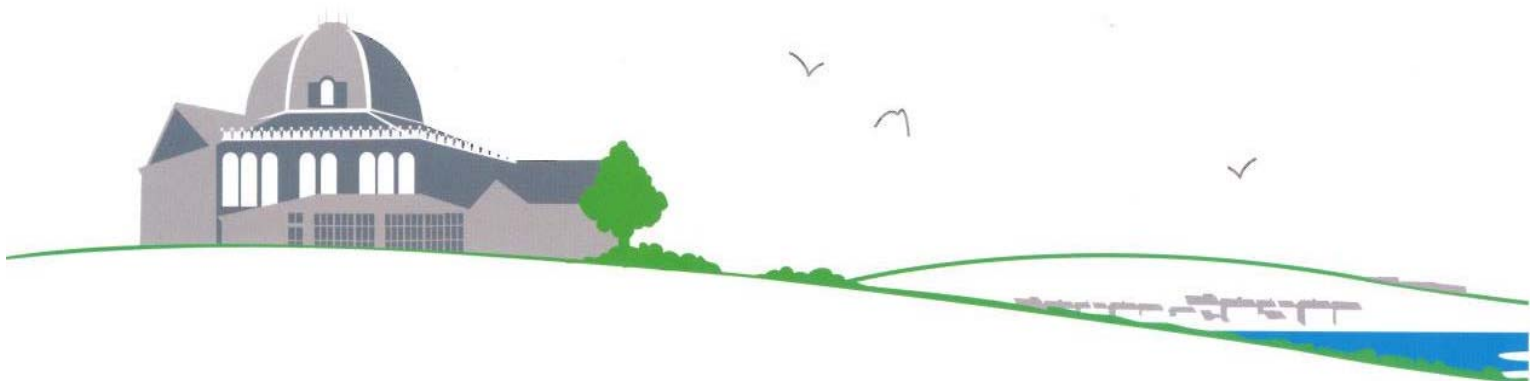




NORRIS JONES DEVELOPMENTS

PROPOSED DEVELOPMENT AT LAND OFF
HILLOCK LANE, GRESFORD, WREXHAM

REPORT TO INFORM
HABITATS REGULATIONS ASSESSMENT



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REPORT TO INFORM HABITATS REGULATIONS ASSESSMENT

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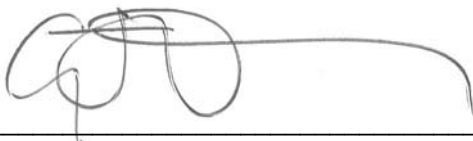
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This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed: _____



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1. INTRODUCTION

Purpose of the Report

- 1.1 Penny Anderson Associates Ltd (PAA) has prepared this report to inform a Habitats Regulations Assessment (HRA) Screening, to accompany a planning application prepared by Norris Jones Developments for the proposed development of land off Hillock Lane, Gresford, Wrexham (Grid Reference SJ 356 544), hereafter referred to as the project.
- 1.2 The planning application is for 116no. residential units, associated highway and pedestrian access including improvements along Vicarage Lane, public open space, landscaping and infrastructure works.
- 1.3 The HRA screening is required because the project is within close proximity to one of the component sites of the Midland Meres and Mosses Phase 2 RAMSAR Site (Figure 1). The component site within the composite RAMSAR Site that is closest to the project is Vicarage Moss (Figure 2).
- 1.4 In accordance with the requirements of the Habitats Regulations it is, therefore, necessary to undertake an assessment of the potential effects of the project (alone or in combination with other projects) on the features for which the designated site is classified. The HRA records the step-by-step process of ensuring that a plan or project being undertaken, or permitted by, a public body will not adversely affect the ecological integrity of a European site. This report informs this process with regard to the proposed project for the development of land off Hillock Lane.
- 1.5 The southern boundary of the project is located some 112m to the north of the nearest boundary of Vicarage Moss (Figure 2). The project and the Midland Meres and Mosses Phase 2 RAMSAR Site is on the southern edge of the settlement of Gresford within an area of agricultural pasture land designated as Green Barrier in the Wrexham Unitary Development Plan (UDP) 1996 - 2011 (Wrexham County Borough 2005), which is covered by Policy EC1. Land beyond the project to the east and the south is designated in the UDP as a Special Landscape Area (Policy EC5) while land to the south of Vicarage Lane is also a Biodiversity Conservation area (Policy EC6) that overlaps with the Midland Meres and Mosses Phase 2 RAMSAR Site boundary.

The Habitats Directive and Habitat Regulations (As Amended)

- 1.6 Legal protection for habitats and species of European importance is provided by the Habitats Directive. Articles 3 to 11 of the Habitats Directive establish a network of sites of nature conservation importance known as Natura 2000 sites, which comprise Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Internationally important wetland sites (RAMSAR Sites) are also included in this suite of sites.
- 1.7 Articles 6(3) and 6(4) of the Directive require that any plan or project not directly connected with, or necessary to, the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site, the competent authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned.
- 1.8 If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest (IROPI) including those of social or economic nature, the Member

State (i.e. the UK) shall take all compensatory measures necessary to ensure that the overall coherence of the Natura 2000 sites are protected.

- 1.9 The Habitats Directive is transposed into UK law by the Conservation of Habitats and Species Regulations 2017 (as amended) (referred to hereafter as the 'Habitat Regulations'). Regulation 61 of the Habitat Regulations requires that:

'61. -

- (1) *A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or a project which –*
- (a) *is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and*
 - (b) *is not directly connected with or necessary to the management of that site, must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.'*

- 1.10 Under Regulation 61(3) the competent authority must for the purposes of the assessment consult the appropriate nature conservation body (i.e. Natural Resources Wales (NRW)) and have regard to any representations made by that body within such reasonable time as the authority specify.

Habitat Regulations Assessment Process

- 1.11 This HRA follows guidance on the assessment of plans and projects significantly affecting Natura 2000 sites developed by the European Commission (European Commission 2001), the National Assembly for Wales *'The Planning Series: 16 – Habitats Regulations Assessment'* (National Assembly for Wales 2017) and published government guidance on Appropriate Assessment at <https://www.gov.uk/guidance/appropriate-assessment> (accessed 12/11/2019).
- 1.12 HRA comprises a four-stage process summarised in Box 1. The format and content of the assessment should be appropriate to the plan or project and it is undertaken by the relevant competent authority. Typically the HRA is based on information provided by the applicant (as set out in this report).

Box 1 Process of Habitat Regulations Assessment (after European Commission 2001)

Stage 1: **Screening** – the process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant i.e. the assessment of *'likely significant effect'* or LSE. At the screening stage, the test is whether the risk of likely significant effects on the integrity of the SPA can be excluded on the basis of objective information. If it cannot be excluded, an appropriate assessment (AA) is required.

Stage 2: **Appropriate Assessment** – the consideration of the impact on the integrity of the Natura 2000 site of the project or plan with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

Stage 3: **Assessment of Alternative Solutions** – the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

Stage 4: **Assessment of Compensatory Measures** – where no alternative solutions exist and where adverse impacts remain and it is deemed in the light of an assessment of imperative reasons of overriding public interest that the project or plan should proceed.

- 1.13 At the screening stage, the test is whether the risk of any likely significant effect (LSE) on the Midland Meres and Mosses Phase 2 RAMSAR Site can be excluded on the basis of objective information. Where this risk can be excluded, the results of the screening process are documented to satisfy the requirements of the Habitat Regulations.
- 1.14 The consideration of LSE is undertaken for the project alone and in combination with other developments (either built or in the planning process and, as far as is possible, is based on readily available information).

Report Structure

- 1.15 This section sets out the background to the HRA process and the need for this.
- 1.16 Section 2 provides a summary of the approach taken within this report.
- 1.17 Section 3 presents an initial screening of effects to identify those for which LSE are predicted.

2. METHODOLOGY

Habitats Regulations Assessment Screening

- 2.1 An initial screening of the project was carried out against the qualifying features of Midland Meres and Mosses Phase 2 RAMSAR Site to determine if the scheme would have a LSE upon the features for which the site(s) are designated.
- 2.2 The Sweetman II Judgement (also known as 'people over wind') concluded that mitigation measures may not be taken into account when deciding whether a plan or project is likely to have a significant effect upon a European site. Therefore, mitigation has not been considered at the screening stage.
- 2.3 The study draws upon the information collected for the project for land off Hillock Lane, Gresford, including the Extended Phase 1 Habitat Survey (PAA 2018), the Transport Assessment (Croft Transport Planning and Design 2019) and the draft plan for the proposals (prepared by Owen Ellis Architects, plan number 4124/SK16 dated 23.10.2019).
- 2.4 In addition, updated boundaries for the European sites were obtained from the Multi Agency Geographic Information for the Countryside (www.magic.gov.uk, MAGIC, last reviewed 12/11/2019). Citation details for the Midland Meres and Mosses Phase 2 RAMSAR Site were reviewed along with other available relevant information (provided in Appendix 1).

Appropriate Assessment

- 2.5 If, following the initial screening process, it is clear that specific elements of the project could have a LSE on the designated features of a European site, then an 'Appropriate Assessment' of those effects on the integrity of the European site must be completed.
- 2.6 The Appropriate Assessment should be 'appropriate' to the project that is being considered and typically comprises a detailed consideration of the effects of the scheme against each of the qualifying features of the European site.
- 2.7 A statement identifying the need for any Appropriate Assessment is provided at the end of the Screening process.

3. THE SCREENING ASSESSMENT

The Project (Application Site)

- 3.1 The project site is agricultural, comprising fields of cattle-grazed agriculturally improved grassland.
- 3.2 The fields are bounded by managed hedgerows, which are predominantly hawthorn¹ (*Crataegus monogyna*) with small sections that are more species-rich. There are occasional trees associated with the boundary hedges on site along with sections of fencing.
- 3.3 There is a public footpath across the site, being particularly well-used by dog walkers and parents with children.

