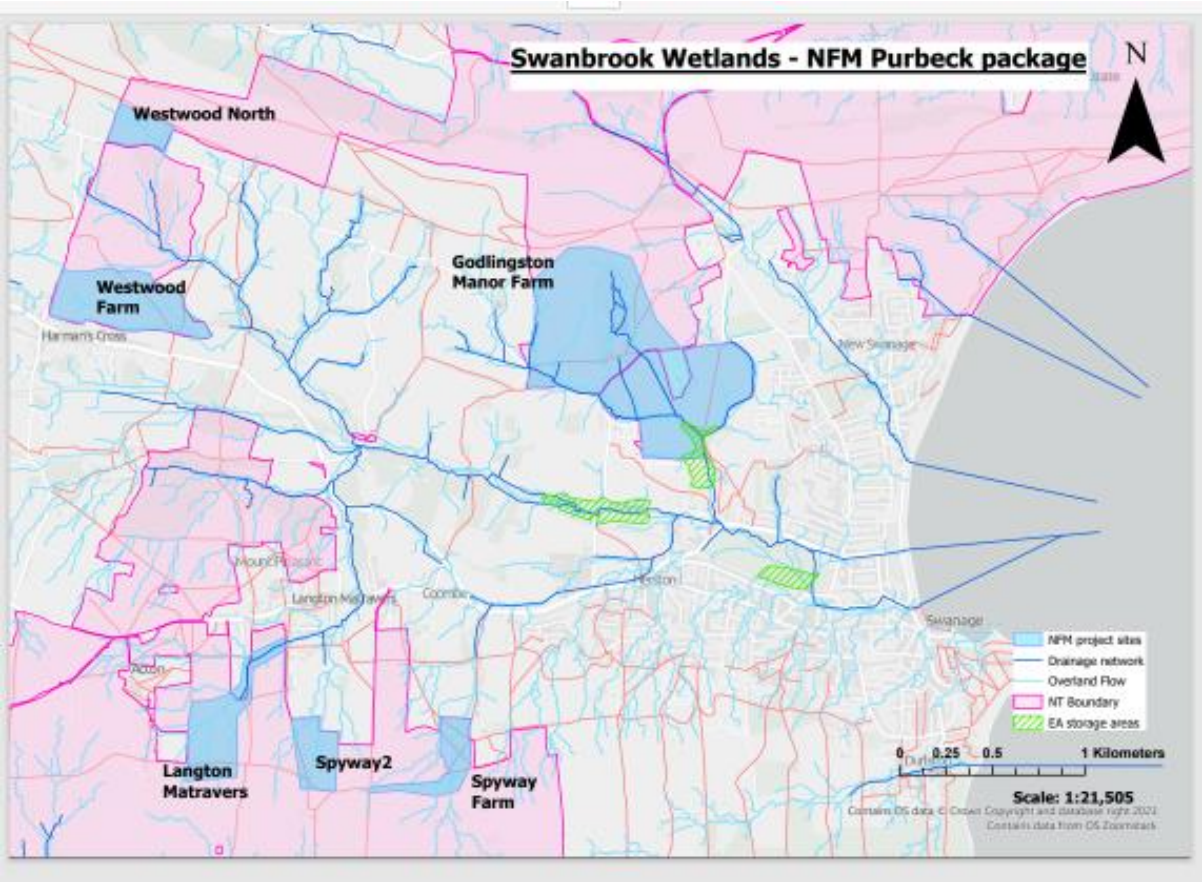
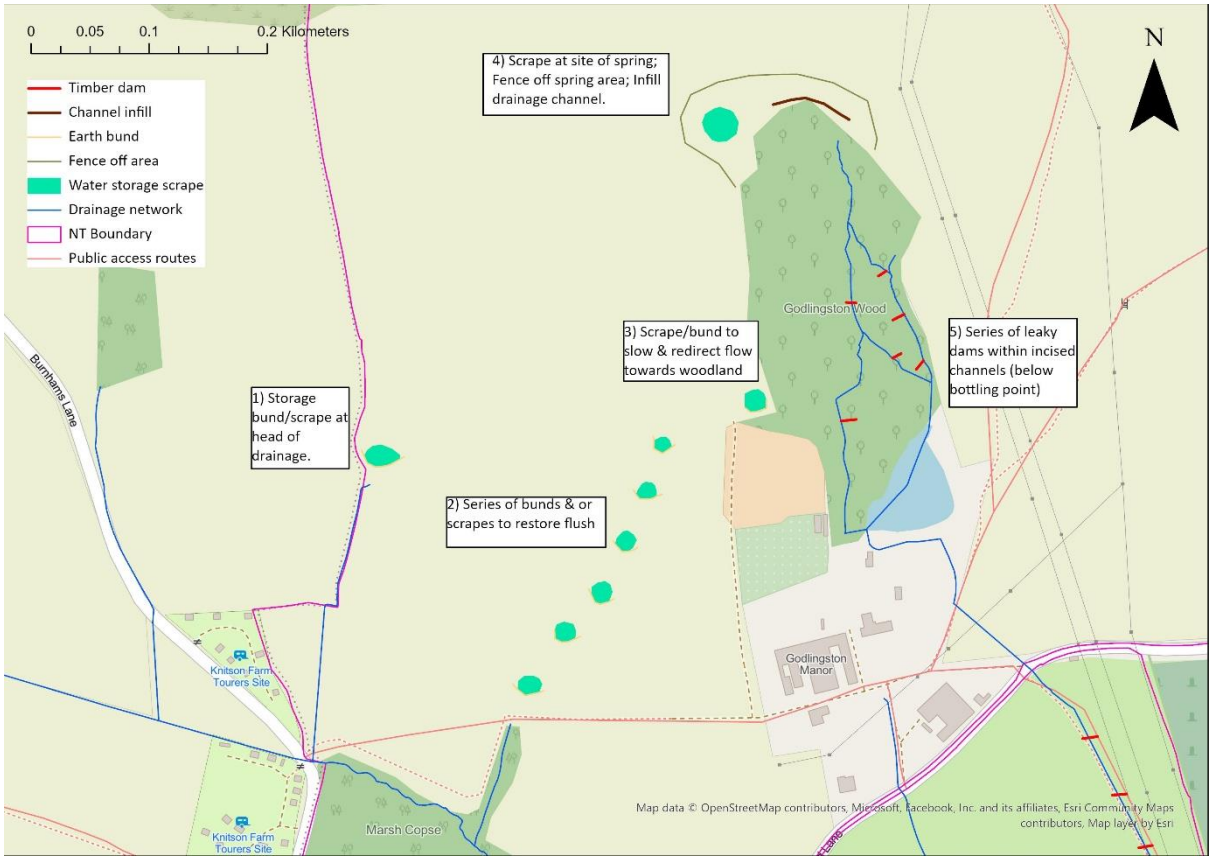
SwanBrook Wetlands package (NFM_ID_LW_000082_Section_C_0001):



