



## **Land Capability Classification for Agriculture (LCA)**

**Bishops Dal BESS, Coldstream**

**January 2025**

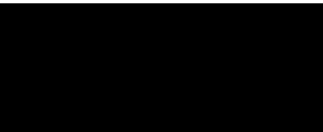


**Bishops Dal Energy Storage Limited**

**Reference: 240711.LC.03**

# Land Capability Classification for Agriculture (LCA)

## Bishops Dal BESS, Coldstream

Client: Bishops Dal Energy Storage  
Limited

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## Contents

1.	<b>SCOPE &amp; OBJECTIVES</b> .....	1
2.	<b>SITE DETAILS</b> .....	2
3.	<b>METHODOLOGY</b> .....	3
4.	<b>CLIMATE DATA</b> .....	5
5.	<b>BRITISH GEOLOGICAL SURVEY AND SOILS PUBLISHED DATA</b> .....	6
6.	<b>FLOOD RISK LIMITATIONS</b> .....	11
7.	<b>AVAILABLE LCA DATA</b> .....	14
8.	<b>INTRUSIVE SURVEY FINDINGS</b> .....	15
9.	<b>LCA CLASS AND CONCLUSIONS</b> .....	16

## Figures

Figure 1: Site Boundaries (highlighted in red) .....	2
Figure 2: Flood Risk Present from Rivers for the Site and Surrounding Area.....	11
Figure 3: Future Potential Flood Risk from Rivers for the Site and Surrounding Area .....	12
Figure 4: Flood Risk Present from Surface Water for the Site and Surrounding Area .....	13

## Tables

Table 1: Summary of Agroclimatic Data for the Nearest available Climate Station.....	5
Table 2: Summary of Flood Risk for the Site in Accordance with SEPA Mapping .....	11
Table 3: Summary of Soils Identified on Site .....	15
Table 4: Summary of Wetness Class and Class Limit Parameters .....	15

## Appendices

I	-	<b>Site Plans</b>
II	-	<b>Site Survey Logs</b>
III	-	<b>Site Survey Photographs</b>
IV	-	<b>LCA Class Definitions and Terms</b>

# 1. Scope & Objectives

<b>The Services</b>	Land Capability Classification for Agriculture (LCA)
<b>The Client</b>	Bishops Dal Energy Storage Limited
<b>Appointment Details</b>	The Services have been carried out in accordance with the Proposal dated 10 <sup>th</sup> April 2024 and REL's Terms and Conditions of Engagement, (together " <b>the Agreement</b> ") as accepted by the Client on 2 <sup>nd</sup> July 2024.
<b>Site Name</b>	Bishops Dal BESS
<b>Site Address</b>	Coldstream, TD12 4JA (" <b>the Property</b> ")
<b>Proposed Use</b>	It is understood that the site will be used as a Battery Energy Storage Site (BESS).
<b>Planning Application</b>	The relevant applications currently available for viewing (Scottish Borders Council planning portal) are listed in Section 2 of this report.
<b>Information Sources</b>	<p><b>Online Source</b></p> <p>British Geological Survey (BGS) Database and Mapping. BGS Geoindex Web Mapping Service. BGS 1: 50,000 scale Provisional Series, Geological Map, England and Wales, Sheet Number 26 (Duns) available on the BGS map portal. Soil Survey of Scotland Staff (1981). Soil maps of Scotland at a scale of 1:250 000. Macaulay Institute for Soil Research, Aberdeen. Soil Survey of Scotland Staff (1970-1987). Soil maps of Scotland (partial coverage). Digital version 10 release. James Hutton Institute, Aberdeen. Lilly, A., Baggaley, N. &amp; Donnelly, D. (2012). Map of WRB soils of Scotland. Map prepared for EU project GS-SOIL - Assessment and strategic development of INSPIRE compliant Geodata-Services for European Soil Data. ECP-2008-GEO-318004 Google Historic Satellite Imagery. National Library of Scotland Historical Ordnance Survey England and Wales, 1855-1956 Maps. Soil Survey of Scotland (1981). Land Capability for Agriculture maps of Scotland at a scale of 1:250 000. Macaulay Institute for Soil Research, Aberdeen. Soil Survey of Scotland Staff (1984-87). Land Capability for Agriculture maps of Scotland at a scale of 1:50 000. Macaulay Institute for Soil Research, Aberdeen. Macaulay Land Use Research Institute, 1991, Land Capability Classification for Agriculture. Scottish Environment Protection Agency (SEPA) Scottish Flood Hazard and Risk Information web mapping.</p> <p><b>Previous Reports</b></p> <p>No previous reports are available for the site.</p>



## 2. Site Details

<b>National Grid Ref.</b>	Approximate centre of the site: 379245 , 641480.
<b>Size</b>	13.20 hectares (ha).
<b>Location</b>	The site is located south of the A697, 2.7km north of the English Border, 5km northwest of Coldstream town centre.
<b>Topography</b>	The site sits within the northern catchment the River Tweed and east of the Soloway Tweed Basin. The highest point of the site is in the northeast corner of the site of the site which sits at 55m. The land slopes downward to the west, southwest and northwest, to a low of 50m on all other boundaries of the site which equates to a 0.65% elevation change over the 769m site width along the southeast boundary.