The Midland Meres and Mosses Phase 2 RAMSAR Site

- 3.4 The Midland Meres and Mosses of the Clwyd-Shropshire-Cheshire-Staffordshire plain form an internationally important series of open water and peatland sites. These have developed in natural depressions in the glacial drift left by receding ice sheets, which formerly covered this plain. The majority lie in Cheshire and north Shropshire, with a small number of outlying sites in adjacent parts of Staffordshire and Clwyd.
- 3.5 The Midland Meres and Mosses Phase 2 RAMSAR Site covers 1,740.3ha. The Midland Meres and Mosses Phase 2 RAMSAR Site citation and associated information is provided in Appendix 1.
- 3.6 Phase 2 of the Midland Meres and Mosses RAMSAR Site qualifies under criterion 1a of the RAMSAR Convention as sites providing particularly good examples of natural or near-natural wetland, characteristic of this biogeographical region. The RAMSAR Site comprises the full range of habitats from open water to raised bog.
- 3.7 The site also qualifies under Criterion 2a for the following:
 - By supporting a number of rare species of plants associated with wetlands, including the nationally scarce cowbane (*Cicuta virosa*), elongated sedge (*Carex elongata*) and bog rosemary (*Andromeda polifolia*). Also present are the nationally scarce bryophytes *Dicranum undulatum*, *Dicranum affine* and *Sphagnum pulchrum*.
 - By containing an assemblage of invertebrates, including several rare wetland species. There are 16 species of Red Data Book insect listed for this site, including the following endangered species: the moth *Glyphipteryx lathamella*, the caddisfly *Hagenella clathrata* and the sawfly *Trichiosoma vitellinae*.
- 3.8 Vicarage Moss (21.2ha) is included as Site 8 of the 19 component sites that form the Midland Meres and Mosses Phase 2 RAMSAR Site. As a component site of the Midland Meres and Mosses Phase 2 RAMSAR Site, Vicarage Moss (21.1ha) lies within close proximity to the project (i.e. the Application Site). All other component sites of the Midland Meres and Mosses Phase 2 RAMSAR Site are at an approximately 17.5km or greater distance away from the project and, therefore, any LSE on any parts of the Midland Meres and Mosses Phase 2 RAMSAR Site other than the Vicarage Moss component site are considered highly unlikely.

¹ Plant species names follow Stace 2019

- 3.9 The Site of Special Scientific Interest (SSSI) citation for Vicarage Moss (the boundary of which is wholly contiguous with the RAMSAR site boundary for this element of the Midland Meres and Mosses Phase 2 RAMSAR Site) describes Vicarage Moss as one of the best-developed examples of a kettle-hole complex in Wales and the largest example of a basin mire in Clwyd. The vegetation is distinctly zoned including areas of extensive bogmoss (*Sphagnum* spp.) lawns, cottongrass species (*Eriophorum* sp.), heather (*Calluna vulgaris*) and cross-leaved heath (*Erica tetralix*) typical of a raised bog habitat surrounded by a poor fen community. There are areas of wet woodland and open water within the designated area.

Conservation Objectives of the Midlands Meres and Mosses RAMSAR Site (Site 8 Vicarage Moss)

- 3.10 The Site Management Statement document (provided in Appendix 1) prepared by the Countryside Council for Wales (the predecessor to NRW) identifies the following targets for the management and maintenance of the special features of Site 8 Vicarage Moss, of the Midland Meres and Mosses Phase 2 RAMSAR Site:

- The shape and form of the kettle holes, and the associated sediments will be maintained in a condition where they can be accessed when required for scientific research;
- At least 50% of the bog and wetland area will comprise plants typical of a raised mire habitat and a further 20% of this area will be maintained as a poor fen/swamp community, that will include the plant species star sedge (*Carex echinata*), bottle sedge (*Carex rostrata*), common sedge (*Carex nigra*) as well as cranberry (*Vaccinium oxycoccos*) and cottongrasses.
- A further 20% will be open water with the remaining 10% being wet woodland, dominated by downy birch (*Betula pubescens*) but with an open canopy, and a ground cover similar to that of the mire areas. The woodland will occupy no more than one tenth of the bog and wetland area of the site.
- The site will support a range of uncommon insects and spiders, including a sustainable population of the rare jumping spider *Sitticus floricola*.

- 3.11 A number of additional faunal species are listed on the RAMSAR Wetland Information Sheet (provided in Appendix 1) for the Midland Meres and Mosses Phase 2 RAMSAR Site, however, these are not separated across the individual component sites. The species included are:

- Bird species with nationally important peak counts in spring/autumn: northern shoveler (*Anas clypeata*);
- Bird species with nationally important peak counts in winter: great cormorant (*Phalacrocorax carbo carbo*), great bittern (*Botaurus stellaris stellaris*), water rail (*Rallus aquaticus*).
- Nationally important invertebrate species occurring on the site: *Limnophila heterogyna*, *Atylotus plebeius*, *Hagenella clathrata*, *Limnophila fasciata*, *Carorita limnaea*, *Glyphipteryx lathamella*, *Trichiosoma vitellinae*, *Eilema serica*, *Brachythops wusteneii*, *Pachinematus xanthocarpus*, *Sitticus floricola*, *Lampronia fuscata*, *Hybomitra lurida*.

Environmental Threats and Pressures Relevant to the Midlands Meres and Mosses RAMSAR Site (Site 8 Vicarage Moss)

- 3.12 The following potentially damaging factors have been identified within the Site Management Statement for Site 8, Vicarage Moss, of the Midland Meres and Mosses Phase 2 RAMSAR Site:

- Lowering of the water table. The hydrology of these sites is often complex and Vicarage Moss is understood to have a perched water table (i.e. one that is isolated from the wider groundwater table, Gilman 1995) and is reliant on surface water and direct precipitation inputs;
- Reductions in water quality, particularly from polluted surface water runoff. The habitats on site are typical of low nutrient environments and increases in fertiliser or sediments could alter the interest features of the site (Shaw and Wheeler 1990, Lindsay 1995, Hawley *et al.* 2004);
- Changes to the current grazing regime on site or the introduction of different agricultural practices within the catchment;
- Increase in tree colonisation;
- Burning of vegetation;
- Dumping of materials on the site; and
- Sand and gravel extraction.

3.13 The RAMSAR Wetland Information Sheet for the Midland Meres and Mosses Phase 2 RAMSAR Site identifies the following potentially adverse factors:

- Eutrophication, both on and off site;
- Introduction of invasion or non-native plant species onto site; and
- Pollution from agricultural practices and/or pesticide use in the catchment area.

3.14 All these factors are considered to exert potentially major impacts on the designated features of the Midland Meres and Mosses Phase 2 RAMSAR Site.

3.15 Wrexham County Borough is currently preparing a new Local Development Plan (LDP) which will replace the existing Wrexham UDP. Adoption of this document is anticipated later in 2020. The evidence base for the emerging LDP includes the 2016 HRA² of the LDP that covers the Midland Meres and Mosses Phase 2 RAMSAR Site.

3.16 The emerging LDP states that the Midlands Meres and Mosses Phase 2 RAMSAR Site is made up of a diverse and widely dispersed suite of wetland sites ranging from open water (meres) to peatland sites (mosses). The sites are distributed across the north-west Midlands in England and across north-east Wales.

3.17 Within the administrative boundary of Wrexham there are four component sites of the Midlands Meres and Mosses Phase 2 RAMSAR Site. The largest being the Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses complex. Three further small sites occur within the County Borough, comprising Hanmer Mere, Vicarage Moss and Llyn Bedydd (see Figure 1).

3.18 Current issues as identified in the emerging LDP are as follows:

3.19 Factors currently identified as having an impact upon the Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses part of the Midlands Meres and Mosses Ramsar site (Phase 2) are agricultural pollution, the surrounding forestry and pheasant rearing practices, and a limited amount of active peat cutting.

² KPD04 2016. *Habitats Regulations Assessment. Wrexham Local Development Plan 2013 - 2028 (Preferred Strategy)*. https://wrexham-consult.objective.co.uk/portal/ldp_ebsd

- 3.20 Hanmer Mere is suffering from aquatic pollution, which is considered to be partly due to intermittent failure of the local waste water treatment (WWT) infrastructure. The local pumping station can leak when under pressure and Hanmer Mere suffers from an input of increased nutrients as a consequence. This WWT facility is considered to be unable to accommodate any further development within the vicinity of Hanmer Mere.
- 3.21 Vicarage Moss is a kettle hole and is, therefore, also of geological importance. Water quality is identified as an issue at this site.
- 3.22 The Llyn Bedydd catchment area brings nutrient-rich water to the lake (mere), which is considered to be affecting the Midlands Meres and Mosses Phase 2 RAMSAR Site interest features. This requires further investigation, but is likely to be a result of diffuse agricultural pollution.
- 3.23 Requirements to resolve current issues and prevent further adverse effects are identified in the emerging LDP as follows:
- There should be no further new development which relies on the pumping station at Hanmer until it is upgraded.
 - Measures to reduce diffuse agricultural pollution will need to be progressed by NRW and Environment Agency Wales and although these are outside the scope of the Local Development Plan, it is stated that the UDP proposals should not exacerbate this issue.

Potential Effects of the Project on the Midlands Meres and Mosses RAMSAR Site (Site 8 Vicarage Moss)

- 3.24 The following pressures, identified via the desk review of various data and published information, are reviewed in the following paragraphs with regard to potential LSE on Site 8, Vicarage Moss, of the Midland Meres and Mosses Phase 2 RAMSAR Site. This assessment is for the project alone (i.e. not in combination).

Direct Impacts

Land Take

- 3.25 The project does not impinge on any areas directly adjacent to the Midland Meres and Mosses Phase 2 RAMSAR Site or any of its supporting habitats, being situated 112m away from the designated site. There is, therefore, no loss of habitat within the Midland Meres and Mosses Phase 2 RAMSAR Site as a result of the project and **no LSE** from habitat loss or change resulting from land take that might impact upon the qualifying features.

Aquatic Pollution via Surface Water

- 3.26 This includes aquatic pollution from surface waterbodies (streams, ditches, etc), surface/sub-surface runoff and construction-related sediments.
- 3.27 The project (application site) does not impact on any surface waterbodies that link to the Midland Meres and Mosses Phase 2 RAMSAR Site and, therefore, there are no known surface waterbody pathways from which aquatic pollution could enter the Midland Meres and Mosses Phase 2 RAMSAR Site. As is typical for 'mosses' of this type, Vicarage Moss has no defined inflow or outflow streams that might create a pathway for pollution from surface water inputs.