The SwanBrook Wetlands package consists of the following 6 project sites, summarised below:

- Godlingston Manor Farm (NFM_ID_LW_000082_Section_C_0002)
- Langton Matravers (NFM_ID_LW_000082_Section_C_0004)
- Spyway 2 (NFM_ID_LW_000082_Section_C_0005)
- Spyway Farm (NFM_ID_LW_000082_Section_C_0006)
- Westwood Farm (NFM_ID_LW_000082_Section_C_0007)
- Westwood North (NFM_ID_LW_000082_Section_C_0008)

Godlingston Manor Farm (NFM_ID_LW_000082_Section_C_0002):

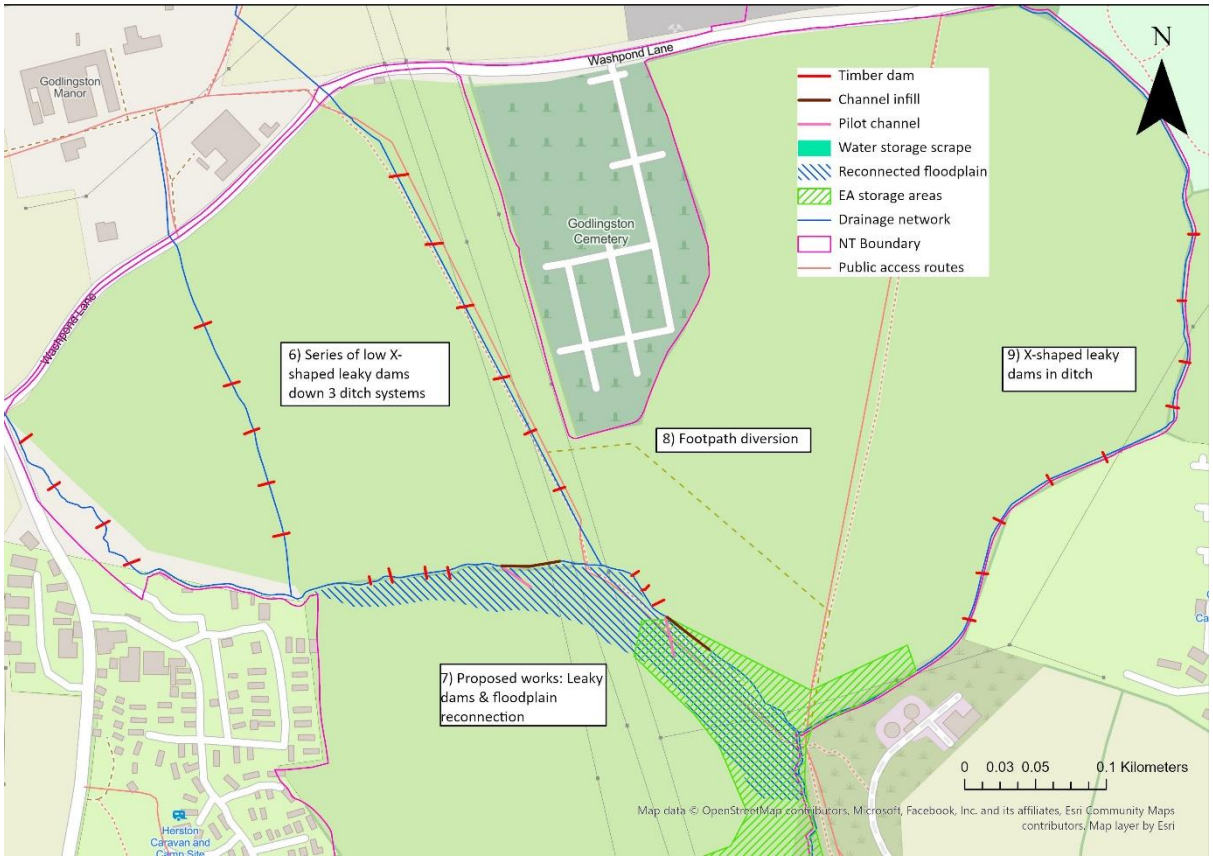


Shallow scrape features (20-30cm) to enhance topographical depression features, with downstream "speed bump" bunds. These will be subtle features to prevent overfilling and potential failure. Three runoff pathways will undergo interventions as labelled on the above map:

1. An existing area of scrubby vegetation at point where runoff converges will be utilised to slow and store water offline before it joins the ditch system. This feature will be around 20m in diameter.
2. A morphologically active flow pathway will be encouraged to slow the flow for longer with a series of small bunds. These features will be around 20m in diameter.
3. Provides an opportunity to intercept a flow pathway, slowing and storing water, with the potential to divert some flow into the woods rather than into the infrastructure and property directly below. This feature will be around 20m in diameter.

4. Spring head protection & re-naturalising: The spring head above the wooded area will be protected from poaching by livestock through fencing off the area which is naturally wet, to prevent access. A channel which has been created to concentrate the spring flow should also be infilled and flow allowed to spread as a diffuse flow in the protected area.

5. In channel slow flow with X-shaped leaky dams: 6 locations are proposed for leaky dams within the wood. These will be installed manually due to the sensitive and inaccessible nature of the habitat. These will be installed in areas with adjacent flatter land to allow for water to fill a wider cross-section. An approved X-shaped design will be used, staked in on the downstream side at an angle, using natural materials.

