

Visual Impact Provision (VIP)

Peak District (East) Project

Appendix 7A Botanical Survey Report

February 2018 Rev04

Quality information

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The methods adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken in June 2016 and June 2017, and is based on the conditions encountered and the information available during those periods. The scope of this Report and the services are accordingly factual and therefore be subject to minor limitations as detailed in Section 3.3.

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Where field investigations are carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in issuing this Report.

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1. Introduction

1.1 Purpose and Scope of this Report

AECOM was instructed by National Grid to carry out botanical surveys of grassland habitats associated with:

- Wogden Foot Nature Reserve and Local Wildlife Site (LWS) (referred to hereafter as Wogden Foot LWS) - (Survey Areas 1-3);
- An area to the east of Dunford Bridge Car Par- (Survey Area 4);
- An area of grassland adjacent to the Yorkshire Water car park at Winscar Reservoir - (Survey Area 5)¹; and
- The verges of the Trans Pennine Trail between Wogden Foot LWS and the public car park located to the west at Dunford Bridge - (Survey Area 6).

The survey was undertaken in June 2016 (Area 1, 2, 3 4 and 6) and June 2017 (Area 5) and the survey locations are shown on Figures 7A.1A and 7A.1B.

The surveys were undertaken to inform the design and future assessment of the Visual Impact Provision (VIP), Peak District (East) Project (hereafter referred to as the 'Proposed Project'). The Proposed Project involves the undergrounding of a 1.8km section of the 4ZO overhead line (OHL).

The purpose of this report is to provide baseline technical information only. Accordingly, the report outlines the methods and results of the surveys undertaken, and provides an evaluation of the relevant habitat, species or assemblage as defined by the objectives (Section 1.3). It does not seek to predict the potential impacts of the Proposed Project, or provide recommendations for impact avoidance and mitigation. These elements will be addressed in the Environmental Assessment Report.

1.2 Defining the Search and Survey Areas

Within this report the following terminology is used:

- Ecological Survey Area – this is the area which was surveyed during the original Preliminary Ecological Appraisal (PEA) (AECOM, 2016) and is shown on Figures 7A.1A – C. The results of the PEA were used to identify habitats suitable for more detailed botanical survey.
- Botanical Survey Areas – there are six areas where the botanical surveys were undertaken (referred to as the 'Survey Areas'). These are shown on Figure 7A.1A - C.

1.3 Survey Aims

The aim and objectives of the survey work and the subsequent report presented herein were to:

Aim:

- Collect baseline data on grassland habitats located within Wogden Foot LWS, along the grass verge adjacent to the Trans Pennine Trail and within potential construction laydown areas. These baseline data will be used to determine the botanical interest/ value of the surveyed grasslands in order to inform the Ecological Impact Assessment (EclA) for the Proposed Project.

Objectives:

- Classify the grasslands present in accordance with the NVC, where appropriate to do so based on the conditions encountered;

¹ Subsequent to the completion of the baseline botanical survey, Area 5 at Winscar Reservoir no longer forms part of the Proposed Project due to changes in the design. However information on Area 5 has been retained in this report to demonstrate the extent of the botanical survey work conducted.

- Better understand the variation and botanical composition of the grassland communities present and their relative distribution; and
- Provide data in support of the identification of any grassland areas of high nature conservation value that require specific consideration in the design and siting of the Proposed Project.

2. Legislation and Planning Policy

2.1 Legislation

There is no specific legal protection afforded to the habitats and flora addressed by the botanical survey.

The Natural Environment and Rural Communities (NERC) Act 2006 is potentially relevant to the habitats and flora surveyed. Under Section 40 of the Act, decision-makers, including local planning authorities, are required to have regard to the conservation of biodiversity in England when carrying out their normal functions. Section 41 (S41) of the Act includes a list of habitat and species of principal importance for nature conservation in England. S41 is to be used as a guide by decision-makers, including local planning authorities, when implementing their duty under Section 40.

Fifty-six habitats and 943 species of principal importance are included on the S41 list, potentially including grassland habitats of the types covered by the current botanical survey. While there was potential for the grassland habitats present to support individual plant species listed on S41, none were recorded during the present survey and no data has been received that would indicate the current presence of important populations of any such species within the survey area. The habitats and species listed in S41 are those that were identified as requiring action in the (now withdrawn) UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. There is no requirement to retain all examples of such habitats, but competent authorities should have regard to them as part of the decision-making process.

Recognition as a S41 habitat is not an indicator of the geographic scale of nature conservation value; S41 habitats are not all by default nationally important. An approach to the evaluation of nature conservation value has been set out by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2016), and is widely adopted for resource evaluation and its use is considered good practice for Ecological Impact Assessment (see Section 3.2).

2.2 Planning Policy

2.2.1 National Planning Policy

The National Planning Policy Framework (NPPF) was published on 27th March 2012 and details the Government's planning policies for England and how it is expected that these policies will be applied.

The NPPF states the commitment of the UK Government to minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity (Paragraph 109). It specifies the obligations that the Local Authorities and the UK Government have regarding statutory designated sites, irreplaceable habitats and protected species under UK and international legislation and how this is to be delivered in the planning system (Paragraph 118).

2.2.2 Local Planning Policy

Non-statutory nature conservation designations, including designated LWS, are covered by local planning policy through saved policy GS18 of the Barnsley Unitary Development Plan (UDP). Saved Policy GS18 requires that:

"Any development which may adversely affect, directly or indirectly, a Local Nature Reserve, a Natural Heritage Site, ancient woodland, a Regionally Important Geological Site or other nature conservation sites identified on the proposals maps, will not be approved unless it can be clearly demonstrated that there is a case for the development which outweighs the case for safeguarding the conservation interest of the site after available measures to avoid, mitigate or compensate for any adverse effects have been taken into account, in which case the council will seek to minimise the adverse impact and/or secure compensatory provision including, where appropriate, through planning conditions or obligations."

Information on the reasons for designation of LWS, along with long-term management or restoration objectives and aspirations, are key to the determination of both the likely impacts of Proposed Project, requirements for mitigation, and opportunities to secure net gain in accordance with the above policy. Barnsley Metropolitan Borough Council has defined the management requirements and objectives necessary to maintain and restore

the designated grassland interest of Wogden Foot LWS (SWT, 2006, TEP, 2011 and SCC, 2016). Further guidance on objectives for grassland habitats are defined in the Barnsley Biodiversity Action Plan (BAP).

2.2.3 Wogden Foot Local Wildlife Site

Wogden Foot LWS is located approximately 1.5km east of Dunford Bridge and is designated for its grassland interest. The LWS was formerly occupied by sidings on the Woodhead railway line that linked Manchester to Sheffield. The railway closed in 1981 and the former track-bed now forms the Trans Pennine Trail. After the sidings were dismantled, the land that was to be later designated as Wogden Foot LWS was unmanaged for some time. This allowed the processes of natural regeneration to take place and the establishment of grassland vegetation, along with areas of dense scrub. While the LWS is located in an area of predominantly acidic geology, much of the vegetation present within the LWS is not overly acidic in character. This is because the limestone ballast used for the sidings remained after closure of the railway and over time has moderated the acidic influence of the local geology. This has produced a broadly neutral sward, allowing some elements from both acidic and limestone grassland habitats to persist in close proximity. The establishment of flora more redolent of limestone grassland habitats was also facilitated by the importation of calcareous grassland plant propagules with the limestone ballast used on the sidings, and a small suite of plants atypical for the local acid geology still survives. This includes, for example, cowslip (*Primula veris*), ploughman's spikenard (*Inula conyza*) and wild marjoram (*Origanum vulgare*). The grassland is currently extensively encroached by scrub. The re-establishment of a more favourable balance between the relative cover of grassland habitats, for which the LWS is designated, and scrub habitats is one of the main management objectives for the LWS (TEP, 2011) and further endorsed as management recommendations by the more recent survey report prepared in June 2016 (Barnsley Metropolitan Borough Council/ Sheffield City Council 2016).

Wogden Foot LWS boundary, as shown on Figure 7A.1C currently extends to a location west of the existing pylon (not defined by a specific boundary feature in the field) and prior to 2016 comprised an area of approximately 10.41ha. An updated survey was conducted further west (encompassing Area 1, shown on Figure 7A.1) to include an area of open grassland located in the parcel of land forming a narrow point between the River Don and the Trans Pennine Trail (as detailed in the Sheffield City Council/Barnsley Metropolitan Borough Council report June 2016). One of the outcomes of this survey was the extension, which was formally adopted in January 2016 of the LWS boundary further west (to include Area 1) increasing the overall area of the LWS to 11.79ha.