- 3.28 Despite the close proximity of the project to the Midland Meres and Mosses Phase 2 RAMSAR Site, the project is outside of the surface water catchment area³ for Site 8, Vicarage Moss, of the Midland Meres and Mosses Phase 2 RAMSAR Site (Figure 2). As a result, any surface water movement (overland flow) across the project's land area is predicted to drain away from the Midland Meres and Mosses Phase 2 RAMSAR Site and, therefore, will not be at risk of entering onto the protected site or affecting any of its interest features.
- 3.29 There is, therefore, **no LSE** identified from aquatic pollution or related sediment runoff via surface waterbodies or surface/subsurface overland water flow to the Midland Meres and Mosses Phase 2 RAMSAR Site in relation to this project.

Groundwater Impacts

- 3.30 Impacts from groundwater changes can be either related to pollution of groundwater and/or from a change in groundwater levels (i.e. a drop in levels).
- 3.31 In terms of the Midland Meres and Mosses Phase 2 RAMSAR Site, studies have shown two important features of the Vicarage Moss component of the RAMSAR Site:
- 3.32 Firstly, the component site of the Midland Meres and Mosses Phase 2 RAMSAR Site of interest (i.e. Site 8 Vicarage Moss) is isolated from the regional groundwater. Gilman (1995) reports that the hydrogeological work undertaken as part of the assessments of potential impacts of nearby sand and gravel extraction '*clearly indicates that Vicarage Moss is perched above the general level of the major water table in the gravels*' by about 20m and that water levels in Vicarage Moss '*depends upon the maintenance of a reliable supply of water from the topographic catchment*'. In other words, it is the surface water (topographic) catchment that sustains the Midland Meres and Mosses Phase 2 RAMSAR Site features of interest at this component site.
- 3.33 The previous assessment (paragraph 3.26) identified that the surface water catchment of the Midland Meres and Mosses Phase 2 RAMSAR Site at this location (Site 8 Vicarage Moss) does not overlap with the project (the Application site). This is shown in Figure 2.
- 3.34 There is, therefore, **no LSE** identified from groundwater impacts to the Midland Meres and Mosses Phase 2 RAMSAR Site in relation to this project.

Atmospheric Pollution

- 3.35 This assessment considers atmospheric pollution from additional road traffic generated by the project. Air pollution from road traffic can affect habitats through increased input of nitrous oxides (NO_x). This can increase the risk of nitrogen inputs exceeding critical levels for habitats, particularly for those habitats associated with low nutrients requirements such as peatlands ('mosses') (Evans *et al.* 2016).
- 3.36 The additional road traffic likely generated from the 116 units within the project along with the distance from the designated site (<200m⁴) has been reviewed following the approach set out in Holman *et al.* (2019). The two roads within 200m of the site are Vicarage Lane and Carthage Lane, both to the south of the area covered by the project. Carthage Lane is a local unclassified dead-end road serving a small number of residential properties. There is no

³ Obtained from the Flood Estimation Handbook(FEH) Web Service - The FEH Web Service delivers catchment descriptors and rainfall data to support the methods outlined in the Flood Estimation Handbook, and implemented in the FEH software, for estimating floods and site runoff rates. <https://fehweb.ceh.ac.uk/> (last accessed 08/11/2019)

⁴ Traffic increases on roads within 200m of the designated site are considered to potentially increase NO_x and other traffic-related air pollution impacts on the designated site (Bignal *et al.* 2004, Ricardo-AEA 2016)

predicted additional use of this lane under the proposed scheme. Vicarage Lane runs between the Midland Meres and Mosses Phase 2 RAMSAR Site and the proposed development site.

- 3.37 The Traffic Assessment identifies that the scheme is forecast to generate 916 two-way AADT⁵ flows at the proposed access point and this disperses onto the network from this point. This is below the 1000 AADT threshold at which LSE might occur.
- 3.38 The scheme's access point is at Hillock Lane to the north of the proposed development site some 350m from the Midland Meres and Mosses Phase 2 RAMSAR Site, where traffic will exit the residential area via a new junction. The predicted increases in traffic are, therefore, beyond the 200m threshold at which a LSE is identified (Bignal *et al.* 2004).
- 3.39 Furthermore, the emerging LDP HRA report does not identify air pollution as a likely impact on the Midland Meres and Mosses Phase 2 RAMSAR Site at this location.
- 3.40 There is, therefore, **no LSE** on the qualifying features of the Midland Meres and Mosses Phase 2 RAMSAR Site from atmospheric pollution resulting from increased road traffic from the project (i.e. additional aerial pollution from traffic generated by the project will be nugatory).

Recreational Pressure

- 3.41 Public Rights of Ways were viewed on the Wrexham County Borough Council's web page showing the Public Rights of Way Definitive Map⁶. There is a small network of public footpaths across the area within the vicinity of the Midland Meres and Mosses Phase 2 RAMSAR Site and the project's land area (Figure 3). The existing section of the footpath crossing the project's land will be retained along a similar route. No footpaths will lead directly onto the Midland Meres and Mosses Phase 2 RAMSAR Site from the project.
- 3.42 No Public Rights of Way go through Midland Meres and Mosses Phase 2 RAMSAR Site. The closest footpath nearby goes through Vicarage Copse only, which is not within the RAMSAR Site boundary.
- 3.43 The Midland Meres and Mosses Phase 2 RAMSAR Site at this location is not mapped as 'Open Access - Registered Common Land', 'Open Access - Open Country', 'Open Access - Dedicated Forest' or 'Open Access - Other Statutory Access Land' according to the dataset available on Lle, the geo-portal for Wales⁷.
- 3.44 A review of the land ownership on LandInsight⁸ web resource indicates that at this location, the Midland Meres and Mosses Phase 2 RAMSAR Site is on land within private ownership.
- 3.45 There is no National Nature Reserve or Local Nature Reserve designation on the land, as viewed on MAGIC⁹, the government's interactive database on geographic information about the natural environment.
- 3.46 In addition, the inaccessibility of the Midland Meres and Mosses Phase 2 RAMSAR Site, due to its wetland nature, is unlikely to attract walkers to stray onto it.

⁵ AADT – average annual daily traffic

⁶ https://www.wrexham.gov.uk/english/leisure_tourism/prow/definitive_map.htm

⁷ <https://lle.gov.wales/home?lang=en>

⁸ <https://land.tech/products/landinsight/>

⁹ <https://magic.defra.gov.uk/home.htm>

- 3.47 Furthermore, the emerging LDP HRA report does not identify recreational pressure as a likely impact on the Midland Meres and Mosses Phase 2 RAMSAR Site at this location.
- 3.48 As such **no LSE** from additional recreational pressure is predicted at the Midland Meres and Mosses Phase 2 RAMSAR Site in relation to the project.

Indirect Impacts

- 3.49 Invasive non-native species – this potential threat relates to a range of invasive non-native plant species, such as Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Reynoutria japonica*). The land within the project does not support any invasive non-native species of concern. No records of these key non-native species have been identified on the land area of the project (see PAA 2018). Therefore, there is **no LSE** relating to the spread of invasive non-native plant species onto the Midland Meres and Mosses Phase 2 RAMSAR Site as a result of this project.
- 3.50 Functional linkages to the designated site – the term ‘functional linkages’ refers to the role or ‘function’ that land beyond the boundary of a designated site might fulfil in terms of supporting those populations for which the site was classified or designated (Chapman and Tyldesley 2016). The habitats on the application site are not considered to be functionally linked to the designated site, as they comprise managed agricultural habitats highly unlikely to support the range of qualifying features for the Midland Meres and Mosses Phase 2 RAMSAR Site at this location. In addition, there are no records of qualifying habitats, flora or fauna using the site (PAA 2018). Furthermore, the application site lies outside of the surface water catchment area of the Midland Meres and Mosses Phase 2 RAMSAR Site at this location and there are no known hydrological functional links between the application site and the designated site. There is, therefore, **no loss of functional linkages** to the Midland Meres and Mosses Phase 2 RAMSAR Site in relation to this project.
- 3.51 Other potential pressures relating to increased urbanisation e.g. litter and fly-tipping, can increase as a result of increasing urbanisation of landscapes. Intentional fire setting can occur on semi-natural areas close to urban locations. In addition, domestic cats can increase risk to wildlife through predation of, for example, the chicks of ground nesting birds. These are discussed below:
- 3.52 Increased fly-tipping can result in the introduction of invasive non-native plant species with garden waste. Non-native species can, in some situations, lead to negative interactions with habitats or species for which sites may be designated. The designated site does not adjoin the proposed development site, therefore, the risk of garden waste being ‘dumped’ in close proximity to the site is judged as minimal. Non-native species may also be introduced deliberately or may be bird-sown from local gardens, and this is a more likely route for invasive plant species to colonise the designated site. The development of the landscape planting scheme would, as part of good practice and design, exclude any non-native invasive plant species including those listed on Schedule 9 of the WCA (1981 as amended). As such **no LSE** from this potential impact is identified.
- 3.53 Semi-natural areas within close proximity to urban development can be subject to intentional fire setting (arson). Habitats most at risk are those that become excessively dry over the spring or summer months, including dry heath and bog, dry grassland and scrub. The site is a wetland area and the descriptions of habitats and range of plant species presented in the documents in Appendix 1 indicate the Midland Meres and Mosses Phase 2 RAMSAR Site at this location remains wet throughout the year. The ‘basin’ form of the site is also a natural collection point for surface water and there is no surface water outflow stream from the site. These factors reduce the vulnerability of the site to intentional fire setting and as such **no LSE** from this potential impact is identified.

- 3.54 Increasing urbanisation is likely to lead to increased wildlife predation by domestic cats. A survey in 1997 reported that nine million British cats brought home 92 million prey items over a five-month period (Woods *et al.* 2003). Other studies have shown that 60% of forays by cats are over a distance of less than 400m (Barratt 1997), and that the mean distance of hunting excursions is 371m from home (Turner and Meister 1988). The designated site is, therefore, within the likely hunting range of a domestic cat residing at the proposed development site. The Qualifying Features for the site do not include breeding species of birds, but instead encompass winter and spring/autumn use of the site for non-breeding activities with the key species being associated with the open water areas (and, therefore, more likely to be protected from cats). As such there is **no LSE** of potential impact of an increase in cat predation on the qualifying features of the Midland Meres and Mosses Phase 2 RAMSAR Site.

