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National Trust Purbeck:
Swan Brook NFM Opportunities

Feasibility Assessments

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1. Introduction

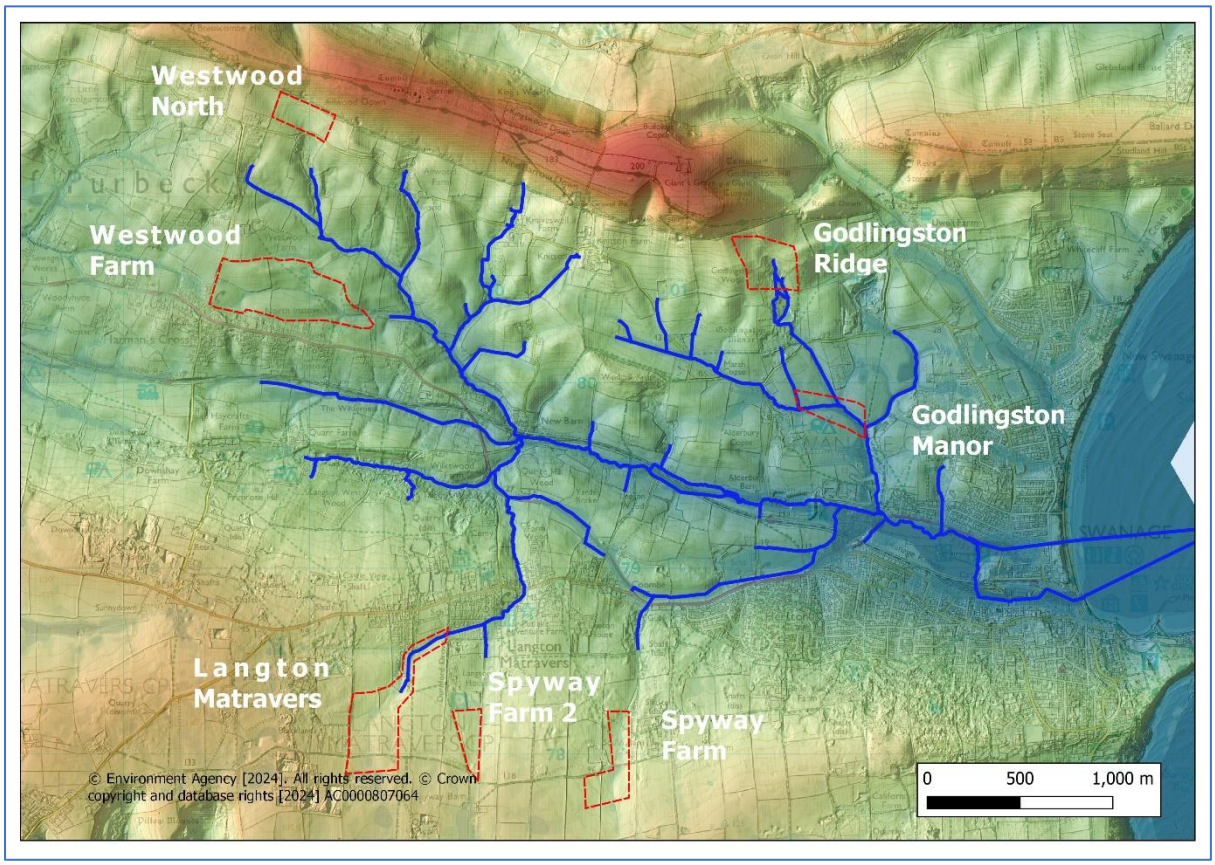
The National Trust are managing an area of approximately 3600 hectares of land at Purbeck. The land is generally farmed but is also being managed for conservation including in this case improvements to surface water hydrology. Within the holding is the Swan Brook catchment which drains to Swanage.

A Natural Flood Risk Management approach is being implemented in the Swan Brook catchment to complement existing management approaches. Funding has been secured to implement measures at 7 sites which are in the holding of the National Trust.

An investigation is reported below to document surface flow pathways on the selected sites and to identify if there is are potential measures to work with natural processes to reduce flood risk through catchment interventions. The investigation to identify potential measures has:

- Undertaken desk-based site characterisation from mapping and interrogated the Environment Agency LiDAR (DTM) data for an understanding of localised topography;
- Completed a site visit to develop site specific detail, identifying site-specific processes and defining measures to work with natural processes to reduce flood risk;
- Developed an inventory of potential measures.

Seven locations are considered in the following report.



N.B. Detailed locations are provided within the report using the What3words referencing system

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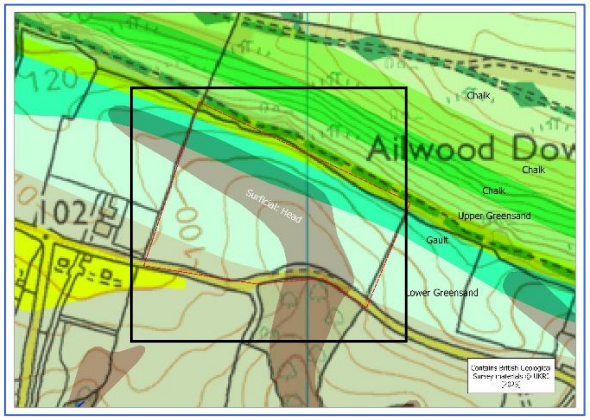
2. Westwood North

Surface Water Drainage and Topography

The Westwood North site is a single field parcel which is a source of runoff generation and flow concentration. There is a complex geology within the field with permeable Chalk and Sandstone bedrock meeting less permeable surficial Head deposits. The geology influences the shape of the field and hydrology.

A clearly defined basin form within the field has a relatively flat valley bottom floor (blue shading below). Ground water is a strong support to hydrology (there is a tapped spring within the field) and the shape of the field concentrates storm runoff into a defined pathway.

A (groundwater) supported runoff flow pathway can cause local accumulation of water on the adjacent road passing out of the field through an access gateway in the low point of the field.



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Approach to working with natural processes.

It is unlikely that any changes can be made to reduce the generation of a surface water flow from the field. One approach considered for natural flood management in the catchment area is to create storage of runoff generated along the upper slopes within the field parcel.

Natural Flood Management Opportunity – Runoff Management

Temporary storage within the field can be created by bunding across the valley bottom. The flatness analysis and detailed contours generated at 0.25m using the Environment Agency LiDAR DTM indicate a potential area for storage in a natural depression in the valley. Two bunds are proposed; one ca.35m long and a second ca 15m long. Both bunds are 0.5m high and should have a pipe outfall within the bund to allow a controlled downstream flow.