

# Isle of Wight Strategic Flood Risk Assessment MK2

## Appendix S Niton



June 2010





### Overview

Please review this discussion in conjunction with the mapping provided in this Appendix.

Niton is classified as a Rural Service Centre which is located in the upper catchment of the Eastern Yar. The Environment Agency flood zones do not extend to cover watercourses with drainage areas of less than 3km<sup>2</sup>, this has resulted in the flood zones not being produced for Niton. Nevertheless, the surface water modelling has provided an indication of route of the floodplain. Any development proposal in Niton, although currently in Flood Zone 1, should be accompanied by an FRA which either confirms the Flood Zone 1 location or demonstrates that any flood risks are appropriately managed in line with the requirements of PPS25.

### Sustainability and Regeneration Objectives

Development within the wider countryside will be focused on the Rural Service Centres such as Niton and should support their role as wider centres for outlying villages, hamlets and surrounding countryside. For the rural service centres development will be expected to ensure their future viability. Within the rural service centres and outlying rural areas, development will be expected, in the first instance, to meet a rural need and maintain or enhance the viability of local communities and will be subject to local considerations.

Niton RSC has been identified as having the potential to accommodate further development to meet the regeneration aims and needs of the local community, through improving local services and strengthening public transport. Development will be encouraged on brownfield sites in the first instance and tourism will be promoted.

### Sites at Risk

Niton is located in the upper reaches of the Eastern Yar catchment, the associated floodplain in the headwaters of the river are very narrow, as a result of the steeper topography. As such all the potential development sites located in Niton have been assessed as being outside the extent of Flood Zone 2. The Flood Zone 1 classification of all the potential sites in Niton is also a result of the Flood Zone extents not extending through the settlement. The Flood Zone mapping project typically only includes drainage areas of more than 3km<sup>3</sup>. The surface water modelling does however identify the likely route of the floodplain – see the following sections. Further downstream, in Whitwell, two of the potential development sites have been assessed as fractionally encroaching into Flood Zones 2 and 3.

### Climate Change

The results of the assessment approach outlined in Section 5.2 of the SFRA report do not identify any significant increase in the extent of fluvial flood risks, as the flood zones do not extend into the settlement centre. Owing to the headwater location of this settlement and the narrow valley floor, it is likely that the increased river flows predicted as a result of climate change, will have little impact on the spatial extent of the flood risk zone.



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### Potential Surface Water Flow Routes and Ponding Areas

#### Method

The potential surface water flow routes and ponding areas presented in the SFRA, illustrate areas of predicted flooding greater than 25m<sup>2</sup> in spatial extent and only flooding which is more than 0.1m deep. This refinement of the TuFLOW model output is necessary so as to establish the primary areas of predicted flood risk. The modelling approach utilises a 5m resolution ground model grid. The TuFLOW model does not incorporate the Southern Water surface water drains or sewers, which during a storm event would provide storage capacity. Southern Water advised that the modelling should assume that the surface water sewer network could accommodate the 1 in 20 year storm. Therefore, the 1 in 20 year rainfall depths for the critical storm were subtracted from the 1 in 100 year (plus climate change) rain fall depths.

The 1 in 100 year (plus climate change) winter profile storm hyetographs (hyetograph refers to a graph presenting rainfall depth over time) were generated by deriving catchment descriptors from the Flood Estimation Handbook CD-ROM (FEH) and applying the FEH Rain Profile Method. The storm durations were determined by the critical drainage pathway lengths in each of the model areas. The model boundaries were determined by the topography, the local watersheds were traced to ensure that all contributing parts of the catchments were included in the model.

#### Results

The surface water modelling has identified a potential flow route through the centre of Niton, which has the potential to impact upon a number of exiting developments. In terms of potential development sites, it is the sites to the north east of the settlement which are predicted to be the most significantly impacted. Development of these sites should therefore carefully consider how development may impact on this flow route. Inappropriate development could have the potential to increase flooding in Niton if the surface water flow routes were not preserved and correctly managed.

