CALEDONIAN CLIMATE
Partnering for net zero

Islay Natural Capital Baseline Survey

Peatland Restoration – Desktop Review

Caledonian Climate Partners (CCP)
Highlands and Islands Enterprise (HIE)

Argyll and Bute Council

UK Government

Highland and Islands Enterprise

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Executive Summary

- Caledonian Climate Partners (CCP) were commissioned by HIE to carry out a desk-based baseline audit of peat on the three islands of Islay, Jura and Colonsay, and the Kintyre peninsula to be delivered by 27/10/2022.
- The method used in this report was a desk-based study on QGIS using pre-existing layers to create shapefiles populated with erosion feature data.
- Results have been provided in the format of embedded maps and tables. It was found that a total of 22293.9 hectares of degradation is present across the study area. The following hectares of degradation features were found on each section of the area:
    - Islay: 9414.5ha
    - Colonsay: 79.9ha
    - Jura: 4069.3ha
    - Kintyre: 8730.2ha
- Carbon calculations, in line with the Peatland Code, were determined from the erosion features identified above. The estimated claimable carbon emission reductions were calculated as between 37475.16 and 45223.68 tCO_2e per year over a forecasted 75 year project duration.
- From these, a series of recommendations on restoration potential, understanding herbivore impact, and commercial forestry implications are given.
- This is followed up by a conclusive summary including the appropriate next steps including conducting peat depth surveys and peatland condition category assessment.

Introduction

Caledonian Climate Partners (CCP) were commissioned by Highlands and Islands Enterprise (HIE) to carry out a desk-based baseline audit to assess the extent of peat on the three islands; Islay, Jura and Colonsay, and the Kintyre Peninsula, shown in Figure 1. This is an entirely desk-based GIS audit using datasets ranging from available open-source data paired with information provided by ACT which was used to inform and compile this report.

The key deliverables are to assess and report on:

- The total extent of peat on Islay, Jura and Colonsay and the Kintyre Peninsula
- The extent of “good peat” i.e. near natural with little or no bare peat or signs of modification
- The extent of drained/eroding peat
- Land ownership boundaries
- The annual saving of tCO_2e of drained/eroding peat being restored.

This report outlines our observations and presents our findings on the extent of peat, its condition and ownership boundaries, and provides an estimation of the annual savings of tCO_2e as result of restoration. The areas with greatest potential for restoration are highlighted based on the observations and findings made. Data on the extent of peat, its condition and ownership boundaries are presented as shapefiles and georeferenced pdf maps.

Recommendations are made on how best to move forward with a successful peatland restoration project, to reduce overall carbon emissions, and aid the green recovery of the Argyll and Bute region in harmony with enhancing the natural capital value of these sensitive ecosystems. An indication of the total extent of peat will be provided and the amount of ‘good peat’ in the area will be identified.

The report will clearly define the potential constraints to restoration specific to the study area. There may also be limitations within these areas that become evident later in the project through ground truthing and consultation with stakeholders.

Figure 1: Overview map of project area

Methodology

Erosion feature classes were created in line with the Peatland Code categories shown in Table 1. Feature classes relevant to the site out with the Peatland Code categories were also noted in the attribute tables, including:

- Peat cutting – areas of historic or active peat cutting
- Micro-erosion/herbivore impact – areas with evidence of small erosion caused by herbivores

These were brought together and used in conjunction to identify and highlight areas of erosion throughout the site.

Table 1: Peatland Condition Assessment Categories

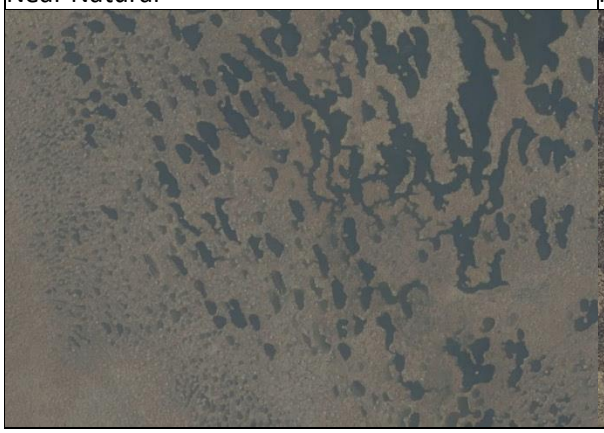
Peatland Condition Category	**Description**	**Key points**
Near Natural	-Sphagnum present -No known fires (wild or prescribed) within living memory -Evidence of grazing and trampling impacts are rare or absent -Little or no bare peat exposed -Heather (Calluna vulgaris) is not dominant	- Natural pools systems present - Dominance of peat-forming moss and sedge species
Modified	-Bare peat in small patches -Fires or history of -Frequent impacts of grazing and trampling -Sphagnum mosses and sedges rare or absent -Extensive cover of heather or purple moor grass -An undesirable level of scrub which is drying out the bog	- Micro-erosion common - Peatland dominated by a particular species - Grazing history - Percentage cover of peat forming species
Drained: hagg/gully	-Within 30 metres of a hagg/gully drainage system	
Drained: artificial	- Within 30 metres of an active artificial drain	- Can sometimes be overgrown so look carefully - Vegetation is usually a different colour or undulation
Actively eroding flat bare	-Extensive bare peat surfaces or “peat pans”	
Actively eroding: hagg/gully	-Actively eroding hagg/gully system with large areas of no vegetation coverage -Bare peat cliffs	

Satellite imagery including ESRI World Imagery, Google Satellite and Bing Virtual Earth, was used to identify and map the erosion features present on the ground. Spatial data used to inform the identification and prioritisation of peatland areas for assessment includes the following:

- The Scotland Soil Carbon and Peat Depth Map (James Hutton Institute, 2019) was overlaid and areas of peat >100cm deep were identified as the focus areas with areas between 50-100cm also considered for the presence of erosion features. The location of deep peat areas >100cm also underpins the identification of areas most important to restoration.
- The Carbon and Peat Map (NatureScot, 2016) was used to identify areas of nationally important peatland using importance classes 1 and 2. Class 1 consists of nationally important carbon rich soils, deep peat and priority peatland habitat (land covered by peat-forming vegetation or vegetation associated with peat formation) – areas likely to be of high conservation value. Class 2 contains nationally important carbon-rich soils, deep peat and priority peatland habitat – areas of potentially high conservation value and restoration potential (see Table 2). These classes further inform areas where the identification of erosion features took place.
- The OS Open Rivers (2022) layer was used to show waterways across the study areas. This source contains OS data © Crown copyright and database right 2021.
- National Forestry Inventory Map (2020) was used to identify areas of forestry that exist within the peatland category areas of the Carbon and Peat Map, and areas of recently felled forestry. Large areas of plantation currently covering areas of carbon rich deep peat soil which we have excluded from our mapping, but should be prioritised for forest to bog restoration when identified. Areas or forestry within peatland were excluded from the study area due to overlapping land uses. These should be considered for 'forest to bog' restoration once the plantations are felled. Recently felled areas were included due to the ease of potential restoration through 'forest to bog' schemes.
- Property boundaries were sourced from *Who Owns Scotland* (Source: www.whoownsscotland.com) and overlaid with the mapped erosion features to show how the spread of peatland restoration opportunity is split across the land holdings.

Carbon emission reductions were calculated using the most up to date IUCN Peatland Code emissions factors. Carbon reductions presented are only those deemed achievable under the Peatland Code v1.2 and therefore exclude the peat cutting areas and are based on technical estimates. These technical estimates draw on our experience and understanding of the relationship between carbon emissions and erosion classifications. Full erosion mapping and peat depth measurements of the identified areas, required to accurately quantify potential carbon reductions, are not part of the scope of this body of works.

