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Callendar Estate Wind Farm, Falkirk

Cultural Heritage

 0131 273 4380

 0131 273 4381

 info@cfa-archaeology.co.uk

 www.cfa-archaeology.co.uk

CFA ARCHAEOLOGY LTD

The Old Engine House
Eskmills Business Park
Musselburgh
East Lothian
EH21 7PQ

Tel: 0131 273 4380

Fax: 0131 273 4381

email: info@cfa-archaeology.co.uk

web: www.cfa-archaeology.co.uk

Author	Samantha Hickman MA FSA Scot AIfA
Commissioned by	Atmos Consulting Ltd
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Callendar Estate Wind Farm, Falkirk

Cultural Heritage Assessment

INTRODUCTION

This chapter considers the likely effects on cultural heritage interests of the construction and operation of the proposed Callendar Estate Wind Farm. The assessment has been undertaken by CFA Archaeology Ltd, informed by comments and information provided by Historic Scotland and the Falkirk Council Archaeologist. The assessment has been conducted in accordance with the Institute of Field Archaeologists Code of Conduct (IfA 2010) and Standard and Guidance for Archaeological Desk-based Assessment (IfA 2008).

The specific objectives of the cultural heritage study were to:

- Identify the cultural heritage baseline within and in the vicinity of the proposed development site.
- Assess the proposed development site in terms of its archaeological and historic environment potential
- Consider the potential and predicted effects of the construction and operation of the proposed development on the baseline cultural heritage resource, within the context of relevant legislation and planning policy guidelines
- Propose measures, where appropriate, to mitigate any predicted significant adverse effects.

STUDY AREA

The study area comprises of two distinct parts:

The proposed wind farm site: comprising the area of land within the application boundary, where direct impacts are likely to occur.

The wider landscape: an area around the proposed development site where impacts on the setting of features including Scheduled Monuments, Listed Buildings, Conservation Areas and Gardens and Designed Landscapes may occur.

Figure 1 shows the proposed wind farm layout and the locations of archaeological sites and features identified by the cultural heritage study. A gazetteer of these sites is provided as Appendix 1.

PLANNING AND LEGISLATION BACKGROUND

Context

Scotland's historic environment contributes to the Scottish Government's strategic objectives and to the target of improving the state of Scotland's historic buildings, monuments and environment is identified as a national indicator and target under the National Performance Framework. The Scottish Historic Environment Policy (SHEP) sets out Scottish Minister's policies for the historic environment, and provides policy direction for Historic Scotland and a framework that informs the day-to-day work of a range of organisations that have a role and interest in managing Scotland's historic environment. Through the implementation of the SHEP, Scottish Ministers wish to achieve three outcomes for Scotland's historic environment:

- 1) That the historic environment is cared for, protected and enhanced for the benefit of our own and future generations.
- 2) To secure greater economic benefits from the historic environment.
- 3) That the people of Scotland and visitors to our country value, understand and enjoy the historic environment.

Cultural heritage resources include sites with statutory and non-statutory designations as set out in Scottish Planning Policy.

Sites with statutory designations include:

- Scheduled Monuments.
- Listed Buildings.
- Conservation Areas.
- Designated Wrecks.

Sites with non-statutory designations include:

- World Heritage Sites.
- Gardens and Designed Landscapes.
- Historic Battlefields.
- Other Historic Environment Interests.

Scottish Planning Policy requires that planning authorities ensure that development plans provide a framework for the protection, conservation and enhancement of the historic environment to allow the assessment of the impact of proposed development on the historic environment and its setting (para 112). PAN 42 indicates that the principle that should underlie all planning decision-making is preservation of cultural resources in situ, where possible, and by record if destruction cannot be avoided. It is recognised in the PAN that preservation may not always be possible, and where damage is unavoidable various mitigation measures may be proposed.

Sites with Statutory Designations

Scheduled Monuments

Under the Ancient Monuments and Archaeological Areas Act 1979 (1979 Act), the Scottish Ministers are required to compile and maintain a schedule of monuments considered to be of importance. The consent of the Scottish Ministers is required before any works are carried out which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or covering up a Scheduled Monument. In addition, impacts of proposed development works upon the setting of a Scheduled Monument form an important consideration in the granting or refusal of planning consent to conduct development works. Further information on development control procedures relating to Scheduled Monuments is provided in the SHEP, SPP and in Planning Advice Note (PAN 42): Archaeology.

Listed Buildings

Under the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 (1997 Act), the Scottish Ministers are required to compile a list of buildings of special architectural or historic interest. Such buildings are classified into Categories A, B and C(s), in decreasing order of importance. Planning authorities and the Scottish Ministers are required to have special regard for the desirability of preserving Listed Buildings and their settings and any features of special architectural or historic importance they possess. Scottish Government policy and guidance is also provided in SHEP and SPP.

Conservation Areas

Under the Planning (Listed Buildings and Conservation Areas) Scotland Act (1997 Act), areas of special architectural or historic interest can be designated by local authorities as Conservation Areas, the character or appearance of which it is desirable to preserve or enhance. Planning authorities are required to consider planning applications affecting the appearance, character or setting of Conservation Areas. Scottish Government policy and guidance is also provided in SHEP and SPP.

Sites with Non-Statutory Designations

World Heritage Sites

Under the terms of the Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO 1972), cultural heritage World Heritage Sites (WHS) comprise individual sites, monuments, and groups of buildings that are recognised to be of outstanding universal value. Sites are nominated by signatory nations and inscribed on a World Heritage List. Inscription confers no especial protection other than normally provided for by national legislation. It does, however, allow for and encourage the protection, conservation and presentation of nominated sites as an internationally valued resource

Other Historic Environment Interests

There is a range of other non-designated archaeological sites, monuments and areas of historic interest, including battlefields, historic landscapes, other gardens and designed landscapes, woodlands and routes such as drove roads that do not have statutory protection. Sites without statutory protection are curated by the local planning authority and SPP and PAN 42 provide national planning policy guidance and advice on the treatment of such resources.

