

HOUSTON SOLAR PHOTOVOLTAIC (PV) AND ENERGY STORAGE FACILITY

Land Capability for Agriculture

NP 12782
Houston Solar
July 2023

AGRICULTURAL LAND CLASSIFICATION

Quality Management

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1. INTRODUCTION

- 1.1 This report presents an assessment of the agricultural characteristics of the proposed solar farm and energy storage facility site comprising three parcels of land situated within the Renfrewshire Council Area. At its nearest point, the northernmost parcel of land (Houston North) is located approximately 0.5km northeast of Houston village. It is situated to the north of the B790 Houston Road and is bisected by Turningshaw Road. The other two land parcels (Houston South) are located to the south of the B790 Houston Road, situated to the east and west of Moss Road. At their nearest point the lands are located approximately 1km east of Houston village. The report considers the nature of the soils and agricultural Land Capability for Agriculture (LCA) classification of the Site based on the Macaulay Institute LCA (1991).
- 1.2 Section 2 of the report considers the National and Local Planning Policy context relevant to consideration of the potential effects of the proposed development on agricultural land quality.
- 1.3 The methodology for data collection is presented in Section 3 of the report. Section 4 describes the published geological and soils characteristics relevant to the land capability of the Site. The LCA of the Site is presented in Section 5. An analysis of the findings from the study is provided in Section 6.

2. POLICY BACKGROUND

Planning Policy Context

National Policy – Scottish Planning Policy (2014)

2.1 Paragraph 80 provides policy in relation to the protection of agricultural land.

“80. Where it is necessary to use good quality land for development, the layout and design should minimise the amount of such land that is required. Development on prime agricultural land, or land of lesser quality that is locally important should not be permitted except where it is essential:

- as a component of the settlement strategy or necessary to meet an established need, for example for essential infrastructure, where no other suitable site is available; or*
- for small-scale development directly linked to a rural business; or*
- for the generation of energy from a renewable source or the extraction of minerals where this accords with other policy objectives and there is secure provision for restoration to return the land to its former status.”*

2.2 Prime land is defined as Classes 1, 2 and 3.1 of the LCA system.

Renfrewshire Local Development Plan Supplementary Guidance 2022

2.3 In relation to Policy 14 Renewable and Low Carbon Energy Developments the Supplementary Guidance states:

Solar PV Farms:

- Where a development is proposed on prime quality agricultural land, on land with an environmental designation, or of historical significance, applicants must provide sufficient information on the potential impact on this existing land use and the mitigation that will be provided.*

3. METHODOLOGY

3.1 The methods used to collect data for the appraisal of soils and LCA on the Site are described below.

Land Capability for Agricultural Classification

3.2 The assessment of the effects on agricultural land quality and soil resources is based on a desk top assessment of relevant published information:

- Geological Information from British Geological Survey Internet Portal at: www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html
- British Geological Survey Sheet 30 (Glasgow) Drift, 1:63,360, 1968 and available online at <https://www.bgs.ac.uk/information-hub/bgs-maps-portal/>
- British Geological Survey Sheets 30E (Glasgow) and 30W (Greenock) Drift Editions, 1:50,000, published in 1994 and 1989 respectively and available online at <https://www.bgs.ac.uk/information-hub/bgs-maps-portal/>
- Soil map available online at http://map.environment.gov.scot/Soil_maps/?layer=5# (Consulted November 2022)
- Macaulay Land Use Research Institute, Land Use Division Report No. 5, The Soils around Glasgow and the Firth of Clyde, 14pp, 1988.
- The James Hutton Institution - Soil Map Unit Description Sheets available online at <https://www.hutton.ac.uk/learning/natural-resource-datasets/soilshutton/soils-maps-scotland> (Consulted November)
- LCA partial cover mapping available at: http://map.environment.gov.scot/Soil_maps/?layer=5
- Bibby J S et al, 1991. Land Capability Classification for Agriculture. The Macaulay Land Use Research Institute, Aberdeen

4. PUBLISHED GEOLOGICAL AND SOIL INFORMATION

Geology

- 4.1 The British Geological Survey has published several geological maps which include the sites but the more recent ones seem un-necessarily complicated for the purposes of explaining the distribution of the soils and hence LCA classes. It is considered that the clearest picture is provided by Sheet 30 (Glasgow) published at a scale of 1:63,360 in 1968. It is also available online at
- 4.2 <https://www.bgs.ac.uk/information-hub/bgs-maps-portal/>
- 4.3 The relevant portion is shown below:

