

# Appendix 5.5 Peatland Condition Assessment

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## Appendix 5.5 Peatland Condition Assessment

- 5.1.1 A peatland condition assessment was completed to assess the condition of peatland on the Site in order to consider higher quality areas of peatland as part of the design process. This appendix provides the detailed methodology and results of the assessment.

### 5.2 Methodology

- 5.2.1 The results of the Phase 1 habitat and National Vegetation Classification (NVC) surveys completed in June 2019 were used to guide the scope of the peatland condition assessment, particularly with regards to the habitat types and plant species known to be present, alongside the results of peat probing surveys completed in September 2020. The results of the Phase 1 habitat surveys, NVC surveys and peat depth results are shown on Figure 5.2, Figure 5.4 and Figure 5.8, respectively. The ‘compartments’ referred to in the peatland condition assessment were based on both the results of peat probing surveys (areas of deep peatland over 0.5m), the proposed locations for infrastructure and the habitats present (informed by the NVC results). The locations of compartments in relation to the NVC habitats recorded on the Site are provided on Figure 5.9. Areas of shallow peat containing proposed infrastructure were also surveyed and their general condition noted.
- 5.2.2 The peatland condition walkover survey was concentrated within the general vicinity of the proposed infrastructure. The much larger number of smaller outlying pockets unlikely to be affected by the Proposed Development were only recorded if they happened to be encountered and were deemed noteworthy.
- 5.2.3 Individual peatland survey units (‘compartments’) were numbered to allow notes on the peatland condition and observations regarding the potential impacts of any proposed infrastructure within or close to each compartment to be recorded. The condition of each compartment was recorded by means of field observations and target notes and, where necessary, further subdivided for assessment purposes. NVC codes (Rodwell, 2006) were used when referring to specific plant communities.
- 5.2.4 The following sections describe how the assessment considers both peatland quality and peatland condition and the key pieces of guidance used for interpreting the results. A summary section in section 5.2.22 provides further information on how this guidance has been used in combination.

#### **Peatland Quality**

- 5.2.5 The Joint Nature Conservation Committee (JNCC) guidance for selecting biological Sites of Special Scientific Interest (SSSIs) in relation to bogs (JNCC, 1994) was used to determine peatland quality and whether the peatland could be defined as active. For the purpose of this assessment, an active peatland was defined as a habitat that supported a significant area of peat-forming vegetation. As there is no guidance on what constitutes a significant area of peat-forming vegetation, significance of cover was based on surveyor experience and the JNCC Phase 1 habitat survey guidance (JNCC, 2010) with respect to the classification of blanket and modified bog i.e. bog areas with abundant bog-moss (*Sphagnum sp.*) are classified as blanket bog and bog areas with rare/absent bog-moss (*Sphagnum sp.*) are classified as modified bog.
- 5.2.6 Habitat quality was assessed using the JNCC guidelines’ (JNCC, 1994) definition of what constitutes an active/peat-forming peatland based on factors such as a low frequency of drains and peat-cuttings and the presence of species indicating peat formation capability and/or a lack of disturbance. The guidance notes, in particular, species such as golden bog-moss (*Sphagnum pulchrum*), rusty bog-moss (*S. fuscum*), Baltic bog-moss (*S. balticum*), magellanic bog-moss (*S. magellanicum*), cow-horn bog-moss (*S. auriculatum/denticulatum*), white beak-sedge (*Rhynchospora alba*), great sundew (*Drosera anglica*) and black bog-rush (*Schoenus nigricans*). The presence of a natural surface pattern was also used to indicate a higher quality area. A natural surface pattern is defined as a pattern that alternates between aquatic and terrestrial elements, e.g. pool and hummock, or terrestrial features alone, e.g. hollow and ridge (JNCC, 1994). Following the guidance, areas considered to be of higher quality contained uncommon species and a higher

species diversity. For example, to be classified as higher quality, the peatland had to support bog-moss (*Sphagnum sp.*) other than the ubiquitous red bog-moss (*S. capillifolium*).