3. Methodology

3.1 Field Survey

Grassland within the Survey Areas was surveyed by an experienced botanist with the support of an assistant on 21 June 2016 (Areas 1 to 4 and 6) and 26 June 2017 (Area 5). The surveys were undertaken in the appropriate season for such work and appropriate survey effort was employed to meet the requirements of the published survey method (Rodwell, 1992).

Areas targeted for detailed botanical survey were identified through (a) a review of the Phase 1 Habitat map prepared in support of the PEA for the Proposed Project (AECOM, 2016), and (b) advice and comments communicated to AECOM during a site visit with stakeholders on 23 May 2016. Furthermore the survey areas coincide with those parts of Wogden Foot LWS surveyed by Sheffield City Council (Ecology Unit) in June 2016 on behalf of Barnsley Metropolitan Borough Council.

An NVC survey was undertaken of grasslands in Wogden Foot LWS (Survey Areas 1 to 3, Figure 7A.1C), an area to the east of the car park at Dunford Bridge (Survey Area 4, Figure 7A.1B), and an area of grassland adjacent to the Yorkshire Water car park at Winscar Reservoir (Survey Area 5, Figure 7A.1A) in accordance with the standard methodology as detailed for grasslands in Rodwell (1992). Survey Area 5, is an area of grassland and young plantation woodland located close to Winscar Reservoir, and shown as Area 5 on Figure 7A.1A, which is being considered for use as a construction laydown/compound during the Proposed Project by National Grid. As such this area has been subject to a more detailed botanical survey in order to assess its potential botanical value and inform the layout and mitigation requirements for the Proposed Project. The area was previously used as laydown/compound site by National Grid during a previous refurbishment project conducted in 2015.

The survey involved sampling and recording the plant species present using a 2 x 2m quadrat. In each discrete grassland community type, up to five randomly selected quadrats were recorded, depending on the extent and variability of the grassland being recorded. Data was collected that was relevant for the determination and future assessment of the likely significant effects of the Proposed Project. Accordingly, data collection focused on characterizing the grassland types which could potentially be impacted by the Proposed Project.

Each plant species present in a quadrat was given a “by eye” estimate of percentage cover, and tree seedlings and bare ground were also recorded. Other typical and/or noteworthy plant species present in the wider sward, but not picked up in the quadrats, were also recorded during the survey. Such species, even if rare within the sward, may be relevant for the classification of the associated NVC grassland community.

Where feasible, each discrete grassland type was assigned to its relative NVC community using the keys and descriptions given in the Rodwell (1992).

Quadrats were not used to sample grassland vegetation along the section of Trans Pennine Trail between Wogden Foot LWS and Dunford Bridge (Area 6). This is because the grassland is present as a narrow (approximately 1m wide) linear verge located between a drainage ditch to the south and the heavily trafficked (by pedestrians, cyclists and horse riders) Trans Pennine Trail to the north. The vegetation was also transitional in character between other habitat types (scrub, wetland) and represented relatively species-poor grassland (the presence of certain more interesting plant species accepted). Therefore, instead of NVC survey, botanical target notes were made of any botanical interest observed to supplement the results of the previous Phase 1 Habitat survey.

3.2 Evaluation Methodology

The method of evaluation that has been utilised has been developed with reference to the Chartered Institute of Ecology and Environmental (CIEEM) ‘Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater and Coastal – Second Edition (CIEEM, 2016). These give advice on scoping and carrying out environmental assessments and place appraisal in the context of relevant policies. Data received through consultation, desk-based studies and field-based surveys are used to allow relevant ecological features (i.e. designated sites, ecosystems, habitat and species) of value (or potential value) to be identified, and the main factors contributing to their value described and related to available guidance.

Habitats along with all other relevant ecological receptors can be of nature conservation value for a variety of reasons, and value should always be determined on a case by case basis to demonstrate a robust selection

process. Value may relate, for example, to the uniqueness, quality or extent of habitats, to habitat rarity, to the extent to which they are threatened throughout their range, or to their rate of decline. Relevant published national and local criteria can be used where available to inform the assessment of nature conservation value. The value of habitats has been defined with reference to the geographical level at which it matters. The frames of reference used for this assessment, and based on CIEEM guidance, are:

- international (i.e. European);
- national (i.e. England);
- regional (i.e. Yorkshire and Humber);
- county (i.e. South Yorkshire);
- district (i.e. Barnsley/Dark Peak);
- local (i.e. Survey Area and up to 2km radius); and
- negligible (used where the value is lower than the Local level).

3.3 Survey Limitations

The 2016 and 2017 surveys were undertaken during favourable weather conditions (dry, no preceding rainfall, no wind and bright sunshine) and during the optimal time of year for recording grassland vegetation. Access was possible to all areas requiring survey and representative coverage of the target grassland habitats was achieved. Accordingly, there were no limitations to the survey work undertaken.

4. Results

4.1 Wogden Foot LWS (Survey Areas 1 to 3)

Three discrete grassland communities/ sub-communities were identified and surveyed as shown on Figure 7A.1C. Detailed species results are provided in Appendix A.

4.1.1 Area 1

Area 1 is a relatively small grassland clearing (approximately 0.19ha in area) located at the western end of the LWS adjacent to the wooden access gate off the Trans Pennine Trail. The grassland present is of a neutral type and is considered typical of grassland types associated with heavier soils where management through either grazing or cutting is relatively light and infrequent. In comparison with the wider grassland resource located within the LWS, the grassland in Area 1 is only lightly and patchily grazed and this influences its structure. The grazing regime results in a sward that is taller and ranker than that present in the wider LWS, and as a consequence tall herbs are able to develop and flower. The margins are being encroached by scrub and are subject to shading from adjacent trees and shrubs.

The grassland community present is considered to have the closest affinity with the MG1 *Arrhenatherum elatius* grassland, *Centaurea nigra* sub-community. This is a relatively widespread herb-rich grassland type of mesotrophic soils in the lowlands. There is some affinity to *Cynosurus cristatus*-*Centaurea nigra* grassland and this is not inconsistent with possible pathways for origin for the MG1 *Centaurea nigra* sub-community (Rodwell, 1992). The affinity with MG5 may represent a transition to or away from this habitat as a result of the established management regime, with grazing insufficient to suppress either establishment of rough grasses (this is not necessarily undesirable as it allows tall herbs to flower) or scrub (Rodwell, 1992).

Based on the conditions present at the time of survey and in the context of the grassland types present in the LWS, the Area 1 grassland was notable for the relative height of the sward and the abundance of tall herb species, particularly common knapweed (*Centaurea nigra* agg.) which was present at approximately 20% total cover. Other typical flora included the grasses Yorkshire-fog (*Holcus lanatus*), red fescue (*Festuca rubra*) and rough meadow-grass (*Poa trivialis*), and the herbs lady's bedstraw (*Galium verum*), white clover (*Trifolium repens*), oxeye daisy (*Leucanthemum vulgare*), meadow vetchling (*Lathyrus pratensis*), cowslip, greater bird's-foot-trefoil (*Lotus pedunculatus*) and yarrow (*Achillea millefolium*). Tussocks of false oat-grass (*Arrhenatherum elatius*) was observed through the sward but was not picked up in the quadrats sampled.

MG1 grasslands cover a broad spectrum and most examples are not of principal importance for nature conservation in England under the NERC Act (Maddock, 2011). However, there is a case for exceptions to be made with regard to herb-rich examples of MG1 grassland, such as the example present in Area 1. This is consistent with the definition of the S41 NERC Act Lowland Meadows and encompasses most species-rich neutral grassland types. They are also covered by the Barnsley BAP.

4.1.2 Area 2

Area 2 is a small clearing (approximately 0.27ha in area) subject to shading from surrounding trees, particularly around the margins of the clearing. It is the area of grassland located closest to the existing OHL pylon. The grassland vegetation is of a circum-neutral type, but with some flora indicative of surface acidification e.g. pill sedge (*Carex pilulifera*) and heath wood-rush (*Luzula multiflora* ssp. *multiflora* and ssp. *congesta*).

The grassland is relatively species-poor in the context of the wider grassland resource of the LWS, and difficult to typify with confidence. In many ways it seems transitional between the MG5/MG6 grassland types of mesotrophic soils, and the more mesotrophic forms of the acidic U4 *Festuca ovina*-*Agrostis capillaris*-*Galium saxatile* grassland community. On balance, because of the presence at low incidence of a limited suite of flora indicative of acidic substrates, it is considered that the grassland fits best as a variant of the U4 *Holcus lanatus*-*Trifolium repens* sub-community. This is the most mesotrophic sub-community, within which plant species most-indicative of acidic substrates are either rare or absent. It is a common grassland type that is widely distributed in upland edge locations.

