane and Church Road, and the land and property within these areas. Highway run-off has also historically caused some flooding in West Lulworth. Much of the road through West Lulworth down to the Cove acts as a flood channel during severe rainfall events. As a consequence properties at or very near to road level may be at risk of flooding. The flood route runs through a system bypassing Hambury Farm and flows through the Weld Estate car park and down to the Cove.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in West Lulworth with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
Development adjacent to the car park has been protected by flood gates and a specific flood route was retained when the Heritage Centre was constructed. Unfortunately modifications to the roundabout next to the Heritage Centre did not give adequate consideration to the need for the flood route down the road. This has increased the risk of flooding for development next to the car park.	
Areas covered by flood warnings	

There are no EA flood warning areas in West Lulworth Parish. However, an EA flood alert area covers West Lulworth and Lulworth Cove.

Areas with critical drainage problems

No known areas.

Areas that may need a surface water management plan

Dorset County Council's Local Flood Risk Management Strategy (table 20) ranks the community of Lulworth 26th in Dorset according to the risk of flooding from surface water and identifies that field run-off has historically caused some flooding in West Lulworth. West Lulworth may require a surface water management plan

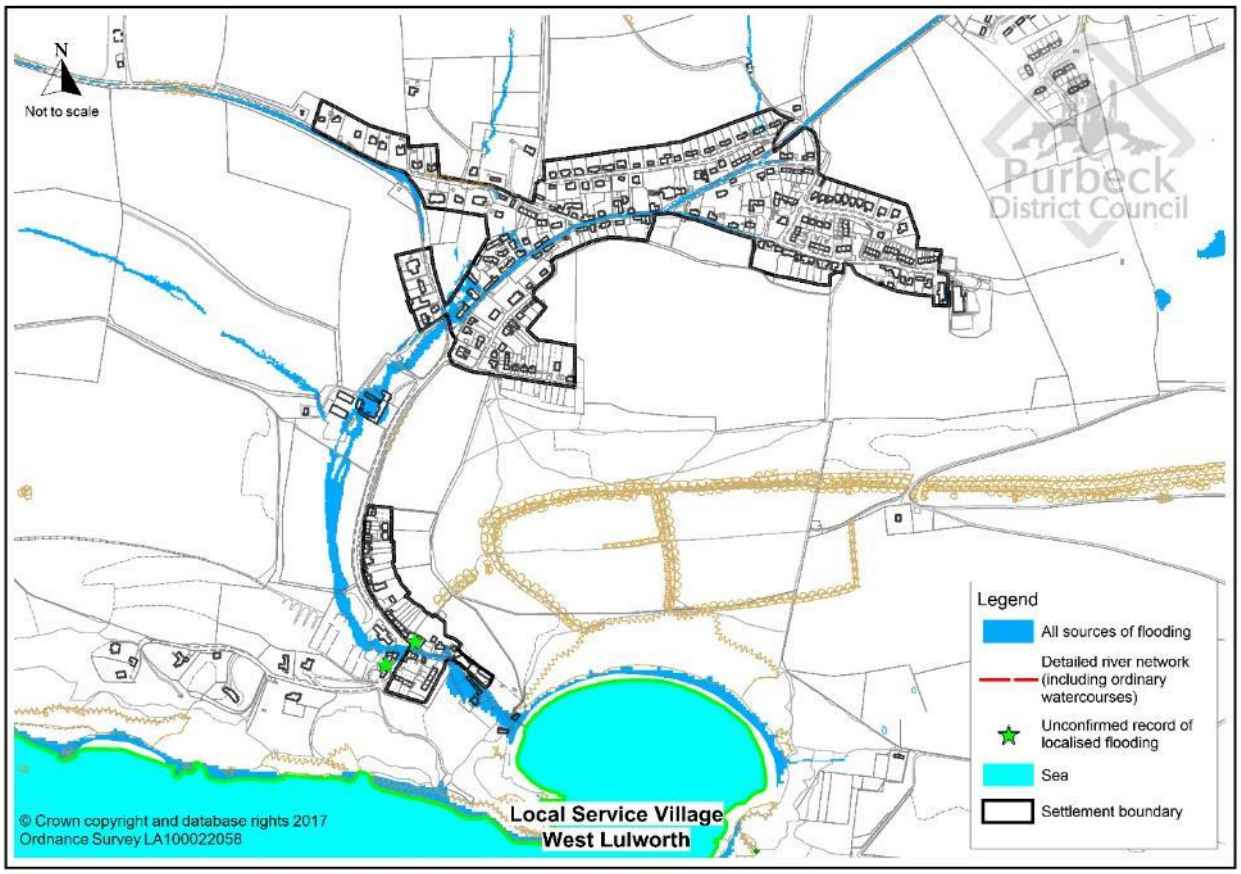
Locations that may have increased flood risk if additional development takes place

Surface water run-off from further development may contribute toward increasing the risks from surface water flooding.

Potential measures to manage flood risk

The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will see opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.

Areas at risk of flooding - West Lulworth



Winfrith Newburgh & East Knighton – Flood Risk Assessment & Management	
Policy LD Settlements	**Winfrith Newburgh:** Local Service Village **East Knighton:** Other village without a settlement boundary
Number of residential properties	322
Number of business properties	53
Vulnerable infrastructure provision	Main Roads: A 352, and High Street
Major watercourses	River Win
Other watercourses	N/A
Coastal areas	N/A
General flood risk	

Rivers and Flood Zones

The River Win is the only major watercourse that flows through the Parish of Winfrith Newburgh. The River Win flows north east through the village of Winfrith Newburgh to join the River Frome in Wool Parish. A number of smaller watercourse feed into the River Win, particularly to the north of the Parish around Winfrith and Knighton Heaths. Flood Zones 2 & 3 run beside the River Win including in parts of Winfrith Village, Blacknoll and the southern fringes of Dorset Green Technology Centre which fall within the Parish boundary. Flood Zones 2 & 3 run beside the length of smaller watercourses and drainage channels that follow the northern boundary of the Parish through Tadnoll and Winfrith Heaths.

Surface Water Flood Risk

Areas of surface water flooding generally relate to existing watercourses including the River Win and its tributaries, and smaller watercourses to the north of the Parish that eventually feed into the River Frome. Surface water flooding also occurs along roads in the Parish, including parts of the A352, Water Lane, High Street in Winfrith Newburgh and other roads leading into/out of the village. There is also an element of surface water flooding in fields where water is seeking the quickest downhill route towards the River Win. The extent of surface water flooding increases at the 1 in 100 year incidence level and more significantly at the 1 in 1000 year incidence level.