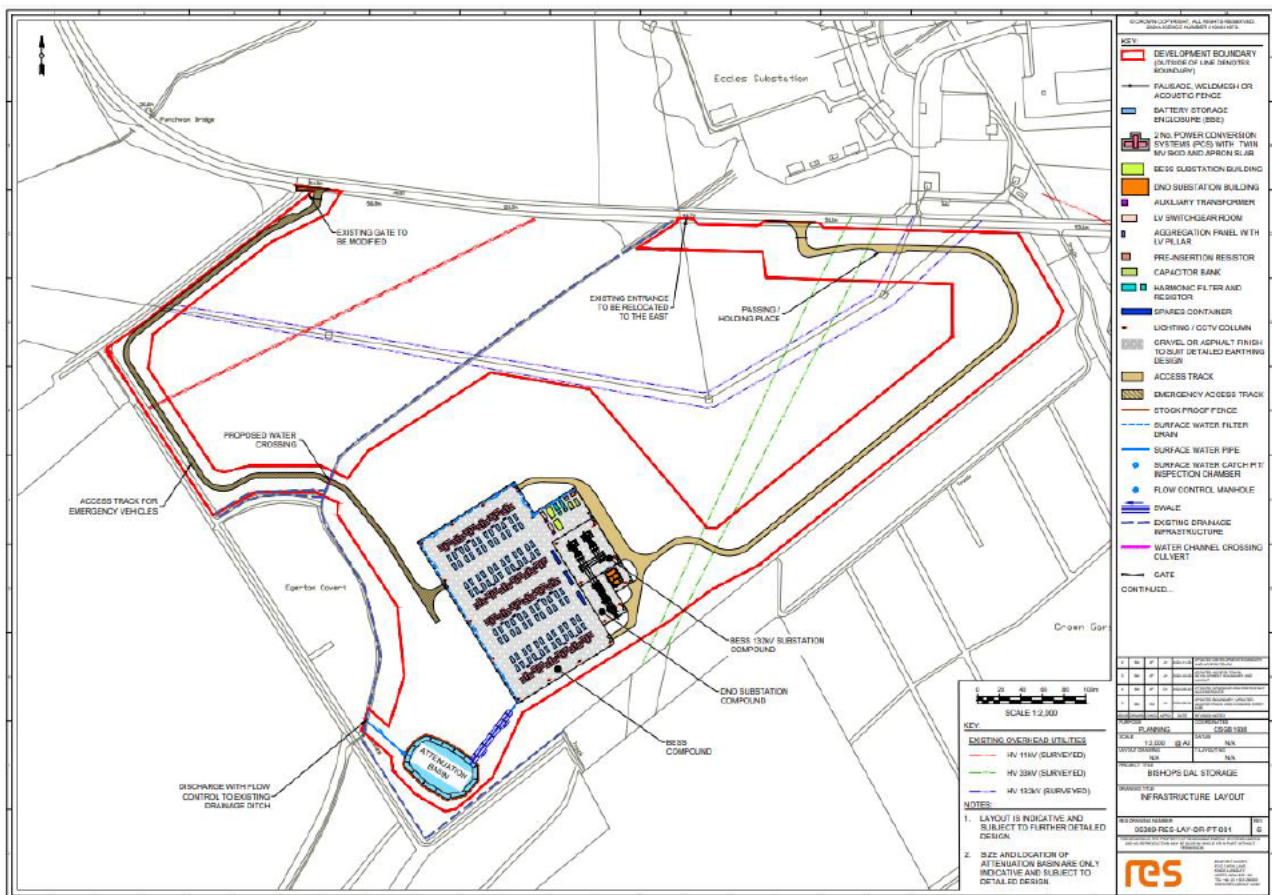


Figure 1: Site Boundaries (highlighted in red)

### Planning History

The following planning applications have been submitted for the site:

- 23/00677/SCO – Proposed development is for 30.5km of overhead line, replacing 2 existing lines between Eccles and Galashiels substations.
- 16/01002/S37 - Rebuild 33Kv over head line.

No information relevant to this assessment was identified within the above planning submissions.

## 3. Methodology

### Land Capability Classification for Agriculture

The LCA guidance provides a framework for ranking the land according to the extent to which its physical or chemical characteristics impose limitations on potential agricultural crop productivity and cropping. The limitations can operate in one or more of four principal ways: they may affect the range of crops which can be grown; the level of yield; the consistency of yield and the cost of obtaining it. The classification system gives considerable weight to flexibility of cropping, whether actual or potential, but the ability of some land to produce consistently high yields of a somewhat narrower range of crops is also taken into account.

LCA classification is determined using the Macaulay Land Use Research Institute (MLURI) '*Land Capability Classification for Agriculture*', 1991. The above factors form the basis for classifying agricultural land into one of 13 Classes and Divisions, ranked from 'land capable of producing a very wide range of crops' (Class 1) to 'land of very limited agricultural value' (Class 7) (see **Appendix IV**).

### Prime Agricultural Land

The National Planning Framework 4 (NPF4, Local Government and Housing Directorate, February 2023) is followed in Scotland. The NPF4 sets out national planning policies with reference to agricultural land in Scotland, which decision makers need to consider when making planning decisions about applications involving agricultural land.

The NPPF Annex F – Glossary of Definitions defines “Prime” Agricultural Land as land ‘identified as being Class 1, 2 or 3.1 in the land capability classification for agriculture developed by Macaulay Land Use Research Institute (now the James Hutton Institute)’. Prime agricultural land is provided a degree of protection against development within planning policy, NPF4 protects prime agricultural land but makes exceptions, such as for essential infrastructure. Most Local Development Plans include specific policies which refer to the protection of prime agricultural land.

Limited to no protection is provided against development on lower class land within planning policy.

### Assessment Methodology

An initial desk-based study was undertaken by REL to provide a reconnaissance of the general site characteristics, including climate, soil type(s) and Land Capability Classification for Agriculture (LCA), using published data sources.

Climatological data provided by the MLURI has been used to determine the high level agroclimatic site limitations (if any), using data available for the site and surrounding area.

Publicly available Flood Risk mapping data, produced by the Scottish Environment Protection Agency (SEPA), has been reviewed as part of the assessment. No site-specific Flood Risk Assessment has been provided to inform this assessment.

A review of publicly available historic maps and Google Earth imagery has been undertaken to assess if significant made ground deposits may be anticipated on site.

The desk based assessment is referenced as follows:

- Land Capability Classification for Agriculture (LCA) Desk-Based Assessment, Bishops Dal BESS, Coldstream, reference: 240711.PA.01, dated: July 2024.

Following completion of the above assessment, REL were instructed to undertake an on-site investigation to determine the LCA classification for the site.

