

Natural England Commissioned Report NECR141

New Forest SSSI Ecohydrological Survey Overview

Annex M: Little Wootton Inclosure

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Contents

1	Little Wootton Inclosure.....	2
1.1	Introduction	2
1.2	Topography and Wetland Distribution	3
1.3	Ecology	4
1.4	Geology and Hydrogeology	5
1.5	Water Supply Mechanisms	6
1.6	Damage and Restoration.....	8
1.7	Monitoring requirements.....	9
2	Maps.....	9

1 Little Wootton Inclosure

1.1 Introduction

This Ecohydrological Assessment Area (EcoHAA) covers 38.1ha and is contained within SSSI Unit 538 with its centre at National Grid Reference (NGR) 422587, 098895 (see Figure 1-1).

Figure 1-1: Location Map



The site is dominated by a mixed woodland plantation on a plateau. On the southern edge is a seepage face from the river terrace gravels. A wetland may have been supported here before the forestry drainage and other ditches were installed. A small remnant area of mire remains. Significant work would be required to recreate a wetland along the river terrace edge and the target habitat could be wet woodland or wet heath.

Table 1-1: Little Wootton Inclosure Ecohydrological Assessment Area Summary Table

Eco-hydrological Assessment Area		N
Name		Little Wootton Pond
Relative Geomorphology Assessment		
Size (ha)		38.1
SSSI Units		538
Valley Side Wetland	Present	Y
	Wetland Type	Flush Dominated Wetland and plantation dominated
	Main Source of water	Seepage from River terrace Gravels at join with Headon Formation (aquitar)

	Indicative NVC communities	M25a
	Wetland Types	Mire. Plantation woodland dominant
	Drainage Damage	Y - from forestry and drains (Moderate)
	Scrub/Tree Encroachment Damage	Y - forestry (Major)
	Poaching and Grazing Pressures Damage	N
Valley Basin Wetland	Present	N
	Wetland Type	
	Main Source of water	
	Indicative NVC communities	
	Wetland Types	
	Drainage	
	Scrub/Tree Encroachment Damage	
	Poaching and Grazing Pressures	
Additional Comments		Pond present perched in river terraces

It should be noted that although this is a standalone report, it is strongly reliant upon the background information provided in section 3 of the JBA (2013) Ecohydrology Survey Overview report, which provides general geology, ecology, hydrogeology, wetland mechanisms and restoration information for the New Forest wetlands surveyed. At the end of the report is a series of maps which support the assessment and indicate the spatial distribution of the features described.

1.2 Topography and Wetland Distribution

The site is mainly occupied by a mixed woodland plantation covered plateau which slopes along its southern boundary down into the Walkford Brook valley. The plateau is covered with regular forestry drainage. Running north-south through the centre of the site is a larger drain which is connected to a pond in the centre of the site on the plateau. The pond is surrounded by embankments (possibly dredging from the ponds creations. A water control structure was removed from the outfall in recent years (Natural England pers. comm.).

Within the Walkford Brook Valley are a series of parallel drains which appear to affectively drain this valley bottom (see Figure 1-2).

Figure 1-2: Drain in the base of Walkford Brook Valley (NGR 422465, 098660)



The forestry drainage and drains within the valley bottom have limited the extent of wetlands to a small area in the south-west corner of the site. There are some areas of sphagnum on the edges of the plateaux where the forestry drainage is not working effectively.

1.3 Ecology

The site is predominantly mixed woodland with several tracks cutting through the centre of it.

A stream flows across the centre of the site with marginal wetland species present. Much of the woodland under-layer vegetation consists of large patches of Bracken *Pteridium aquilinum*, Ground Elder *Aegopodium podagraria* and Bramble *Rubus fruticosus* agg. species.

The stream runs into a large pond at the southern end of the site. There was no aquatic vegetation present within this water body at the time of survey.

Towards the south-west of the site a drainage ditch runs along the boundary. Within this area, the woodland has been managed with felled trees clearly visible. As a result the ground in these open areas is wetter, with species such as *Sphagnum* spp., Bog Myrtle *Myrica gale* and Bog Pondweed *Potamogeton polygonifolius* present, indicating that a mire habitat used to be present in this area. However, the areas run along the outside of the unit boundary, with only a few patches present within the unit itself.

In the middle of the unit there is a large pond with Water-cress *Rorippa nasturtium-aquaticum*, Common Duckweed *Lemna minor*, Soft Rush *Juncus effusus*, Reedmace *Typha latifolia*, and Common Reed *Phragmites australis* present (Figure 1-3). In previous surveys the highly invasive Australian Swamp Stonecrop *Crassula helmsii* has been noted as a problem within the pond; however it was not recorded during the survey. This could possibly be due to the time of the year the survey was carried out, high water levels in the pond, and the difficulty in accessing the pond margin. The surrounding area and outlet from the pond are dominated by wetland species with Purple Moorgrass *Molinia caerulea* tussocks, Wood Horsetail *Equisetum sylvaticum* and *Sphagnum* patches forming a wet woodland habitat.