EA Flood Warning Areas

The nearest EA flood warning area to Winfrith Newburgh Parish is along the River Frome to the north of the Parish. However, there is an EA flood alert area that extends across southern parts of the Parish and also along the River Win through Winfrith Newburgh village and northwards through Blacknoll, Knighton Heath and up to Dorset Green Technology Centre.

Flood History

There is some flood history relating to highway flooding along the A352 (SWIM-geowessex).

The River Win has a history of flooding. The underlying geology of the Win is permeable. However, when the land is saturated, flash flooding can by surface water entering the Win. The most significant event was on 5 June 1983. One of the key factors in this event was the gauging station at Winfrith Newburgh, the purpose of which was to measure low flows for water resource purposes. However, no bypass route had been provided and the structure caused a significant obstruction to flood flows. As the gauging station was

in place prior to the adjacent development being built, it only became a flood risk issue after the area was developed in the 1980s.

In addition, the bridges through the village are of insufficient size to cater for extreme river flows. In these situations they restrict flow and cause flooding.

The area around the Red Lion Pub floods (affecting the pub itself). This situation was exacerbated when the A352 was improved by adjusting and raising the road levels.

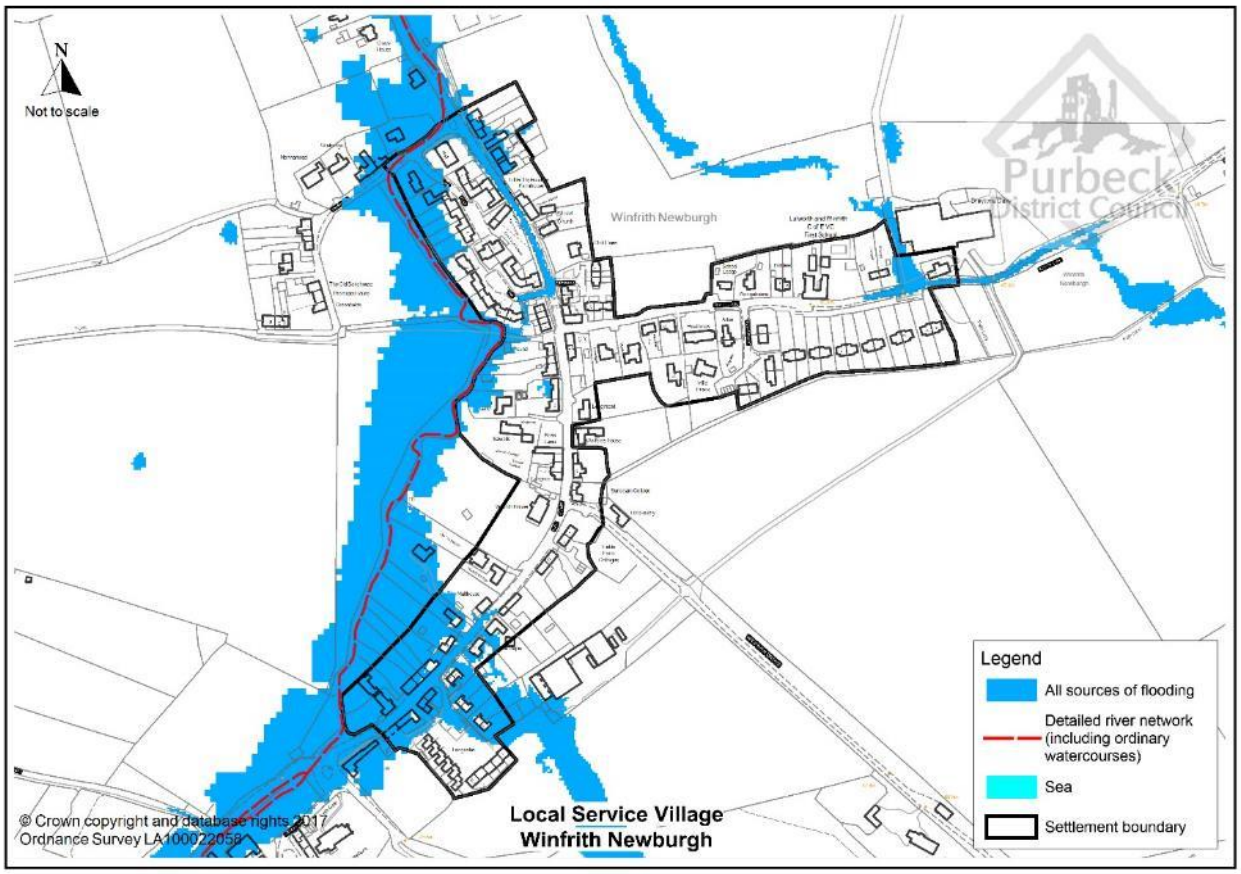
The River Win passes through a culvert under the A352. Immediately down-stream it passes under a bridge giving access to a development at Gatemore Road which was constructed in the 1990s (subject of a planning appeal). The National Rivers Authority (now the Environment Agency) allowed a bridge to be built, provided that it would be free-spanning. However, for practical reasons, the bridge could not be free spanning. To facilitate its construction, the roadside bank was removed. This resulted in the flooding and evacuation of two cottages on the opposite side of the road and flooding of the farm house further down Gatemore Rd. The bridge has caused a problem over the years. The problem is still not resolved, but it has been improved by: i) enlarging the size of the channel below the bridge; and ii) increasing the size of the bridge upstream which provides access to the Red Lion.

The Frome and Piddle CFMP (2008) notes river flooding at Winfrith Newburgh in July 1986. EA records of the 2012/13 flooding notes that 9 flood incidents were reported in Winfrith Newburgh parish.

Between 2013 and 2014 Dorset County Council received 3 flood reports of internal property flooding and 3 flood reports of external property at Winfrith Newburgh (Local Flood Risk Management Strategy – Table 22).