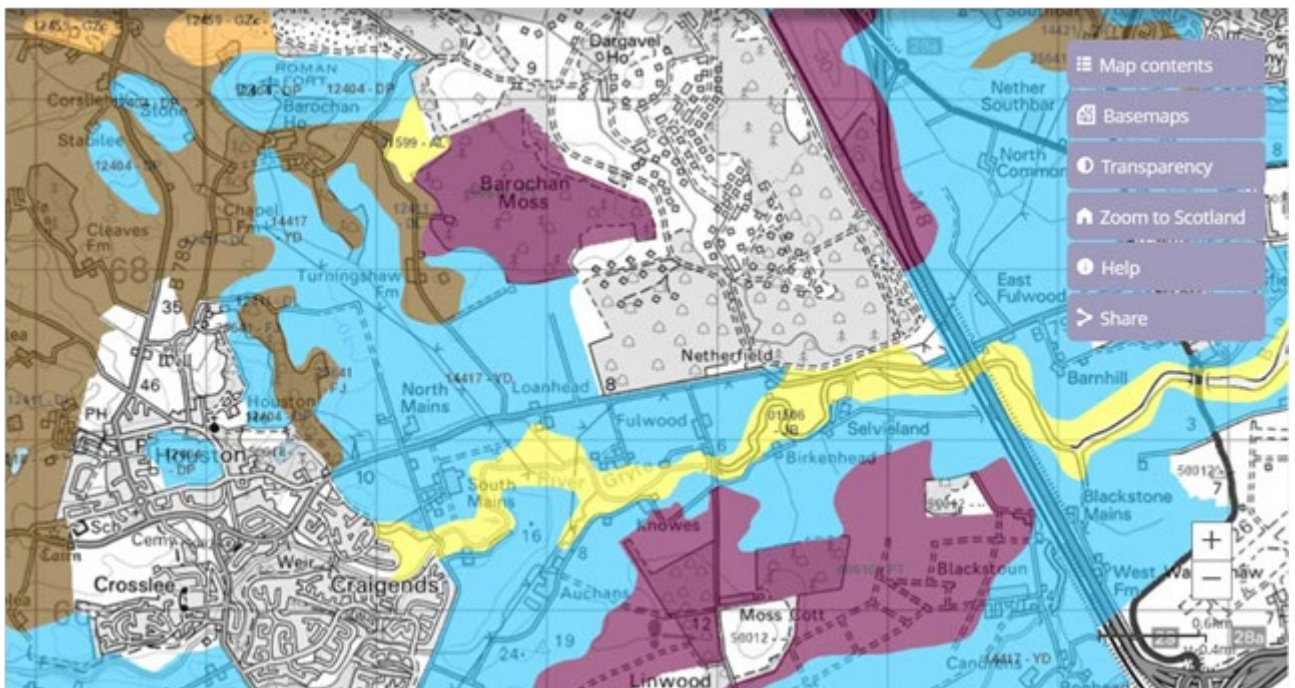


- 4.4 The local bedrocks are Carboniferous calcareous sandstones and limestones, map symbols d1, d2a and d2b but the only places on the sites where there is an outcrop at or near the surface is adjacent to Houston Wood on the western edge of the northern site where it is shown in a dark grey tone. Elsewhere there is an extensive covering of what are referred to as Late Glacial Raised Beach Deposits, shown in a pale orange tone. These are an indeterminate mix of sands, silts and clays. The pale yellow along the course of the River Gryfe which runs more or less east-west between the two sites is alluvium of indeterminate texture. Finally the pale brown, for example on Barochan Moss in the north of this map and Linwood Moss in the south, indicates thick accumulations of peat.
- 4.5 Thus, geologically, the Northern Site is mainly Late Glacial Raised Beach Deposits with some peat adjacent to Fulwood Wood and, as noted above, some calcareous sandstone on the western edge, adjacent to Houston Wood. The Southern Site is Late Glacial Raised Beach Deposits in the north and peat in the south

4.6 For the record the images below are the relevant portions of the more recent 1:50,000 scale geological maps, Sheets 30W (Greenock) and 30 E (Glasgow) unfortunately the Northern Site lies on the join of the two maps. Also, confusingly, the colours adopted for Late Glacial Raised Beach Deposits differ on the two maps, being shown in orange tones on Sheet 30W but brick red on 30E. Bedrock is now shown in a lilac colour but the colours used for the peat and alluvium are similar to those used on the 1:63,000 sheet described above. There are some minor changes to the geological boundaries on the western edge of the Northern Site which are of little consequence.