### **Intrusive Soil Survey**

The intrusive soil survey comprised at least one hand auger boring per hectare to a depth of 1.20m below ground level (where achievable) in accordance with current guidance. These were undertaken to examine the soil profiles, using standard soil survey methods.

In addition, in order to determine subsoil structure, at least one inspection pit has been excavated for each soil type encountered.

The application boundary has altered since the site survey works were undertaken; therefore the survey area boundary differs to the site boundary and the application boundary. Results for the likely soil type and LCA Class of the proposed access road adjacent northwest have been determined by extrapolating the findings of the intrusive investigation.

### **LCA Class Assessment**

All potential LCA class factors requirements have been considered as part of the assessment to determine the overriding LCA class for the site.

Using the information collected during the site survey and the LCA guidance document, an LCA class was then determined for the site, or for each soil type based on the most limiting LCA class (**Appendix I**). A brief overview of relevant terminology is included in **Appendix IV**.

## 4. Climate Data

Using the climatological data set (LCA, 1991) the following information has been identified for the site. The information provided in *Table 3* and *Figure 3* of the LCA guidance document has been used to identify the nearest climate data station to the site.

The closest available data station to the site is Bowhill for which the following information is provided in **Table 1** below.

**Table 1:** Summary of Agroclimatic Data for the Nearest available Climate Station

Climate Station Name (station number)	Bowhill (41)	
Station Altitude (m aOD)	168	
Accumulated Temperature (°C)	ATO	1137
Potential Soil Moisture Deficit (mm)	PSMD	118

The site is indicated to have a Class limit of Class 2 based on Climate (LCA, Figure 1). It would be important to note that the site sits on the lower limit of Class 2 (ie boundary of Class 2 / Class 3.1) with regard to potential Climate limitations.

The area's average wind speed is quoted as 5m/sec (LCA, Figure 2), therefore no adjustment for the LCA class in regard to exposure is considered to be necessary.

Therefore, Climate is taken forward for consideration as a potential LCA class limitation on the site.

## 5. British Geological Survey and Soils Published Data

### Geology

Information gathered from the British Geological Survey (BGS) Geology Sheet 26 (Duns) and the BGS Onshore GeoIndex suggests the site is located in an area mapped as being absent of significant Artificial/Made Ground.

The site is denoted as being underlain by superficial geology of majority Devensian age Till, comprising of sandy, gravelly, cobbly clay (TILLD-CSVL), with a small area of superficial deposits of Quaternary period Head comprised of sand, and silt (HEAD-XDVSZ) across the northern and western site boundaries.

The bedrock geology across the entire site is indicated as the Ballagan Formation comprising sandstone, siltstone and dolomitic limestone (BGN-SSDL).

### Published Soils Data

The below sources have been consulted to identify the available soils data for the site, with extracts from the appropriate mapping provided below.

#### National Soil Map of Scotland (1:250,000 scale)

The site is indicated as having the following soil type.

Soil Association	Whitsome
Component Soils	Noncalcareous gleys with brown earths
Parent Material	Drifts derived from Lower Carb sediments and basic lavas, Upper ORS sandstones and Silurian greywackes
Land Form	Undulating lowlands with gentle slopes

#### Soil Map of Scotland – partial cover (1:50,000 scale)

The majority of the site is indicated as having the following soil type.

Soil Association	Whitsome
Soil Map Unit	Whitsome
Major Soil Group	Brown soils
Major Soil Subgroup	Brown earths
Soil Phase Description	
Soil Drainage	Imperfectly drained
Component soils (Soil complexes only)	
Land form (Soil complexes only)	



Parent Material	Calcareous till derived from sediments and basic lavas of Lower Carboniferous age, sandstones of Upper Old Red Sandstone age and greywackes of Silurian age
Generalised Soil Type	Brown Soils

The following soil type may encroach on to the northwest of the site.

Soil Association	Alluvial Soils
Soil Map Unit	Alluvial Soils: undifferentiated texture and drainage
Major Soil Group	Alluvial Soils
Major Soil Subgroup	Undifferentiated alluvial soils
Soil Phase Description	
Soil Drainage	Undifferentiated drainage class
Component soils (Soil complexes only)	Alluvial Soils, undifferentiated texture and drainage
Land form (Soil complexes only)	
Parent Material	Recent riverine and lacustrine alluvial deposits
Generalised Soil Type	Alluvial Soils

World Reference Base Soil Map (1:250,000 scale)

The site is indicated as having the following soil type.

World Reference Base qualifier 1	Eutric
World Reference Base qualifier 2	
World Reference Base soil group	Stagnosol

James Hutton Institute – SoilFinder Interactive Mapping (1:250,000 scale)

The site is indicated as having the following soil type.

Soil Mapping Unit	574
Major Soil Group	4.1
Major Soil SubGroup	4.1.4
Association	Whitsome
Component Soil	Noncalcareous gleys with brown earths
LANDFORM	Undulating lowlands with gentle slopes
PARENT	Drifts derived from Lower Carb sediments and basic lavas, Upper ORS sandstones and Silurian greywackes

The National Soil Map of Scotland, James Hutton Institute and the Partial Cover maps differ in the soil components between noncalcareous and calcareous soils respectively. For the purpose of this report, we will accept the findings of the Partial Cover (1:50,000 scale) map indicating calcareous brown earths of the Whitsome Soil Association as this map is likely to have been derived from site specific

data from the surrounding area, rather than being developed at a regional scale as per the other two reference maps. This would also correlate with the findings of the BGS mapping which would indicate the site soils have been derived from dolomitic limestone.

The above soil mapping references would indicate soils of the 'Brown Earths' Major Soil Group are present on the site.