Regional and Local Planning Policy Guidance

Falkirk Structure Plan 2007

The Structure Plan aims to continue to protect, promote and enhance important aspects of the local built environment whilst seeking to integrate care for the built environment with the economic and social development of the area.

Structure Plan Policy ENV5 (Built Environment and Heritage) states that important archaeological sites, Scheduled Monuments, Listed Buildings, Conservation Areas, and sites included in the Inventory of Gardens and Designed Landscape will be protected and enhanced. Local Plans will identify these assets and incorporate policies appropriate to the significance of the area or individual feature, including the following range of measures:

1. Measures to ensure that assets are maintained in a good state of repair;
2. Promoting sensitive interpretation of heritage assets;
3. Protection of the assets and their setting from inappropriate development; and
4. Where development would, damage, or result in the loss of the asset, that provision is made for adequate recording of the current status of the asset.

Rural Local Plan 1994

The Rural Local Plan covers all the countryside of the Falkirk Council area outwith the boundaries of the main settlements and provides a comprehensive statement of planning policy for the countryside. .

Policy RURAL 14 (Conservation Areas) states that the visual amenity and character of each Conservation Area including its setting, buildings and open spaces will be protected.

Policy RURAL 15 (Listed Buildings) states that there will be a presumption against proposals which would destroy or adversely affect the architectural character, appearance or setting of Listed Buildings.

Policy RURAL 16 (Places of Archaeological Interest) states that there will be a general presumption against development which would destroy or adversely affect Scheduled Monuments and other sites of archaeological / historical importance or their settings. Archaeological sites which are threatened by development, and where

preservation has improved impossible, will be excavated and recorded. The District Council supports Historic Scotland's policy to seek developer funding of any necessary excavation, recording and publication works.

Policy RURAL 17 (The Antonine Wall) states that there will be a presumption against proposals which would adversely affect the line, setting and amenity of the wall.

Policy RURAL 18 (Canals) states that there will be a general presumption against development which will have an adverse effect upon the amenity, setting or nature conservation value of the canals.

Policy RURAL 21 (Gardens and Designed Landscapes) that there will be a general presumption against development which would adversely affect the character and setting of sites identified in the 'Inventory of Gardens and Designed Landscapes in Scotland' and other historic gardens and designed landscapes of national or regional significance.

APPROACH TO THE ASSESSMENT

Consultation

A scoping report (June 2010) was sent by Atmos Consulting to Falkirk Council and Historic Scotland inviting comment of the proposed wind farm.

Data Collection

This assessment has been conducted in accordance with the Institute for Archaeologists Code of Conduct (2009) and Standard and Guidance for Archaeological Desk-Based Assessment (2008).

Up-to-date information was obtained from appropriate sources on the locations of cultural heritage sites with statutory protection and non-statutory designations either within or in the vicinity of the proposed development.

Details of the locations and extents of Scheduled Monuments, Listed Buildings, Gardens and Designed Landscapes within the proposed development area were obtained from Historic Scotland. Data was provided in a digital GIS format.

Information on known archaeological sites and monuments within the proposed development area was obtained from the National Monuments Record of Scotland (NMRS) via the online Pastmap resource, maintained by the Royal Commission on the Ancient and Historic Monuments of Scotland (RCAHMS) and Historic Scotland (<http://jura.rcahms.gov.uk/PASTMAP/start.jsp>). The Falkirk Council Sites and Monuments Record (SMR) was consulted but provided no additional information.

Ordnance Survey maps and other historic maps held by the Map Library of the National Library of Scotland were examined, to provide information on sites of potential archaeological significance and on historic land-use changes.

An assessment was made of vertical aerial photograph collections held by the RCAHMS. Sorties dating from 1946 - 1960 were available for examination.

Bibliographic references were consulted to provide background and historical information. No attempt was made within the remit of this study to conduct detailed historical analysis.

The Scottish Palaeoenvironmental Database (<http://xweb.geos.ed.ac.uk/~ajn/spad>) which records the distribution of known palaeoenvironmental sites within Scotland and the online Historic Land-Use Assessment Data for Scotland maps, maintained by the RCAHMS (<http://www.rcahms.gov.uk/>) were consulted.

Reconnaissance Field Survey

A reconnaissance field survey (equating to a RCHAMS Level 1¹ survey) was undertaken of the proposed development site. The aims of the field survey were to:

- assess the baseline condition of the known archaeology and heritage features, previously identified through the desk-based assessment;
- identify any further features of cultural heritage interest not detected from the desk study and identify areas with the potential to contain currently unrecorded, buried archaeological remains;
- identify areas with the potential to contain unrecorded, buried archaeological remains, taking into account factors such as topography, geomorphology and ground conditions;
- assess the potential effects of the construction of the proposed development on cultural heritage sites and areas, and their settings, where appropriate.

Identified sites were recorded on pre-forma monument recording forms and by digital photography and their positions (and where appropriate their extents) were logged using GPS equipment. These archive materials will be offered to the Falkirk Council Sites and Monuments Record (SMR). No intrusive archaeological interventions have been carried out as part of this assessment.

Identification of External Receptors and Characterisation of their Settings

Details were obtained for previously recorded cultural heritage sites, monuments and landscape features with statutory and non-statutory designations², undesignated archaeological sites of likely national importance, within the landscape surrounding the proposed development site. A Zone of Theoretical Visibility (ZTV) map, generated for the proposed development, was used to identify those cultural heritage receptors within 15km of the proposed development boundary from where there is theoretical intervisibility with one or more wind turbines.

Guidance issued by Historic Scotland notes that the setting of a receptor could be affected by the introduction of new development into its surroundings, even if that new development will not be directly visible from the receptor. Such cases may arise, for example, when both development and a highly sensitive receptor will be caught in important views, vistas or prospects from somewhere other than the receptors location. Further appraisal of the dataset will be undertaken to establish if there are any such instances whereby potential effects on setting will be assessed.