Soils

4.7 A map of the soils on the site, produced by the Hutton Institute, is available online at http://map.environment.gov.scot/Soil_maps/?layer=5#. The relevant portion is shown below:



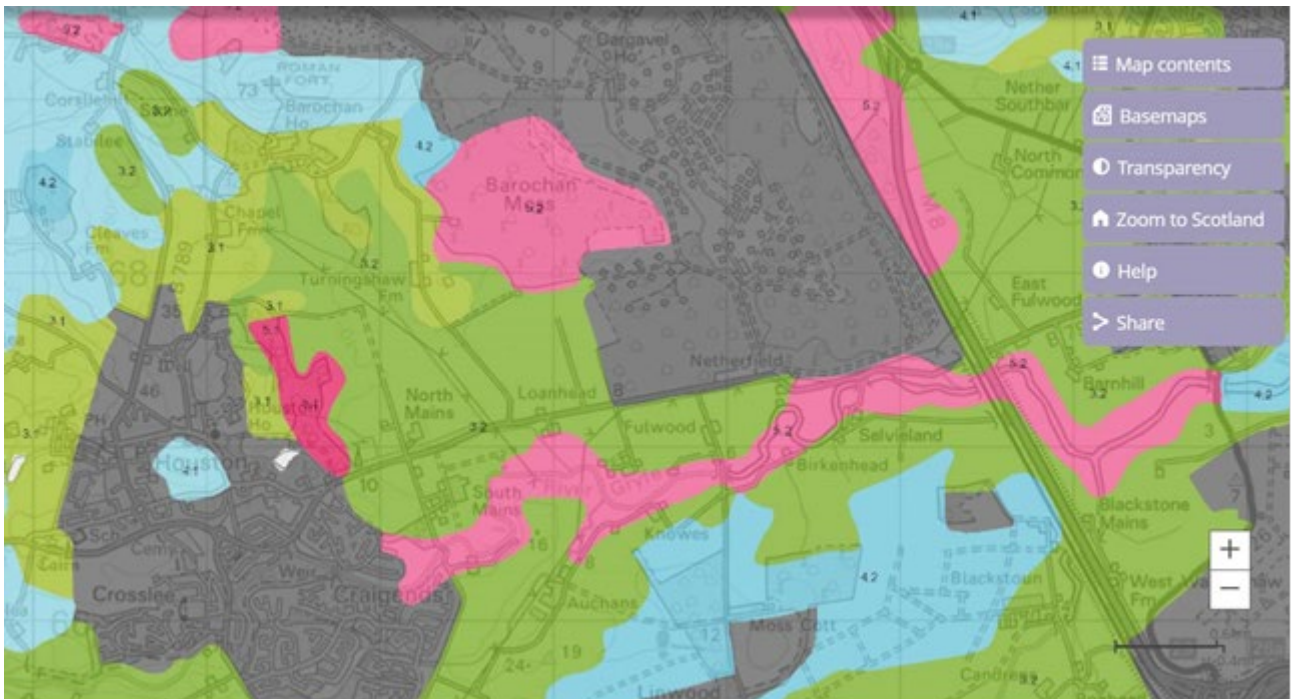
4.8 Somewhat confusingly, the same basic colour is used for different soil series. However, as far as the Northern Site is concerned the dominant soil, shown in blue, is the Yonderton series, poorly drained soils developed in raised beach deposits of fine sands and silts.

4.9 The area shown in brown on the western edge is the freely drained Forestmill series developed in weathered residual material from Carboniferous sandstones. The very small area in a very subtly different shade of brown around Turningshaw Farm is the Darleith series, a freely drained soil developed in drifts derived from basalts and intrusive basic igneous rocks of which there are no indications on the geological map. The Ecological Impact Assessment (EclA) that accompanies the planning submission, demonstrates that the peat shown on Barochan Moss in a purple colour, does not extend onto the Northern Site.

- 4.10 The picture on the Southern Site is simple. The Yonderton series, poorly drained soils developed in raised beach deposits of fine sands and silts are shown in a blue occur intermittently along the northern edge, and there is peat shown on the mapping in a purple colour to the south of this, making up most of the site. However, the Phase 1 Habitat survey advises that those fields within the southern site parcels are identified in ecological terms as marsh/marshy grassland and semi-improved neutral grassland. The EclA confirms that these areas have no conservation designations and are of low ecological value.
- 4.11 Only the Darleith series has a description in the Soil Map Unit Description Sheets to be found online at:-
<https://www.hutton.ac.uk/learning/natural-resource-datasets/soilshutton/soils-maps-scotland>
- 4.12 The key features of this soil are its free drainage, its sandy silt loam textures, its stoniness and, in places, shallowness over rock
- 4.13 The Yonderton series is mentioned in a very brief report on the Soils around Glasgow and the Firth of Clyde, but only insofar as saying it is the poorly drained member of the sequence of soils in the Dreghorn Association developed in raised beach deposits of fine sands and silts. Similarly the Forestmill series is given only a passing mention as a freely drained soil developed in residual weathering sandstone and shallow drift. No detailed profile description is given for either.