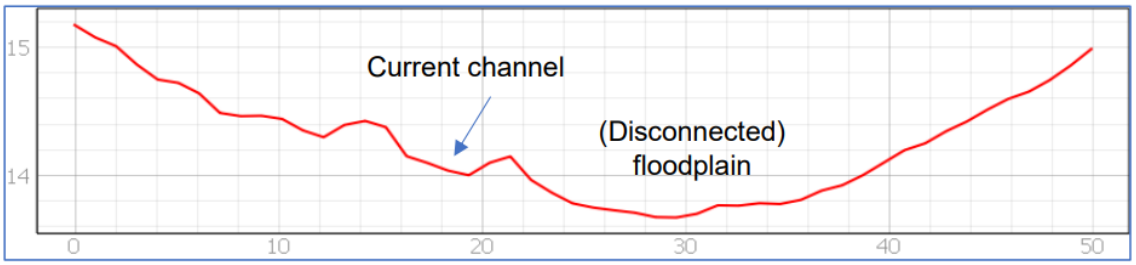


6/7/9. In channel leaky dams: Addition of woody debris to the channel is proposed specifically with the intention to trap sediment and raise the bed level of the channel. In the larger lower ditch system, two reaches are proposed, with up to 7 dams installed (labelled feature 7).

Additional opportunities to slow the flow are present within the smaller upstream ditches too (labelled features 6 & 9), with an additional 24 smaller dams proposed.

This will follow the same method as in the upper farm. In the smaller ditches, where channels are quite steep, the x-shape design should help mitigate potentially for scouring.

7. Floodplain reconnection: Analysis of flatness in the valley floor identifies the natural floodplain, disconnected from the current channel. It is proposed to re-connect this at the points where the path deviates. A simple infill of the channel is proposed, with a shallow pilot channel to direct flow onto the floodplain area. Material from the pilot channel can be used as infill. The infill should be immediately downstream from the reconnection point and only need to be for a distance of 10 to 20m.



The downstream of the newly reconnected floodplain area is currently modified for use as EA flood alleviation storage. Re-connecting the floodplain will make the current storage feature an

on-line wetland feature, with a wide and shallow diffused flow created on the floodplain as the main flow path of the stream. Water flow has a shallow connection back to the current single channel at the base of the site for ongoing flow downstream.

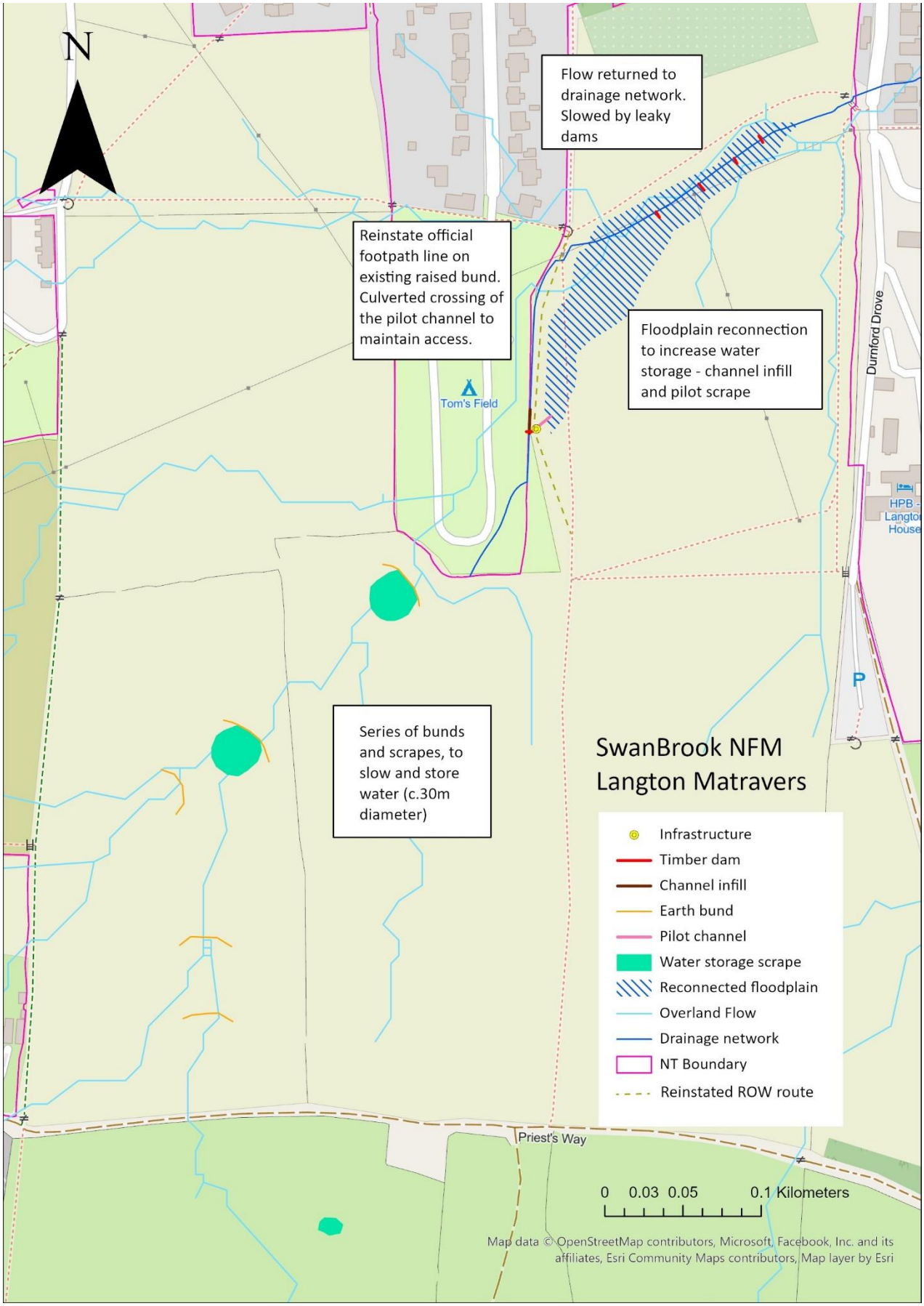
Ordinary Watercourse Consent: An application has been prepared and submitted for Land Drainage Consent to Dorset Council.

Main River & EA water storage area: The lower end of the floodplain reconnection area is in a reach classified as Main River and will modify the functioning of the current flood storage feature. A pre-application assessment has been made by local Environment Agency personnel, following a site visit and involvement of teams including asset performance, biodiversity, fisheries & geomorphology.

