FloodSmart Pro

Site address	Seaview Park Warden Bay Road Leysdown ME12 4NB
Site coordinates	602380, 171115
Report prepared for	Wickland Holdings Lyon House Lyon Road Romford Essex RM1 2BG
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1. Executive summary

The National Planning Policy Framework (NPPF) (2019) and National Planning Practice Guidance (NPPG) (2014) requires that flood risk assessments review flooding from all potential sources. A review has been undertaken of national environmental data sets to assess the potential flood risk to the Site. The review is provided within this concise interpretative report written by an experienced GeoSmart consultant.

Site analysis

Source of Flood Risk	Baseline	After Mitigation
River (fluvial) and Sea (coastal/tidal)	Very Low to Low	N/A
Surface water (pluvial) flooding	Very Low	N/A
Groundwater flooding	Negligible	N/A
Other flood risk factors present	Yes	Yes
Is any other further work recommended?	Yes	Yes (see below)

N/A = mitigation not required

The Site is currently used within a commercial capacity as a holiday park. Development proposals comprise the construction of seven new chalets to replace the existing caravan and chalet plots. Four of these are located in the north of the Site, two in the centre of the Site and one in the south of the Site.

The flood risks from all sources have been assessed as part of this report and are as follows:

- According to the Environment Agency's (EA) Flood Map for Planning Purposes, the majority of the Site is located within a Flood Zone 1 while the south and east of the Site located within a tidal Flood Zone 3, although it benefits from the presence of defences, designed to provide a 1 in 1000 year event standard of protection;
- According to the EA's Risk of Flooding from Rivers and Sea (RoFRS) map, which considers the type, condition and crest height of flood defences, the Site has a Very Low to Low risk of flooding from Rivers and the Sea;
- Modelled flood data was obtained from the EA to confirm flood levels at the Site. Analysis of this data, including the most up to date guidance on climate change, confirms the maximum flood level at the Site during the 1 in 200 year (2115)

undefended event would be 5.68 mAOD. The area proposed for development is located above this modelled flood level and is therefore not at risk from tidal flooding;

- According to the EA's Risk of Flooding from Surface Water (pluvial) flood mapping, the majority of the Site is at a Very Low risk of pluvial flooding with a small area of Low to High risk in the south eastern corner of the Site;
- GeoSmart's Groundwater Flood Risk (GW5) mapping confirms there is a Negligible risk of groundwater flooding during the 1 in 100 year event (1% annual probability); and
- The EA's Risk of Flooding from Reservoir map confirms the Site is not at risk of Reservoir Flooding.

Recommendations / Next steps

Recommendations for mitigation are provided below, based upon the proposed development and the flood risk to the Site:

- The regular maintenance of any existing and proposed drains and culverts surrounding, or on the Site should be undertaken to reduce the flood risk caused by blockages.

GeoSmart recommend that mitigation measures that have been discussed within this report are considered as part of the proposed development where possible and evidence of this is provided to the Local Authority as part of the planning application.

2. Introduction

Background and purpose

This assessment has been undertaken by firstly compiling information concerning the Site and the surrounding area. The information gathered was then used to construct a 'conceptual site model', including an understanding of the appropriateness of the development as defined in the NPPF (2019) and the source(s) of any flood risk present. Finally, a preliminary assessment of the steps that can be taken to manage any flood risk to the development was undertaken.

This report has been prepared with reference to the NPPF (2019) and NPPG (2014).

"*The National Planning Policy Framework set out the Government's planning policies for England and how these are expected to be applied*" (NPPF, 2019).

The NPPF (2019) and NPPG (2014) promotes a sequential, risk based approach to the location of development.

"This general approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. The aim should be to keep development out of medium and high risk flood areas (Flood Zones 2 and 3) and other areas affected by other sources of flooding where possible" (NPPG, 2014).

The purpose of this report is to provide clear and pragmatic advice regarding the nature and potential significance of flood hazards which may be present at the Site.

Report scope

A thorough review of a commercially available flood risk report and EA supplied data indicating potential sources of flood risk to the Site from rivers and coastal sources, surface run-off (pluvial), groundwater and reservoirs, including historical flood information and modelled flood extent. Appropriate measures are recommended to manage and mitigate the flood risk to the property.

Information obtained from the EA and a review of the Swale Borough Council Strategic Flood Risk Assessment (Halcrow, 2009) is used to ascertain local flooding issues and, where appropriate, identify information to support a Sequential and/or Exception test required as part of the NPPF (2019).

Using the available data, the existing and future flood risks to and from the Site from all flood sources is assessed in line with current best practice.

An indication of potential flood risk from the Site to downstream receptors is provided where the proposed development increases run-off from the Site.

Report limitations

It is noted that the findings presented in this report are based on a desk study of information supplied by third parties. Whilst we assume that all information is representative of past and present conditions we can offer no guarantee as to its validity and a proportionate programme of site investigations would be required to fully verify these findings.

This report excludes consideration of potential hazards arising from any activities at the Site other than normal use and occupancy for the intended land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities.

Datasets

The following table shows the sources of information that have been consulted as part of this report:

Table 1: Datasets consulted to obtain confirmation of sources of flooding and risk

Source of flooding	Datasets consulted			
	Commercial Flood Maps and GW5 Data (Appendix B)	SFRA*	Environment Agency (Appendix C)	OS Data
Historical	X	X	X	
Fluvial/tidal	X	X	X	
Surface water (pluvial)	X	X	X	
Groundwater	X	X		
Sewer		X		
Culvert/bridges		X		X
Reservoir		X	X	

*Swale Borough Council Strategic Flood Risk Assessment (Halcrow, 2009)
*Supporting information on the datasets used is provided in the relevant appendix

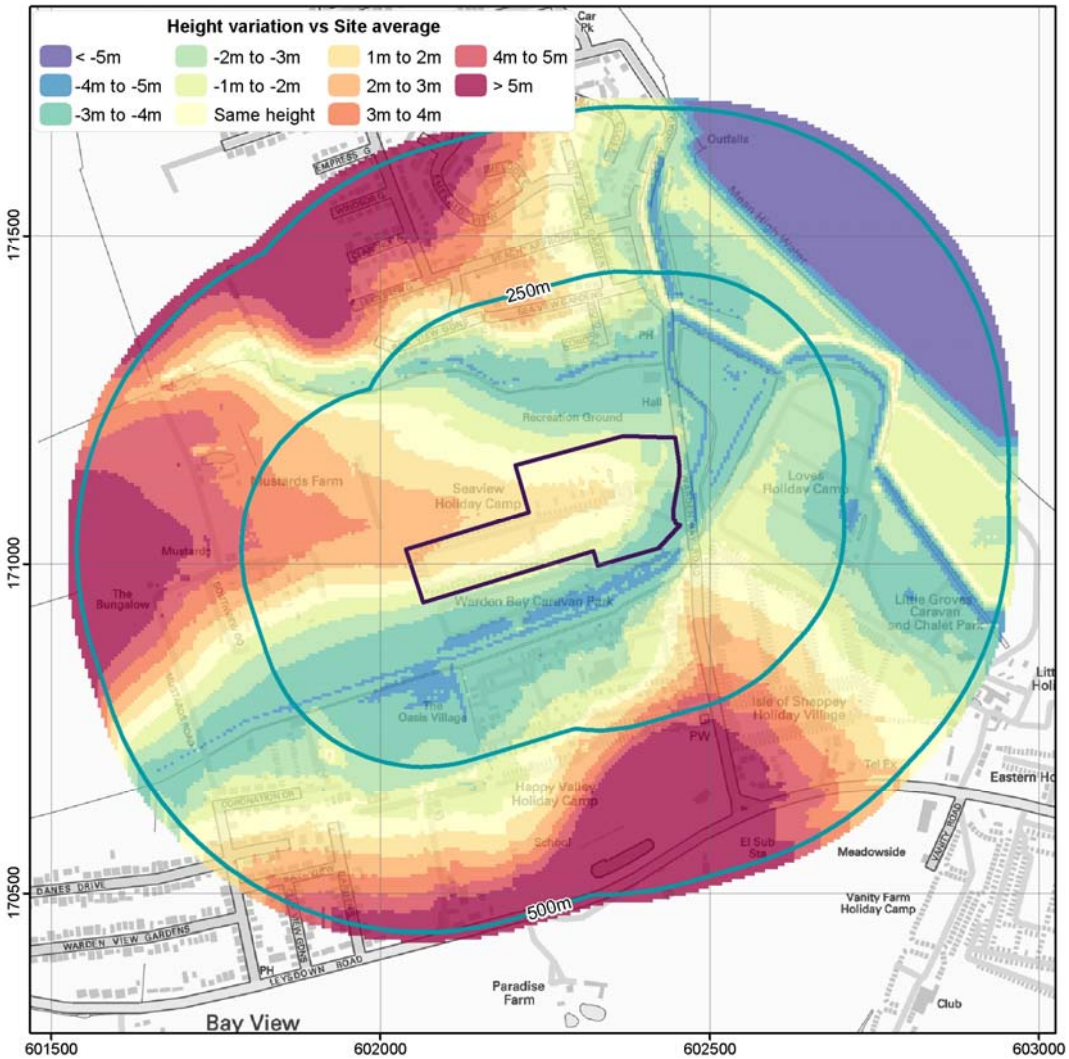
3. Site analysis

Site information

The Site is located in Warden, Kent in a setting of commercial land use at National Grid Reference TR 02329 71078. Site plans and drawings are provided in Appendix A.

According to OS data, the general level of the Site is between 2.8 and 7.9 mAOD with the Site falling gradually in an easterly, northerly and southerly direction from a high point in the centre of the Site. This is based on EA elevation data obtained for the Site to a 1 m resolution with a vertical accuracy of ±150 mm (Appendix D).

Figure 1 Site Location and Relative Elevations



Development

The Site is currently used within a commercial capacity as a holiday park. Development proposals comprise the construction of seven new chalets to

replace the existing caravan and chalet plots. Four of these are located in the north of the Site, two in the centre of the Site and one in the south of the Site (Appendix A).

Ground levels of the northern chalets are between 6.7 to 6.9 mAOD, ground levels for the southern chalet are between 5.8 to 6.1 mAOD and ground levels at the central chalets are between 6.1 to 6.6 mAOD.

It is understood that planning permission for full occupancy has been granted for the chalets in the north and south of the Site but only a ten month occupancy has been granted for the chalets in the centre of the Site.

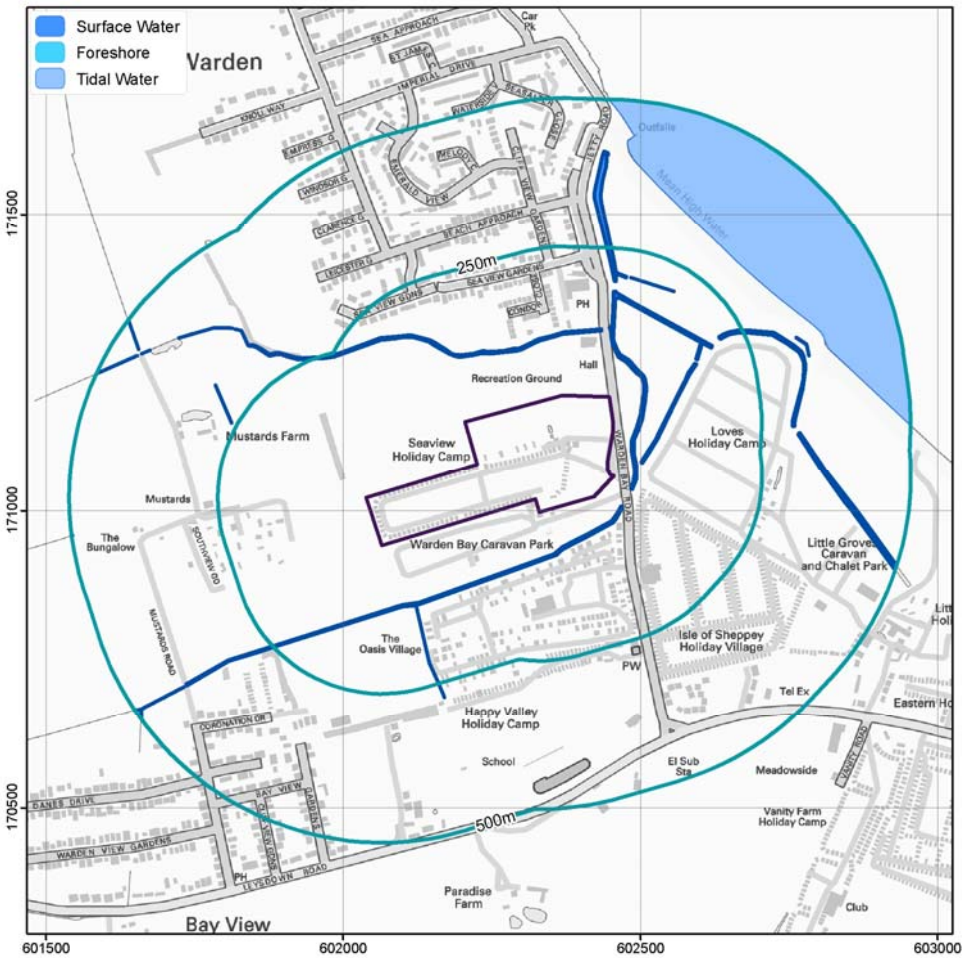
The effect of the overall development will not result in an increase in number of occupants and/or users of the building but will result in the change of use, nature or times of occupation. The estimated lifespan of the development is 60 years.

Hydrological features

Watercourses/surface water features within 500 m of the Site:

There are numerous surface water features within 500 m of the Site (Figure 2), these are included in the mapping below:

Figure 2 Surface water features



There are multiple surface watercourses/drainage ditches surrounding the Site that feed into The Bay. The closest of which is located approximately 30m east of the Site and 50m south of the Site.

A surface watercourse is also present approximately 90m north of the Site.

The Bay is located approximately 310m northeast of the Site.

Proximity to relevant infrastructure:

The nearest flood defences are located approximately 180m north east of the Site and continue along the coast to the north and south.

The watercourse to the south of the Site is culverted under Warden Bay Road approximately 40m south east of the Site.

The watercourse to the north of the Site is culverted under Warden Bay Road approximately 110m north east of the Site.

Hydrogeological features

British Geological Survey (BGS) mapping indicates that there are no superficial deposits underlying the majority of the Site (BGS, 2019) however the underlying superficial geology in the south east of the Site consists of Alluvium (BGS, 2019) and is classified as a Secondary Undifferentiated Aquifer (EA, 2019).

BGS mapping indicates that the underlying bedrock geology consists of the London Clay Formation (BGS, 2019) and is classified as a Unproductive Strata (EA, 2019).

The Site is not located within a groundwater Source Protection Zone (EA, 2019).

4. Flood risk to the development

Historical flood events

According to the EA's historical flood map the east of the Site was affected by the February 1953 flood event which was caused by an overtopping of defences (EA, 2019). The EA have confirmed flood defences have been upgraded since this event with a sea wall with a design standard of protection of 1000 years built/upgraded along the coast in 2019.

The purpose of historical flood data is to provide information on where and why flooding may have occurred in the past. The absence of any recorded events does not mean flooding has never occurred on Site or that flooding will never occur at the Site.

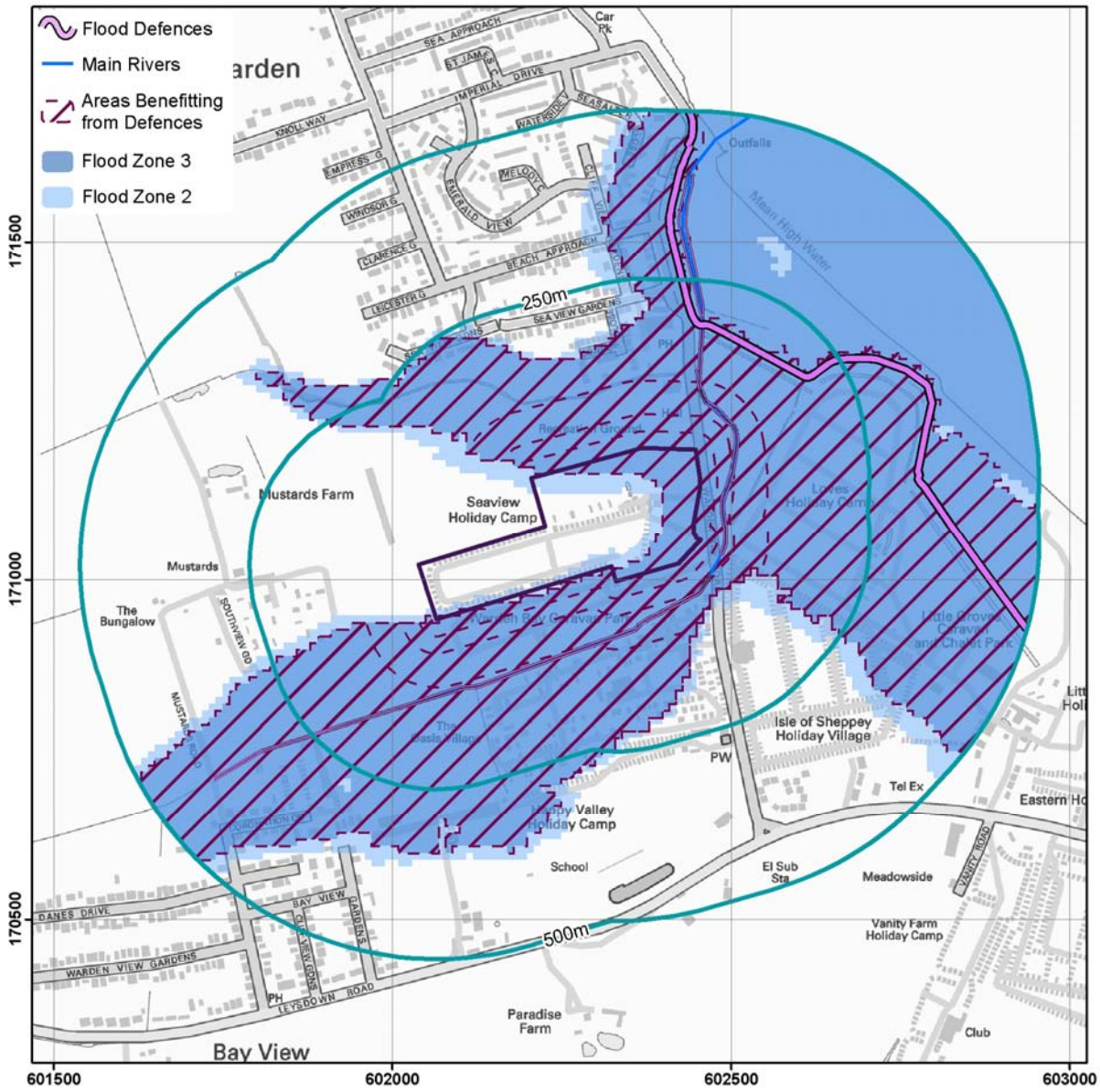
Figure 3 EA Historic Flood Map (EA, 2019)

Rivers (fluvial) / Sea (coastal/tidal) flooding

According to the EA's Flood Map for Planning Purposes (Figure 3), the Site is partially located within tidal Flood Zone 3 and is therefore classified as having a High probability of tidal (coastal) flooding from the sea. However, the Site is located within an area that benefits from the presence of flood defences. This is defined as an area that benefits from the presence of defences in a 1 in 100 (1%) chance of flooding each year from rivers; or 1 in 200 (0.5 %) chance of flooding each year from the sea. If the defences were not there, these areas would flood in a 1 in 100 (1%)/ 1 in 200 (0.5 %) or larger flooding incident.

The area proposed for development is located within the Flood Zone 1 (Low probability) areas of the Site.

Figure 3 EA Flood Map for Planning Purposes (EA, 2019)



As defined in the NPPF (2019):

Guidance

Ignoring the presence of any defences, land located in a Flood Zone 3 is considered to have High probability of flooding with a 1 in 100 year or greater annual probability of fluvial flooding or a 1 in 200 or greater annual probability of coastal flooding in any one year.

Development of "Water-Compatible" and "Less Vulnerable" land uses are suitable for this zone with "More Vulnerable" and "Essential Infrastructure" requiring an Exception test to be passed prior to development taking place. (see glossary for terminology).

Flood defences

Guidance

Sites that are located close to flood defences are likely to be zones where rapid inundation will occur in the event of the flood defences being overtopped or breached. A Site located close to flood defences (within 250m) may require a more detailed FRA subject to local topography.

- The Site is in an area which benefits from flood defences.
- There are flood defences within 250 m of the Site.
- There are no proposed flood defences within 250 m of the Site.

Information from the EA relating to the defences is outlined below.

- According to the EA (2019) the flood defences in place for this area are designed to defend up to a 1 in 1000 year flood event.
- The defences consist of a clay embankment and is maintained by the Environment Agency which classifies their current condition as fair to poor.

Model data

As the Site is located within the EA's tidal floodplain, modelled flood elevation data was obtained from the EA and has been used to assess flood risk and to provide recommendations for mitigation for the proposed development. The data is provided in Table 2 below and included with Appendix C.

North Kent Coast Modelling and Mapping Study (August, 2015)

The data obtained from the EA uses a 2D TuFLOW model to represent the floodplain as a grid with flood water levels calculated for each grid cell. The modelled flood levels for the closest and most appropriate model grid cells have been provided for both still water and wave overtopping defended and undefended scenarios for a variety of return periods (Appendix C).

Defended:

The modelled data shows that the Site is not affected by flooding in any event up to and including the defended 1 in 1000 year (2012) still water or wave overtopping events.

Flood extent mapping has also been provided by the EA and this shows that the Site is not affected by flooding until the 200 year 2115 plus climate change modelled flood event where the south eastern corner of the Site will experience flooding. The area proposed for development will not be affected.

Undefended:

The modelled data shows that the Site is partially affected by all events from the 20 year (2012) event up to the 200 year (2115) event with increasing extents and depths. The highest flood depths at the Site are shown below (node point 9).