### Peatland Condition

5.2.7 The peatland condition of the compartments was categorised based on guidance produced by The Heather Trust (The Heather Trust *et. al.*, 2017). This recognises six key factors that determine the condition of a peatland. These are:

#### 1. Bog-moss (*Sphagnum sp.*) Cover

5.2.8 A key component of an active peatland, this was used as one of the primary indicators of determining the degree of peatland modification. The extent alone gives a good indication of how high the water table is and, therefore, to what extent a peatland is still functioning (i.e. growing and sequestering carbon). The extent of bog-moss (*Sphagnum sp.*) present in each compartment was recorded as dominant, abundant, locally abundant, scarce or absent using an adaptation of the 'DAFOR' scale (Norfolk Wildlife Trust, 2021) as shown in Table 5.5.1. The DAFOR scale is used in Phase 1 habitat surveys.

**Table 5.5.1 – Recording Extent**

DAFOR Scale	Cover (%)	Scale Used in This Assessment	Cover (%)
D = Dominant	50-100	Dominant	50-100
A = Abundant	30-50	Abundant	30-50
F = Frequent	15-30	Locally abundant	15-30
O = Occasional	5-15	Scarce	0-15
R = Rare	<5	Absent	0

5.2.9 Dominant is rarely used as a plant species would have to be the most common plant by far in the study area (Norfolk Wildlife Trust, 2021). For the purpose of this assessment, the peatland compartments would have to almost entirely contain bog-moss (*Sphagnum sp.*) for this species to be classed as dominant.

5.2.10 The information already gathered on the habitats and species present on the Site during Phase 1 habitat and NVC surveys was also taken into account as the surveys supplemented the peatland condition assessment with further data on the plant species present in each habitat and the habitat types present at each infrastructure location, with the extent and species of bog-moss (*Sphagnum sp.*) already recorded in peatland habitats.

5.2.11 A high water table provides opportunities for less common species to colonise whereas a lower water table limits both the extent of cover and the species diversity. Bog pools in particular are both conspicuous and invaluable indicators according to the species they support. In NVC terms, M2 *Sphagnum cuspidatum/recurvum* bog pool communities support an abundance of bog-moss (*Sphagnum sp.*), such as feathery bog-moss (*S. cuspidatum*) and flat-topped bog-moss (*S. fallax*), and indicate near-natural conditions. M3 *Eriophorum angustifolium* bog pool communities, on the other hand, are species-poor, usually dominated by common cottongrass (*Eriophorum angustifolium*) underlain by bare peat, indicating a peatland that is tending towards highly modified.

#### 2. The Presence of Bare Peat

5.2.12 The presence of bare peat indicates that the water table has become lowered and that part of the peatland, at least, is no longer functioning. Over time, the higher, drier hummocks come to resemble wet heath rather than bog. This, too, is an important indicator that a peatland is highly modified. The presence of bare peat was quantified using percentage cover, where possible. Where this was not possible i.e. where the proportion was too small to quantify as a percentage, such as with areas of micro-erosion, the presence of bare peat was described.

### **3. Drainage**

- 5.2.13 In this context, drainage means the creation of artificial channels or the artificial deepening of existing channels that lowers the water table and inhibits or prevents peatland formation. The presence of drainage channels was described where it was encountered.

### **4. Burning**

- 5.2.14 Historic burning tends to eliminate bog-moss (*Sphagnum sp.*), which leads to erosion (indicated by bare peat) and this sign was recorded where present.

### **5. Grazing and Trampling**

- 5.2.15 Grazing and trampling can disturb fragile species such as bog-moss (*Sphagnum sp.*), exposing bare peat and leading to erosion. The presence of grazing and trampling was quantified using percentage cover, where possible. Where this was not possible i.e. where the proportion was too small to quantify as a percentage, the presence of grazing and trampling was described.

### **6. Peat Loss**

- 5.2.16 From erosion that has created channels with bare peat and hummocky terrain. The presence of peat loss was quantified using percentage cover, where possible. Where this was not possible i.e. where the proportion was too small to quantify as a percentage, such as with areas of micro-erosion, the presence of peat loss was described.