The baseline setting of each relevant receptor or related group of receptors will be characterized on a case-by-case basis. Characterisation of setting of a receptor will be based upon its properties and location, and will take into account the factors identified in the guidance issued by Historic Scotland. The baseline setting of each receptor will be characterized principally in terms of the:

- Archaeological / historical context of the receptor;
- Current landscape and visual surroundings of the receptor;
- Aesthetic and experiential properties of the receptor within its surrounding;
- Social value (actual or potential) of the receptor as a recreational / leisure or education resource.

Targeted field visits were undertaken to assess the character and sensitivity of the settings of identified receptors, and to assess the effects of the proposed development on those settings. Direct visits to receptors focused on those

¹ Royal Commission on the Ancient and Historical Monuments of Scotland Corporate Plan 2004-9, Survey and Recording Policy, p12. www.rchams.gov.uk/survey

² Scheduled Monuments, Listed Buildings, Conservation Areas, Gardens and Designed Landscapes; including candidate sites where applicable

which are likely to receive significant effects on their settings (i.e. those closest to the development site and those specifically identified as requiring assessment by Historic Council). In cases where access was difficult or denied and where the setting issues are unlikely to be significant, publicly accessible locations as close as possible to the receptors were sought as a basis for the assessment. Wireframes were generated of views from selected receptors to aid assessment. As wireframes provide bare ground views, field observation was important in identifying any obstructions, screening etc that limit visibility of the proposed development in key views.

The outcome of this work was an understanding, involving the application of professional judgment, of the key characteristics that define the setting of each receptor. Where it is established that the setting of a receptor is such that there is no potential for it to be affected by the presence of the development, the receptor was not considered further in the assessment. For example where the setting of a receptor is localized and does not include the development site or, as noted in Historic Scotland's published guidance, the setting of a cultural heritage asset may not include all land visible from that asset, since distant views alone are not necessarily sufficient to raise concerns about adverse effects on setting.

Impact Assessment Methodology

The effects of the proposed development on cultural heritage assets were assessed on the basis of their type (direct, secondary, indirect, cumulative), nature (beneficial, neutral or adverse), and longevity (reversible, short-term or long-term, irreversible, permanent). The assessment took into account the sensitivity of the receptor and the magnitude of impact. Mitigation measures designed to prevent, reduce or offset significant adverse effects are proposed, and residual effects are assessed taking into account the likely effectiveness of the mitigation proposed. The reporting of assessment of effects contains a statement as to any limitations on the confidence placed on the assessments, providing reasons as necessary.

The assessment of sensitivity of archaeological and heritage assets reflects the relative weight which statute and policy attached to them, principally as published in Scottish Planning Policy (SPP) and Scottish Historic Environment Policy (July 2009). Table 1 summarises the relative sensitivity of key cultural heritage resources.

Table 1: Sensitivity of Cultural Heritage Assets

Sensitivity	Definition / criteria
High	Sites of national or international importance, including World Heritage Sites Scheduled Monuments, and sites proposed for scheduling Undesignated archaeological sites and areas of likely national importance identified in HERS/SMRs
Medium	Sites of regional importance, including: Archaeological sites and areas of distinctive regional importance Archaeologically Sensitive Areas Category B listed buildings Conservation Areas
Low	Sites of local importance, including: Archaeological sites of local importance Category C(S) listed buildings Unlisted historic buildings and townscapes with local (vernacular) characteristics
Negligible	Sites of little or no importance, including: Sites of former archaeological features Unlisted buildings of minor historic or architectural interest Poorly preserved examples of particular types of feature

Assessment of Physical Effects

Criteria for assessing magnitude of direct physical impact, which measures the degree of change to the baseline condition of a feature that would result from the construction of one or more element of the proposed development, are presented in Table 2.

Table 2: Magnitude of Physical Impacts

Level of magnitude	Definition
High	A fundamental change to the baseline condition of the receptor, leading to total or major alteration of character.
Medium	A material, partial alteration of character.
Low	Slight, detectable alteration of the baseline condition of the receptor.
Imperceptible	A barely distinguishable change from baseline conditions.

Sensitivity of the receptor and magnitude of impact are used to inform the professional judgment of the likely significance of the physical effect. Table 3 summarises the criteria for assigning significance of a physical effect. Major and moderate effects are considered to be significant in terms of the EIA Regulations. Where a physical effect on a feature is likely, the assessment contains a summary statement of the 'cultural significance' of that feature (following the guidance defined in Annex 1 of Scottish Historic Environment Policy (July 2009)).

Table 3 Significance of Physical Effects

Magnitude				
High	Minor	Moderate	Major	Major
Medium	Negligible	Minor	Moderate	Major
Low	Negligible	Negligible	Minor	Moderate
Imperceptible	Negligible	Negligible	Negligible	Minor
	Negligible	Low	Medium	High
	Sensitivity			

Assessment of Effects on Setting³

For each receptor where a potential effect on setting has been identified, the assessment of possible effects adopts a four-stage approach:

- Identification of the characteristics of the setting of the receptor (see above);
- Assessment of the sensitivity of that setting;
- Identification of how the presence of the proposed development will affect that setting (magnitude of impact); and
- Assessment of significance of effect.

Effects on the setting of GDL's

Criteria for Assessing Sensitivity of Setting

Sensitivity of setting was assessed by considering two factors:

- the relative weight which statute and policy attach to the receptor and its setting; and

³ This methodology was developed during 2007 in consultation with Historic Scotland in relation to an overhead transmission line project in South West Scotland.

- the degree to which the baseline setting contributes to the understanding and/or appreciation, and hence value, of the receptor.

The relative weight that statute and policy attach to the receptor and its setting determines using the sensitivity of archaeological and heritage resources set out in Table 1. Where individual designated receptors are present within larger designated areas (e.g. Listed Buildings within a Conservation Area; Scheduled Monuments within an Archaeologically Sensitive Area), the sensitivity is stated as the higher of the two designations. None of the sites included in the assessment is of 'negligible sensitivity'.

The degree to which the baseline setting contributes to the understanding and/or appreciation of the receptor will be assessed according to the criteria set out in Table 4.