### Surface Drainage and Infiltration SuDS Potential

The majority of the potential development sites in Niton are assessed as being in areas where infiltration SuDS techniques only have a low potential. This classification is the result of incomplete Groundwater Vulnerability data in the vicinity of this settlement. Nonetheless, infiltration SuDS should remain a preferred option unless infiltration testing demonstrates that it is not a feasible option. Caution should be applied when considering any drainage solution in the west of the settlement owing to the close proximity of a Source Protection Zone (SPZ) 1. The SPZ mapping is however subject to change, and should be reviewed with the Environment Agency when proposing any form of SuDS solution.



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### **Flood Risk Management Guidance and Site Specific FRAs**

The principal of avoidance should be applied when considering sites within the Niton area. The development of any previously undeveloped site in Flood Zones 2 and 3 is considered by PPS25 as an increase in flood risk and should be avoided. The redevelopment of any previously developed sites within the Flood Zones will require the PPS25 Sequential test to be passed and the Exception Test satisfied where necessary.

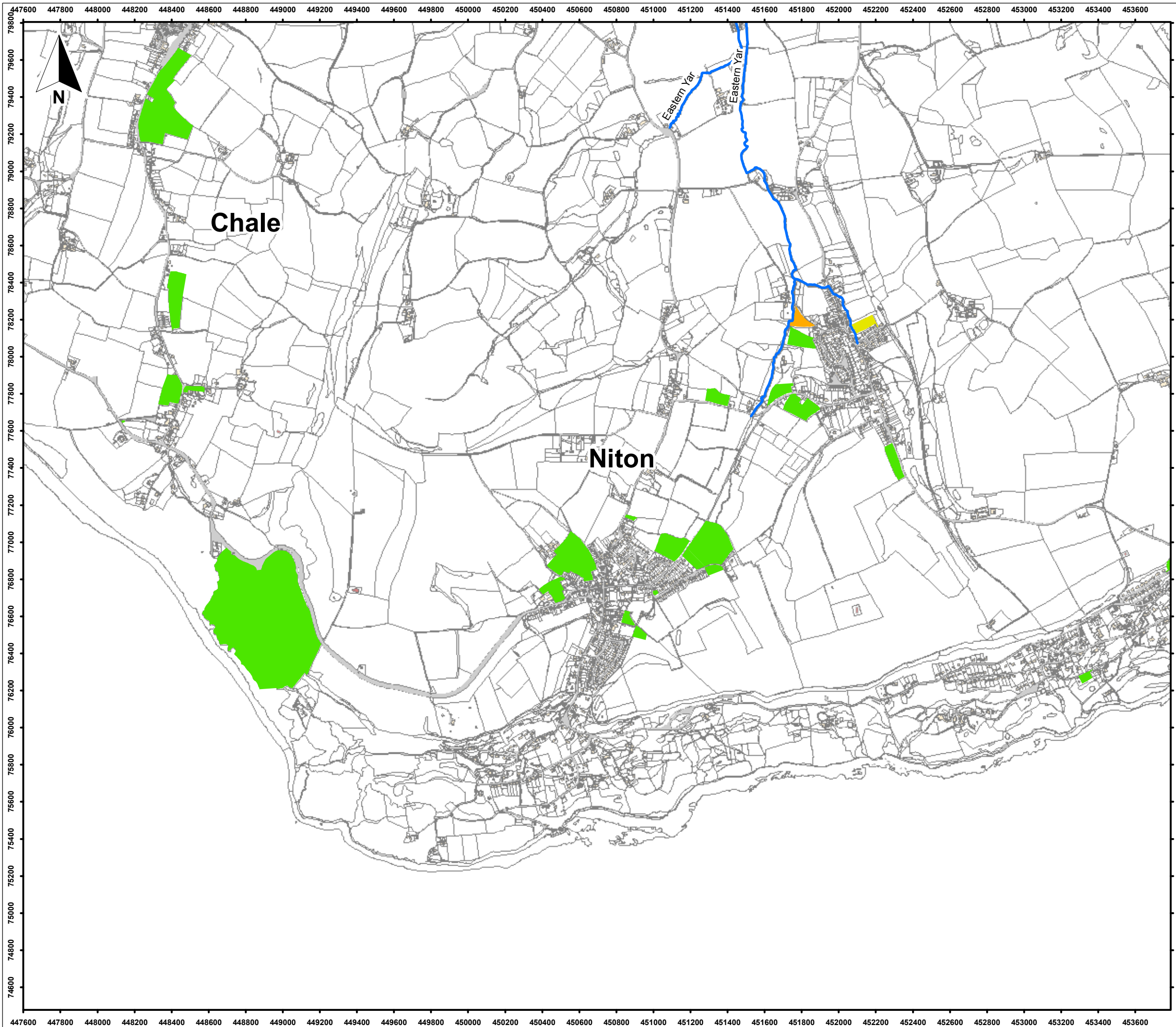
As there is no Flood Zone 2 and 3 extent in Niton, despite the presence of the upper reaches of the River Eastern Yar, it is recommended that the Environment Agency be consulted for all development proposals within Niton. It may be necessary for future FRAs to define the fluvial flood risk.