In-combination Assessment

- 3.55 The above assessment of the project on the individual proposal results in no LSE on the Midland Meres and Mosses Phase 2 RAMSAR Site in relation to the qualifying features of the site.
- 3.56 As such, the project results in a neutral impact on the designated site. Nugatory impacts can combine with other plans of projects in the area to result in a potential LSE, and the assessment of these in-combination effects is presented below.
- 3.57 A review of the UDP (Wrexham County Borough 2005) identified an allocated site for residential development within the Gresford settlement area. This site has now been taken forward to development ('The Pavilions' at Postcode LL12 8TZ) comprising 44 units. A search of the Wrexham Borough Council planning portal¹⁰ identified no further submitted applications or granted development proposals within the nearby area (postcodes LL12 and LL13 covering Gresford, Acton and Holt). The largest application (for 44 residential units off Vicarage Lane) was declined planning permission in early 2019. In addition the emerging LDP for Wrexham identifies no additional land allocations development with the locality of the Midland Meres and Mosses Phase 2 RAMSAR Site within the Gresford area¹¹
- 3.58 In-combination effects are considered to comprise potential for air pollution from traffic associated with the recently completed 'The Pavilions' development and the proposed development off Hillock Lane. The Pavilions development was constructed in phases, with the first dwellings being occupied in November 2016, and the most recent being occupied in August 2019, and it is now almost fully occupied¹². The Traffic Survey for this project was carried out on 11th June 2019, so is considered to be accounted for in the additional traffic movements associated with The Pavilions.
- 3.59 Furthermore, the emerging LDP HRA report does not identify any potential for in-combination impacts on the Midland Meres and Mosses Phase 2 RAMSAR Site at this location.
- 3.60 As such there is no additional impact of air pollution identified from in-combination effects, and **no in-combination LSEs** are identified for the Midland Meres and Mosses Phase 2 RAMSAR Site at this location.

¹⁰ <http://planning.wrexham.gov.uk/Planning/lq/GFPlanningWelcome.page> (accessed 11/11/2019)

¹¹ KSD04e Wrexham LDP Deposit Map 3 Burton, Gresford, Rossett. Wrexham Local Development Plan 2013 - 2028 (Preferred Strategy). https://wrexham-consult.objective.co.uk/portal/ldp_ebsd

¹² <https://www.sqstates.co.uk/current/the-pavilions-gresford-ll12-8tn/> (last viewed 18/11/2019)

Overall Conclusion

- 3.61 The project at land off Hillock Lane, Gresford is assessed as having **no LSE** on the qualifying features of the Midland Meres and Mosses Phase 2 RAMSAR Site at this location (Site 8 Vicarage Moss), as such no Appropriate Assessment is predicted to be required.

4. REFERENCES

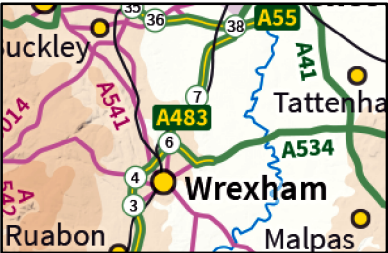
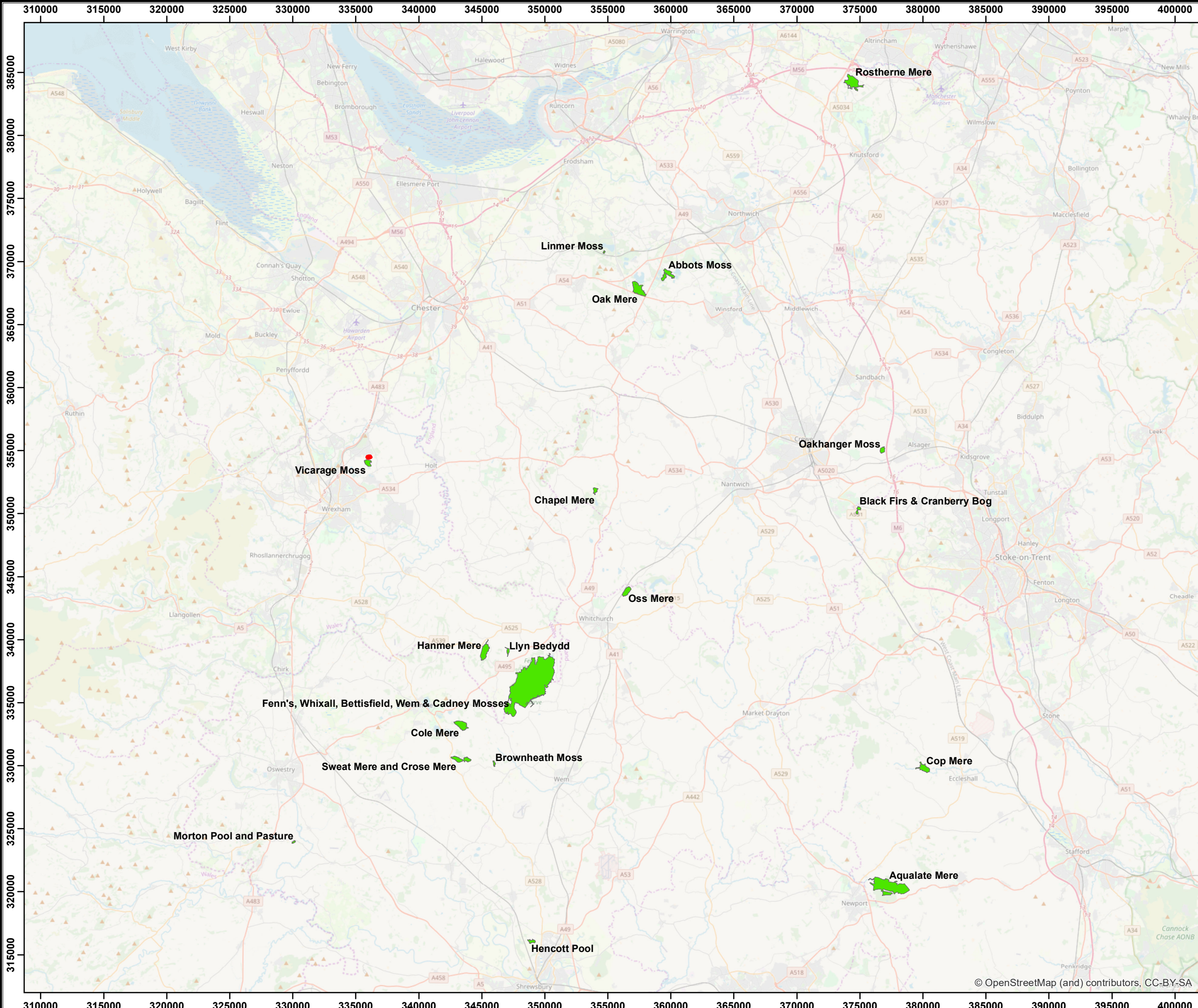
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5. ABBREVIATIONS

HRA	Habitats Regulations Assessment
IROPI	Imperative Reasons of Overriding Public Interest
LDP	Local Development Plan
LSE	Likely Significant Effect(s)
MAGIC	Multi Agency Geographic Information for the Countryside
NRW	Natural Resources Wales
PAA	Penny Anderson Associates Ltd
SAC	Special Area(s) of Conservation
SPA	Special Protection Area(s)
SSSI	Site(s) of Special Scientific Interest
UDP	Unitary Development Plan
WWT	Waste Water Treatment

FIGURES



Legend

- Application Site Boundary
- Midland Meres and Mosses Phase 2 RAMSAR site

British National Grid
Projection: Transverse Mercator
False Easting: 400000.000000
False Northing: -100000.000000
Central Meridian: -2.000000
Scale Factor: 0.999601
Latitude Of Origin: 49.000000

ISO A3

0 1 2 4 6 8 Kilometers

Penny Anderson Associates Ltd
CONSULTANT ECOSYSTEMS

Penny Anderson Associates Ltd,
Parklea, 60 Park Road,
Buxton, Derbyshire, SK17 6SN.
Telephone 01298 27086