Figure 1-3: Large Species-rich Pond (NGR 422700, 098820)



The non-native invasive species *Rhododendron ponticum* was found at NGR 422180, 098867.

It seems obvious that the area was once a mixture of wet heath with some valley bottom wetlands and the drainage pattern at the bottom of the southern boundary valley would confirm this, i.e. that it was once lawn prior to the enclosure of the area and the planting of the present forestry cover. To aid the trees, the area was then further drained although the presence of the *Sphagna* indicates that, over time, this has not been totally successful. As a result, the flora of the area has been modified dramatically as a consequence of two periods of drainage activities, the latter being co-incident with afforestation and this has led to the loss of the heathland and lawn habitats that were once present. The pond was created around 20 years ago (Jinti Gifford pers. comm.) and has suffered from numerous changes in management and appears to be silting-up at the present time. The presence of Australian Swamp Stonecrop is a major problem as it spread vegetatively from small fragments and can be carried from site to site on the hooves of grazing herbivores.

1.4 Geology and Hydrogeology

Table 1-2 shows the geology at Little Wootton Inclosure. The river terrace gravels form a plateau which occupies the majority of the site except along the valley bottom at the southern boundary of the site.

Table 1-2: Geology and Hydrogeology

Age	Group	Formation - member	Description	Thickness	Hydrogeological Role	Water Resources
Quaternary		River terrace deposits	CLAY, SILT, SAND and GRAVEL.		Aquifer / Aquitard - Spring lines may be present at the base of high level river	

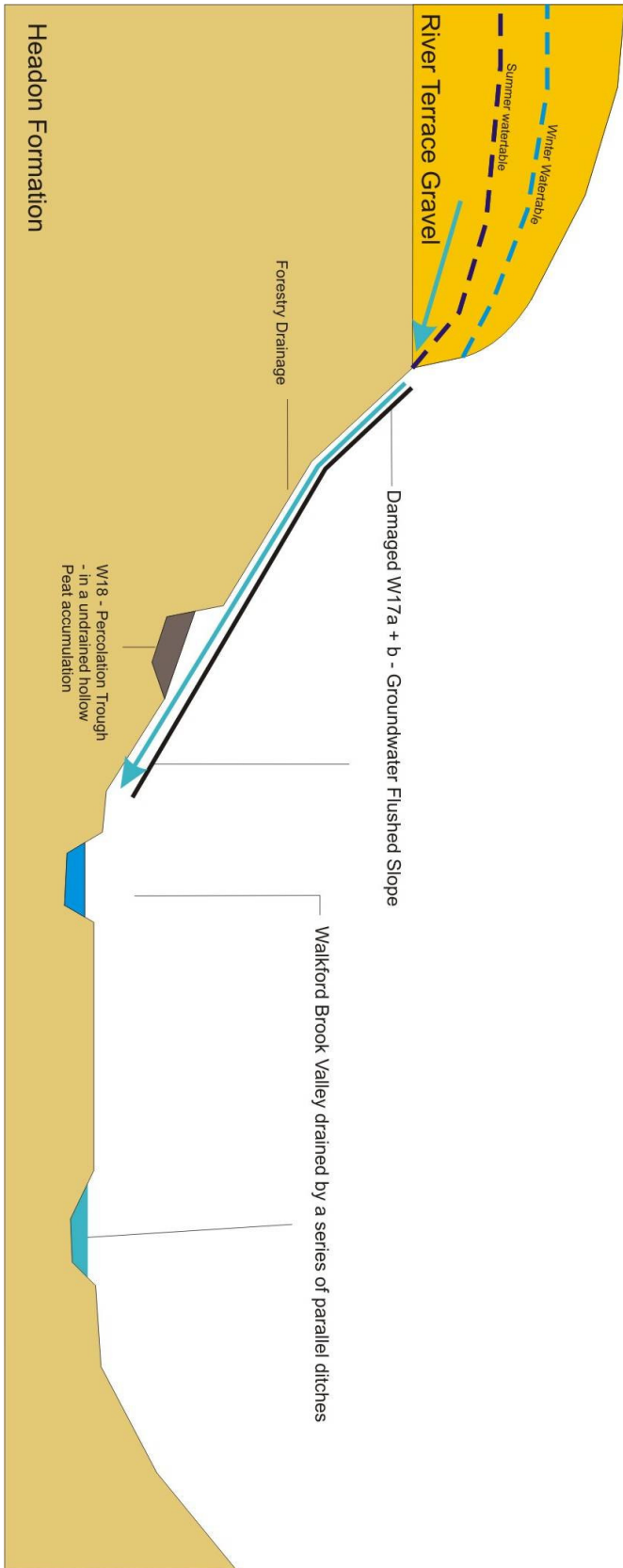
					terraces.	
Tertiary (Eocene)	Solent Group	Headon Formation and Headon Hill Formation	Greenish grey shelly CLAY with laminated SAND, SILT and CLAY.	Up to 49 m	Aquifer / Aquitard	Sandy strata may provide yields sufficient for domestic or small agricultural use.
BGS digital 1:50,000 geology mapping, Melville and Freshney (1982), Edwards and Freshney (1987), Bristow <i>et al.</i> (1991), Jones <i>et al.</i> (2000), Barton <i>et al.</i> (2003), and Neumann <i>et al.</i> (2004).						