The *Soils of the Country Round Kelso and Lauder, Sheets 25 and 26* book provides a brief overview of the division of local soils and how the Whitsome Series fits within this structure:

TABLE H. CLASSIFICATION OF SERIES

Division	Major Soil Group	Sub-group	Series
Leached Soils	Normal Brown Earths	Brown Forest Soils of low base status	Bemersyde, Darleith, Eckford, Hobkirk, Lauder, Linhope, Smailholm, Sourhope, Yarrow
		Brown Forest Soils with gleyed B and C horizons	Kedsie, Belses <b>Whitsome</b>
	Podzols	Iron Podzols	Dirrington, Minchmoor, Langtonlees, Hexpath
		Peaty Podzols (with thin iron pan)	Dod, Faw
Gleys	Surface-water gleys	Non-calcareous gleys	Atton, Cessford, Etrick, Lylestone, Minto, Peden
		Calcareous Gleys	Horndean
		Peaty Gleys	Hardlee, Wauchope
Organic Soils	Blanket Peat	Hill Peat	
	Basin Peat	Low Moor Raised Moss	

The book also provides the following brief description of the Whitsome Association:

*'Generalised description of till of the Whitsome Association. Reddish brown (5YR 4/3) clay; massive; plastic; rounded and sub-rounded stones of fresh and weathered greywacke and basalt; also fragments of coal, red and pale coloured sandstones and shales, felsite and andesite'.*

The *Organisation and Methods of the 1:250 000 Soil Survey of Scotland Handbook 8* provides the following detail for the subgroups within the Whitsome Association:

<b>WHITSOME</b> (412 sq. km., 0.53%)	Drifts derived from Lower Carboniferous sediments and basic lavas, Upper Old Red Sandstone sandstones and Silurian greywackes	574	102	Brown forest soils with gleying, brown forest soils	Undulating lowlands with gentle slopes	Arable and permanent pastures
		575	310	Brown forest soils with gleying; some noncalcareous gleys	Undulating lowlands with gentle slopes	Arable and permanent pastures Rush pastures and sedge mires

The *Soil Survey of Scotland: South-East Scotland 1:250,000 Sheet 7* accompanying book describes the Whitsome Association as:

*'Brown forest soils with gleying developed on the slowly permeable clayey tills predominate throughout the association. Noncalcareous gleys are restricted to low-lying ground between drumlin*

ridges, and brown forest soils occur where the surface veneer of coarse-textured materials is of appreciable thickness. The land is characterized by large well-laid-out farms which are highly mechanized. Cropping follows intensive arable rotations.

Map unit 574 comprises brown forest soils with gleying and brown forest soils and occupies 102 square kilometres (25 per cent of the association). The soils are developed on the red-brown clayey tills typical of the association or on tills with a surface veneer of coarse-textured materials. Where these coarser materials are one metre or so in thickness the soils are brown forest soils and the natural drainage is free. Elsewhere the clayey subsoils are slowly permeable and the soils are brown forest soils with gleying and the natural drainage is imperfect. Gentle slopes predominate in an undulating lowland landscape which presents a vista of large well-appointed farmsteads set in a patchwork pattern of large fields carrying a wide variety of arable crops. Where coarse-textured materials overlie the tills, the soils are easily worked and a wide range of crops can be grown. Cultivation is also favoured by the warm dry climate and low average rainfall but in some years drought may affect crops where subsoils are coarse. The brown forest soils with gleying developed on clayey tills provide land similar to that of map unit 575.

Map unit 575 occupies 310 square kilometres (75 per cent of the association) and comprises mainly brown forest soils with gleying with some noncalcareous gleys. The soils are developed on red-brown clayey tills which are often calcareous and contain limestone fragments. They are naturally fertile, but the subsoils are only slowly permeable and the natural drainage is imperfect. As in map unit 574 the landscape is of undulating lowland with gentle slopes in which the tills have been moulded into long drumlin-like ridges. In the intervening hollows between ridges the natural drainage is often poor and the soils noncalcareous gleys. The natural 127 SOU-1.1 I-FASI- SCOf(LANI) fertility of the land is high and has been increased during a long period of intensive farming and fertilizer usage. Arable crops generally form a high proportion of most farm rotations and periods in grass leys are usually short. Arable crops generally form a high proportion of most farm rotations and periods in grass leys are usually short. The farms are large and highly mechanized. Nevertheless, despite the warm dry climate and low rainfall these fine-textured soils with impeded natural drainage require careful management to avoid damage to soil structure. Underdrains with permeable infill in the drain-lines and secondary treatments to improve subsoil structure and permeability are necessary for efficient cultivation'.

The survey then goes on to describe the following soil growing conditions:

'Although the soils are slowly permeable, soil moisture is at field capacity for only 150 days or less in most years and high levels of deficit develop in summer. The moisture state of the land therefore generally allows good opportunities for cultivation and seeding in most seasons without undue risk of soil structural damage. But unseasonably high rainfall and plastic conditions in wet soils can pose problems in some years. The land is retentive of both moisture and plant nutrients and fertility is