Table 2: Undefended Modelled Tidal Flood Levels

20 year (2012)	200 year (2012)	200 year (2070)	200 year (2115)	1000 year (2012)
3.83 mAOD	4.59 mAOD	5.05 mAOD	5.68 mAOD	4.94 mAOD

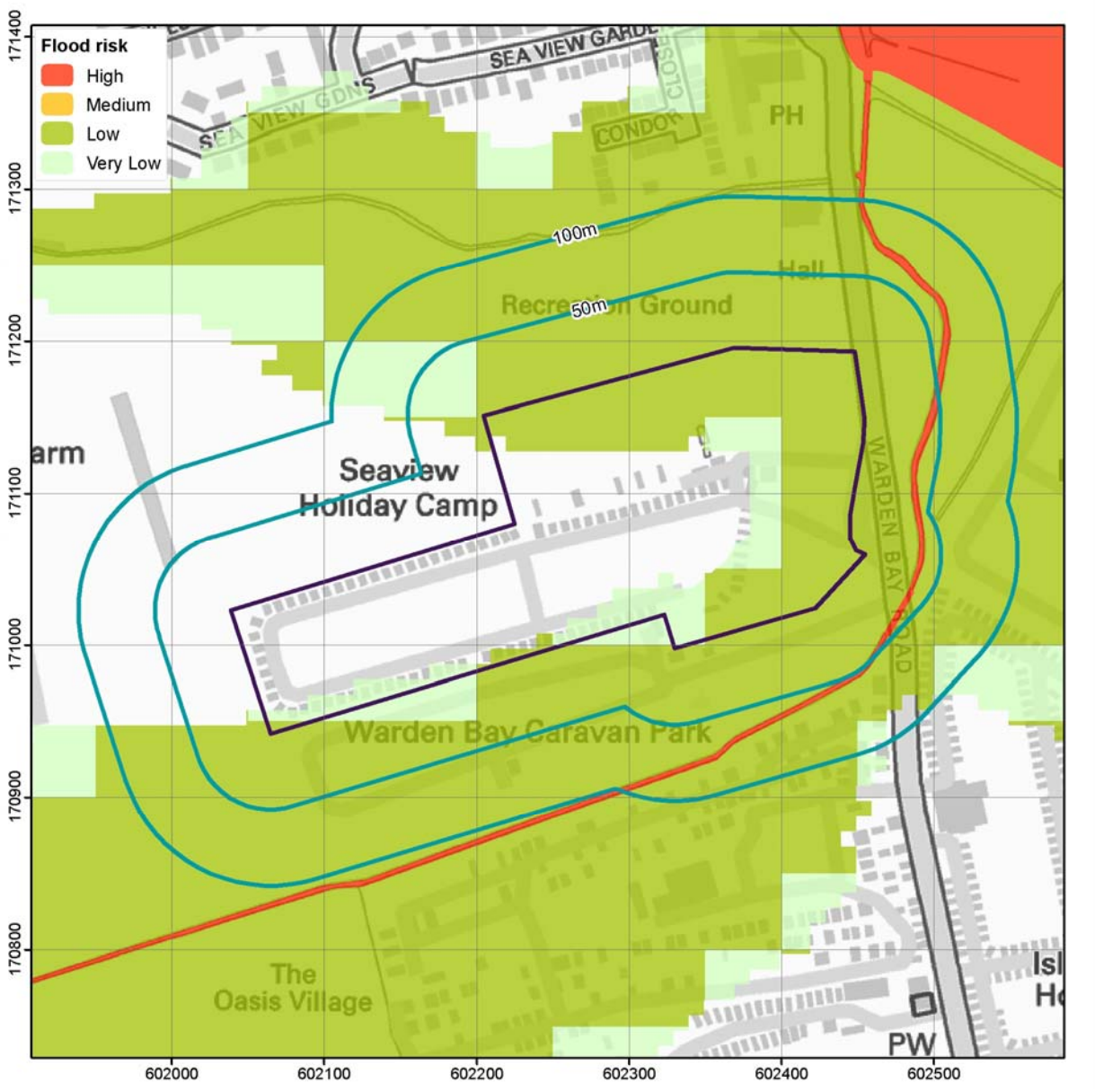
The area proposed for the new chalets are therefore all located outside the modelled flood extent and are located above the modelled flood level for the 200 year (2115) undefended event.

Fluvial/Tidal Flood risk

The type and condition of the existing flood defences influence the 'actual' risk of fluvial flooding to the Site, albeit the residual risk of flooding should be considered when proposing new development.

According to the EA's Risk of Flooding from Rivers and the Sea (RoFRS) mapping (Figure 4), which considers the crest height, standard of protection and condition of defences, the flood risk from Rivers and the Sea is Very Low to Low.

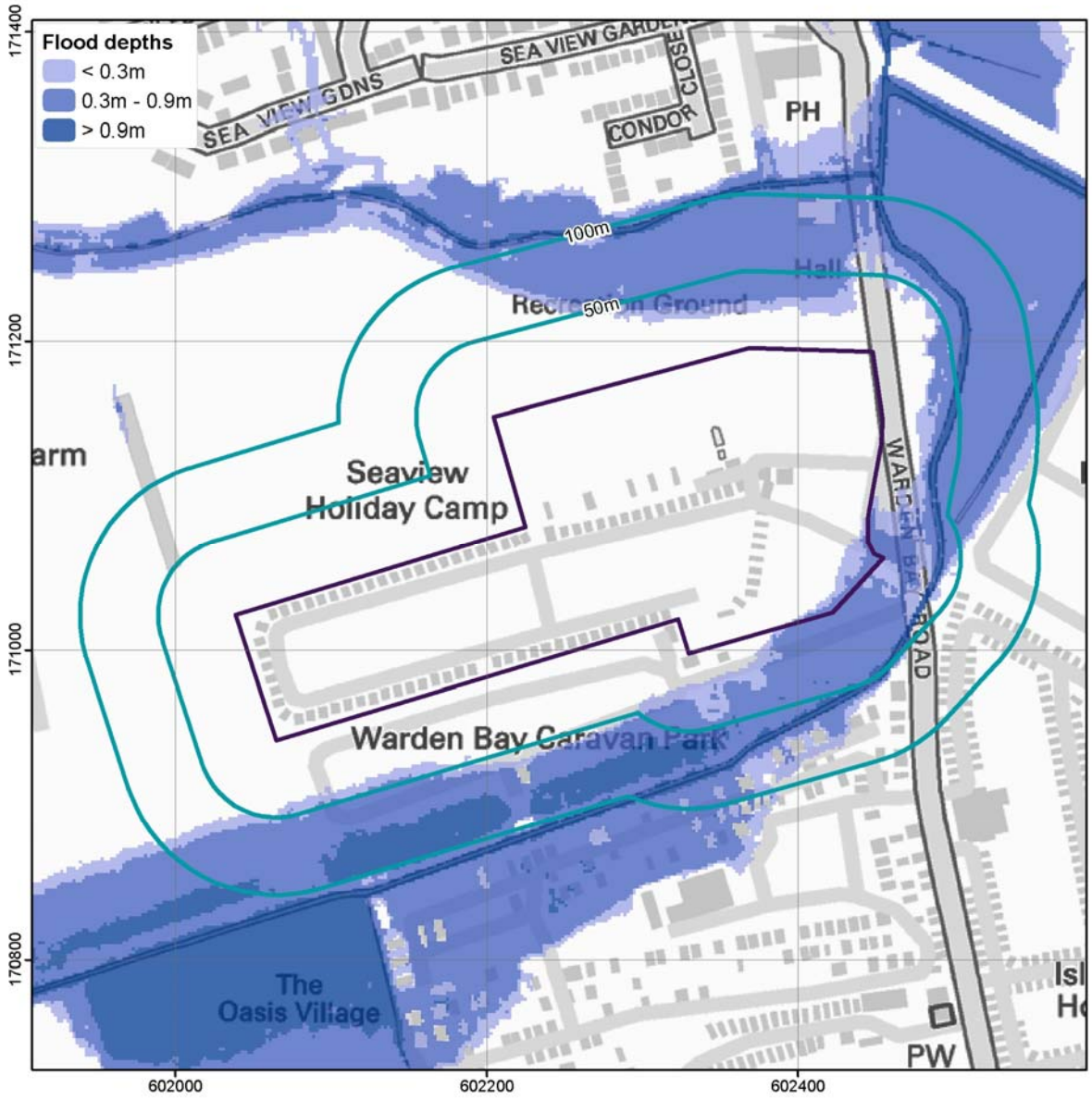
Figure 4 Risk of Flooding from Rivers and Sea map (EA, 2019)



Surface water (pluvial) flooding

According to the EA's Risk of Flooding from Surface Water (pluvial) mapping for a 1 in 100 year pluvial event (Figure 5), there is a Very Low risk of pluvial flooding across the majority of the Site with a small area of the south east corner at Low to High pluvial flood risk. This is likely associated with the nearby watercourse which runs between approximately 50-100m south and east of the Site. No risk is shown to occur from the watercourse mapped to the north of the Site which is at a lower elevation.

Figure 5 EA Medium surface water flood risk map (EA, 2019)



Guidance

According to EA's surface water flood risk map, a site at Very Low risk has a chance of flooding of less than 1 in 1000 (0.1%)

According to EA's surface water flood risk map, a site at Low risk has a chance of flooding of between a 1 in 1000 and 1 in 100 (0.1% and 1%).

According to EA's surface water flood risk map, a site at Medium risk has a chance of flooding of between a 1 in 100 and 1 in 30 (1% and 3.3%).

According to EA's surface water flood risk map, a site at High risk has a chance of flooding of greater than 1 in 30 (3.3%)

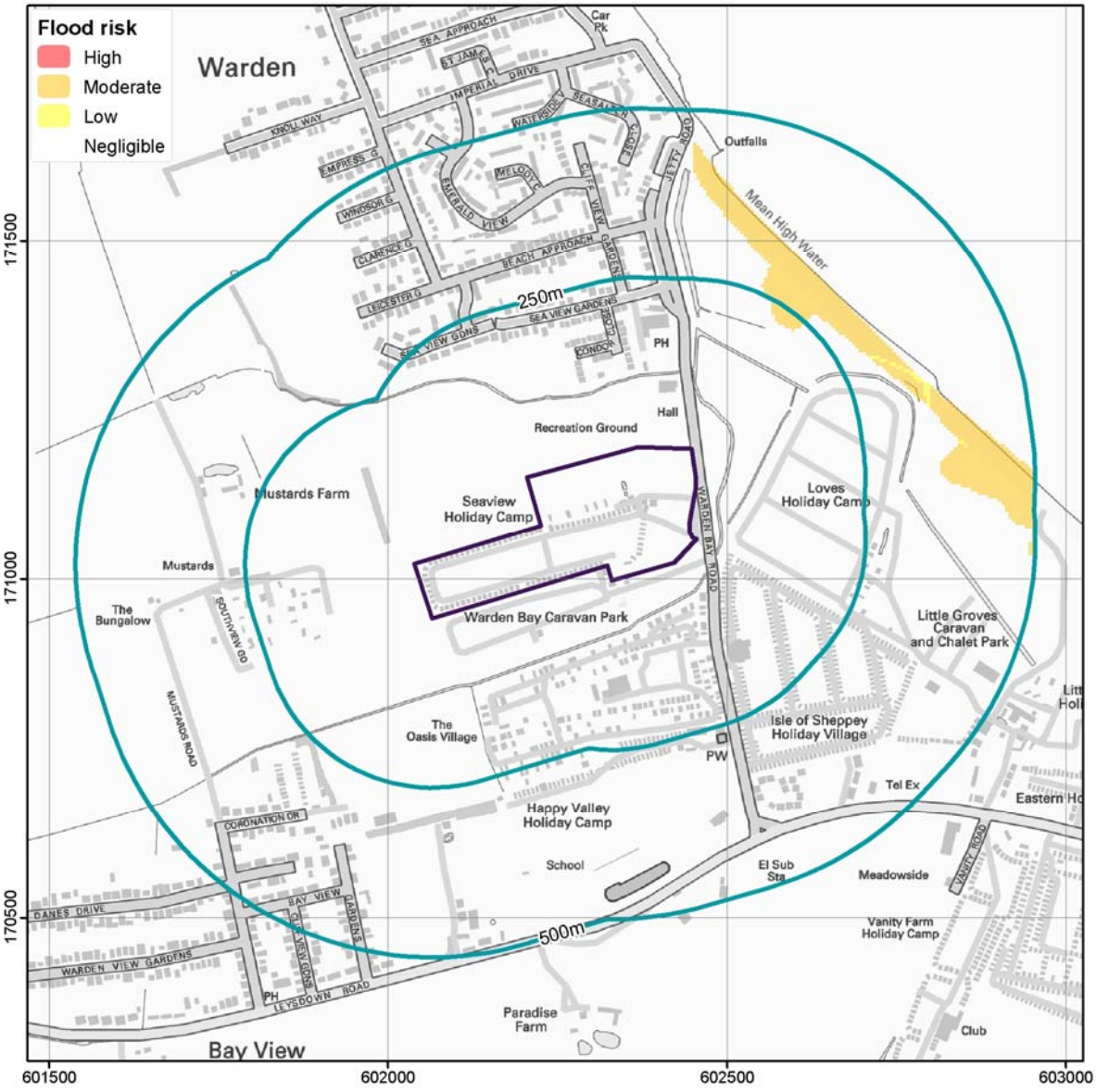
Analysis of OS mapping, ground elevation data and the EA's pluvial flow route mapping confirm the Site is not located on a potential overland flow route.

The SFRA does not indicate reported incidents of historical surface water flooding at the Site (Halcrow, 2009).

Groundwater flooding

Based on GeoSmart's Groundwater Flood Risk (GW5) Map (Figure 7) the Site is considered to be at Negligible risk of groundwater flooding. The risk map below confirms the risk of groundwater emergence at the surface during a 1% annual probability (1 in 100 year) event.

Figure 7 GeoSmart GW5 Groundwater Flood Risk Map (GeoSmart, 2019)



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The SFRA does not indicate reported incidents of historical ground water flooding within 20 m of the Site (Halcrow, 2009).

Guidance

According to GeoSmart (2019) there is a Negligible risk of groundwater flooding in this area and any groundwater flooding incidence will be less frequent that 1 in 100 years return period.

Negligible Risk - There will be a remote possibility that incidence of groundwater flooding could lead to damage to property or harm to other sensitive receptors at, or near, this location.

Flooding from Artificial Sources

Sewer flooding

The SFRA mapping indicates a sewer flooding incident (according to Southern Water records) within 100m of the Site (to the south) (Halcrow, 2009). However, it is advisable to contact the local water company to obtain information regarding more recent flooding events that may have occurred at, or in close proximity to, the Site.

Guidance

Properties classified as "at risk" are those that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system either once or twice in the ten year reference period. Records held by the sewage utility company provide information relating to reported incidents, the absence of any records does not mean that the Site is not at risk of flooding.

Canal Failure

According to Ordnance Survey (OS) mapping, there are no canals within 500 m of the Site.

Water supply infrastructure

Water supply infrastructure is comprised of a piped network to distribute water to private houses or industrial, commercial or institution establishments and other usage points. In urban areas, this represents a particular risk of flooding due to the large amount of water supply infrastructure, its condition and the density of buildings. The risks of flooding to properties from burst water mains cannot be readily assessed.

If more information regarding the condition and history of the water supply infrastructure within the vicinity of the Site is required, then it is advisable to contact the local water supplier (Southern Water).

Culverts and bridges

Culverts have been identified within 500 m of the Site and these structures may cause a flood risk to the Site if they become blocked. The SFRA has identified a historic flood incident from other sources at the nearby culvert located south east of the Site (Halcrow, 2009). However, it is a significant distance from the proposed development.

Reservoir flooding

According to the Environment Agency's Risk of Flooding from Reservoir map, the Site is not considered to be at risk of flooding from reservoirs.

Guidance

The risk of reservoir flooding is related to the failure of a large reservoir (holding over 25,000 m^3 of water) and is based on the worst case scenario. Reservoir flooding is extremely unlikely to occur (EA, 2019).

5. Flood risk from the development

Floodplain storage

As the development is located within a tidal Flood Zone 3, compensation for any loss in flood plain storage will not be required.

In undefended tidal areas, raising ground levels is unlikely to impact on maximum tidal levels so the provision of compensatory storage is not considered to be necessary (CIRIA C624 (2004)).

It is however, considered to be best practice to provide an overall improvement in flood risk, so compensatory flood storage and / or Sustainable Drainage (SuDS) features should be provided wherever this is possible.

Drainage and run-off

Should the proposed development involve an increase of impermeable surfaces at the Site, an estimation of run-off would be required to permit effective site water management and prevent any increase in flood risk to off-site receptors from the Site.

Using FEH 2013 rainfall data from the online Flood Estimation Handbook (FEH), developed by NERC (2009) and CEH (2016), the potential surface water run-off generated from the Site during a 1 in 100 year return period should be calculated. Guidance included within the National Planning Policy Framework (NPPF) recommends that the effects of climate change are incorporated into Flood Risk Assessments (Flood Risk Assessments: Climate Change Allowances Guidance, 2016). As the proposed development is being changed to residential, the lifespan of the development and requirements for climate change should allow up to the 2115 scenario.

Table 4: Climate change rainfall allowances

Applies across all of England	Total potential change anticipated for 2010 to 2039	Total potential change anticipated for 2040 to 2059	Total potential change anticipated for 2060 to 2115
Upper end	10%	20%	40%
Central	5%	10%	20%

A method of investigating the run-off due to the proposed development can be calculated by multiplying the run-off per square metre by the impermeable area within the proposed development plan.

It is recommended that attenuation of run-off is undertaken on site to compensate for proposed increases in impermeable surface areas. Attenuation may comprise the provision of storage within a sustainable drainage system (SuDS). Potential SuDS options are presented in the table below, subject to further investigation:

Table 5: SuDS features which may be feasible for the Site

Option	Description
Rainwater harvesting	Rain water harvesting can collect run-off from the roofs for use in non-potable situations, using water butts for example.
Permeable paving	Permeable pavements can be used for driveways, footpaths and parking areas to increase the amount of permeable land cover. Suitable aggregate materials (angular gravels with suitable grading as per CIRIA, 2007) will improve water quality due to their filtration capacity. Plastic geocellular systems beneath these surfaces can increase the void space and therefore storage but do not allow filtration unless they are combined with aggregate material and/or permeable geotextiles.
Swales	Shallow, wide and vegetated channels that can store excess run-off whilst removing any pollutants.
Soakaways	An excavation filled with gravel within the Site. Surface water run-off is piped to the soakaway.
Attenuation basins/pond	Dry basin or a permanent pond that is designed to hold excess water during a rainfall event.

It is assumed that any changes to the existing drainage system will be undertaken in accordance with best practice and that care will be taken to ensure the new development does not overload/block any existing drainage or flow pathways to/from the Site.

GeoSmart could provide a separate outline drainage strategy as required, through our SuDSmart Pro report range. A separate proposal could be provided upon request.

6. Suitability of the proposed development

The information below outlines the suitability of proposed development in relation to national and local planning policy.

National

The aims of the national planning policies are achieved through application of the Sequential Test and in some cases the Exception Test.

Guidance

Sequential test: The aim of this test is to steer new development towards areas with the lowest risk of flooding (NPPF, 2018). Reasonably available sites located in Flood Zone 1 should be considered before those in Flood Zone 2 and only when there are no reasonably available sites in Flood Zones 1 and 2 should development in Flood Zone 3 be considered.

Exception test: In some cases, this may need to be applied once the Sequential Test has been considered. For the exception test to be passed it must be demonstrated that the development would provide wider sustainability benefits to the community that outweigh flood risk and a site-specific FRA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

Suitability of the proposed development, and whether an Exception Test is required, is based on the Flood Zone the Site is located within and the flood risk vulnerability classification of the development proposals. Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

This report has been produced to assess all development types, prior to any development. The vulnerability classification and Flood Zones are compared within Table 6 overleaf (Table 3 of the NPPG (2014)).

As the proposed development is located within Flood Zone 1 and there is no increase in vulnerability of the type of development and there would be no increase in the number of occupants staying on the Site, all types of development listed within the Table overleaf are acceptable according to National Policy.

Table 6: Flood risk vulnerability and flood zone 'compatibility (taken from NPPG, 2014)

Flood risk vulnerability classification		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood Zone	Zone 1 – low probability	✓	✓	✓	✓	✓
	Zone 2 – medium probability	✓	✓	Exception test required	✓	✓
	Zone 3a - high probability	Exception test required	✓	X	Exception test required	✓
	Zone 3b – functional flood plain	Exception test required	✓	X	X	X

Local policy and guidance

For this report, several documents have been consulted for local policy and guidance and relevant information is outlined below:

Swale Borough Council Strategic Flood Risk Assessment (Halcrow, 2009):

- In February 1953, overtopping and breaches of tidal defences occurred at Sheerness and along the western border of the Isle of Sheppey, either side of the Swale near Sittingbourne, at Warden, and around the Isle of Harty (although the Island itself was not flooded). Extensive flooding of property is known to have occurred.

- The Swale Borough historic records do not include many events classified as fluvial Most of the main rivers have at least some measure of protection along most of their length which helps prevent flooding. Also most of these rivers flow through areas where there are numerous other small watercourses and drainage ditches which can intercept and carry runoff, thus reducing the amount concentrated in the main rivers. Furthermore, most of the main rivers do not flow through built up areas so that even if the rivers do overtop their banks there is plenty of unoccupied floodplain area, where if flooding does occur it may not be noticed or reported. However, it should be noted that much of the rivers' floodplains fall within the tidal floodplain such that, in large events such as 1953 and 1978, it may be expected that the tidal flooding which occurred overwhelmed any fluvial contribution.

- Two potential groundwater flooding events have been identified from the Environment Agency database. In addition, three further incidents were recalled by Environment Agency staff.

Guidance

Strategic Flood Risk Assessments are carried out by local authorities, in consultation with the Environment Agency, to assess the flood risk to the area from all sources both now and in the future due to climate change. They are used to inform planning decisions to ensure inappropriate development is avoided (NPPF, 2018).

Environment Agency pre-application response:

The EA (2019) was contacted as part of this FloodSmart report.

However, a response was not received within the timeframe of this report.

EA Flood Risk Standing Advice for Sites located in Flood Zones 2 or 3

For all relevant vulnerable developments (i.e. more vulnerable, less vulnerable and water compatible), advice on the points should be followed:

- Surface water management;
- Access and evacuation; and
- Floor levels.

Surface water management

Plans for the management of surface water need to meet the requirements set out in either the local authority's:

- Surface water management plan where available; OR
- Strategic flood risk assessment.

They also need to meet the requirements of the approved building regulations Part H: drainage and water disposal. Read section H3 rainwater drainage.

Planning permission is required to use a material that can't absorb water (e.g. impermeable concrete) in a front garden larger than 5 square metres.

Access and evacuation

Details of emergency escape plans should be provided for any parts of a building that are below the estimated flood level:

Plans should show:

- Single storey buildings or ground floors that don't have access to higher floors can access a space above the estimated flood level, e.g. higher ground nearby;
- Basement rooms have clear internal access to an upper level, e.g. a staircase;
- Occupants can leave the building if there's a flood and there's enough time for them to leave after flood warnings.

Floor levels

The following should be provided:

- Average ground level of the building; and
- Finished floor level of the lowest habitable room in the building.

Ground floor levels should be a minimum of whichever is higher of:

- 300 millimetres (mm) above the general ground level of the site; OR
- At least 600 mm above the estimated river or sea flood level.

7. Resilience and mitigation

Based on the available information mitigation measures outlined within this section of the report are likely to help protect the development from flooding.