Local BGS borehole logs (available at <http://www.bgs.ac.uk/GeoIndex/>) describe the river terrace deposits as sandy gravel (likely to be relatively permeable and to act as an aquifer) and the Headon Formation as a greyish yellow green clay (likely to act as an aquitard).

1.5 Water Supply Mechanisms

The forestry drainage network and other drains within the valley bottom have limited the extent of wetland to a small area in the south-west corner of the site. If these were not here flush dominated wetlands would have been supported by a seepage face at the junction between the river terrace deposits (aquifer) and the underlying Headon Formation (aquitard). In parts of this area there are some areas of sphagnum amongst the trees where the forestry drainage has never been particularly effective.

Figure 1-4: Conceptual Model Diagram



1.5.1 WETMECS identified

WETMECs are ecohydrological classifications of how water can be supplied to a wetland to create distinguishable habitats. WETMECS were developed in partnership between the Wetland Research Group at the University of Sheffield, the Environment Agency, English Nature (now Natural England) and Countryside Council for Wales (now Natural Resources Wales). For each Ecohydrological Assessment Area WETMECS have been identified.

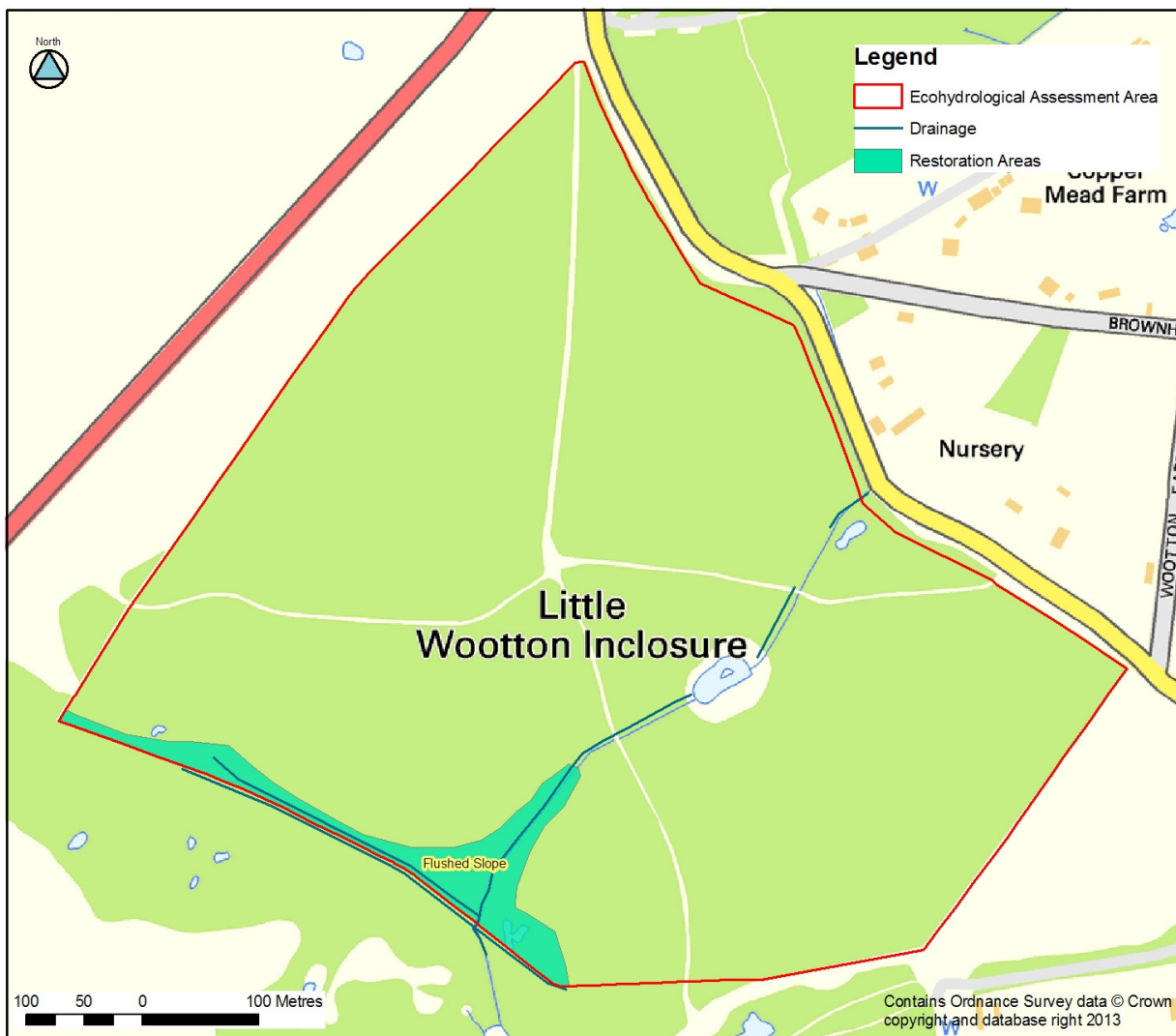
Only a very small area of wetland has been identified which could be described as W18 Percolation Trough. The flushed slopes before the drainage might have supported W17a and W17b (groundwater flushed slope).