Table 4: Contribution of Setting to Understanding and Appreciation of a Cultural Heritage Receptor

Contribution	Definition
<i>High</i>	A setting which makes a strong positive contribution to the understanding and/or appreciation of the siting and/or historical/archaeological/architectural context of a receptor. E.g. a prominent topographic location; surroundings that include related monuments in close association; surroundings that are believed to be little changed from those when the receptor was created.
<i>Moderate</i>	A setting which makes some positive contribution to the understanding and/or appreciation of the siting and/or historical/archaeological/architectural context of a receptor. E.g. surroundings that complement the siting and appearance of a receptor, such as the presence of a feature of the rural past within a more recent farming landscape containing little or no urban or industrial development.
<i>Low</i>	A setting which makes little positive contribution to the understanding and/or appreciation of the siting and/or historical/archaeological/architectural context of a receptor. E.g. where surroundings only partially complement the siting and appearance of a receptor, such as the presence of a feature of the rural past within a partly urbanised or industrialised landscape.
<i>Negligible</i>	A setting which does not contribute positively to the understanding and/or appreciation of the siting and/or historical/archaeological/architectural context of a receptor. E.g. immediate surroundings of a commercial coniferous single species woodland or industrial development that are not relevant to understanding the context of the receptor.

These two criteria were combined to assess the overall sensitivity of a setting, as set out in Table 5.

Table 5: Sensitivity of Setting of a Receptor

Sensitivity of Receptor	Contribution of Setting			
	<i>High</i>	<i>Moderate</i>	<i>Low</i>	<i>Negligible</i>
High	High	High	Medium	Low
Medium	High	Medium	Low	Low
Low	Medium	Low	Low	Low

Table 5 defines the overall contribution of setting. The characterisation of baseline setting for each receptor identified any specific elements of that setting which individually provide a greater contribution to understanding and/or appreciation of a receptor than the overall contribution assessment might suggest.

Identification of Magnitude of Impact on Setting

Magnitude of impact on setting will be assessed according to the thresholds in Table 6:

Table 6: Magnitude of Impacts on Setting

Level of magnitude	Definition
High	Fundamental impacts obviously changing the surroundings of a receptor, such that its baseline setting is substantially or totally altered.
Medium	Impacts discernibly changing the surroundings of a receptor, such that its baseline setting is partly altered.
Low	Slight, but detectable impacts that do not alter the baseline setting of the receptor materially.
Imperceptible	A very slight and barely distinguishable change from baseline conditions.

Assessment of Effect Significance

The significance of effect on setting depends on both the magnitude of impact and the sensitivity of the setting of the receptor. Table 7 presents the matrix that was used to inform the determination of the significance of effects on setting.

Table 7: Significance of Effects on Setting

Magnitude	Sensitivity		
	High	Medium	Low
High	Major	Major	Minor
Medium	Major	Moderate	Minor
Low	Minor ⁴	Minor	None
Imperceptible	Negligible	Negligible	Negligible

Significance Criteria

The proposed criteria for determining the significance of cultural heritage effects are provided in Table 8. Effects considered to be of major or moderate significance are deemed to be significant in terms of the EIA Regulations.

Table 8 Significance Criteria

Significance of Effect	Definition
Major	A change to the fabric or setting that leads to a substantial effect on the character, quality or context of a receptor.
Moderate	Changes to the fabric or setting that lead to a material effect on the character, quality or context of a receptor.
Minor	Changes to the fabric or setting that lead to a detectable but non-material change effect on the character, quality or context of a receptor.
Negligible	Changes to the fabric or setting that lead to, at most, a negligible effect on the character, quality or context of a receptor.

⁴ A non-material change to baseline conditions cannot by its nature lead to a significant effect. A significant effect arises from a material change to baseline conditions. This distinction explains why this particular significance assessment finding is not 'moderate'.

Baseline

General

This section considers the known cultural resource, both within and in the vicinity of the proposed development site. Numbers in parentheses in the following sections refer to site numbers annotated on Figures 1, and detailed in Appendices 1 and 2.

Fifteen cultural heritage sites and features were recorded in the proposed development site (Figure 1). There are 151 Scheduled Monuments; 76 Category A Listed Buildings; 590 Category B Listed; 434 Category C(S) Listed; five Garden and Designed Landscapes, and 16 Conservation Areas within 15km of the proposed wind farm site.

Consultation Responses

Scoping responses, raising cultural heritage issues, were received from Historic Scotland and the Falkirk Council who were consulted as part of the pre-application consultation process:

Table 9 Consultation Responses

Consultee	Scoping Opinion / Other	Issue Raised
Historic Scotland	Scoping Opinion (20.07.10)	In its scoping opinion (17/06/10) Historic Scotland set out the underlying principles for assessing the impacts of the development on the cultural heritage resource. Historic Scotland confirmed that there are no Scheduled Monuments, Listed Buildings within the proposed wind farm site and that no part of the proposed development area lies within an Inventory Gardens or Designed Landscapes (GDL). It identified concerns regarding the impact on the setting of the Frontiers of the Roman Empire (Antonine Wall) World Heritage Site and Callendar Park Inventory Designed Landscape. Historic Scotland also requested that assessment of indirect visual impacts on setting of key external receptors be supported by appropriate visualisations such as wireframes or photomontages.
Falkirk Council	Scoping Opinion (10.06.10)	The Falkirk Council Archaeologist requested that a walkover survey is conducted before any (construction) work is carried out. He also requested that the sites of Bantaskine House and estate, Charlie's Hill and the 1746 Battle of Falkirk, and Jawcraig Brickworks are considered during the assessment as well as the impact on the World Heritage Site of the Antonine Wall.

Desk-based Assessment Results

There are no Scheduled Monuments or Listed Buildings within the proposed development site, and no part of the proposed development site lies within a Conservation Area or Garden and Designed Landscape.

The NMRS contains records for two sites; Newcraig open cast mine and rig and furrow cultivation (7) and Rottenstocks (11).

Examination of historical maps led to the identification of seven additional sites and features: two enclosures (5, 6) and five farmsteads at Wester Loanfoot, Loanfoot, Auchengean, Auchingain, and Cornfield (1, 2, 3, 8,10).