Table 2: Examples of erosion features identifiable from satellite imagery

Actively Eroding: Hagg/Gully	Actively Eroding: Flat Bare
	
Drained Artificial	Peat Cutting
	
Herbivore Impact	Felled Woodland
	
Near Natural	Modified
	

Results

Soil Survey, Carbon and Peat Map

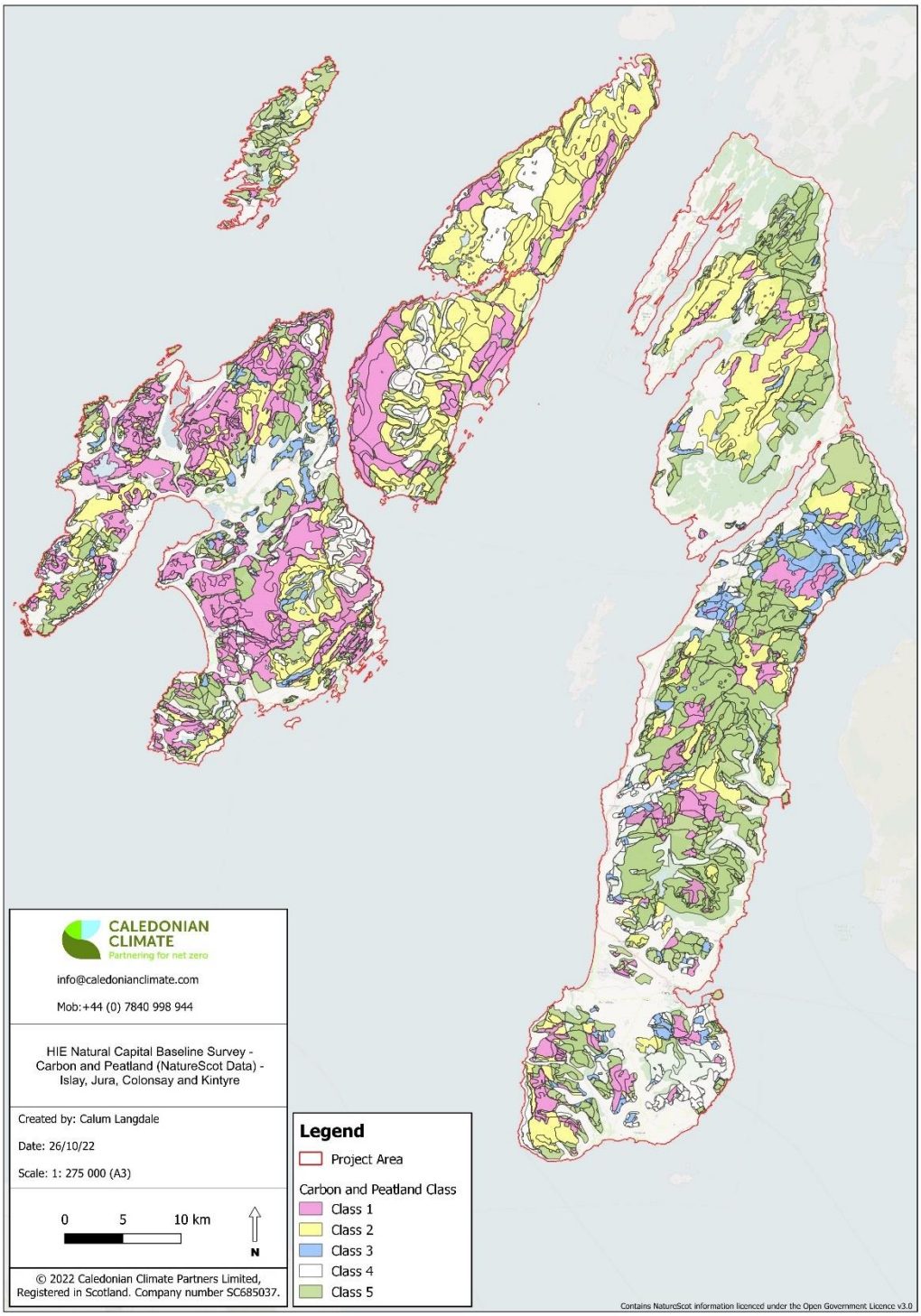


Figure 2: Carbon and peatland map of project area, derived from NatureScot data.

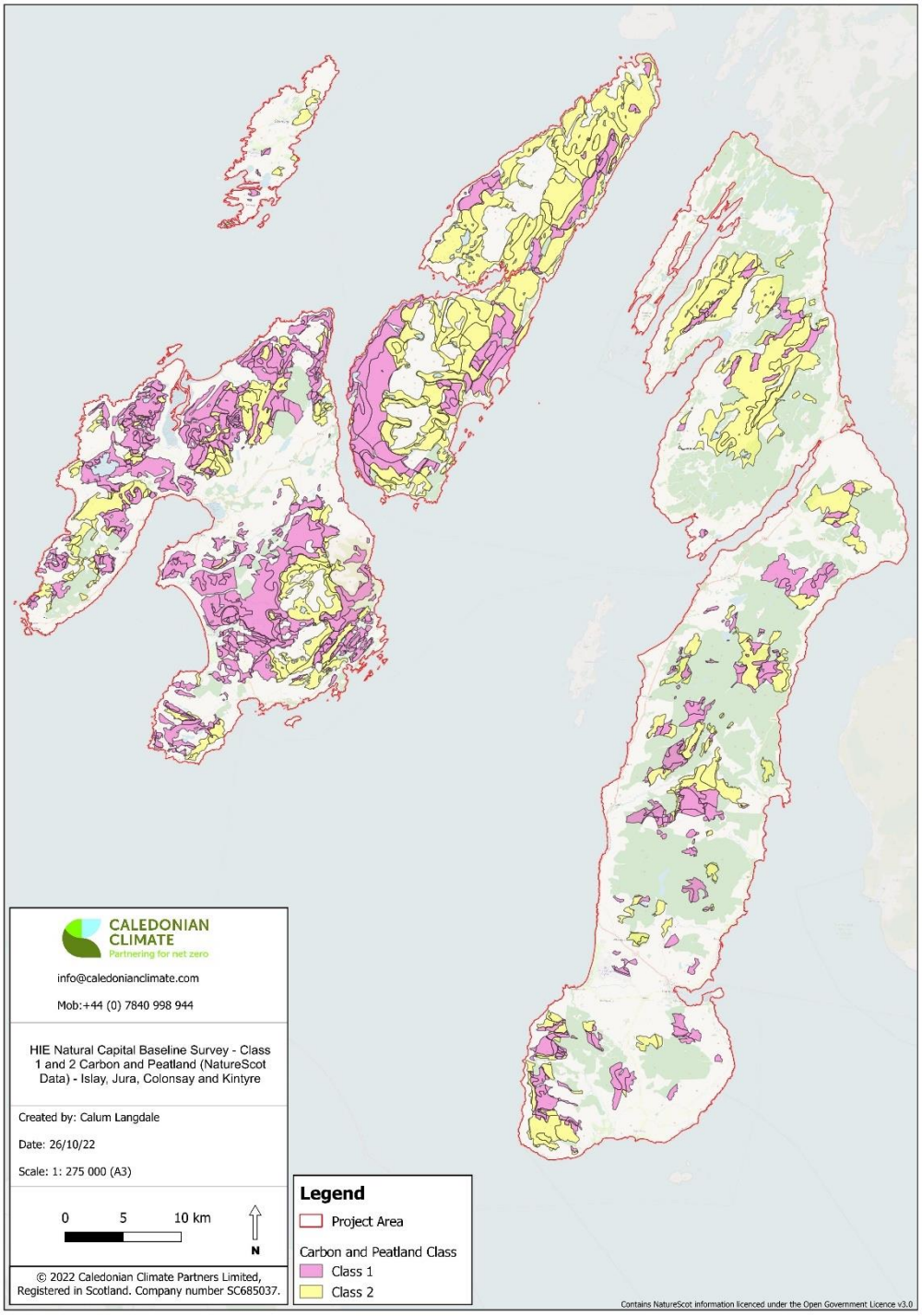


Figure 3: Carbon and peatland map of project area showing class 1 and 2 peatland, derived from NatureScot data.

Table 3: Class description of Class 1 and 2 in the Carbon and Peat Map (2016) and the total extent of these classes within the study area.

Class No	Class Description
1	Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value
2	Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential

Table 4: the hectares of class 1 and 2 peat (Carbon and Peat Map) present in study area locations.