1.6 Damage and Restoration

1.6.1 Damage

The forestry drainage network and other drains within the valley bottom have limited the extent of wetlands to a small area in the south-west corner of the site (see Figure 1-5). The seepage from the river terrace gravels could have supported an area of flushed slope.

Figure 1-5: Restoration Areas Map



1.6.2 Restoration

Only a very small area of wetland remains on this site, so restoration works would have to be fairly comprehensive. Any works on site could be classified as wetland creation. Such a

scheme would focus on the removal of forestry (and associated drainage) and an improvement of both banks of the Walkford Brook Valley (not just the north bank within the site boundary) including drain infilling and possible renaturalisation. The current forestry could be replaced with wet woodland or wet heath in these areas.

No restoration measures can be suggested for the pond, except for a *Crassula helmsii* eradication plan, as it was very difficult to access during the survey. If a control structure was to be installed again within the raised embankments of the pond, an engineering assessment of the banks would be required.

1.7 Monitoring requirements

1.7.1 Water Monitoring

Given the very small extent of wetlands on site, no monitoring is required.

1.7.2 Vegetation

Invasive species encroachment has been identified as an issue at this site. As a result, it may be necessary to monitor the extent of *Rhododendron* annually post restoration works and Australian Swamp Stonecrop if eradication measures are introduced in and around the pond.

Table 1-3: Monitoring Requirements

Eco-hydrological Assessment Area	SSSI Units	Site Names	Requirements for monitoring: ecology	Requirements for monitoring: hydrology (number of installations estimated)
N	538	Little Wootton Pond	Fixed point camera survey (specifically focussing on extent of <i>Rhododendron</i> encroachment) Fixed point quadrat survey (to monitor development of wetland habitats)	Flush dominated wetland – little peat – no monitoring recommended

2 Maps

Map 1: Location

Map 2: Aerial Photography

Map 3: Topography, Hydrology and Wetland Distribution

Map 4: Phase One Habitat

Map 5: Drift Geology

Map 6: Bedrock Geology

Map 7: Eco-Hydrology Map

Map 8: Restoration Plan



LEGEND

 Ecohydrological Assessment Area

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MAP 1

Site Location

Scale 1:3,198



LEGEND

 Ecohydrological Assessment Area

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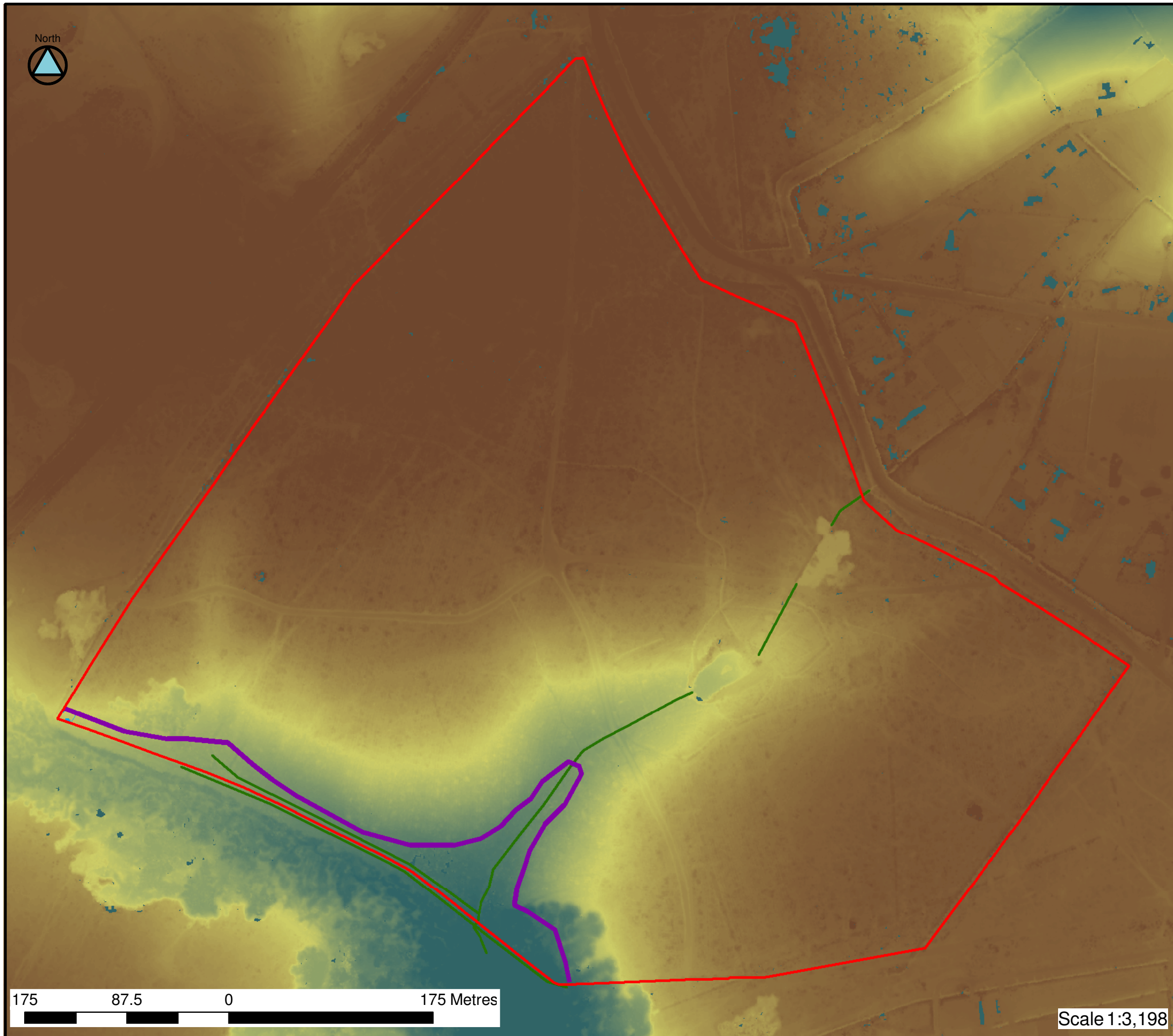


