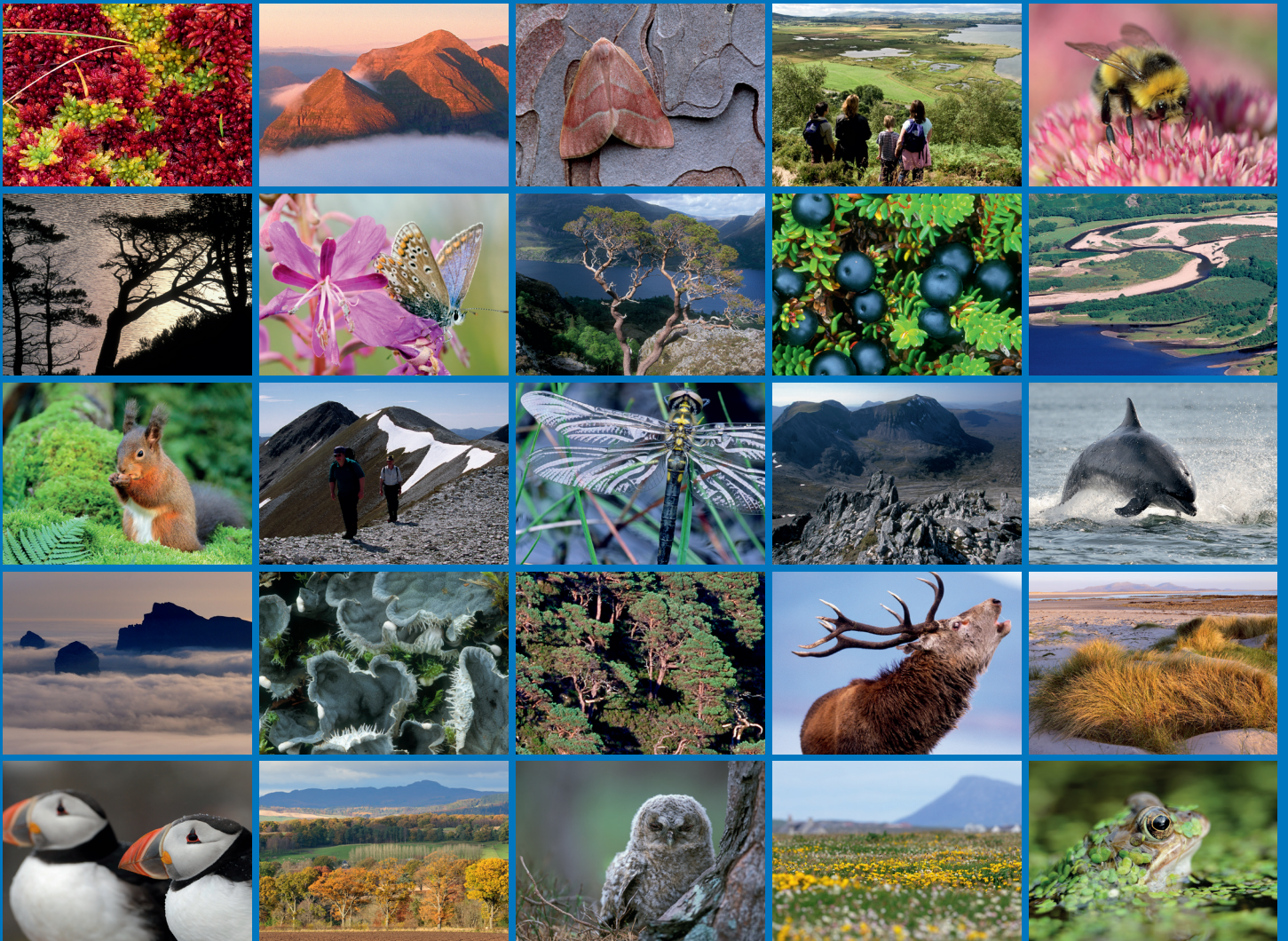


Site condition monitoring survey of upland notified features on designated sites – East Mires and Lumbister





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RESEARCH REPORT

Research Report No. 1031

**Site Condition Monitoring survey of upland
notified features on designated sites –
East Mires and Lumbister**

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SCM Reports

This report was commissioned by SNH as part of the Site Condition Monitoring (SCM) programme to assess the condition of special features (habitats, species populations or earth science interests) on protected areas in Scotland (Sites of Special Scientific Interest, Special Areas of Conservation, Special Protection Areas and Ramsar). Site Condition Monitoring is SNH's rolling programme to monitor the condition of special features on protected areas, their management and wider environmental factors which contribute to their condition.

