

Isle of Wight Strategic Flood Risk Assessment MK2

Appendix M St Helens



June 2010



Overview

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

St Helens is classified as a Rural Service Centre, which is situated in the north western corner of Bembridge harbour on the reasonably steep South Facing slope of the high ground between St Helens and Seaview. Owing to the mostly elevated topography (above the extent of the tidal Flood Zones) and absence of any Main Rivers running through the town, the flood risk posed to the potential development sites is minimal. Only a couple of site on the lowest land and nearest to the river are at risk.

Sustainability and Regeneration Objectives

Development within the wider countryside will be focused on the Rural Service Centres such as St Helens 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.

St Helens 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

Flood risk in St Helens is present from both fluvial and tidal sources, with the later presenting potentially higher water levels and thus flood extents. Only a couple of smaller potential development sites in the south of the settlement are considered to be within the extent of the flood zone 2 and 3 extents (2115), these risk areas should be avoided and managed through a risk based sequential approach to landuse planning.

There is a large potential development site to the south west of St Helens which is located on a piece of land between the A3055 and the B3330. This site is assesses as being at significant risk of flooding, indeed a large portion of the site was flooded in 1974. Flood risk to this site is posed by the Vicarage Lane Drain and the tidal risk associated with the wider Eastern Yar Estuary. Only the northern most portion of the site, adjacent to the B3330 is identified as being in Flood Zone 1.

Climate Change

There is very little difference in the extents for the modelled year 2015 and year 2105 flood zones. This implies that the increased sea level associated with climate change will only really have an impact on the depth and velocity of the flooding in those areas already covered by the flood map. Only two sites become partially affected



Appendix M

by the modelled climate change flood extents. The exact implications of climate change should be assessed for these two sites at the FRA level if they are released for planning.

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 25m² 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 does not predict there to be significant surface water flood risks in the village of St Helens or across any of the potential development sites in the area. Potential flow routes are defined, but these are largely limited to the rural areas.

Surface Drainage and Infiltration SuDS Potential

Surface runoff potential in the town of St. Helens is varied. The lower half of the town is characterised by a SPR of 25%, while in the north west the SPR is in the order of 15%. This increases to 50% in the far north eastern corner of St Helens. The north and south of the town are characterised by soils with high leaching potential, underlain by a Secondary Aquifer. Infiltration potential is classified as medium in the north west and south and low in the north east.

The south and eastern parts of the town fall within the SPA and SSSI designations which cover the Eastern Yar Estuary. This potentially sensitive environment requires discharge of surface water be contaminant free. It is therefore appropriate that SuDS, with an ability to remove or attenuate pollutants, be considered. SuDS are less suitable for those areas of low infiltration potential around the centre of the town.



Appendix M

Wave Exposure Risk

The coastline near St Helens has been classified as being at medium risk of wave exposure (see Section 6 of the SFRA Report). It is recommended that for any site within the 50m buffer, where ground levels are less or equal to the predicted peak 1 in 200 year tide in 2115 level plus a 4m allowance for wave height, building design should consider the impact of being potentially exposed to airborne beach material and the corrosive effects of sea spray. The estuary has not been attributed with a Wave Exposure Risk because of its sheltered situation.

Flood Risk Management Guidance and Site Specific FRAs

The principal of avoidance should be applied when considering sites within St Helens. 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.

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 allowance and above the 1 in 200 year predicted tide levels for the year 2115. The Environment Agency should be consulted for fluvial flood levels and the Environment Agency should be asked to confirm if the predicted tide levels in Figure 1 in Appendix B are still the most recent predictions. A freeboard allowance should be applied, again the Environment Agency should be consulted on this aspect of the design.
- 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) and 1 in 200 year tidal event (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.