Rights of Way: A public footpath (ref: SE3/2) currently follows the western side of the tributary channel, where floodplain reconnection is proposed. The footpath will need to be re-routed along the eastern bank from SZ0184679903 to SZ0200379746. Whilst an existing upstream crossing point exists, a new crossing is proposed to ensure that the footpath is a sufficient distance from the floodplain to remain accessible. This has been agreed in principle with the Dorset Council. The official application process takes time to complete but an application is underway with Swanage Town Council.

Monitoring: A holistic monitoring programme has been designed around the SwanBrook NFM project – *see NFM monitoring plan summary*. Watervole surveys have been included in baseline environmental assessments for this site, scheduled for September 2024 and spring 2025.

Langton Matravers (NFM_ID_LW_000082_Section_C_0004):

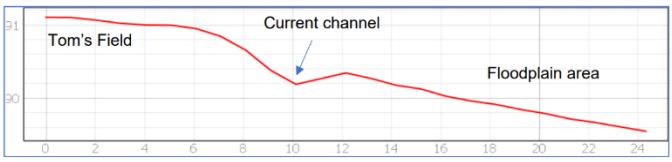


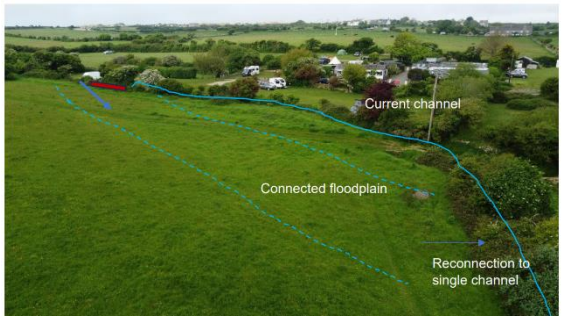
An ephemeral flow pathway develops over limestone bedrock in fields upstream (South) of Tom's Field Campsite. Flow is concentrated sufficiently to cause erosion and establish a defined ephemeral channel.

Shallow (ca. 30cm high) bunds created across the flow pathway within natural topography will form a curved "speed bump", slowing the delivery of runoff from the upstream field sources. It is intended that flow will overtop these features. These features will be around 30m in diameter.

Shallow (20-30cm) scrape features will enhance two natural depression features, to create additional temporary storage within the fields. The scrape features will be created using a digger to remove a shallow depth of topsoil. Removed material will define the feature but also to infill the upstream runoff pathway that feeds into the scrape feature. The two features suggested will both be in the order of 30m in diameter. These will be subtle features to prevent overfilling and potential failure.

Floodplain reconnection: On reaching Tom's Field Campsite, a modified channel is established, diverting water around the campsite and field boundaries. Below the campground, where the channel crosses the downstream natural floodplain area, lowering of the right bank of the channel (by around 20cm x 3m) will restore flow to natural low-lying topography. Material taken from the bank will be used to infill the downstream channel.





A pilot channel will be excavated, to pass water under the raised footpath route.

A culverted crossing will allow this access to remain open throughout the winter/periods of heavy rain.

The channel at the base of the site is over deep and incised. 4 leaky woody debris (X-shaped) dams are proposed will be installed manually within the channel, with downstream stakes securing the tree trunks or large branches on the downstream side. These are proposed specifically with the intention to trap sediment and raise the bed level of the channel, increasing the cross-section width of the channel, slowing delivery and increasing storage.

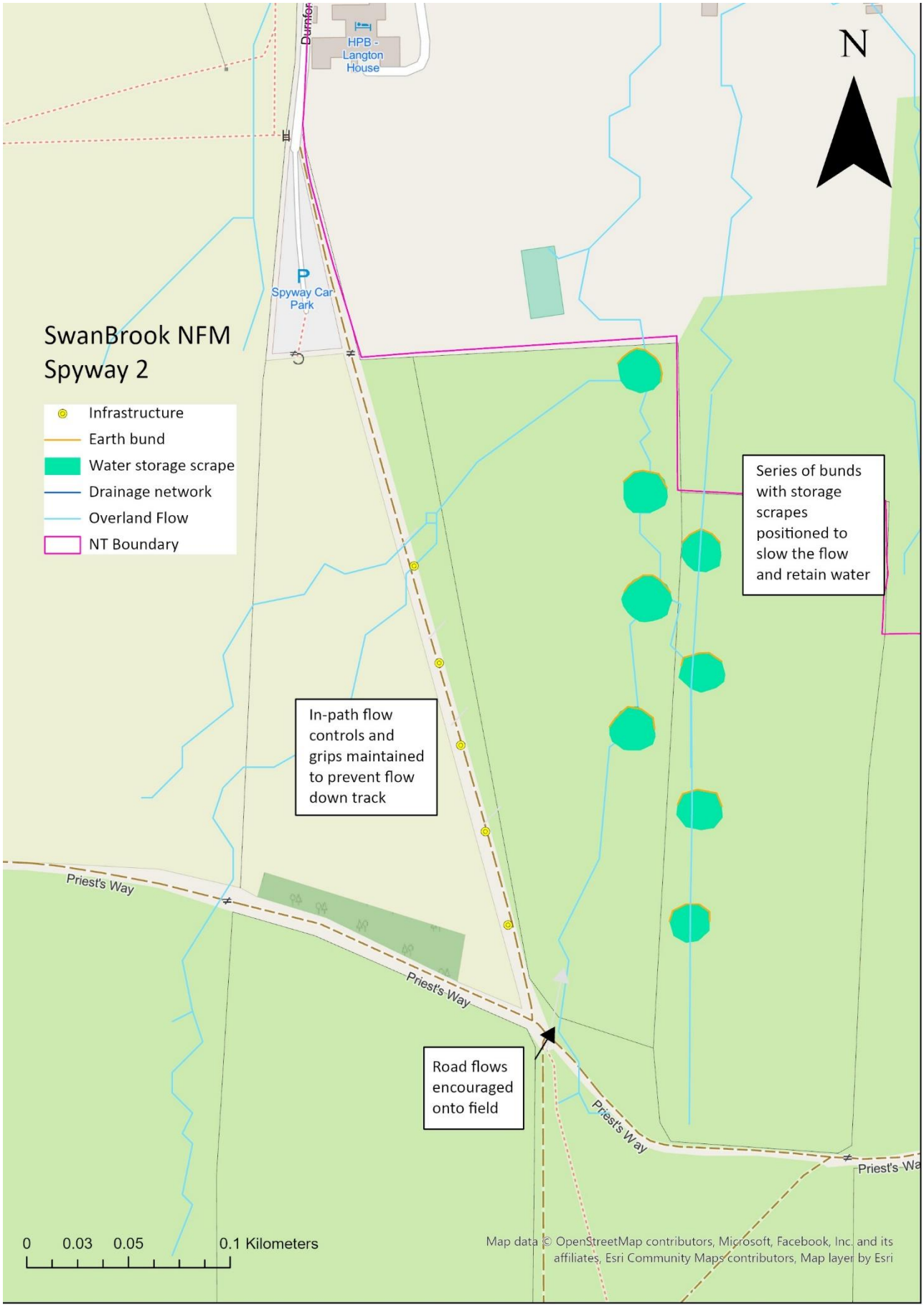
Ordinary Watercourse Consent: An application has been prepared and submitted for Land Drainage Consent to Dorset Council.