Examination of the vertical aerial photographs held by the RCHAMS identified two further sites (9, 12) and provided additional information on the baseline character of sites identified by the NMRS, SMR and historical maps. Substantial areas of former rig and furrow cultivation (13) are also visible on aerial photographs dating from 1946-1967.

The Scottish Palaeoenvironmental Database (SPAD) resulted in the identification of a three records of raised mire at Newcraig (Lindsay and Immirizi 1996) centred on NS 842 762, NS 847 757 and NS 853 760, covering the southwestern end of the proposed development site.

Character of the Cultural Heritage

The majority of the sites and features within the proposed development site are associated with medieval or later settlement and agrarian activity. Detailed descriptions are provided in Appendix 1 and the sites are discussed thematically below.

Medieval and Later Remains

Farmsteads

The farmstead of Wester Loanfoot (1) dates to the early 1800's when it is depicted on Grassom's map of 1817. It is depicted as two roofed buildings, an enclosure and a well on the Ordnance Survey 1st Edition map. Field survey identified the upstanding remains of the farmhouse and the foundations of a second building within forestry plantation. The remains of the enclosure wall also survive. However, the whole farmstead has been heavily disturbed by forestry operations. The farmstead is considered to be of low sensitivity and local historical environment interest.

Loanfoot (2) dates to the early 1800s and is contemporary with Wester Loanfoot (1). A large roofed complex of buildings within enclosures is depicted on the Ordnance Survey 1st Edition map. However, the only upstanding remains of this farmstead are the foundations of the rectangular building to the south of the complex and the outer enclosure wall. The farmstead is located within an area of commercial forestry and although it does not appear to have been directly planted upon, the farmstead has been heavily disturbed by forestry operations. The farmstead is considered to be of low sensitivity and local historical environment interest.

Auchengean (3) dates to at least the early 1800s when it is depicted on Grassom's map of 1817, although it is named Auchendean on this map. It is annotated Auchingane on the Ordnance Survey 1st Edition map where it is shown as a large complex of roofed buildings set round a courtyard with an enclosure to the south. Field survey noted that the current layout of the farmstead is similar to that shown on the Ordnance Survey 1st Edition although there have been modern additions. It is currently in use as a private residence. The farmstead is considered to be of low sensitivity and local historical environment interest.

Auchingain (8) is depicted on Grassom's map of 1917 and named on Thomson's map of 1832. It is not shown on the Ordnance Survey map and field survey found no visible trace of the farmstead within an area

of marsh. The farmstead is considered to be of unknown but of no more than low sensitivity as the baseline of the farmstead could not be established.

Rottenstocks (11), named as 'Drumtruster' on Grassom's and Thomson's maps, is depicted on the Ordnance Survey 1st Edition map. The farmstead survives as turf covered foundations in a rough pasture field. A length of track extends to the east and may have originally been connect to the main road by track (15). The farmstead is considered to be of low sensitivity and local historical environment interest. The track is considered to be of negligible sensitivity and lesser historical environment interest.

A building (9) is visible on aerial photographs from 1946. The location of this building is currently within a stance of dense conifer plantation and it was therefore not possible to ascertain the baseline condition of this site. The building is considered to be of unknown sensitivity but unlikely to be of greater than low sensitivity.



Plate 1. Remains of track (15)

Rig and Furrow Cultivation

Extensive areas of rig and furrow (18) cover the proposed development area. The areas of rig and furrow correspond with areas of improved land shown on the Ordnance Survey 1st Edition map (1865). The rig

and furrow is clearly visible on aerial photographs and on the ground. It is most likely to be of post-medieval date and is considered to be of low sensitivity and local historical environment interest.

19th century Mining

The NMRS records an area of open cast mining, Newcraig (7), in the west of the proposed development area. The open cast mining is not visible on aerial photographs dating from 1946 to 1967 and it is therefore assumed to be of relatively modern date. The open cast is no longer in operation and the area has been reinstated. The mine workings are considered to be of negligible sensitivity and lesser historical environment interest.

Cornfield (10), a row of possible miners cottages, is depicted on the Ordnance Survey 1st Edition map to the north of Newcraig coal pit, which lies outside the proposed development area. There are currently no visible upstanding remains of the buildings within an area of marshland. Cornfield is considered to be of unknown but of no more than low sensitivity as the baseline of the site could not be established.



Plate 2. Remains of rig and furrow cultivation (18)

Barleyside West (14) closed in 1949 and the remains of the spoil heap are visible on aerial photographs dating from 1946 to 1960. The spoil heap is defined by a post and wire fence and is currently overgrown with trees and shrubs. The remains of a mine (12) to the west of Barleyside West may be associated with

the colliery. A small spoil tip and associated ancillary buildings are visible on aerial photographs although only the spoil tip is visible on the ground. Both sites are considered to be of no more than negligible sensitivity and lesser historical environment interest.

Miscellaneous Features

A bridge (4) was noted during the field survey, carrying a farm track over a burn. It is originally of stone and mortar construction but has been repaired with bricks in places. It is a single span, arched bridge and is still in use. The bridge is considered to be of low sensitivity and local historical environment interest.

Field survey found no visible trace of two enclosures (5, 6) shown lying close to a large drain on the Ordnance Survey 1st Edition map. It is possible that these were temporary structures which have since been removed. They are considered to be of unknown but no more than negligible sensitivity as the baseline could not be ascertained.

Two clearance heaps (13, 16) were noted during the field survey. The first lies close to an old field bank and may be associated with early agricultural activities. The second is a large pile of boulders which appears quite recent in date. They are both considered to be of negligible sensitivity and lesser historical environment interest.

Two field banks (17) were identified during the field survey. They appear to form part of the original field layout which has mostly been replaced elsewhere by post and wire fences. They are considered to be of negligible sensitivity and lesser historical environment interest although of low sensitivity and local historical environment interest when considered part of the wider agricultural landscape.