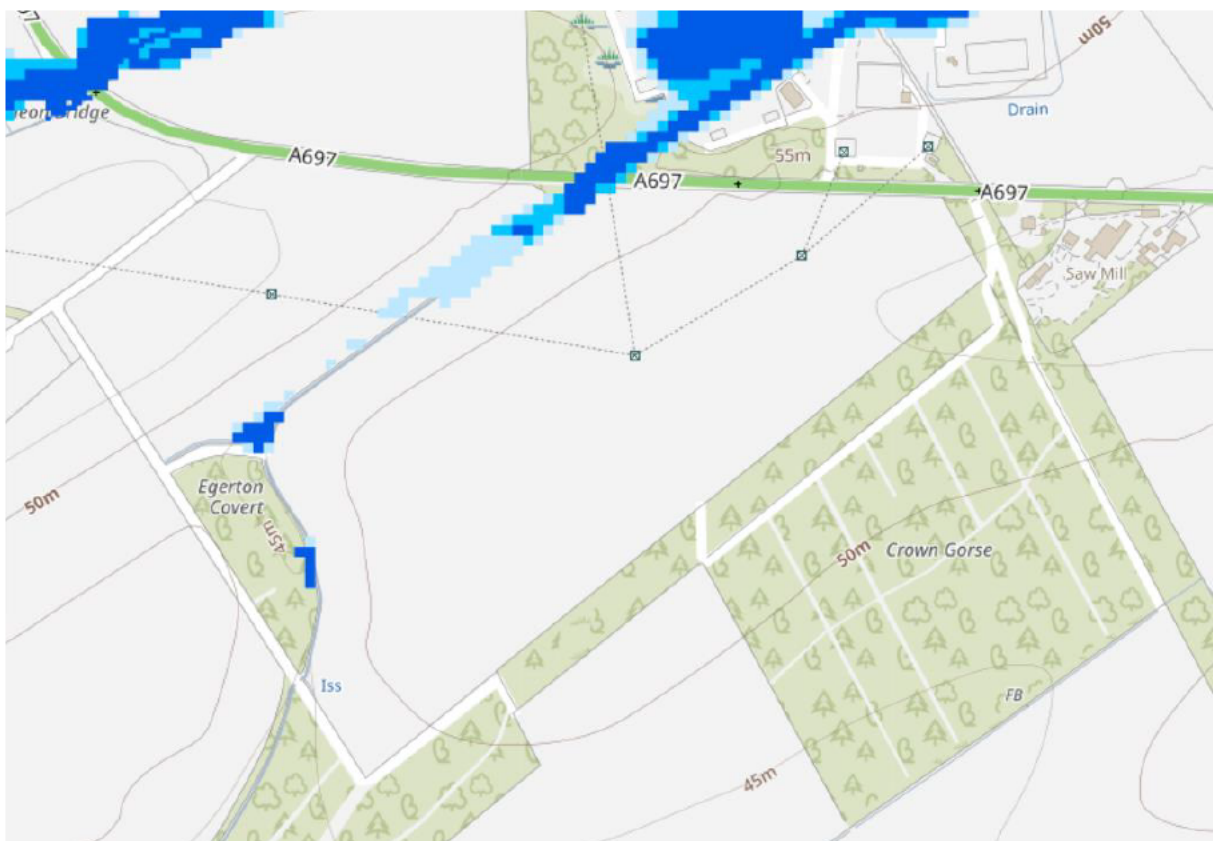
*generally maintained at high levels. The landscape is subject to constant seasonal change as bare furrows are succeeded by emergent and then maturing and ripening grain crops to form a patchwork with the green short-ley pastures and, in recent years, also with the chrome yellows of fields of flowering oil-seed rape'.*

## 6. Flood Risk Limitations

The potential limitations due to flood risk on the site have been assessed using publicly available flood risk mapping, accessed via the Scottish Environment Protection Agency (SEPA) website.

**Table 2:** Summary of Flood Risk for the Site in Accordance with SEPA Mapping

SEPA Flood Classification	Percentage Chance of Flooding
High Likelihood	10% each year
Medium Likelihood	0.5% each year
Low Likelihood	0.1% each year




### **Key- River Flooding**


High Likelihood

 Each year this area has a 10% chance of flooding.

Medium Likelihood

 Each year this area has a 0.5% chance of flooding.

Low Likelihood

 Each year this area has a 0.1% chance of flooding.

**Figure 2:** Flood Risk Present from Rivers for the Site and Surrounding Area



The SEPA map extract above identifies the site to have a less than 0.1% chance of potential flooding from rivers each year, however, there is the potential for the north western boundary extent of the site to encroach into the High Likelihood (10% chance) of river flooding each year (**Figure 2**).





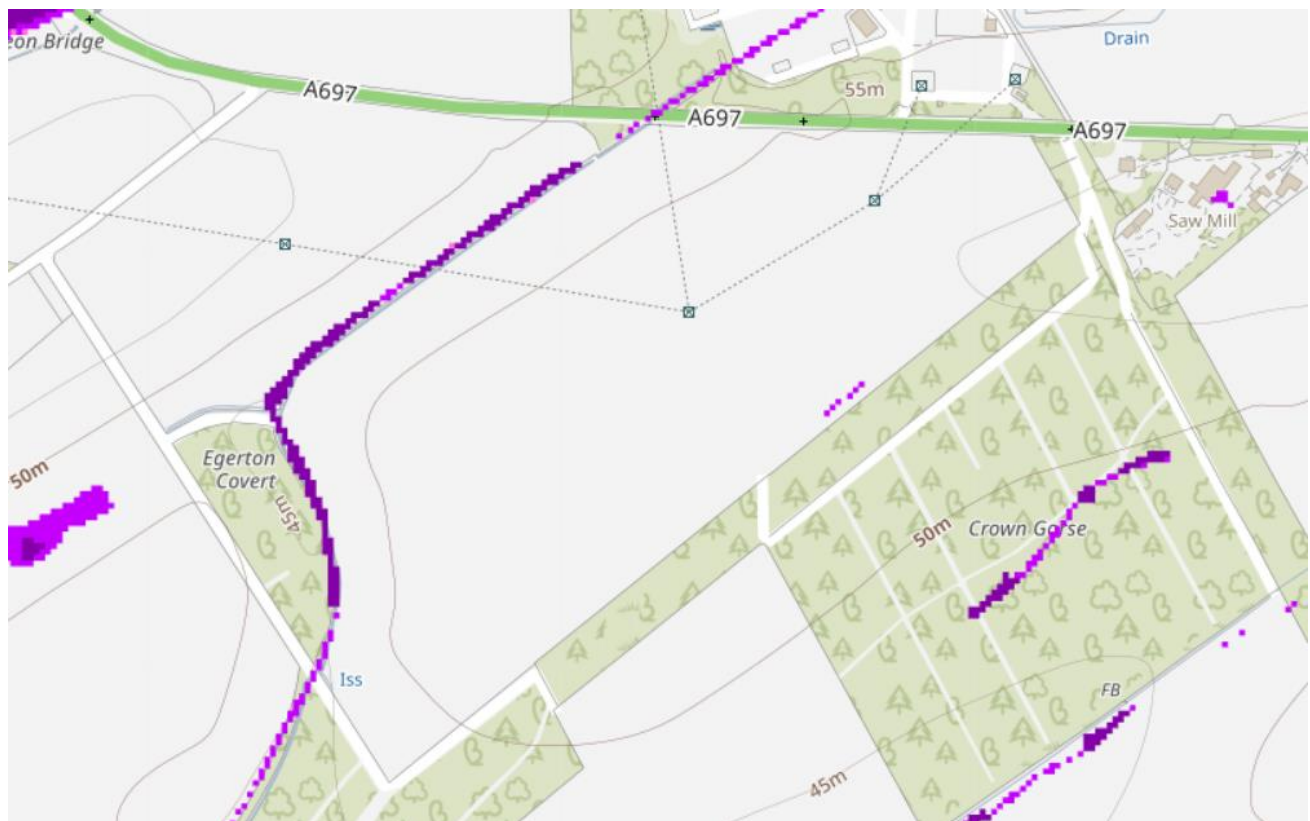
**Key – Future Flood Risk**

River Medium Likelihood

-  By the 2080s, each year this area may have a 0.5% chance of flooding.
-  Future scenario data not available.

