Natural England Commissioned Report NECR141

New Forest SSSI Ecohydrological Survey Overview

Annex E: Common Moor

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NATURAL ENGLAND

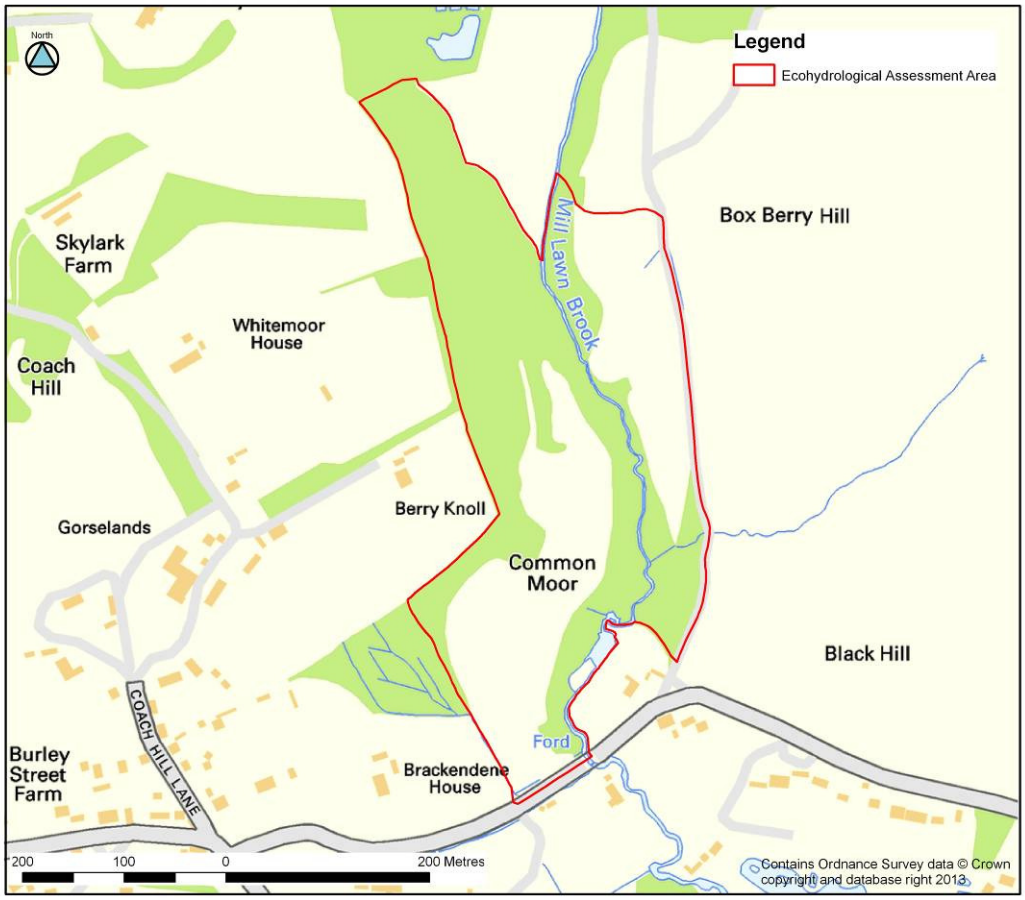
Contents

1 Common Moor

1.1 Introduction

This Ecohydrological Assessment Area (EcoHAA) covers 12.5 ha and is contained within SSSI Unit 130 with its centre at National Grid Reference (NGR) 420587 104665 (see Figure 1-1).

Figure 1-1: Location Map



The site includes two areas of flush-dominated valley mire associated with groundwater seepage from two closely-spaced geological boundaries: (i) the contact between the Becton Sand Formation and underlying Chama Sand Formation and, (ii) the contact between the Chama Sand Formation and adjacent/overlying river terrace silt and clay deposits. The area drains towards Mill Lawn Brook, which has been diverted and held back by weirs to form a pond in the south-eastern corner of the site. Artificial drainage along, and adjacent to, the south-western corner of the site does not appear to be seriously affecting the hydrology of the mires, as *Sphagnum denticulatum* occurs right up to the poorly-maintained boundary ditch.