Rights of Way: No changes to rights of way are required. This design has been agreed in principle with the Dorset Council. Work will be sequenced to reinstate the official footpath route with spring mowing and signage prior to works to avoid any disruption to access. Diversions will be temporarily required for safety reasons during construction works.

Monitoring: A holistic monitoring programme has been designed around the SwanBrook NFM project – *see NFM monitoring plan summary.*

Note: The Langton Matravers Parish Council has embraced this project and the opportunity to work together to mitigate local flooding risks.

Spyway 2 (NFM_ID_LW_000082_Section_C_0005):



At Spyway 2, an ephemeral runoff pathway concentrates within two fields, with natural topography aiding in the efficient delivery of runoff during periods of heavy rainfall. A combination of flatness modelling and engagement with neighbouring landowners has identified the most efficient location for initial NFM interventions.

8 shallow (20-30cm) scrape features will enhance natural depressions, to create additional temporary storage within the fields. The scrape features will be created using a digger to remove a shallow depth of topsoil. The 8 features suggested will be in the order of 20m in diameter, created across the 2 flow pathways in 2 series of 4. These will be subtle features to prevent overfilling and potential failure.

Removed material can be used to define the feature with a shallow downstream bund. 8 Shallow (ca. 30cm high) bunds will form a curved "speed bump", slowing the delivery of runoff from the upstream field sources. It is intended that flow will overtop these features. These features will also be around 20m in diameter.

Track infrastructure provides access from the National Trust Spyway carpark to the popular walking route of the Priests Way, and to Dancing Ledge, a popular coastal tourist destination. It also provides access to Farm buildings for the tenant. Historically, runoff from this track has contributed to flooding issues within the village of Langton Matravers. The Langton Matravers Parish Council has embraced this project and the opportunity to work together to mitigate local flooding risks.

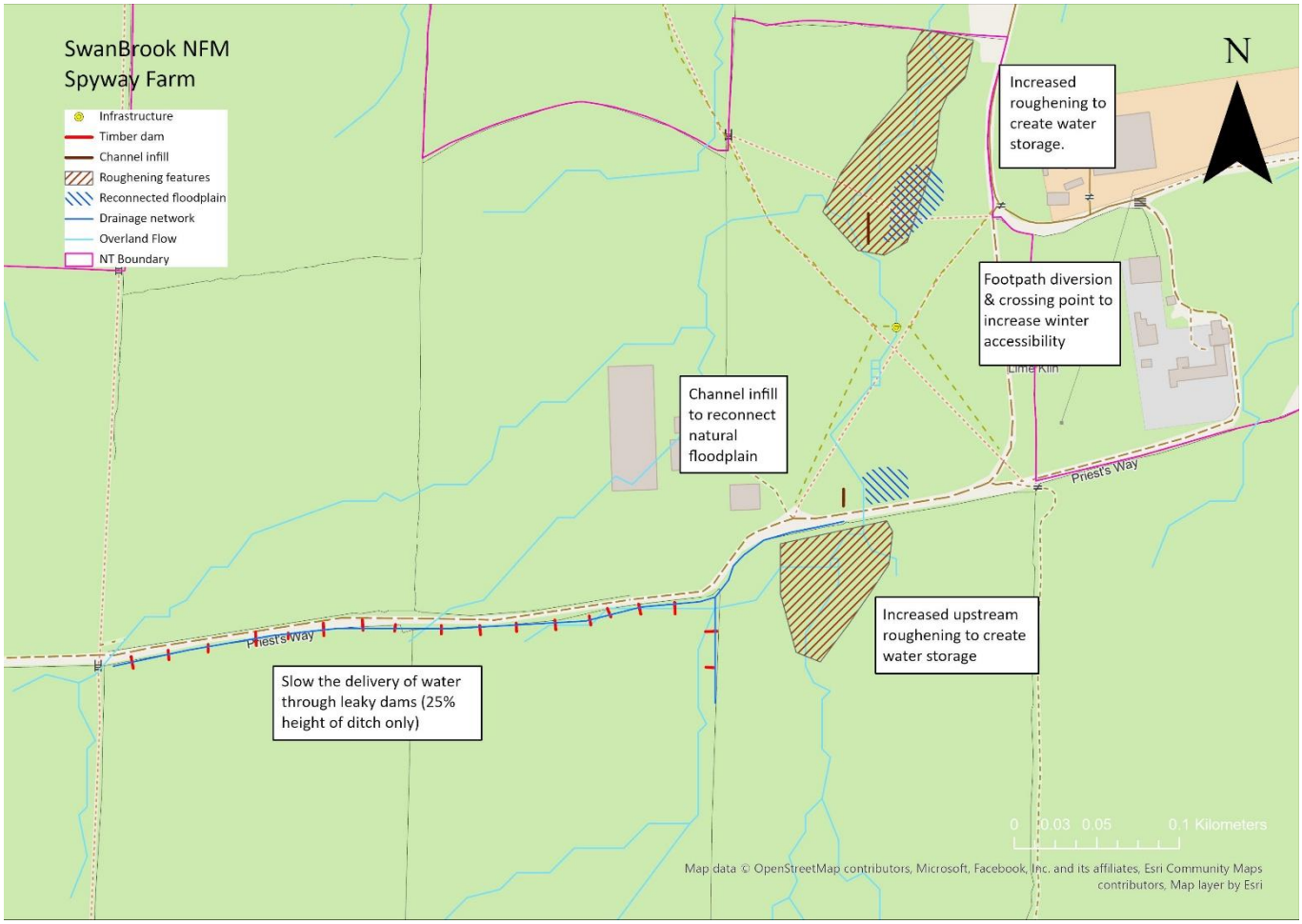
Rights In-path flow controls and grips will be renewed to encourage track flows on to the field where NFM measures can help to slow and store it.