The views expressed in the report are those of the contractor concerned and have been used by SNH staff to inform the condition assessment for the individual special features. Where the report recommends a particular condition for an individual feature, this is taken into account in the assessment process, but may not be the final condition assessment of the feature. Wider factors, which would not necessarily be known to the contractor at the time of the monitoring, are taken into consideration by SNH staff in making final condition assessments.



RESEARCH REPORT

Summary

Site Condition Monitoring survey of upland notified features on designated sites – East Mires and Lumbister

Research Report No. 1031

Project No: 013952

Contractor: Andy Acton and Anna Griffith

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Keywords

Site Condition Monitoring; Protected Area; Upland; Site of Special Scientific Interest; Condition; Blanket bog

Background

Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), and RAMSAR sites are designated on the basis of notified features of interest. These features of interest may be particular habitats or vegetation types, particular species, or particular geological or geomorphological features. Site Condition Monitoring is a six year rolling programme of assessment, against quality standards, of the state of notified features of interest on designated sites. This report covers the blanket bog feature of the East Mires and Lumbister SAC and SSSI, Grid Ref HU 495 955, on Yell, Shetland (SNH Northern Isles Area).

Main findings

The blanket bog SAC and SSSI notified feature was assessed during September 2012. As much of the site that could be visited within one day was assessed using ten random sample locations and casual observations made whilst walking between these plots. At each random sample location attributes were assessed against blanket bog targets in the standard guidance for the assessment of upland habitats. Site check was also carried out for one SSSI feature, the breeding bird assemblage. The results of the survey were as follows:

- The blanket bog feature failed to meet the set targets at three of the ten sample locations visited. The failures were due to dwarf-shrub dominance.
- The dominance of dwarf-shrubs may reflect grazing history and/or maritime conditions or other natural factors. On balance it is suggested that the target be considered as met for the site overall. Repeat monitoring visits should provide an indication as to whether or not there is decline with respect to this target.
- Site check for the breeding bird assemblage did not observe any obvious negative impacts on moorland bird habitat.

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1. BACKGROUND

Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), and RAMSAR sites are designated on the basis of notified features of interest. These features of interest may be particular habitats or vegetation types, particular species, or particular geological or geomorphological features. Site Condition Monitoring (SCM) is a six year rolling programme of assessment, against quality standards, of the state of notified features of interest on designated sites. This report covers the blanket bog and breeding bird assemblage features of the East Mires and Lumbister SAC and SSSI, Grid Ref HU 495 955, on Yell, Shetland (SNH Northern Isles and North Highland Area). The blanket bog feature was subject to full SCM; the breeding bird assemblage was briefly assessed under Site Check.

2. METHODOLOGY

2.1 Site Condition Monitoring (SCM) (Common Standards Monitoring)

The methods for assessing the condition of the habitats followed those given in the documents listed below:

- Common Standards Monitoring - guidance for upland habitats ([JNCC 2009](#)).
- Site Condition Monitoring of Upland Sites in Scotland: Method of Field Assessment (MacDonald, 2004).
- Site Condition Monitoring (SCM) survey of upland and peatland notified features on selected protected areas in Shetland - Contract Statement of Requirements.

The above CSM guidance provides the blanket bog attribute table which includes all targets to be assessed for the feature.

Methods differed to MacDonald (2004) where requested in the contract Statement of Requirements or at the inception meeting. Notably:

- *An assessment of the condition of each selected notified feature, in the field:*
 - For sites over 1000ha, from as many of the 37 sample locations at which the appropriate feature is found to be present, or from known locations and opportunistic samples, using the standard methods provided.*
 - For sites less than 1000ha, visit as much of the features as practical within a day's fieldwork. Collect data at 5-20 locations.*
- *Stop at 28 sample points for sites falling under i). i.e. continue assessments regardless of the fails at six locations fieldwork cessation threshold given in MacDonald (2004).*

2.2 Generation of assessment points

East Mires & Lumbister SAC/SSSI covers 620ha and the SNH method of assessment is as follows:

For sites less than 1000ha, visit as much of the feature as practical within a day's fieldwork.