Table 1-1: Ecohydrological Assessment Area Summary Table

Eco-hydrological Assessment Area		E
Name		Common Moor
Relative Geomorphology Assessment		
Size (ha)		12.5
SSSI Units		130
Valley Side Wetland	Present	Y
	Wetland Type	Flush Dominated
	Main Source of water	Seepage from (i) the junction between the Becton Sand Formation and underlying Chama Sand Formation and (ii) the junction between the Chama Sand and adjacent/overlying river terrace silt and clay deposits. These two junctions are close together, so effectively there is a single seepage line. Water flows over low permeability river terrace deposits (silt/clay) and alluvium (clayey sand).
	Indicative NVC communities	M16a, M21a, W4b, W14, M24, U4
	Wetland Types	Wet Woodland, Mire, Wet Heath, Acid Grassland
	Drainage Damage	Y - Drainage ditches present locally around margins (Minor). The south-western boundary ditch is shallow and choked with vegetation, and has *Sphagnum* immediately adjacent to it.
	Scrub/Tree Encroachment Damage	N
	Poaching and Grazing Pressures Damage	Y (Minor)
Additional Comments		The track along the eastern edge of the site has associated small drainage ditches; some runoff from the track can enter the site, which is topographically lower than the track.

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

Common Moor occupies a shallow valley containing Mill Lawn Brook. The wetlands take the form of valley mires developed on the western side of the valley. Here the ground slopes gently eastwards or south-eastwards towards the brook. Drainage ditches occur along, and adjacent to, the south-western corner of the site, but do not appear to be adversely affecting the site hydrology to any great extent: *Sphagnum denticulatum* occurs close to the boundary ditch, which is poorly maintained. Mill Lawn Brook has been diverted and held back by weirs to form a large garden pond in the south-eastern corner of the site. Runoff from track drainage along the eastern edge of the site has the potential to enter the site, but this is on the opposite side of Mill Lawn Brook to the valley mires and is, therefore, unlikely to pose a water quality problem.

Figure 1-2: General view of the eastern part of Common Moor (NGR 420698 104664, looking northwest)

Figure 1-3: General view across the valley mire in the western portion of the unit

1.3 Ecology

Within this Unit, woodland is the dominant habitat, with a varied species mix, including Beech *Fagus sylvatica*, Oak *Quercus robur*., Downy Birch *Betula pubescens*, Grey Willow *Salix cinerea*, Hazel *Corylus avellana* and Holly *Ilex aquifolium*. Several of the trees also had quite extensive Ivy *Hedera helix* cover. The canopy is relatively dense and present on both banks of Mill Lawn Brook, which has limited the growth of aquatic macrophytes within the channel and consequently no in-channel species were noted during the site visit. The stream was also in spate at the time of survey which may have hindered the recording of aquatic species. This also limited access to some parts of the Unit; however, the conditions did clearly show that there were a number of channels meandering across the floodplain within the woodland.

On the right bank of the floodplain, adjacent to the track leading to Turf Croft, wet heath was present, with extensive Bog Myrtle *Myrica gale*, Purple Moor-grass *Molinia caerulea*, Heather *Calluna vulgaris* and scattered Downy Birch and Gorse *Ulex europaeus.*

On the left bank floodplain, woodland is again the dominant habitat present, although patches of wet heath, mire and wet grassland are also present. Adjacent to Forest Lane is a heavily grazed wet lawn area, with poaching by livestock evident in some places; this extends north for a few metres and may be associated with the drainage alongside the road. A small thicket of Bog Myrtle and birch scrub is also present. This then grades into mire habitat, with a tussocky Purple Moor-grass and Bog Myrtle dominated community. Across the mire area, just north of the Bog Myrtle thicket, is a shallow, linear depression (possibly marking an old drainage line). This is very wet and quaking and contains *Sphagnum* tussocks and White Beak-sedge *Rhynchospora alba* and corresponds with the M21a NVC community.