The grassland is characterised by abundant red fescue and Yorkshire-fog, below which there is a dense thatch of bryophytes, particularly *Rhytidiadelphus squarrosus*. Herbs are of scattered occurrence and subordinate to grasses, but include common mouse-ear-hawkweed (*Pilosella officinarum*), fairy flax (*Linum catharticum*), wild

strawberry (*Fragaria vesca*), wild angelica (*Angelica sylvestris*) and various species of clover (*Trifolium* spp.) and vetch (*Lathyrus* and *Vicia* spp.). Acid grasslands of the U4 type fall within the definition of the NERC Act S41 Lowland Meadows habitat type (Maddock, 2011). They are also covered by the Barnsley BAP.

4.1.3 Area 3

The grassland present in Area 3 comprises most of the grassland resource of the LWS as it extends further eastwards. It is managed as two pasture fields, both of which were closely grazed at the time of survey. The grassland is punctuated, particularly towards the western end, by mounds of free-draining limestone ballast. These mounds support their own distinct vegetation community and are typically dominated by wild strawberry and common mouse-ear-hawkweed, with occasional ploughman's spikenard, wood sage (*Teucrium scorodonia*) and sheep's fescue (*Festuca ovina*).

The Area 3 grassland supports the greatest diversity of flora of all the grasslands surveyed and is circum-neutral in character. The grassland community present is considered a good match for the MG5 *Cynosurus cristatus*-*Centaurea nigra* grassland, but is not a good match for any of the sub-communities, although it is perhaps most redolent of the *Lathyrus pratensis* sub-community. Area 3 is the section of the LWS that was likely most disturbed by previous land-uses and within which grassland has re-established most recently (predominantly within the last 35 years) on substrates of introduced origin. This is the most likely reason for the poor match with the NVC i.e. grasslands of recent artificial origin are less likely to show an affinity with semi-natural grassland communities defined in the NVC.

The grassland is characterised by the dominance of red fescue, and the diverse range of herb species present that include: white clover, common bird's-foot-trefoil (*Lotus corniculatus*), fairy flax, wild strawberry, vetches (*Vicia* spp.), common mouse-ear-hawkweed, oxeye daisy, cowslip and harebell (*Campanula rotundifolia*). Common spotted-orchid (*Dactylorhiza fuchsii*), northern marsh-orchid (*Dactylorhiza purpurella*) and their hybrids were also widespread at low density through the sward.

MG5 grasslands were relatively widespread historically but have declined substantively due to agricultural improvement. Therefore remaining areas of relatively species-rich MG5 grassland are likely to be of nature conservation interest, as reflected by the designation of Wogden Foot as a LWS. Grasslands of this type fall within the definition of the NERC Act S41 Lowland Meadows habitat type (Maddock, 2011). They are also covered by the Barnsley BAP.

4.2 Area east of Dunford Bridge Car Park (Survey Area 4)

4.2.1 Area 4

Immediately east of the car park there are three parcels of grassland (Areas 4a, 4b and 4c, Figure 7A.1B) as defined by the orientation and intersections of the associated surfaced tracks that are of moderate botanical diversity, and that have a high cover of herbs within the sward. Orchids are frequent, of which southern marsh-orchid (*Dactylorhiza praetermissa*) is most abundant and accompanied by smaller numbers of common spotted-orchid. The grassland appears to be managed through a sensitive mowing regime that allows a high cover of herbs to persist.

The grassland does not appear to be associated with natural slope profiles and the soils present appear to have been re-profiled in the past. It is also uncertain whether the grassland has developed naturally or has been supplemented with additional sowings of grassland flora. These two points merit further clarification to determine the relative age of the grassland and how long it has taken for the sward to establish and achieve its current botanical interest.

The grassland community is of a neutral type and is considered to be a close match for the MG5 *Cynosurus cristatus*-*Centaurea nigra* grassland, *Lathyrus pratensis* sub-community. The grassland is characterised by abundant Yorkshire-fog, red fescue, common bird's-foot-trefoil and common knapweed, growing with lower proportions of oxeye daisy, sweet vernal-grass (*Anthoxanthum odoratum*) and yellow oat-grass (*Trisetum flavescens*). Other typical herb species present include meadow vetchling, ribwort plantain (*Plantago lanceolata*), red clover (*Trifolium pratense*), yellow rattle (*Rhinanthus minor*) and lady's bedstraw. The full survey results for this area are provided in Appendix A.

As stated above, MG5 grasslands were relatively widespread historically but have declined substantively due to agricultural improvement. Therefore remaining areas of relatively species-diverse MG5 are likely to be of nature conservation interest, and typically fall within the definition of the NERC Act S41 Lowland Meadows habitat type

(Maddock, 2011). If the grassland is of recent sown origin, recognition as the S41 habitat may not be appropriate. This is because over-valuing sown habitats of recent origin may divert resources that could otherwise be allocated for the maintenance and protection of existing long-standing habitats of high value. Acknowledging this does not negate the wider nature conservation value of the grassland in Area 4. It still merits consideration as a Barnsley BAP habitat and contributes to targets for habitat creation and restoration.

4.3 Winscar Reservoir (Survey Area 5)²

This is an area of grassland (approximately 0.62ha) located immediately south of the Yorkshire Water car park at Winscar Reservoir (Figure 7A.1A). The grassland has been used previously as a laydown area for a previous OHL refurbishment in 2015/2016. Adjacent to the grassland are several small stands of dense semi-mature plantation woodland, which comprised a mix of native and non-native tree and shrub species.

The main area of grassland, i.e. the grassland proposed to be reused as a laydown area (Area 5), still shows signs of disturbance from its previous use as a laydown area. The ground is compacted and stony, and as a consequence the grassland sward is short and sparse. The grassland is neutral in character and semi-improved. The flora is relatively diverse but not as species-rich as peripheral areas to the south, east and west on the margins of the plantation woodlands. No orchids or other species of note were observed in the grassland.

The grassland does not classify easily into an NVC type because it has been disturbed in the recent past and because the ground conditions have been modified by compaction and addition of substrate. It is considered to be closest to the MG5 *Cynosurus cristatus*-*Centaurea nigra* grassland, and would likely tend towards this over time and with appropriate management. However, it is possible that prior to disturbance this grassland had a more acidic character and that the current neutral character is a result of the recent disturbance etc. There is no data available to clarify the original (pre-disturbance) status of the Area 5 grassland.

The grassland is characterised by abundant Yorkshire-fog, red fescue, creeping bent (*Agrostis stolonifera*), and where the ground is compacted and sparsely vegetated mats of bryophytes are prominent. Typical associated species include daisy (*Bellis perennis*), glaucous sedge (*Carex flacca*), common mouse-ear (*Cerastium fontanum*), bird's-foot-trefoil, selfheal (*Prunella vulgaris*), lesser trefoil (*Trifolium dubium*), white clover and colt's-foot (*Tussilago farfara*). The detailed species data for this area are provided in Appendix A.

As stated above, MG5 grasslands were relatively widespread historically but have declined substantively due to agricultural improvement. Whilst the grassland in Area 5 is currently of relatively poor quality, restoration management could improve the current situation and would contribute to nature conservation targets for grassland habitats. This has a bearing on valuation (Section 5) as this should consider both current status and the potential for restoration to a higher value.

Outside the extent of Area 5, the grassland varies in structure and composition. These grassland areas are summarised below to help place Area 5 in context and by doing so demonstrate its relatively lower botanical interest.

The margins of the plantations support a taller semi-improved neutral grassland sward with affinities to the MG5 community. Orchids are frequent in the sward, predominately common spotted-orchid (*Dactylorhiza fuchsii*) but with occasional northern marsh-orchid also. The flora is similar to the main area, but slightly more diverse, more natural in composition, and herbs are more abundant. Fairy flax is locally abundant, while the following are occasional to frequent: oxeye daisy, common knapweed, common sorrel (*Rumex acetosa*) and oval sedge (*Carex leporina*).

At the southwestern end of the plot, beyond the Area 5, is a small area of unmanaged unimproved acid grassland. Yorkshire-fog and sweet vernal-grass are abundant, while tufted hair-grass (*Deschampsia cespitosa*) is frequent, and wavy hair-grass (*Deschampsia flexuosa*) occasional. A range of herbs are present. Greater bird's-foot-trefoil is abundant, while the following species are occasional to frequent: heath bedstraw (*Galium saxatile*), common sorrel, marsh thistle (*Cirsium palustre*), heath wood-rush, meadow buttercup (*Ranunculus acris*), white clover and cat's-ear (*Hypochaeris radicata*). Common spotted-orchid is present in small numbers, while heather (*Calluna vulgaris*) and common haircap (*Polytrichum commune*) are also present and locally occasional.