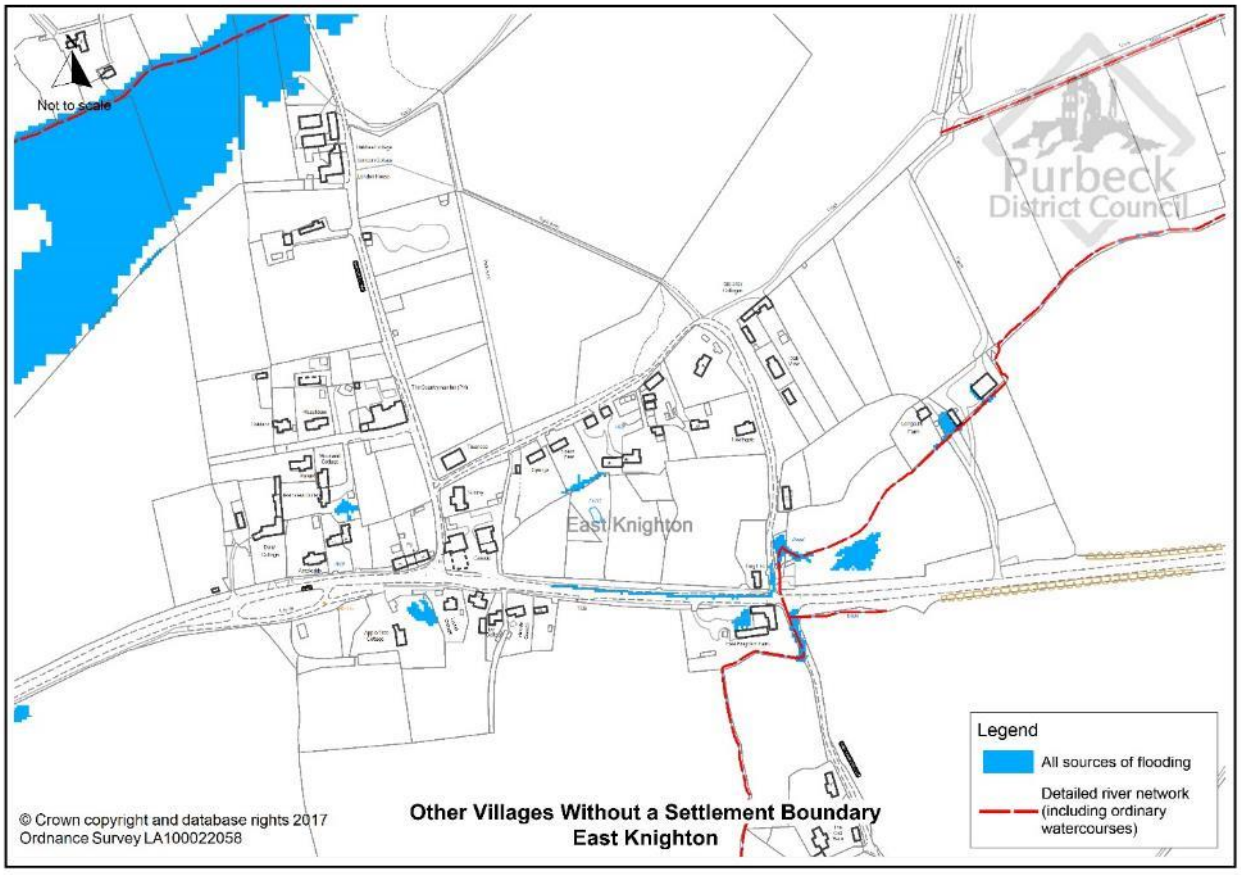
Settlement – Winfrith Newburgh	
Risk of flooding	**Comment**
Fluvial	The River Win is a major watercourse that flows north through the centre of Winfrith Newburgh towards Blacknoll and the River Frome in Wool. Flood Zones 2 & 3 lie to both sides of the River Win and include a number of properties and gardens and parts of the A352 to the north of the village.
Coastal and tidal	N/A
Surface Water	At the 1 in 30 year incidence level surface water flooding affects a number of areas of the village, particularly in the southern part of the village, along the flow path of the River Win. Flooding also occurs along areas of road including the A352 to the north and smaller lanes linking with the village. At the 1 in 100 and 1 in 1000 year incidence levels flooding affects significantly greater areas of the village and roads/lanes linking to the village.
Groundwater	Anecdotal evidence suggests that parts of Winfrith Newburgh have been effected by groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Winfrith Newburgh with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.

Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
See general flood risk information above.	
Areas covered by flood warnings	
There are no EA flood warning areas affecting the village. There is an EA flood alert area that extends across southern parts of the Parish and northwards along the River Win through Winfrith Newburgh village.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
Dorset County Council's Local Flood Risk Management Strategy (table 20) ranks the community of Winfrith Newburgh 27th in Dorset according to the risk of flooding from surface water. Winfrith Newburgh may require a Surface Water Management Plan.	
Locations that may have increased flood risk if additional development takes place	
Surface water run-off from further development in and around Winfrith Newburgh may contribute toward increasing the risks from surface water flooding.	
Potential measures to manage flood risk	
Dorset County Council's Flood Risk Management Strategy identifies Winfrith Newburgh in its 3rd group of communities where flood risk management activities should be prioritised. The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will see opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Winfrith Newburgh	



Settlement – East Knighton	
Risk of flooding	**Comment**
Fluvial	The River Win lies between East Knighton and Blacknoll flowing north to join the River Frome at Wool. Flood Zones 2 & 3 run beside the river and include a couple of properties and gardens/areas of land at Blacknoll. East Knighton lies outside the Flood Zones. A number of smaller watercourses feed into the River Win including drainage channels from nearby heathland to the north and east of the village.
Coastal and tidal	N/A
Surface Water	At the 1 in 30 year incidence level surface water flooding relates to the River Win and a number of smaller drainage channels. The extent of flooding increases at the 1 in 100 and 1 in 1000 year incidence levels to include larger areas of countryside and a number of areas of road.
Groundwater	No record of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in East Knighton with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
See general flood risk information above.	

