3 RESULTS

3.1 Aerial Assessment and Habitat Impacts

Figure 2a provides an overview of the aerial imagery collected during the UAV surveys, with Figure 2b providing a snapshot of the level of detail available from this imagery. Figures 3a -e show the boundary of the mapped zone of impact which is the result of the ground truthing of the predicted zone of impact digitised from the UAV collected imagery.

A cloud point video transect along the Yellow Bog track has also been provided separate to this Report, along with video images of the track and its surroundings. This should be referred to for added context.

Table 1 provides Target Notes on the habitats present within the zone of impact and surrounding peatland habitats. Target Note locations are similarly shown on Figures 3a -e.

Table 2: Target notes from ground truthing survey of the predicted impact zone at the Yellow Bog Access Track

Target notes from ground truthing survey

Target Note Number	East	North	Note Description	Location Photograph
1	952082	280145	Area dominated by purple moor grass (*Molina caerulea*) and hare's tail cotton-grass with patches of common cotton-grass, ling heather (*Calluna vulgaris*) abundant along with cross-leaved heath (*Erica tetralix*). Hair-cap moss species (*Polytrichum* spp.) in exposed areas following works and along ditches. In hollows soft rush (*Juncus* effusus) is abundant. Tormentil (*Potentilla erecta*) is also abundant throughout the sward. Pleurocarpus moss species are common in the drier areas of the spoil mound from road construction.	
2	952113	280117	M17 mire has developed at this location in the low depression. Ling heather, bog myrtle (*Myrica gala*) and deer grass (*Trichophorum germanicum*) abundant. Cross-leaved heath, hare's tail cotton-grass are common throughout the area with a rich sphagnum layer present including large patches of *S. capillofolium S. papillosum* and *S. cuspidatum*.	

Target notes from ground truthing survey

3	952129	280114	A drier area on shallow peat/rock substrate dominated by bent grass species (*Agrostis spp.*). Blanket bog species are beginning to recolonise with cross-leaved heath, ling heather, hare's tail cotton-grass, common cotton-grass and a layer of common bryophytes	
4	952148	280089	Borrow pit present at this location. Vegetation consistent with this drier habitat. Purple moor-grass dominant inter-mixed with bent grass species, ling heather and bell heather (*Ericea cinerea*). Patches of crowberry (*Empetrum nigrum*) recorded with a bryophytes layer beneath grass / dwarf shrub heath sward. Sparse bryophyte cover present on rocky substrate in borrow pit bottom with some lodgepole pine regeneration.	
5	952138	280037	Bog myrtle, ling heather, common cotton-grass and deer grass most dominant species. Good layer of S. capillofolium throughout with small patches of S. papillosum.	
6	952132	280006	Purple moor grass dominated area with common cotton-grass common throughout the sward. Tormentil common beneath the grass sward.	

Target notes from ground truthing survey

7a	952120	279893	Species poor area dominated by purple moor grass with bent grass species present at lower densities. Tormentil common, bog myrtle and common cotton-grass present but sparse. Bell heather and ling heather common in low densities throughout sward. Hair-cap moss species common in patches, along with other pleurocarpus moss species Cladonia lichen species present. Raised area isolated from adjoining bog complex to north; vegetation community of little value	
7b	952232	279740	Description as per location 7a.	

Target notes from ground truthing survey

9	952279	279550	Vegetation composition much the same as the adjoining blanket bog, hard to differentiate between the two. Shallow peat depth along this section. Soft rush present but sparse, purple moor grass more common closer to the track. Ling heather common and more dominant than in undisturbed ground. Ditch is filled with purple moor grass, bent grass species, and sedges. Bryophytes and ling heather most common towards top of the ditch, along with a carpet of Pleurocarpus mosses. Cladonia lichens common on south facing slope of northern ditch.	
10	952310	279498	M17 mire community starts directly after ditch to north of track. In the ditch ling heather is dominant with a bryophyte layer present. Lodgepole regeneration present and no peat layer; vegetation growing on rocky substrate. Some birch regeneration also present. Purple moor grass and sphagnum species present in great abundance further west as the topography slopes towards the burn.	
11	952330	279479	Purple moor grass dominant interspersed with sparse tussocks of soft rush. Ling heather and cross-leaved heath common but sparse, bell heather present but uncommon. Tormentil and self-heal (*Prunella vulgaris)* present sparse throughout the sward. Bog myrtle present and common further west.	