160 80 0 160 Metres






Scale 1:3,198

MAP 2

Aerial Photography

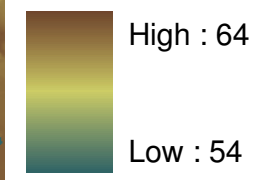


LEGEND

-  Ecohydrological Assessment Area
-  Seepage face
-  Drainage
-  Valley Bottom Wetland
-  Valley Side Wetland

LIDAR

mAOD



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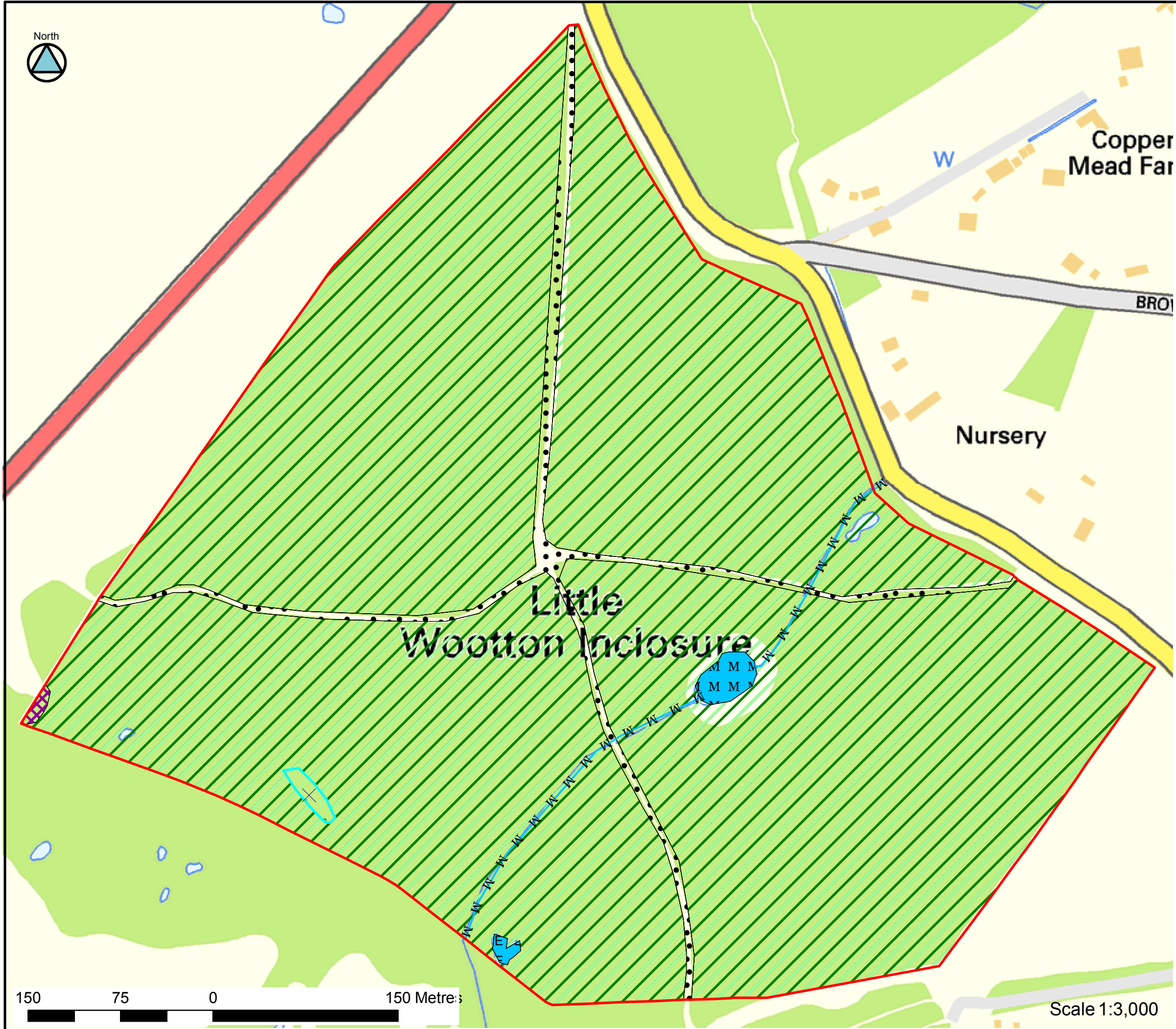