Areas covered by flood warnings
There are no flood warning areas affecting the village of East Knighton. A flood alert area extends along the River Win to the north and east of the village across the Blacknoll area.
Areas with critical drainage problems
No known areas.
Areas that may need a surface water management plan
None identified.
Locations that may have increased flood risk if additional development takes place
Surface water run-off from further development may contribute to increasing risks from surface water flooding.
Potential measures to manage flood risk
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will see opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.
Areas at risk of flooding - East Knighton



Wool – Flood Risk Assessment & Management	
Policy LD Settlements	**Wool:** Key Service Village **Bovington:** Key Service Village **East Burton:** Other village with a settlement boundary
Number of residential properties	2165
Number of business properties	73
Vulnerable infrastructure provision	Main Road: A 352 (Dorchester Road), and Weymouth – London Railway Line, Doctors Surgery, and telephone exchange
Major watercourses	River Frome River Frome North Channel River Win
Other watercourses	Many smaller watercourses and drainage channels that feed into the Rivers Frome and Win
Coastal areas	N/A

General flood risk

Rivers and Flood Zones

Wool Parish has two major watercourses within its boundary – The Rivers Frome and Win. The River Win feeds into the River Frome at East Burton after flowing through Dorset Green and parts of East Burton. The River Frome lies to the north of Wool and East Burton in water meadows.

Surface Water Flood Risk

At the 1 in 30 year incidence level, surface water flood risk in the Parish largely relates to existing watercourses, (including drainage channels and smaller watercourse) that feed into the River Frome. There are also areas of surface water flooding along a number of roads/streets in Wool, East Burton and Bovington, areas of heathland, and parts of the railway line in Wool. The extent of surface water flooding increases at the 1 in 100 year incidence level and significantly at the 1 in 1000 year incidence level.

EA Flood Warning Areas

There is a large EA flood warning area along the River Frome to the north of Wool. This also includes some parts of East Burton and fringes of Bovington. The warning area also extends south from the River Frome towards Bindon Lane, High Street, Spring Street, Duck Street and the west of Lulworth Road.

An EA flood alert area covers similar locations including areas to the north of Wool, parts of East Burton, eastern parts of Wool (extending from the railway station south along High Street and east of Lulworth Road) and to the east of Wool along Bindon Lane. It also extends north of Wool to the southern fringes of Bovington and northwards along Cologne Road and Lower Long Bottom.

Flood History

There is recorded flood history at Bindon Lane, surface water flooding related to block drainage systems in the Knowlewood Knap (to the south of D'Urberville Centre), and highway flooding at East Burton (SWIM-geowessex).

A culvert near the BT Exchange in Wool has historically led to some localized flooding. The watercourse at Spring Street and Duck Street also occasionally overtops its banks and causes some flooding to property.

The bridge over the River Win at East Burton crossroads is of adequate capacity, but the downstream channel is restricted. Although the flood risk has been reduced, the watercourse still represents a significant flood risk. The area was severely flooded in 1983, affecting several properties.

In Bovington, a watercourse running behind properties in Cologne Road has caused some flooding in the area. There is also a flood risk from overland flow containing silt from Bovington Camp.

The Frome and Piddle CFMP (2008) notes river flooding impacts on riverside dwellings, a water treatment works, main road, and several local roads in Flood Risk Zones 2 & 3.

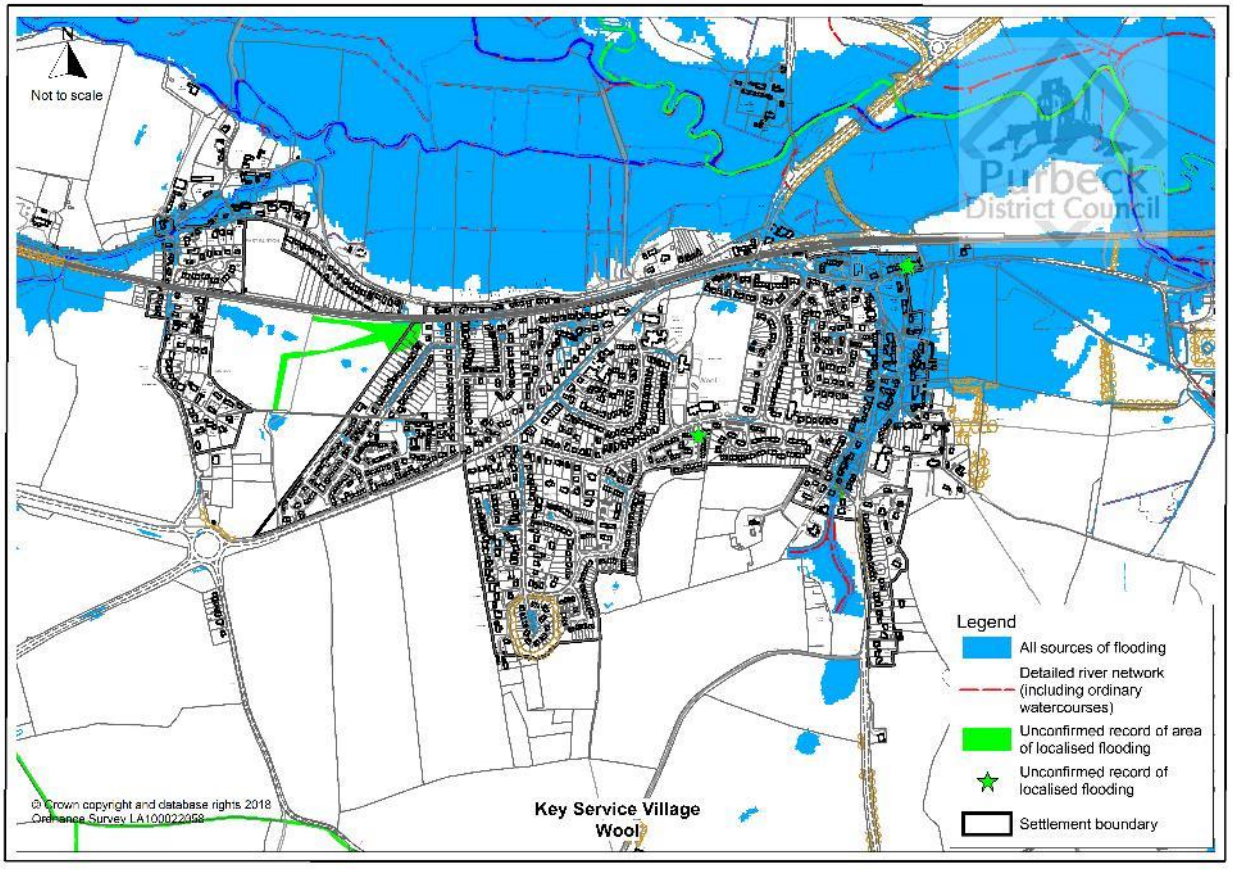
Between 2013 and 2014 Dorset County Council received 2 flood reports of external property flooding within the community of Wool (Local Flood Risk Management Strategy – Table 22).