Rivers (fluvial) / Sea (coastal/tidal) flood mitigation measures

Table 2: Undefended Modelled Tidal Flood Levels

20 year (2012)	200 year (2012)	200 year (2070)	200 year (2115)	1000 year (2012)
3.83 mAOD	4.59 mAOD	5.05 mAOD	5.68 mAOD	4.94 mAOD

The area proposed for development is located within Flood Zone 1 and is located at a higher elevation (5.8 to 6.9 mAOD) than the 1 in 200 year (2115) modelled flood level.

Fluvial mitigation measures are therefore not considered to be required.

Surface water (pluvial) flood mitigation measures

As the proposed development area is not identified as being at risk of pluvial flooding, mitigation measures are not required.

However, the regular maintenance of any drains and culverts surrounding/on the Site should be undertaken to reduce the flood risk.

Groundwater flood mitigation measures

As the Site is not identified as being at risk of groundwater flooding, mitigation measures are not required.

Reservoir flood mitigation measures

The Site is not a risk of flooding from reservoirs, therefore mitigation measures are not required.

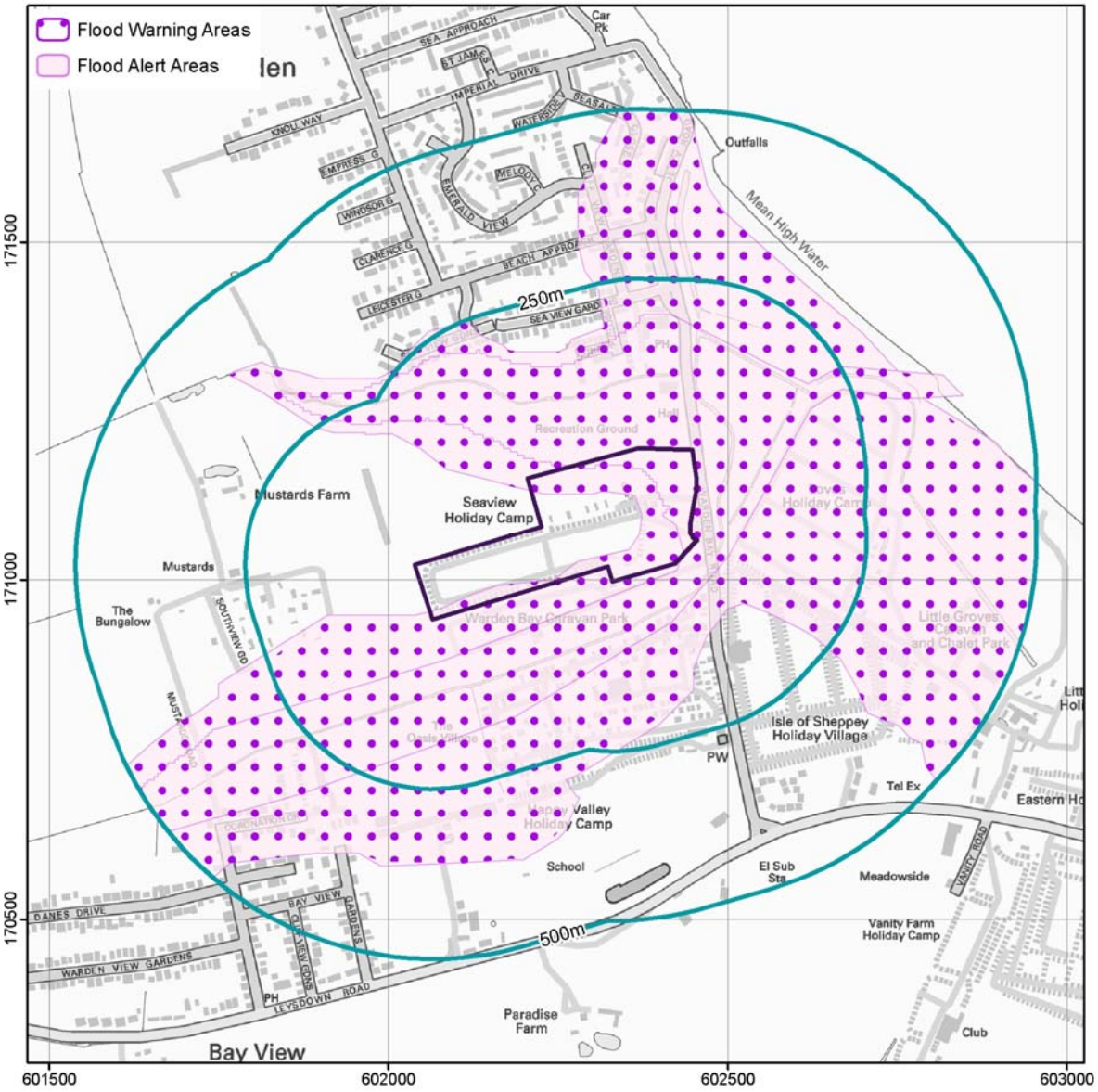
Emergency evacuation/safe access and egress routes

Flood Warnings Direct (FWD)

The EA operates a flood warning service in all areas at risk of flooding; this is available on their website: https://www.gov.uk/check-flood-risk. Flood warnings are broadcast on TV and radio weather and travel bulletins and, in designated flood warning areas, direct to the local community by siren, loudhailer or flood wardens, and in high risk areas by phone or fax. The flood warning information on the EA website is updated every 15 minutes. All warnings are also available through the EA's 24 hour Floodline Service 0345 988 1188. Furthermore, people may sign up to Flood Warnings Direct (FWD) to receive a pre-recorded flood warning message sent to their home, work or mobile phone number.

The Site is located within an EA Flood Warning Coverage area so is able to receive warnings via the EA Flood Warnings Direct Service (Figure 9). The EA aims to issue flood warnings 2 hours in advance of a flood event. Flood warnings can provide adequate time to enable protection of property and evacuation from a Site, reducing risk to life and property.

Figure 9 EA Flood Warning Coverage for the local area.



Emergency Evacuation

Where possible, a safe access and egress route with a 'very low' hazard rating from areas within the floodplain to an area wholly outside the 1 in 100 year flood event including an allowance for climate change should be demonstrated.

A flood warning would be required to trigger an evacuation with a 'very low' hazard rating from the development. Based on the EA Flood Risk Map the closest dry evacuation area within Flood Zone 1 is along Warden Bay Road (c.180 m south – direct measurement). It is advised that evacuation from the premises would be the preferred option in a flood event if safe to

do so. It is recommended that residents prepare to evacuate as soon as an EA flood warning is issued in order to completely avoid flood waters.

Principal escape route

Residents should exit the property and travel south along Warden Bay Road for 180 m. Following this route will lead residents into Flood Zone 1 into an area within a 'Very Low Hazard' rating where provisions can be made for alternative accommodation.

In total, the proposed primary evacuation route is 180 m from the Site and would take approximately 1 minute without traffic to complete by car and 4 minutes by foot. Upon inspection of OS data, the EA flood map and LiDAR data, this is considered to be the most appropriate evacuation route from the Site.

The proposed primary evacuation route utilises a public highway, which should allow for easier navigation.

On-site refuge

While defences are still operational, safe access and egress along Warden Bay Road should be available. However, in the event of a breach event, Warden Bay Road may be flooded and so occupants should take refuge in the Flood Zone 1 areas of the Site.

Other relevant information

Registration to the Environment Agency's flood warning scheme can be done by following this link: https://www.gov.uk/sign-up-for-flood-warnings.

It is recommended that main communication lines required for contacting the emergency services, electricity sockets/meters, water supply and first aid stations and supplies are not compromised by flood waters. Where possible these should all be raised above the extreme flood level.

8. Conclusions and recommendations

A VERY LOW tidal flood risk has been identified.

A VERY LOW surface water (pluvial) flood risk has been identified.

A NEGLIGIBLE groundwater flood risk has been identified.

The Site is not located in an area classified as being at risk of flooding from reservoir failure.

As the Site is located within Flood Zone 1, all types of development listed within the Table 2 of the NPPF are acceptable according to National Policy.

Providing the recommended mitigation measures are put in place it is likely that flood risk to this Site will be reduced to an acceptable level.

The table below provides a summary of where the responses to key questions are discussed in this report.

Table 9: Summary of responses to key questions in the report

Key sources of flood risks identified	Tidal (see Section 3).
Are standard mitigation measures likely to provide protection from flooding to/from the Site?	Yes (see Section 7).
Is the development likely to satisfy the requirements of the Sequential Test?	Yes (see Section 6).
Is any further work recommended?	
Recommendations for mitigation are provided below, based upon the proposed development and the flood risk to the Site: • The regular maintenance of any existing and proposed drains and culverts surrounding, or on the Site should be undertaken to reduce the flood risk caused by blockages. GeoSmart recommend that mitigation measures that have been discussed within this report are considered as part of the proposed development where possible and evidence of this is provided to the Local Authority as part of the planning application.	

9. Further information

The following table includes a list of additional products by GeoSmart:

Additional GeoSmart Products		
	Additional assessment: SuDSmart Report	The SuDSmart Report range assesses which drainage options are available for a Site. They build on technical detail starting from simple infiltration screening and work up to more complex SuDS Assessments detailing alternative options and designs. Please contact info@geosmartinfo.co.uk for further information.
	Additional assessment: EnviroSmart Report	Provides a robust desk-based assessment of potential contaminated land issues, taking into account the regulatory perspective. Our EnviroSmart reports are designed to be the most cost effective solution for planning conditions. Each report is individually prepared by a highly experienced consultant conversant with Local Authority requirements. Ideal for pre-planning or for addressing planning conditions for small developments. Can also be used for land transactions. Please contact info@geosmartinfo.co.uk for further information.

10. References and glossary

British Geological Survey (BGS) (2019). Geology of Britain Viewer. Accessed from: http://mapapps.bgs.ac.uk/geologyofbritain/home.html on 03/07/19.

Department for Communities and Local Government (2019). National Planning Policy Framework (NPPF). Accessed from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf on 03/07/19.

Defra/Environment Agency (2005). Flood Risk Assessment Guidance for New Development. *Phase 2 Framework and Guidance for Assessing and Managing Flood Risk for New Development – Fill Documentation and Tools*. R & D Technical Report FD232-/TR2.

Environment Agency [EA] (2019). MagicMap. Accessed from: http://magic.defra.gov.uk/MagicMap.aspx on 03/07/19.

Environment Agency [EA] (2019). Flood map for planning. Accessed from https://flood-map-for-planning.service.gov.uk/ on 03/07/19.

Environment Agency [EA] (2019). Long term flood risk assessment for locations in England. Accessed from https://flood-warning-information.service.gov.uk/long-term-flood-risk on 03/07/19.

GeoSmart (2019). GeoSmart groundwater flood risk (GW5) map (version 2.2).

Halcrow (2009). Swale Borough Council Strategic Flood Risk Assessment. Accessed from: https://www.swale.gov.uk/flood-risk-strategic-assessment/ on 03/07/19.

National Planning Practice Guidance (2014). Planning Practice Guidance. Flood Risk and Coastal Change. Accessed from http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/ on 03/07/19.

Ordnance Survey Mapping (2019). © Crown copyright. All rights reserved. Licence number AL 100054687. For full terms and conditions visit: www.ordnancesurveyleisure.co.uk

Survey Open Data (2019). Accessed from: http://www.geostore.com/environment-agency/survey.html#/survey/tandc on 03/07/19.

UK Flood Maps (Ambiental FTP) (2019). UKFloodMap4 Data

Glossary

General terms

BGS	British Geological Survey
EA	Environment Agency
GeoSmart groundwater flood risk model	GeoSmart's national groundwater flood risk model takes advantage of all the available data and provides a preliminary indication of groundwater flood risk on a 50m grid covering England and Wales. The model indicates the risk of the water table coming within 1 m of the ground surface for an indicative 1 in 200 year return period scenario.
Dry-Island	An area considered at low risk of flooding (e.g. In a Flood Zone 1) that is entirely surrounded by areas at higher risk of flooding (e.g. Flood Zone 2 and 3)
Flood resilience	Flood resilience of wet-proofing accepts that water will enter the building, but through careful design will minimise damage and allow the re-occupancy of the building quickly. Mitigation measures that reduce the damage to a property caused by flooding can include water entry strategies, raising electrical sockets off the floor, hard flooring.
Flood resistance	Flood resistance, or dry-proofing, stops water entering a building. Mitigation measures that prevent or reduce the likelihood of water entering a property can include raising flood levels or installation of sandbags.
Flood Zone 1	This zone has less than a 0.1% annual probability of river flooding
Flood Zone 2	This zone has between 0.1 and 1% annual probability of river flooding and between 0.1% and 0.5 % annual probability sea flooding
Flood Zone 3	This zone has more than a 1% annual probability of river flooding and 0.5% annual probability of sea flooding
Functional Flood Plain	An area of land where water has to flow or be stored in times of flood.
Hydrologic model	A computer model that simulates surface run-off or fluvial flow. The typical accuracy of hydrologic models such as this is ±0.25m for estimating flood levels at particular locations.
OS	Ordnance Survey
Residual Flood Risk	The flood risk remaining after taking mitigating actions.
SFRA	Strategic Flood Risk Assessment. This is a brief flood risk assessment provided by the local council
SuDS	A Sustainable drainage system (SuDS) is designed to replicate, as closely as possible, the natural drainage from the Site (before development) to ensure that the flood risk downstream of the Site does not increase as a result of the land being developed. SuDS also significantly improve the quality of water leaving the Site and can also improve the amenity and biodiversity that a site has to offer. There are a range of SuDS options available to provide effective surface water management that intercept and store excess run-off. Sites over 1 Ha will usually require a sustainable drainage assessment if planning permission is required. The current proposal is that from April 2014 for more than a single dwelling the drainage system will require approval from the SuDS Approval Board (SABs).

Aquifer Types

Principal aquifer	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale..
Secondary A aquifer	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
Secondary B aquifer	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.
Secondary undifferentiated	Has been assigned in cases where it has not been possible to attribute either category A or B to a rock type due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that has negligible significance for water supply or river base flow.

NPPF (2019) terms

Exception test	Applied once the sequential test has been passed. For the exception test to be passed it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk and a site-specific FRA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
Sequential test	Aims to steer new development to areas with the lowest probability of flooding.
Essential infrastructure	Essential infrastructure includes essential transport infrastructure, essential utility infrastructure and wind turbines.
Water compatible	Water compatible land uses include flood control infrastructure, water-based recreation and lifeguard/coastal stations.
Less vulnerable	Less vulnerable land uses include police/ambulance/fire stations which are not required to be operational during flooding and buildings used for shops/financial/professional/other services.
More vulnerable	More vulnerable land uses include hospitals, residential institutions, buildings used for dwelling houses/student halls/drinking establishments/hotels and sites used for holiday or short-let caravans and camping.
Highly vulnerable	Highly vulnerable land uses include police/ambulance/fire stations which are required to be operational during flooding, basement dwellings and caravans/mobile homes/park homes intended for permanent residential use.

Appendices

Appendix A

Site plans

0 25 50 75 100 125 150

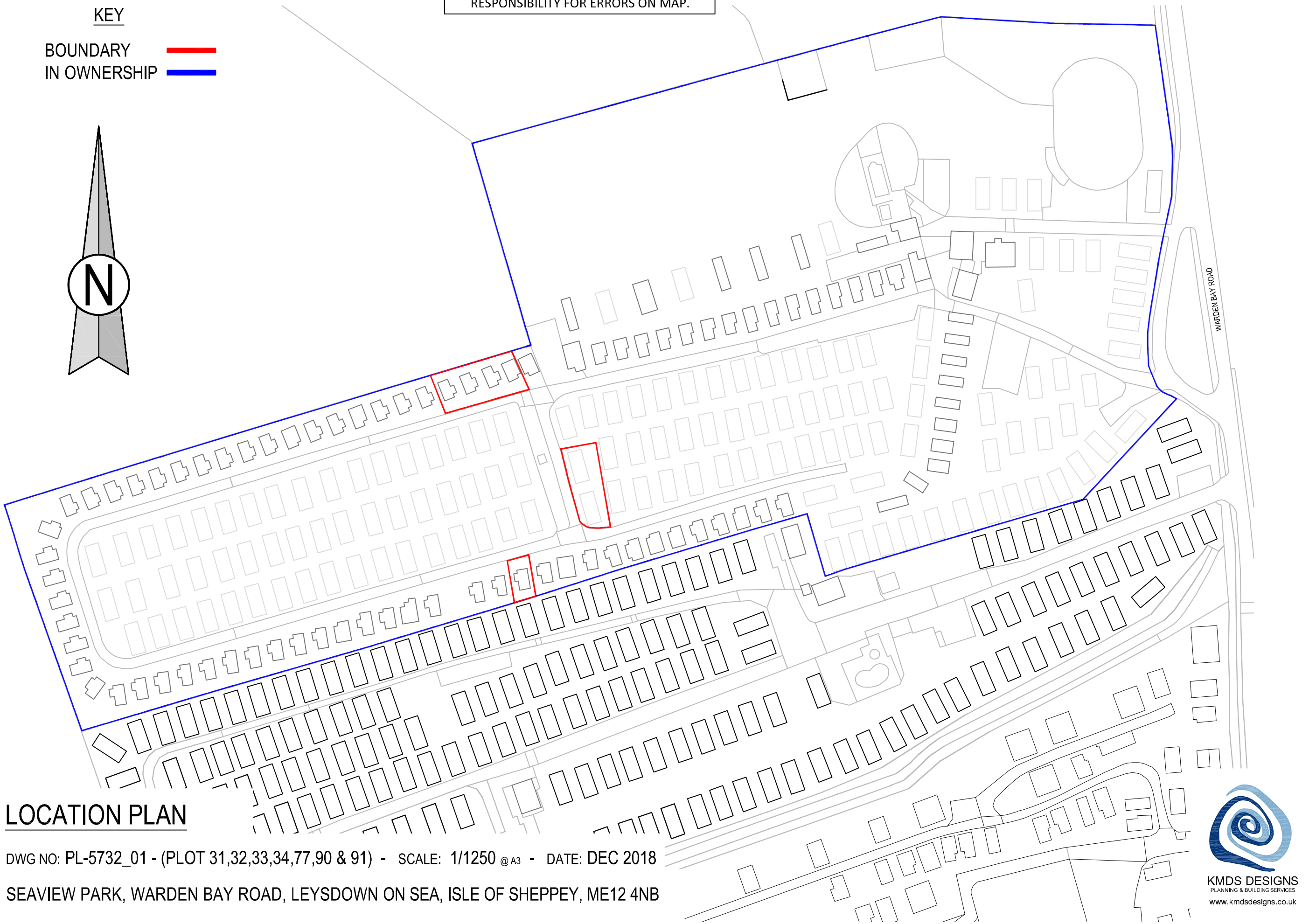
PLEASE NOTE THE LOCATION MAP HAS BEEN BASED ON A CENTREMAPS LIVE MAP AND IS NOT BASED ON A TOPOGRAPHICAL SURVEY. DESIGNER WILL NOT ACCEPT ANY RESPONSIBILITY FOR ERRORS ON MAP.