Factors to be considered in safe development could include:

- Ensuring that the sequential approach to landuse planning is, where possible, applied on site. This approach would see more and highly vulnerable landuse types being placed in the lower risk zones.
- Finished first floor levels should be set above the predicted 1 in 100 year fluvial flood levels, plus a climate change. The Environment Agency should be consulted for fluvial flood. A freeboard allowance should be applied, again the Environment Agency should be consulted on this aspect of the design. Site specific hydraulic modelling may be required to define these levels.
- Buildings should be designed so that safe access and egress can be facilitated in the event of the 1 in 100 year (plus climate change).
- Development should not increase the risk of flooding elsewhere. As such, the potential for displaced flood water to impact adjacent areas should be considered. This typically applies if an existing building footprint is being increased in fluvial floodplains and defended tidal floodplains. The displacement of water aspect of development along an undefended coastline is not necessarily a concern.
- Building design should account for the potential depths of water that might occur and appropriate flood resilient and or resistant design features should be incorporated.
- Surface water generated by development should be managed using sustainable techniques. The FRA or drainage assessment should explore the Environment Agency and CIRIA SuDS hierarchy. Discharge rates and volumes should not increase post development, in addition to this PPS25 requirement, the Council and the Environment Agency want to see developers seeking to reduce run-off rates and volumes.



#### **Appendix S**



**Key:**

- Main Rivers

**Probability of Flooding**

- Functional Floodplain
- High Probability
- Medium Probability
- Low Probability

**Notes:**  
 Site is attributed with the flood probability associated with the highest probability flood zone the site intersects

The mapped extent of Flood Zone 3b has been used to identify Functional Floodplain  
 The 1 in 100 year fluvial flood zone for the present day and the 1 in 200 year tidal extent predicted for the year 2115 has been used to identify sites at a High Probability. The 1 in 1000 year fluvial flood zone for the present day and the 1 in 1000 year tidal extent predicted for the year 2115 has been used to identify sites at a Medium Probability. Sites only in Flood Zone 1 have been assigned a Low Probability