Dorset County Council's Flood Risk Management Strategy identifies Wool in its 3rd group of communities where flood risk management activities should be prioritised.

Settlement – Wool and East Burton	
Risk of flooding	**Comment**
Fluvial	The River Frome and related water channels lie to the north of Wool village with large areas of floodplain and Flood Zones 2 & 3 on both sides of the river. A number of smaller watercourses flow south into the River Frome from the East Burton and Woolbridge areas. A smaller watercourse also flows north into the River Frome and is adjoined by watercourses that start at a spring to the west of Lulworth Road and flow along Spring Street and Bindon Lane. Flood Zones 2 & 3 cover larger areas to the north and east of Wool. A number of properties along Duck Street, High Street, Spring Street, Station Road and Bindon Lane fall within the Flood Zones. The Frome and Piddle CFMP (2008) notes river flooding at Wool between October 2000 and January 2001.
Coastal and tidal	N/A
Surface Water	Surface water flooding at the 1 in 30 year incidence level affects a number of areas in Wool including areas around the spring and smaller watercourse to the west of Lulworth Road, and the roads close to this flow path such as Duck Street, Spring Street, High Street and Station Road. There are also surface water flood risk areas between Station Road, Bindon lane and the railway line to the north. Other areas of surface water flooding relate to the water meadows and drainage channels to the north of the village, areas around Water

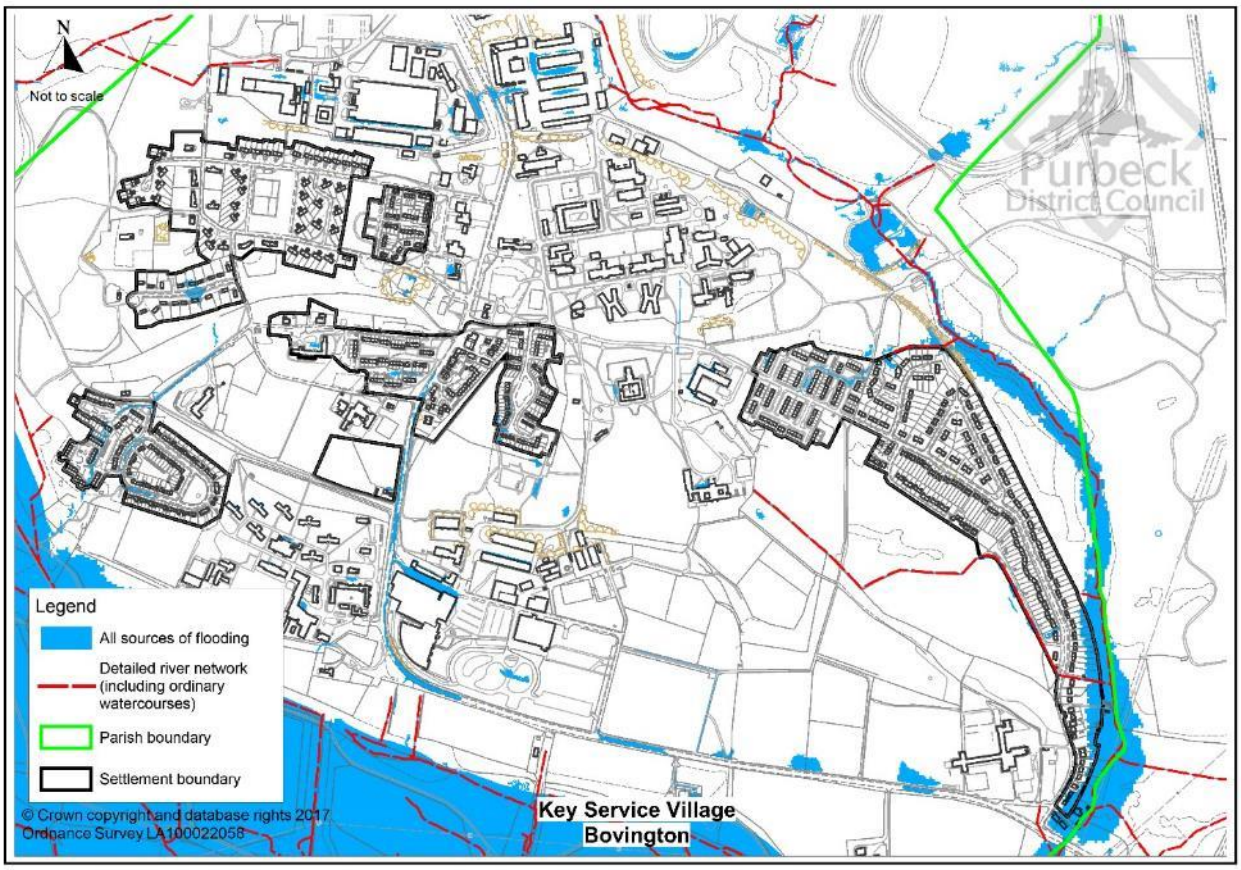
	Meadow Lane in East Burton, and areas around Giddy Green including parts of the fields between East Burton and Wool. At 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flooding increases to include many more streets in Wool, larger areas along the railway line and larger areas of flood plain and agricultural land, particularly to the west of Lulworth Road and between East Burton and Wool. When commenting on options sites for new homes in 2016 (which were presented as part of the review the Council's Local Plan in 2016) the LLFA noted that there were empirical records of localised flooding to the west of the Wool, around A352, and in the fields next to Purbeck Gate development. The railway embankment acts as a barrier to surface water flowing northward the Frome. It is likely that flooding arises when high groundwater levels limit infiltration and surface water collects on low lying land.
Groundwater	There is anecdotal evidence that the area to the west of Lulworth Road suffers groundwater flooding and a lake sometimes forms. Flooding here also results from a spring and small watercourse with Flood Zones 2 & 3 to either side.
Sewer	There is a Wessex Water sewage treatment works at Wool. No additional foul sewer flood risk for small infill development in Wool with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance SFRA.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008). There is a large EA flood warning area along the River Frome to the north of Wool. This also includes some parts of East Burton and fringes of Bovington. The warning area extends south from the River Frome towards Bindon lane, High Street, Spring Street, Duck Street and the west of Lulworth Road. An EA flood alert area covers similar locations to the flood warning areas including areas to the north of Wool, parts of East Burton, eastern parts of Wool (extending from the railway station south along High Street and east of Lulworth Road) and to the east of Wool along Bindon Lane. It also extends north of Wool to the southern fringes of Bovington and northwards along Cologne Road and Lower Long Bottom.	