The extent and distribution of the blanket bog feature was identified via email correspondence with Jonathan Swale (SNH, Lerwick) and Aerial Photos. The majority of the site is blanket bog. Although there were no previous sample locations generated by SNH, or a requirement to generate them due to the size of the site, 39 random 13 figure grid references were generated in Excel 2010 in order to encourage good site coverage by

surveyors within the one day allowed for fieldwork. These waypoints were uploaded into GIS and any falling within obviously incorrect habitat e.g. lochs were discarded. For East Mires and Lumbister SAC/SSSI this gave a potential 28 blanket bog random sample locations. As this was too many to visit in one day the first 5 and last 5 random sample locations appearing to fall within blanket bog were provisionally selected.

2.3 Field methods – SCM

The surveyor navigated to each point using a hand-held Garmin eTREX H GPS receiver. Grid references were recorded once the accuracy value stated on the GPS unit had settled to between 1-10m. Each location was checked for blanket bog, if not present at the provided grid reference the required habitat was searched for within a 20m radius of that grid reference. The 'new' grid reference was then recorded. Locations falling more than 20m outside blanket bog habitat were discarded.

At each point, all targets for each feature to be assessed were checked according to the methods listed in section 2.1. For each target a record of whether the feature passed or failed was made and the actual value of the assessment recorded, e.g. the number of indicator species.

Photographs were taken at each sample location and throughout the site to illustrate general condition of the blanket bog feature and any particular issues related to condition or management. Each photo was given a unique reference.

2.4 Field methods – site check

Features not identified for condition assessment were to be borne in mind by the contractors whilst on site. Any issues relevant to condition or management were noted for a feature, together with the GPS grid reference and photos. Site check is intended to be a brief assessment requiring little additional time requirement or deviation from the route taken to assess the blanket bog feature.

2.5 Dates, surveyors and local conditions

The site was surveyed on 20/09/12 by Andy Acton and Anna Griffith. Weather conditions were dry, bright and windy.

2.6 Constraints

The contractors requested National Vegetation Classification (NVC) Survey/Phase 1 maps for the site prior to visiting in order to generate random sample locations according to correct habitat. The local SNH office staff were not aware of such data and so waypoints for sample locations were generated on the basis of the site boundary rather than blanket bog areas. As the site was predominantly blanket bog this proved not to be an issue. The contractors subsequently determined that the site had indeed been surveyed to NVC level by Loizou in 2000.

No difficulties with particular features, attributes or targets were encountered.

3. RESULTS

3.1 SCM of blanket bog

A map showing the East Mires and Lumbister SAC/SSSI with sample locations visited is provided in Appendix I. Appendix II contains the results of the assessments made at each of the ten sample locations provided in SNH's standard spreadsheet for upland and peatland features. The list of 31 generated waypoints and their grid references are provided as a separate worksheet in Appendix II. Plot and report figure photos are provided in Appendix III.

The results of the 2012 Site Condition Monitoring visit are summarised in Table 1 below.

Table 1. Summary table of the overall condition assessment for the blanket bog feature at East Mires and Lumbister SAC/SSSI.

Feature/ habitat	Number of assessments				Pass/ Fail	Reasons for failure or uncertainty
	passed	failed	discarded	not visited		
Blanket bog	7	3	-	18*	Pass	Cover of dwarf shrubs > 75%

* NB there was no requirement to visit all sample locations due to the size of the site (see section 2.1)

Blanket bog covers almost the entire site and assessments were made from widespread locations (see map, Appendix I). The blanket bog feature failed to meet targets at three out of the ten sample locations assessed. All failures were due to dwarf shrub dominance with the cover of *Empetrum nigrum* and/or *Calluna vulgaris* being higher than the 75% threshold for a 4m² plot. The percentage covers recorded at every location that failed were 85%, 10% above the target threshold.