0 200 400 600 800 1,000 Meters  
 Scale: 1:20,000 @ A3

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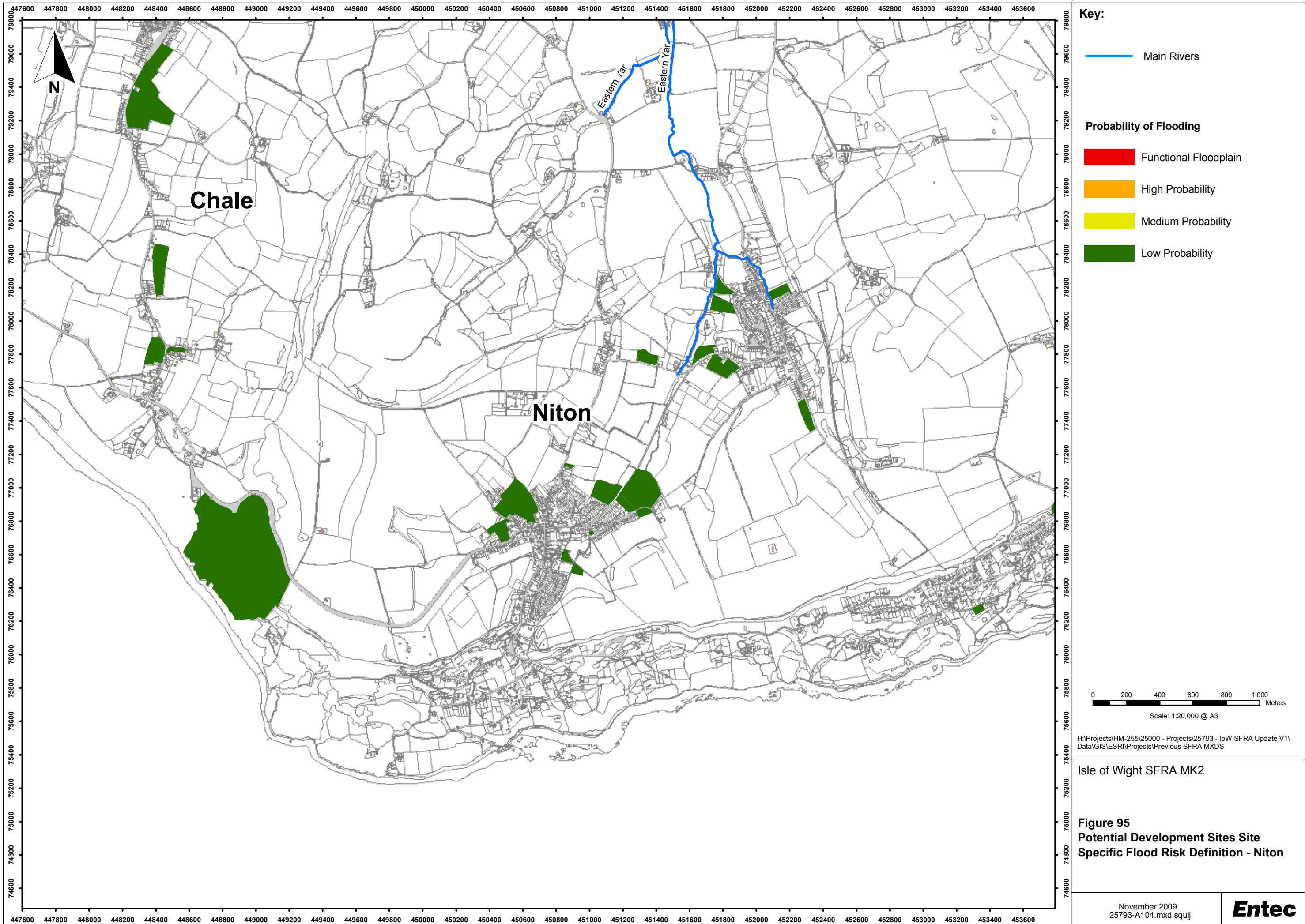
**Figure 94**  
**Potential Development Sites**  
**Qualitative Flood Risk - Niton**