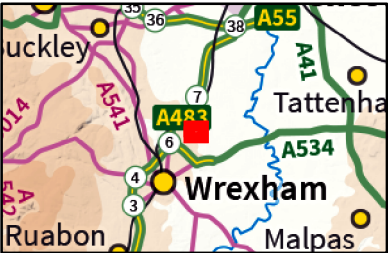
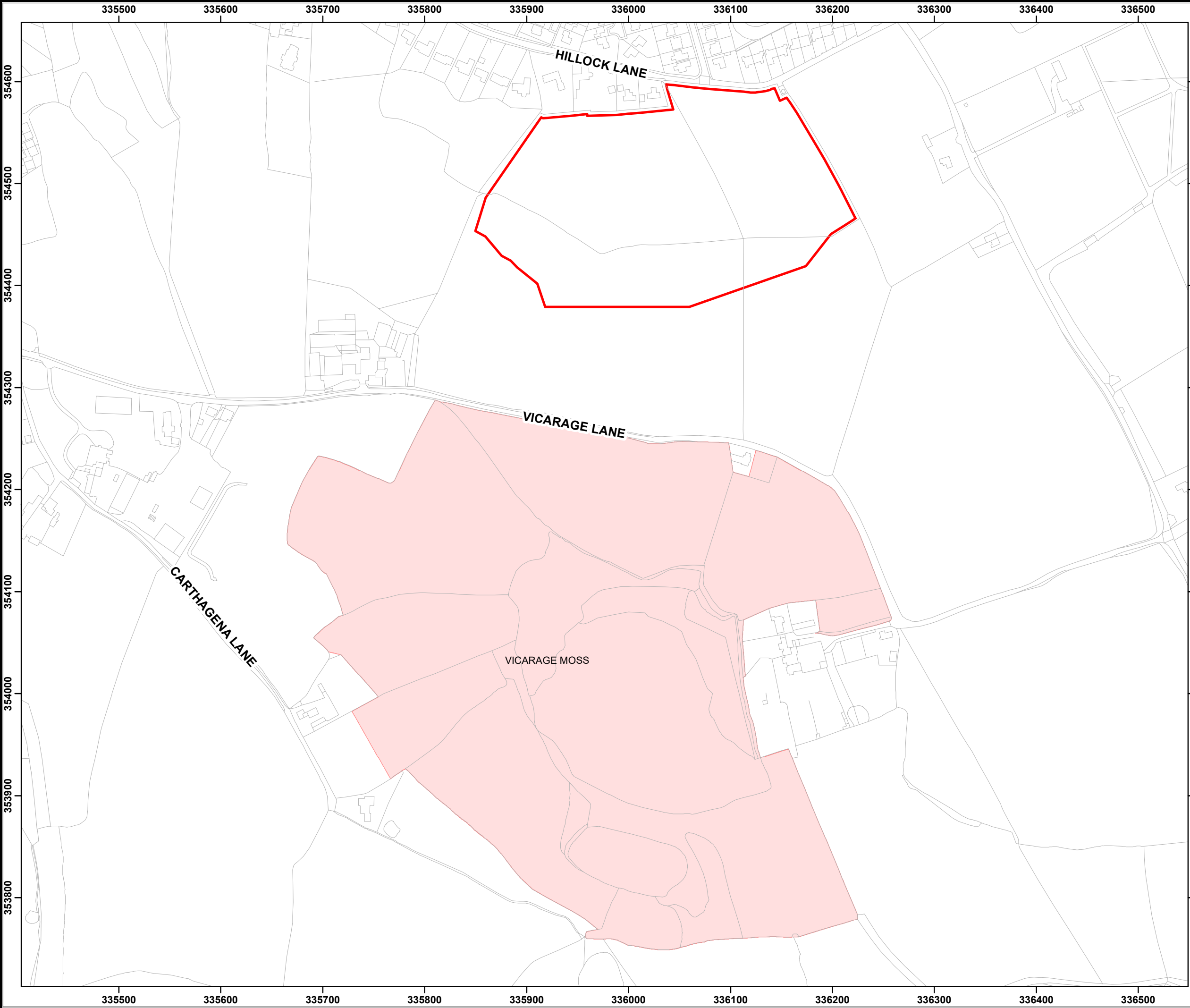
Project Name
Gresford, Wrexham

Discipline
Ecology

Title:
Midland Meres and Mosses
Phase 2 RAMSAR site

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Drawn By MDM	Originator SRs
PRA Ref. G:\WOJ001_Gresford_Wrexham\Maps\Figures\	Date 28/01/2020
	Revision 1.0

Contains OS data © Crown copyright [and database right] (2017)



Legend

- Application Site Boundary
- Midland Meres and Mosses
- Phase 2 RAMSAR site – Vicarage Moss

British National Grid
Projection: Transverse Mercator
False Easting: 400000.000000
False Northing: 100000.000000
Central Meridian: -2.000000
Scale Factor: 0.999601
Latitude Of Origin: 49.000000

ISO A3

Metres

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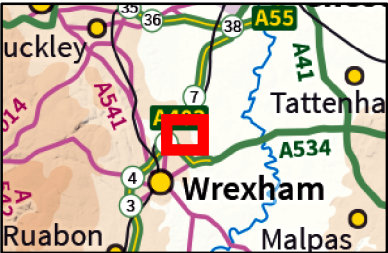
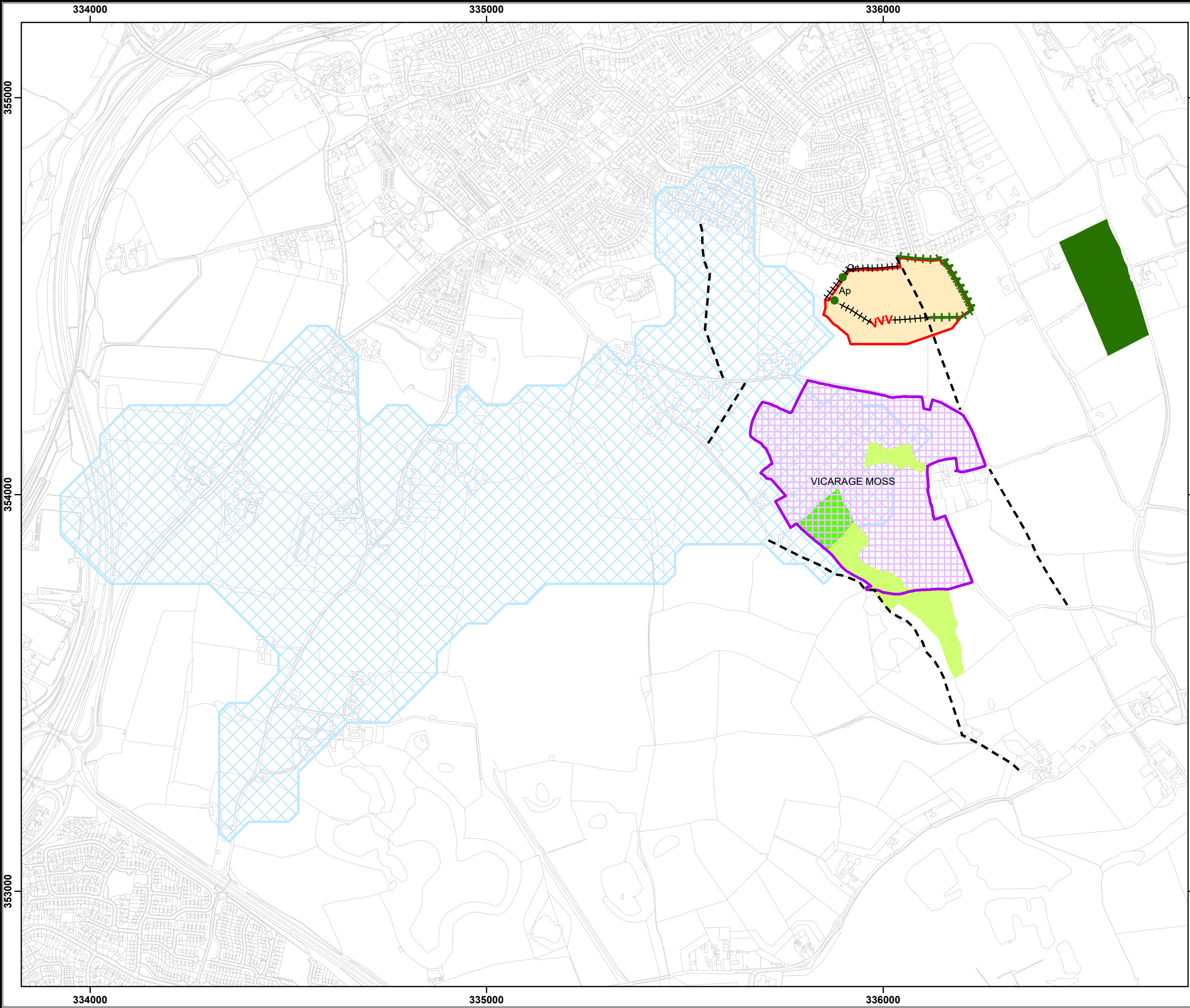
Penny Anderson Associates Ltd
Parklea, 60 Park Road,
Buxton, Derbyshire, SK17 6SN.
Telephone 01298 27086

Project Name
Gresford, Wrexham

Discipline
Ecology

Title:
**Location and Extent of the
Midland Meres and
Mosses Phase 2
RAMSAR site – Vicarage Moss'**

Scale 1:3,500	Drawing No. Figure 2	
Drawn By MDM	Originator CBo	Date 28/01/2020
P/A Ref. G:\WOJO01_Gresford_Wrexham\Maps\Figures\	Revision 1.0	



Legend

- Application Site Boundary
- Habitats**
 - Improved grassland
 - Tall ruderal
 - Bare earth
 - Fence
 - Hedge with trees - species poor
 - Hedge with trees - species rich
 - Intact hedge - species poor
 - Intact hedge - species rich
 - Public Footpaths
 - Tree
 - Vicarage Moss SSSI / RAMSAR site
 - Surface water catchment of Vicarage Moss
- Habitats from MAGIC**
 - Important Plant Areas
 - Broadleaved woodland
 - Conifer woodland
 - Mixed woodland

British National Grid
 Projection: Transverse Mercator
 False Easting: 400000.000000
 False Northing: 100000.000000
 Central Meridian: -2.000000
 Scale Factor: 0.999601
 Latitude Of Origin: 49.000000

ISO A3

0 45 90 180 270 360 Metres

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Project Name
 Gresford, Wrexham

Discipline
 Ecology

Title:
 Features of the
 Midland Meres and
 Mosses Phase 2 RAMSAR
 Site – Vicarage Moss

Scale 1:9,000	Originator CBo	Drawing No. Figure 3
Drawn By MDM	Date 29/01/2020	Revision 1.0

PAA Ref:
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APPENDIX 1

Designated Site Information

Ramsar Convention on Wetlands of International Importance

MIDLAND MERES AND MOSSES (PHASE 2)

The Meres and Mosses of the Clwyd-Shropshire-Cheshire-Staffordshire plain form an internationally important series of open water and peatland sites. These have developed in natural depressions in the glacial drift left by receding ice sheets, which formerly covered this plain. The majority lie in Cheshire and north Shropshire, with a small number of outlying sites in adjacent parts of Staffordshire and Clwyd.

The origin of most of the hollows can be accounted for by glaciation but a small number have been formed, at least in part, by more recent subsidence resulting from the removal in solution of underlying salt deposits.

There are more than 60 open water bodies known as 'meres' or 'pools' and a smaller number of peatland sites or mires known as 'mosses'. The meres range in depth from about one metre to 27 metres and vary between less than one hectare to 70 hectares, in area.

Although the majority of the meres are naturally nutrient rich (eutrophic), the water chemistry is very variable reflecting the heterogeneous nature of the surrounding drift deposits. Associated fringing habitats such as reedswamp, fen, carr and damp pasture add to the value of the meres. The development of these habitats is associated with peat accumulation which in some cases has led to the complete infilling of the basin. During this process the nutrient status of the peat surface changes and typically becomes nutrient poor (oligotrophic) and acidic, thus allowing species such as the bog mosses *Sphagnum* spp. to colonise. The resultant peat bogs are the 'mosses'. In a few cases colonisation of the water surface by floating vegetation has resulted in the formation of a quaking bog known as a 'schwingmoor'.