Study area	Hectares of class 1 & 2 peat
Islay	27748.4
Colonsay	381.5
Jura	24770.2
Kintyre	23702.8
Total Area	76602.9ha

The total extent of class 1 and 2 peat was identified by highlighting the appropriate layers described, resulting in 76602.9ha of priority peat across the site. Figure 3 and Table 4 show the hectares of class 1 and 2 peat broken down by study area.

James Hutton Institute Peat Depth Data

The Scotland Soil Carbon and Peat Depth Map (Figure 4 below) shows areas of deep peat across the project area. This data was utilised in the identification of peatland restoration opportunities. It is noted that there is substantial areas of deep peat present across the study area.

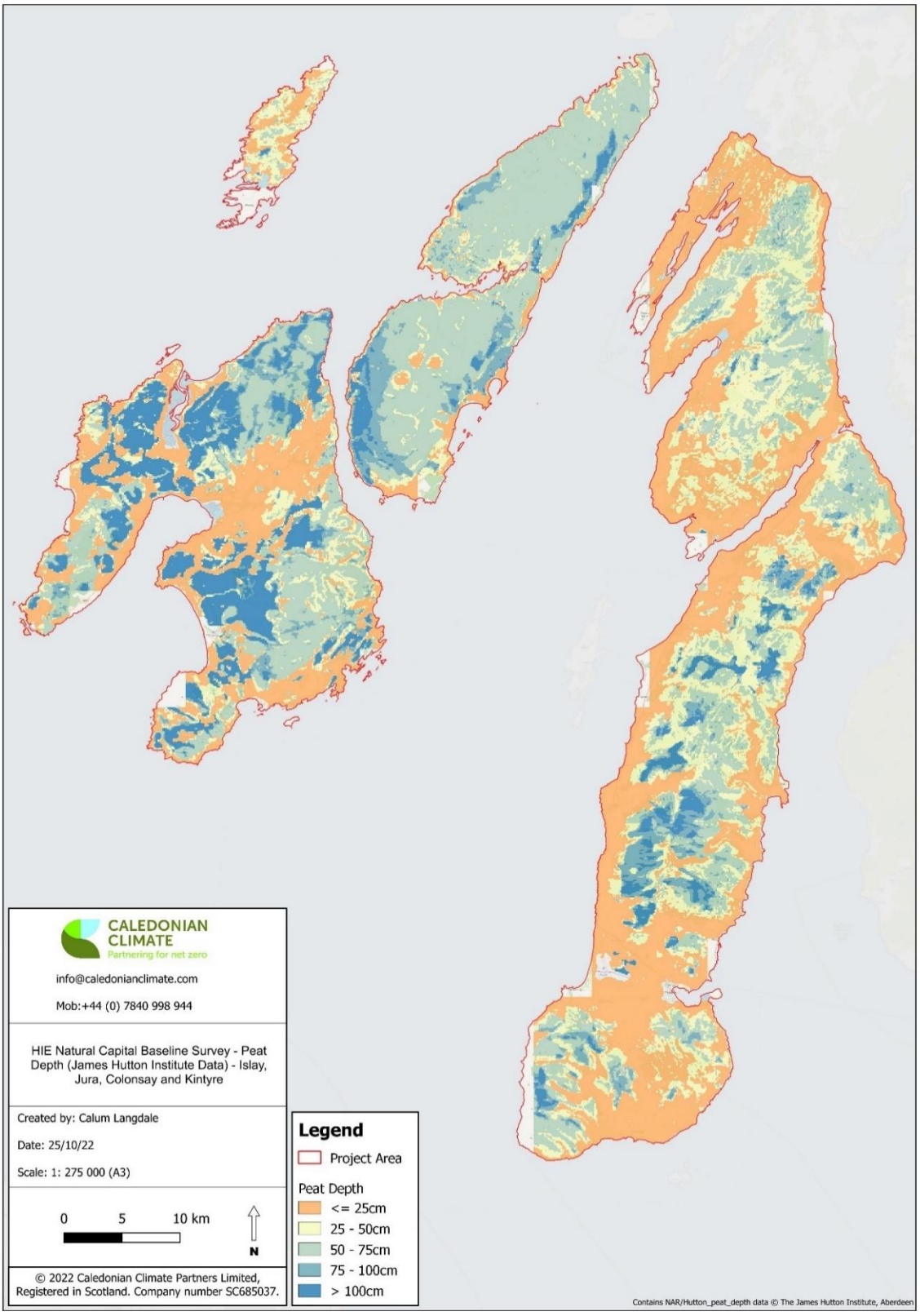


Figure 4: Scotland Soil Carbon and Peat Depth Map (James Hutton Institute)

Erosion Feature Mapping

Table 5 and Figure 5 show that there is significant opportunity for peatland restoration across the study area due to the presence of erosion features. Most of the restoration opportunity is focused around restoring artificial drains, closely followed by the restoration of actively eroding hagg/gully and flat bare peat systems. Areas of peat cutting have been mapped separately to the 'actively eroding' category as this is currently not claimable carbon emissions reductions under the Peatland Code but should still be considered for restoration.

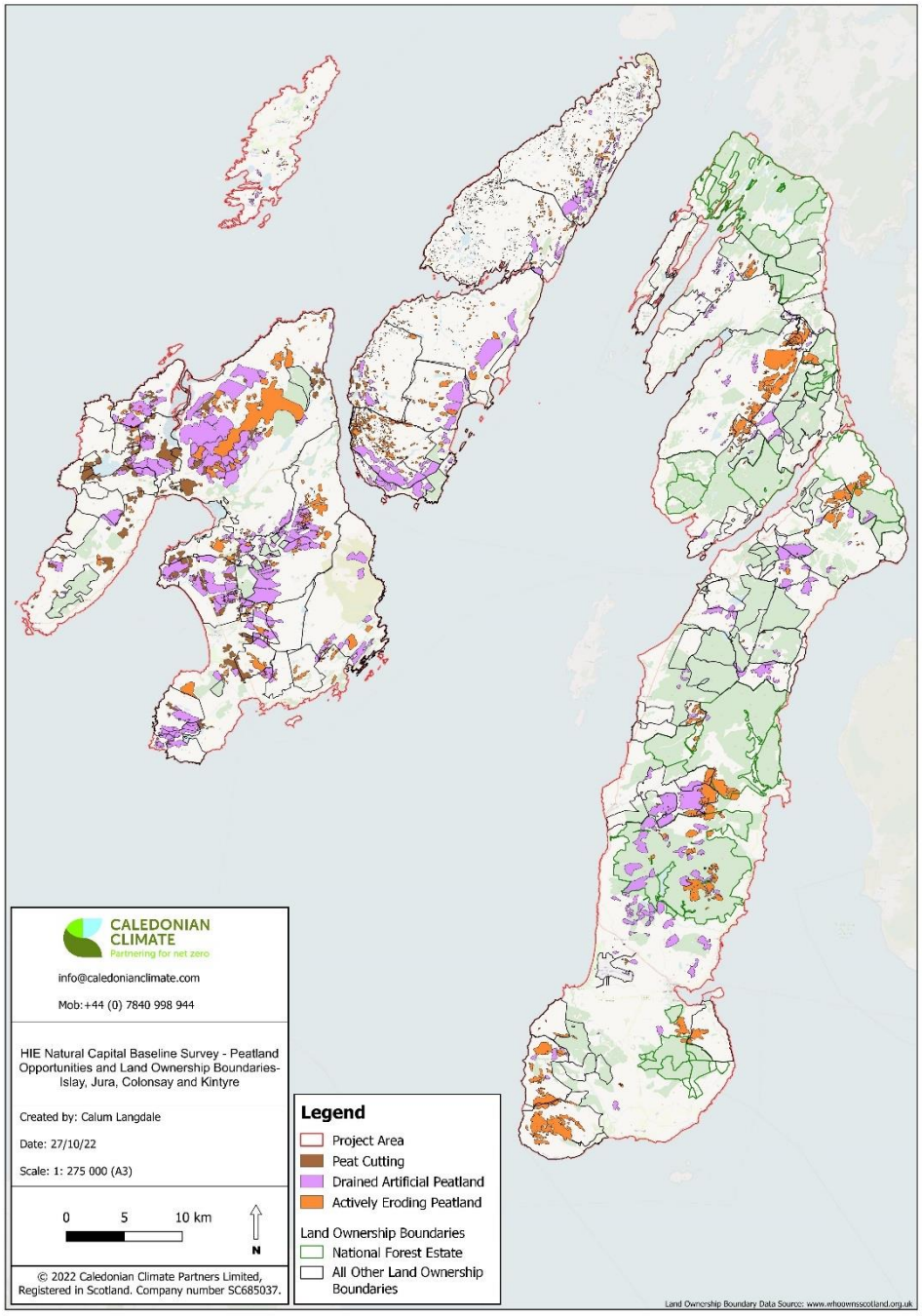


Figure 5: Peatland restoration opportunities and land ownership boundaries across project area.