KEY

BOUNDARY

IN OWNERSHIP

N



LOCATION PLAN

DWG NO: PL-5732_01 - (PLOT 31,32,33,34,77,90 & 91) - SCALE: 1/1250 @ A3 - DATE: DEC 2018

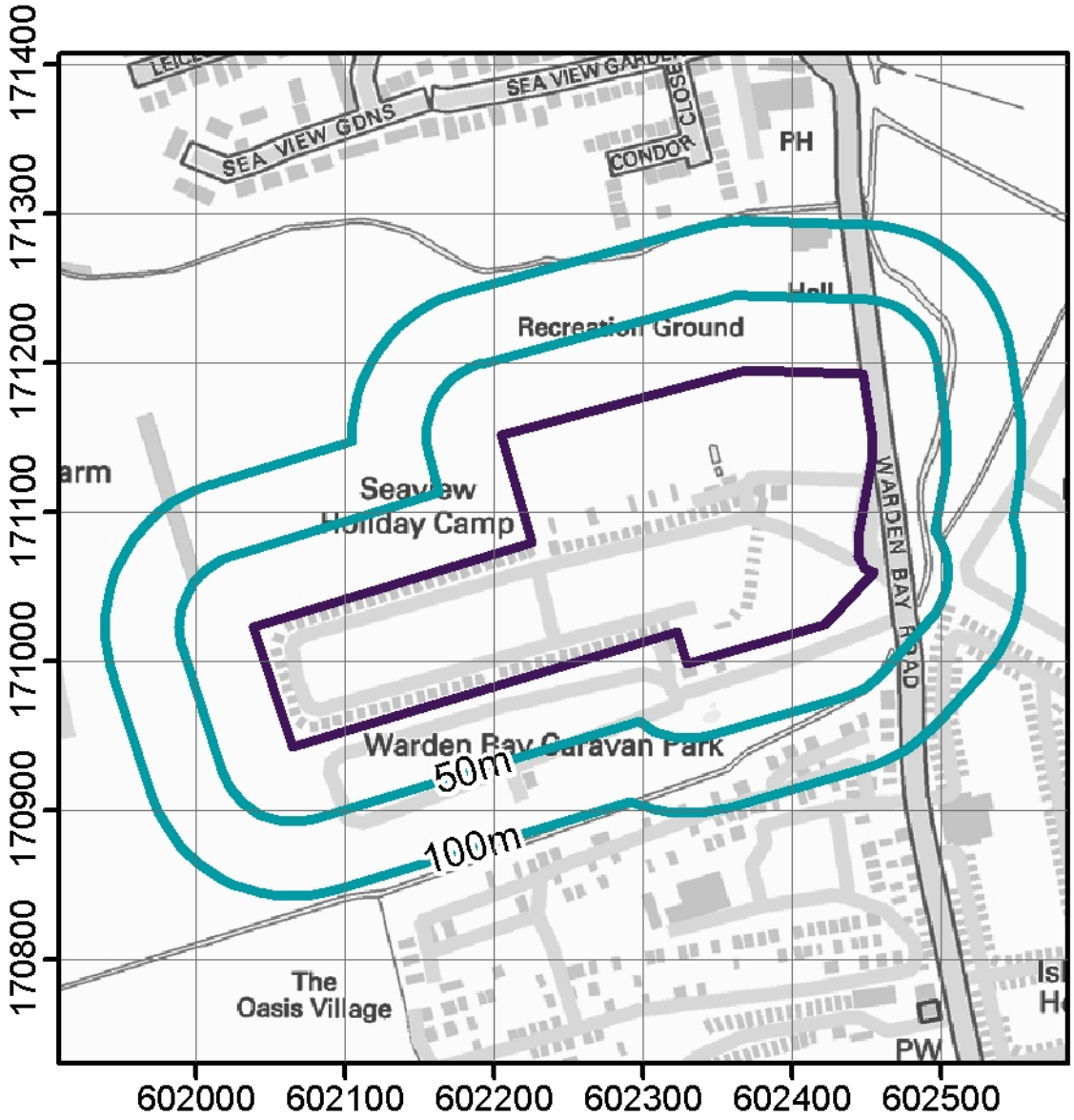
SEAVIEW PARK, WARDEN BAY ROAD, LEYSDOWN ON SEA, ISLE OF SHEPPEY, ME12 4NB

KMDS DESIGNS
PLANNING & BUILDING SERVICES
www.kmdsdesigns.co.uk

Appendix B

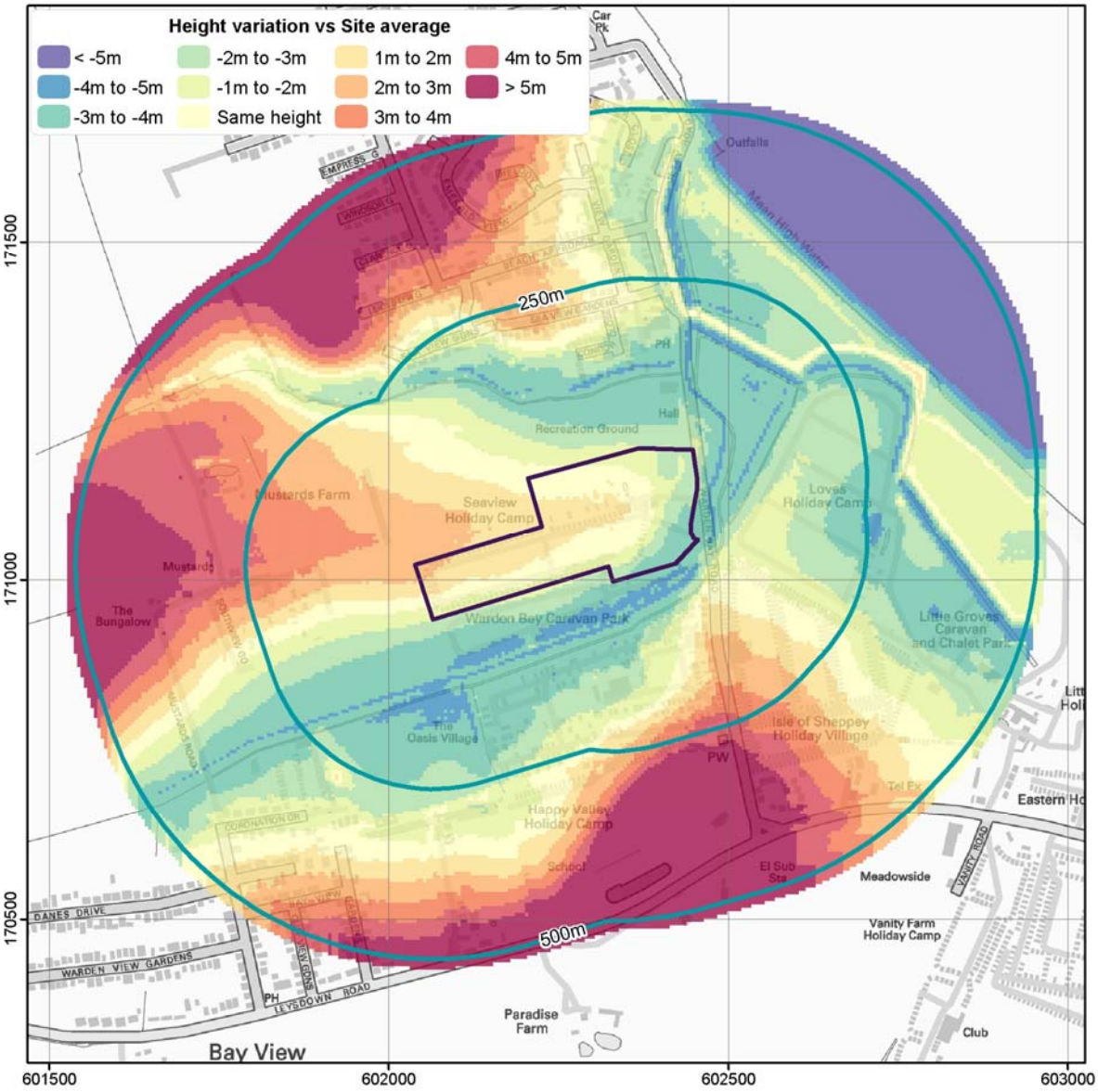
Commercial flood mapping

Site Location Plan (OS, 2019)

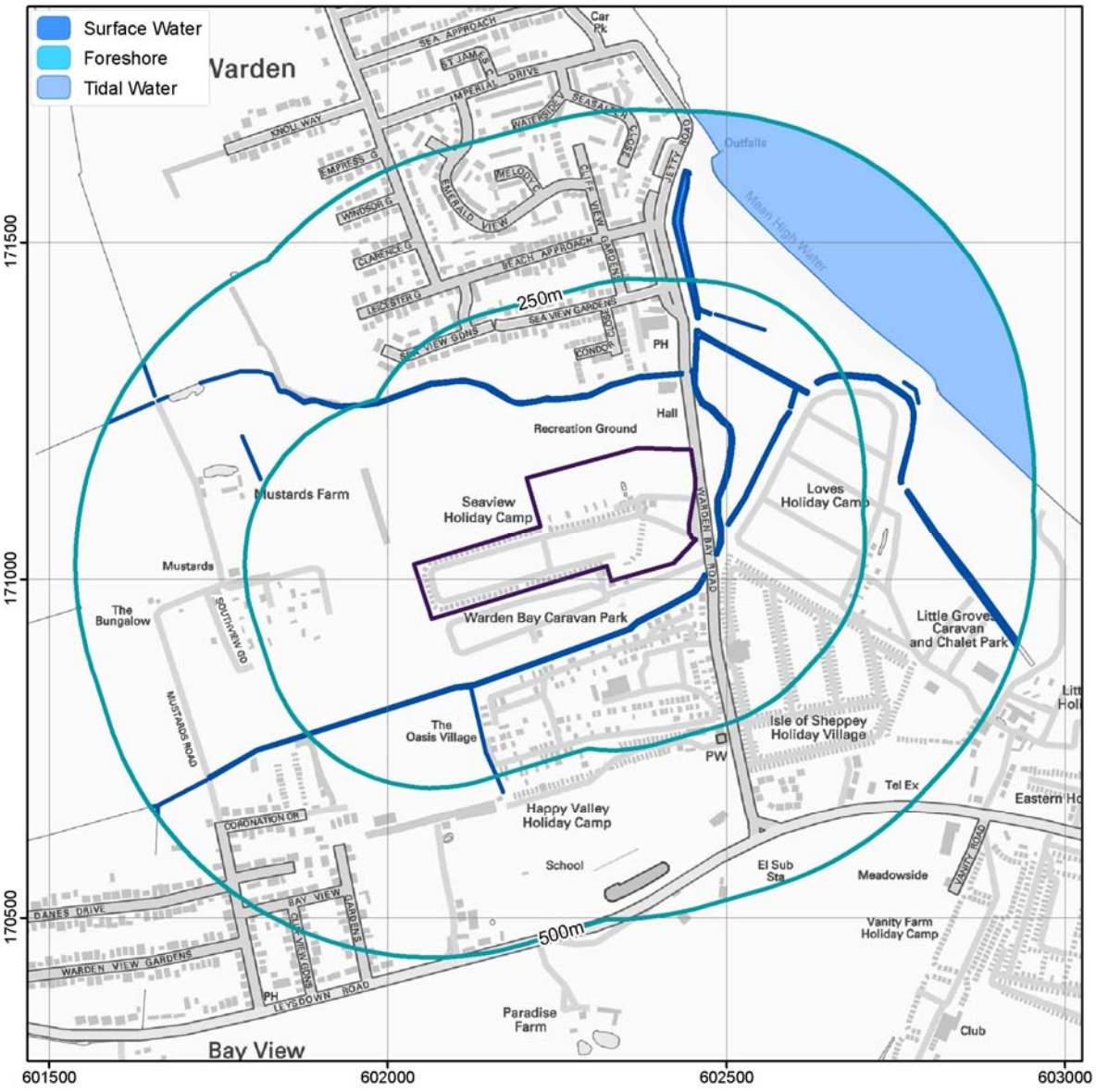


Aerial Photograph (BlueSky, 2019)

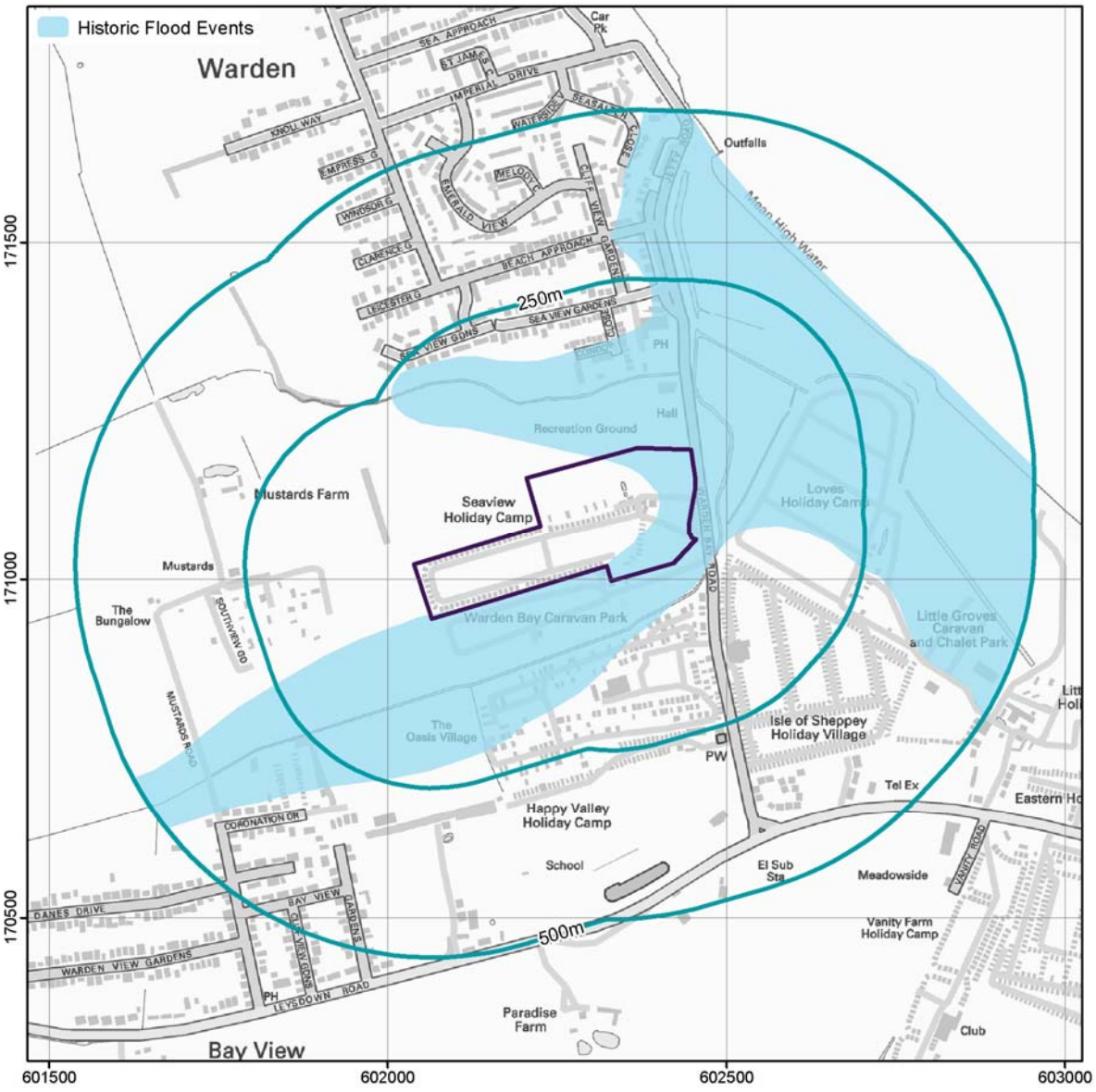
GeoSmart DTM5 (5m) map (EA, 2019)



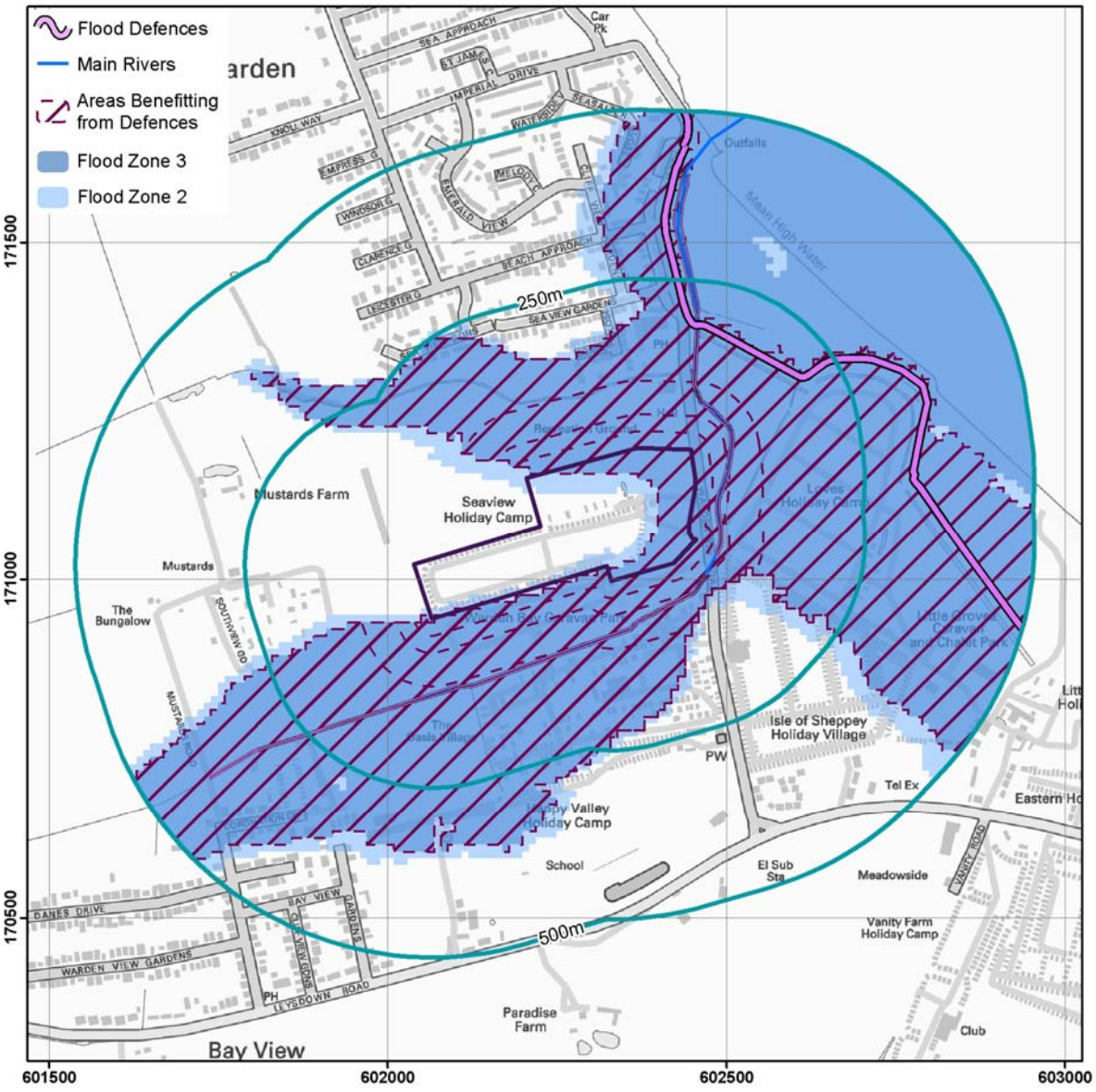
Ordnance Survey Surface Water Feature Vector Map (OS, 2019)



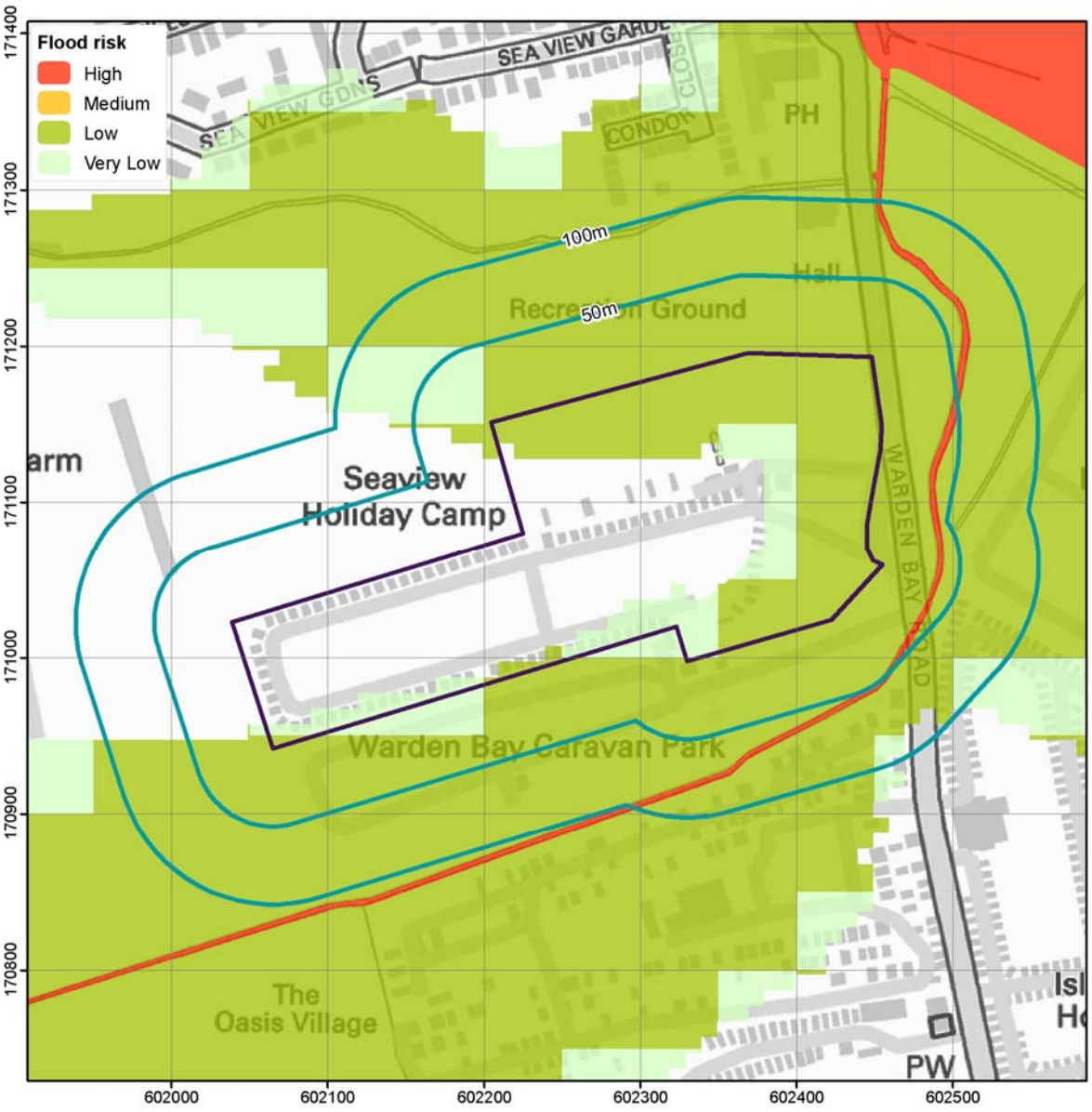
Environment Agency Historic Flood Map (EA, 2019)



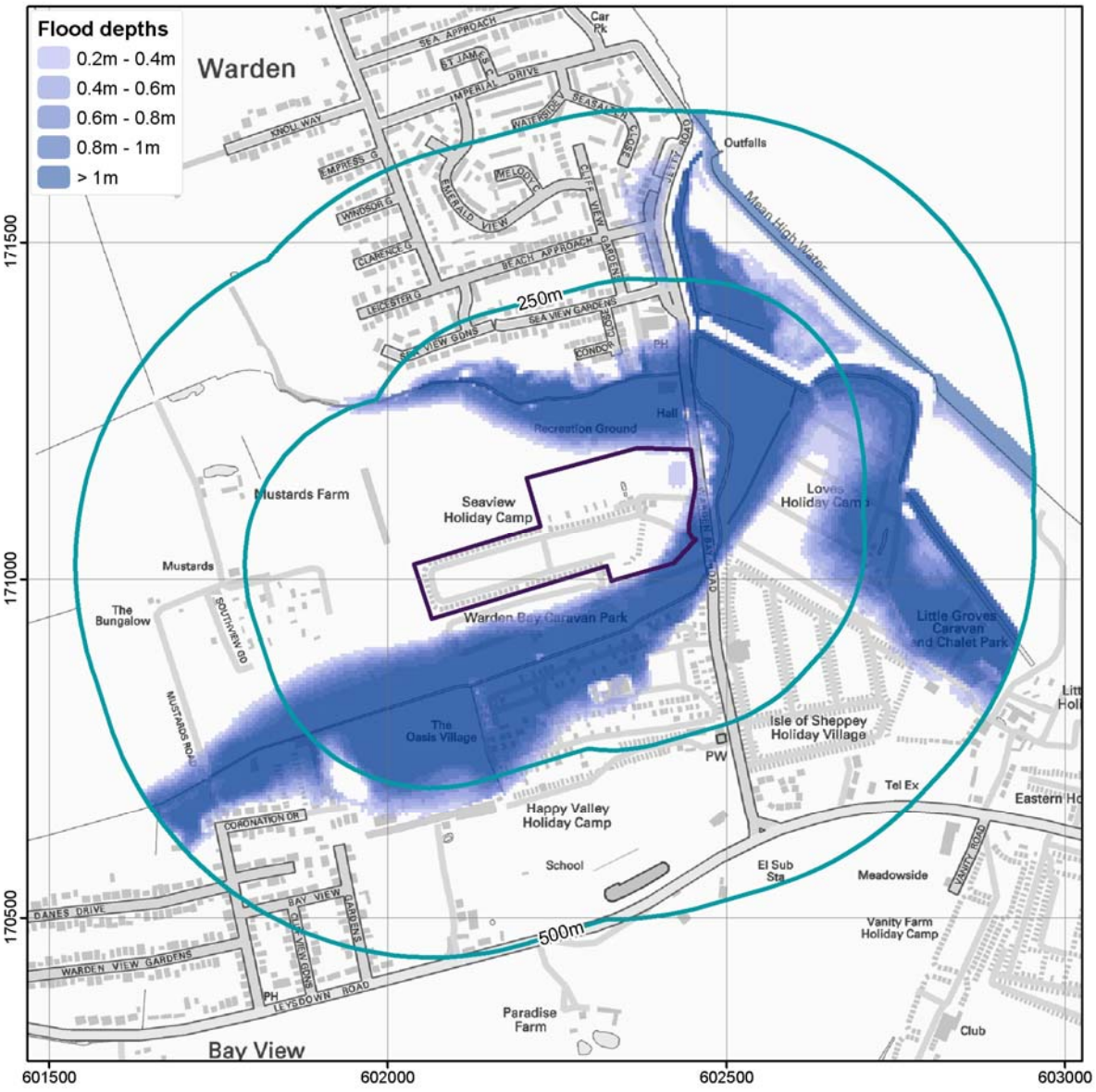
Environment Agency's Flood Map for Planning Purposes (EA, 2019)