Phase 2 of the proposed Ramsar site is entirely coincident with the following 19 Sites of Special Scientific Interest (SSSI): Abbots Moss; Aqualate Mere; Black Firs & Cranberry Bog; Brownheath Moss; Chapel Mere; Cole Mere; Cop Mere; Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses; Hanmer Mere; Hencott Pool; Linmer Moss; Llyn Bedydd; Morton Pool & Pasture; Oak Mere; Oakhanger Moss; Oss Mere; Rostherne Mere; Sweat Mere & Crose Mere; Vicarage Moss.

Phase 2 of the proposed Ramsar site covers 1740.3 hectares.

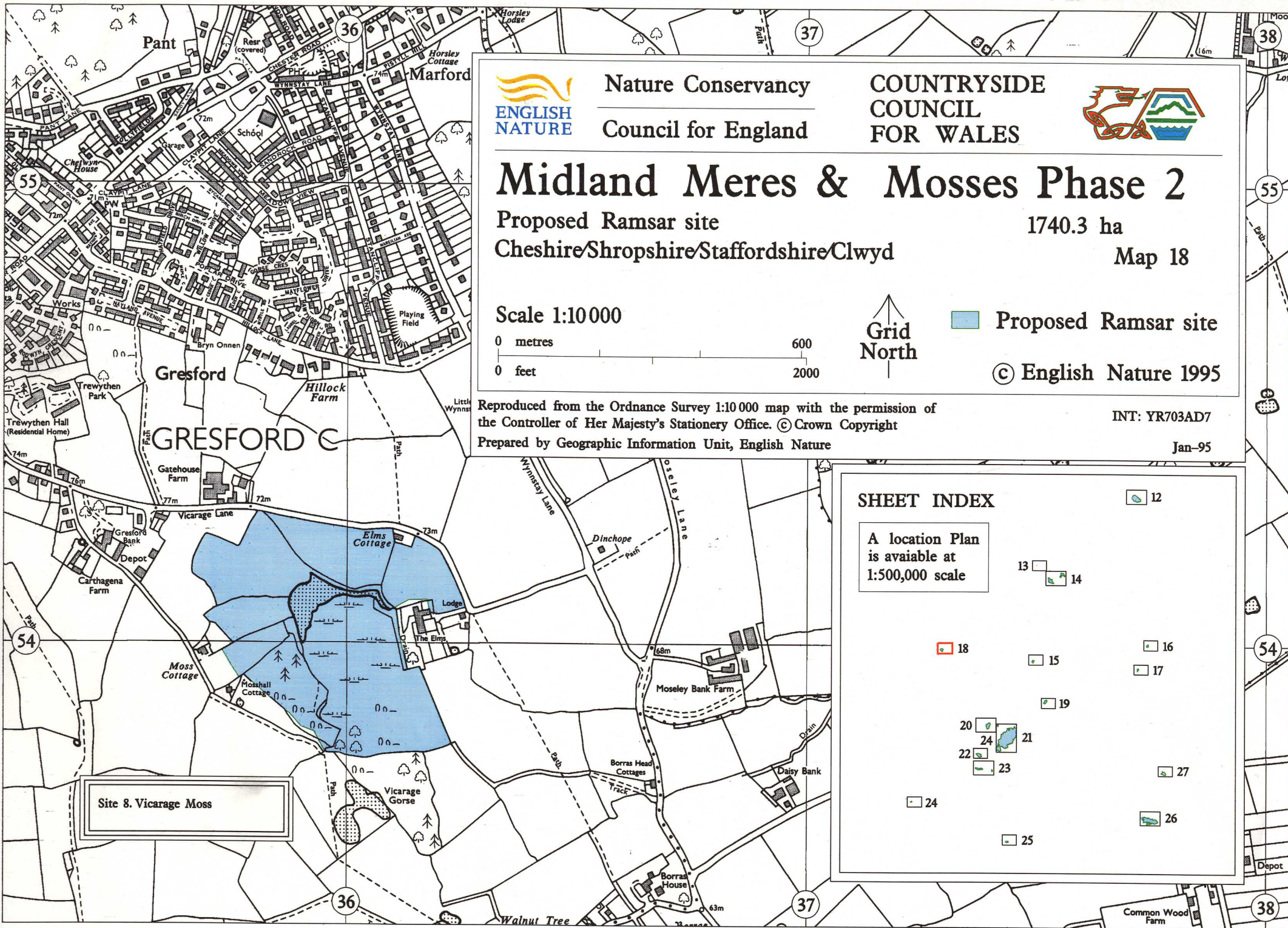
Phase 2 of the proposed Midland Meres and Mosses Ramsar site qualifies under criterion 1a of the Ramsar Convention as it is a particularly good example of a natural or near-natural wetland, characteristic of this biogeographical region. The proposed Ramsar site comprises the full range of habitats from open water to raised bog. .

The site qualifies under Criterion 2a by supporting a number of rare species of plants associated with wetlands, including the nationally scarce cowbane *cicuta virosa*,

elongated sedge *Carex elongata* and bog rosemary *Andromeda polifolia*. Also present are the nationally scarce byophytes *Dicranum undulatum*, *Dicranum affine* and *Sphagnum pulchrum*.

The site also qualifies under Criterion 2a by containing an assemblage of invertebrates, including several rare wetland species. There are 16 species of Red Data Book insect listed for this site, including the following endangered species: the moth *Glyphipteryx lathamella*, the caddisfly *Hagenella clathrata* and the sawfly *Trichiosoma vitellinae*.

Ramsar Citation (Montreaux criteria 1990)
countryside Council for Wales/English Nature
February 1995



Nature Conservancy
Council for England

COUNTRYSIDE
COUNCIL
FOR WALES



Midland Meres & Mosses Phase 2

Proposed Ramsar site

1740.3 ha

Cheshire/Shropshire/Staffordshire/Clwyd

Map 18

Scale 1:10 000

0 metres

600

0 feet

2000



Proposed Ramsar site

© English Nature 1995

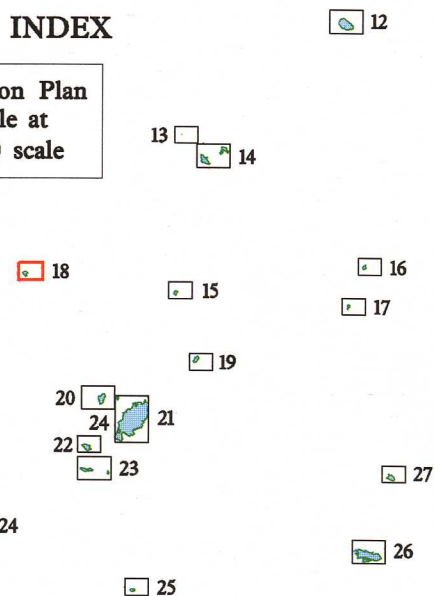
Reproduced from the Ordnance Survey 1:10 000 map with the permission of
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Prepared by Geographic Information Unit, English Nature

INT: YR703AD7

Jan-95

SHEET INDEX

A location Plan
is available at
1:500,000 scale



Site 8. Vicarage Moss

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

Joint Nature Conservation Committee

Monkstone House

City Road

Peterborough

Cambridgeshire PE1 1JY

UK

Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948

Email: RIS@JNCC.gov.uk

FOR OFFICE USE ONLY.

DD MM YY

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

Designated: 02 February 1997

3. Country:

UK (England/Wales)

4. Name of the Ramsar site:

Midland Meres and Mosses Phase 2

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. **For RIS updates only,** changes to the site since its designation or earlier update:

a) Site boundary and area:

**** Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) **hard copy** (required for inclusion of site in the Ramsar List): yes ✓ -or- no ☐;
- ii) **an electronic format** (e.g. a JPEG or ArcView image) Yes
- iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** yes ✓ -or- no ☐;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

52 55 20 N 02 45 43 W

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Chester, Shrewsbury, Stafford

The 18 units which make up the site are spread over the Wrexham / Shropshire / Cheshire and Staffordshire Plain. The majority of the units are in Cheshire and north Shropshire, with a small number of outlying sites in adjacent parts of Staffordshire and Wrexham.

Administrative region: Cheshire; Clwyd; Shropshire; Staffordshire; Wrexham/ Wrexham

10. Elevation (average and/or max. & min.) (metres): **11. Area** (hectares): 1588.24

Min. 63
Max. 94
Mean 83

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Meres and Mosses form a geographically diverse series of lowland open water and peatland sites in the north-west Midlands of England and north-east Wales. These have developed in natural depressions in the glacial drift left by receding ice sheets which formerly covered the Cheshire/Shropshire Plain. The 18 component sites include open water bodies (meres), the majority of which are nutrient-rich with associated fringing habitats, reed swamp, fen, carr and damp pasture. Peat accumulation has resulted in the nutrient-poor peat bogs (mosses) forming in some sites on the fringes of the meres or completely infilling basins. In a few cases the result is a floating quaking bog or schwingmoor. The wide range of resulting habitats support nationally important flora and fauna.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 2

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

The site comprises a diverse range of habitats from open water to raised bog.

Ramsar criterion 2

Supports a number of rare species of plants associated with wetlands, including the nationally scarce cowbane *Cicuta virosa* and, elongated sedge *Carex elongata*. Also present are the nationally scarce bryophytes *Dicranum affine* and *Sphagnum pulchrum*.

Also supports an assemblage of invertebrates including several rare species. There are 16 species of British Red Data Book insect listed for this site including the following endangered species: the moth *Glyphipteryx lathamella*, the caddisfly *Hagenella clathrata* and the sawfly *Trichiosoma vitellinae*.