**Figure 3:** Future Potential Flood Risk from Rivers for the Site and Surrounding Area

The SEPA map extract above identifies the northwest boundary of the site as having a less than 0.5% chance of potential flooding from rivers (**Figure 3**).



**Key – Surface Water Flooding**

High Likelihood

Each year this area has a 10% chance of flooding.

Medium Likelihood

Each year this area has a 0.5% chance of flooding.

Low Likelihood

Each year this area has a 0.1% chance of flooding.

**Figure 4:** Flood Risk Present from Surface Water for the Site and Surrounding Area

The SEPA map extract above identifies small discrete areas on the northwest and west site boundaries, as well as a small patch near the southeast boundary where there is a 10% likelihood of surface water flooding each year. The remainder of the site has a less than 0.1% chance of surface water flooding each year (**Figure 4**).

The impact of flood risk is assessed to confirm if it can pose a limitation to the LCA class of the site, in accordance with the guidance available (Table 16, MLURI, 1991). As the majority of the site is indicated as having a Low risk of flooding from either rivers or surface water, there is not considered to be a potential limitation for the LCA class for the site with regard flooding.

## 7. Available LCA Data

### National Scale Land Capability for Agriculture (1:250,000 scale)

According to the available mapping, the site LCA class is indicated as:

Land capability for agriculture class	2
---------------------------------------	---

*'Class 2: Land capable of producing a wide range of crops.'*

### Land Capability for Agriculture - partial cover (1:50,000 scale)

According to the available mapping, the northern part of the site LCA class is indicated as:

Land capability for agriculture class	2
---------------------------------------	---

*'Class 2: Land capable of producing a wide range of crops.'*

It is of note that the boundaries between the differing soils types on the soils mapping also correlates with the location and orientation of the boundaries between the differing LCA Classes on the LCA mapping. This is likely due to the differences in the soil types influencing the changes in the LCA Classes across the site and surrounding area.

The LCA Class on the site is indicated as Class 2, which affords the following description of this land:

Climate	Zone 1 and 2 Not less than 95 PSMD or 1050 day °C Hourly median wind speed usually less than 5m/sec No microclimatic limitations
Gradient	Not greater than 7°
Soil	Should be no more than slightly stony Should not be non to slightly droughty for two indicator arable crops Should not have more than minor structural problems Should be at least 45cm deep
Wetness	Should be moderately well drained, either naturally or with the assistance of a drainage scheme Should have negligible flood risk apart Should not have more than slight workability limitations
Erosion	Slight risk

### Previous Site Reports

No previous LCA reports have been made available to REL during the compilation of this report.

## 8. Intrusive Survey Findings

The survey identified One Soil Type across the entire site. A generalised profile of the soil type encountered has been described as below (**Table 3**) however, please note some localised variations were recorded. Complete soil logs are provided in **Appendix II** and photographs of the surveyed soils are presented in **Appendix III**.

**Table 3:** Summary of Soils Identified on Site

	Depth (cm)	Texture	Colour	Stones (%)	Mottles	Structure
Soil Type 1	0-40	Sandy Clay Loam (SCL)	Dark Greyish Brown (2.5Y 4/2)	15	No	Subangular Blocky
	40-120	Sandy Clay (SC)	Brown (7.5YR 4/4)	15	Few Medium Grey (10YR 6/1) and Ochreous (5YR 5/6) Mottles	Weak Coarse Prismatic

**Table 4:** Summary of Wetness Class and Class Limit Parameters

Retained Water Capacity <sup>[1]</sup>	FCD <sup>[2]</sup>	Impermeable Horizon (depth cm) Justification	Wetness Class <sup>[3]</sup>	Class Limit <sup>[4]</sup>
A topsoil texture of Sandy Clay Loam (SCL) was identified on site which relates to a Medium (35-45%) retained water capacity	175-200	At a depth of 40cm, the IH was identified to be present due to the following characteristics: Sandy Clay (SC) prismatic structure moderately firm ped strength few visible pores evidence of gleying in the layer	II	3

Notes: References within the LCA guidance document [1] - Table 11, [2] Figure 6, [3] Table 12, [4] Table 13

### Division Limits for LCA Class 3

The land on this site satisfies all the criteria associated with the classification of Grade 3 division 1 'Land capable of producing consistently high yields of a narrow range of crops'.

## 9. LCA Class and Conclusions

The site is mapped as being LCA Class 2 across the entire site on the 1:250,000 scale mapping, and LCA Class 2 on the 1:50,000 scale mapping. However, the intrusive survey data identifies the site to be within LCA Class 3.1

There is also a minor potential limitation across the northwestern boundary and access entrance for the site which relates to the potential risk of river/surface water flooding. Unfortunately, there is no definitive way to correlate the LCA Class limitations with the SEPA flood risk classifications, therefore it is unclear if the flood risk poses a significant limitation to the site which could reduce the LCA Class. However, any potential Class limit due to flood risk is likely to be only in relation to the soils around the site boundaries on the north and west, and is not likely to limit the LCA Class across the whole site.