MAP 3

Topography, Hydrology and Wetland Distribution



Scale 1:3,198



LEGEND

- Ecohydrological Assessment Area
- M—M G2.2
- A1.3.2
- A4.3
- E1.7
- G1.1
- M M M G1.2
- J4

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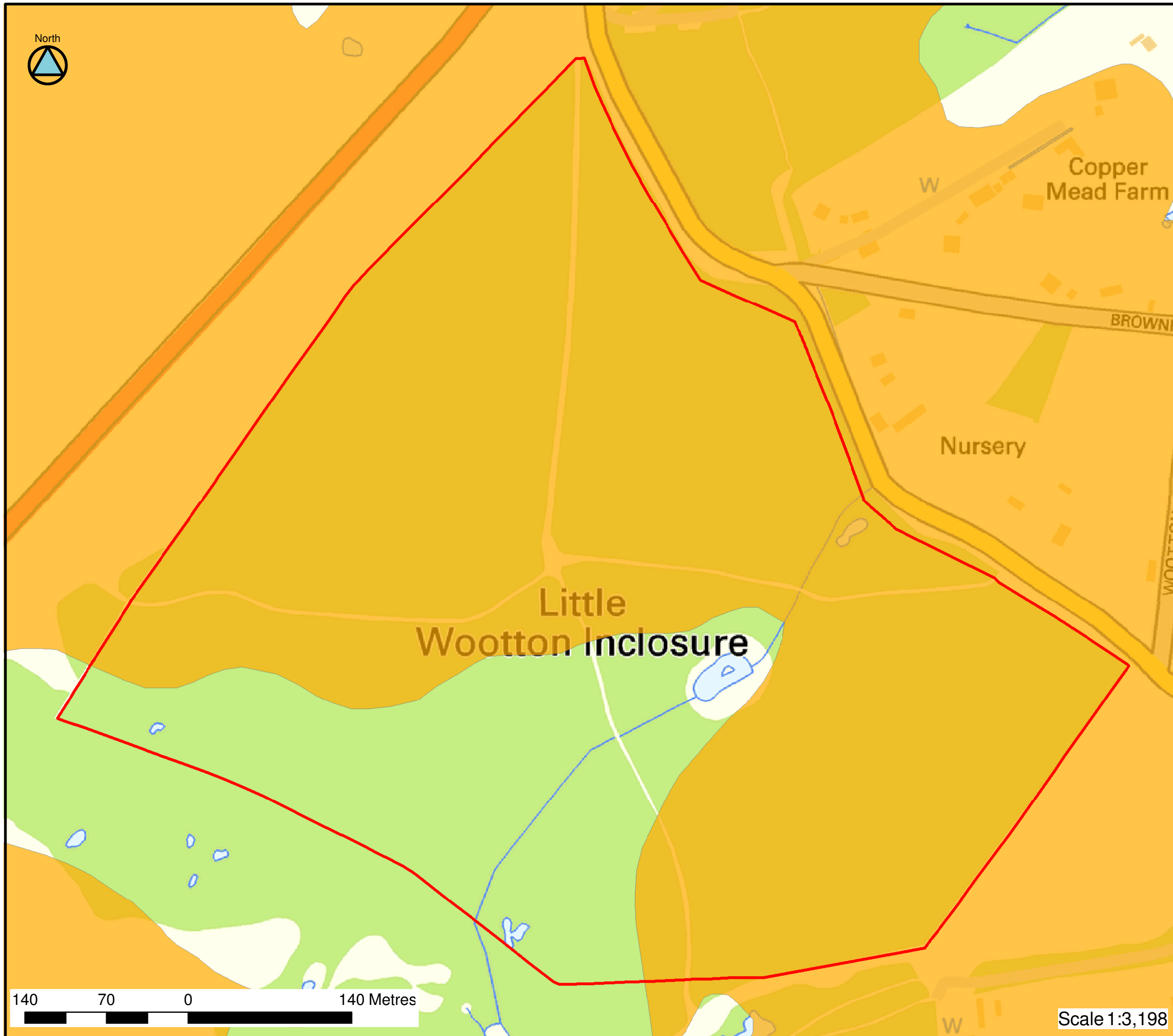