Ordinary Watercourse Consent: An application has been prepared and submitted for Land Drainage Consent to Dorset Council.

Rights of Way: No rights of way are affected by this proposal. The Dorset Council highways team have been made aware of the project and have no concerns.

Monitoring: A holistic monitoring programme has been designed around the SwanBrook NFM project – *see NFM monitoring plan summary.*

Spyway Farm (NFM_ID_LW_000082_Section_C_0006):



At Spyway Farm an ephemeral runoff pathway develops within a cluster of gently sloping field sources. These concentrate through a combination of field ditch drainage and in naturally occurring low points in topography. Two main source pathways develop at this site: Pathway 1 originates from the west and is concentrated through deep, fast-flowing drainage ditches around the perimeter of two fields; Pathway 2 develops from the South as a combination of emerging groundwater and rainfall runoff. Both paths join at a key node to develop a single pathway through the last downstream field of the site area. A significant flow develops during heavy rainfall, with signs of erosion and ponded holes obviously present.

Methods to slow the delivery of runoff downstream are proposed, encouraging a slower velocity, shallow diffuse flow where possible and creating more in-catchment storage.

Pathway 1 – In-ditch slow the flow (from the West):

18 Low-level X-shaped woody debris dams within the channel are proposed, as a series of baffles to slow the delivery of flow and trap sediment, reducing power in the runoff flow. The height of the dam will be no more than 25% of the ditch height to allow for overtopping. Dams will be secured with angled stakes downstream.

Pathway 2 – "Floodplain" reconnection (from the South):

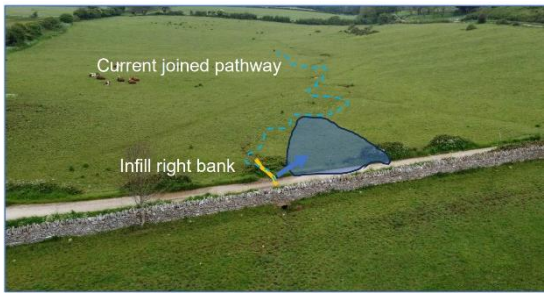
Flatness modelling shows potential for additional water storage in seasonally wet field areas.

Roughening features (heavy logs scattered on the flatter areas of the flow pathway) are proposed to slow and create a more diffused flow, mitigating the more defined pathways caused in response to heavier rainfall runoff.

Combined pathway 1&2:

Runoff pathways 1 and 2 combine on the upstream side of the well-used Priest's Way track, passing underneath in a piped culvert. The culvert is not at the lowest point in the natural valley form and is held within an embanked channel (outside of the natural low-lying land) on the downstream side of the track.

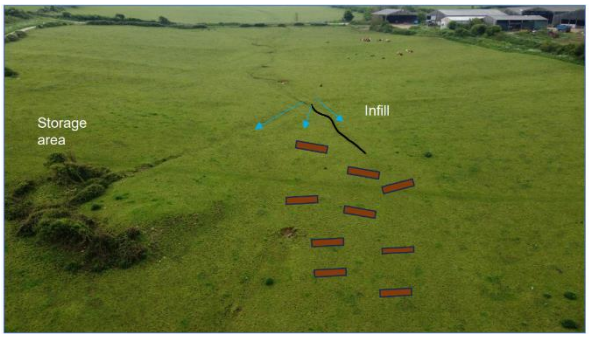
Channel infill (ca. 10m) to reconnect the natural floodplain: Rather than move the culvert, it is proposed to reconnect the downstream flow back into the lower lying land by infill of the embanked channel, pushing the right bank material into the channel. The combined flow from the culvert should be allowed to spill into the downslope field as a diffuse flow without concentration into any channel.



Deep holes have been created within the downstream field by significant flows in the past. These are positioned within the natural flo w path and will remain was water storage features.

The downstream end of the field (to the North) has been identified as flatter ground where the flow pathway could be enhanced to increase potential water storage during rainfall. A natural depression within the field will aid water storage but requires reconnection.

A stretch of runoff channel infill (ca. 20m) will help to connect the depression more frequently and increase the diffuse spill of flow into the flatter area.
Roughening features (heavy logs scattered on the flatter areas of the flow pathway) are proposed to slow and create a more diffused flow, mitigating the more defined pathways caused in response to heavier rainfall runoff.



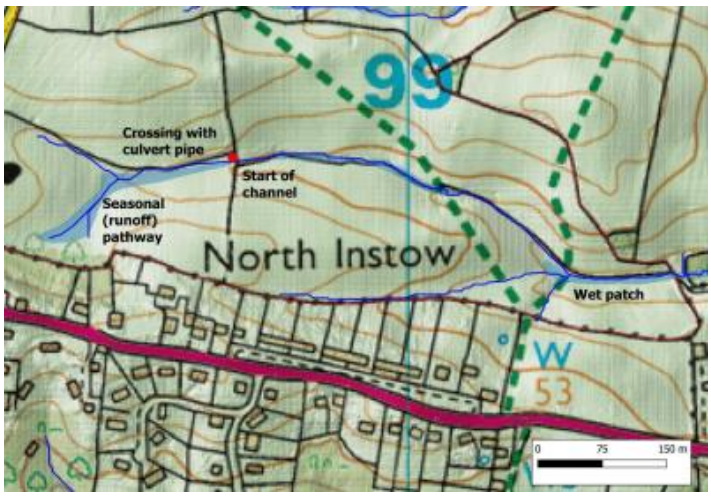
Ordinary Watercourse Consent: An application has been prepared and submitted for Land Drainage Consent to Dorset Council.

Rights of Way: Several footpaths are present within this field and are currently disrupted by the flow of water during wet periods. To future-proof access, one new raised crossing is proposed at SZ0067678057, with a footpath diversion (ref SE16/17) suggested to avoid the water storage area. This design has been agreed in principle with the Dorset Council. The official application process takes time to complete but is underway with Langton Matravers Parish Council.