Areas with critical drainage problems
No known areas.
Areas that may need a surface water management plan
A surface water management plan may be required to address both existing problems of surface water flooding and also to set out how new built development must address its own surface water run-off.
Locations that may have increased flood risk if additional development takes place
Development to the west and south of Wool may exacerbate existing flood risk if: i) surface water flow routes are obstructed, or ii) surface water running off development is not properly managed.
Potential measures to manage flood risk
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where possible managed to reduce causes and impacts of flooding. Such management could involve their inclusion as part of a wider site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site. New development sites that do not have identified flood risk (for example, to the South of Dorchester Road) must demonstrate how surface water running off development will be managed to avoid causing, or exacerbating, flooding elsewhere. Surface water infiltration is unlikely to be acceptable in this location due to high groundwater levels so all new development proposals will need to explore different measures for managing surface water. This may involve storing/holding back water.
Areas at risk of flooding – Wool.



Settlement – Bovington	
Risk of flooding	**Comment**
Fluvial	The River Frome lies to the south of Bovington. A number of smaller watercourses and drainage channels flow into the river from areas south of Bovington Lane. Areas to the south of Stanley Barrack and Bovington Farm fall within Flood Zones 2 & 3 of the river Frome. Smaller watercourses also flow south to the River Frome from Bovington Heath, Wool Heath, Woolbridge Heath and the Cologne Road area. The smaller watercourse to the east of Cologne Road that flows along Higher and Lower Long Bottom has Flood Zones 2 & 3 beside the watercourse (affecting several gardens and properties on Cologne Road).
Coastal and tidal	N/A
Surface Water	Surface water flooding at the 1 in 30 year incidence level mostly relates to the flow paths of smaller watercourses, drainage channels and ponds. There are some smaller areas of surface water flooding along the roads and elsewhere in the built area. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flooding increases to include more areas of road, built area and land adjacent to watercourses. The continuous use of heavy tank vehicles over a restricted area of Heathland at Bovington Camp could have an effect on local soil structure and surface water run-off patterns over the longer-term (CFMP, 2008).
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Bovington with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk (Long term flood risk information – gov.uk)
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
The EA provides a flood warning service on the River Frome from Maiden Newton in West Dorset to Wareham in Purbeck. The service aims to give the public 2 hours warning of flooding from rivers and allows people to prepare for potential flooding, such as moving cars, furniture, turning off services and evacuating more vulnerable groups of the community (Frome and Piddle CFMP, 2008). There is a large EA flood warning area along the River Frome to the north of Wool. This also includes some parts of East Burton and fringes of Bovington. An EA flood alert area covers similar locations to the flood warning areas including the southern fringes of Bovington and northwards along Cologne Road and Lower Long Bottom.	
Areas with critical drainage problems	

No known areas.
Areas that may need a surface water management plan
None identified.
Locations that may have increased flood risk if additional development takes place
Further development in and around the settlement may cause or exacerbate existing flooding if routes of surface flow are obstructed or surface water run-off from development is not properly managed.
Potential measures to manage flood risk
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where possible managed to reduce causes and impacts of flooding. Such management could involve their inclusion as part of a wider site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.
Areas at risk of flooding - Bovington



Worth Matravers – Flood Risk Assessment & Management	
Policy LD Settlements	**Harmans Cross**: Other Village with a settlement boundary **Worth Matravers**: Other Village with a settlement boundary
Number of residential properties	397
Number of business properties	46
Vulnerable infrastructure provision	N/A

Major watercourses	None
Other watercourses	Several smaller watercourses and drainage ditches.
Coastal areas	From Chapmans Pool in west to Seacombe Cliff in east

General flood risk

Rivers and Flood Zones

There are no major watercourses in Worth Matravers Parish. However, there are a number of smaller watercourses and drainage ditches. To the north of the Parish, these watercourses and ditches eventually feed into Byle Brook in Corfe Castle and Swan Brook in Swanage. In the south of the Parish, the watercourses feed into the sea.

Surface Water Flood Risk

There are areas of surface water flood risk in the north of the Parish around Harmans Cross related to existing watercourses and also along the Swanage railway. The extent of surface water flooding increases at the 1 in 100 and 1 in 1000 year incidence levels. There is also some surface water flood risk linked to watercourses that flow from Worth Matravers to the coast and other watercourses in the rural areas of the Parish.

EA Flood Warning Areas

There are no EA flood warning areas within the Parish. There are flood alert areas along the coastline. These do not extend inland to Worth Matravers.

Flood History

There is limited recorded flood history in Worth Matravers Parish (SWIM-Geowessex).