To the north of Brackendene, just outside of the unit to the west, there are a series of connected drains that channel water along the western boundary of the unit into the roadside drain. However, this drain is very shallow and was not carrying water at the time of survey. A small quagmire of very spongy *Sphagnum denticulatum* containing vegetation was present adjacent to this drain, indicating that it may now be ineffective in conveying water.

1.4 Geology and Hydrogeology

Table 1-2 shows the geology at Common Moor.

Table 1-2: Geology and Hydrogeology

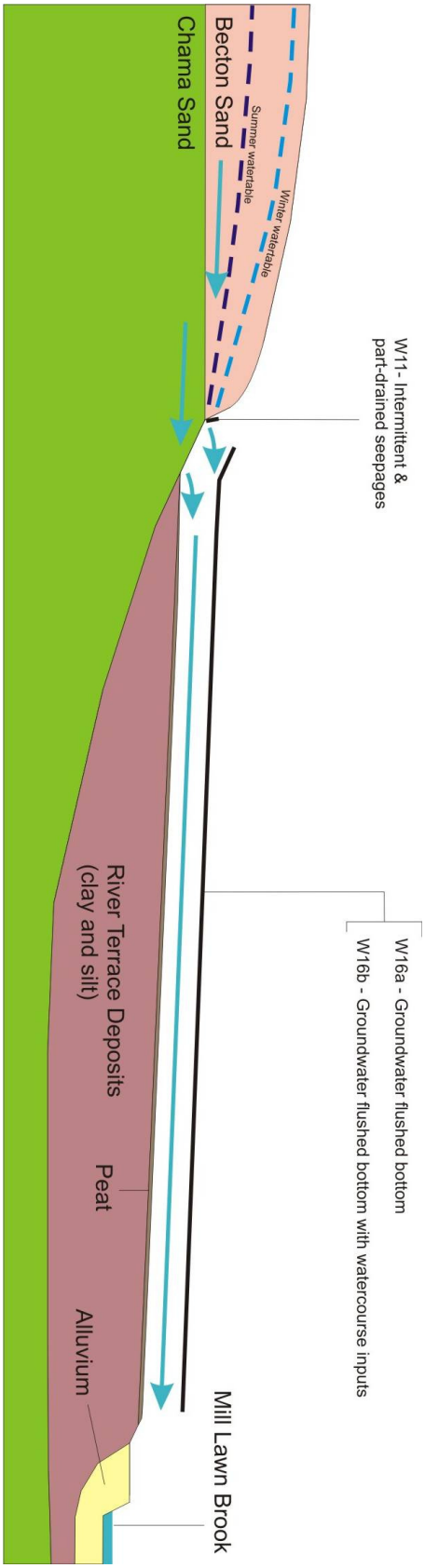
Age	Group	Formation - member	Description	Thickness	Hydro-geological Role	Water Resources
Quat-ernary		Alluvium	CLAY, SILT, SAND and GRAVEL (clayey sand exposed in stream banks; gravel bed).	Up to 10 m	Aquifer / Aquitard	Yields from alluvium and terrace gravels are often obtained from the adjacent rivers.
		River terrace deposits	CLAY and SILT.		Aquifer / Aquitard - Spring lines may be present at the base of high level river terraces.	

Tertiary (Eocene)	Barton Group	Becton Sand Formation	Yellow/buff fine- to very fine-grained well sorted SAND.	6 – 70 m	Aquifer - The most permeable and reliable aquifer within the Barton Group.	Yields up to 600 m^3/d in the south; in the north they rarely exceed 200 m^3/d.
		Chama Sand Formation	Greenish grey fine- to very fine-grained and rather clayey/silty SAND; slightly glauconitic. Also sandy CLAY.	6 – 15 m	Aquifer	May yield small supplies

1.5 Water Supply Mechanisms

The wetlands on site are flush-dominated (see Figure 1-4). They are sourced mainly by groundwater seepage from two closely-spaced geological boundaries: (i) the contact between the Becton Sand Formation and underlying Chama Sand Formation and, (ii) the contact between the Chama Sand Formation and adjacent/overlying river terrace silt and clay deposits. As these boundaries are closely spaced, there is effectively a single seepage line.

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.