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	acidic, basic, neutral, sand, clay, alluvium, peat, nutrient-rich, nutrient-poor, sandstone, sandstone/mudstone, gravel
Geomorphology and landscape	lowland, hilly, floodplain, escarpment
Nutrient status	eutrophic, mesotrophic, oligotrophic
pH	acidic, circumneutral, strongly acidic
Salinity	fresh
Soil	mainly organic
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Shawbury, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/shawbury.html) Max. daily temperature: 13.4° C Min. daily temperature: 5.2° C Days of air frost: 61.8 Rainfall: 655.7 mm Hrs. of sunshine: 1398.1

General description of the Physical Features:

The Meres and Mosses of the north-west Midlands comprise a series of open water and peatland sites, most of which developed in natural depressions left by the retreating ice sheets at the end of the last Ice Age. There are over 60 open water sites, or 'meres', as well as a smaller number of peatland sites, known as 'mosses'.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

The Meres and Mosses of the north-west Midlands comprise a series of open water and peatland sites, most of which developed in natural depressions left by the retreating ice sheets at the end of the last Ice Age. There are over 60 open water sites, or 'meres', as well as a smaller number of peatland sites, known as 'mosses'.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Recharge and discharge of groundwater, Flood water storage / desynchronisation of flood peaks

19. Wetland types:

Inland wetland

Code	Name	% Area
U	Peatlands (including peat bogs swamps, fens)	66.1
O	Freshwater lakes: permanent	14.4
Other	Other	12.7
Xp	Forested peatland	4.7
W	Shrub-dominated wetlands	2.1

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The site's primary interest is its wide range of lowland wetland types and successional stages within a distinct biogeographical area. Waters are generally circumneutral or acidic depending on the component site's soil type, catchment size and usage. Substantial areas of open water remain in some sites, and in many cases this is fringed by extensive and varied swamp, fen and carr communities. Some basins have become peat-filled, leading in some circumstances to the development of ombrotrophic conditions; of particular importance are the quaking bogs or schwingmoors.

Fenns, Whixall, Bettisfield, Wem and Cadney Mosses are large raised bogs of exceptional importance.

Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Nationally important species occurring on the site.**Higher Plants.**

Calamagrostis stricta, *Carex elongata*, *Cicuta virosa*, *Thelypteris palustris*

Lower Plants.

Sphagnum pulchrum, *Dicranum undulatum*

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds**Species currently occurring at levels of national importance:****Species with peak counts in spring/autumn:**

Northern shoveler , <i>Anas clypeata</i> , NW & C Europe	171 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
--	--

Species with peak counts in winter:

Great cormorant , <i>Phalacrocorax carbo carbo</i> , NW Europe	323 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3)
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Great bittern , <i>Botaurus stellaris stellaris</i> , W Europe, NW Africa	1 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
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Water rail , <i>Rallus aquaticus</i> , Europe	7 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
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Species Information**Nationally important species occurring on the site.****Invertebrates.**

Limnophila heterogyna, Atylotus plebeius, Hagenella clathrata, Limnophila fasciata, Carorita limnaea, Glyptopteryx lathamella, Trichiosoma vitellinae, Eilema serica, Brachythops wusteneii, Pachinematus xanthocarpus, Sittcus floricola, Lampronia fuscataella, Hybomitra lurida.

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
 Archaeological/historical site
 Environmental education/ interpretation
 Livestock grazing
 Non-consumptive recreation
 Peat cutting (small-scale/subsistence)
 Scientific research
 Sport fishing

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	
Local authority, municipality etc.	+	+
National/Crown Estate	+	+
Private	+	+

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Recreation	+	
Current scientific research	+	
Collection of non-timber natural products: (unspecified)	+	
Commercial forestry		+
Fishing: recreational/sport	+	
Arable agriculture (unspecified)		+
Grazing (unspecified)	+	+
Hunting: recreational/sport	+	+
Sewage treatment/disposal		+
Irrigation (incl. agricultural water supply)		+
Mineral exploration (excl. hydrocarbons)		+
Transport route		+
Urban development		+
Non-urbanised settlements		+

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.
2. Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Eutrophication	1		+	+	+
Introduction/invasion of non-native plant species	1		+		+
Pollution – pesticides/agricultural runoff	1			+	+

For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?

Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
National Nature Reserve (NNR)	+	
Land owned by a non-governmental organisation for nature conservation	+	
Management agreement	+	+
Site management statement/plan implemented	+	
Other	+	+
Special Area of Conservation (SAC)	+	

b) Describe any other current management practices:

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Habitat.

Catchment management planning.

Peatland restoration & monitoring.

Fen rehabilitation.

Limnology.

Hydrology.

Environment.

Water chemistry.

Trophic status/nutrient budgets.

Peat paleo-ecology.

Impacts of fish.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Areas owned by the Local Authority and National Nature Reserves are used by schools and universities for site-based projects and individual dissertations.

National Nature Reserves are used as management-practice and machinery demonstration sites.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities.

Angling; boating.

Facilities provided.

There is a network of public footpaths.

Seasonality.

Increased use in summer.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs,

European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

Head, Countryside Division, Welsh Assembly Government, Cathays Park, Cardiff, CF1 3NQ

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK / Site Safeguard Officer, International Designations, Countryside Council for Wales, Maes-y-Ffynnon, Penrhosgarnedd, Bangor, Gwynedd, LL57 2DW

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Site-relevant references

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**CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES**

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

WREXHAM

VICARAGE MOSS

<u>Date of notification:</u>	1981, 1983, 1988
<u>National Grid Reference:</u>	SJ359541
<u>O.S. Maps:</u>	1:50,000 Sheet number: 117 1:25,000 Sheet number: SJ35
<u>Site area:</u>	21.1 ha

Description:

Geomorphological and botanical interest.

The site is one of the best-developed examples of a kettle hole complex in Wales comprising one very large and several smaller subsidiary kettle holes. The largest kettle hole, Vicarage Moss itself, is about 200 metres long and forms a deep basin occupied by mire vegetation which also occupies one of the smaller kettle holes. The basin mire is exceptionally well-defined by its sharp junction with the steep surrounding slopes.

The kettle holes are representative of many developed through the Wrexham area in the sands and gravels of the famous 'Wrexham Delta Terrace' and were probably formed towards the close of the Devensian glaciation by the melting of buried ice. As a classic example of the kettle hole land form and an integral part of the Wrexham Delta Terrace, Vicarage Moss is a site of outstanding interest to the Quaternary geomorphologist.

Vicarage Moss is the largest example of a basin mire in Clwyd, the vegetation being distinctly zoned, particularly in the isolated mire occupying a subsidiary kettle hole to the south.

The plant communities on the outer edge of the mire, which is generally species-poor, are dominated by *Juncus effusus* soft rush with extensive 'lawns' of *Sphagnum recurvum* and areas of *Carex rostrata* bottle sedge with *Carex elata* tufted sedge and *Agrostis canine* brown bent-grass. Further towards the centre of the mire is an area dominated by *Potentilla palustris* marsh cinquefoil and *Deschampsia cespitosa* tufted hair-grass.

The central part of the mire supports *Molinia caerulea* purple moor-grass, *Eriophorum angustifolium* common cotton-grass, *Eriophorum vaginatum* hare's-tail cotton-grass together with *Calluna vulgaris* ling and *Erica tetralix* cross-leaved heath.

There is an area of carr (wet woodland) consisting of *Alnus glutinosa* alder and *Salix spp.* willows at the northern edge of the mire and drier parts have been colonised by *Betula pubescens* hairy birch and *Pinus sylvestris* Scots pine.

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proceedings, public enquiry or any other hearing or appeal. If you require a full legal copy of the document please contact CCW in writing.

VICARAGE MOSS

Wrexham Maelor – CLWYD

NTY
A483(T)

MARFORD AND HOSELEY C

ALLINGTON C

36

57

A483(T)

LAT
53° 05'

GRESFORD C

54

53

CYNGOR
CEFN GWLAD
CYMRU



COUNTRYSIDE
COUNCIL
FOR WALES

**Ffin So.Dd.Ga
S.S.S.I. boundary**

Arwynebedd / Area **21.1** ha

Graddfa / Scale **1:10,000**

Hysbyswyd am
y tro cyntaf **1/1/77**

Hysbyswyd yr
adolygiad
diwethaf **25/5/88**

Cadarnhad
Confirmation **24/1/89**



Atgynhychwyd o fap Ordnance Survey gyda chaniatâd
Rheolwr Swyddfa ei Mawrhydi; cedwir hawlfraint y Goron.

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**CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES**

**SITE OF SPECIAL SCIENTIFIC INTEREST: OPERATIONS REQUIRING CONSULTATION
WITH THE COUNTRYSIDE COUNCIL FOR WALES (CCW)**

SITE NAME: VICARAGE MOSS

UNITARY AUTHORITY: WREXHAM

DATE OF NOTIFICATION: 1988

The operations listed below may damage the features of interest of Vicarage Moss SSSI. Before any of these operations are undertaken you must consult CCW, and may require our consent. **The list of operations is not a prohibited list.**

It is usually possible to carry out some of these operations in certain ways, or at specific times of year, or on certain parts of the SSSI, without damaging the features of interest. If you wish to carry out any of these activities please contact the local office of CCW, a Conservation Officer will give you advice and where appropriate issue a consent. Please help us by using the enclosed form to ask us for consent to carry out these operations.

In certain circumstances it will not be possible to consent these operations, because they would damage the features of interest. Where possible the Conservation Officer will suggest alternative ways in which you may proceed, which would enable a consent to be issued. To proceed without CCW's consent may constitute an offence. **If consent is refused, or conditions attached to it, which are not acceptable to you, you will be provided with details of how you may appeal to the National Assembly of Wales.**

<u>Ref No</u>	<u>Type of operation</u>
6.	Application of pesticides, including herbicides, (weedkillers).
7	Dumping, spreading or discharging of any waste materials (excluding manure in GCR extension).
11.	Destruction, removal or pruning of any plant or plant remains, including tree, shrub, herb or moss.
12.	Tree planting including afforestation and re-afforestation.
13a.	Drainage, including the use of mole, tile, tunnel or other artificial drains.
14.	Changes in the present utilisation of water, including irrigation and abstraction from existing water bodies and through boreholes.
15.	Infilling of ponds, ponds, marshes or pits.
20.	Extraction of minerals including peat, sand and gravel, topsoil or subsoil.
21.	Construction of roads, tracks, hardstands, banks, ditches or other earthworks.

23. Erection of permanent or temporary structures or the undertaking of engineering works, including the laying, maintenance or removal of pipelines and cables, above or below ground.
24. Modification of natural features including grading surface land forms and infilling of depressions and pits.