5. LAND CAPABILITY FOR AGRICULTURE (LCA) CLASSIFICATION OF THE SITE

- 5.1 Maps of the Land Capability for Agriculture are based on interpretations of soil maps made by officers of the Soil Survey of Scotland. They were originally published as a series of 1:50,000 maps but the information is now also available online at http://map.environment.gov.scot/Soil_maps/?layer=5#
- 5.2 The relevant portion of the LCA map for the site is reproduced below.



- 5.3 On the Northern Site the poorly drained Yonderston series developed in raised beach deposits of fine sands and silts is placed in Class 3.2, shown in a dark green shade, almost certainly because of the poor drainage. The very small area of freely drained Darleith series near Turningshaw Farm is, however, classed as Class 3.1 and shown in a slightly paler green. The main problem of this soil is probably a tendency to droughtiness. The narrow band of Forestmill series on the western edge alongside Houston Wood has been classed as 5.1 shown in a reddish tint, probably because of shallowness and excessive stoniness and if any of the area of peat in Fulwood Wood actually extends onto the site, it would give Class 5.2, shown in pink.
- 5.4 On the Southern Site the poorly drained Yonderston series developed in raised beach deposits of fine sands and silts is again placed in Class 3.2, shown in a dark green shade, but most of this site is Class 4.2 shown in blue.
- 5.5 The definitions of the LCA classes identified are as follows:

- 3.1 - Land capable of producing consistently high yields of a narrow range of crops and/ or moderate yields of a wider range. Short grass leys are common.
- 3.2 - Land capable of average production though high yields of barley, oats and grass can be obtained. Grass leys are common.
- 4.2 - Land capable of producing a narrow range of crops, primarily on grassland with short arable breaks of forage crops.
- 5.1 - Land capable of use as improved grassland. Few problems with pasture establishment and maintenance and potential high yields.
- 5.2 - Land capable of use as improved grassland. Few problems with pasture establishment but may be difficult to maintain.
- 5.3 - Land capable of use as improved grassland. Pasture deteriorates quickly.

5.6 The distribution of LCA classes, both within the application boundary, but also within the areas of the proposed installation is shown on Figure 1.