Environment Agency's Flood Risk from Rivers and Sea map (EA, 2019)

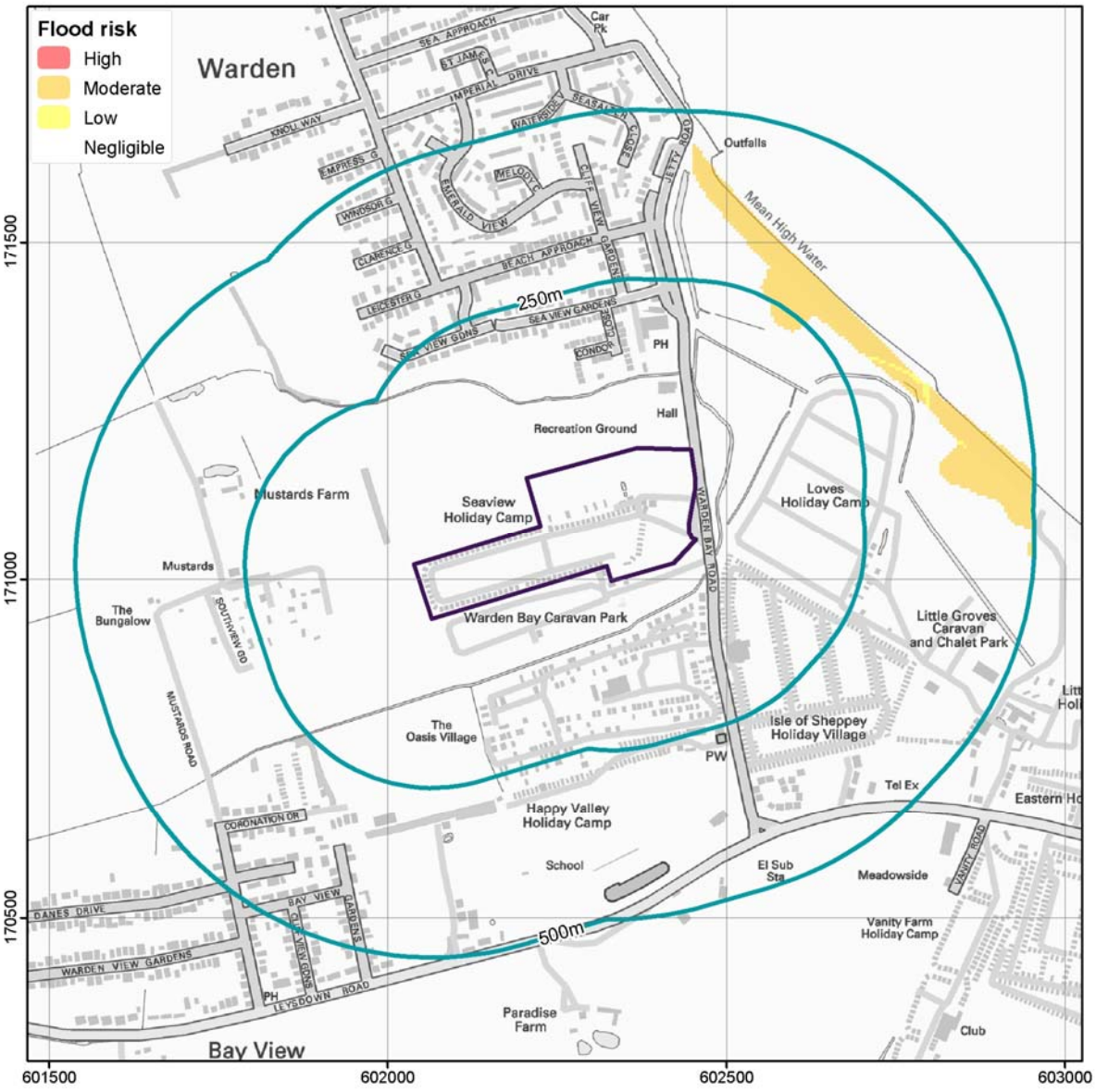


UKFloodMap4TM 1 in 100 year Fluvial/Tidal Flood Depth Map (Ambiental, 2019)

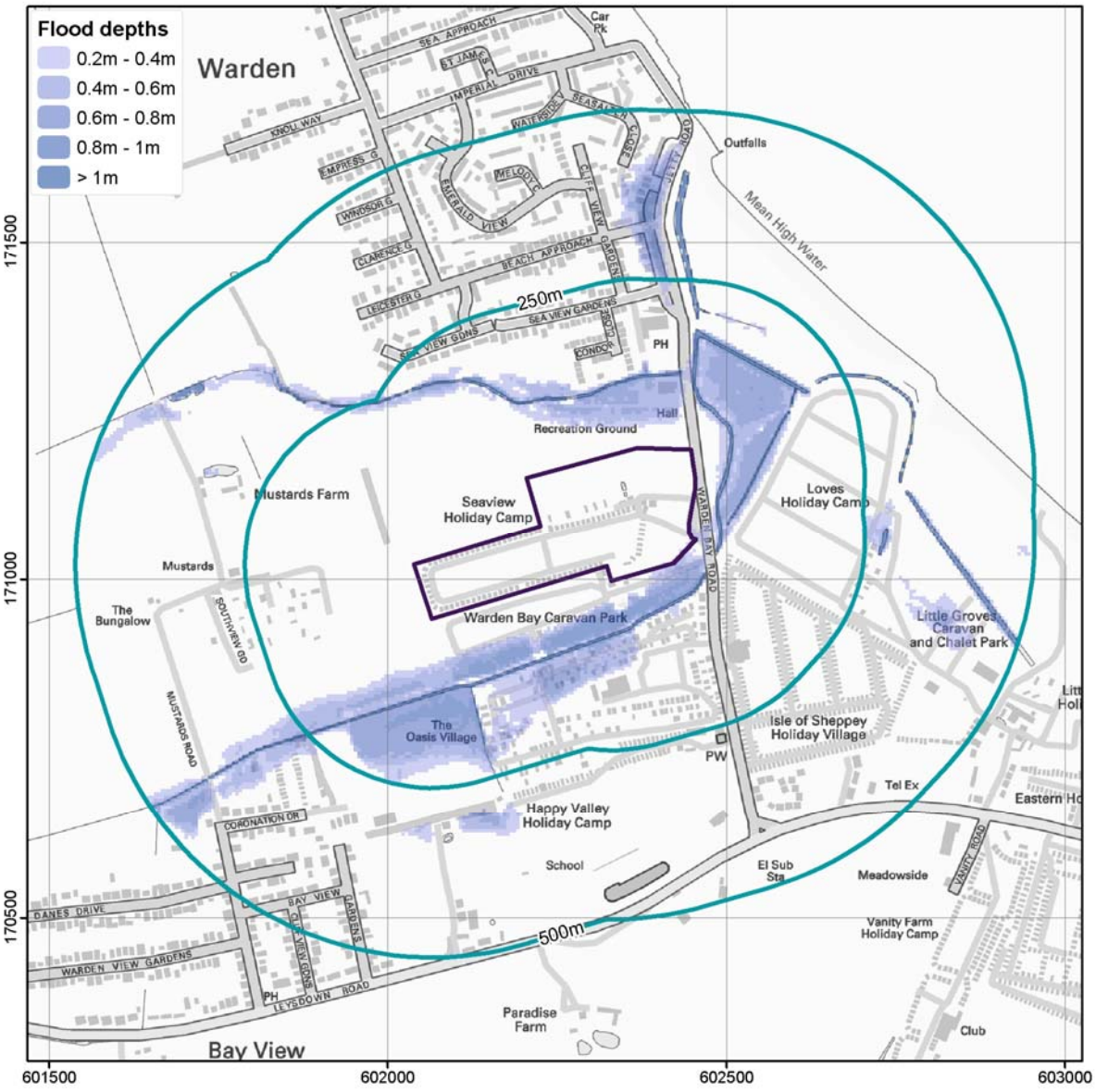


Contains Ordnance Survey data © Crown copyright and database right 2019
Contains Ambiental UKFloodMap4TM data 2019

GeoSmart Groundwater Flood Risk (GW5, v2.2) Map (GeoSmart, 2019)



UKFloodMap4^{TM} Pluvial 1 in 75 year Pluvial Flood Depth Map (Ambiental, 2019)



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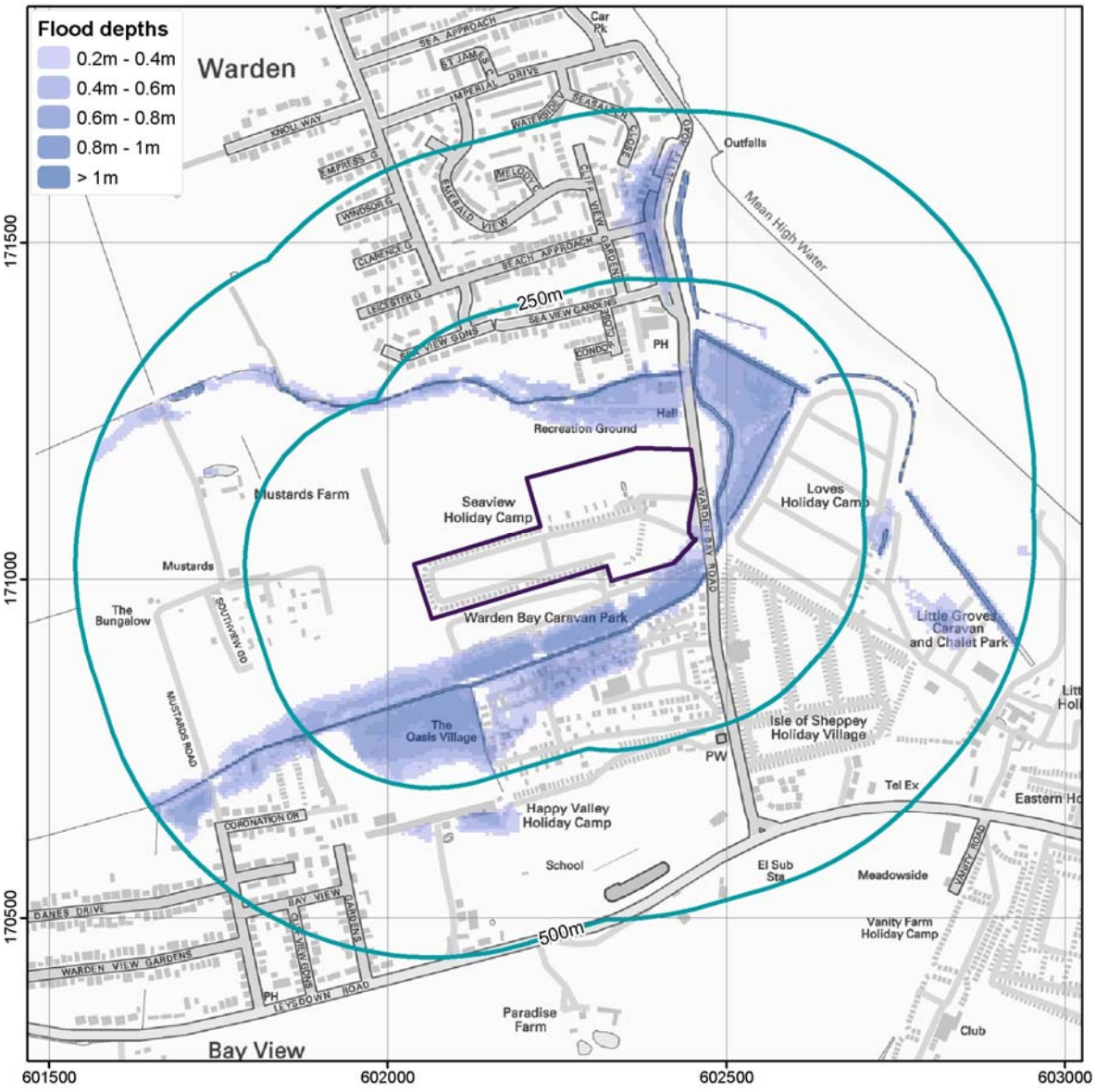
Contains Ambiental UKFloodMap4^{TM} data 2019

UKFloodMap4TM Pluvial 1 in 100 year Pluvial Flood Depth Map (Ambiental, 2019)



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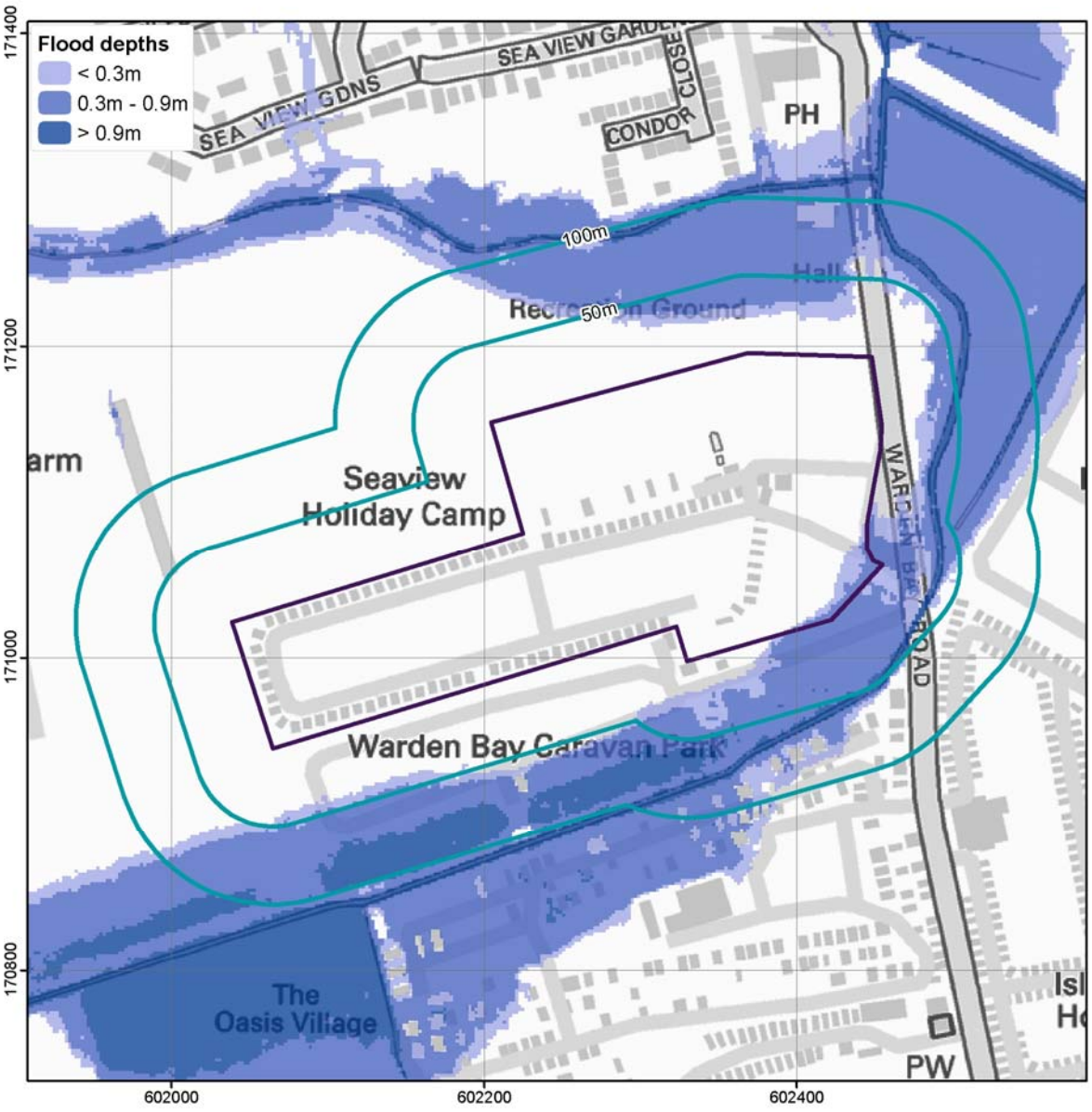
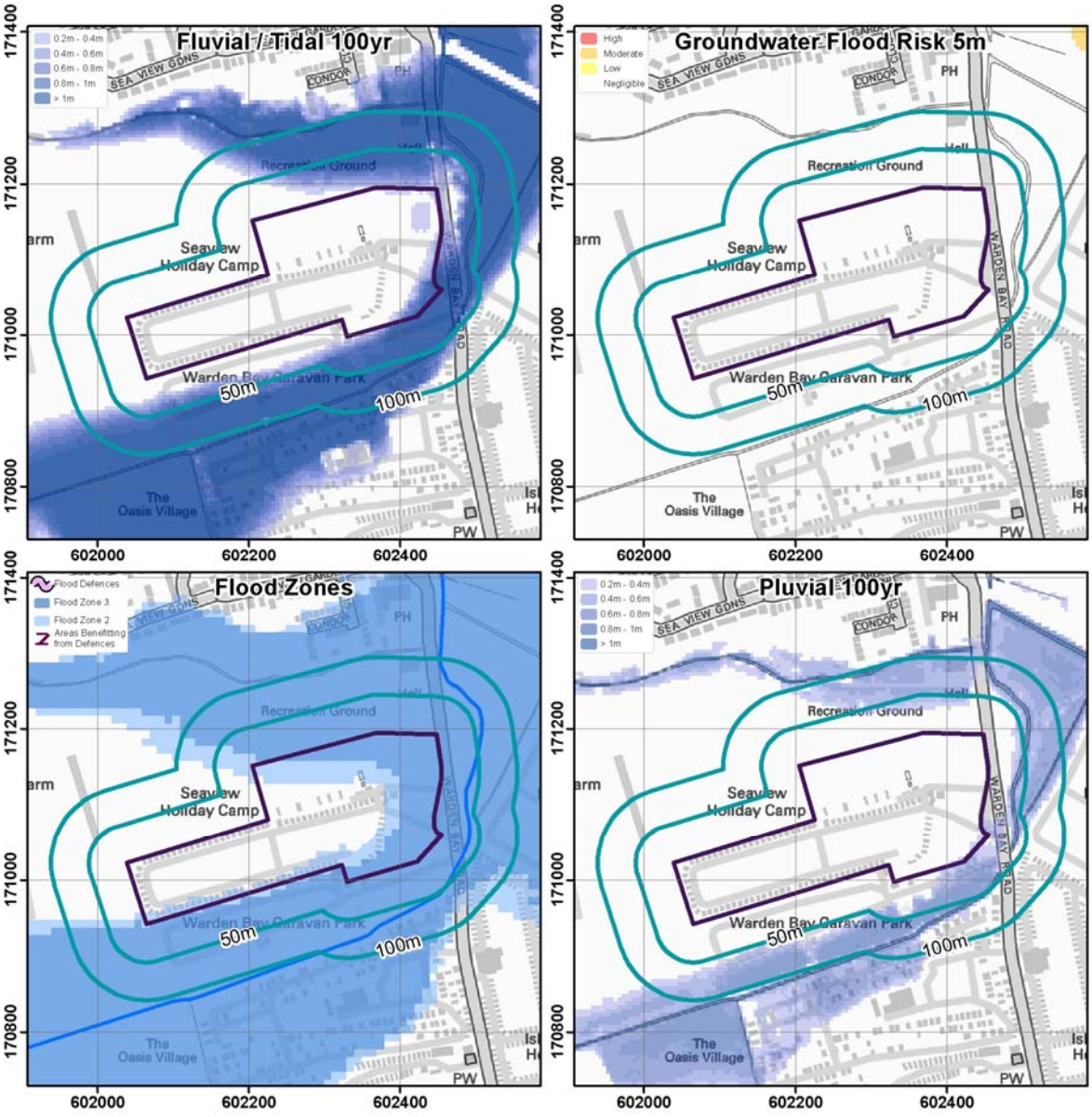
Contains Ambiental UKFloodMap4^{TM} data 2019

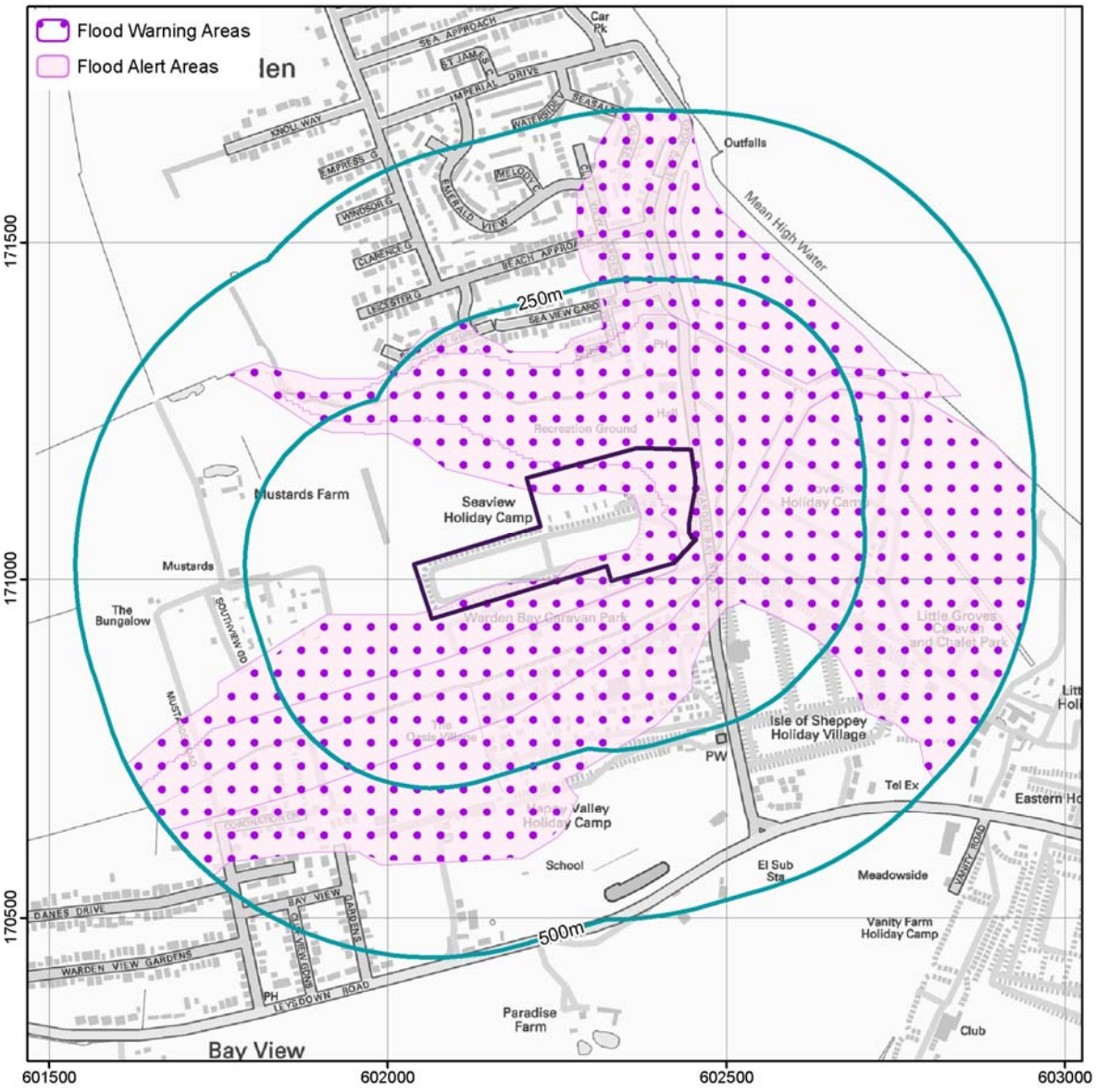
EA Risk of Flooding Surface Water (pluvial) Depth map 1 in 100 year (EA, 2019)



Quad Map (EA and Ambiental Data, 2019)



Environment Agency Flood Alert and Flood Warning Areas Map (EA, 2019)



Appendix C

Environment Agency data

Product 4 (Detailed Flood Risk) for: Seaview Park, Warden Bay Road, Sheerness, ME12 4NB
Requested by: Sarah Sculley
Reference: KSL 129201 KB
Date: 10 June 2019

Contents

The information provided is based on the best data available as of the date of this letter.