² Subsequent to the completion of the baseline botanical survey, Area 5 at Winscar Reservoir no longer forms part of the Proposed Project due to changes in the design. However information on Area 5 has been retained in this report to demonstrate the extent of the botanical survey work conducted.

Also at the southwestern end of the plot there is also a small area of vegetation best characterised as marshy-grassland. Purple moor-grass (*Molinia caerulea*) is dominant, and tufted hair-grass and creeping soft-grass (*Holcus mollis*) are locally abundant. The dominance of these grass species excludes herbs from the sward.

4.4 Trans Pennine Trail (Survey Area 6)

The verges of the Trans Pennine Trail between Dunford Bridge and the LWS are not designated for their botanical interest. They are considered by the Trans Pennine Trail Conservation Volunteers to have some botanical interest, but this is patchily distributed and limited to the southern edge of the Trans Pennine Trail. The grassland interest along the Trans Pennine Trail is constrained to a narrow verge (approximately 1m wide). This is due to recreational land use pressures (footfall, horse riding and bicycle movements) arising from public use of the Trans Pennine Trail, and over-shading from trees present to the south of the Trans Pennine Trail, where a ditch also limits the southern extent of grassland vegetation.

The Trans Pennine Trail comprises a wide surfaced track, with an adjacent 2.5m wide soft verge running parallel to the south. Most of this verge is heavily compacted and supports a short patchy sward of grassland. This compacted part of the verge forms part of the adopted Trans Pennine Trail and has no botanical interest. A more botanically diverse unmanaged 1m wide verge is present to the south and follows the alignment of the boundary ditch. It is this 1m wide section of verge that was the focus of the survey and is described further below.

The purpose of the survey was to identify any 'hotspots' i.e. small areas of botanical interest along the alignment of the Trans Pennine Trail between the car park grassland and the western entrance to Wogden Foot LWS. It had been suggested by stakeholders that areas of botanical interest occurred and are important for orchids.

In accordance with the advice received from the Trans Pennine Trail Conservation Volunteers during the site visit on 23 May 2016, localised areas of slightly more botanically diverse grassland were found to be present at scattered points along the Trans Pennine Trail where there was space for the vegetation to develop and, importantly, where there was reduced shading from the scrub that lines the Trans Pennine Trail. The correlation between areas of botanical interest and extent of shading strongly indicates that the botanical interest of the grassland along the Trans Pennine Trail is currently limited by the extent of over-shading from trees and shrubs. These areas were found to support orchids of up to four to five species, all of which are common and widespread opportunistic species. The orchid species present comprised common spotted-orchid, northern marsh-orchid (more frequent towards the Wogden Foot LWS end of the Trail) and southern marsh-orchid (more frequent towards the Dunford Bridge end of the Trans Pennine Trail). Hybrids were also detected and involved either *Dactylorhiza x venusta* and/or *Dactylorhiza x grandis* but, given the close similarity between the parent species, the hybrids could not generally be identified to species level with confidence.

The discrete 'hotspots' of botanical interest identified are summarised in Table 4.1 below and shown on Figures 7A.1B and 7A.1C. It is emphasised that (a) while the focus of these notes is orchids, the focus of the survey was the detection of any notable botanical interest present; and (b), in this context, 'hotspots' are defined as those areas with a notably more diverse assemblage of herbs than the surrounding vegetation. In using the word 'hotspots', it is not the intention to imply these areas are of high nature conservation interest. The nature of the described interest, and the relatively favourable nature conservation status of the species noted, demonstrates that these areas are of no more than local value in the context of the section of the Trans Pennine Trail surveyed.

No vegetation was identified that would be considered of high nature conservation value on its own merits, and this is not surprising given the recreational pressures associated with the Trans Pennine Trail and the limited extent of undisturbed and unshaded grassland verge habitat present.

Table 4.1: Botanical hotspots along the Trans Pennine Trail

Grid Reference	Observed Botanical Interest
417128 402583 to 417098 402578	Area opposite Wogden Foot LWS gate. Abundant northern marsh-orchid growing with occasional common spotted-orchid.
417029 402565	One southern marsh-orchid growing at the edge of a ditch margin vegetation of tall herbs and bramble.
417029 402565 to 416878 402517	Frequent common spotted-orchid and hybrids, growing with rare southern marsh-orchid. Eyebright (<i>Euphrasia</i> agg.) was also abundant at this location.
416405 402395	Discrete location with a stand of orchids, comprising northern marsh-orchid and the hybrid <i>Dactylorhiza x venusta</i> .

5. Evaluation

5.1 Wogden Foot LWS (Survey Areas 1-3)

The results of the survey have confirmed the presence of three discrete grassland communities within Wogden Foot LWS, two mesotrophic neutral grassland communities (Areas 1 and 3) and a mesotrophic acidic grassland community (Area 2).

The Area 3 neutral grassland is the most botanically-diverse and extensive grassland community within the LWS and is the primary reason for designation of the LWS. Therefore this grassland should be considered to be of county ecological value on its own merit. While the other grassland types (Area 1 and 2) add to the habitat diversity within the LWS and complement Area 3, it is considered that these additional grassland types are not of sufficient botanical interest to merit LWS status in isolation.

The Area 2 grassland falls within the definition of the NERC Act S41 acid grassland habitat of principal importance, it is considered a relatively poor example of the type given it is species-poor (even in the context of acid grassland which is naturally of relatively low botanical diversity) and of a mesotrophic type. Acid grasslands of comparable or higher ecological value can reasonably be expected to be present in the wider surrounding landscape given the prevailing acidic geology and the habitats previously identified through Phase 1 Habitat survey (AECOM, 2016). The extent of the grassland is also relatively small at 0.27ha. While this grassland is unlikely to be of county value on its own merits, it is likely to be of district ecology and nature conservation value as an example of a Barnsley BAP habitat that is considered scarce and under threat.

The Area 1 grassland is not of comparable nature conservation value to Area 3, it does provide an area of tall herb grassland that complements the wider ecological interest of the LWS, and in particular may be important in providing a late season nectar resource for invertebrates when other parts of the wider LWS have been more closely grazed by livestock. The extent of the grassland is also relatively small at approximately 0.19ha. The current management regime is encouraging encroachment by rank grasses and scrub, and this may threaten the integrity of this grassland over the longer term. While this grassland is unlikely to be of county value on its own merits, it is likely to be of district ecology and nature conservation value as an example of a Barnsley BAP habitat that is considered scarce and under threat.

5.2 Area east of Dunford Bridge Car Park (Survey Area 4)

The results of the survey have confirmed the presence of one neutral grassland community (Areas 4a to 4c, Figure 7A.1A) and this is of moderate botanical diversity and herb-rich.

While the grassland supports a population of orchids, this does not infer any specific nature conservation value. It is a widespread misconception that all orchids are rare, of high nature conservation value, or require specific nature conservation action. This is not the case. The common spotted and southern marsh orchids present are widespread species with good dispersal abilities, and have a favourable nature conservation status. They are common in a wide range of habitats and commonly encountered in a range of disturbed, brownfield and other artificial habitats, as well as semi-natural habitats (Preston *et al.* 2002; Stroh *et al.* 2014). Considerations based on the presence of orchids should inform but not dis-proportionately sway decision-making processes, as other ecological receptors may merit greater attention.

Area 4 comprises a relatively large and cohesive area of herb-rich grassland. The grassland is of a type that can be considered of principal importance for nature conservation in England (NERC Act S41). Doubts over the origin of the grassland (sown or with a pre-existing native component) has a bearing on assessment of nature conservation value. If the grassland is of recent sown origin, then care would be needed to balance the apparent floristic interest of the grassland against its likely wider nature conservation interest which may take longer to establish. The grassland is almost certainly of district nature conservation value as it represents a relatively large area of favourable management grassland of a type covered by the Barnsley BAP, and that is considered scarce in the district. County value may be justified but requires careful consideration against the LWS selection criteria for Barnsley (TEP, 2011). These were not available at the time of drafting this report.

5.3 Winscar Reservoir (Survey Area 5)³

The results of the survey have confirmed the presence of a single neutral grassland community (Area 5, Figure 7A.1A). The grassland is of moderate botanical diversity, but the flora present has been influenced by the previous disturbance to the grassland. Disturbance and compaction has allowed colonisation by flora that would not ordinarily be considered typical for MG5 grassland in good condition e.g. colt's-foot and willowherb species.