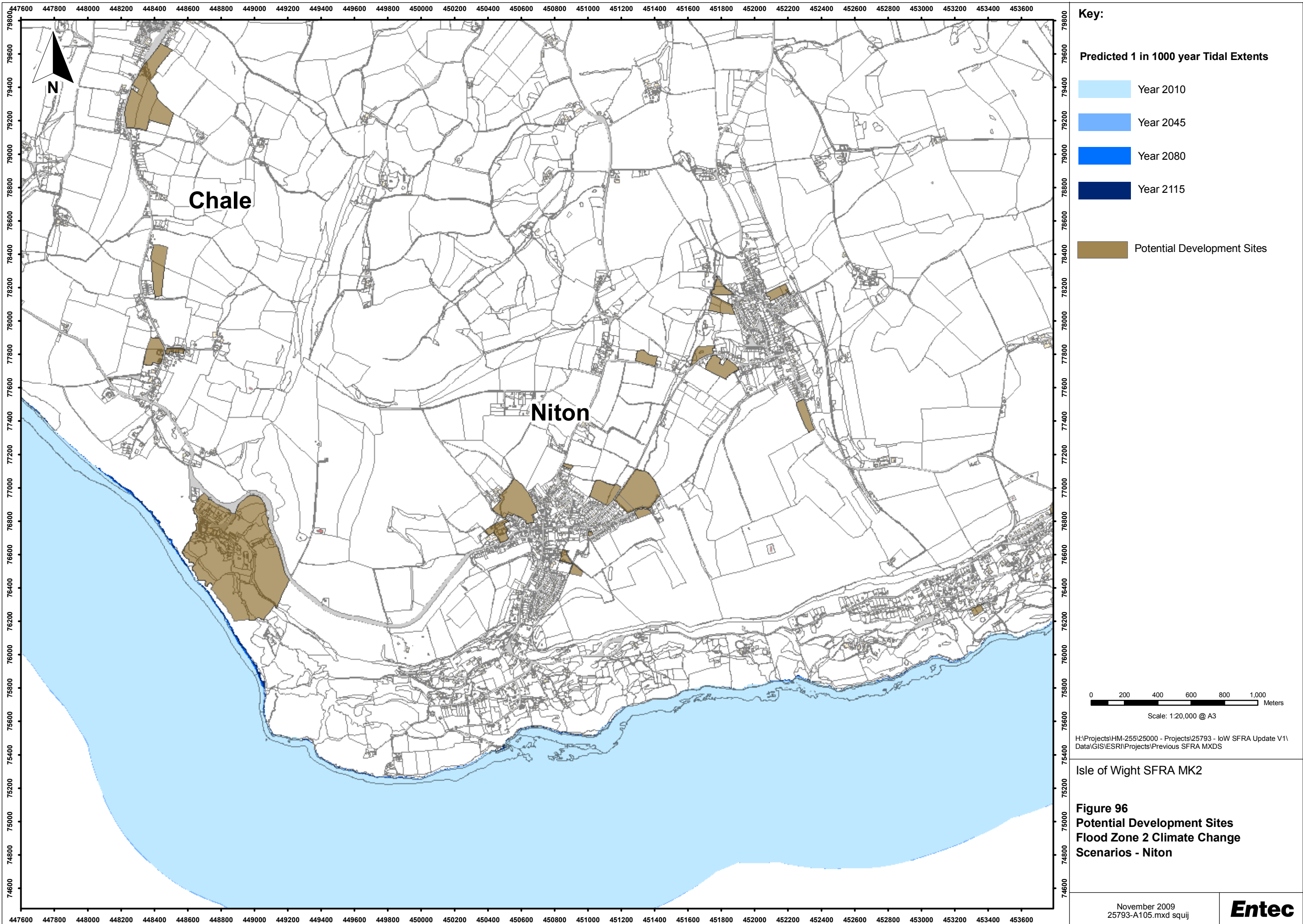
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