You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made to the data for this location. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Flood Map Confirmation

The Flood Map:

Our Flood Map shows the natural floodplain for areas at risk from river and tidal flooding. The floodplain is specifically mapped ignoring the presence and effect of defences. Although flood defences reduce the risk of flooding they cannot completely remove that risk as they may be over topped or breached during a flood event.

The Flood Map indicates areas with a 1% (0.5% in tidal areas), Annual Exceedance Probability (AEP) - the probability of a flood of a particular magnitude, or greater, occurring in any given year, and a 0.1% AEP of flooding from rivers and/or the sea in any given year. The map also shows the location of some flood defences and the areas that benefit from them.

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time, taking into account historic flooding and local knowledge. The Flood Map is updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet at www.gov.uk/prepare-for-a-flood.

At this Site:

The Flood Map shows that this site lies within the outline of the 0.5% chance of flooding in any given year from the sea.

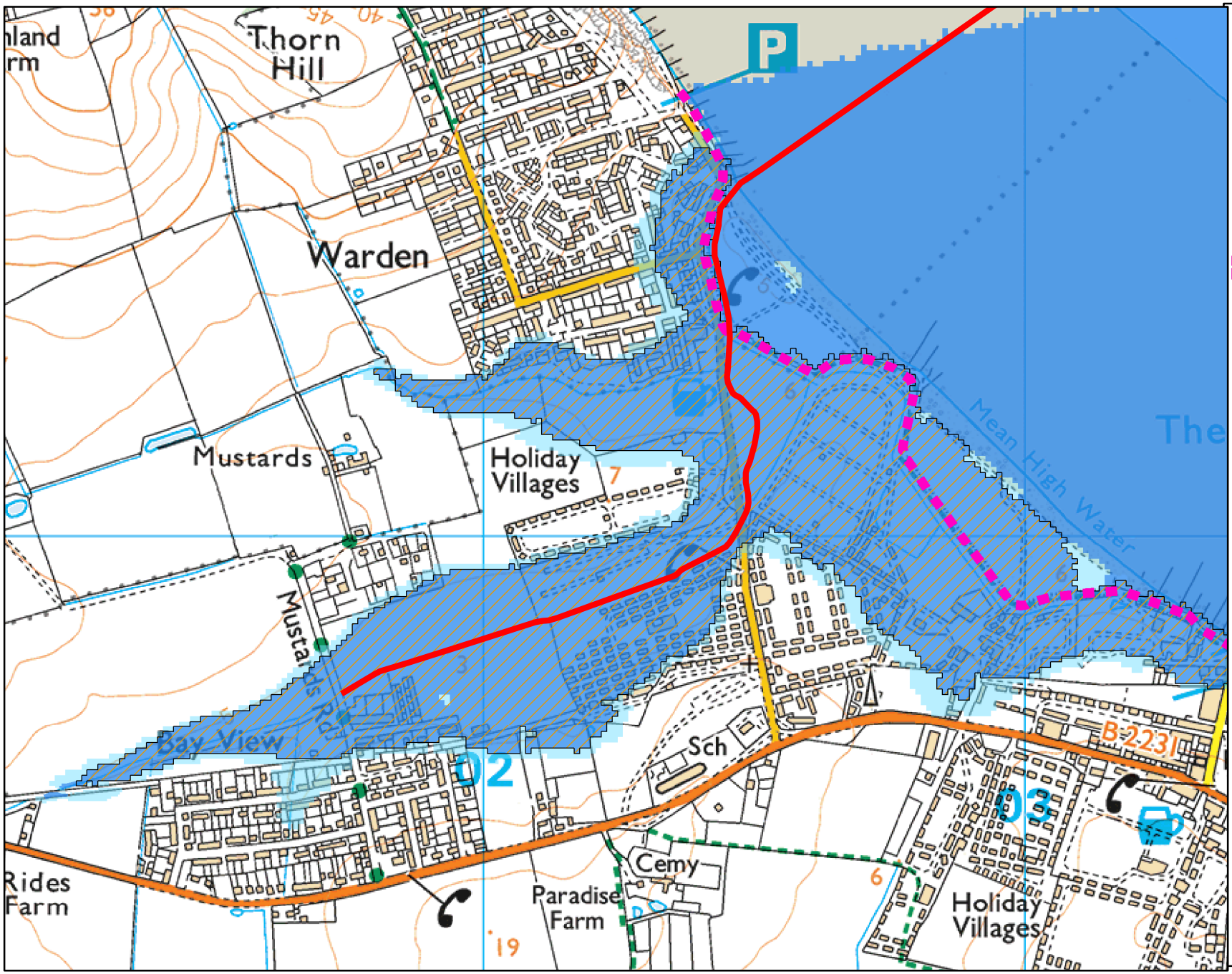
Enclosed is an extract of our Flood Map which shows this information for your area.

Method of production

The Flood Map at this location has been derived using detailed tidal modelling of the North Kent Coast, completed in August 2015.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Flood Map centred on Seaview Park, Warden Bay Road, Leysdown ME12 4NB
Created 10/06/2019 (Ref KSL 129201KB)



Environment Agency

N

Legend

- Main Rivers
- Flood Defences
- Flood Storage Area
- Areas Benefiting From Flood Defence
- Flood Zone 3
- Flood Zone 2

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

0 250 500

Meters

Scale 1:10,000

Contact us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506. Email:enquiries@environment-agency.gov.uk

Model Output Data

You have requested flood levels for various return periods at this location.

The modelled flood levels for the closest most appropriate model grid cells, any additional information you may need to know about the modelling from which they are derived and/or any specific use or health warning for their use are set out below.

Using a 2D TuFLOW model the floodplain has been represented as a grid. The flood water levels have been calculated for each grid cell.

A map showing the location of the points from which the data is taken is enclosed. Please note you should read the notice enclosed for your specific use rights.

Table 1: Defended Modelled Tidal Flood levels for Annual Exceedance Probability shown in mAOD

Modelled Node Id	National Grid Reference		Defended Scenario - Still Water						Defended Scenario - Wave Overtopping				
	Eastings	Northings	5% AEP (2012)	1.3% AEP (2012)	0.5% AEP (2012)	0.5% AEP (2070)	0.5% AEP (2115)	0.1% AEP (2012)	5% AEP (2012)	1.3% AEP (2012)	0.5% AEP (2012)	0.5% AEP (2115)	0.1% AEP (2012)
1	602102	170903	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	602127	170903	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	602152	170903	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	602077	170928	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	602102	170928	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	602127	170928	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	602152	170928	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	602177	170928	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	602202	170928	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

10	602127	170953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	602152	170953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	602177	170953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	602202	170953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	602227	170953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	602252	170953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	602277	170953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	602227	170978	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	602252	170978	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	602277	170978	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	602302	170978	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	602327	170978	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	602352	170978	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	602302	171003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	602327	171003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	602352	171003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	602377	171003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	602402	171003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	602352	171028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	602377	171028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	602402	171028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	602427	171028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	602452	171028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	602402	171053	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	602427	171053	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	602452	171053	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	602402	171078	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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37	602427	171078	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	602402	171103	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	602427	171103	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	602402	171128	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	602427	171128	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	602452	171128	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43	602227	171153	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	602252	171153	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	602277	171153	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	602302	171153	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47	602327	171153	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	602377	171153	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49	602402	171153	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	602427	171153	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	602302	171178	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	602327	171178	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	602352	171178	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	602377	171178	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	602402	171178	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	602427	171178	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Table 2: Undefended Modelled Tidal Flood levels for Annual Exceedance Probability shown in mAOD

Modelled Node Id	National Grid Reference		Undefended Scenario				
	Eastings	Northings	5% AEP (2012)	0.5% AEP (2012)	0.5% AEP (2070)	0.5% AEP (2115)	0.1% AEP (2012)
1	602102	170903	3.83	4.58	5.05	5.68	4.94
2	602127	170903	3.83	4.58	5.05	5.68	4.94
3	602152	170903	3.83	4.58	5.05	5.68	4.94
4	602077	170928	0.00	4.58	5.05	5.68	4.94
5	602102	170928	0.00	4.58	5.05	5.68	4.94
6	602127	170928	3.83	4.58	5.05	5.68	4.94
7	602152	170928	3.83	4.58	5.05	5.68	4.94
8	602177	170928	3.83	4.58	5.05	5.68	4.94
9	602202	170928	3.83	4.58	5.05	5.68	4.94
10	602127	170953	0.00	0.00	5.05	5.68	4.94
11	602152	170953	0.00	0.00	5.05	5.68	4.94
12	602177	170953	0.00	4.58	5.05	5.68	4.94
13	602202	170953	0.00	4.58	5.05	5.68	4.94
14	602227	170953	0.00	4.58	5.05	5.68	4.93
15	602252	170953	3.83	4.58	5.05	5.68	4.93
16	602277	170953	3.83	4.58	5.05	5.68	4.93
17	602227	170978	0.00	0.00	0.00	5.68	0.00
18	602252	170978	0.00	4.58	5.05	5.68	4.93
19	602277	170978	0.00	4.58	5.05	5.68	4.93
20	602302	170978	3.83	4.57	5.05	5.67	4.92
21	602327	170978	3.83	4.57	5.05	5.67	4.92
22	602352	170978	3.82	4.57	5.05	5.67	4.92

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23	602302	171003	0.00	0.00	5.05	5.67	4.92
24	602327	171003	0.00	4.57	5.05	5.67	4.92
25	602352	171003	0.00	4.57	5.05	5.67	4.92
26	602377	171003	3.82	4.57	5.05	5.67	4.91
27	602402	171003	3.82	4.57	5.05	5.67	4.91
28	602352	171028	0.00	0.00	0.00	5.67	0.00
29	602377	171028	0.00	0.00	5.05	5.67	0.00
30	602402	171028	3.82	4.57	5.05	5.67	4.91
31	602427	171028	3.82	4.57	5.05	5.67	4.91
32	602452	171028	3.82	4.57	5.05	5.67	4.91
33	602402	171053	0.00	4.57	5.05	5.67	4.91
34	602427	171053	3.82	4.56	5.05	5.67	4.91
35	602452	171053	3.82	4.56	5.05	5.67	4.91
36	602402	171078	0.00	0.00	0.00	5.67	0.00
37	602427	171078	0.00	4.56	5.05	5.67	4.91
38	602402	171103	0.00	0.00	0.00	5.67	0.00
39	602427	171103	0.00	4.56	5.05	5.67	4.91
40	602402	171128	0.00	0.00	0.00	5.67	0.00
41	602427	171128	0.00	0.00	5.05	5.67	4.91
42	602452	171128	3.82	4.56	5.05	5.67	4.91
43	602227	171153	0.00	0.00	0.00	5.67	0.00
44	602252	171153	0.00	0.00	0.00	5.67	0.00
45	602277	171153	0.00	0.00	0.00	5.67	0.00
46	602302	171153	0.00	0.00	0.00	5.67	0.00
47	602327	171153	0.00	0.00	0.00	5.67	0.00
48	602377	171153	0.00	0.00	0.00	5.67	0.00
49	602402	171153	0.00	0.00	5.05	5.67	4.91
50	602427	171153	0.00	4.56	5.05	5.67	4.91
51	602302	171178	0.00	4.56	5.05	5.67	4.92

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
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52	602327	171178	0.00	4.56	5.05	5.67	4.92
53	602352	171178	0.00	4.56	5.05	5.67	4.91
54	602377	171178	0.00	0.00	5.05	5.67	4.91
55	602402	171178	0.00	4.56	5.05	5.67	4.91
56	602427	171178	0.00	4.56	5.05	5.67	4.91

Values of 0.00 indicate locations at which the selected points lie outside of a particular modelled flood extent.

Data taken from North Kent Coast Modelling and Mapping Study, completed by JBA Consulting, in August 2015.

There are no health warnings or additional information for these levels or the model from which they were produced.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
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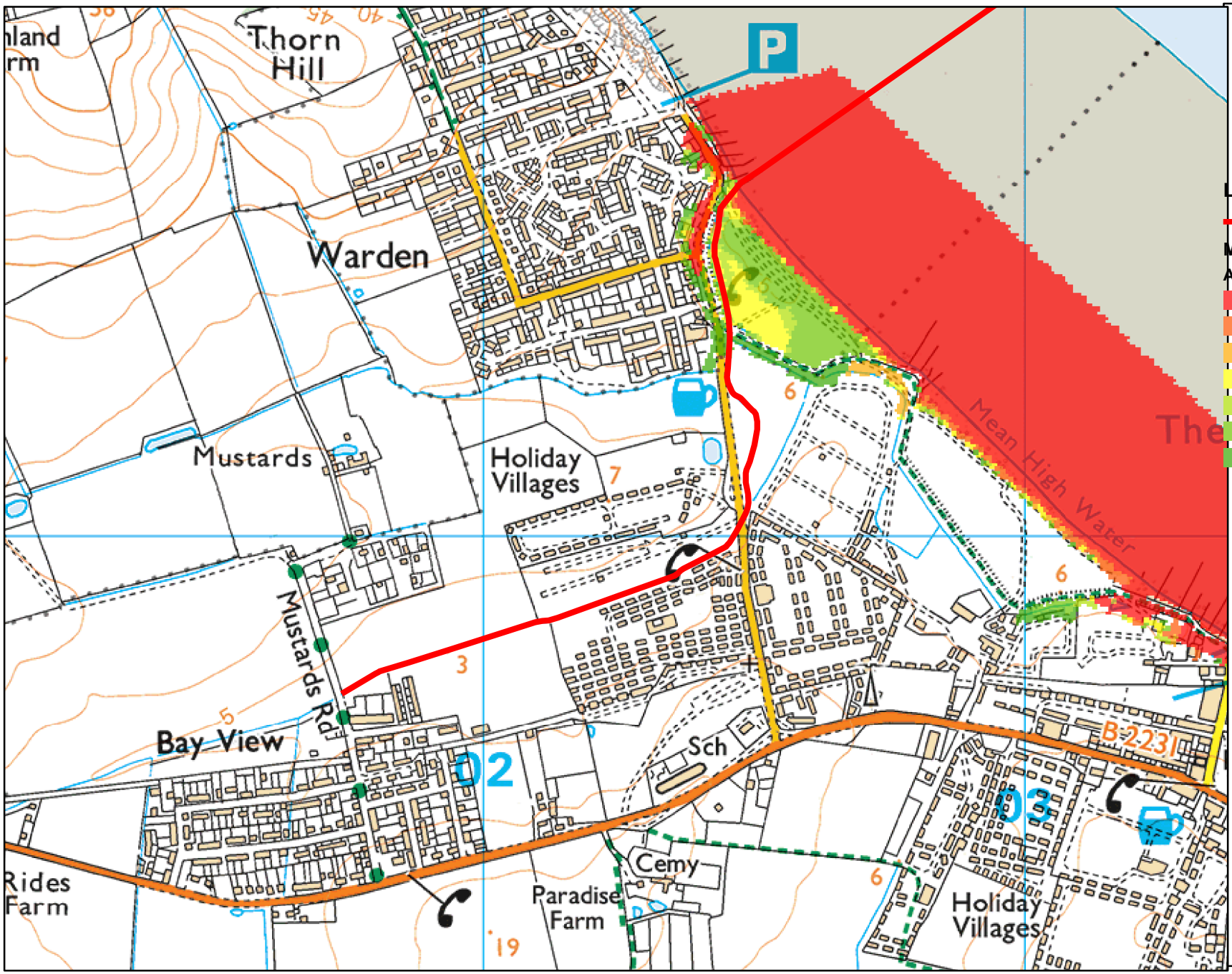
Modelled Extent Event Map centred on Seaview Park, Warden Bay Road, Leysdown ME12 4NB
Created 10/06/2019 (Ref KSL 129201KB)



Environment Agency

N

Legend

- Main Rivers

Maximum Defended 2016 Flood Extents

AEP (%)

- 20% AEP extent
- 5% AEP extent
- 3.33% AEP extent
- 2% AEP extent
- 1.33% AEP extent
- 0.5% AEP extent
- 0.1% AEP extent

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

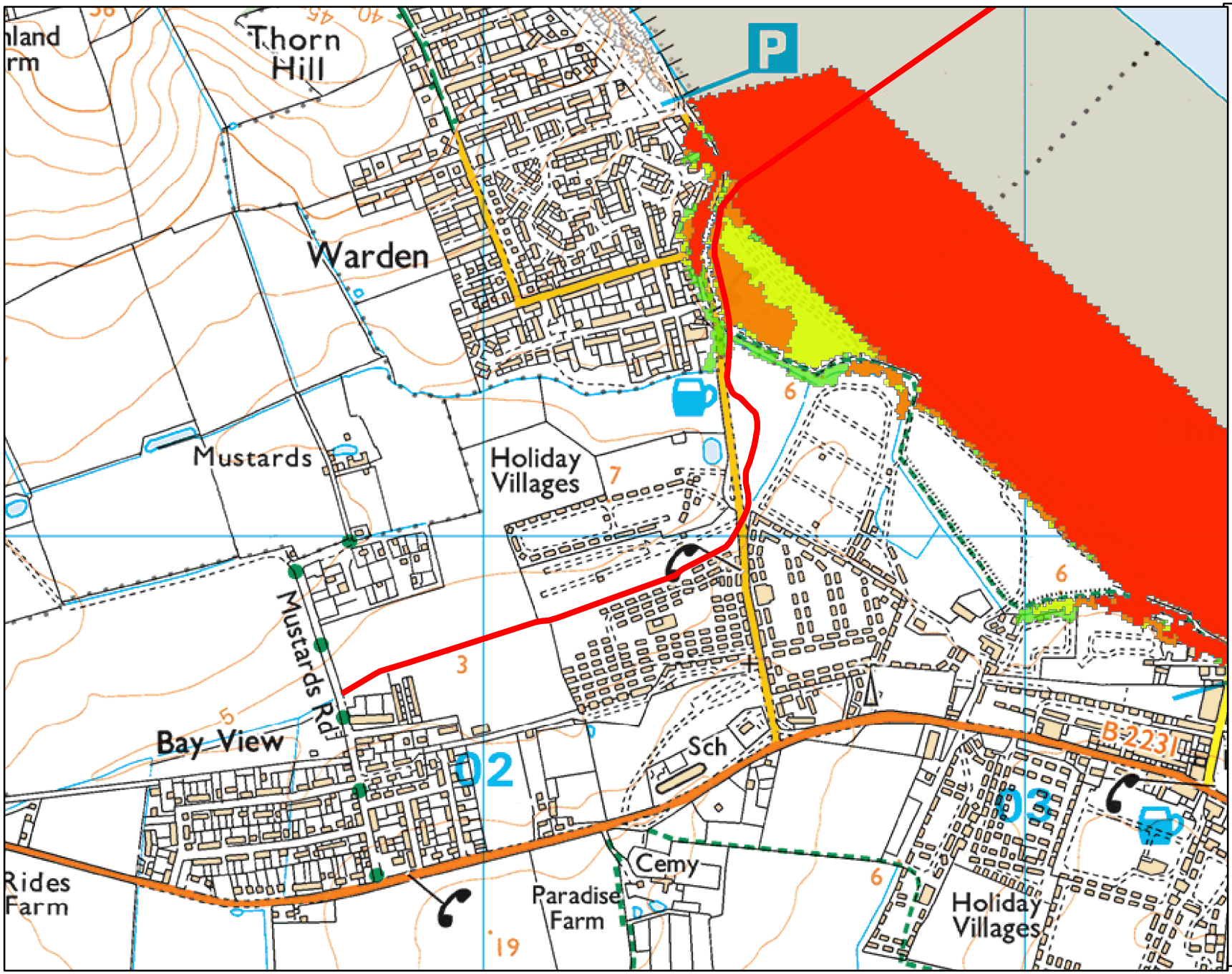
0 250 500

Meters

Scale 1:10,000

Contact us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506. Email:enquiries@environment-agency.gov.uk

Modelled Extent Event Map centred on Seaview Park, Warden Bay Road, Leysdown ME12 4NB
Created 10/06/2019 (Ref KSL 129201KB)



Environment Agency

N

Legend

- Main Rivers
- Defended WO 5% AEP 2016
- Defended WO 1.33% AEP 2016
- Defended WO 0.5% AEP 2016
- Defended WO 0.1% AEP 2016