Table 5: the hectares of erosion feature present across each study area and the totals per area and erosion feature class.

Area	Actively Eroding	Drained Artificial	Peat Cutting	Total
Islay	3242.7	4101.3	2070.5	**9414.5**
Colonsay	23.3	56.6	0	**79.9**
Jura	1374.1	2599.2	96	**4069.3**
Kintyre	4673.5	4044.7	12	**8730.2**
Total	**9313.6**	**10801.8**	**2178.5**	**22293.9**

Table 6 shows areas of forestry above deep peat that should be considered for forest to bog restoration methods if felled. Presently this may not be possible but is recommended to be a future consideration.

Table 6: hectares of forest on deep peat present by study area

Area	Hectares
Islay	509.8
Colonsay	5.22
Jura	321.2
Kintyre	3287.9
Total	**4124.12**

Carbon Emissions Reductions Potential

CCP has carried out a desktop assessment of the area, resulting in a potential carbon reduction per year (realisable under the Peatland Code) of between 37475.16 and 45223.68 tCO_2e over a forecasted 75 year period, assuming all areas identified are restorable. It is important to note that these estimates include both drained and actively eroding areas. A break down between the two areas is identified below in Table 7.

Without accurate peat depth measurements across the site and detailed erosion feature mapping, it is not possible to provide accurate carbon numbers.

The numbers take into consideration the fact that most of the degraded areas identified are within Class 1 (Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value), and Class 2 (Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential) on the Carbon and Peatland map, 2016.

N.B. The Peatland Code v1.2 requires:

- over 75% of peat depth points within a restoration area to be over 50cm in depth
- over 75% of peat depth points within a restoration area to be over the minimum depth required for the duration of said project. i.e. a 100 year project must have 75% of its depth points over 100cm.

CCP Data

The following assumptions have been taken with regards to peatland restoration, validated to the Peatland Code, across the study area:

- Peat depth of 75cm across more than 75% of the area to be restored – allowing for a 75 year project as a minimum
- Average Emissions avoidance of between 1.4 and 1.6 tCO_2e per hectare per year over drained areas and 2.4 and 3 tCO_2e per hectare per year over areas mapped as actively eroding – technical estimate
- All of the 20115.4 ha is accessible and able to be restored using currently known and deployed techniques
- Herbivore impact is acceptable across the whole proposed area – currently this is not the case, please see results and recommendations
- The areas have not been burned in the last two years
- Protected species are low in variety and number and able to be worked around through active monitoring techniques etc – surveying and monitoring of protected species will need to be undertaken to allow this assumption to be taken

Table 7 sets out a summary of the combined total estimated claimable carbon units across Colonsay, Jura, Islay & the Kintyre Peninsula. Table 8, 9, 10 and 11 sets out a summary of the total estimated claimable carbon units per study area for Colonsay, Jura, Islay & the Kintyre Peninsula separately.

Table 7: Summary of the total estimated claimable carbon units across Colonsay, Jura, Islay & the Kintyre Peninsula

	COLONSAY, JURA, ISLAY & THE KINTYRE PENINSULA			
	Drained Area		**Actively Eroding Area**	
Area to be restored (ha)	10801.8		9313.6	
Predominant features present	Artificial drainage features		Actively eroding haggs/gullies/peat pans	
Estimate	Low	High	Low	High
Project Life (years)	75	75	75	75
Carbon Units per ha per year (tCO_2e)	1.4	1.6	2.4	3
Total Claimable Carbon Units (tCO_2e)	1134189	1296216	1676448	2095560
tCO_2e /yr	15122.5	17282.9	22352.6	27940.8

Table 8: Summary of the total estimated claimable carbon units across Colonsay

COLONSAY				
	Drained Area		**Actively Eroding Area**	
Area to be restored (ha)	56.6		23.3	
Predominant features present	Artificial drainage features		Actively eroding haggs/gullies/peat pans	
Estimate	Low	High	Low	High
Project Life (years)	75	75	75	75
Carbon Units per ha per year (tCO_2e)	1.4	1.6	2.4	3
Total Claimable Carbon Units (tCO_2e)	5943	6792	4194	5242.5
tCO_2e /yr	79.24	90.56	55.92	69.9

Table 9: Summary of the total estimated claimable carbon units across Jura

JURA				
	Drained Area		**Actively Eroding Area**	
Area to be restored (ha)	2599.2		1374.1	
Predominant features present	Artificial drainage features		Actively eroding haggs/gullies/peat pans	
Estimate	Low	High	Low	High
Project Life (years)	75	75	75	75
Carbon Units per ha per year (tCO_2e)	1.4	1.6	2.4	3
Total Claimable Carbon Units (tCO_2e)	272916	311904	247338	309172.5
tCO_2e /yr	3638.88	4158.72	3297.84	4122.3

Table 10: Summary of the total estimated claimable carbon units across Islay

ISLAY				
	Drained Area		**Actively Eroding Area**	
Area to be restored (ha)	4101.3		3242.7	
Predominant features present	Artificial drainage features		Actively eroding haggs/gullies/peat pans	
Estimate	Low	High	Low	High
Asumed Project Life (years)	75	75	75	75
Carbon Units per ha per year (tCO_2e)	1.4	1.6	2.4	3
Total Claimable Carbon Units (tCO_2e)	430637	492156	583686	729607.5
tCO_2e /yr	5741.82	6562.08	7782.48	9728.1

Table 11: Summary of the total estimated claimable carbon units across the Kintyre Peninsula

	KINTYRE PENINSULA			
	Drained Area		**Actively Eroding Area**	
Area to be restored (ha)	4044.7		4673.5	
Predominant features present	Artificial drainage features		Actively eroding haggs/gullies/peat pans	
Estimate	Low	High	Low	High
Project Life (years)	75	75	75	75
Carbon Units per ha per year (tCO_2e)	1.4	1.6	2.4	3
Total Claimable Carbon Units (tCO_2e)	424694	485364	841230	1051538
tCO_2e /yr	5662.58	6471.52	11216.4	14020.5