Notes:

- i. This is a list of operations appearing to the CCW to be likely to damage the special features of this SSSI, as required under section 28(4)(b) of the Wildlife and Countryside Act 1981 as substituted by Schedule 9 to the Countryside and Rights of Way Act 2000.
- ii. Where an operation has been granted a consent, licence or permission from another authority separate consent will not normally be required from CCW, however you should always give notice to CCW prior to exercising such consent, licence or permission.

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VICARAGE MOSS SITE OF SPECIAL SCIENTIFIC INTEREST



YOUR SPECIAL SITE AND ITS FUTURE

Your Special Site and its Future' is part of our commitment to improve the way we work with Site of Special Scientific Interest (SSSI) owners and occupiers. In it, we explain what is special about the wildlife / geology on your site, and what care is needed to look after its wildlife / geology into the future.

All SSSIs are considered to be of national importance and we recognise the crucial role that owners and occupiers play in their management and protection. We need you to share your views and knowledge of this site with us, to help safeguard it.

We hope that you will find 'Your Special Site and its Future' interesting and helpful. Please contact us if there is anything about the site and its management that you would like to discuss

What is 'special' about the landforms (geomorphology) wildlife and at Vicarage Moss SSSI?

It has two special features

- **Pleistocene/Quaternary landform assemblage (kettle holes) and associated sediment deposits.**

Vicarage Moss SSSI is of national importance because it contains one of the best examples of a kettle hole complex in Wales. These depressions in the ground mark the positions of isolated blocks of ice which became trapped in the sediment as the glaciers and ice sheets of the last Ice Age retreated. As the blocks of ice melted, the sediment covering them collapsed to form hollows. Three individual kettle holes are found within Vicarage Moss SSSI. These are separated by well-defined ridges. In addition to their shape, the sediment within them is also important. Since the creation of the kettle holes, pollen and organic debris have gradually accumulated in the depressions and this sediment infill allows research into environmental change.

- **A Mixture of Mire, Swamp, Wetland and Wet Woodland plant communities.**

The plant communities in two of the three kettle holes at Vicarage Moss are examples of basin raised mires or bogs, developed, probably initially from open water, since the end of the last Ice Age. The largest kettle hole supports a central peat dome, dominated by sphagnum moss vegetation. The moss living in the upper part of the dome is higher than the surrounding watertable, so its very sparse supply of nutrients comes only from rainwater. The dome is largely surrounded by fen/swamp vegetation, which then grades into open water. Wet woodland has developed on a parts of the bog and fen.

As well as the features listed above, Vicarage Moss has other habitats that contribute to the special wildlife interest. These include ditches, hedgerows, tree plantations, scrub and improved grassland. This diversity of habitats is important for a wide range of species. Except where specified below, management of this site should aim to look after these habitats as well as the listed features of interest.

Vicarage Moss also forms part of the nationally important Midlands Meres and Mosses Ramsar site, which means that it qualifies under the Ramsar Convention as being a particularly good example of a near natural wetland. This is because it is characteristic of its region in terms of biology and geography, being made up of the full range of habitats from open water to raised bog.

What do we want Vicarage Moss to look like?

The following is a description of how we would like to see Vicarage Moss SSSI.

The special geomorphological feature will be visible and accessible in order to allow further study and research. This will be achieved by maintaining the shape and form of the kettle holes, and the associated sediments, in a condition where they can be accessed when required for scientific research.

At least 50% of the bog and wetland area will be occupied by a group of plants that form a plant community known as Raised Mire. This will include a number of different sphagnum moss species, hare's-tail cotton grass, common cotton grass, cross-leaved heath, and heather. A further 20% of this area will be of another vegetation type called a fen/swamp community, that will include the plant species star sedge, bottle sedge, common sedge as well as cranberry and cotton grasses. A further 20% will be open water with the remaining 10% being a wet woodland, dominated by downy birch but with an open canopy, and a ground cover similar to that of the mire areas. The woodland will occupy no more than one tenth of the bog and wetland area of the site.

Living on the site there will be a range of uncommon insects and spiders. This will include a healthy, stable population of the rare jumping spider *Sitticus floricola*, a species that needs cotton grass on which to lay its eggs

What management is needed on Vicarage Moss SSSI and why?

Although Vicarage Moss is an excellent place to study geomorphology and for wildlife it will only remain so if the necessary management continues. CCW's priority is to work with you to ensure that this management is carried out.

What does this mean in practice?

There are a number of different factors that could damage the special features of Vicarage Moss if they are not properly managed. These are the ones we regard as most important:

- **Lowering of the water table**

Maintaining the water table is vitally important because any drainage of the boggy areas would lead to:

- a. A drying out, and therefore loss of, fragile peat deposits. These accumulate very slowly over thousands of years and cannot be replaced. Apart from providing the right type of soil for the important plant communities of the site, the conditions within it protect pollen grains and other organic material that have become trapped there over time. If the peat dries out, this material and the peat itself will decompose.

- b. A shift towards plant communities more typical of drier places, this being particularly so for the raised mire, as sphagnum mosses are very susceptible to drying.
- c. An invasion by woody plants of drier soils, which would further increase the rate at which drying occurred (See “The Spread of Trees...” below).
- d. Changes to the insect and spider communities (this would apply to any factor that caused changes to vegetation).

Surveys of the way water moves through this site and the surrounding land (its hydrology), have suggested that the water table of these kettle holes is isolated from that of the surrounding area. However, we cannot be certain of this, so expert advice and investigation would be needed before CCW could consider any proposed activity that might affect the water tables in the area.

- **Water quality**

The catchment area for the vegetation feature within Vicarage Moss is small and there is no outflow. Its water comes either directly from rainfall or from run-off within the moss' catchment. This may include water from adjacent roads and nearby farmyards but will mainly consist of water that runs off of, or permeates from surrounding fields. Such water may carry excessive amounts of fertilizers, chemicals or other pollutants that can over-fertilise certain plants. This effect may have caused the Sphagnum moss species *Sphagnum recurvum*, to spread in parts of this site to form extensive wet lawns. Therefore, steps should be taken to safeguard the quality of the water supply, both by the regular testing of the water quality and discussions or agreements with landowners and other interested parties.

- **Grazing and cultivation**

The way the land within the site is currently farmed, namely by sheep and cattle grazing, has little or no effect upon the structure of the kettle holes or on underground sediment deposits. However, certain changes to these farming practices could change or damage the special features. For example, increased grazing could damage the protected plant communities, both from the act of grazing itself and from poaching or trampling. Cultivation could lead to nutrients and sediment being washed downhill, leading to erosion of slopes and increased deposition in boggy areas. (See Water Quality above)

- **The spread of trees, either by self seeding or planting**

More trees would be undesirable on Vicarage Moss for the following reasons:

- (a) In general, plants draw water out of the soil through their roots and allow it to evaporate into the air from their leaves. Apart from helping in the distribution of nutrients, this water prevents plants from wilting. Trees, because of their size,

need large amount of water for this process. Therefore an increase in tree cover is likely to lower the water table of the site (See above).

- (b) Subtle changes of slope, as well as overall views of the individual landforms, are important parts of the geomorphological interest. Trees tend to obscure these subtle changes.
- (c) The spread of trees into boggy areas, would lead to the disturbance of underlying layers of peat and sediment. The different sediments and the pollen grains found within their layers provide clues to environmental changes that have occurred since the kettle holes developed. Therefore, any increase in the area of bog covered by trees could destroy irreplaceable historical information.

- **Burning**

This is a method commonly used by land managers to rejuvenate dry heathland. Though some of the plant species found on Vicarage Moss are types of heather, burning such bogland vegetation will reduce its special interest. This is because some plant species are better able to cope with the effects of fire than others. Mosses and liverworts are particularly susceptible to damage and these are important parts of the site's vegetation. Burning would also damage the insect and spider communities.

- **Dumping of materials**

Activities which would hide or alter the shape of the kettle holes, such as dumping of material in the kettle hole depressions, or changing the gradient of the slopes, would be highly damaging to the site's interest. Depending where the dumping occurred, these activities could also damage or change the fragile wetland plant communities. This may be simply from their being buried, from the effects of pollution, or because it may cause changes to the way water moves within or through the site (the site's hydrology).

- **Sand and gravel extraction**

The removal of sand and gravel from within the site would destroy the kettle hole landforms and the vegetation. New quarrying developments in adjacent areas would also need to be carefully assessed. Although surveys have suggested that the water table of the kettle holes at Vicarage Moss is isolated from that of the surrounding area, we cannot be certain of this. So before any new quarrying in the area adjacent to the site could proceed, further surveying and the strict monitoring of the water levels within the site may be needed. The effects of lowering the water table are discussed in more detail above.

Finally

Our knowledge of geomorphology and biology is continually improving and sites such as this are vital in that process. It is possible that new issues may arise in the future, whilst other issues may disappear. This statement is written with the best information we have now, but may have to change in the future as our understanding improves. Any information you can provide on the special feature of your site and its conservation would be much appreciated.

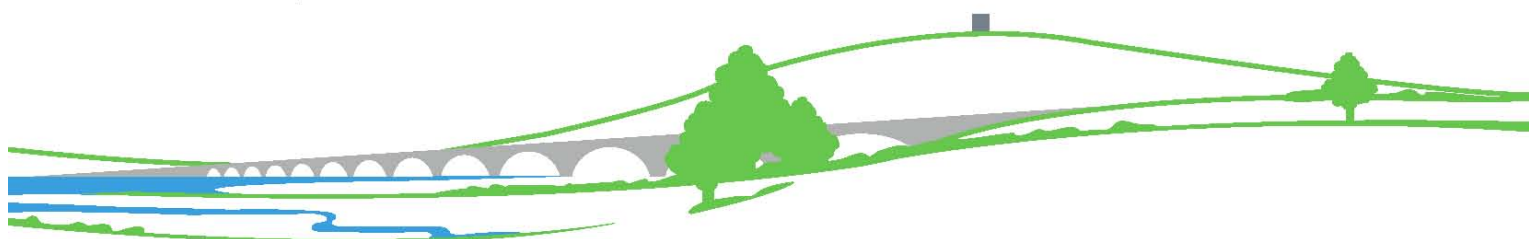
If you would like to discuss any aspect of your SSSI, or have any concerns about your SSSI, please contact your local CCW office.

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