Target notes from ground truthing survey

12	952349	279368	Soft rush dominated area along the burn and up the banking. Bent grass species and heath bedstraw (*Galium* saxatile) make up the predominant proportion of the vegetation.	
13	952329	279369	Borrow pit present at this location dominated by soft rush, hair-cap moss species, S. palustre, S. cuspidatum and other sphagnum species.	
14	952320	279441	Purple moor grass dominated interspersed with tormentil, ling heather, crowberry, self-heal and cross-leaved heath. Bryophyte layer dominated by hair-cap moss species and woolly fringe moss (*Racomitrium lanuginosum*) although this is supressed by the dense grass sward. Cladonia species present throughout. Occasional patches of bell heather present but the compartment is of little conservation value being isolated from the adjoining blanket bog due to raised topography. Dwarf birch is present in dense patches but is heavily grazed further east from waypoint toward the top of the watershed.	

Target notes from ground truthing survey

15	952317	279470	A ditch dominated by bryophytes and woody shrubs. Ling heather and crowberry present and common. Hair-cap moss species and pleurocarpus mosses dominant the ground layer. Purple moor grass and bent grass species common throughout the sward becoming more prevalent further up the ditch banking.	
16	952236	279636	Ditches dominated by bryophytes, ling heather and cross-leaved heath in areas of rocky substrate, and woolly fringe moss in the drier areas. Hair-cap moss species are present in semi -wet areas transitioning into sphagnum species blankets and purple moor grass where some standing water is present. Peat hags forming on the south ditch banking. Effect of the track construction disturbance stops at the edge of the ditch with little impact on the M17 blanket bog adjoining it. There appears to have been some recent subsidence of the ditch banking with peat bags slowly worsening. Recommend reprofiling ditch banking once work has been completed to prevent hags forming.	
17	952166	279788	Uniform M17 community to the north and south of the track. Dominated by deer grass, ling heather and to a lesser extent purple moor grass with a carpet of S. capillofolium and Cladonia species. Round sundew (*Drosera rotundifolia*) and cross-leaved heath also noted.	

Target notes from ground truthing survey

18	952078	279956	As per description for notes 7 and 14.	
19	952106	280023	Road spoil and ditch present at this location. Ditch vegetation is dominated by soft rush and standing water with Sphagnum species common. Common cotton-grass beginning to colonise the bare peat caused by worsening hagging. Hair-cap moss species common on spoil heap along with bent grass species and ling heather. Lodgepole pine regeneration present along the ditch. Bare peat present along length of this section; large cracks forming ca. 1m behind peat hag that will eventually cause subsidence of that peat mass.	

Target notes from ground truthing survey

20	952048	280138	Common cotton- grass, purple moor grass and ling heather dominant the area, with cross-leaved heath and bog myrtle present but sparse. S. capillofolium carpets are present in depressions. The habitat appears to be slowly recovering to M17 blanket mire with deer grass beginning to encroach from adjoining habitat. The compartment currently species poor overall, with few areas of floristic value ecologically. Peat appears to be deep and water table high due to topography.	
21	952050	280159	Rocky substrate with very shallow layer of peat. Ling heather, heath rush (*Juncus squarrosus*) and purple moor grass the dominant species. Pleurocarpus mosses, hair-cap moss species and sphagnum species form the majority of the bryophyte ground flora. Sphagnum species present only further east closer to stream where ground holds more moisture.	
22	952174	280059	An area of M17 blanket mire. Deer grass, bog myrtle, common hare-grass and ling heather dominate the field-layer. Sphagnum carpets blanket the ground layer with S. capillofolium the dominant species present. Bog asphodel (*Narthecium ossifragum*) present but sparse, hare's-tail cotton- grass tussocks sparsely distributed. Wooley fringe moss hummocks are present. Further west deer grass becomes more dominant and bog myrtle and hare's-tail cotton-grass are no longer present or very uncommon. Habitat generally becoming drier towards the watershed with sphagnum cover	

Target notes from ground truthing survey				
			falling. Purple moor grass very spare and low cover in comparison to its dominance in the disturbed ground either side of the track.	