The failures for dwarf shrub dominance were scattered across the site. All failures fell within M19 *Calluna vulgaris* – *Eriophorum vaginatum* blanket mire habitat, a community which often has a high cover of *Calluna* throughout its range in Upland Britain. The prominence of *Empetrum* in some stands may reflect 1) a period of heavy grazing (during which *Calluna* is grazed in preference to the less palatable *Empetrum*), followed by a relaxation of grazing and 2) the maritime conditions (*Empetrum* copes better than *Calluna* when exposed to salt laden air).

As the results showing high numbers of indicator species (including in samples where dwarf-shrub cover was high), absence of undesirable species, and low levels of disturbance by grazing and trampling (see comments in sections 4.1 and 4.2), it is suggested that this feature is not particularly at risk. Continued monitoring will reveal whether areas where dwarf-shrub cover is high show decline, for example, losing species diversity due to increasing shading by dwarf-shrubs.

The previous SCM visit was carried out in 2001; the blanket bog feature passing the condition assessment. No previous report or data was provided by SNH for comparison or identification of trends. The 2001 visit may not have used the current JNCC guidance and therefore comparison may be difficult.

3.2 Site check

The features for Site Check are listed below:

Breeding Bird assemblage

There were no obvious site-based issues observed that might have a negative impact on the breeding bird assemblage, specifically moorland birds. However, a detailed investigation of the breeding numbers, success and precise habitat conditions would be required to confirm that this feature continues to be in favourable condition. The site is owned by the Royal Society for the Protection of Birds (RSPB) and therefore it is expected that more data would be available from them that could contribute to Site Check.

Figures 1 – 3 on the next page show some of the water bodies encountered. These include the bog pool systems at c. HU 4492 11964 (see figure 10 in drainage section) and on the lower slopes of Muckle Swart Houll, as well as Trona Water and Loch of Windhouse (although Trona Water and Loch of Windhouse were only viewed from a distance) and no obvious adverse impacts noted.

Figure 1. Loch of Windhouse viewed from HU 49619 94318



Figure 2. Bog pools on the NE slopes of Muckle Swart Houll as seen when walking between locations 35 and 36.



Figure 3. Photo of Loch Trona from Plot 5.



4. MANAGEMENT

The site management statement (SNH, 2010) provides the following information:

East Mires and Lumbister SSSI is owned by the Royal Society for the Protection of Birds (RSPB) and is managed as part of the Lumbister nature reserve. The site is also part of a crofting tenancy, used for grazing by sheep and is stocked with 0.5-0.6 ewes per hectare (SNH, 2010).

The pressures likely to affect condition of the blanket bog are ticked in the standard SNH pressures table provided below. A brief description of observed pressures are also provided.

Table 2. SNH standard list of pressures likely to affect the condition of notified features. Those affecting the condition of the blanket bog feature are ticked.

Pressure	Relevant to feature	Pressure	Relevant to feature
1. Agricultural operations		25. Pollution - sewerage	
2. Burning		26. Presence/changing extent invasive species - NATIVE	
3. Development with planning permission		27. Presence/changing extent invasive species - NON NATIVE	
4. Dumping/spreading/storage of materials		28. Pressure to be identified	
5. Extraction - dredging (capital, maintenance)		29. Proactive on-site management	
6. Extraction - maerl		30. Recreation/disturbance	
7. Extraction - quarrying		31. Statutory undertaker	
8. Extraction - sand & gravel		32. Tourism & recreation	
9. Extraction - water (freshwater catchment; industrial, e.g. power station)		33. Trampling	✓
10. Fishing - recreational		34. Waste disposal - quarrying (geological material)	
11. Flood defence/coastal defence works		35. Water Dependant Pressure- abstraction	
12. Forestry operations		36. Water Dependant Pressure- artificial recharge	
13. Game or fisheries management		37. Water Dependant Pressure- diffuse source pollution	
14. Grazing - appropriate level	✓	38. Water Dependant Pressure- flow regulation	
15. Grazing - over		39. Water Dependant Pressure- morphological alteration	
16. Grazing - under		40. Water Dependant Pressure- point source pollution	
17. Inter-specific competition		41. Plant pests and diseases: <i>Phytophthora ramorum/kernoviae</i> on Blaeberry of heathland and woodland habitats	
18. Maintenance activities carried out on site by an organisation		42. Plant pests and diseases: <i>Phytophthora austrocedrae</i> on Juniper (Juniper dieback)	