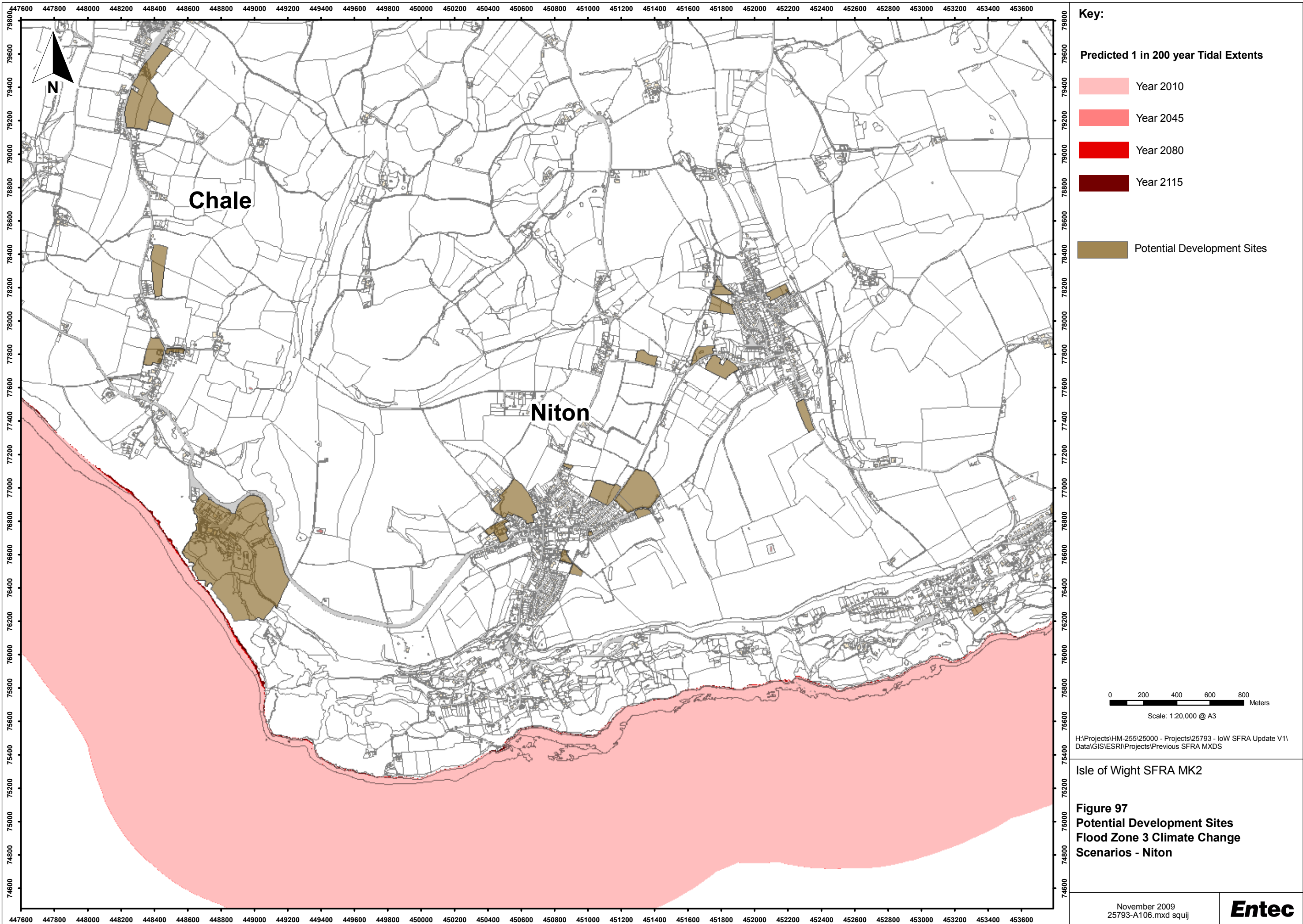