When the flora present is compared with that recorded from the other survey areas (Areas 1 to 4) it is clearly of lower quality. The flora is less typical of a long-established and/ or well managed semi-natural grassland community, and it still shows evidence of the disturbance, compaction and addition of off-site substrates following the previous usage by National Grid. The grassland is also notably less diverse and of lower quality than adjacent grassland areas outside the proposed extent of the laydown area. No orchids or other species of note were found in Area 5.

The description provided in this report is not intended to imply that the Area 5 grassland is without ecological value, just that of all the areas surveyed it is the grassland of lowest inherent nature conservation value. It is still of a type that can be considered part of the NERC Act S41 lowland meadows grassland habitat of Principal Importance, albeit an example in need of restoration and favourable management to maximise its nature conservation value. On this basis the grassland can also be considered an example of the Barnsley BAP neutral grassland habitat. Taking account of this information, the floristic data, the previous disturbance of the grassland, and the apparent ongoing effect of this on the grassland structure and composition, the Area 5 grassland is considered to be of no more than district ecology and nature conservation value. With restoration and favourable management it is considered likely that the nature conservation value of the grassland could be substantively improved. However, an appropriate mechanism would need to be in place to achieve this, without which a change in status would be highly unlikely.

5.4 Trans Pennine Trail (Survey Area 6)

The narrow grassland verge present along the margin of the Trans Pennine Trail is not considered to have any specific botanical merit and is of no more than local value in the context of the amenity value and wildlife interest it provides to users of the Trans Pennine Trail. The grassland occupies a constrained niche between the well-used Trans Pennine Trail to the north and a ditch and the heavy shading of extensive areas of scrub to the south. The flora is considered typical of the conditions present and no rare or notable flora was observed during the survey.

As discussed above for Dunford Bridge Car Park, while the verges support a range of orchid species this does not infer any specific nature conservation value. The species present are widespread species, have good dispersal abilities, and have a favourable nature conservation status. As such, considerations based on the presence of orchids should inform but not disproportionately sway decision-making processes.

³ Subsequent to the completion of the baseline botanical survey, Area 5 at Winscar Reservoir no longer forms part of the Proposed Project due to changes in the design. However information on Area 5 has been retained in this report to demonstrate the extent of the botanical survey work conducted.

6. References

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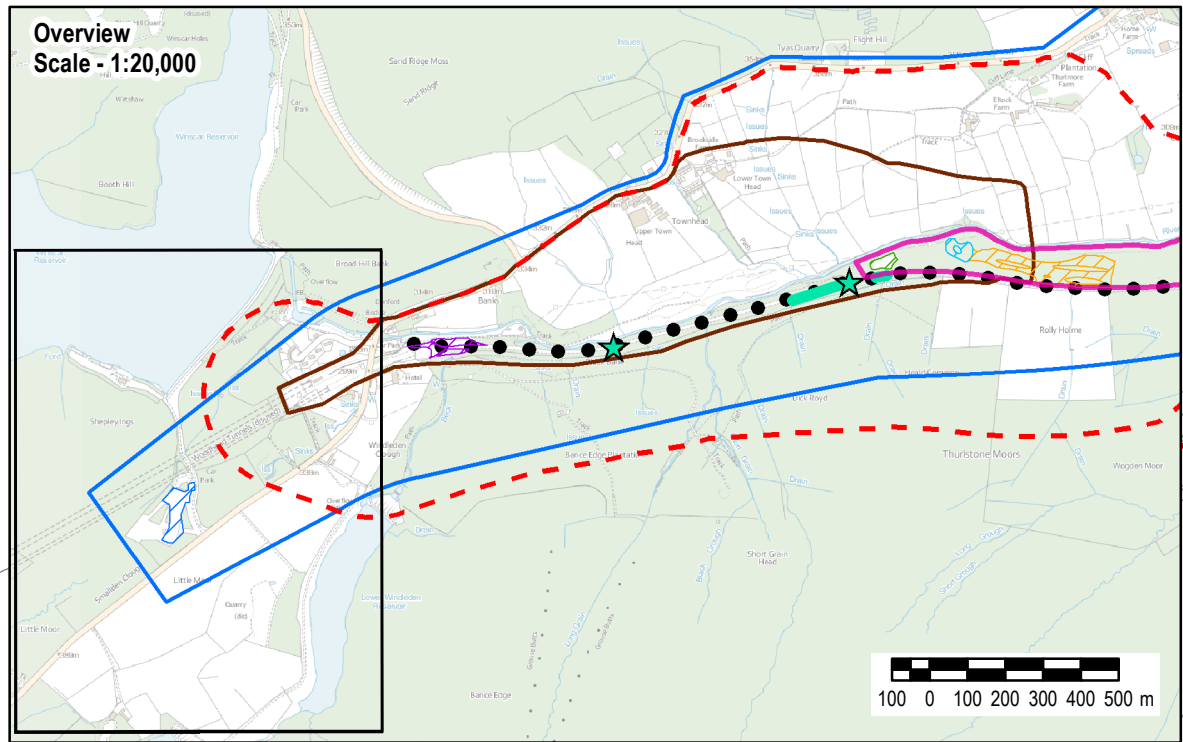
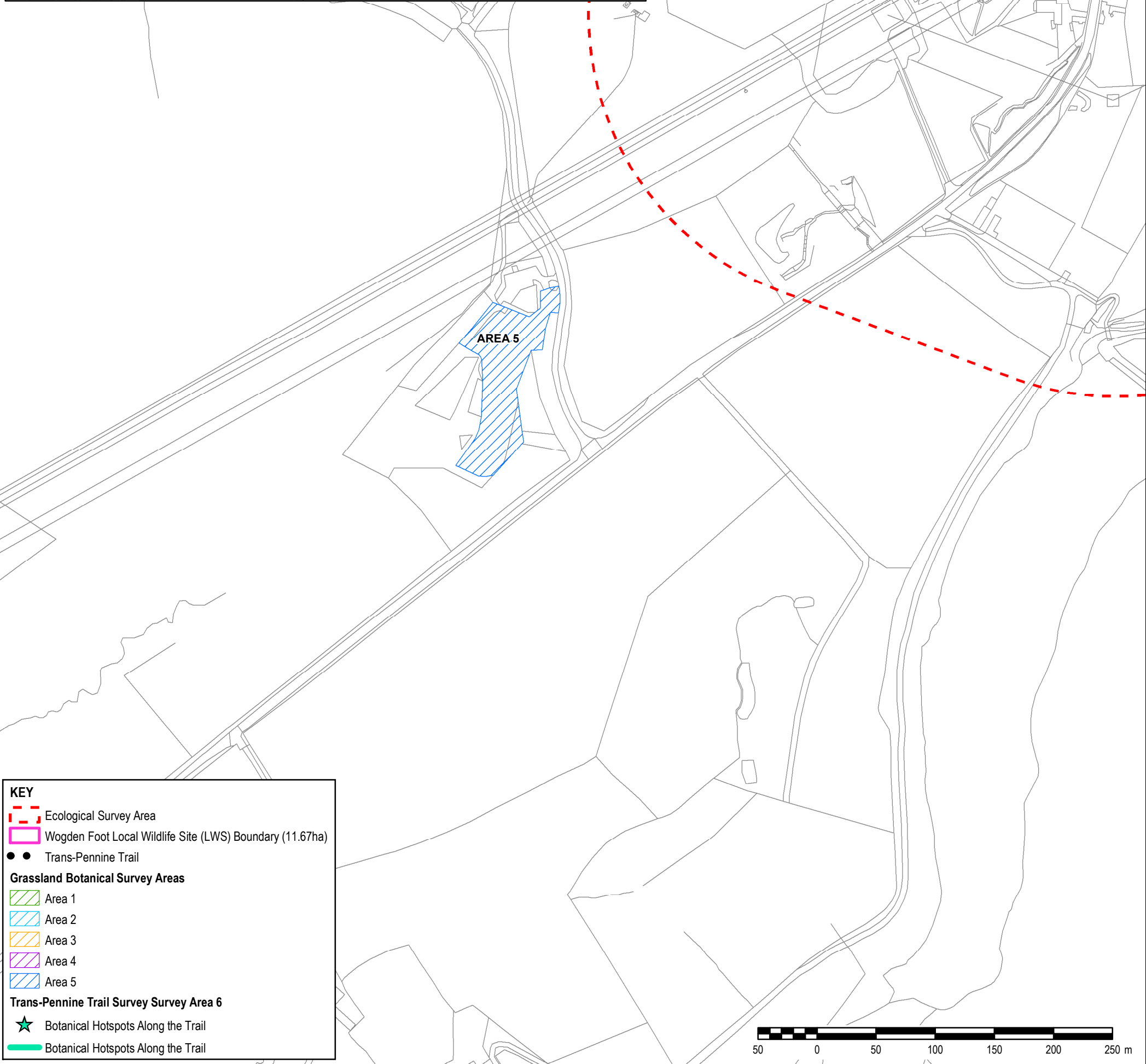
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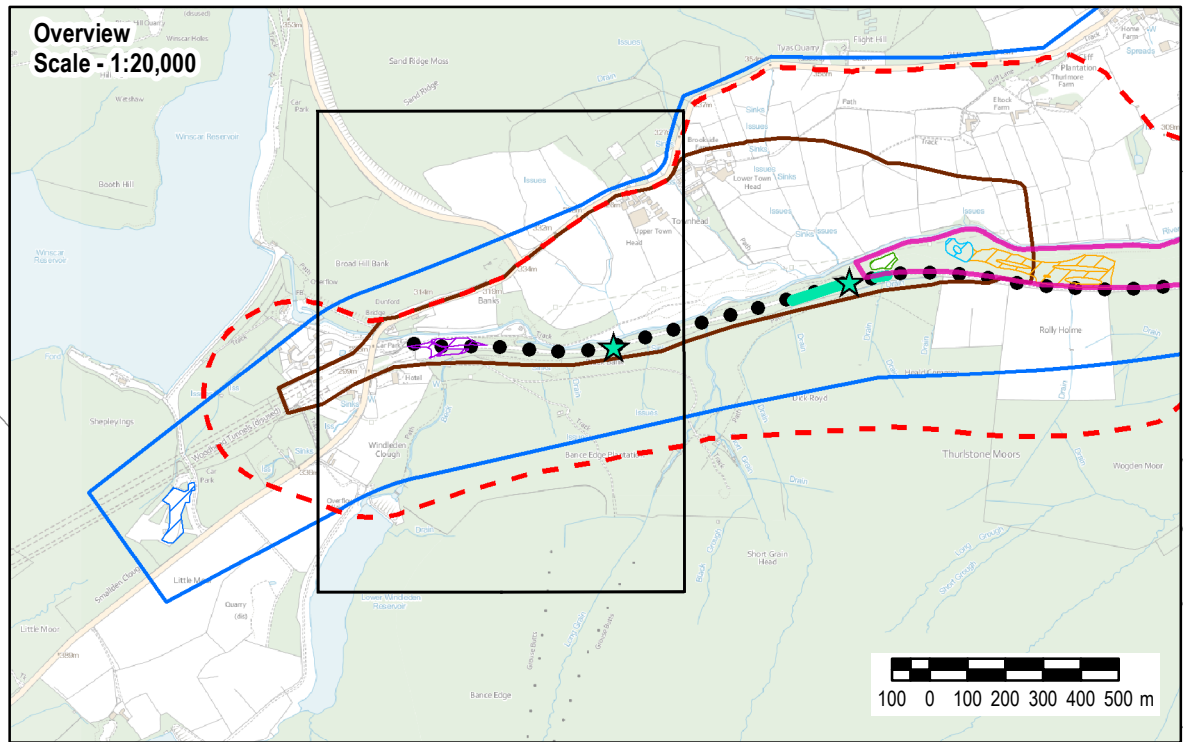
Figures 7A.1A, 7A.1B and 7A.1C



