

Isle of Wight Strategic Flood Risk Assessment MK2

Appendix I Wroxall



June 2010



Overview

Wroxall is classified as a Rural Service Centre and it is situated in the upper catchment of the Eastern Yar, it is located in a valley with hills to the east and west. Flood risk in Wroxall is limited to areas immediately adjacent the river, with only 2 sites seriously affected.

Please review this discussion along side the mapping provided in this Appendix.

Sustainability and Regeneration Objectives

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

Wroxall 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 the town is fluvial, which affects areas adjacent to the tributary of the Eastern Yar which flows from south to north along the western side of the settlement.

The Flood Zones through Wroxall are narrow, owing to the narrow valley floor which is bounded by relatively steep topography. Only one of the potential development sites in the settlement is directly influenced by fluvial flooding. This is the large site on the western bank of the river. The eastern strip of this site falls into flood zone 3a. Owing to the topography much of it remains in Flood Zone 1.

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



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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

Wroxall is situated in the bottom of a small valley which drains towards the north. Only SAR (Synthetic Aperture Radar) data is available for Wroxall. SAR data typically includes far less small surface detail than LiDAR, as such it is just the general surface trends which are included in the model. The surface water modelling predicts flow routes in the valley bottoms and it also predicts that there is a potential surface water flood risk posed to the southern portion of the large potential development site located on the western bank of the watercourse. This potential risk should be reviewed if and when the site is developed.

Surface Drainage and Infiltration SuDS Potential

The runoff potential in Wroxall is varied, with four SPR classifications being present. In the north east, SPR values are about 15%, and in the south east the value is 29%. The north west has SPR values around 47% while the south west has SPR values of 60%. Soil leaching potential in the town is slightly more uniform, with the west and far east parts having intermediate leaching potential associated with a Principal Aquifer, while the north of the town is characterised by a Secondary Aquifer with intermediate leaching potential soils. The south is underlain by Unproductive Strata. The areas of Principal Aquifer are classified as having a medium infiltration potential while the other areas of the town has been assigned a low infiltration potential. An area potentially susceptible to mass movement associated with clay strata has been identified in Wroxall this zone has been classified as having low suitability for infiltration SuDS Techniques. Each potential development site in the Sites Database is assigned a classification for infiltration potential, groundwater contamination and runoff.

Wroxall is one few towns on the Isle of Wight without a coastline and consequently unconstrained discharge of surface waters is not possible. Infiltration potential is therefore a potential limiting factor in the use of infiltration SuDS. The western side of Wroxall and the areas along its eastern margin have been assigned a moderate suitability for infiltration SuDS techniques. The remainder of the town has been classified as having a low suitability for infiltration SuDS.



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Flood Risk Management Guidance and Site Specific FRAs

The principal of avoidance should be applied when considering sites within Wroxall. The Flood Zones 2 and 3 only occupy small land areas and as such attempts to avoid these zones should be made. One large site in Wroxall has been identified as a potential development site and Figure 42 illustrates the delineation of risks across this site. If this site is brought forward for development then a sequential risk based approach to landuse distributions should be applied. Lower lying areas of higher flood risk should be designated for water compatible or less vulnerable uses.