MAP 4

Phase One Habitat

Scale 1:3,000

150 75 0 150 Metres



LEGEND

- Ecohydrological Assessment Area
- No Drift
- Other Deposits
- Alluvium - Clay, Silt, Sand and Gravel
- Head - Clay, Silt, Sand and Gravel
- Head - Gravel, Sand, Silt and Clay
- Head - Silty Clay
- Head - Gravelly Sand
- Peat
- River Terrace Deposits - Clay and Silt
- River Terrace Deposits - Sand and Gravel
- River Terrace Deposits - Sand, Silt and Clay

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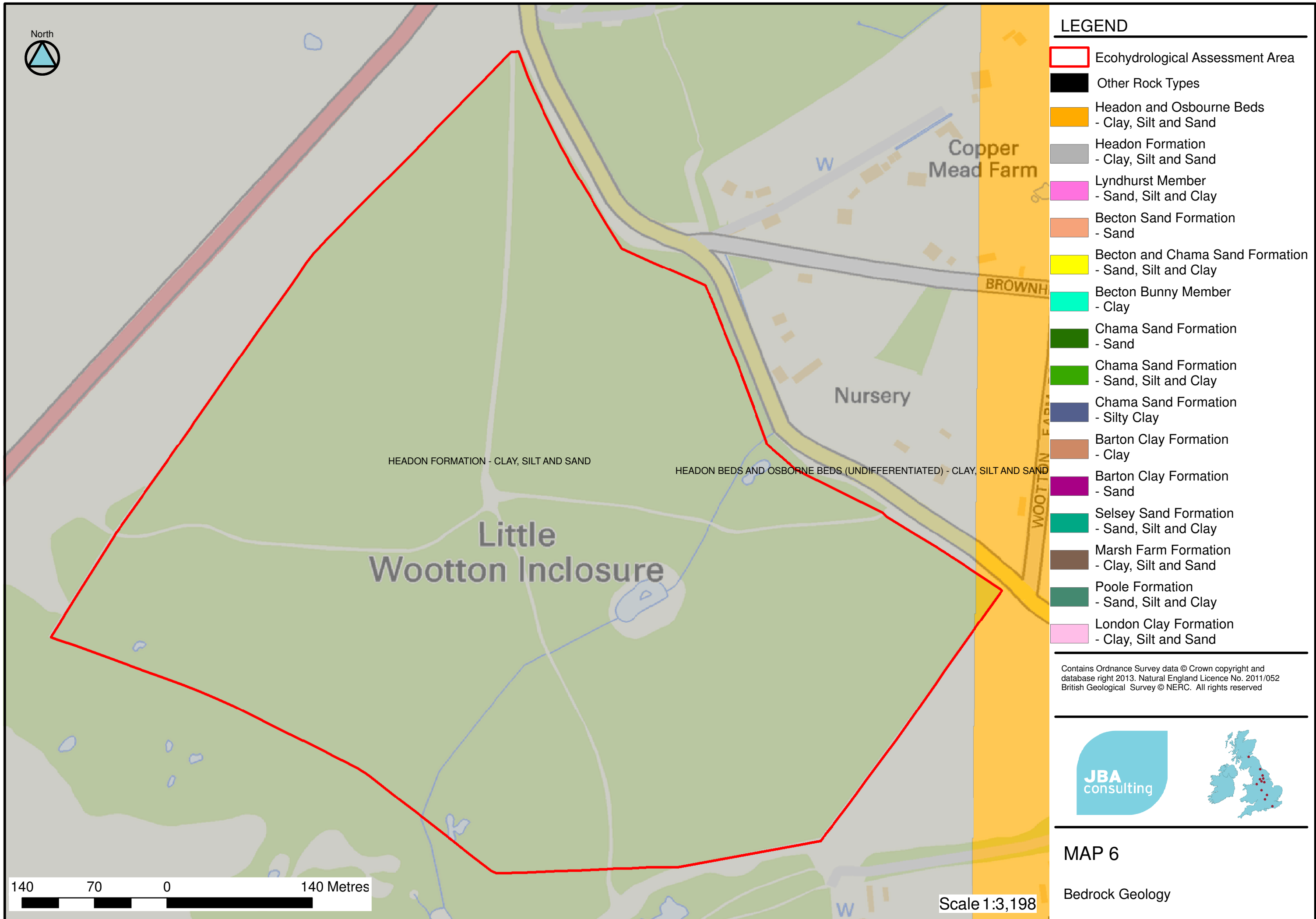


MAP 5

Drift Geology



Scale 1:3,198



LEGEND

- Ecohydrological Assessment Area
- Other Rock Types
- Headon and Osbourne Beds
- Clay, Silt and Sand
- Headon Formation
- Clay, Silt and Sand
- Lyndhurst Member
- Sand, Silt and Clay
- Becton Sand Formation
- Sand
- Becton and Chama Sand Formation
- Sand, Silt and Clay
- Becton Bunny Member
- Clay
- Chama Sand Formation
- Sand
- Chama Sand Formation
- Sand, Silt and Clay
- Chama Sand Formation
- Silty Clay
- Barton Clay Formation
- Clay
- Barton Clay Formation
- Sand
- Selsey Sand Formation
- Sand, Silt and Clay
- Marsh Farm Formation
- Clay, Silt and Sand
- Poole Formation
- Sand, Silt and Clay
- London Clay Formation
- Clay, Silt and Sand