Settlement – Harmans Cross

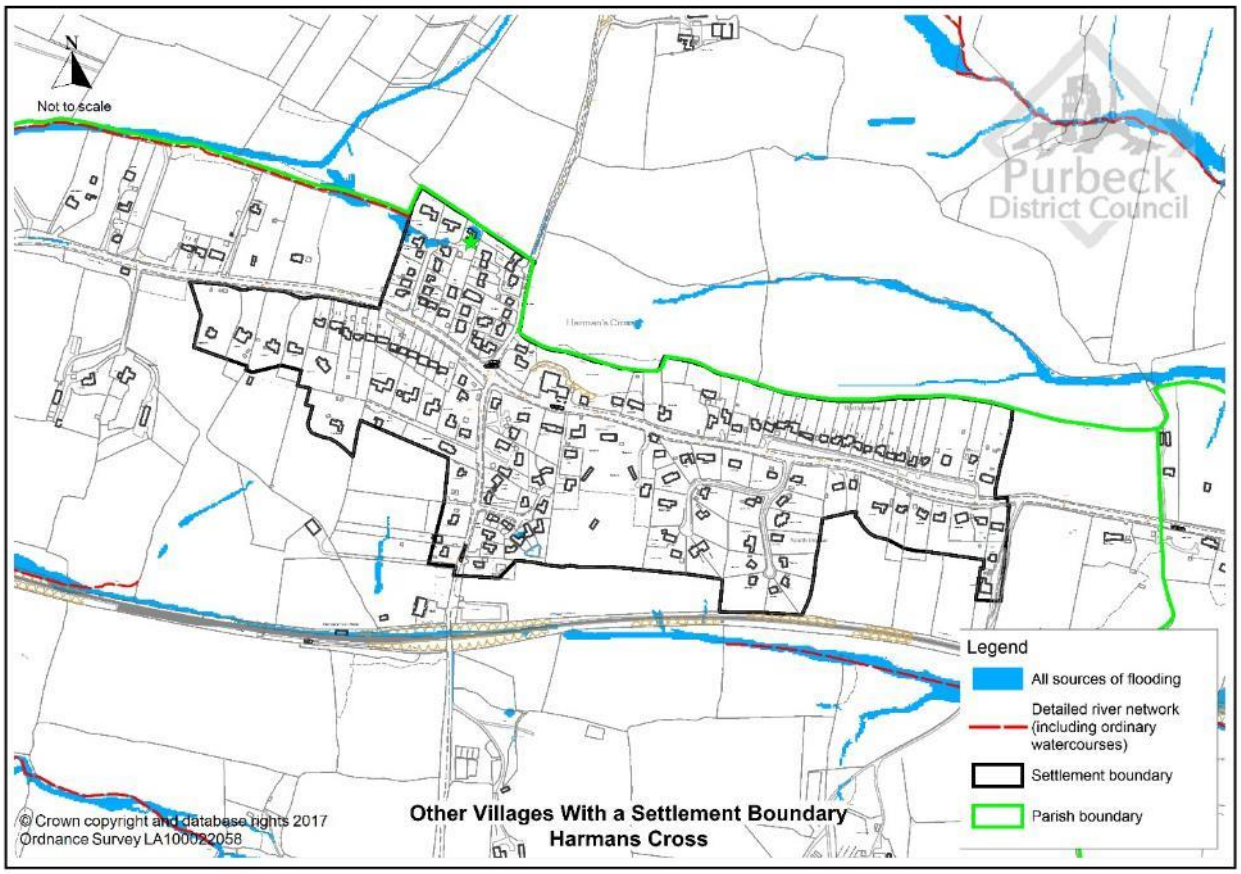
Risk of flooding	Comment
Fluvial	There are no major watercourses in and around the settlement of Harman's Cross. However, there are a number of smaller watercourses to the north and south of the settlement.
Coastal and tidal	N/A
Surface Water	Areas of surface water flooding relate to the flow paths of small watercourses and ditches to the north and south of the village. Some areas also follow the railway line and existing ponds. At the 1 in 100 and 1 in 1000 year incidence levels the extent of surface water flooding increases and there is a greater chance of flooding in the built area and along the main road, draining to the south.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Harmans Cross with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk
Climate change	See general guidance in SFRA.

Existing measures to manage flood risk

No known measures.

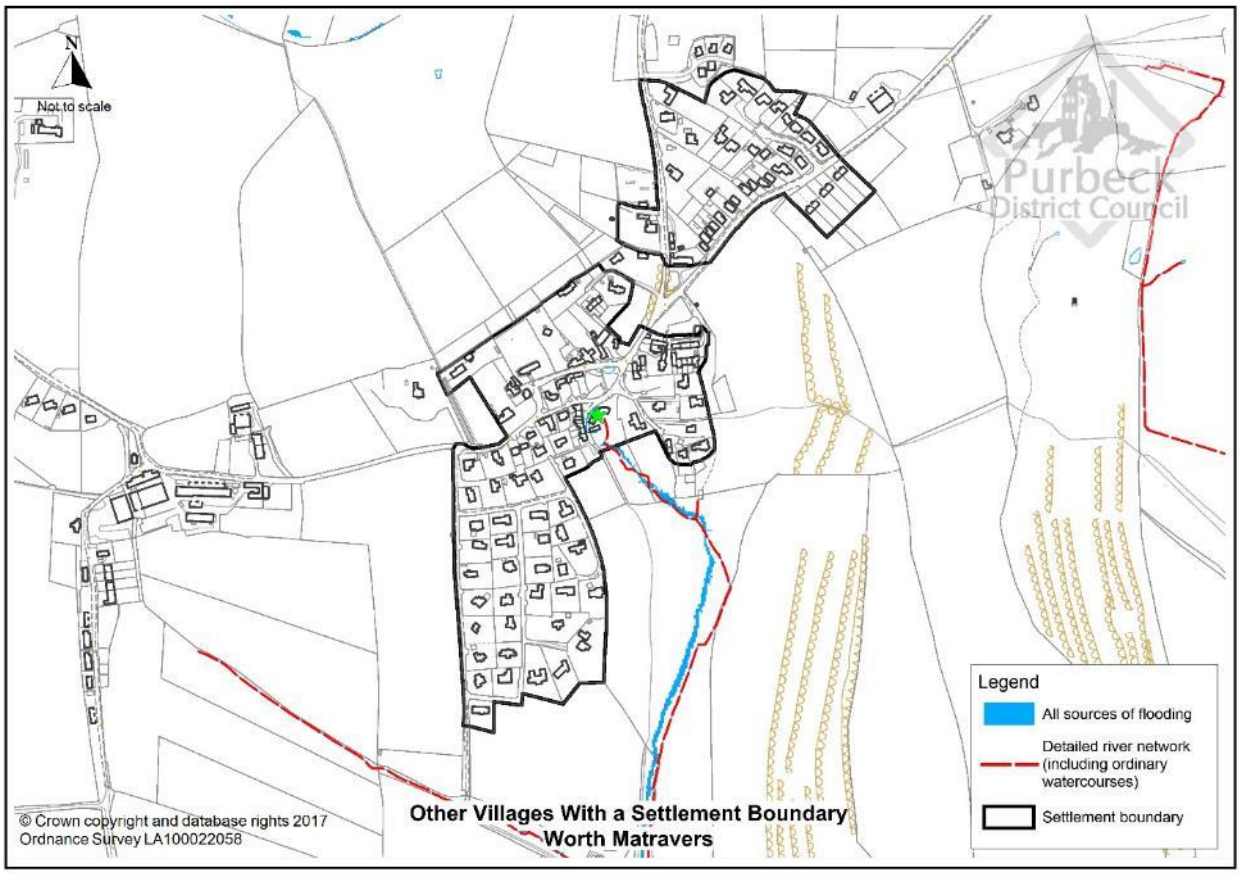
Areas covered by flood warnings

There is an EA flood alert area to the north of Harmans Cross at Woolgarston. This is outside the Parish Boundary.
Areas with critical drainage problems
No known areas.
Areas that may need a surface water management plan
None identified.
Locations that may have increased flood risk if additional development takes place
There may be surface water flooding along Valley Road and Springbrook Close, South Instow and Haycrafts Lane areas if additional development takes place.
Potential measures to manage flood risk
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where possible managed to reduce causes and impacts of flooding. On larger sites, management could involve their inclusion as part of a wider site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.
Areas at risk of flooding - Harmans Cross