Observations

Islay

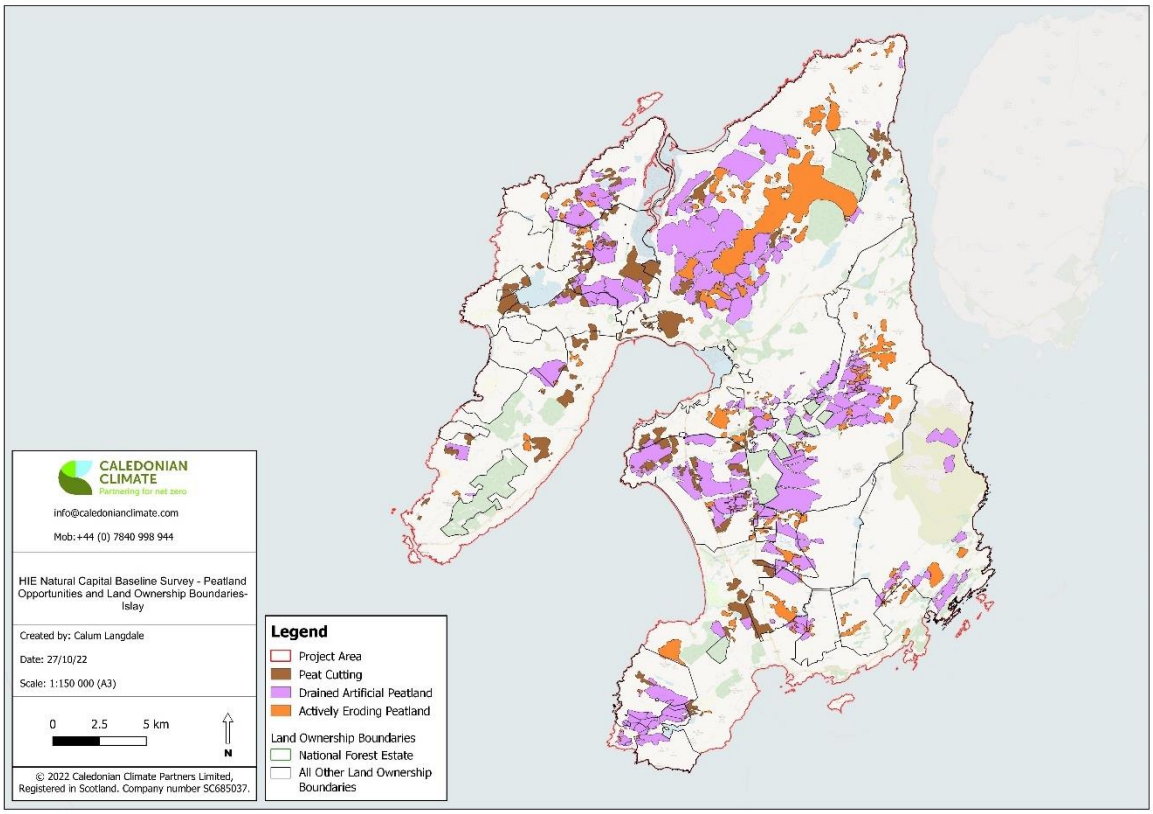


Figure 6: Peatland restoration opportunities and land ownership boundaries across Islay.

After undertaking an extensive desk-based study, it is clear that the majority of Islay is modified through anthropogenic influence both directly and indirectly with nearly no 'Near Natural' habitat to be seen.
The following land practises are present on Islay:

- Commercial forestry
- Commercial peat harvesting
- Grazing domestic herbivores in agriculture

These have all required changes to the natural landscape to achieve efficient output within these industries. Tied to these, **artificial drainage** systems are cut into the land to achieve drier, less 'boggy' conditions to allow forestry, peat cutting and grazing to take place. These adversely alter the natural hydrology of an ecosystem causing these areas to be categorised as 'drained' leading to 'erosion' or 'micro erosion'.

Herbivore activity in large quantities adds to the pressure on these sensitive ecosystems. Natural herbivores such as Red and Roe Deer can have adverse negative impacts on peatland areas. Browsing and trampling causes the vegetative layer soil to break which starts the erosion process. This depends on how they use an area in terms of migratory patterns, rutting and holding. It also depends on the density of deer across the island and how each land holding manages their numbers. On Islay, it is evident that the density of domestic herbivores is the main concern, with migration paths and over-grazing evident around farm steadings. Flat bare areas of peat can be seen within these areas of dense grazing, which is highest emission factor (Table 1).

The areas of **commercial forestry** of greatest concern, are located on top of soil types class 1&2.
Heavy domestic grazing on 'deep peat' is equally damaging in terms of habitat degradation and amount of CO2 emitted into the atmosphere. Trampling caused from a high footfall over stock lines, evident through the presence of trods, has evidently created heavy erosion features.
Peat cutting is clearly active across the island, with many peat banks exposed to the elements. These areas will have an equally adverse impact on the atmosphere to that of a flat bare or 'actively eroding' areas. The areas of historic peat cutting activity appear to have mostly grown over. Although the impact of these areas will be less severe, they will still be conducting the way water moves and is contained across much of the landscape.

As mentioned above, **artificial drains** are common erosion features across Islay. They can be seen intersecting with peat cutting areas, forestry plantations, and much of the upland grazing regions. These drains will be having a high impact on the health of the peatland areas they cut through and the wider ecosystem within each water catchment. The drains direct water off the hill starving peatland of the element most crucial to habitats creation.

Existing areas of restoration
As seen in Figure 6 below, peatland restoration projects have commenced across some parts of Islay. This demonstrates that knowledge, equipment and skills within the peat wetland restoration sector already exist on Islay.