The WETMECS identified include:

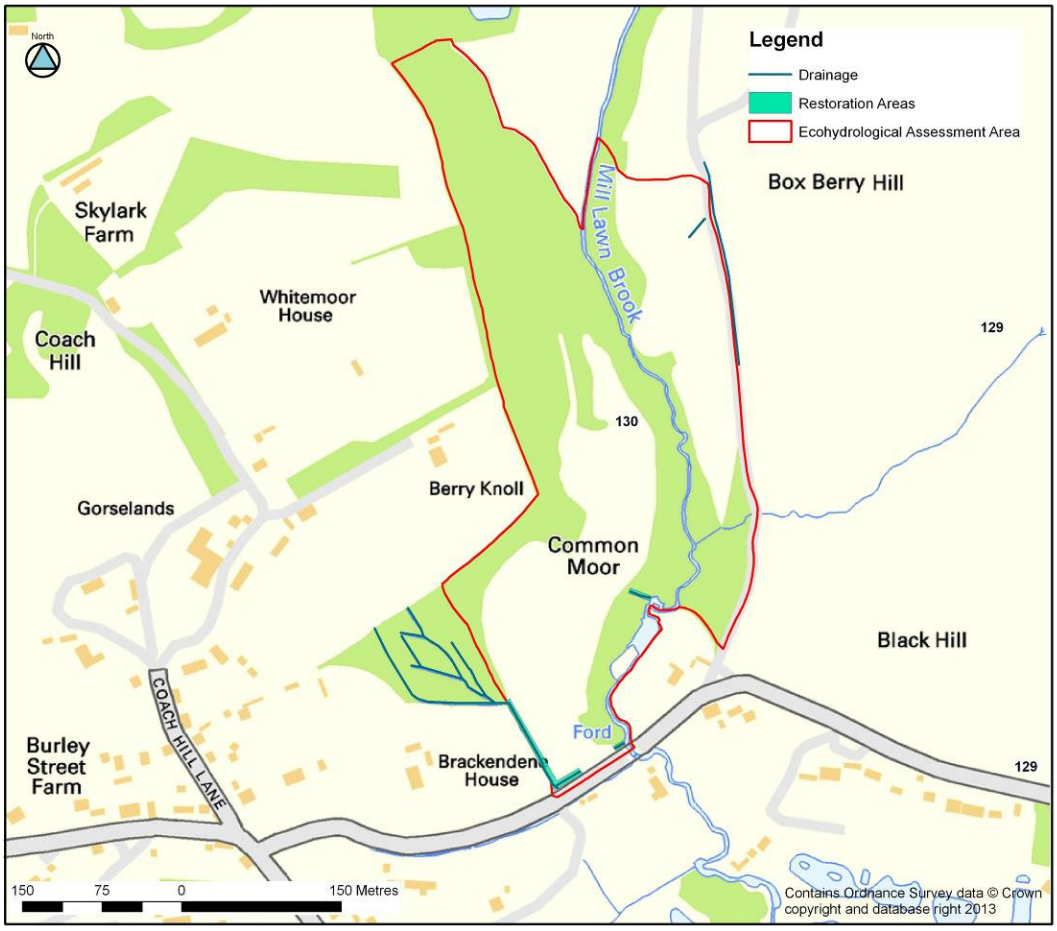
Valley bottom wetlands - W16a and W16b with a narrow zone of W11 above.

1.6 Damage and Restoration

1.6.1 Damage

Some areas around the edges of the southern mire have been subject to artificial drainage (see Figure 1-5). The drainage ditches do not appear to be having a serious impact on water levels within the mire, but could potentially be blocked in order to restore a more natural hydrological regime, and to help improve the quality of (and potentially extend areas of) mire and wet heath habitat. Water level monitoring (see Section 1.7 below) would provide a more complete understanding of the influence of drainage on the mires and help determine the usefulness of ditch blocking.

Figure 1-5: Restoration Areas Map



1.6.2 Restoration

Table 1-3: Restoration Area Summary Table

Restoration Area	Damage Type	Restoration Proposals	Improvement	Constraints and Issues
Drained Areas (see Figure 1-5)	Artificial Drainage	Block drains	Create a more natural hydrological regime. Improved quality and potentially extent of mire and wet heath communities	Artificial drainage is not a major issue on this site, so any gains would be modest.