The Soil Survey of Scotland: South-East Scotland 1:250,000 Sheet 7 book states that the Whitsome soils are '*brown forest soils with gleying and the natural drainage is imperfect*'. This is consistent with the soils which were identified on site which were identified as being within Wetness Class II and Well to Imperfectly drained soils.

The western boundary of the site was identified to have a steep gradient, compared to the majority of the site which is relatively flat. The average gradient in the western portion of the site was identified as 21°. However this is only representative of <0.8ha of the site area.

### Conclusions

All land surveyed has been identified as LCA Class 3.1, and therefore 'Prime' agricultural land has been identified on this site, with the exception of <0.8ha which is limited to LCA Class 5.3 due to the topography being between 15° and 25°.

Within the planning context, 'prime' agricultural land is protected from development, with 'prime' agricultural land defined as land within Classes 1 – 3.1 (NPF4 Annex F, 2023). Currently, this site falls within the lowest of the 'prime' agricultural land classes (3.1) and as such, would be restricted from development. However, Policy 5 states that development could be supported in the scenario where the development is for 'essential infrastructure and there is a specific locational need and no other suitable site' and/or 'the generation of energy from renewable sources'.



## APPENDIX I

## SITE PLANS





**Legend**

- Red Line Boundary
- ⊕ Borehole Locations
- Soil Type 1

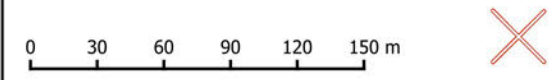


Figure Borehole Locations and Soil types		
Job Land at Bishops Dal, Coldstream		
Client Bishops Dal Energy Storage Limited		
Figure No. 1	Revision 1	Date 08 January 2025
Drawn by EH	Checked by LM	Scale 1:3,400
Job No. 240711		



DO NOT SCALE. NOT FOR CONSTRUCTION

Microsoft product screen shot, reprinted with permission from Microsoft Corporation. Microsoft Bing logo © Microsoft Corporation 2025.

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**Legend**

- Red Line Boundary
- Borehole Locations
- Grade 3.1
- Grade 5.3

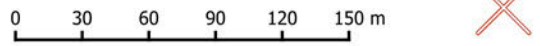


Figure <b>Borehole Locations and LCA Grade</b>		
Job <b>Land at Bishops Dal, Coldstream</b>		
Client <b>Bishops Dal Energy Storage Limited</b>		
Figure No. <b>2</b>	Revision <b>1</b>	Date <b>08 January 2025</b>
Drawn by <b>EH</b>	Checked by <b>LM</b>	Scale <b>1:3,400</b>
Job No. <b>240711</b>		

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## APPENDIX II



## SITE SURVEY LOGS










## APPENDIX III

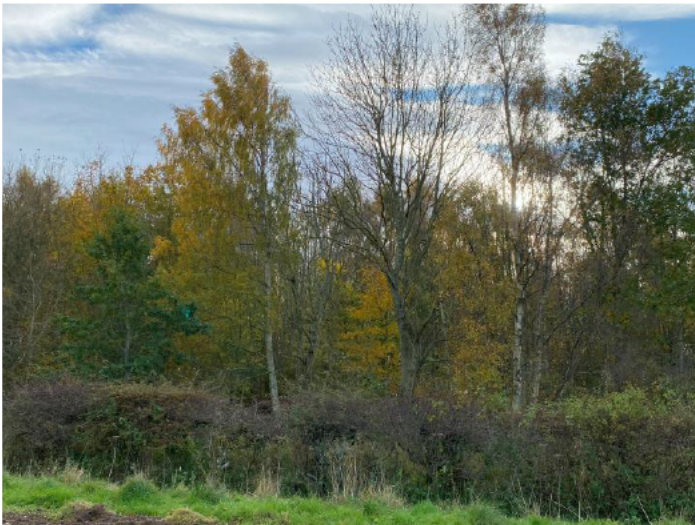

## SITE SURVEY PHOTOGRAPHS

Photograph Number	Photograph Description	Photograph
1.	<p><b>Land at Bishops Dal, Coldstream</b></p> <p>View from centre of site.</p>	
2.	<p><b>Land at Bishops Dal, Coldstream</b></p> <p>Soil type 1, Auger sample.</p>	

Photograph Number	Photograph Description	Photograph
3.	<p><b>Land at Bishops Dal, Coldstream</b></p> <p>Soil type 1, Soil pit view.</p>	
4.	<p><b>Land at Bishops Dal, Coldstream</b></p> <p>Soil type 1, topsoil structure.</p>	



Photograph Number	Photograph Description	Photograph
5.	<p><b>Land at Bishops Dal, Coldstream</b></p> <p>Soil type 1, subsoil structure.</p>	
6.	<p><b>Land at Bishops Dal, Coldstream</b></p> <p>Soil type 1, stones in profile.</p>	
7.	<p><b>Land at Bishops Dal, Coldstream</b></p> <p>View of western boundary of site showing steep topography.</p>	

Photograph Number	Photograph Description	Photograph
8.	<p><b>Land at Bishops Dal, Coldstream</b></p> <p>Vegetation surrounding site.</p>	
9.	<p><b>Land at Bishops Dal, Coldstream</b></p> <p>Standing water on the southern boundary of the site.</p>	

## **APPENDIX IV**

## **LCA CLASS DEFINITIONS AND TERMS**



## **Appendix I – LCA Class Definitions and Terms**

This appendix describes an abridged version of the agricultural land capability classes used on the assessment on agricultural land in accordance with the Macaulay Land Use Research Institute (MLURI) descriptors for each land capability class.

### **Class 1: Land Capable of Producing a Very Wide Range of Crops**

Cropping is highly flexible and includes the more exacting crops (i.e. those with demanding requirements) such as winter harvested vegetables (cauliflower, Brussels sprouts, leeks). The level of yield is consistently high. Soils are usually well-drained deep loams, sandy loams, silty loams or their related humic variants with good reserves of moisture. Sites are level or gently sloping, and the climate is favourable. There are no or only very minor physical limitations affecting agricultural use.