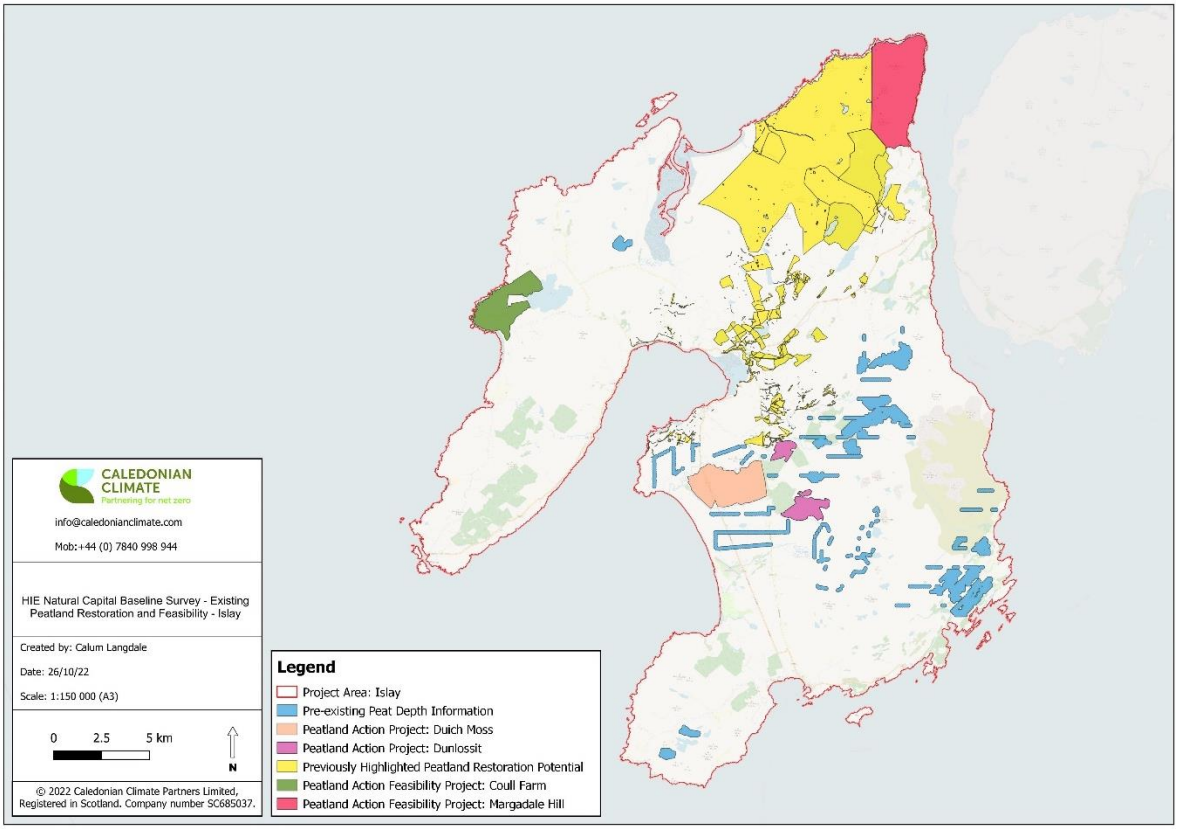


Figure 7: Existing peatland restoration and feasibility projects across Islay

Colonsay

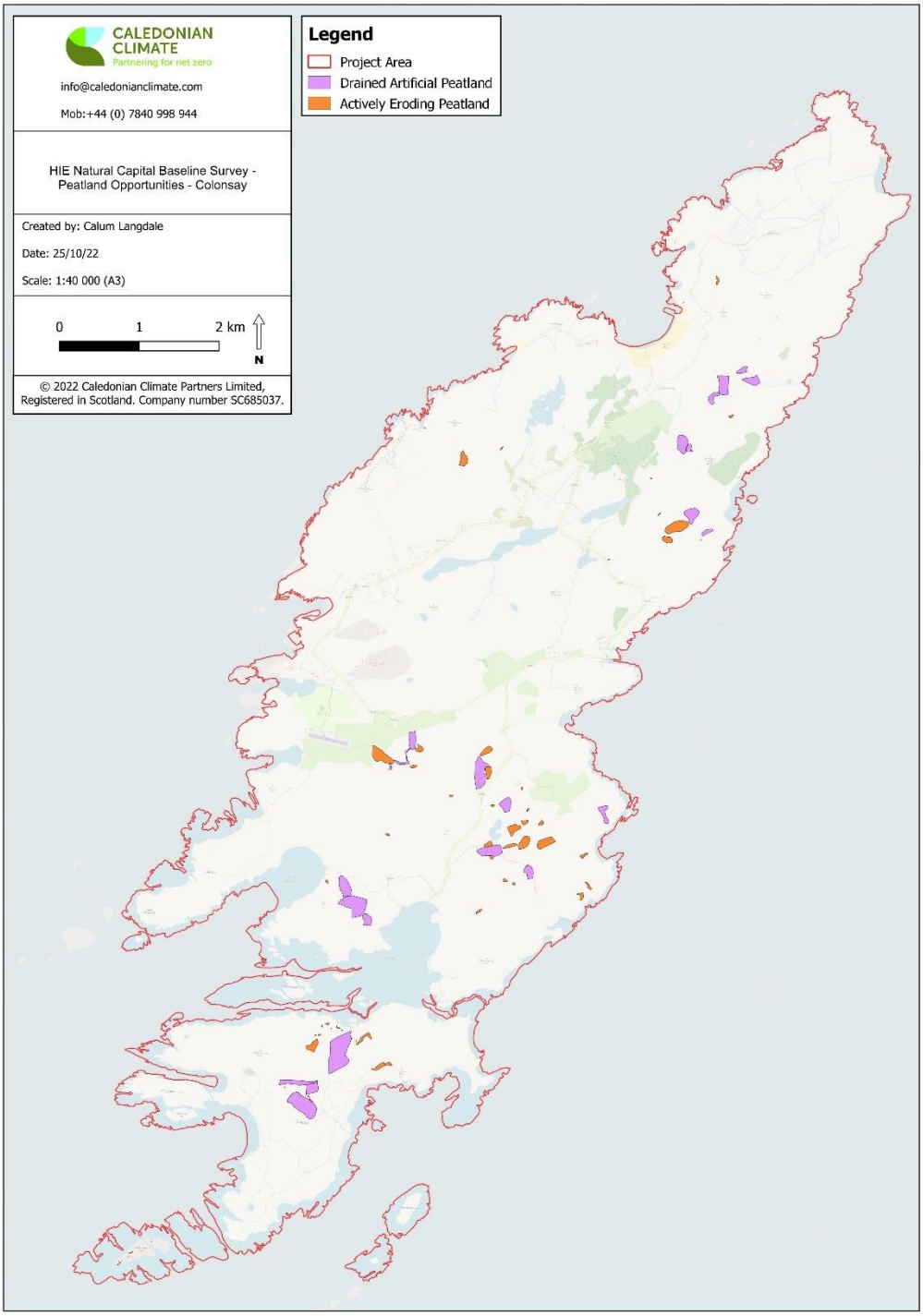


Figure 8: Peatland restoration opportunities across Colonsay.

The desk based study concludes through Figure 8 that the majority of Colonsay is 'modified' due to human activity, mainly through the creation of drains. Little to no 'near-natural' condition is seen from this survey but this should be assessed in future field surveys.

The following land practises are present on Colonsay:

- Grazing domestic herbivores in agriculture

This required changes to the natural landscape, mainly through drainage systems to achieve efficient output.

Across Colonsay, there are small, infrequent patches of deep peat (>100cm deep) with the majority of the island's peat below 50cm deep. Furthermore, the areas of class 1 and 2 peatland habitat in the *Carbon and Peat Map* are also uncommon, small pockets of these categories exist across the island. As a result, the carbon emissions reductions from restoration of peat on Colonsay may not be high but still recommended in order to improve the quality of existing peatland habitat.

The present erosion features primarily include areas of **artificial drains** with small locations of haggs and gullies present. The drains most likely exist to create farmland and better grazing quality. **Haggs and gullies** are most likely formed due to this draining action removing water from the peatland and creating erosion.

There is no evidence of peat cutting present, and some drained peatland areas have been converted into farmland/improved pasture. There is little evidence of herbivore impact creating erosion features. However, this will need to be assessed in line with existent herbivore densities and through ground truthing.

Jura

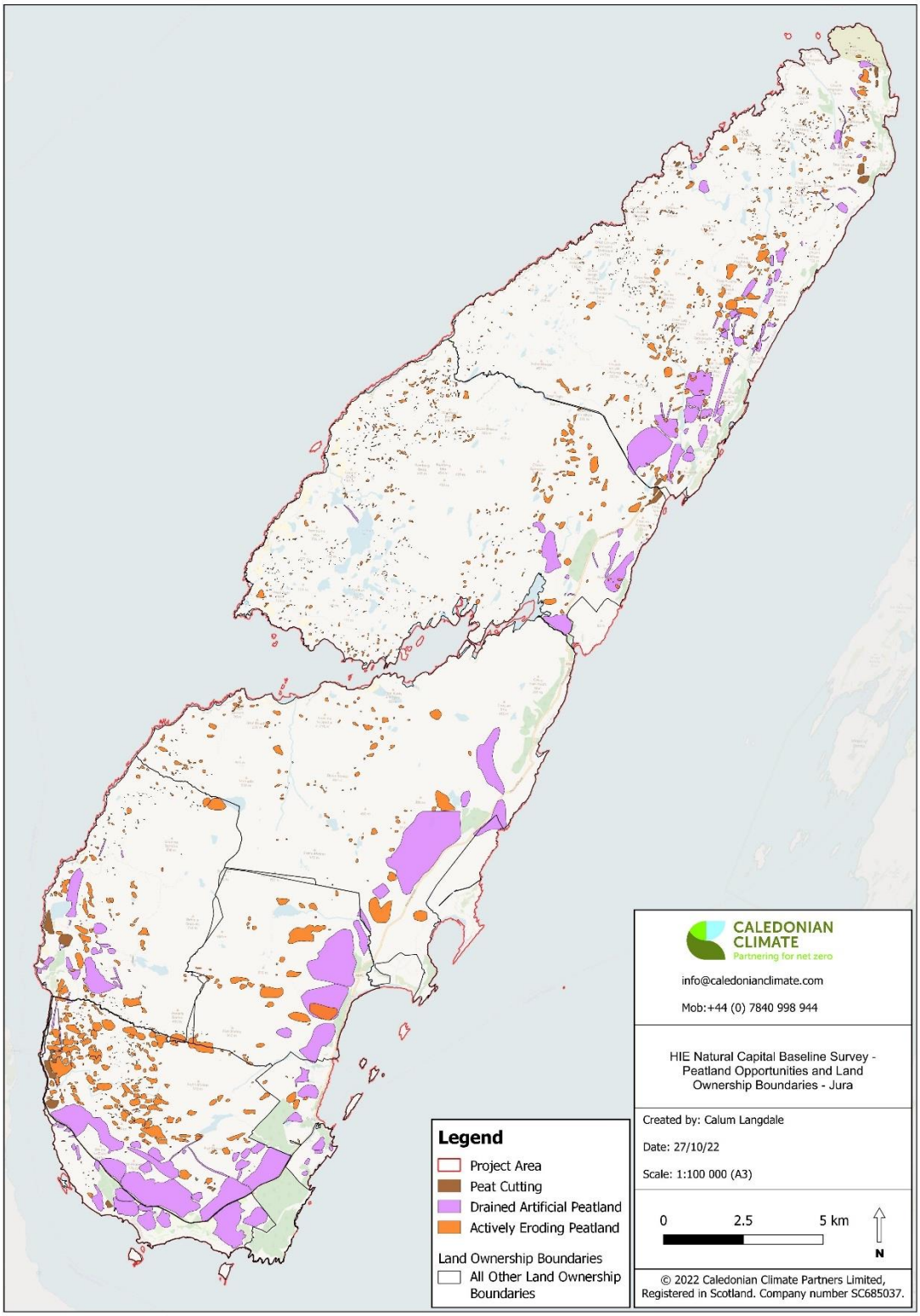


Figure 9: Peatland restoration opportunities and land ownership boundaries across Jura.