Key Receptors in the Vicinity of the Proposed Development Area

125 Scheduled Monuments, 55 Category A Listed Buildings, 412 Category B Listed Buildings, 347 Category C(S) Buildings, five Gardens and Designed landscapes and 16 Conservation Areas within 15km of the proposed development site are predicted to have theoretical views of the proposed wind turbines based on the preliminary ZTV model.

Assessment of archaeological potential of the proposed development as a whole

The proposed development site is situated within in an area of upland pasture that lies between Slamannan and Falkirk. The area consists principally of rough pasture and forestry plantation. The site ranges from between 120 and 190 AOD.

The western area and the area to the east of Auchengean farm have been completely sterilised by 20th century quarry works (extent of quarry works shown on Figure 1). The quarry works are no longer in use and the areas have been reinstated. The northern part of the development area is currently under coniferous forestry plantation. Only the remainder of the area, which is used for grazing, appears to have undergone little change since the 19th century.

The NMRS and SMR contain no records pertaining to prehistoric activity in the area immediately around the proposed development site. The majority of sites in the vicinity relate to mining or recent agricultural activities or, further to the north, Roman remains relating to the Antonine Wall.

The number, distribution and condition of sites identified within the proposed development area and the available evidence on historic and current land-use of the area suggests that the potential of, as yet undetected, buried remains of medieval or earlier archaeological sites surviving within the proposed development area is low. It is judged that there is no potential for any archaeological remains to survive in the area of former opencast mining.

EFFECTS AND MITIGATION

Assessment of Effects within the Proposed Development Site

The assessment of predicted impacts has been carried out with reference to the preliminary wind farm layout and cultural heritage constraints.

Any ground-breaking activities associated with the construction of the proposed wind farm, (such as those required for turbine bases and crane hardstandings, access tracks, cable routes, compounds, etc.) have the potential to disturb or destroy features of cultural heritage interest. Other construction activities, such as vehicle movements, soil and overburden storage and landscaping also have the potential to cause direct, permanent and irreversible impacts on the cultural heritage.

Using the criteria detailed in Section 6.3, Appendix 6.1 provides a final column which summarises the predicted effects on the identified cultural heritage sites and features identified by the study within the proposed development area. These effects are discussed in more detail below.

Uncertain Effects

In addition to the site specific predictions ground-disturbing excavations associated with the construction of the proposed development could have an adverse effect on any unrecorded, buried archaeological remains present in affected areas. Taking into account the limited extent of the proposed ground disturbance generated by the construction of access tracks, cable routes, turbine bases, hardstanding areas, construction compound and substation, the likelihood of encountering remains of archaeological significance is considered to be low.

Assessment of Effects on External Receptors within 15km of the Proposed Wind farm

The presence of wind farm features can have indirect impacts on the setting of cultural heritage sites in the wider landscape. In particular, there is potential for the turbines to be present in views of and from Scheduled Monuments, Listed Buildings and other cultural heritage sites and areas in the vicinity of the proposed development.

A preliminary analysis of the ZTV indicates that there would be theoretical visibility of the turbines from 125 Scheduled Monuments, 55 Category A Listed Buildings, 412 Category B Listed Buildings, 347 Category C(S) Listed Buildings, 14 Conservation Areas and predicted to have views of one or more turbines. A full

assessment of the impact of the setting on these sites will be carried out once the wind farm layout has been fixed.

The assessment of magnitude of impacts will be based on the analysis of the blade tip ZTV, taking into account the distance of the assessed site from the proposed wind farm, the number of blade tips visible and the present baseline setting of each site. The ZTV model is, however, a coarse predictive tool based on bare-earth surface topography and maximum blade-tip heights. It takes no account of obstructions to intervisibility caused by existing forestry and other vegetation or buildings and other man-made features. Therefore, professional judgement has been used to arrive at the conclusions drawn.

Sites predicted to receive potentially significant effects or identified by Historic Scotland and/or the Falkirk Council Archaeologist as required to be considered by the EIA will be further assessed using wireframe visualisations and photomontages.

Historical Maps

Ainslie, J. 1820 Map of the Southern Part of Scotland.

Thomson, J. 1820 Stirlingshire.

Grassom, J. 1817 Stirling.

Ordnance Survey 1st Edition (1865) *Stirlingshire* Sheet XXX six inches to one mile.

Sortie	Year	Frame	Scale	Library Ref
106G/UK/0092	1946	4108-4112	1:10,400	B_0097
106G/UK/0010	1946	5062-5068 7105-7107	1:10,400	B_0099
CPE/UK/0265	1946	5207-5210	1:10,000	B_0169
541/A/0467	1949	4019-4021 4093-4095	1:10,000	B_265
540/0801	1952	4009-4015	1:9,960	B_0343
82/1236	1955	0144-0146 0115-0119	1:10,000	B_0419
58/3544	1960	0350-0355	1:10,666	B_0483
543/0840	1960	0300-0305	1:10,666	B_0489
58/1656	1955	0119-0123	1:10,666	B_0593
OS67-162	1967	095-097	1:8,000	OS_67-162

Bibliography

Begg, W., Gordon, T. & Taylor J.W. 1841 'Parish of Falkirk' in the *New Statistical Account*, Vol.8, 1-37.

IfA 2008 *Standard and Guidance for Archaeological Desk-based Assessment*. Institute for Archaeologists.

IfA 2010 *By-Laws: Code of Conduct*. Institute for Archaeologists.

Lindsay R.A. Immirzi C.P. (1996) An inventory of lowland raised bogs in Great Britain. *Scottish Natural Heritage Research, Survey and Monitoring Report.*, 78, .

Wilson, J. 'Parish of Falkirk' in the *Statistical Account of Scotland*, Vol.19, 71-113.