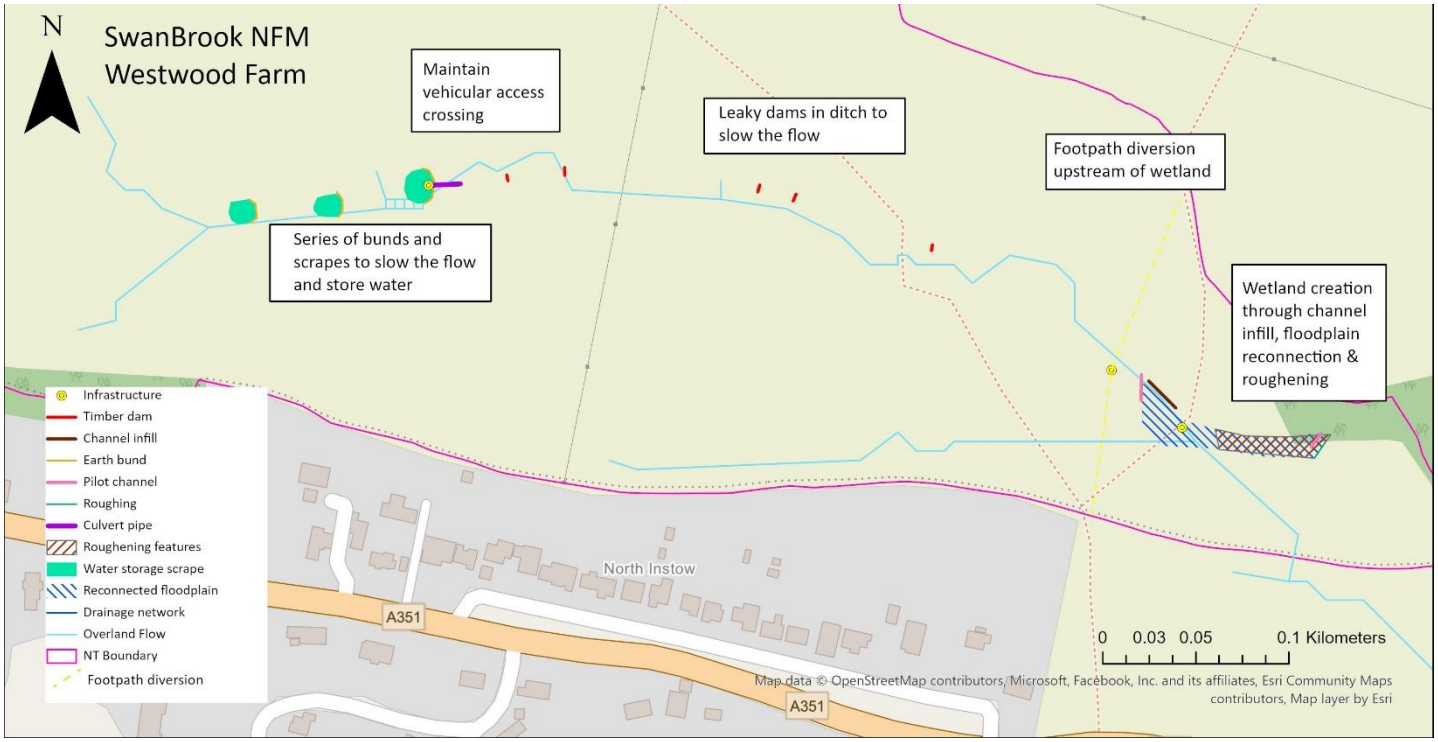
Monitoring: A holistic monitoring programme has been designed around the SwanBrook NFM project – *see NFM monitoring plan summary.*

Westwood Farm (NFM_ID_LW_000082_Section_C_0007):

The catchment area draining to the tributary channel at Westwood Farm concentrates surface rainfall flow from two runoff pathways that generate from southern slopes. This is further supported by emerging groundwater with a clear start of the channel as a spring type emergence. Although some of the channel flows through a relatively narrow valley form with steep slopes, hydrological analysis has identified areas where water might naturally flow or accumulate.



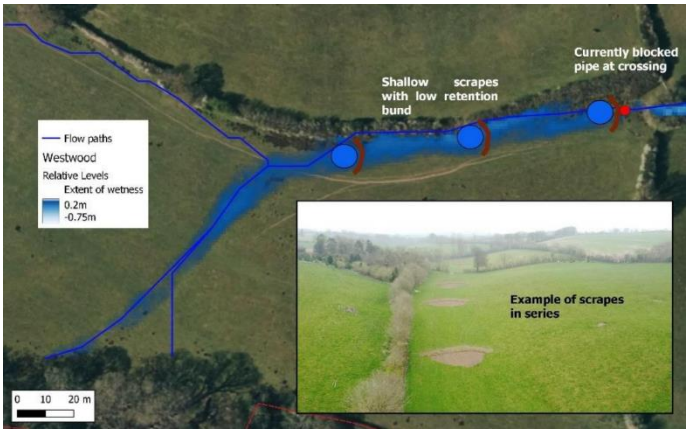
Three approaches are considered for natural flood management at Westwood Farm: (i) creating storage of runoff generated along the upper slopes of the tributary; (ii) slowing of the flow concentrated within the channel and managing the downstream delivery of fine sediment; and (iii) reconnecting the floodplain area.



Slow & store runoff:

To slow the delivery of flow and create temporary "floodplain" storage for flow and mobilised sediment, an approach of creating a series of three shallow bunded depressions (scrapes) is proposed. The scrapes will retain water within the catchment for a longer period but slowly drain and are not expected to be permanent storage of water.

Three shallow (20-30cm) scrape features will be created within the valley floor and are located based on topography, with existing flatter areas modified by scraping out surface material. The scrape features will be created using a digger to remove a shallow depth of topsoil from an area of approximately 10m wide and 10-15m length downstream.



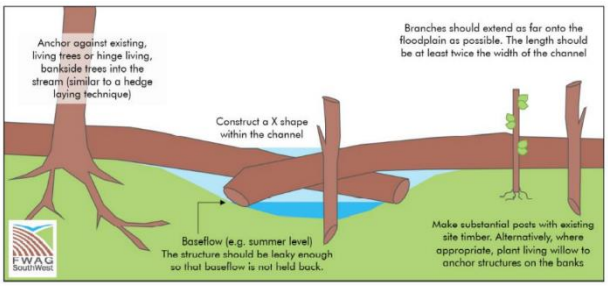
Shallow (ca. 25cm high) bunds will be created with won material, to create a small wide mounding of scraped material at the downstream end of the scrapes to retain water. A lowered notch (approximately the width of the flow pathway and half the mound height) in the mounded material and within the flow pathway allows downstream flow without full overtopping of the scrape feature (mitigating erosion).