19. Mineral extraction		43. Plant pests and diseases: <i>Dothistroma septosporum</i> on conifers (Dothistroma needle blight, or Red-band needle blight)	
20. Natural event		44. Plant pests and diseases: <i>Phytophthora ramorum/kernoviae</i> on Rhododendron, Larch http://tinyurl.com/d6wbe8a , other hosts	
21. No on-site activities related to feature condition noted		45. Plant pests and diseases: Alder dieback (Including <i>Phytophthora alni</i> and other causes)	
22. Non intervention	✓	46. Plant pests and diseases: Heather beetle	
23. Pollution - air-based sources (inc. greenhouse gases)		47. Plant pests and diseases: Other/unidentified suspected pest/pathogen	
24. Pollution - land-based sources			

In addition to the above pressures a number of active drains were observed on the site. These are not recently cut or cleared drains, rather they are being kept clear by the action of water flowing through them. It was unclear where this fitted into the above table.

4.1 Grazing

The site management statement (SNH, 2010) states that grazing impact is low. The 2012 site visit confirms that grazing impact (sheep) continues to be low and is at an appropriate level. It is clear from the vegetation composition and structure that grazing levels were formerly higher, but that reduction in grazing has largely led to positive changes to the bog vegetation. In some areas it is likely the relaxation of grazing may account for the high cover of dwarf shrubs (and failures for this target noted in section 3.1), but on balance the reduction in grazing has had a positive impact.

4.2 Trampling

The site management statement notes that trampling appears to be the main impact of the sheep and that it is causing localised erosion. During the 2012 visit a herd of sheep was seen around the pasture at Lumbister. Trampling evidence was observed on the bog expanse whilst walking between plots. In areas of taller vegetation this was visible as locally frequent but generally faint tracking with little or no bare peat, but more locally there were areas of short, sparse vegetation with abundant hoof prints. This is illustrated in figures 4-8 below. The levels of trampling were not observed to be such that they caused or exacerbated erosion in the areas passed through or at sample locations. However, this may not be the case for areas not visited and if there are any areas of hags and gullies where sheep may shelter, trampling may be contributing to erosion here. In general it appears that reduced trampling has allowed a significant recovery of the bog vegetation at the site and many hagged areas were observed to have revegetated.

Figure 4. An area of short, sparse vegetation at HU 49678 94367 showing abundant hoof prints with little bare peat. This was not currently leading to active peat erosion.



Figure 5. Close up of figure 4 trampling at HU 49678 94367.



Figure 6. One of the more conspicuous areas of trampling. Around bog pool at HU 48309 95570.



Figure 7. Most of the hagged areas seen were revegetating well with bog vegetation (including frequent to abundant Sphagna).



Figure 8. Another hagged area (HU 49437 94284) with revegetated, generally stable banks with few signs of erosion caused or exacerbated by trampling. Some localised areas used by sheep for shelter and rubbing.



Figure 9. Another example of a hagged area (HU 49421 94962) with revegetated, generally stable banks with few signs of erosion caused or exacerbated by trampling.



4.3 Drainage

The site management statement (SNH, 2010) notes that the lack of significant drainage on the site has contributed to the intact nature of the blanket bog habitat. Only a few drains, mostly small were observed during the visit. Generally these have infilled and there is little or no active erosion associated with them.

The pool systems in the large flat expanse of bog between plot 3 and 39 are largely intact, but a few pools have low water levels which might be something to monitor. No obvious drains were seen affecting this area but if there are drains known to be present that are affecting water levels they could be blocked. There is some sheep trampling here but there is only very localised trampling damage and no large scale negative impact. The area was only passed through briefly but it is important to monitor this area to ensure the pool systems do not deteriorate.

Figure 10. Good pool systems between plot 3 and 39. A few in this area have low water levels and subsequent monitoring should check for deterioration.