### **Class 2: Land Capable of Producing a Wide Range of Crops**

Cropping is very flexible and a wide range of crops can be grown, however the land may be unsuited to winter harvested crops. The level of yield is high but less consistently obtained than on Class 1 land due to the effects of minor limitations which impact upon cultivation, crop growth or harvesting. The limitations may include, either singly or in combination, slight workability or wetness problems, slightly unfavourable soil structure or texture, moderate slopes and slightly unfavourable climate. The limitations are always minor in their effect however and land in the class is highly productive.

### **Class 3: Land Capable of Producing a Moderate Range of Crops**

Class 3 land is capable of producing good yields of a narrow range of crops, principally cereals and grass, and/or moderate yields of a wider range including potatoes, some vegetable crops (e.g. field beans and summer harvested brassicae) and oilseed rape. The degree of variability between years will be greater than is the case for Classes 1 and 2, mainly due to interactions between climate, soil and management factors affecting the timing and type of cultivations, sowing and harvesting. The moderate limitations require careful management and include wetness, restrictions to rooting depth, unfavourable structure or texture, strongly sloping ground, slight erosion or a variable climate.

The range of soil types within the class is greater than for previous classes.

#### *Class 3: Division 3.1*

Land in this division is capable of producing consistently high yields of a narrow range of crops (principally cereals and grass) and/or moderate yields of a wider range (including potatoes, field beans and other vegetables and root crops). Short grass leys are common.

#### *Class 3: Division 3.2*

This land is capable of average production but high yields of barley, oats and grass are often obtained. Other crops are limited to potatoes and forage crops. Grass leys are common and reflect the increasing growth limitations for arable crops and degree of risk involved in their production.

### **Class 4: Land Capable of Producing a Narrow Range of Crops**

The land is suitable for enterprises based primarily on grassland with short arable breaks (e.g. barley, oats, forage crops). Yields of arable crops are variable due to soil, wetness or climatic factors. Yields of grass are often high but difficulties of production or utilisation may be encountered. The moderately severe levels of limitation restrict the choice of crops and demand careful management. The limitations may include moderately severe wetness, occasional damaging floods, shallow or very stony soils, moderately steep gradients, moderate erosion, moderately severe climate or interactions of these which increase the level of farming risk.

#### *Class 4: Division 4.1*

Land in this division is suited to rotations, which, although primarily based on ley grassland, include forage crops and cereals for stock feed. Yields of grass are high but difficulties of utilisation and conservation may be encountered. Other crop yields are very variable and usually below the national average.

#### *Class 4: Division 4.2*

The land is primarily grassland with some limited potential for other crops. Grass yields can be high but difficulties of conservation or utilisation may be severe, especially in areas of poor climate or on very wet soils. Some forage cropping is possible and, when the extra risks involved can be accepted, an occasional cereal crop.

### **Class 5: Land Capable of Use as Improved Grassland**

The agricultural use of land in Class 5 is restricted to grass production but such land frequently plays an important role in the economy of British hill lands. Mechanised surface treatments to improve the grassland, ranging from ploughing through rotation to surface seeding and improvement by nondisruptive techniques are all possible. Although an occasional pioneer forage crop may be grown, one or more severe limitations render the land unsuited for arable cropping. These include adverse climate, wetness, frequent damaging floods, steep slopes, soil defects or erosion risks. Grass yields within the class can be variable and difficulties in production, and particularly utilisation, are common.

#### *Class 5: Division 5.1 Land Well Suited to Reclamation and to Use as Improved Grassland*

Establishment of a grass sward and its maintenance present few problems and potential yields are high with ample growth throughout the season. Patterns of soil, slope or wetness may be slightly restricting but the land has few poaching problems. High stocking rates are possible.

#### *Class 5: Division 5.2 Land Moderately Suited to Reclamation and Use as Improved Grassland*

Sward establishment presents no difficulties but moderate or low traffic ability, patterned land and/or strong slopes cause maintenance problems. Growth rates are high and despite some problems of poaching satisfactory stocking rates are achievable.

#### *Class 5: Division 5.3 Land Marginally Suited to Reclamation and Use as Improved Grassland*

Land in this division has properties which lead to serious traffic ability and poaching difficulties and although sward establishment may be easy, deterioration in quality is often rapid. Patterns of soil, slope or wetness may seriously interfere with establishment and/or maintenance. The land cannot support high stock densities without damage and this may be serious after heavy rain even in summer.

### **Class 6: Land Capable of Use Only as Rough Grazing**

The land has very severe site, soil or wetness limitations, which generally prevent the use of tractor operated machinery for improvement. Reclamation of small areas to encourage stock to range is often possible. Climate is often a very significant limiting factor. A range of widely different qualities of grazing is included from very steep land with significant grazing value in the lowland situation to moorland with a low but sustained production in the uplands. Grazing is usually insignificant in the full arctic zones of the mountain lands, but below this level grazings which can be utilised for five months or longer in any year are included in the class. Land affected by severe industrial pollution or dereliction may be included if the effects of the pollution are non-toxic.

#### *Class 6: Division 6.1 High Grazing Value*

The dominant plant communities contain high proportions of palatable herbage, principally the better grasses, e.g bent-fescue grassland or meadow grass-bent pasture.

*Class 6: Division 6.2 Moderate Grazing Value*

Moderate quality herbage such as white and flying bent grasslands, rush pastures and herb-rich moorlands or mosaics of high and low grazing values characterise land in the division.

*Class 6: Division 6.3 Low Grazing Value*

The vegetation is dominated by plant communities with low grazing values, particularly heather moor, bog heather moor and blanket bog communities.

**Class 7: Land of Very Limited Agricultural Value**

This land has extremely severe limitations that cannot be rectified. The limitations may result from one or more of the following defects: extremely severe wetness, extremely stony, rocky land, bare soils, scree or beach gravels, toxic waste tips and dereliction, very steep gradients, severe erosion including intensively hagged peat lands and extremely severe climates (exposed situations, protracted snow-cover and short growing season). Agricultural use is restricted to very poor rough grazing.

**Unclassified land** – Built up areas, motorways, airports etc.