Figure 9 shows that the majority of peatland across Jura is of 'modified' condition due to human activities such as draining and peat cutting and also from high herbivore impact creating micro-erosion

and leading to macro-erosion features. As a result there is little to no evidence of 'near-natural' peat condition.
The following land uses are present on Jura:

- Commercial forestry
- Peat cutting
- Grazing domestic herbivores in agriculture

These required changes to the natural landscape to achieve efficient output.
The majority of peat across Jura is between 50-100cm deep with some medium patches of >100cm deep peat around the edges of the island. The majority of the island is class 1 and 2 bog habitat, meaning that the restoration potential here is high.

There are large areas of **artificially drained** peat across the south and north east of Jura which are mostly located near settlements, areas of forestry and peat cutting. These drains have an impact on the water level of the peatland as they are dug to dry an area. There will be a negative impact on peatland forming vegetation.

Areas of **peat cutting** exist in these areas too. It is not clear if these are scars or still active areas of cutting. These areas of bare peat cliffs will have an impact on the hydrology and ability of peat to regenerate. Some areas may be historic which may have revegetated but will still carry an altered hydrology. There are some small areas of **commercial forestry** present but these are mainly out with areas of peatland. Some areas of commercial forestry are located on top of soil types class 1&2 which is concerning for the state of the peat beneath.

Herbivore impact across the island is high causing the majority of **micro-erosion** areas. Herbivore tracks are visible on satellite images. Most water features are especially impacted. As a result, the whole island can be classified as 'modified'. **Haggs and gullies** exist in small isolated patches across the island and are most likely influenced by herbivore impact and artificial drains.

Kintyre

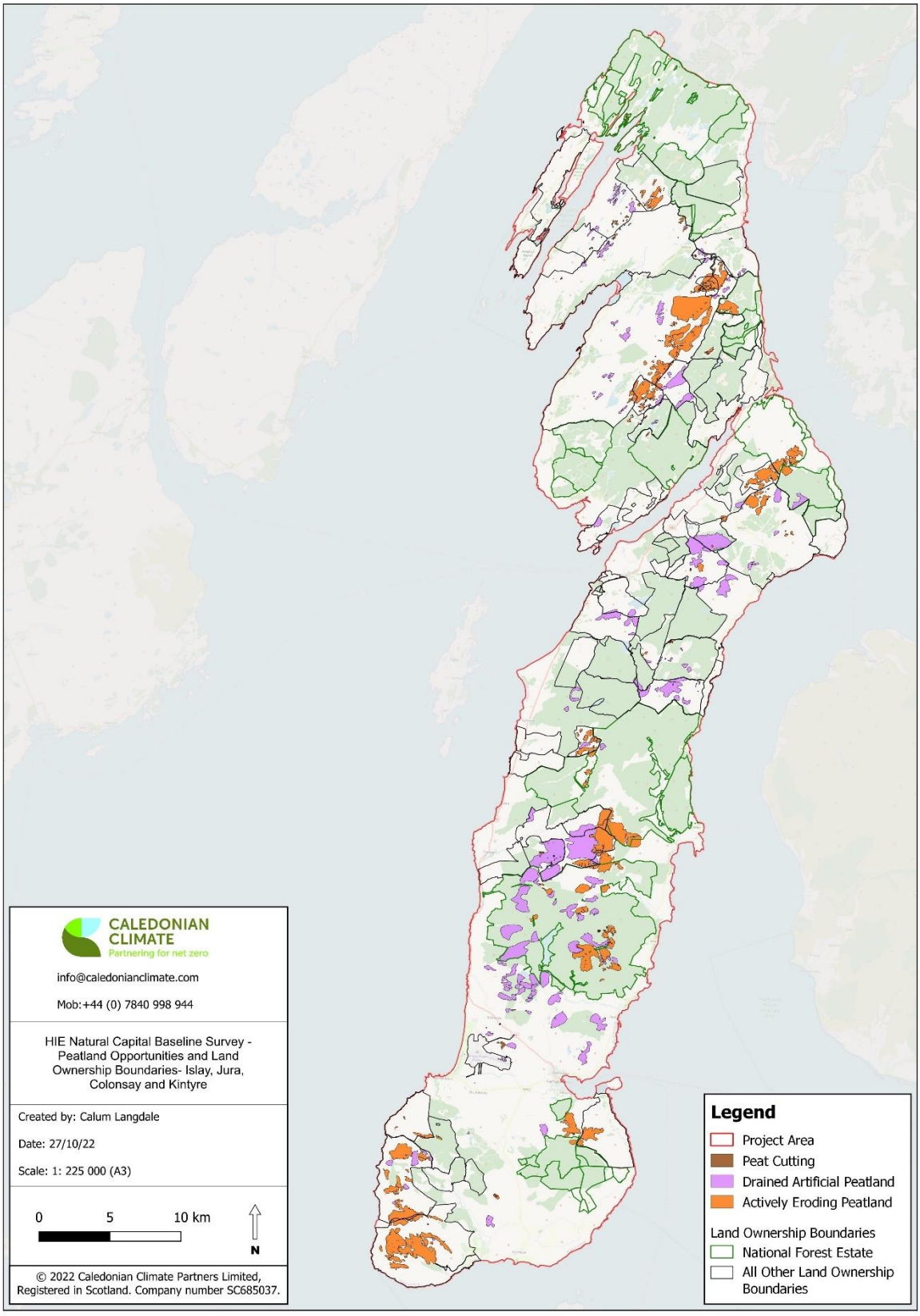


Figure 10: Peatland restoration opportunities and land ownership boundaries across Kintyre.

Akin to the other areas, Figure 10 shows the majority of peatland in Kintyre is categorised as 'modified' due to human activity and herbivore impacts. Some fragmented areas of 'near-natural' peatland were seen through the desk-based survey. However, the condition would need to be investigated through a ground truth survey.
Historical land use practices which demand alteration of the peatland present are:

- Commercial forestry
- Peat cutting
- Grazing domestic herbivores in agriculture
- Windfarm developments

Across the Kintyre peninsula area there are large amounts of deep peat (>100cm deep) alongside some areas of peat between 50-100cm deep. Areas of class 1 and 2 high priority peatland are also present across the area.

There is a large amount of **artificially drained** peat present. This varies in terms of being actively drained and existing historically. Similarly to the areas above, these are cut into the hillside to achieve drier, less 'boggy' conditions to allow forestry, peat cutting and grazing to take place. These adversely alter the natural hydrology of an ecosystem causing these areas to be categorised as 'drained' leading to 'erosion' or 'micro erosion'. Some large patches of **hagg/gully** systems with **bare peat** are also present within the class 1 and 2 areas. These are relatively flat and would support restoration works. Many small areas of haggs/gully systems also exist.

Considerable areas of **commercial forestry** or recently felled areas are present over deep peatlands. There are also areas of self-seeded woodland with deep peat underneath. This is potentially a land use consideration when moving forward with peatland restoration as there are challenges with converting forest to bog when forestry is still commercial. Some areas of eroded peat also exist in close proximity to, or related to, **windfarm** developments.

One area of **peat cutting** was identified in close proximity to Campbeltown airport. These exposed peat banks will have equally adverse impacts on the atmosphere to that of flat bare areas. The areas of historic peat cutting activity appear to have mostly grown over. Although the impact of these areas will be less severe, they will still be conducting the way water moves and is contained across much of the landscape.