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

0 250 500

Meters

Scale 1:10,000

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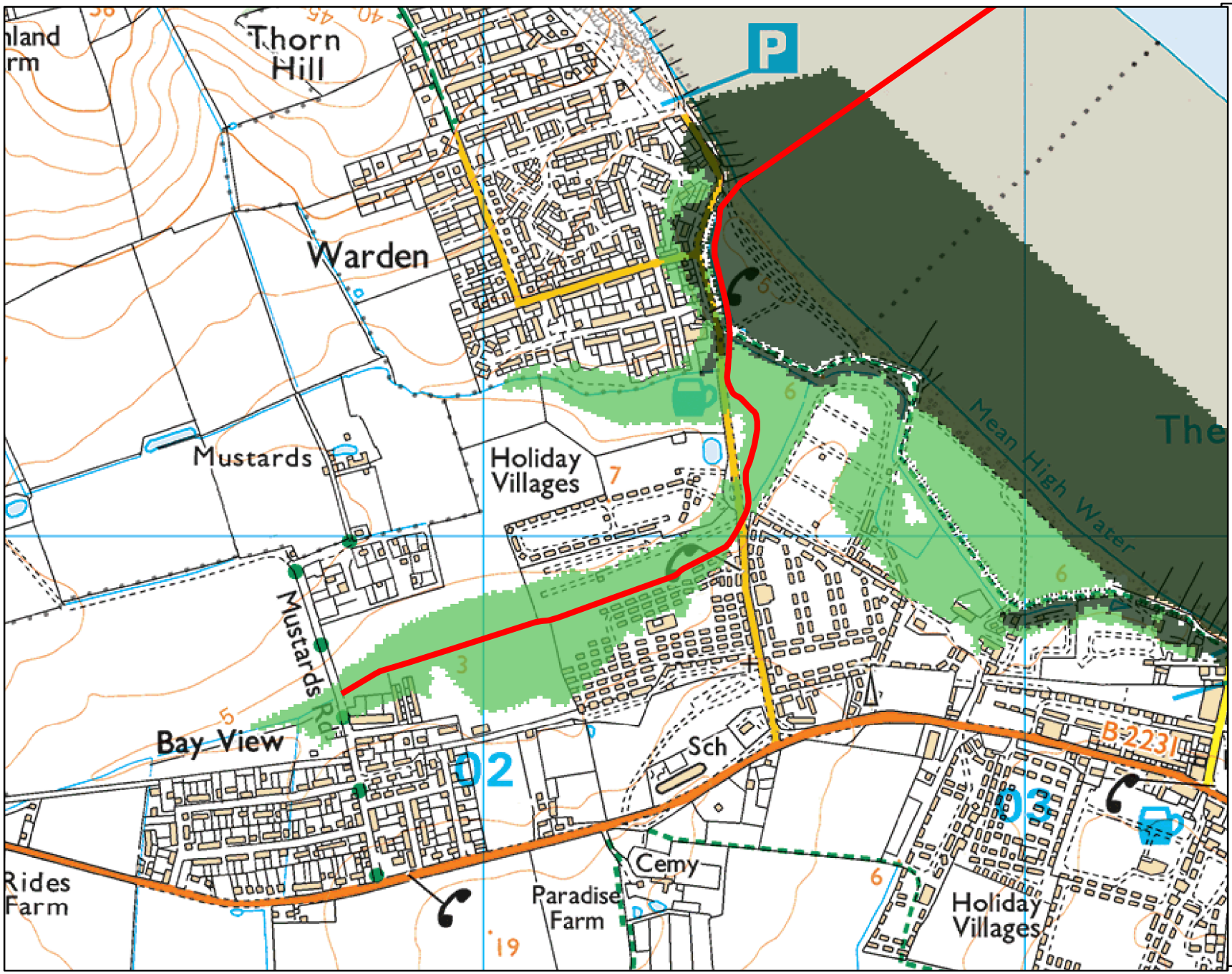
Modelled Extent Event Map centred on Seaview Park, Warden Bay Road, Leysdown ME12 4NB
Created 10/06/2019 (Ref KSL 129201KB)



Environment Agency

N

Legend

Main Rivers

Max Def CC (NPPF) Flood Extents

Epoch

0.5% AEP 2070

0.5% AEP 2115

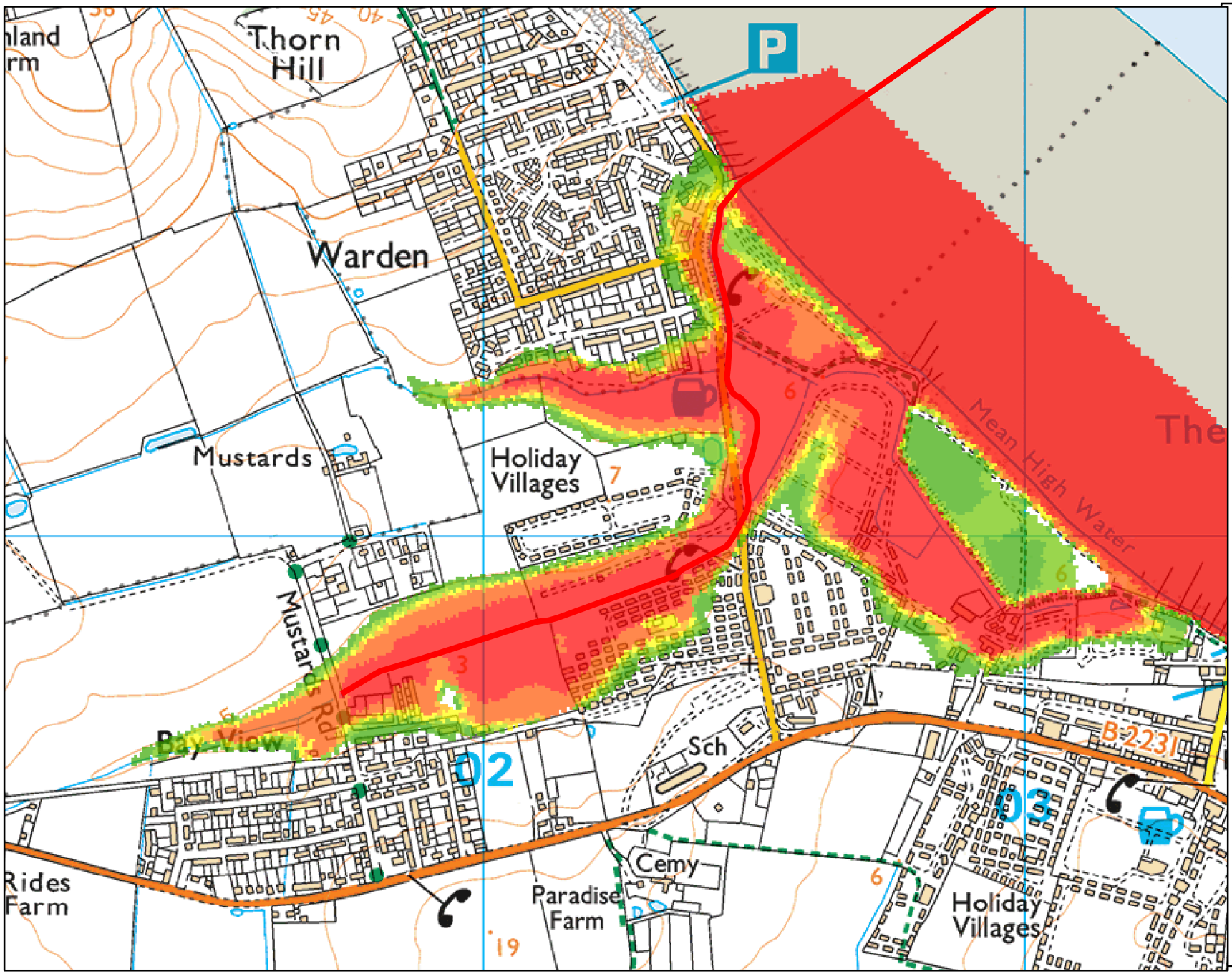
Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

0 250 500

Meters

Scale 1:10,000

Modelled Extent Event Map centred on Seaview Park, Warden Bay Road, Leysdown ME12 4NB
Created 10/06/2019 (Ref KSL 129201KB)



Environment Agency

N

Legend

Main Rivers

Maximum Undefended 2016 Flood Extents

AEP (%)

- 20% AEP extent
- 5% AEP extent
- 3.33% AEP extent
- 2% AEP extent
- 1.33% AEP extent
- 0.5% AEP extent
- 0.1% AEP extent

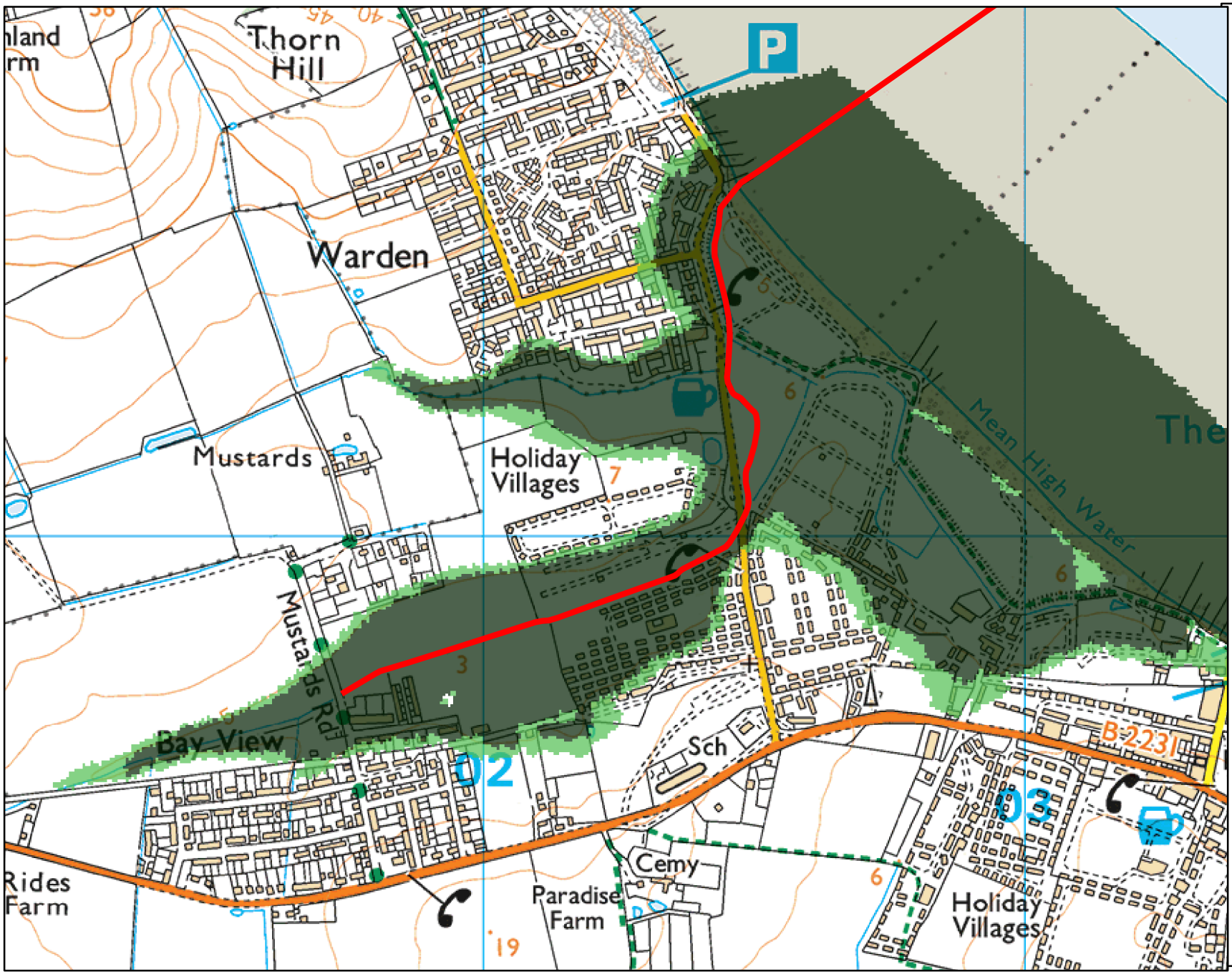
Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

0 250 500

Meters

Scale 1:10,000

Modelled Extent Event Map centred on Seaview Park, Warden Bay Road, Leysdown ME12 4NB
Created 10/06/2019 (Ref KSL 129201KB)



Environment Agency

N

Legend

Main Rivers

Max Undef CC (NPPF) Flood Extents

Epoch

0.5% AEP 2070

0.5% AEP 2115

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

0 250 500

Meters

Scale 1:10,000

Defence Details

A flood defence embankment provides 1:1000 (0.1% AEP) standard of protection. This embankment is maintained by the Environment Agency.

High-ground closer to the site provides 1: 5 years (20 % AEP) standard of protection.

Areas Benefiting from Flood Defences

This property is within an area benefiting from flood defences, as shown on the enclosed extract of our Flood Map. Areas benefiting from flood defences are defined as those areas which benefit from formal flood defences specifically in the event of flooding from rivers with a 1% (1 in 100) chance in any given year, or flooding from the sea with a 0.5% (1 in 200) chance in any given year.

If the defences were not there, these areas would be flooded. An area of land may benefit from the presence of a flood defence even if the defence has overtopped, if the presence of the defence means that the flood water does not extend as far as it would if the defence were not there.

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Historic Flood Data

We hold records of historic flood events from rivers and the sea. Information on the floods that may have affected the area local to your site are provided below and in the enclosed map (if relevant).

Flood Event Data

Dates of historic flood events in this area – **February 1953**

Please note that our records are not comprehensive. We would therefore advise that you make further enquiries locally with specific reference to flooding at this location. You should consider contacting the relevant Local Planning Authority and/or water/sewerage undertaker for the area.

We map flooding to land, not individual properties. Our historic flood event record outlines are an indication of the geographical extent of an observed flood event. Our historic flood event outlines do not give any indication of flood levels for individual properties. They also do not imply that any property within the outline has flooded internally.

Please be aware that flooding can come from different sources. Examples of these are:

- from rivers or the sea;
- surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system);
- overflowing or backing up of sewer or drainage systems which have been overwhelmed,
- groundwater rising up from underground aquifers

Currently the Environment Agency can only supply flood risk data relating to the chance of flooding from rivers or the sea. However you should be aware that in recent years, there has been an increase in flood damage caused by surface water flooding or drainage systems that have been overwhelmed.

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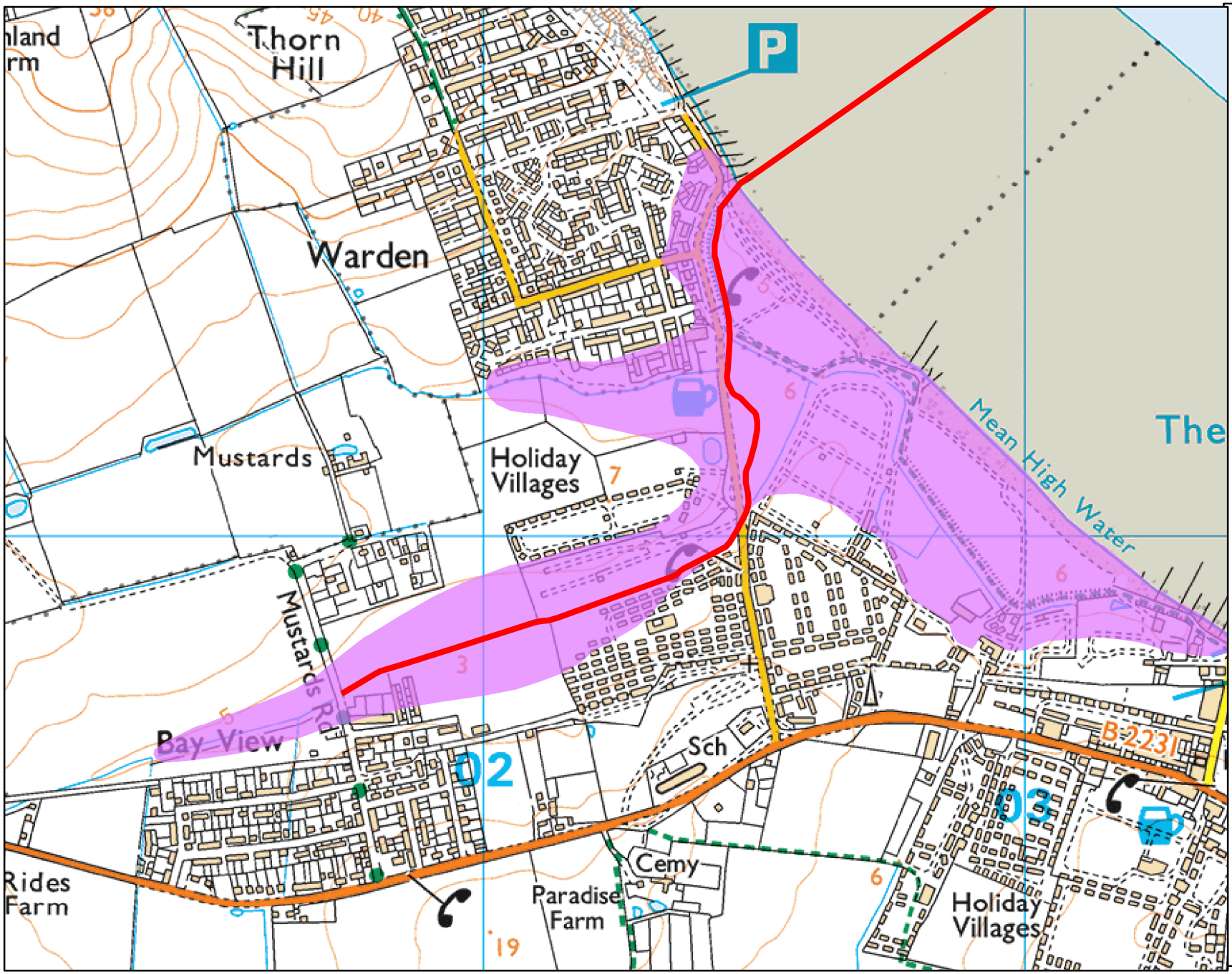
Historic Flood Map centred on Seaview Park, Warden Bay Road, Leysdown ME12 4NB
Created 10/06/2019 (Ref KSL 129201KB)



Environment Agency

N

Legend

Main Rivers

Feb 1953

0 250 500

Meters

Scale 1:10,000

Contact us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506. Email:enquiries@environment-agency.gov.uk

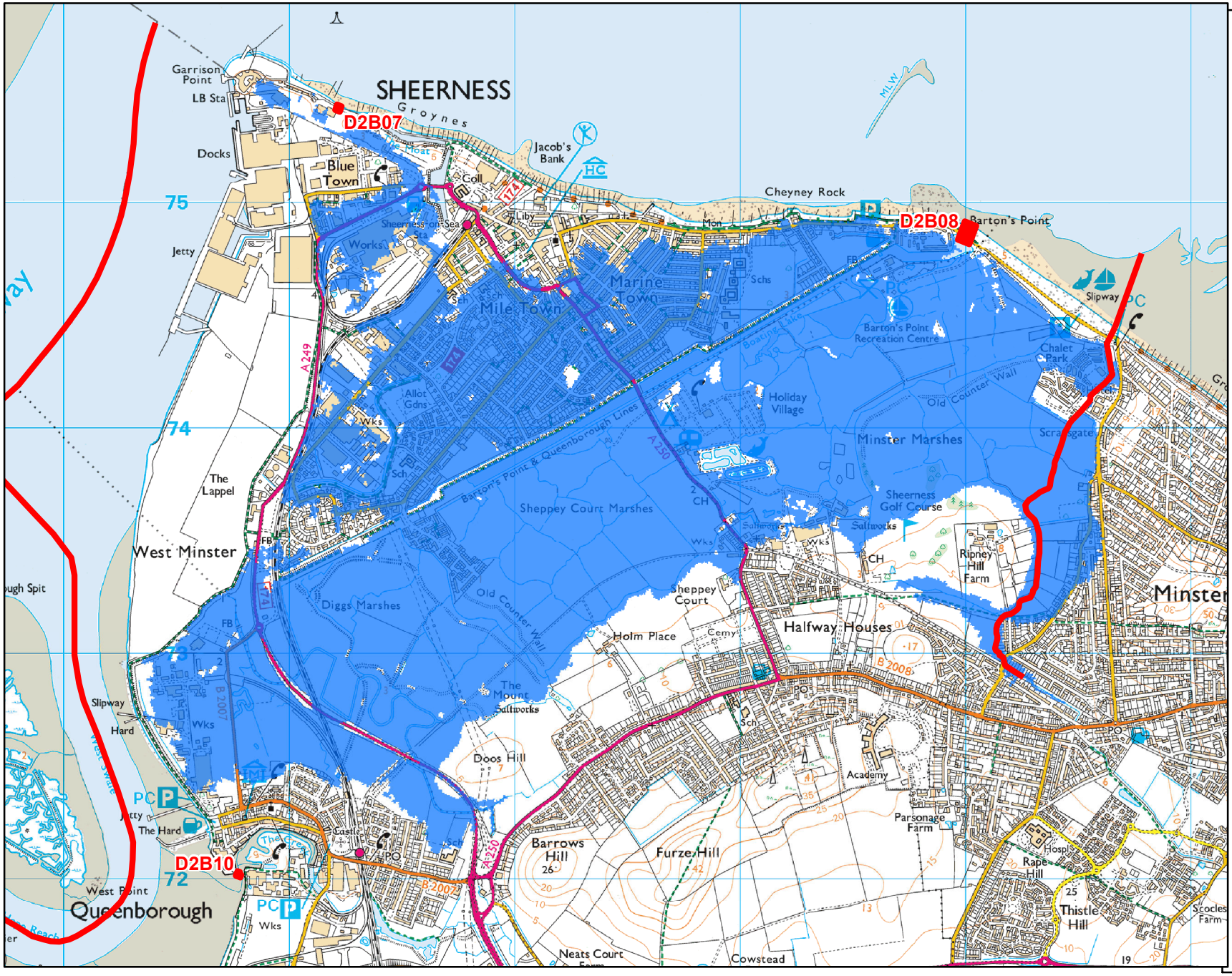
Breach Mapping

The breach mapping provided for Sheerness has been taken from the North Kent Coast modelling completed by JBA in February 2019.The extents show flood risk from two breach locations. Therefore this doesn't represent a worst case scenario at a site specific level.

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Modelled breach extents and locations, centred on Sheerness



Environment Agency

N

Legend

- Main Rivers
- Breach Locations

Extent Type

- Breach extent

0 500 1,000

Meters

Scale 1:24,000

Contact us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506. Email:enquiries@environment-agency.gov.uk

Additional Information

Information Warning - OS background mapping

The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.

Planning advice and guidance

The Environment Agency are keen to work with partners to enable development which is resilient to flooding for its lifetime and provides wider benefits to communities. If you have requested this information to help inform a development proposal, then we recommend engaging with us as early as possible by using the pre-application form available from our website:
https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

Complete the form in the link and email back to kslplanning@environment-agency.gov.uk

We recognise the value of early engagement in development planning decisions. This allows complex issues to be discussed, innovative solutions to be developed that both enables new development and protects existing communities. Such engagement can often avoid delays in the planning process following planning application submission, by reaching agreements up-front. We offer a charged pre-application advice service for applicants who wish to discuss a development proposal.
We can also provide a preliminary opinion for free which will identify environmental constraints related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

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Email: kslenquiries@environment-agency.gov.uk

Flood Risk Assessments guidance

Flood risk standing advice for applicants

In preparing your planning application submission, you should refer to the Environment Agency's Flood Risk Standing Advice and the Planning Practice Guidance for information about what flood risk assessment is needed for new development in the different Flood Zones. This information can be accessed via:

https://www.gov.uk/flood-risk-assessment-standing-advice

http://planningguidance.planningportal.gov.uk/

https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications

https://www.gov.uk/guidance/flood-risk-and-coastal-change

You should also consult the Strategic Flood Risk Assessment and flood risk local plan policies produced by your local planning authority.