3.2 Topographical Surveys

Figure 4 provides the contour map generated from the UAV imagery combined with the topographical surveys and ground control points as shown in Image 1.

Figures 5a shows cross sections of the Yellow Bog Access Track. Figures 5b-d show the cross-sections of its running surface and the areas of surrounding cuts and spoil generated from its construction. Eight cross sections are provided with the locations of these in the context of the wider track. The width of the impacted ground within the SAC is similarly shown on these cross-sectional diagrams into which the current access track could be expanded for the purposes of wind farm construction whilst limiting the effects to SAC qualifying habitats (depending on details considerations of slope and resulting in-direct drainage effects).

4 CONCLUSION

The UAV aerial imagery combined with topographic control data allowed the extent of disturbed ground from the existing track to be demarcated accurately.

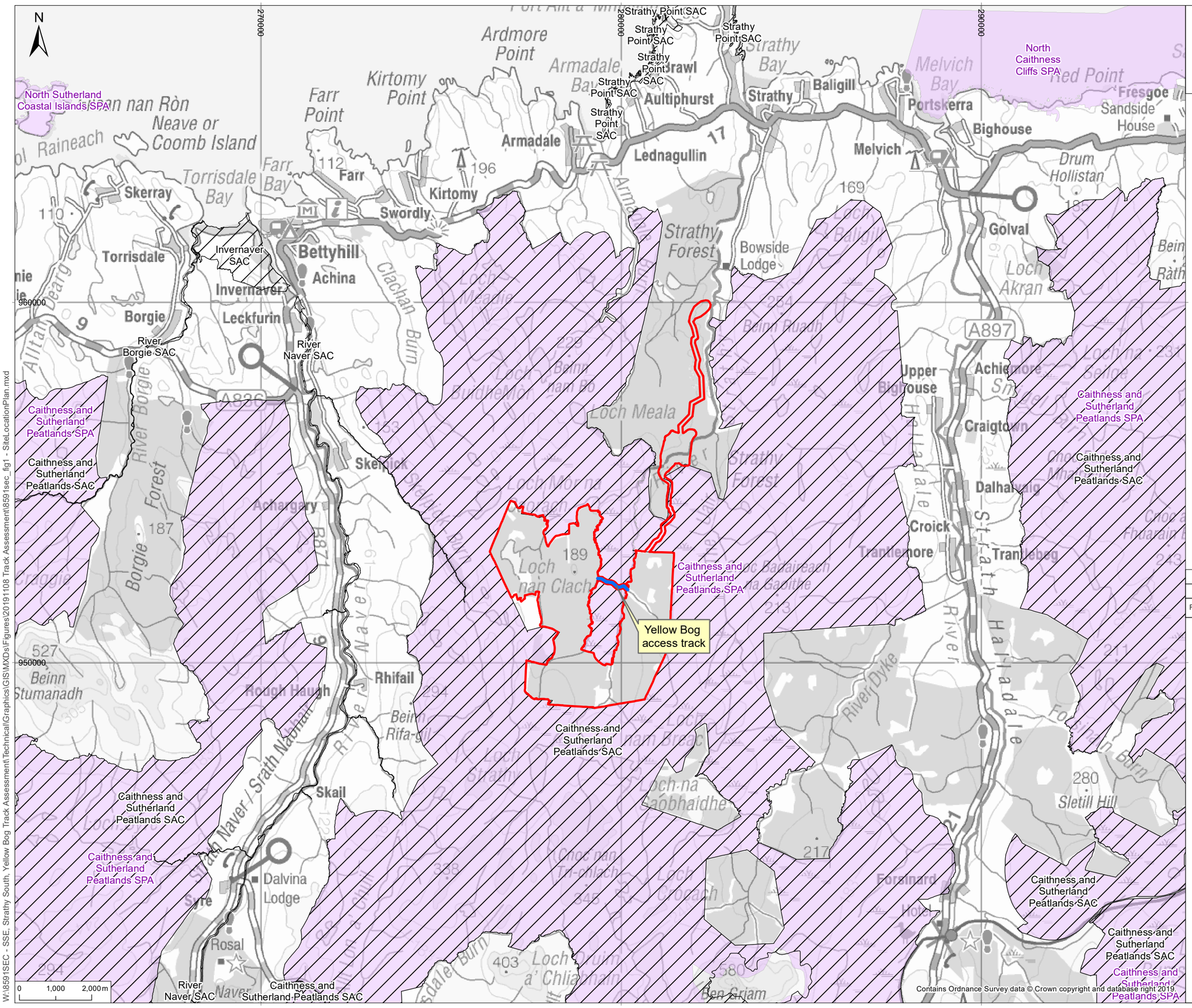
The vegetation composition within the impact zone has been altered markedly from the surrounding unaffected area. Purple moor grass is the most dominant species present within the impact zone readily colonising the disturbed area where spoil from the track construction has created a raised area above the water-table and disconnected it from the adjacent bog complex. Interspersed within the grass sward are patches of cotton grass species, bent grass species and ling heather with a bryophyte field layer typical of drier heaths. *Sphagnum spp.* are present in the drainage ditches at either end of the access track due to the accumulation of water providing suitable habitat. However, these only cover a small extent of the overall area and are therefore of limited significance. Two areas near the eastern extent of the track within the impact zone appear to have remained unaffected with their vegetation resembling the adjacent unaffected area. Both areas are situated within depressions that have kept the water table closer to the surface allowing typical blanket bog species to recolonise.