APPENDIX 1 – Cultural heritage sites and features within the proposed wind farm area

Ref no	Site name / type	NMRS No	Easting	Northing	Source	Site description	Sensitivity
1	Wester Loanfoot		28464	67723	Maps	Wester Loanfoot farmstead is depicted but not named on Grassom's map of 1817. The farmstead of Wester Loanfoot, comprising two large roofed buildings and an enclosure, is depicted on the Ordnance Survey 1 st Edition map (1864). Field survey recorded the remains of a large rectangular building and associated enclosure. The building measures approximately 18m by 8m with the northern gable wall standing to approximately 5m high. The east and west walls are quite ruinous, reduced to foundation level for much of their length. The enclosure lies to the east of the building and survives as a drystone wall up to 1m high and 0.75m wide. The remains of a possible second building were recorded to the east of the first building and to the north of the enclosure. A length of revetment wall approximately 2m long was recorded. The site lies within commercial forestry and has been damaged by forestry activities.	Low
2	Loanfoot		28497	67730	Maps	Loanfoot farmstead is depicted and named on Grassom's map of 1817 and Thomson's map of 1820. The farmstead of Loanfoot, comprising a large arrangement of roofed buildings around a courtyard with four enclosures, is depicted on the Ordnance Survey 1 st Edition map (1864). Field survey recorded the remains of the large enclosure which surrounded the farmstead and the small rectangular building to the south of the complex. The enclosure survives as a drystone revetment wall up to 2m high. The building, located at NS 8497 7728, measures approximately 17m by 6m with drystone walls up to 1m high and comprises of at least three compartments. A track, noted on the Ordnance Survey 1 st Edition map, was recorded leading from the forestry track into the farmstead area. It measures approximately 2m wide and has a metalled surface, although this appears quite modern and may have been upgraded for use by forestry operations, perhaps for access to storage areas.	Low
3	Auchengean		285746	677033	Maps	The farmstead of Auchindean is depicted and annotated on Grassom's map of 1817. A farmstead which is annotated as Auchingane and comprises a roofed complex of buildings around a courtyard with an enclosure to the south, is depicted on the Ordnance Survey 1 st Edition map (1864). Auchengean is visible on aerial photographs dating from 1946 to 1967. Field survey noted that this farmstead is still in use as such and comprises the original stone buildings together with modern corrugated iron sheds and outbuildings. The southern enclosure walls are drystone construction.	Low
4	Bridge		285949	677135	Field survey	Field survey recorded a bridge carrying the farm track to Auchengean over a small burn. It is a single span arched bridge, originally stone built but repaired with brick. It	Low

						measures approximately 2m in length by 6m wide and 4m high.	
5	Enclosure		285776	676847	Maps	A long rectangular enclosure is depicted on the Ordnance Survey 1 st Edition map (1864). Field survey found no visible trace of this enclosure close to a large drainage ditch. It may have been a temporary structure.	Unknown / Negligible
6	Enclosure		285724	676812	Maps	A small rectangular enclosure is depicted on the Ordnance Survey 1 st Edition map (1864). Field survey found no visible trace of this enclosure close to a large drainage ditch. It may have been a temporary structure.	Unknown / Negligible
7	Newcraig open cast mine and rig and furrow cultivation	NS87NW 36	2848	6765	NMRS, aerial photographs	The NMRS has identified from aerial photographs, an area of open-cast mining 750m NNE of Newcraig Cottage. It overlies an area of rig and furrow cultivation. The open cast mine is not visible on aerial photographs dating from 1967 and it is therefore assumed to be of a later date. Field survey noted that this area has been landscape and planted with coniferous trees.	Negligible
8	Auchingain		28465	67608	Maps	A building is depicted but not annotated on Grassom's map of 1817. A farmstead annotated Auchingain is depicted on Thomson's map of 1832. Field survey found no visible trace of this farmstead in an area of marsh.	Unknown / Low
9	Building		28514	67631	Aerial photographs	The remains of a rectangular, three compartment building are visible on aerial photographs from 1946. The location of this building is now within a mature stance of coniferous trees and was not accessible during the field survey.	Unknown / Low
10	Cornfield		285143	675740	Maps	Cornfield is depicted and annotated on Grassom's map of 1817. Cornfield, comprising a long roofed rectangular building with an enclosure and a small roofed building to the east, is depicted on the Ordnance Survey 1 st Edition map (1864). They may be miners cottages associated with the coal mine at Newcraig to the south. Field survey identified no visible remains of this farmstead within an area of marshland beside the main road.	Unknown / Low
11	Rottenstocks	NS87NE 68	285655	676434	NMRS; maps	A farmstead annotated 'Drumtruster' is depicted on Thomson's map 1832 and Grassom's map of 1817. A farmstead which is annotated as Rottenstokes (in ruins) and comprises one unroofed long building of two compartments with an attached length of wall is depicted on the Ordnance Survey 1 st Edition map (1864). The farmstead and wall are visible on aerial photographs dating from 1946, 47 and 55. Field survey recorded the remains of the farmstead and a length of trackway, not wall, extending to the east. The farmstead measures approximately 40m by 10m and	Low