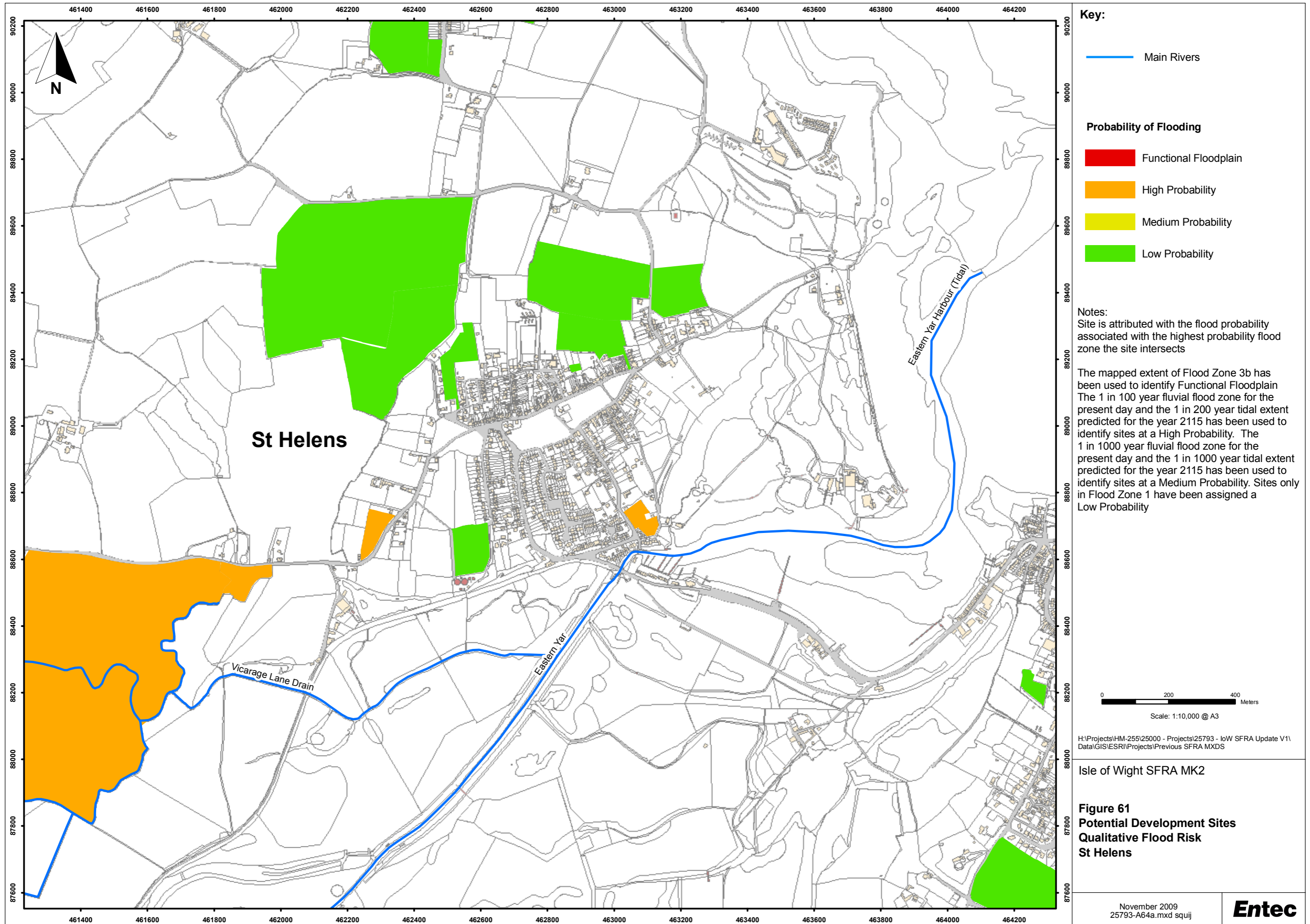


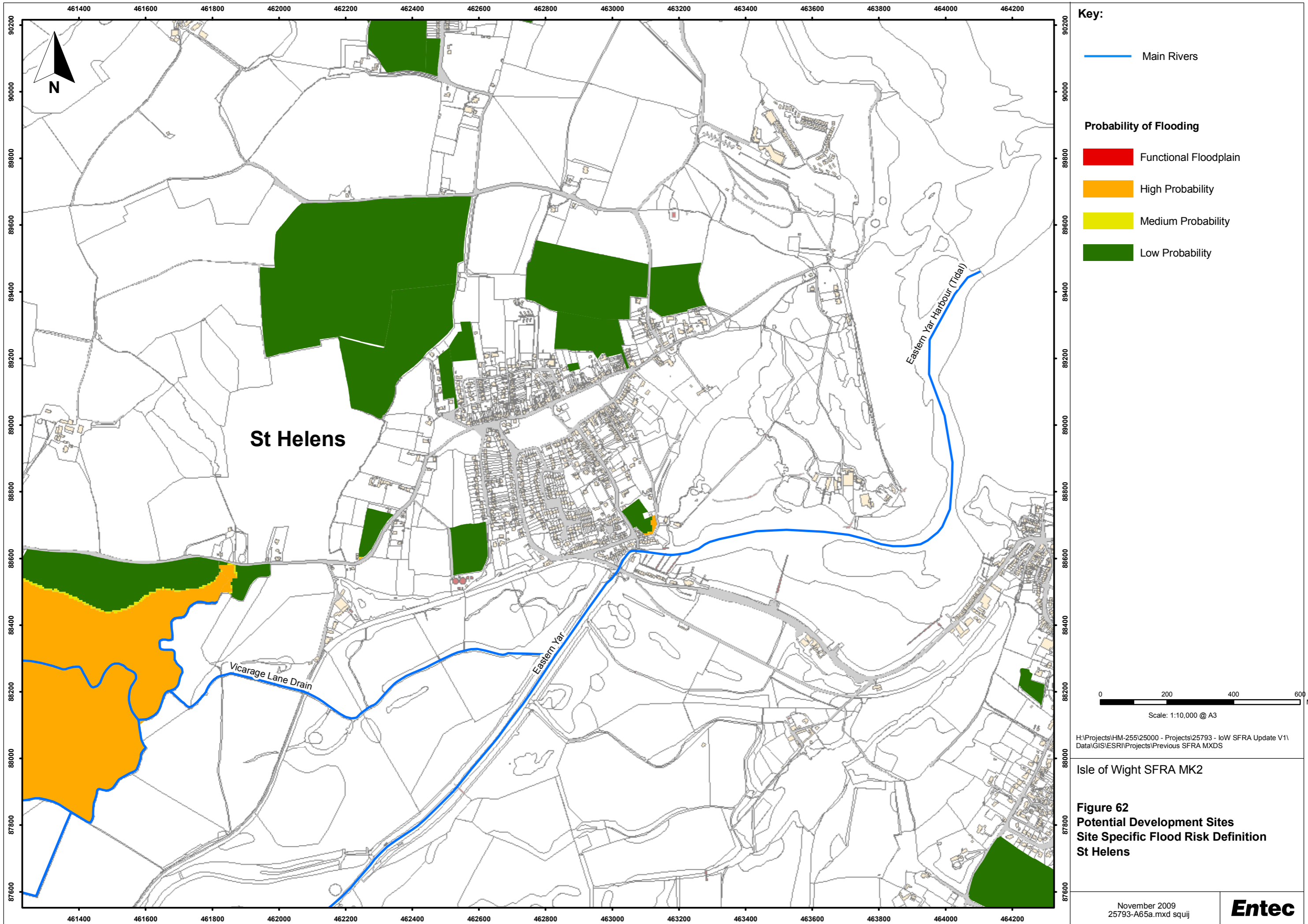
Appendix M

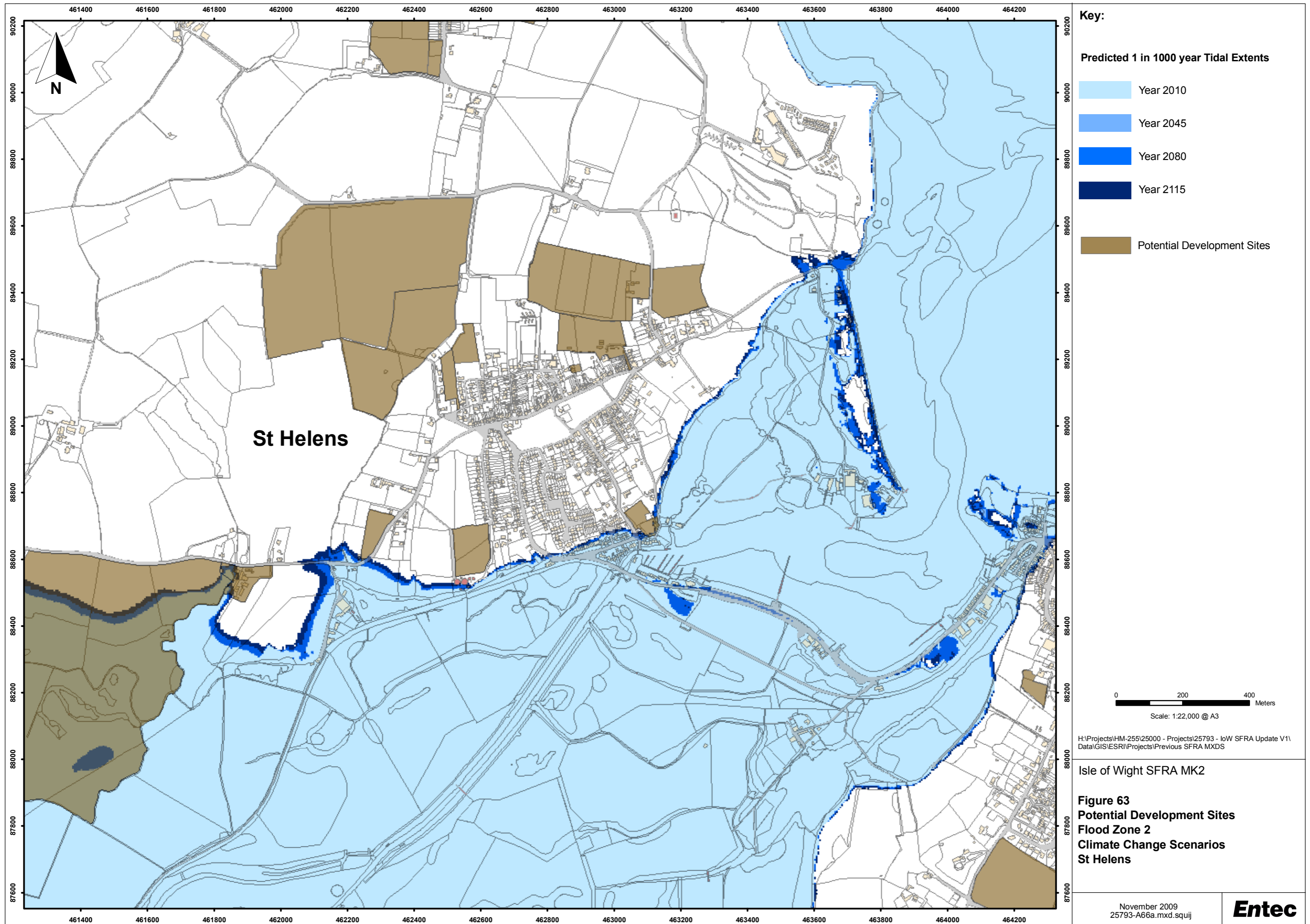
The Agency have a flood event outline for the October 2000 event that occurred on the Eastern Yar, this does not extend to cover any of the potential development sites, nonetheless it represents a useful source of information which should be considered in the FRA for either of the two potential sites that have been identified as being at flood risk, should they be put forward for planning. As with all sites over 1ha a FRA will be required and many of the proposed sites in St Helens are over the threshold, the Potential Development Site Attribution dataset details these sites and defines the area of each.