You should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk Assessment where one is required, but does not constitute such an assessment on its own.
2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or overland runoff. You should discuss surface water management with your Lead Local Flood Authority.
3. Where a planning application requires a FRA and this is not submitted or deficient, the Environment Agency may well raise an objection due to insufficient information

.

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Surface Water

We have provided two national Surface Water maps, under our Strategic Overview for flooding, to your Lead Local Flood Authority – Medway / Kent County Council, who are responsible for local flood risk (i.e. surface runoff, ground water and ordinary watercourse), which alongside their existing local information will help them in determining what best represents surface water flood risk in your area.

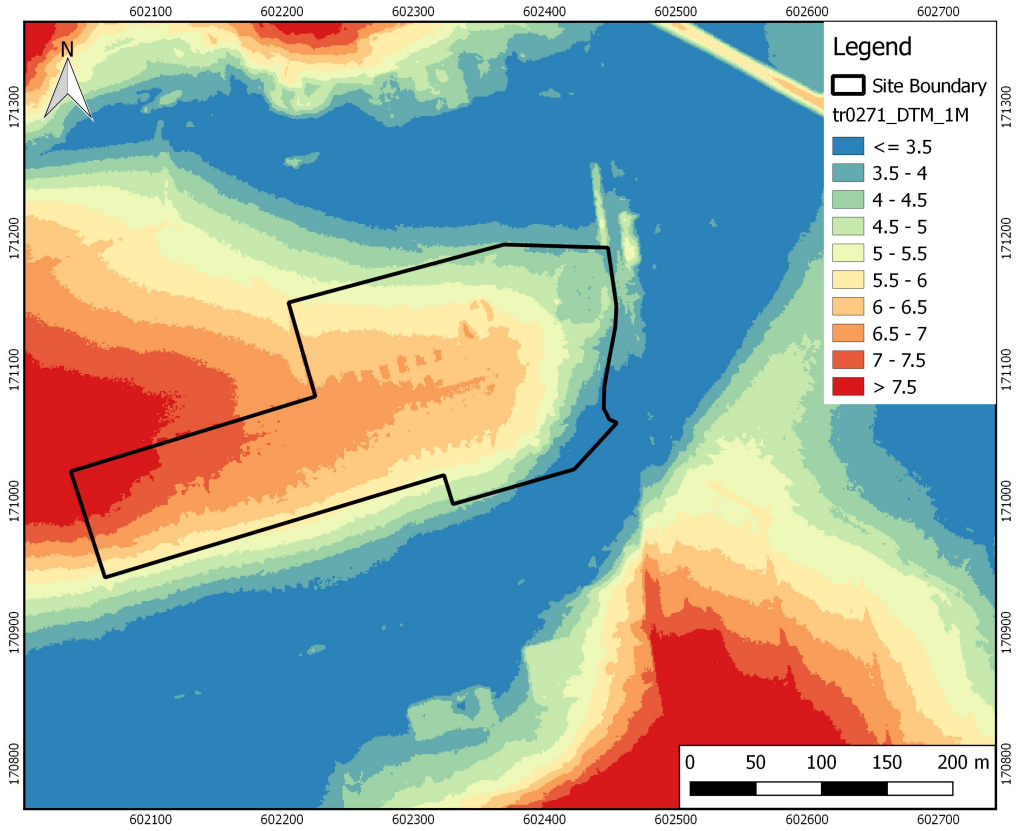
Medway / Kent County Council have reviewed these and determined what it believes best represents surface water flood risk. You should therefore contact this authority so they can provide you with the most up to date information about surface water flood risk in your area.

You may also wish to consider contacting the appropriate relevant Local Planning Authority and/or water/sewerage undertaker for the area. They may be able to provide some knowledge on the risk of flooding from other sources. We are working with these organisations to improve knowledge and understanding of surface water flooding.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Appendix D

Environment Agency LiDAR Elevation Data



Disclaimer

This report has been prepared by GeoSmart in its professional capacity as soil, groundwater, flood risk and drainage specialists, with reasonable skill, care and diligence within the agreed scope and terms of contract and taking account of the manpower and resources devoted to it by agreement with its client and is provided by GeoSmart solely for the internal use of its client.

The advice and opinions in this report should be read and relied on only in the context of the report as a whole, taking account of the terms of reference agreed with the client. The findings are based on the information made available to GeoSmart at the date of the report (and will have been assumed to be correct) and on current UK standards, codes, technology and practices as at that time. They do not purport to include any manner of legal advice or opinion. New information or changes in conditions and regulatory requirements may occur in future, which will change the conclusions presented here.

This report is confidential to the client. The client may submit the report to regulatory bodies, where appropriate. Should the client wish to release this report to any other third party for that party's reliance, GeoSmart may, by prior written agreement, agree to such release, provided that it is acknowledged that GeoSmart accepts no responsibility of any nature to any third party to whom this report or any part thereof is made known. GeoSmart accepts no responsibility for any loss or damage incurred as a result, and the third party does not acquire any rights whatsoever, contractual or otherwise, against GeoSmart except as expressly agreed with GeoSmart in writing.

For full T&Cs see http://geosmartinfo.co.uk/terms-conditions

Important consumer protection information

This search has been produced by GeoSmart Information Limited, Suite 9-11, 1st Floor, Old Bank Buildings, Bellstone, Shrewsbury, SY1 1HU.

Tel: 01743 298 100

Email: info@geosmartinfo.co.uk

GeoSmart Information Limited is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom
- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.
- By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

The Code's core principles

Firms which subscribe to the Search Code will:

- display the Search Code logo prominently on their search reports
- act with integrity and carry out work with due skill, care and diligence
- at all times maintain adequate and appropriate insurance to protect consumers
- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

Complaints

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme

(TPOs). The Ombudsman can award compensation of up to £5,000 to you if he finds that you have suffered actual loss as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs contact details:

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP
Tel: 01722 333306
Fax: 01722 332296
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk.

Please ask your search provider if you would like a copy of the search code

Complaints procedure

GeoSmart Information Limited is registered with the Property Codes Compliance Board as a subscriber to the Search Code. A key commitment under the Code is that firms will handle any complaints both speedily and fairly.

If you want to make a complaint, we will:

- Acknowledge it within 5 working days of receipt.
- Normally deal with it fully and provide a final response, in writing, within 20 working days of receipt.
- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time.
- Provide a final response, in writing, at the latest within 40 working days of receipt.
- Liaise, at your request, with anyone acting formally on your behalf.

If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk.

We will co-operate fully with the Ombudsman during an investigation and comply with his final decision.

Complaints should be sent to:

Jemma Prydderch
Operations Manager

GeoSmart Information Limited
Suite 9-11, 1st Floor,
Old Bank Buildings,
Bellstone, Shrewsbury, SY1 1HU
Tel: 01743 298 100 jemmaprydderch@geosmartinfo.co.uk

Terms and Conditions

GEOSMART INFORMATION LIMITED
Conditions of contract for environmental reports

June 2016, Version 1.2

Definitions:

The following words shall have the following meaning:

a) “Client” means the person for whom the Report has been procured either directly or through an Intermediary;

b) “Conditions” means these terms and conditions of sale, the User Guide and the Order;

c) “GEOSMART” means GeoSmart Information Ltd of Suite 9-11, Old Bank Buildings, Bellstone, Shrewsbury, SY1 1HU, registered in England and Wales with company registration number 05475394.

d) “Information” means environmental data, including other third party sources of information;

e) "Intermediary" means the party that places the Order acting on behalf of the Beneficiary, who might be a lawyer, consultant or other party;

f) "Order" means the order for Services sent by a Client or an Intermediary to GEOSMART;

g) "Report" or “Reports” means a report which relates to environmental information (as distinct from opinion) and which is prepared by GEOSMART in respect of a Site;

h) "Services" means the preparation and provision of Report(s) by GEOSMART from the Information;

i) "Site" shall mean the site specified in the Order;

j) "User Guide" means the document (if any) which may be produced from time to time by GEOSMART entitled ‘GeoSmart User Guide’, which may be requested with the Report by writing to GEOSMART at the above address and will be provided if applicable.

1. Conditions

1.1 Subject to receipt of a valid Order, GEOSMART agrees to supply to the Client or the Intermediary (if the Client has appointed one) the Services subject to these Conditions and the Client or the Intermediary agrees that by placing an Order for the Services it accepts these Conditions. The User Guide applicable to each Report should be read in conjunction with the Report and is incorporated into these Conditions as if it were repeated herein. A Report is sold subject to all information contained in such User Guide

1.2 GEOSMART acknowledges that in the provision of the Report and Services it owes a duty of care to the Intermediary and to the Client.

1.3 In providing search reports and services GEOSMART will comply with Search Code and will take into account the requirements of the Alternative Dispute Resolution for Consumer Disputes (Amendment) Regulations 2015. Further details are provided in the PCCB Bulletin which accompanies GEOSMART Reports.

2. Report

GEOSMART shall use reasonable care, skill and diligence in carrying out the Services and providing the Report to the Intermediary (and the Client). However, the Report is provided to the Intermediary (and the Client) on the express basis that the Intermediary (and the Client) acknowledge and agree to the following:

2.1 information and data supplied in Report(s) is derived from the Information and GEOSMART does not warrant the accuracy or completeness of such Information;

2.2 the sources of information and data supplied in Report(s) are specifically cited in the Report and the User Guide; however, GEOSMART does not claim that these sources represent an exhaustive or comprehensive list of all sources that could or might be consulted; and

2.3 GEOSMART does not guarantee that all environmental risks that are or might be associated with the Site will be identified in the Report; and

2.4 Reports and other services provided by GEOSMART are generally professional business to business services and intended as such for use or interpretation by professional persons skilled in the use of environmental information; and

2.5 GEOSMART shall not be responsible for any error or corruption in a Report resulting from inaccuracy or omission of third party information and data provided by the Intermediary or the Client (as applicable), inaccurate processing of information and data by third parties, computer malfunction or corruption of data whilst in the course of conversion, coding, processing by computer or electronic means, or in the course of transmission by telephone or other communication link.

3. Liability

3.1 As some of the data and information which GEOSMART interprets in Reports is obtained by GEOSMART from third parties, GEOSMART cannot control the accuracy or completeness of such data and information, nor is it within the scope of the Services to verify the data or information by a physical inspection of the Site. Save as provided in Conditions 3.5 and 3.11 GEOSMART will only be liable to the Client or to the Intermediary in respect of the Services:

3.1.1 for loss or damage caused by breach by GEOSMART of these Conditions accordingly save as provided in Condition 3.5 GEOSMART shall not be liable in any other circumstances for any errors, inaccuracies, faults or omissions in the Services;

3.1.2 for any obvious errors or obvious inaccuracies in any information obtained by it where GEOSMART should reasonably have been alerted to such error or inaccuracy;

3.2 GEOSMART has no liability whatsoever for, under or in respect of any insurance policy purchased by the Client or the Intermediary where insurance is made available to the Client or Intermediary following the provision of a Report by GEOSMART issued in accordance with these Conditions. Where such a policy has been purchased, all liability arising from or relating to the Site shall remain exclusively with the insurers. Moreover, GEOSMART is not endorsing any policy recommended by insurers and the Client or the Intermediary is entirely responsible for ensuring the insurance policy offered is

suitable for its needs and should seek independent advice.

3.3 GEOSMART does not guarantee that an insurance policy will be available for the environmental risks that may be associated with the Site specified in the Report and the provision of a Report does not constitute any indication by GEOSMART that insurance will be available for the Site.

3.4 GEOSMART has undertaken the Services for use by the Client or the Intermediary and those persons referred to at condition 5.1 and 5.2 and for no other purpose whatsoever and the Services should not be relied upon by any other third party. GEOSMART cannot accept responsibility and will not be liable to any other party for any loss caused as a result of reliance upon the Services. Any other party relying on the Services does so entirely at its own risk, including without limitation, any insurers. Recipients of the Services are to rely on their own skill and judgment in determining the suitability of the Services for their own purpose and use.

3.5 Nothing in these Conditions shall exclude or restrict GEOSMART's liability for death or personal injury resulting from the negligence of GEOSMART or their employees while acting in the course of their employment or arising from a breach of its statutory duty or fraud.

3.6 GEOSMART shall not be liable to any recipient of the Service for loss of profits, loss of contracts, (or other indirect or consequential loss or damage) resulting from any event or default by GEOSMART in the provision of the Services to the fullest extent permitted by law.

3.7 GEOSMART shall make reasonable endeavors to supply the Report on the date agreed with the Intermediary or the Client (as applicable). This date will be taken as a guideline for time planning purposes only. Time shall not be of the essence with respect to the provision of the Services except where it has agreed in writing to a deadline with the Client or Intermediary in which it is stated that time is of the essence.

3.8 GEOSMART shall not be liable for any delay, interruption or failure in performance of its obligations hereunder which is caused by war, flood, riot, Act of God, strike or other labour dispute (including those affecting Government officials), suspension or delay of service at public registries, lack of power, telecommunications failure or overload, or computer malfunction caused by any event beyond the reasonable control of GEOSMART.

3.9 The Client or the Intermediary (as appropriate) shall on receipt of the Services make a reasonable inspection of the Site to satisfy itself that there are no apparent defects or failures with respect to the description of the Site.

3.10 GEOSMART's liability under the Conditions shall cease upon the expiry of six (6) years from the date when the Client, Intermediary or any person making use of the Report in accordance with Condition 5.2 became aware that it may have a claim in respect of a particular Report provided always that there shall be no liability at the expiration of six (6) years from the date of the Report. For the avoidance of doubt, any claims in respect of which proceedings are notified to GEOSMART prior to the expiry of the time

periods referred to in this Condition shall survive the expiry of those time periods.

3.11 Subject as otherwise provided in these Conditions, GEOSMART's aggregate liability arising out of the provision or use of the Services, in contract, negligence or in any other way, for damages or loss sustained or incurred by the Intermediary shall be limited to an aggregate amount not exceeding £5,000,000 pounds. For the avoidance of doubt, if multiple parties make use of the Report, the limit referred to above applies to all users of that Report in aggregate.

3.12 GEOSMART undertakes for the duration of the six (6) year period of liability provided for by Condition 3.11 to maintain and renew annually Professional Indemnity Insurance in respect of the Services with a liability limit of not less than £5,000,000 provided that such insurance is available at commercially reasonable rates (and in such case then at the next highest limit which is available in the market at commercially reasonable rates). Details of Professional Indemnity Insurance shall be made available to the Client or Intermediary (as applicable) on request.

3.13 Where GEOSMART procures for the Intermediary, otherwise than as part of a Report, any third party service, including but not limited to, environmental reports, risk models, risk assessments, professional opinions, or any other service, GEOSMART accepts no liability whatsoever for the information contained therein.

3.14 The Client and the Intermediary warrant that they shall: (i) comply with all applicable laws, statutes and regulations relating to anti-bribery and anti-corruption including but not limited to the Bribery Act 2010; (ii) comply with such of GEOSMART 'S anti-bribery and anti-corruption policies as are notified to them from time to time; and (iii) promptly report to GEOSMART any request or demand for any undue financial or other advantage of any kind received by the or on their behalf in connection with these Conditions. Breach of this clause shall be deemed a material breach of these Conditions.

4. Copyright

4.1 The Intermediary, the Client and any recipient of the Report pursuant to the provisions of condition 5.2 acknowledge that the proprietary rights subsisting in copyright, design rights and any other intellectual property rights in respect of the data and information in the Report are and shall remain the property of GEOSMART and these Conditions do not purport to grant, assign, or transfer any such rights in respect thereof.

4.2 Reports may be stored on the Intermediary's server and used on up to ten (10) units (where a "Unit" means a single client personal computer or workstation) on the Intermediary's network and any network of a recipient of the Report pursuant to the provisions of Condition 5.2. Data in Reports is deemed to be in use when it is loaded into the temporary memory (i.e. RAM) or installed onto the permanent memory (i.e. memory chip, hard disc, CDROM) of that computer.

4.3 The Intermediary, the Client and all recipients of the Report pursuant to the provisions of Condition 5.2 are all entitled to make up to five printed copies only of any Report. Copies of the Report may be provided for information purposes for

proper and lawful use only to a person who is considering whether to acquire or hold an interest in the Site or to provide funding in relation to the Site. Further copies may not be made in whole or in part without the written permission of GEOSMART who shall be entitled to make a charge for each additional copy.

4.4 The Intermediary and the Client (as applicable) shall (and shall procure that all recipients of the Report pursuant to the provisions of Condition 5.2 shall):

4.4.1 not remove, suppress or modify any trademark, copyright or other proprietary marking belonging to GEOSMART from the Services;

4.4.2 not create any product which is derived directly or indirectly from the data contained in the Services; save for products documents and advice provided by those acting in a professional or commercial capacity in accordance with 5.2.3;

4.4.3 not combine the Services with or incorporate such Services into any other information data or service;

4.4.4 not re-format or otherwise change (whether by modification, addition or enhancement) data contained in the Services save for those modifications made by those acting in a professional or commercial capacity in accordance with 5.2.3;

4.5 The mapping (if any) contained in any Services is protected by Crown Copyright and must not be used for any purpose outside the context of the Services.

5. Confidentiality and reliance

5.1 Subject to (i) full payment of all relevant Fees and (ii) compliance with this Contract, the Client or the Intermediary is entitled to rely on the report and information provided.

5.2 Subject to Condition 5.3, the Client or the Intermediary (as applicable) may without further charge make the Report available to:

5.2.1 Up to a maximum of three (3) persons who acquire or hold an interest in the Site or an interest in the Client or the entity which holds or acquires an interest in the Site save that nothing shall hereby entitle any such person to recover twice (whether directly or indirectly) in respect of the same loss nor seek recovery in respect of any loss relating to any period after such entity ceases to hold its interest or to have potential liability for the Site(whichever is the later) (unless otherwise agreed by the parties);

5.2.2 Up to a maximum of three (3) persons who provide funding to the Client or to a person at condition 5.2.3;

5.2.3 Up to a maximum of three (3) persons acting in a professional or commercial capacity for the Client in relation to the Site.

5.3 GEOSMART shall have the same duties and obligations to those persons referred to in Conditions 5.2.1, 5.2.2, 5.2.3 in respect of the Services as it has to the Client and the Intermediary , and such persons shall be entitled to rely on the relevant Report as if it was addressed to them and any such person shall be entitled to enforce each of these Conditions as if they were named as joint Client in the Order, provided always that the person to whom the Report is made available accepts these Conditions by

writing accordingly to GEOSMART citing the Report and the Site.

5.3 The Report is to be used solely for the benefit of such persons as are set out in Condition 5.1 and 5.2, and GEOSMART exclude all liability to all other persons unless GEOSMART has expressly agreed in writing to a third party taking the benefit of the Report and has been paid reasonable fees for so doing.

5.4 Any information provided by the Intermediary or the Client to GEOSMART in contemplation of the Services to be provided together with the Report will be treated as confidential information.

5.5 GEOSMART agrees not to disclose or publish any statement relating to such confidential information (in whole or in part) to any third party without the prior written consent of the Intermediary save for its provision to GEOSMART 's employees who require access to the confidential information in order to perform their duties to GEOSMART.

5.6 GEOSMART will procure that its employees will maintain the confidential information in strict confidence.

6. GEOSMART's charges

6.1 The Client or the Intermediary (as applicable) shall pay GEOSMART's charges for the Services at the rate set out in the Order.

6.2. Unless otherwise stated all prices are exclusive of Value Added Tax which shall, where applicable, be payable in addition to any sum payable for the Services at the relevant rate in force from time to time, against delivery of an appropriate tax invoice.

6.3 The Client or the Intermediary (as applicable) shall pay the price referred to in Condition 6.1 above for the Services:

6.3.1 without any set off, deduction or counterclaim;

6.3.2 GEOSMART requests upfront payment by debit or credit card (No surcharges for credit cards) or by bank transfer. A credit agreement can be set up for repeat clients with terms based on 14 days from the date of GEOSMART's invoice.

6.4 GEOSMART shall not be obliged to invoice any party other than the Client or the Intermediary (as applicable) for the provision of Services, but where GEOSMART does so invoice any third party at the written request of the Client Intermediary, and such invoice is not accepted or remains unpaid, GEOSMART shall have the right at any time to cancel such invoice and invoice the Client or the Intermediary (as applicable) direct for such Services. Where the Intermediary 's order comprises a number of Services or separate elements within any one or more Services, any failure by GEOSMART to provide an element or elements of the Services shall not prejudice GEOSMART's ability to require payment in respect of the other Services delivered to the Intermediary or the Client (as applicable).

6.5 If the Intermediary or the Client (as applicable) fails to make any payment on the due date GEOSMART shall be entitled to cancel or suspend any further orders or delivery. In addition, GEOSMART may charge the Intermediary or the Client (as applicable) interest on overdue amounts at 4% over the NatWest plc base rate (as varied from time to time) from the due

date until payment in full is made (whether before or after judgment).

7. General

7.1 These Conditions constitute the entire agreement between the parties and no statement given orally or in writing should be deemed incorporated herein unless executed in writing by a director of GEOSMART and countersigned by the Intermediary or the Client (as applicable). Each of the Conditions and Sub-conditions of these Conditions is distinct and severable. If any provision of these Conditions shall be determined to be invalid, illegal or unenforceable, the remainder of these Conditions shall continue to be valid, legal and enforceable to the fullest extent of the law.

7.2 Any time or indulgence granted by GEOSMART or the Client or the Intermediary or delay in exercising any of its rights under these Conditions shall not prejudice or affect GEOSMART's or the Client's or the Intermediary 's rights or operate as a waiver of the same.

7.3 GEOSMART, the Client and the Intermediary shall not be entitled to assign their respective rights or obligations pursuant to these Conditions without the prior written approval of the other parties.

7.4 GEOSMART may suspend or terminate the provision of the Services if the Client or the Intermediary (as applicable) is bankrupt or insolvent or makes any voluntary arrangements with its creditors or become subject to an administration order or has an administrative receiver appointed over any of its assets or GEOSMART has reason to believe that any of foregoing circumstances may come into existence or any amount owing to GEOSMART that is overdue or where the Client or Intermediary (as applicable) has exceeded any credit limit.

7.5 These Conditions shall at all times be governed construed and enforced in accordance with English Law which shall be the proper law of these Conditions, and both parties thereby submit to the exclusive jurisdiction of the English courts.

7.6 Except as otherwise provided in these Conditions a person who is not a party to any contract made pursuant to these Conditions shall have no right under the Contracts (Rights of Third Parties) Act 1999 to enforce any terms of such contract and GEOSMART shall not be liable to any such third party in respect of the Products.