1.7 Monitoring requirements

1.7.1 Water Monitoring

Monitoring of groundwater and brook/ditch water levels would allow the influence of artificial drainage (and the diverted brook) on the mires to be properly assessed. Monitoring should be undertaken for at least a year (to capture seasonal variations) and ideally for longer (to capture variations between wet/dry years).

1.7.2 Vegetation

As the restoration proposed for this unit is relatively minimal, the proposed monitoring requirements are similarly minimal, focussing only on the western part of the unit where restoration proposals are suggested, in order to monitor the impact of these on the mire and wet heath communities.

Table 1-4: Monitoring Requirements

Eco-hydrological Assessment Area	SSSI Units	Site Names	Requirements for monitoring: ecology	Requirements for monitoring: hydrology (number of installations estimated)
E	130	Common Moor	Fixed point camera survey Fixed point quadrat survey (specifically focussing on western part of unit where restoration is proposed, to monitor impacts on mire and wet heath communities)	3 boreholes and 3 stilling wells (6 installations in total). Plus associated monitoring (manual or automatic) and data processing.

2 Maps

North

ylark
arm

Whitemoor
House

Mill Lawn Brook

Box Berry Hill

rselands

Berry Knoll

Common
Moor

Black Hill

COACH HILL LA

Ford

Brackendene
House

150 75 0 150 Metres

Scale 1:2,836

LEGEND

Ecohydrological Assessment Area

JBA consulting

MAP 1

Site Location

North

140 70 0 140 Metres

Scale 1:2,836

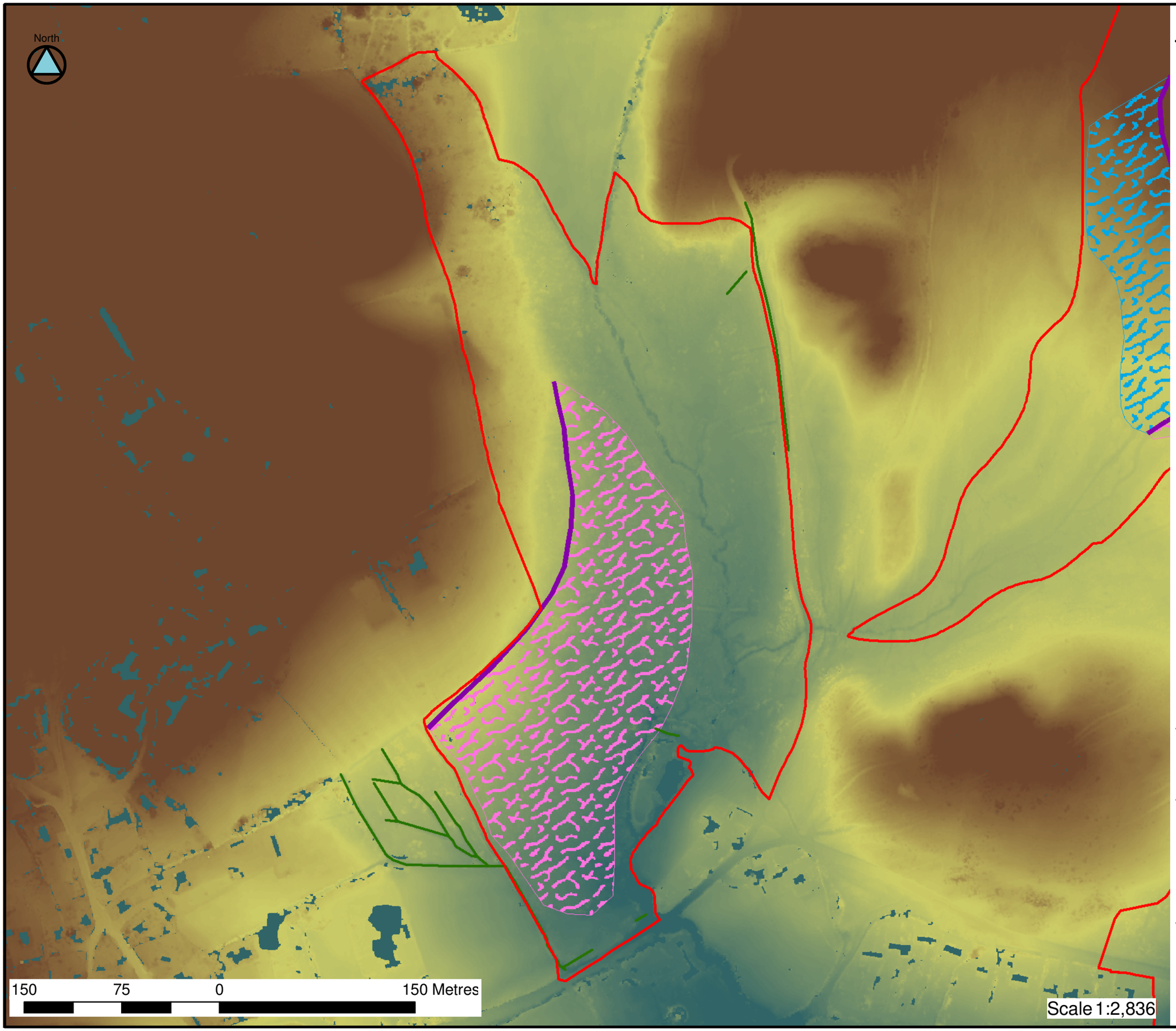
LEGEND

Ecohydrological Assessment Area

JBA consulting

MAP 2

Aerial Photography



LEGEND

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

LIDAR

mAOD

High : 62

Low : 51

JBA consulting

MAP 3

Topography, Hydrology and Wetland Distribution