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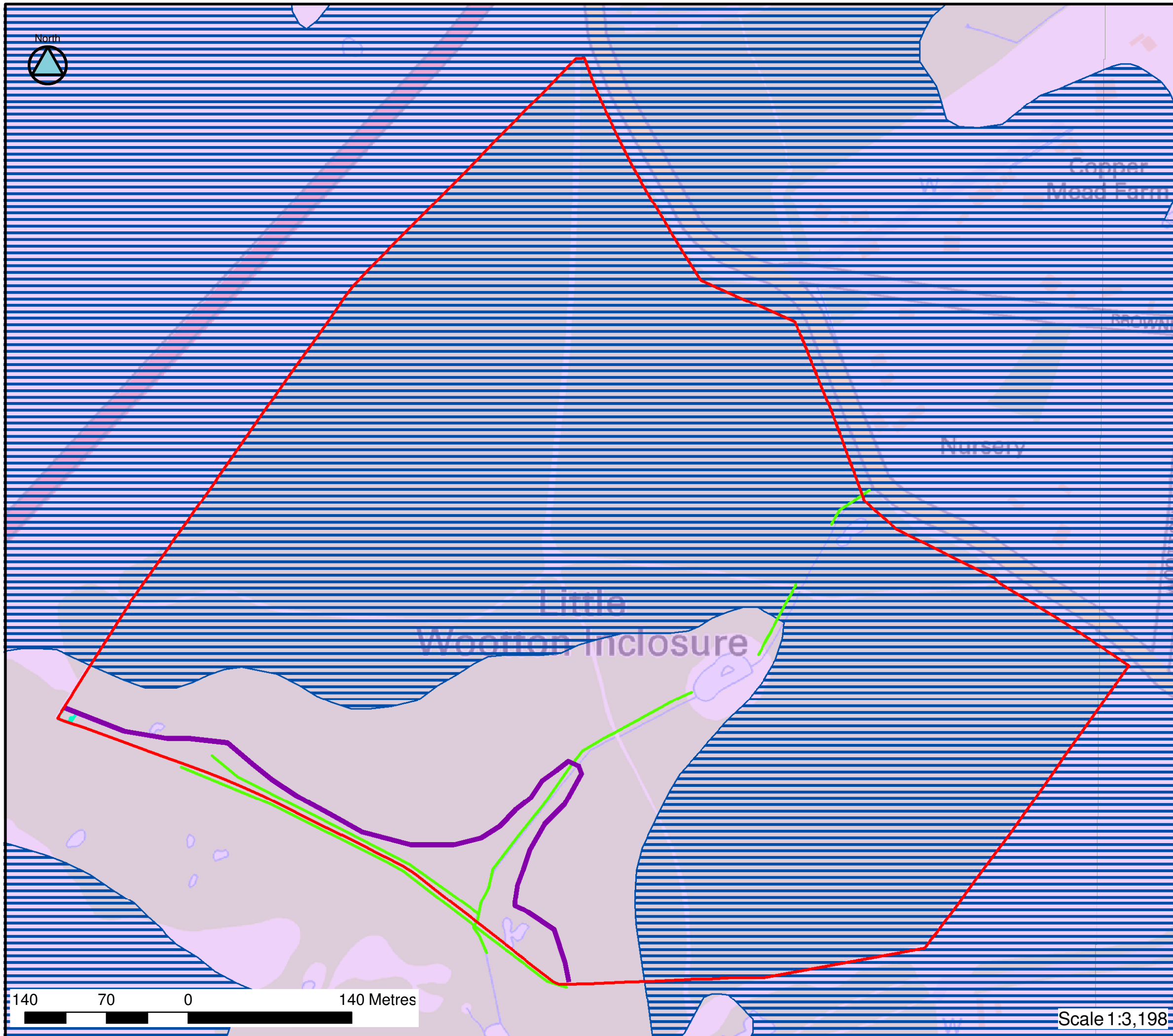


MAP 6












Bedrock Geology



Scale 1:3,198



LEGEND

-  Ecohydrological Assessment Area
-  Seepage face
-  Drainage
-  Valley Bottom Wetland
-  Valley Side Wetland
- Drift Hydrogeology**
-  Aquifer
-  Aquifer/Aquitard
-  Aquitard
- Bedrock Hydrogeology**
-  Aquifer
-  Aquifer/Aquitard
-  Aquitard

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MAP 7
Eco-hydrology

Scale 1:3,198



LEGEND

- Ecohydrological Assessment Area
- Drainage
- Restoration Areas

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MAP 8
Restoration Plan

Scale 1:3,198