Vehicular access to the North side of the farm will be maintained with new infrastructure. A culverted crossing will be reinstated with the overflow from the 3rd (downstream) scrape feature piped below ground. A tried and tested sediment trap and overflow design will mitigate the blocking of this culvert and subsequent flooding of the crossing.

Slowing of the flow within the channel:

Parts of the channel are confined by a limited valley floor/floodplain area and are in places over-deepened and detached from the limited area of floodplain. Further storage in the catchment can be created by a combination of raising the bed of the channel and increasing frequency of interaction with any available floodplain.

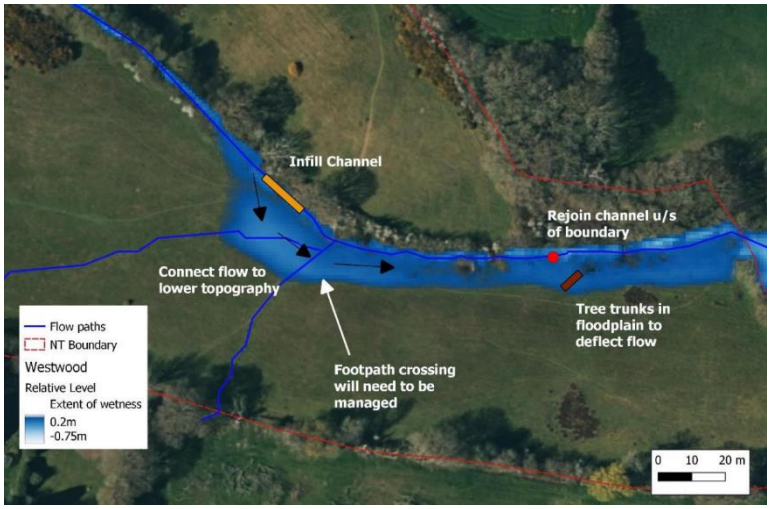
5 X-shaped leaky dams are proposed to trap sediment and to hold back water. These will be installed manually, staked in on the downstream side at an angle, using natural materials. Where possible trees will be felled in situ and hinged to enable the tree to carry on living, naturally securing them to the banks.



Floodplain reconnection:

At the downstream end of the farm the valley floor widens out to a disconnected but recognisable floodplain area. An area of floodplain approximately 10m wide and 75m long can potentially be reconnected.

Infill of the existing channel at the location where the level of



the bed of the channel is closest to the level of the adjacent floodplain will allow flow to connect to the floodplain.

A pilot channel will help to ensure water is directed onto the floodplain but the flow will then be allowed to follow a diffuse pattern within the area.

Roughening features (the addition of large tree trunks into the reconnected flow path) will help to direct and further flows, maintaining a diffuse flow and shallow wetland habitat.

The flow path must return back into the single channel before leaving National Trust land. If necessary, a wide shallow pilot channel which lowers the bank of the channel can help to return flow safely within the boundaries of the farm.

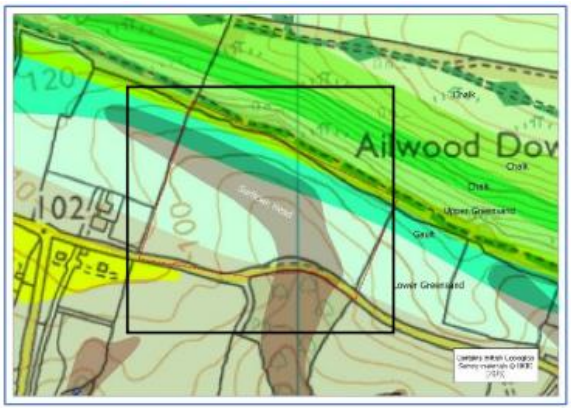
Ordinary Watercourse Consent: An application has been prepared and submitted for Land Drainage Consent to Dorset Council.

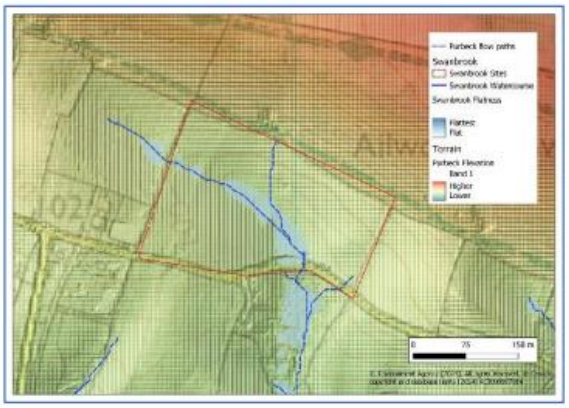
Rights of Way: A footpath diversion is proposed for footpath SE11/27, where occasional wetting of the floodplain already causes access issues for the current foot crossing (SY 99188 80366). A new footbridge will be created upstream of the floodplain reconnection (SY 99150 80397), providing a future-proof and more direct access route across the farm with minimal changes. This has been agreed in principle with the Dorset Council. The footbridge will be constructed in partnership with the Dorset Council highways team. The official application process takes time to complete but an application is underway with Corfe Castle Parish Council.

Monitoring: A holistic monitoring programme has been designed around the SwanBrook NFM project – *see NFM monitoring plan summary.*

Westwood North (NFM_ID_LW_000082_Section_C_0008):

The Westwood North site is a single field 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.





2 temporary runoff storage bunds: Constructing bunding across the valley bottom will create temporary runoff storage. Two bunds are proposed; one ca.35m long and a second ca.15m long. Both bunds are to be 0.5m high and will have a piped outfall (as pictured) within the bund to allow a controlled downstream flow.

Ordinary Watercourse Consent: An application has been prepared and submitted for Land Drainage Consent to Dorset Council.

Rights of Way: No rights of way are affected by this proposal. The Dorset Council highways team have been made aware of the project and have no concerns.

It has been suggested that moving the lower field access gate slightly along the road may be beneficial, as the current location may be accelerating water flow on to the road. This has not been officially included in the project but will be considered as a complimentary action.

Monitoring: A holistic monitoring programme has been designed around the SwanBrook NFM project – *see NFM monitoring plan summary.*