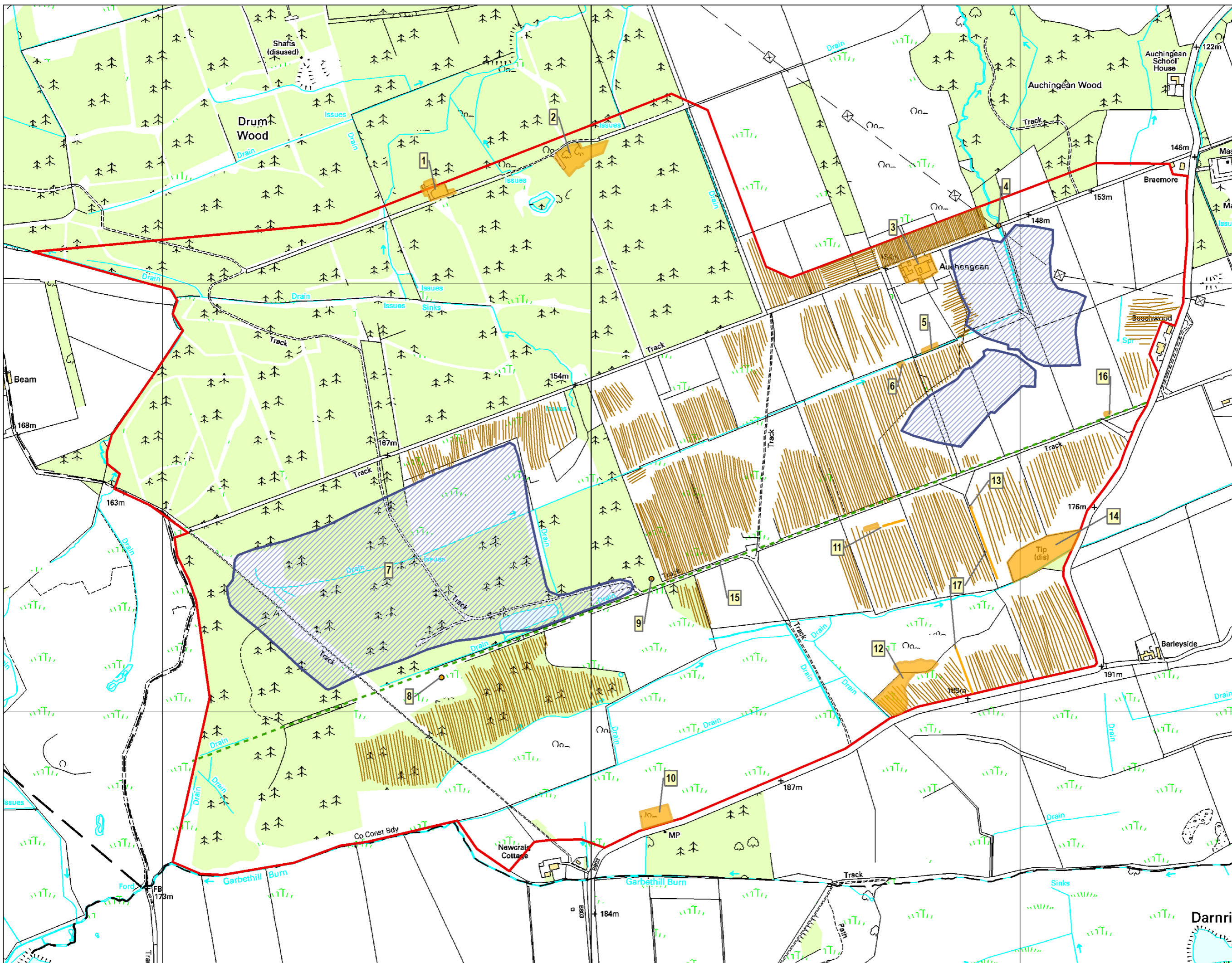
						comprises three compartments measuring approximately 16m, 5m and 12m in length. The walls of the building are overgrown with grass and measure approximately 2m wide and up to 0.5m high. The track running to the east measures approximately 5m wide with a running surface approximately 2m wide. It is overgrown with grass and sedges and has been out of use for some time.	
12	Mine		28573	67610	Aerial photographs	A mine, including ancillary buildings to the south, is visible on aerial photographs from 1946 to 1960. Field survey recorded the remains of a spoil tip approximately 50m by 40m and up to 2m high. It is overgrown with shrubs and grass. The area to the south of the fence line appears to have been flattened and improved and it is therefore more difficult to identify the extent of the spoil tip.	Negligible
13	Clearance		285883	676478	Field Survey	Field survey identified a clearance cairn lying close to a field boundary. It measures approximately 5m by 4m and 1m high. It is grassed over but a few stones were visible on the surface.	Negligible
14	Barleyside West	NS87NE 71	28628	67646	NMRS; aerial photographs	Barleyside West Colliery closed in 1949. It is unknown when it commenced operations but it was a deep coal mine, mining coal for domestic use (Oglethorpe, 2006). The spoil tip associated with this colliery is visible on aerial photographs from 1946-1960. Field survey identified the extent of the spoil tip is defined by a post and wire fence and the spoil tip itself survives to a height of approximately 5m and measures approximately 175m by 55m.	Negligible
15	Track				Maps, field survey	Several tracks are depicted on the Ordnance Survey 1 st Edition map (1864) providing access into the area from the main roads. Field survey noted that the majority of these tracks are still in use and have been upgraded for use as forestry or former opencast access tracks. One track was identified that is no longer in use and appears to have been the access track to Rottenstocks (10). It measures approximately 4m wide and is lined with trees on both sides. It is grassed over and no wheel ruts are visible along the running surface.	Negligible
16	Clearance		286191	676692	Field survey	Field survey recorded a large pile of cleared stone lying beside an old track. It measures approximately 20m by 10m and 2m high. It comprises large boulders averaging 0.5m in length and appears to be quite modern.	Negligible
17	Field banks				Maps, field survey	The majority of field boundaries within the development area are post and wire fences although these appear to replace earlier field banks which were noted during the field survey at two locations. The banks measure approximately 2m wide and 0.5m high and are grassed over. The field banks and modern field boundaries appear to respect the areas of rig and furrow (18) suggesting that they are	Negligible / low

					contemporary.		
18	Rig and furrow cultivation	NS87NW 36			Aerial photographs	Extensive areas of rig and furrow cultivation are visible on aerial photographs dating from 1946 to present. It covers the majority of the development area. It survives in varying degrees of preservation, and averages a wavelength of 6m with rigs up to 0.4m high. The areas of rig and furrow appear to correspond to the existing field pattern suggesting that they are contemporary and or relatively modern date.	Low



Key:

- Site Boundary
- Cultural Heritage Site (point)
- Cultural Heritage Site (linear)
- Track
- Cultural Heritage Site (area)
- Opencast Mine Workings
- Rig and Furrow (Site 18)



CFA ARCHAEOLOGY LTD
 The Old Engine House
 Eskmills Park
 Musselburgh
 East Lothian, EH21 7PO
 t: 0131 273 4380
 f: 0131 273 4381
 e: info@cfa-archaeology.co.uk
 w: www.cfa-archaeology.co.uk

Fig. No: **1** Revision: **A**

Title:
Cultural Heritage: Constraints

Project:
Callendar Estate Wind Farm

Scale:
1:8,000 @ A3

Client:
Atmos Consulting

Drawn by: **SW** Report No:

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