KEY

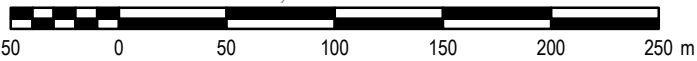
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- Wogden Foot Local Wildlife Site (LWS) Boundary (11.67ha)
- Trans-Pennine Trail
- Grassland Botanical Survey Areas**
- Area 1
- Area 2
- Area 3
- Area 4
- Area 5
- Trans-Pennine Trail Survey Survey Area 6**
- Botanical Hotspots Along the Trail
- Botanical Hotspots Along the Trail

Project Title/Drawing Title		Client			AECOM	
VISUAL IMPACT PROVISION PEAK DISTRICT (EAST) PROJECT		NATIONAL GRID			 Scott House Alençon Link, Basingstoke Hampshire, RG21 7PP Telephone (01256) 310200 Fax (01256) 310201 www.aecom.com	
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		Date 17/10/2018	Scale @ A3 1:3,500	Purpose of Issue DRAFT		
BOTANICAL SURVEY AREAS		Drawing Number FIGURE 7A.1A		Rev 02	THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.	



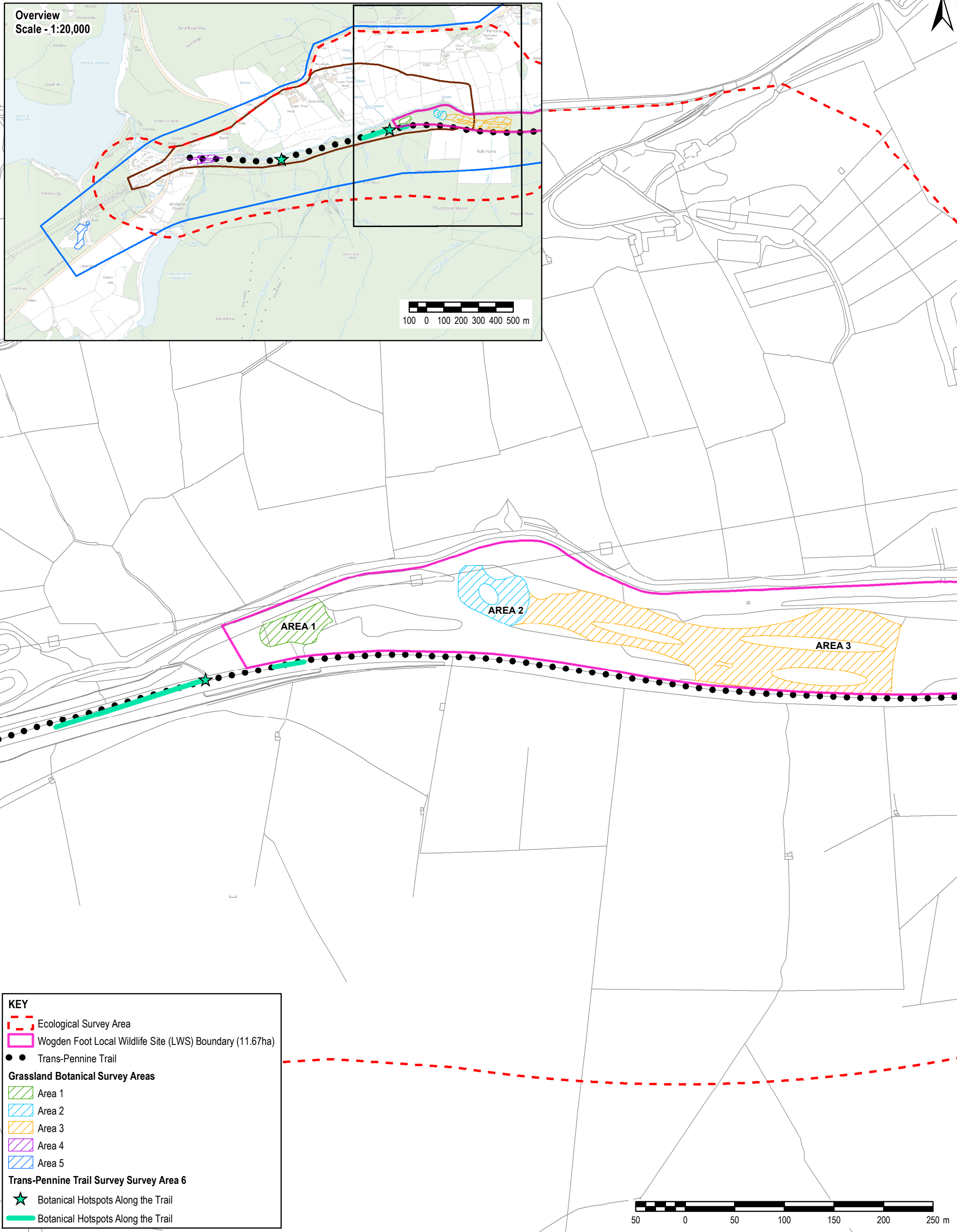
KEY

- Ecological Survey Area
- Wogden Foot Local Wildlife Site (LWS) Boundary (11.67ha)
- Trans-Pennine Trail
- Grassland Botanical Survey Areas**
 - Area 1
 - Area 2
 - Area 3
 - Area 4
 - Area 5
- Trans-Pennine Trail Survey Survey Area 6**
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		Drawing Number	FIGURE 7A.1C		Rev	02	
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Appendix A NVC Survey Data