Herbivore impact is present to the extent of causing micro-erosion visible from satellite imagery. High numbers of herbivores can have adverse impacts on peatland areas through browsing and trampling. This causes the vegetative layer to break, kick-starting the erosion process. This depends on how they use an area in terms of migratory patterns, rutting and holding. It also depends on the density of deer across the area and how each land holding manages numbers.

Existing areas of restoration
As seen in Figure 11 below, peatland restoration feasibility research has commenced across areas of southern Kintyre.

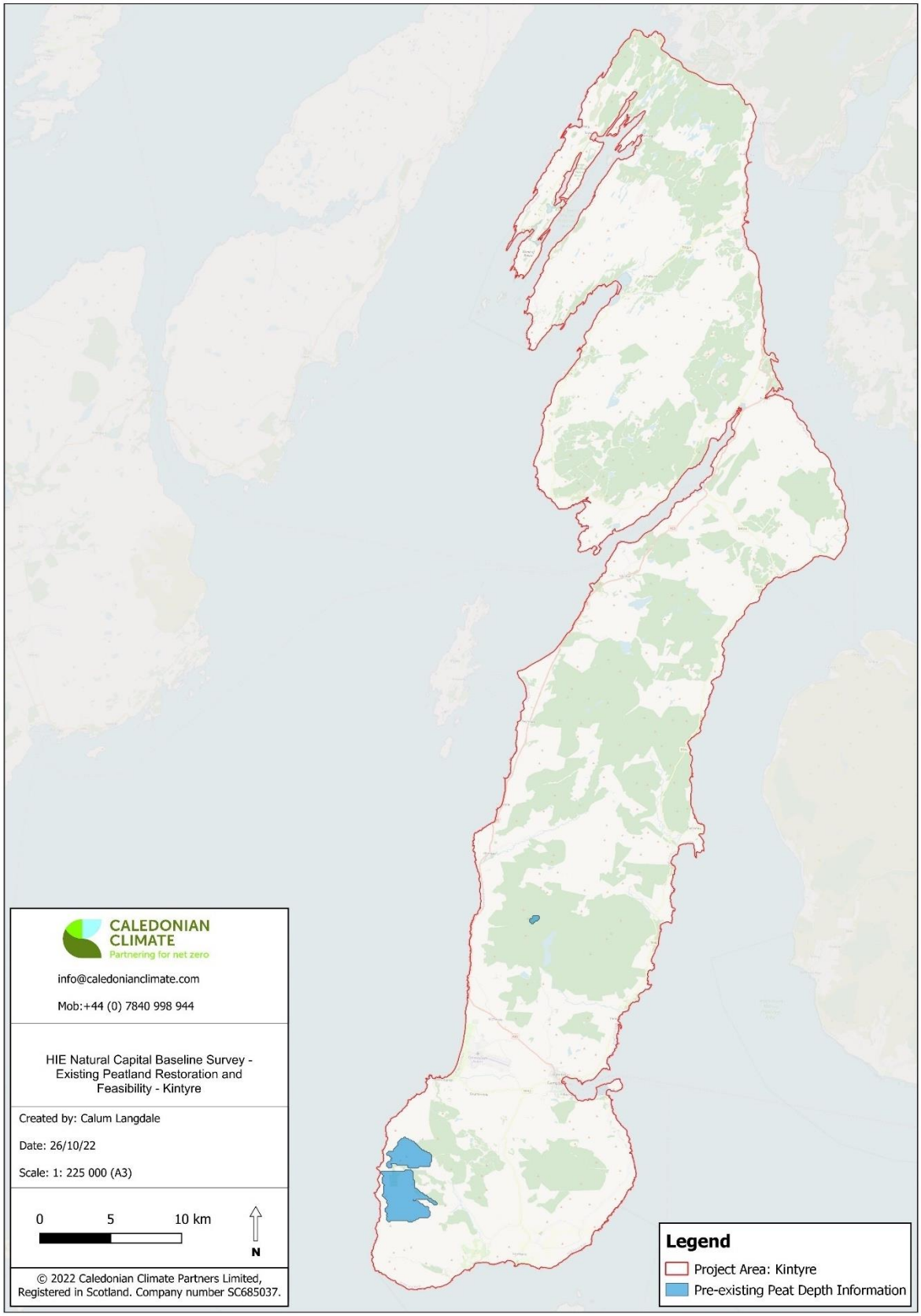


Figure 11: Existing peatland restoration and feasibility projects across Kintyre.

Recommendations

New restoration areas

Areas of restoration could begin anywhere in the areas highlighted 'artificially drained' or 'actively eroding' throughout the whole study area. It is recommended that this be done through a phased approach with consideration of land ownership boundaries, access, and willingness of landholder to proceed with works. Due to the small area of erosion on Colonsay, it is recommended that any restoration be considered as one phase for the island as a whole.

Ground truthing

The areas highlighted as potential for restoration in maps above, would require a peat depth survey, Peatland Condition Assessment, and habitat impact assessment (HIA). This will allow for high quality restoration mapping and confirm potential carbon storage values (measured by the peat depth and extent of erosion features). This can be done across the whole site.

Herbivore densities

The largest and most impactful risk to successful restoration is herbivore impact, and most notably that posed by red deer. This risk must be critically analysed and considered in advance of carrying out restorative works to ensure that success is likely over the long term. CCP can help to assess current impact and advise on areas that should not be considered for restoration in the event of the impact being too great to facilitate successful restoration.

From the initial desktop assessment there is clear evidence of high herbivore impact across Islay, Kintyre, and Jura. On Colonsay there is little evidence however it is still recommended that this be included in the herbivore density study to understand densities across the study area. Understanding the landholding complexities of the area and their domestic and wild herbivore grazing densities would be an important next step.

It will be necessary to engage with the relevant DMG (Deer Management Group) around deer management in the area.

Peat cutting

Peat cutting areas exist on Islay, Jura, Kintyre and there are both active and inactive sites present. It would be our recommendation that steps were put in place to slow down and eventually halt the cutting of peat, alongside considering these sites for restoration.

Artificial Drain Blocking

Present across the whole study area, it is recommended that these be blocked to avoid further damage to peatland and help with retention of water. This will allow the peatland vegetation to regrow. To raise the water table and begin to encourage a more natural blanket bog environment, the chosen contractor would 'block' or 'zip' the artificial drains to slow down the flow of water. Using on site materials the contractors would sculpt mini dams and 'zips' in 7 metre increments (suggested frequency in advance of full design) using tilting hitch buckets installed on the excavators. 'Zipping' and 'blocking' are efficient, low cost and reliable techniques used successfully in restoration projects nationwide.

Reprofiling and revegetating actively eroding hagg/gullies

Hagg and gully systems exist across the study area. It is recommended that these be restored to avoid continued erosion, greenhouse gas emissions and allow for the regeneration of peatland. The aim of reprofiling eroding peat haggs is to reconfigure the topography of the eroding haggs/gullies to an angle no steeper than 30°, and to cover any exposed soils with vegetation. A chosen contractor will skilfully

create a mosaic of vegetation using materials found on site to alter peat hagg topography, halt further erosion and encourage vegetation to cover exposed soil which, through future growth seasons, will help to bind it together.

Conclusion and Next Steps

In conclusion, there is very significant potential for peatland restoration of artificial drain systems, actively eroding hagg/gully systems, and peat cutting areas throughout the study area, and thus significant potential for carbon emissions reduction through the restoration of these features.

A full feasibility study will be required to refine detailed numbers in the identified proposed project areas. From this report an accurate quantification of carbon units can be ascertained, depending on erosion features and peat depth. The Feasibility study should include as a minimum:

- Peat depth surveying
- Surveying of erosion and degradation features
- Habitat Impact Assessment to assess herbivore impact
- Stakeholder consultation
- Geological and hydrological assessments
- Digital mapping and analysis
- Aerial photography
- Breeding bird surveys
- Further baseline assessments

Contact Details

Should there be any questions or points that require further clarification, please do not hesitate to get in touch.

Freddie Ingleby
Managing Director
freddie@caledonianclimate.com
+44 (0) 7840 998944

Garth Mortimer
Head of Projects
garth@caledonianclimate.com
+44 (0) 7938 504236

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