North

W14 and W4b mosaic, with W4b in wetter areas

U4 with scattered Gorse and birch Scrub

Box Berry Hill

M16a

M24

Whitemoor House

Berry Knoll

M16a with some M21a in wetter areas

Black Hill

W14 and W4b mosaic, with W4b in wetter areas

Bog Myrtle thicket

M24

COACH HILL L

160 80 0 160 Metres

Scale 1:2,750

LEGEND

Ecohydrological Assessment Area

Habitat

Habitat_code

- A1.1.1
- A2.1
- A2.2
- B1.1
- B5
- D2
- E3.1
- G1.2

Boundary

- G2.2
- G2.3

JBA consulting

MAP 4

Phase One Habitat

North

ylark
arm

Whitemoor
House

Box Berry Hill

Mill Lawn Brook

Berry Knoll

rselands

Common
Moor

Ford

Brackendene
House

Black Hill

COACH HILL LA

130 65 0 130 Metres

Scale 1:2,836

LEGEND

- Ecohydrological Assessment Area
- No Drift
- Other Deposits
- Alluvium - Clay, Silt, Sand and Grave
- 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

JBA consulting

MAP 5

Drift Geology

North

HEADON FORMATION - CLAY, SILT AND SAND

BECTON SAND FORMATION - SAND

BECTON SAND FORMATION - SAND

CHAMA SAND FORMATION - SAND, SILT AND CLAY

Box Berry Hill

Mill Lawn Brook

Whitemoor House

Berry Knoll

Common Moor

Black Hill

Ford

Brackendene House

COACH HILL LAN

130 65 0 130 Metres

Scale 1:2,836

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

JBA consulting

MAP 6

Bedrock Geology

North

Box Berry Hill

Whitemoor House

Berry Knoll

Black Hill

130 65 0 130 Metres

Scale 1:2,836

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

JBA consulting

MAP 7

Eco-hydrology

North

ylark
arm

Whitemoor
House

Mill Lawn Brook

Box Berry Hill

rselands

Berry Knoll

Common
Moor

Drained Area

Drained Area

Brack
House

Drained Area

Black Hill

COACH HILL LA

160 80 0 160 Metres

Scale 1:2,836

LEGEND

Ecohydrological Assessment Area

Drainage

Restoration Areas

JBA consulting

MAP 8

Restoration Plan