Settlement – Worth Matravers	
Risk of flooding	**Comment**
Fluvial	There are no major watercourses running through, or around the settlement of Worth Matravers. There are several smaller watercourses that flow south from the village and surrounding

	areas to the coast. There are no areas of Flood Zone affecting Worth Matravers village.
Coastal and tidal	N/A
Surface Water	Surface water flooding affects areas around the watercourse that flows south from Pikes Lane to Winspit on the coast. Smaller areas of land affected by flooding at the 1 in 30 year incidence level, the affected land increases at the 1 in 100 and 1 in 1000 year incidence levels.
Groundwater	No records of groundwater flooding.
Sewer	No additional foul sewer flood risk for small infill development in Harmans Cross with foul only connections to the public foul systems. Any significant increase in cumulative flows will require assessment.
Reservoir	No risk
Climate change	See general guidance in SFRA.
Existing measures to manage flood risk	
No known measures.	
Areas covered by flood warnings	
None within and around village.	
Areas with critical drainage problems	
No known areas.	
Areas that may need a surface water management plan	
None identified.	
Locations that may have increased flood risk if additional development takes place	
Potential increased flood risk from surface water flooding around the watercourse that flows south from Pikes Lane to Winspit on the coast if additional development takes place in this location.	
Potential measures to manage flood risk	
The layout of any proposed development must ensure that surface water flow paths (existing and those of dry valleys) and areas of surface water ponding are kept clear and where appropriate the Council will see opportunities to reduce the causes and impacts of flooding in the general area. On larger sites, management could involve their inclusion as part of a wider site landscaping scheme that provides the opportunity to provide new Green Infrastructure and connect with existing Green Infrastructure adjoining the site.	
Areas at risk of flooding - Worth Matravers	


N
Not to scale
Purbeck District Council
Legend
All sources of flooding
Detailed river network (including ordinary watercourses)
Settlement boundary
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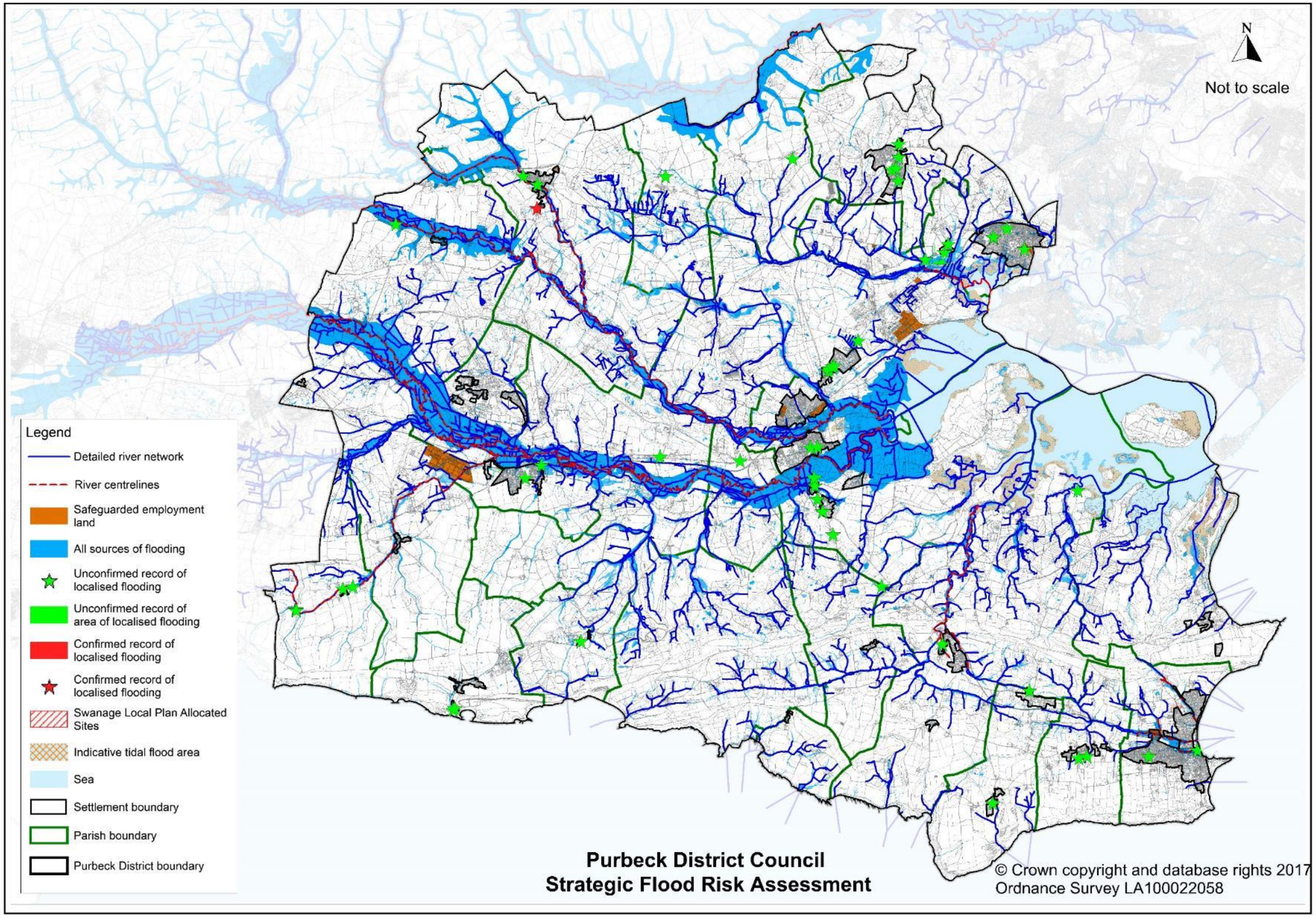
Other Villages With a Settlement Boundary
Worth Matravers

Appendix 1 Purbeck SFRA Map



Map 1 – Purbeck Strategic Flood Risk Assessment Map