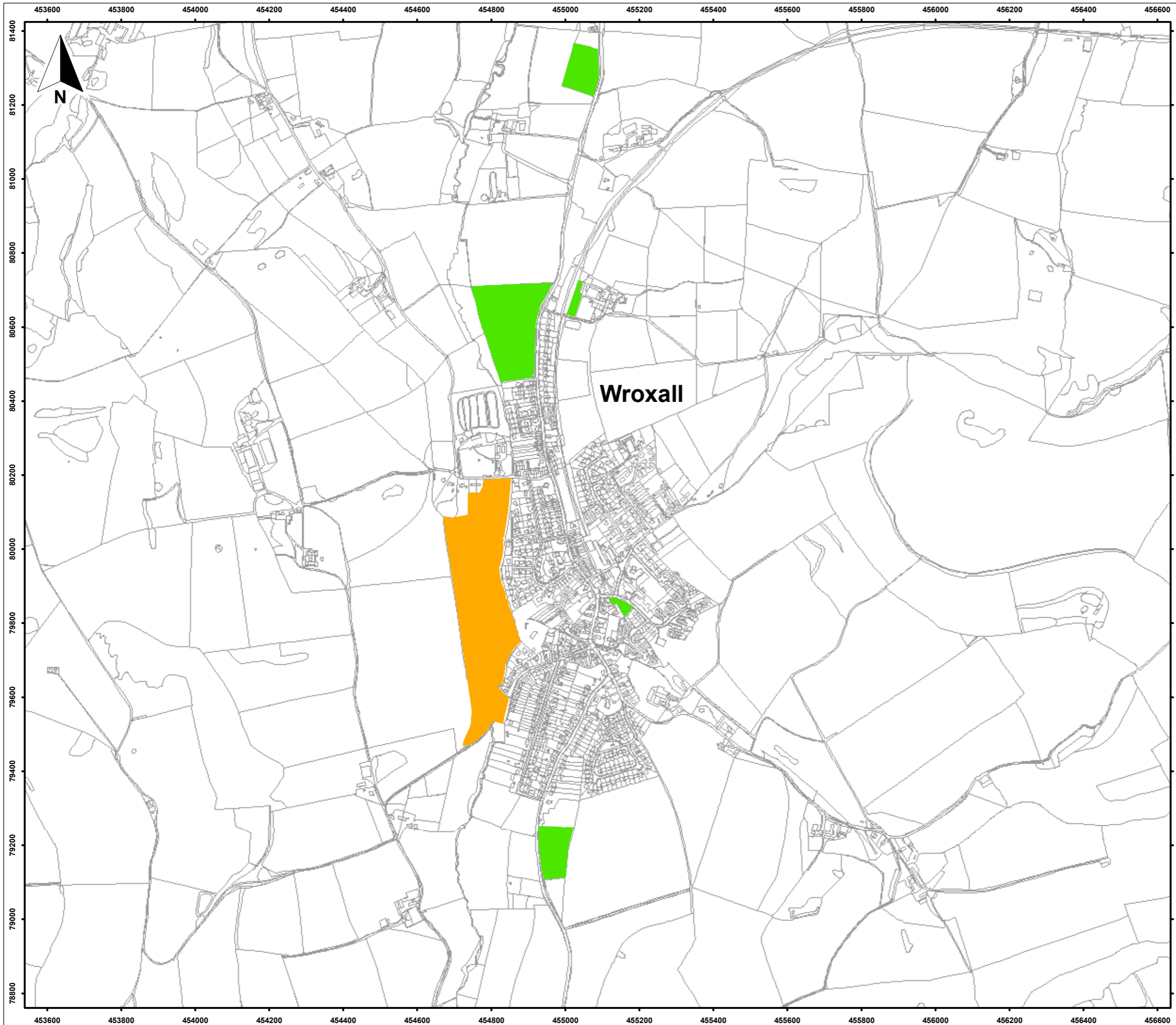
The development of any previously undeveloped site in Flood Zones 2 and 3 is considered by PPS25 as an increase in flood risk and should be avoided. The redevelopment of any previously developed sites within the Flood Zones will require the PPS25 Sequential test to be passed and the Exception Test satisfied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

Factors to be considered in safe development could include:

- Finished first floor levels should be set above the predicted 1 in 100 year fluvial flood levels, plus a climate change allowance. The Environment Agency should be consulted for fluvial flood levels. 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).
- 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 I



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
 Meters

Scale: 1:10,000 @ A3

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Isle of Wight SFRA MK2

Figure 41
Potential Development Sites
Qualitative Flood Risk
Wroxall

November 2007
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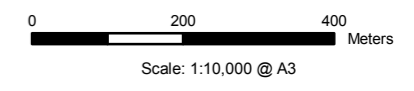
Entec



Key:

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Figure 42
Potential Development Sites
Site Specific Flood Risk Definition
Wroxall

November 2009
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