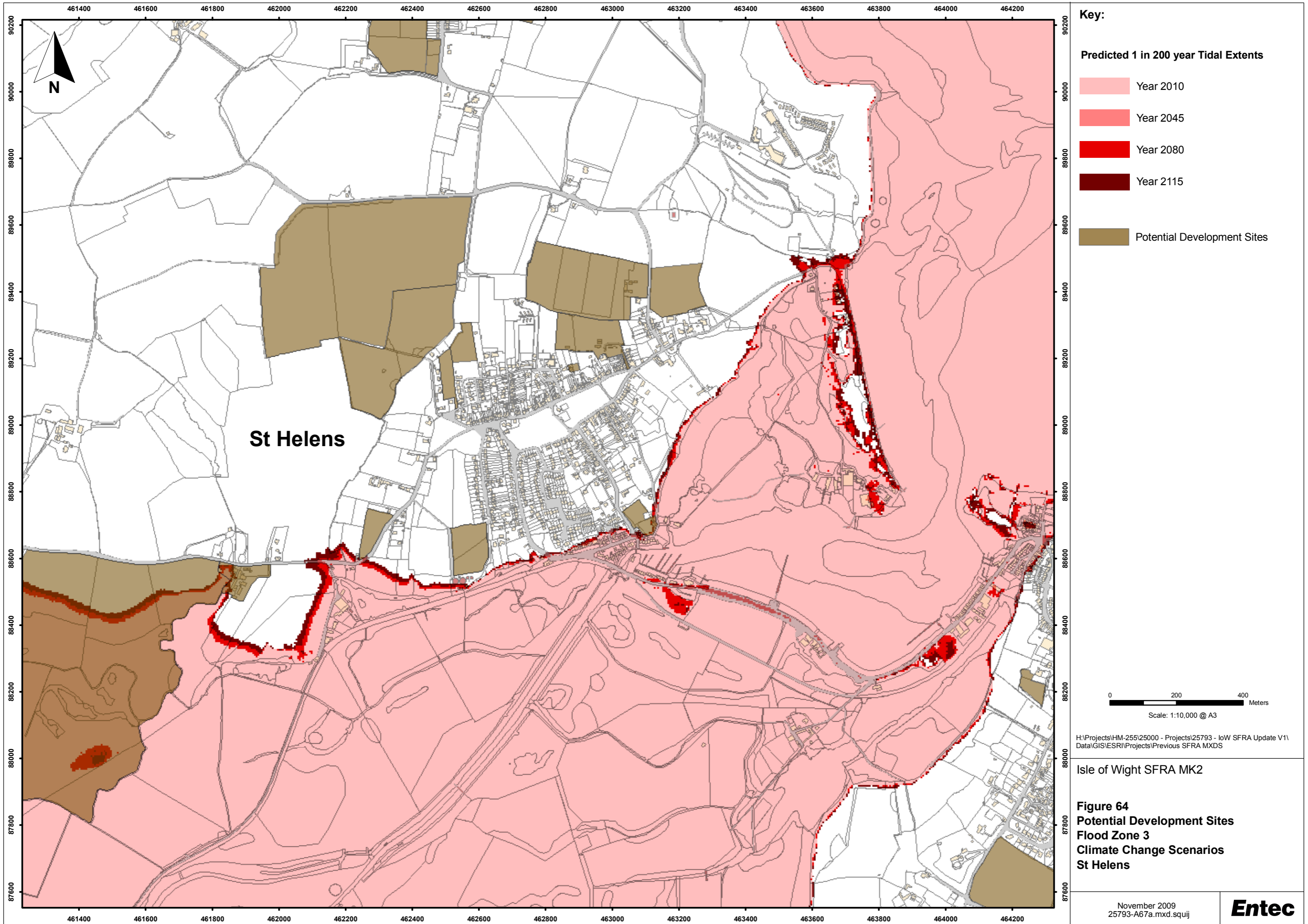


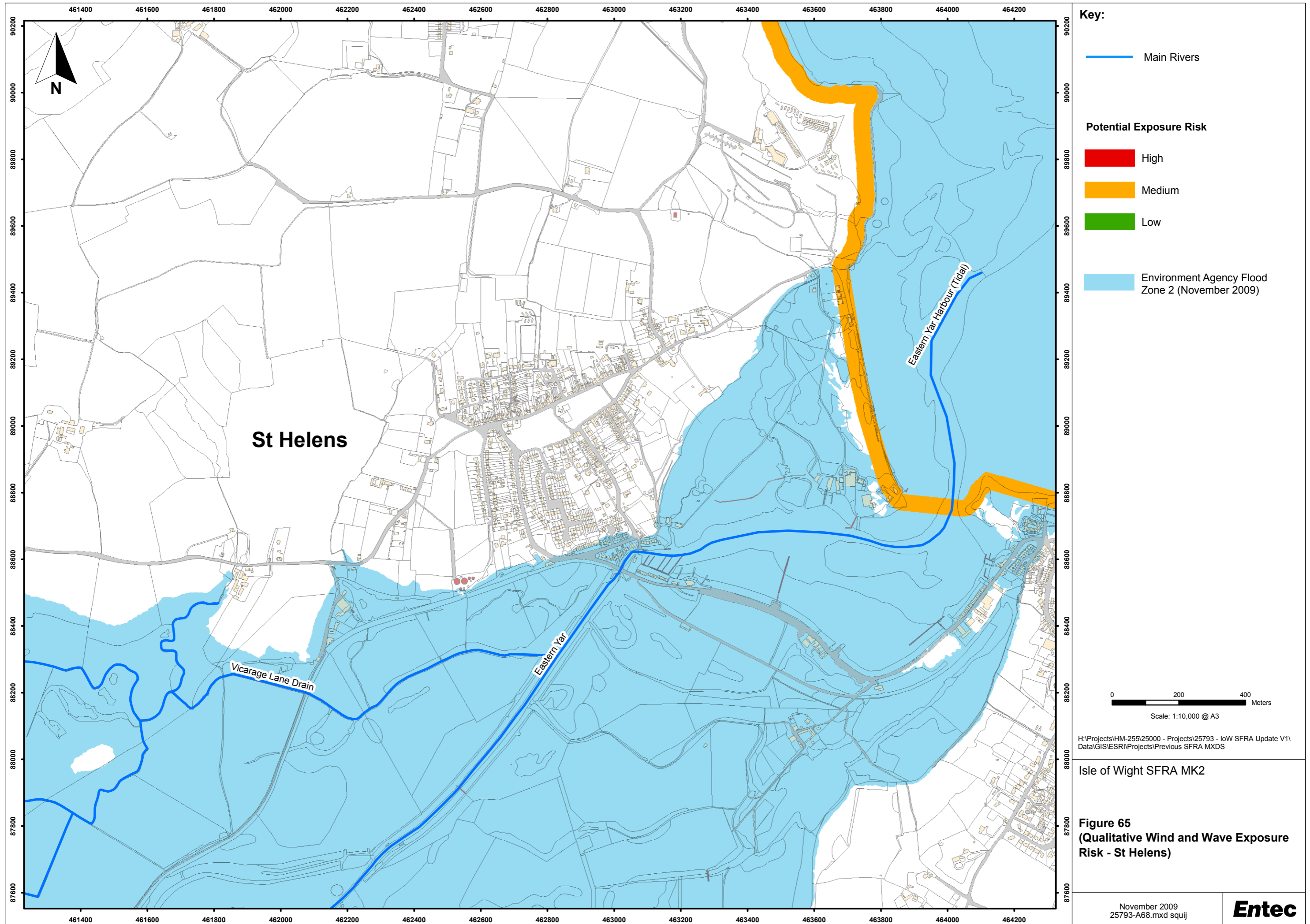
Appendix M











Based upon the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office. © Crown Copyright. AL100001776