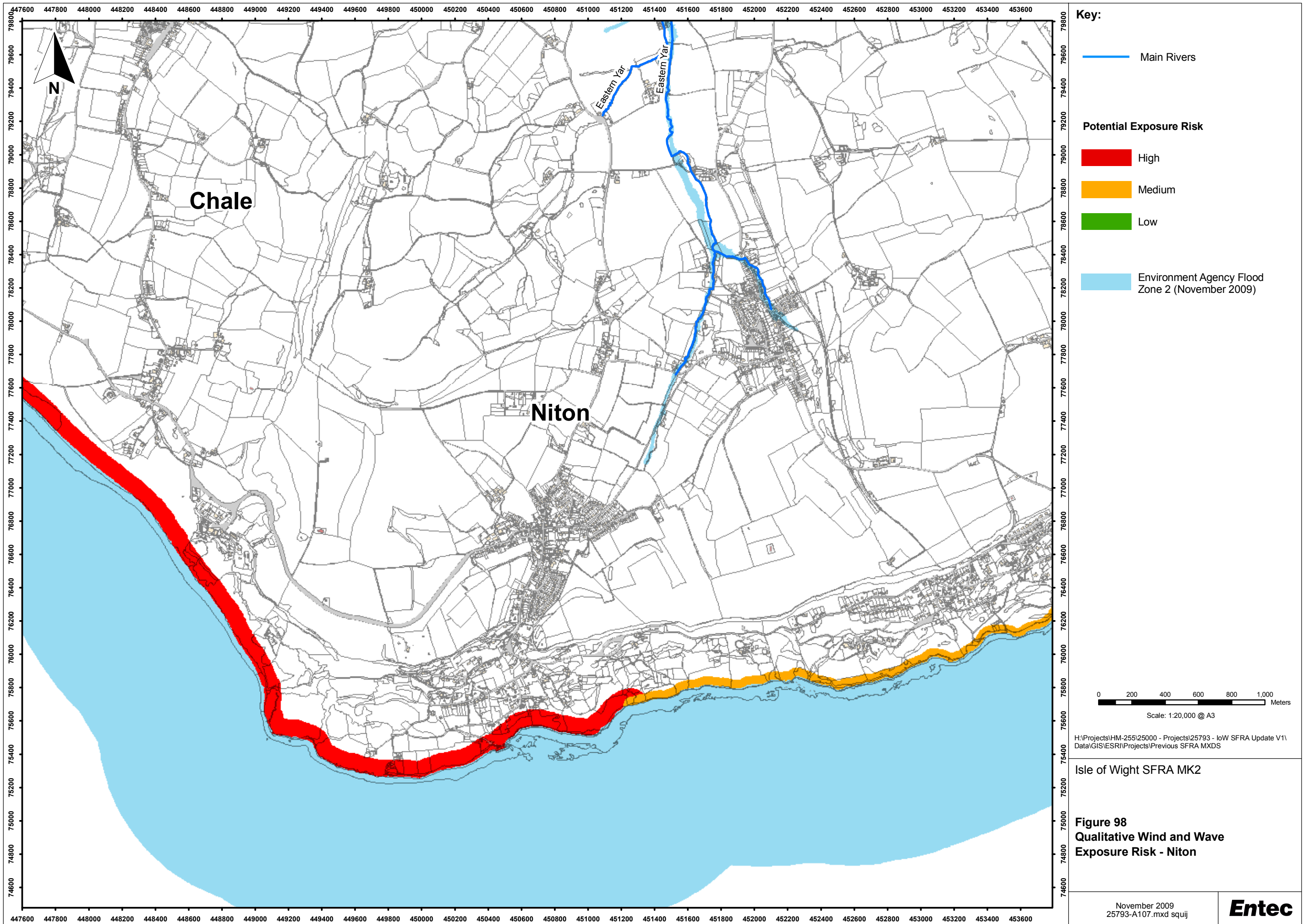
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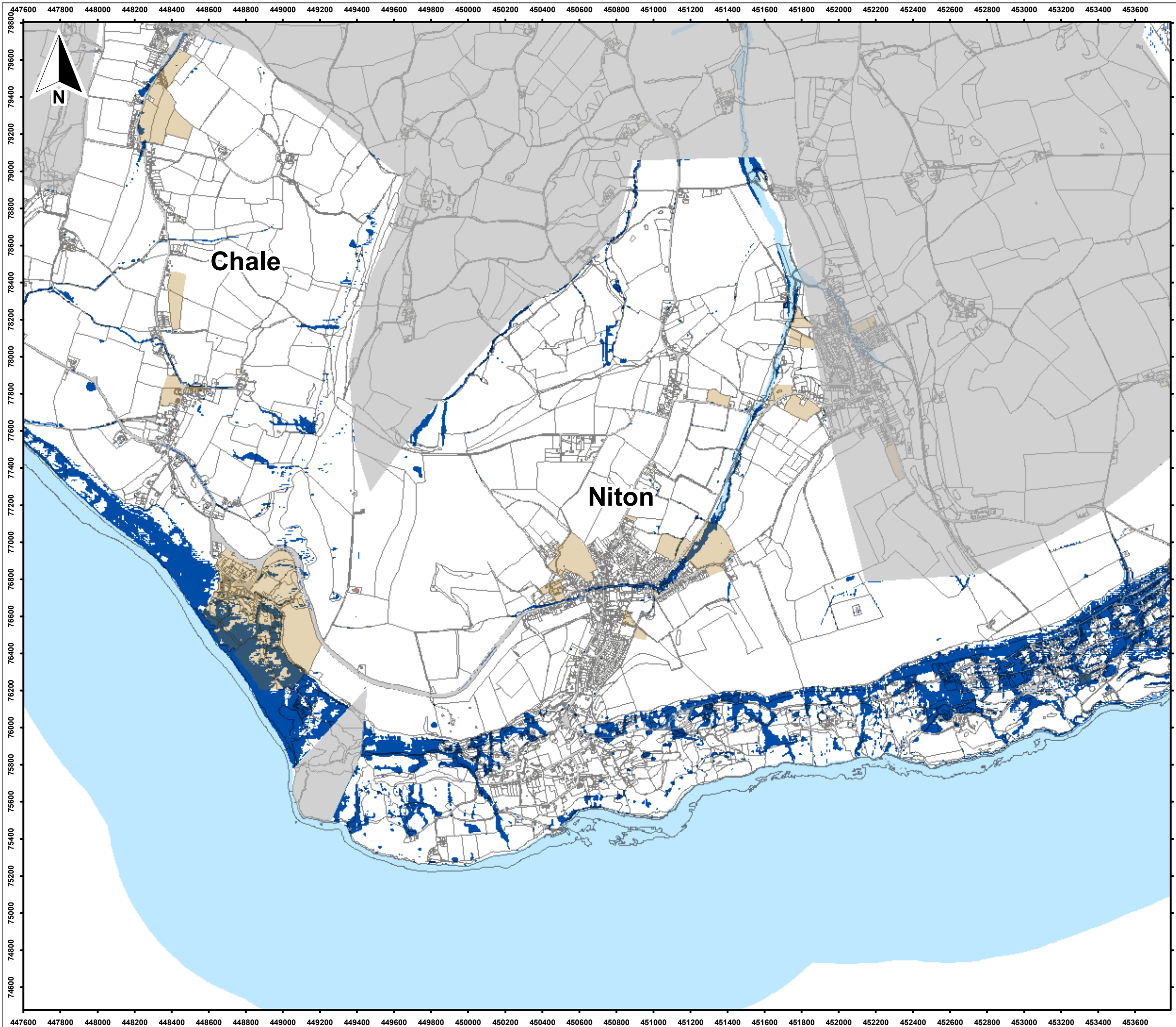




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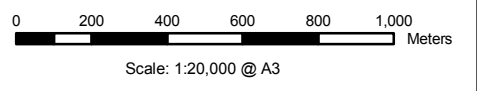




**Key:**

- Location of reported surface water flooding issues. Supplied by Southern Water for the period upto and including 2006.
- Environment Agency Flood Zone 2 (November 2009)
- Potential Surface Water Flow Routes and Ponding areas (1:100+cc) Over 0.2m deep
- Potential Development Sites
- Outside the Limits of the Surface Water Model

**Notes:**  
 Only predicted surface water flow routes and ponding areas, over 0.1m deep and greater than 25m<sup>2</sup> in areas are shown



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**Figure 99**  
**Potential Surface Water Flow Routes and Ponding Areas (1 in 100 year storm + climate change) - Niton**

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