5. REFERENCES

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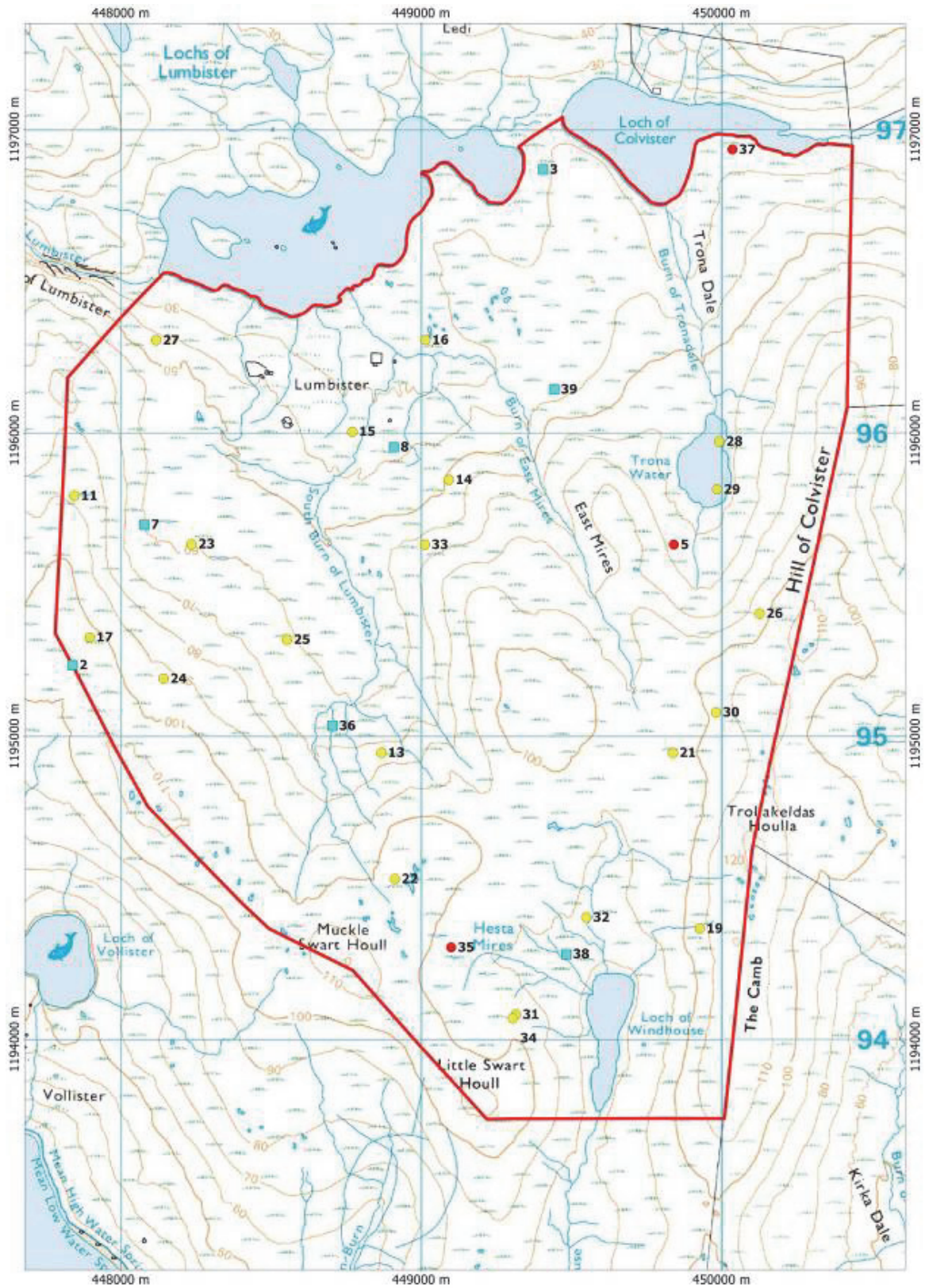
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APPENDIX I: MAP OF EAST MIRES AND LUMBISTER SAC/SSSI SHOWING SAMPLE LOCATIONS VISITED

Blue = pass, red = fail, yellow = not visited.



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