Location: Wogden Foot (Area 1)		Recorder: DB & CW				
		Date: 21 June 2016				
		Sample area: 2 x 2 m				
Layers: mean height 0.5 m 25 cm		Layers: cover 50% 50%				
Description:						
West end of site (first glade). Quadrats fully representative of flora present. No weed issues, relatively rank sward allowing tall herbs to flower. Lightly and patchily grazed by sheep. <i>Arrhenatherum elatius</i> (false oat-grass) patchily present in the sward, but was not picked up in quadrats.						
		% Cover by Quadrat				
		1	2	3	4	5
Species list	Grid Reference	417124 402621	417117 402615	417100 402616	417124 402630	417138 402633
<i>Achillea millefolium</i> (yarrow)		2	3	4	3	3
<i>Angelica sylvestris</i> (angelica)			1			
<i>Anthoxanthum odoratum</i> (sweet vernal-grass)						5
<i>Briza media</i> (quaking-grass)					1	
<i>Centaurea nigra</i> (common knapweed)		20	30	15	8	25
<i>Cerastium fontanum</i> (common mouse-ear)		2	2	2	2	
<i>Cirsium arvense</i> (creeping thistle)					1	
<i>Clinopodium vulgare</i> (wild basil)			3			
<i>Cynosurus cristatus</i> (crested dog's-tail)				2	5	
<i>Equisetum arvense</i> (field horsetail)						1
<i>Festuca rubra</i> (red fescue)		30	25	25	25	30
<i>Galium aparine</i> (cleavers)				1		
<i>Galium verum</i> (lady's bedstraw)		8	3	3	5	3
<i>Holcus lanatus</i> (Yorkshire fog)		12	15	20	18	13
<i>Lathyrus pratensis</i> (meadow vetchling)		3	3	1	2	3
<i>Leucanthemum vulgare</i> (oxeye daisy)		2	1	3	3	2
<i>Lotus corniculatus</i> (common bird's-foot-trefoil)					5	
<i>Lotus pedunculatus</i> (greater bird's-foot-trefoil)		5	3	8	5	3
<i>Luzula campestris</i> (field wood-rush)					1	
<i>Luzula multiflora</i> ssp. <i>multiflora</i> (heath wood-rush)					2	
<i>Luzula multiflora</i> ssp. <i>congesta</i> (heath wood-rush)						1
<i>Plantago lanceolata</i> (ribwort plantain)				1	1	
<i>Poa trivialis</i> (rough meadow-grass)		3	3	2	2	2
<i>Primula veris</i> (cowslip)					5	3
<i>Prunella vulgaris</i> (selfheal)				2	1	
<i>Ranunculus acris</i> (meadow buttercup)			1		3	2
<i>Ranunculus repens</i> (creeping buttercup)		2	1			1
<i>Rubus fruticosus</i> agg. (bramble)				2		
<i>Trifolium repens</i> (white clover)		1	5	8	3	3
<i>Vicia cracca</i> (tufted vetch)				1		

		Recorder: DB & CW		
Location: Wogden Foot (Area 2)		Date: 21 June 2016		
Stand area: 30 x 15 m		Sample area: 2 x 2 m		
Layers: mean height 1 m 60 cm 15 mm		Layers: cover 30% 40% 30%		
Description: Second (from west) small glade. Character completely different due to lack of <i>Centaurea nigra</i> . Shaded fringes but generally not too impacted by shading. A lot of thatch and moss. Scrub invasion. Other flora not picked up in quadrats: <i>Dactylorhiza purpurella</i> (northern marsh-orchid) (Rare), <i>Carex pilulifera</i> (pill sedge) (Rare), <i>Prunella vulgaris</i> (selfheal), <i>Luzula multiflora</i> ssp. <i>congesta</i> (heath wood-rush ssp.). Area too small and uniform to merit any greater than three quadrats.				
		% Cover by Quadrat		
		6	7	8
Species list	Grid Reference	417290 402666	417304 402667	417290 402653
Agrostis stolonifera (creeping bent)		10		
Angelica sylvestris (angelica)			3	
Anthoxanthum odoratum (sweet vernal-grass)		5		1
Arrhenatherum elatius (false-oat grass)		1	8	5
Cerastium fontanum (common mouse-ear)		1		3
Chamerion angustifolium (rosebay willowherb)				1
Cirsium arvense (creeping thistle)		5	4	3
Cirsium palustre (marsh thistle)		2		
Cirsium vulgare (spear thistle)				1
Crataegus (hawthorn) seedling				1
Cynosurus cristatus (crested dog's tail)				2
Dactylis glomerata (cock's-foot)				5
Deschampsia cespitosa (tufted hair-grass)				3
Festuca rubra (red fescue)		30	35	40
Fragaria vesca (wild strawberry)		3	3	
Holcus lanatus (Yorkshire-fog)		13	14	12
Hypericum perforatum (perforate St John's wort)		2	1	1
Lathyrus pratensis (meadow vetchling)			8	
Linum catharticum (fairy flax)		1		
Lotus corniculatus (common bird's-foot-trefoil)		2		5
Lotus pedunculatus (greater bird's-foot-trefoil)			2	
Luzula multiflora ssp. multiflora (heath wood-rush spp.)		3	2	
Mosses (mainly Rhytidiadelphus squarrosus)		8	15	5
Pilosella officinarum (mouse-ear-hawkweed)		5		2
Plantago lanceolata (ribwort plantain)			1	
Poa trivialis (rough meadow-grass)				2
Rubus sp. (bramble) seedling		1	1	1
Salix cinerea ssp. oleifolia (grey willow ssp.)			3	
Senecio jacobaea (common ragwort)		2		1
Taraxacum agg. (dandelion)		1	1	1
Trifolium dubium (lesser trefoil)		2		
Trifolium repens (white clover)		3		3
Vicia cracca (tufted vetch)				1
Vicia sp. (vetch sp.)				1

Location: Wogden Foot (Area 3)		Recorder: DB & CW				
Sample area: 2 x 2 m		Date: 21 June 2016				
Layers: mean height 0.5 m 30 cm 10 cm		Layers: cover 40% 50% 10%				
Description: main grassland area, grassland uniform over the two large fenced fields. Eastern enclosure had been heavily sheep grazed over previous months. Western enclosure had sheep present, but only light patchy grazing at time of survey. <i>Dactylorhiza fuchsii</i> (common spotted orchid) and <i>Dactylorhiza purpurella</i> (northern marsh-orchid) rare and of scattered occurrence.						
		% Cover by Quadrat				
		9	10	11	12	13
Species list	Grid Reference	417994 402617	417716 402621	417653 402618	417559 402599	417404 402623
<i>Agrostis stolonifera</i> (creeping bent)		10				
<i>Anthoxanthum odoratum</i> (sweet vernal grass)				2		
<i>Arrhenatherum elatius</i> (false oat-grass)		1	5	3	2	5
<i>Campanula rotundifolia</i> (harebell)					3	
<i>Cerastium fontanum</i> (common mouse-ear)		2		1	1	2
<i>Chamerion angustifolium</i> (rosebay willowherb)			2			
<i>Cirsium arvense</i> (creeping thistle)					4	
<i>Cirsium vulgare</i> (spear thistle)						2
<i>Clinopodium vulgare</i> (wild basil)				1		
<i>Cynosurus cristatus</i> (crested dog's-tail)				15		8
<i>Dactylis glomerata</i> (cock's-foot)						2
<i>Dactylorhiza fuchsii</i> (common spotted orchid)					2	
<i>Deschampsia cespitosa</i> (tufted hair-grass)		10	3		1	
<i>Euphrasia</i> sp. (eyebright)					1	2
<i>Festuca ovina</i> (sheep's fescue)					3	3
<i>Festuca rubra</i> (red fescue)		40	49	40	20	34
<i>Fragaria vesca</i> (wild strawberry)			4	1	1	
<i>Holcus lanatus</i> (Yorkshire fog)		15	10	8	3	8
<i>Hypericum perforatum</i> (perforate St John's wort)					1	
<i>Hypericum tetrapterum</i> (square-stalked St John's wort)						3
<i>Lathyrus pratensis</i> (meadow-vetchling)					2	
<i>Leucanthemum vulgare</i> (oxeye daisy)			2	3	3	2
<i>Linum catharticum</i> (fairy flax)		2		3	3	
<i>Lotus corniculatus</i> (common bird's-foot-trefoil)		8	3	5	5	3
<i>Luzula campestris</i> (field wood-rush)					3	2
<i>Luzula multiflora</i> ssp. <i>multiflora</i> (heath wood-rush)			2	2		
<i>Mentha arvensis</i> (corn mint)					5	
Mosses		8	5	4	2	3
<i>Pilosella officinarum</i> (mouse-ear-hawkweed)				5	25	5
<i>Plantago lanceolata</i> (ribwort plantain)					3	
<i>Poa pratensis</i> (smooth meadow grass)		2				
<i>Poa trivialis</i> (rough meadow-grass)						1
<i>Potentilla reptans</i> (creeping cinquefoil)						4
<i>Primula veris</i> (cowslip)			2			
<i>Prunella vulgaris</i> (selfheal)				2	3	4
<i>Ranunculus acris</i> (meadow buttercup)						1
<i>Rubus fruticosus</i> agg. (bramble)			2	2	1	
<i>Scorzoneroide autumnalis</i> (autumn hawkbit)				1		
<i>Senecio jacobaea</i> (common ragwort)		2		3		2
<i>Taraxacum</i> agg. (dandelion)			1			1
<i>Trifolium medium</i> (zigzag clover)			1			
<i>Trifolium repens</i> (white clover)		10	3	3	5	3
<i>Veronica serpyllifolia</i> (thyme-leaved speedwell)			2			
<i>Vicia cracca</i> (tufted vetch)			1			
<i>Vicia sativa</i> ssp. <i>nigra</i> (common vetch spp.)				1		
<i>Vicia</i> sp. (vetch sp.)			1			