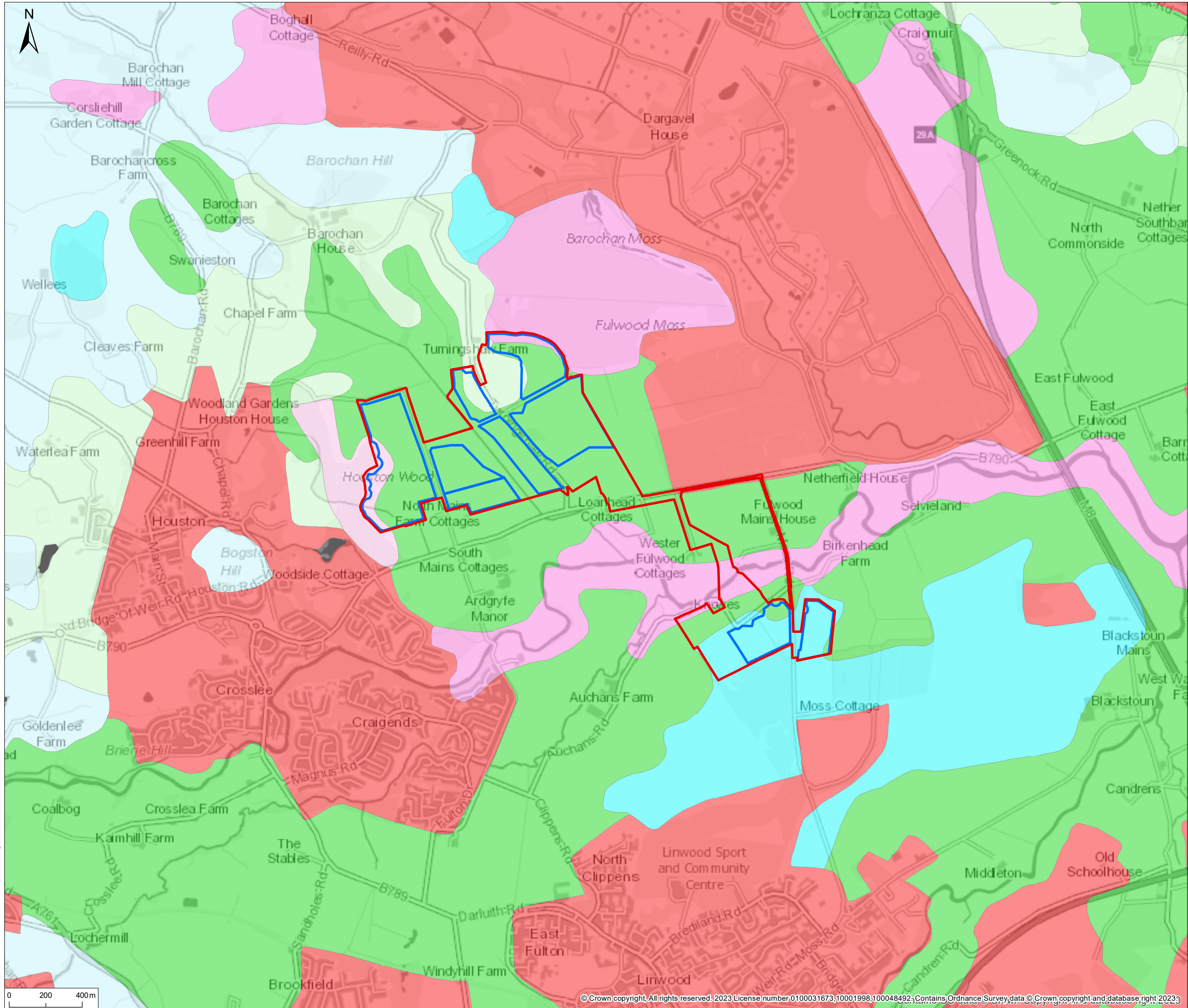
5.7 The analysis of the LCA classes of land identified within both the Application Site and also within the area of the proposed installation are therefore as follows:

LCA Class	Area(ha)		Areas within Layout Area		
	Application Boundary	%	Area (ha)	%	%
Class 3.1	8.7	7	2.4	3	8
Class 3.2	92.4	72	55.7	77	72
Class 4.2	16.9	13	9.7	13	14
Class 5.1	4.5	3	3.3	5	4
Class 5.2	5.8	4	1.6	2	2
Urban	0.7	1	0	0	0
Total	129.0	100	72.7	100	100

6. ANALYSIS AND CONCLUSIONS

- 6.1 The desk top analysis indicates that virtually the entire site is assessed within the LCA classification of Class 3.2 or lower, which does not comprise Prime land.
- 6.2 The design of the scheme has been developed to limit, wherever possible, the inclusion of Prime land and Figure 1 shows that only a very small area of approximately 2.4ha (8%) of Class 3.1 land would be affected by the installation, on the north-eastern part of the Site.
- 6.3 For this small area to the north, which is defined as Prime land, the mitigation for the use of this small area of this land for this development would be:
- The land can continue to fulfil an agricultural purpose during the operation of the solar farm and soils would remain in situ on the Site, as far as possible. There would therefore be no permanent loss of the soil resource as a result of the development or total loss of agricultural productivity; and
 - The land would be restored to the pre-working agricultural use following the completion of the operation of the solar farm.
- 6.4 The use of this area of land as a solar farm would not therefore affect the local area's supply of land classified as Prime.
- 6.5 The development of this Site is in accordance with both National and Local Policy. It would not compromise the local area's supply of land classified as Prime as it predominantly comprises lower quality land and the potential impact on the land within the Site would be mitigated through continued grazing use during operation of the solar farm and appropriate restoration of the Site through decommissioning.

FIGURES



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Legend

- Site Boundary
- Installation Area

Land capability for agriculture

- 3.1 Land capable of producing consistently high yields of a narrow range of crops and/or moderate yields of a wider range. Short grass leys are common
- 3.2 Land capable of average production though high yields of barley, oats and grass can be obtained. Grass leys are common
- 4.1 Land capable of producing a narrow range of crops, primarily grassland with short arable breaks of forage crops and cereal
- 4.2 Land capable of producing a narrow range of crops, primarily on grassland with short arable breaks of forage crops
- 5.1 Land capable of use as improved grassland. Few problems with pasture establishment and maintenance and potential high yields
- 5.2 Land capable of use as improved grassland. Few problems with pasture establishment but may be difficult to maintain
- Built-up area
- Inland water

Rev	Description	By	CB	Date

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