Erosion features were identified along the length of the track in the form of peat hagging and cracking. Peat hags have formed towards the peripherals of the track's length where peat accumulation is much greater than in the centre. For the most part the peat hags are stable and do not appear to be deteriorating at a rapid rate. However, to the eastern extent of the track there is a peat crack has begun to form ca. 1m behind the peat hag. This will eventually entirely separate from the peat mass and increase the speed at which erosion occurs.

Figures 5a-d provide the width of the impact zone present surrounding the existing track. These cross sections clearly define the extent of the effects to habitats, and how these extend for a significant distance from the current running surface. The approximate width of the running surface and associate drainage was found to be c.10 m with areas of disturbance to habitats either side of the footprint of the track of between 10 and 15m.

As there has already been substantial alterations to the habitats present surrounding the current track, it is considered that there is sufficient ground available for the track to be widened into during the construction of the Strathy South Wind Farm. Given the habitats within the current impact zone are already significantly altered along with their associated watertables, construction on the margins of these areas (bordering the existing track) is unlikely to cause additional impacts to the qualifying habitats of the surrounding Caithness and Sutherland Peatland SAC.

FIGURES



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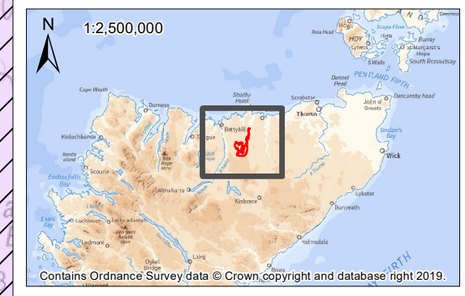
Legend

- Site boundary
- Yellow Bog access track
- Special Protection Areas (SPAs)
- Special Areas of Conservation (SACs)



Rev	Description	By	CB	Date

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Client: SSE Renewables

Project: Strathy South Wind Farm
Yellow Bog Access Track

Title: Site Location Plan

Status	Drawn By	PM/Checked By
FINAL	KAG	SL
Project Number	**Scale @ A3**	**Date Created**
SEC8591	1:100,000	NOV 2019
Figure Number		**Rev**
1		-

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