		Recorder: DB & CW				
Location: Wogden Foot – TPT Verges (Area 4)		Date: 21 June 2016				
Stand area:		Sample area: 2 x 2 m				
Layers: mean height 0.5 m 40 cm 10 cm		Layers: cover 20% 40% 40%				
Description: Wide well managed (by mowing) verges near car park. Origin uncertain – native or part sown? <i>Dactylorhiza praetermissa</i> (southern marsh-orchid) is frequent, <i>Dactylorhiza fuchsii</i> (common spotted orchid) is rare. Other flora not picked up in quadrats: <i>Galium verum</i> (lady's bedstraw), <i>Vicia sativa</i> ssp. <i>nigra</i> (common vetch spp.), <i>Linum catharticum</i> (fairy flax), <i>Medicago lupulina</i> (black medick), <i>Pilosella officinarum</i> (mouse-ear-hawkweed), <i>Hypochaeris radicata</i> (cat's ear), <i>Rhinanthus minor</i> (yellow rattle), <i>Vicia sepium</i> (bush vetch), <i>Bellis perennis</i> (common daisy).						
		% Cover by Quadrat				
		14	15	16	17	18
Species list	Grid Reference	416033 402407	416007 402404	415994 402406	415941 402395	415962 402380
Achillea millefolium (yarrow)					3	
Agrostis stolonifera (creeping bent)				10		
Anthoxanthum odoratum (sweet vernal-grass)		3	3	3	3	3
Briza media (quaking-grass)					3	
Carex hirta (hairy sedge)			3			
Centaurea nigra (common knapweed)		2		5	10	4
Cerastium fontanum (common mouse-ear)		2	1			1
Cirsium arvense (creeping thistle)		3	5	3		2
Cynosurus cristatus (crested dog's- tail)		3	2	3	2	3
Dactylorhiza fuchsii (common spotted-orchid)		1		1		
Dactylorhiza praetermissa (southern marsh-orchid)		1				
Euphrasia sp. (eyebright)			1	5	1	
Festuca rubra (red fescue)		15	20	25	10	5
Heracleum sphondylium (hogweed)		1	2			
Holcus lanatus (Yorkshire fog)		15	15	5	10	5
Lathyrus pratensis (meadow vetchling)			8		1	1
Leucanthemum vulgare (oxeye daisy)		3	3		1	2
Lolium perenne (perennial rye-grass)		2				
Lotus corniculatus (common bird's-foot-trefoil)		10	3	20	10	39
Plantago lanceolata (ribwort plantain)		4	10	5	5	8
Poa pratensis (smooth meadow-grass)						2
Poa trivialis (rough meadow-grass)		3	3	3	2	2
Prunella vulgaris (selfheal)					3	1
Ranunculus acris (meadow buttercup)		2	2		5	3
Ranunculus repens (creeping buttercup)		1	15	2	3	3
Rubus fruticosus agg. (bramble)		1				
Rumex obtusifolius (broad-leaved dock)						1
Senecio jacobaea (common ragwort)						2
Silene flos-cuculi (ragged-robin)					4	
Taraxacum agg. (dandelion)						2
Trifolium pratense (red clover)		10	8	8	15	5
Trifolium repens (white clover)		15		8	5	5
Trisetum flavescens (yellow oat-grass)		2	3		1	1
Vicia hirsuta (hairy tare)		1				
Vicia sativa ssp. segetalis (common vetch spp.)			1		2	

		Recorder: DB & JW				
Location: Winscar Reservoir (Area 5)		Date: 26 June 2017				
Stand area:		Sample area: 2 x 2 m				
Layers: mean height: 15 cm, 5 cm		Layers: cover: 10%, 90%				
Description: Lightly managed area previously occupied for use as a temporary construction compound but since returned to grassland. Sward is short and patchy. Ground shows evidence of compaction and is very stony.						
		% Cover by Quadrat				
		1	2	3	4	5
Species list	Grid reference	SE 1524 0200	SE 1524 0200	SE 1525 0198	SE 1526 0199	SE 1524 0197
Agrostis stolonifera (creeping bent)		10	10	25	50	15
Bellis perennis (daisy)		1	2	2	2	1
Bromus hordeaceus subsp. Hordeaceus (soft brome)		1	1			
Carex flacca (glaucous sedge)		3	5	5	3	
Cerastium fontanum (common mouse-ear)		1	2		1	1
Cirsium arvense (creeping thistle)		1	1			
Dactylis glomerata (cock's-foot)		2				
Epilobium sp. (willowherb seedlings)		1	1	1		1
Euphrasia agg. (eyebright)			2			1
Festuca rubra (red fescue)		35	20	4	10	20
Holcus lanatus (Yorkshire-fog)		15	20	10	5	20
Hypericum perforatum (perforate St John's-wort)						1
Juncus articulatus (jointed rush)				3		
Lathyrus pratensis (meadow vetchling)						2
Leucanthemum vulgare (oxeye daisy)						2
Linum catharticum (fairy flax)		2				
Lotus corniculatus (common bird's-foot-trefoil)		3	8			5
Luzula multiflora (heath wood-rush)		1				2
Myosotis discolor (changing forget-me-not)				1		1
Plantago lanceolate (ribwort plantain)		2				2
Poa trivialis (rough meadow-grass)			1	1		2
Prunella vulgaris (selfheal)		3	5	3	2	3
Ranunculus repens (creeping buttercup)		2	3	3	2	3
Rumex crispus (curled dock)				1		1
Rumex obtusifolius (broad-leaved dock)		2	1			1
Sagina procumbens (procumbent pearlwort)		1		1		
Senecio jacobaea (common ragwort)		1		1		
Taraxacum agg. (dandelion)			1			1
Tree seedlings				2		
Trifolium dubium (lesser trefoil)		5	2	3	2	2
Trifolium repens (white clover)		3	3	2	3	3
Tussilago farfara (colt's-foot)		1	3	3	1	5
Veronica serpyllifolia (thyme-leaved speedwell)		2	2			1
Vicia cracca (tufted vetch)			1	1		2
Bryophytes (mosses)		5	5	25	15	5
Bare/ Stone			2	3	5	1

Appendix B Photographs



Photograph 1: Area 1 grassland, common knapweed abundant but not in bloom at time of survey



Photograph 2: Area 1 grassland, view into the sward



Photograph 3: Area 2 grassland, note the low cover of herbs



Photograph 4: Area 2, view into the sward



Photograph 5: Area 3 grassland, herbs not obvious due to recent grazing



Photograph 6: Area 4 grassland looking west towards Dunford Bridge car park



Photograph 7: Area 4, view over the herb-rich grassland



Photograph 8: Area 5, - signs of previous disturbance and impeded growth of herbs and grasses



Photograph 9: View into the grassland sward in Survey Area 5 with evident signs of compaction and remnants of substrate from previous use of the grassland as a laydown area



Photograph 10: Grassland adjacent to but outside Area 5, note the better grassland structure and the better established cover of grassland herbs



Photograph 11: Survey Area 6 - View along the Trans Pennine Trail towards Dunford Bridge, note the compacted turf of the Trail, and the negligible unimpacted grassland verge on the left hand side



Photograph 12: Survey Area 6 - View along the Trans Pennine Trail towards Wogen Foot LWS, note the compacted short grassy vegetation on the Trail and the narrow grassland verge encroached by scrub to the right