- 5.2.17 The peatland condition was then categorised as follows:

#### **Near-natural**

- 5.2.18 Near-natural peatland has a high water table with an abundance of bog-moss (*Sphagnum sp.*), indicating a functioning peatland. Sphagnum-rich bog pools and a natural surface pattern, such as hummocks, hollows and ridges, are also good evidence of conditions approaching near-natural. Where areas have been classified as near-natural as part of this assessment, it indicates that an abundance of bog-moss (*Sphagnum sp.*) and/or less common species and/or bog pools and a natural surface pattern were recorded.

#### **Modified and Highly Modified**

- 5.2.19 Most peatland in the UK is modified to some extent. This is further sub-divided into modified, which is less than near-natural but not overly degraded, or highly modified, which is degraded with a lowered water table, low abundance/absence of bog-moss (*Sphagnum sp.*) and some degree of erosion. Essentially, modified means still functioning as an active peatland while highly modified means that a large percentage of the area is no longer functioning as an active peatland.

#### **Drained**

- 5.2.20 This means drainage by artificial means either in the form of excavated drainage channels or the artificial deepening of existing natural channels to the extent where the peatland is no longer functioning.

#### **Actively Eroding**

- 5.2.21 Where bare peat occurs, a peatland is actively eroding. This can range from micro-erosion of small patches as the peatland dries out and bog-moss (*Sphagnum sp.*) cover is lost, to bare peat in the margins of bog pools or within deeper, more incised and clearly defined channels.

#### **Summary of Guidance Used in This Assessment**

- 5.2.22 The JNCC guidance (JNCC, 1994) has been used to classify peatland quality, which is based on factors such as species diversity and peat-forming ability i.e. whether the peatland is active or inactive. The Heather Trust guidance (The Heather Trust *et al.*, 2017) has been used to categorise the condition of the peatland and inform any management measures required to improve the condition of the peatland i.e. whether the peatland has restoration potential. Compartments considered to have

restoration potential are detailed in Appendix 5.7 as part of the Outline Habitat Management Plan (OHMP). In this assessment, a high quality peatland, as defined by the JNCC guidance, is considered to have a near-natural condition, as defined by The Heather Trust guidance. A high-quality peatland is active, species diverse, typically with more uncommon species, and contains a natural surface pattern (JNCC,1994). In the absence of specific criteria for defining poorer-quality peatland areas, the principles in the JNCC guidance (JNCC, 1994) and The Heather Trust guidance (The Heather Trust *et al.*, 2017) have been extrapolated from their definition of a high-quality peatland and a near-natural condition peatland to provide definitions of moderate-quality and poor-quality peatland. A moderate-quality peatland is considered to have a modified condition. A moderate-quality peatland is also active but with lower species diversity, typically dominated by common species, and some natural surface patterns remaining. A poor-quality peatland is considered to have a highly-modified condition. A poor-quality peatland has poor species diversity, a lack of a natural surface pattern and is inactive as it does not contain a significant proportion of peat-forming vegetation.

- 5.2.23 In summary, near-natural condition peatlands are always active and high quality. Modified condition peatlands are active and of moderate quality. Modified condition peatlands are lower quality than near-natural condition peatlands. Highly-modified condition peatlands are always inactive and poor quality.

### **Review of Habitat Results**

- 5.2.24 The results of the peatland condition assessment were used in combination with the Phase 1 habitat, NVC and peat depth information to recommend any required modifications to the locations of proposed infrastructure. This information was taken forward through the design process and engineering assessment in order to optimise the layout of the Proposed Development. The layout of the Proposed Development has been, as far as possible, designed to avoid habitats of highest ecological importance and highest sensitivity to impacts in the first instance. This was considered by this assessment to include high-quality, near-natural and active peatlands, where possible. As defined in section 5.2.21, a high-quality (near-natural condition) peatland contains a high species diversity, natural surface pattern and a significant proportion of peat-forming vegetation. Moderate-quality (modified condition) peatlands were also considered to be of higher ecological importance as they are active peatlands. Poor-quality (highly-modified condition) peatlands, while inactive, were not considered to have low or no ecological importance but were valued for their potential for restoration to a higher quality. Moderate-quality peatlands were also considered for their potential for restoration to a high-quality peatland.

## **5.3 Results**

- 5.3.1 For the most part, the peatland surveyed fell into the modified category, with some compartments showing higher levels of disturbance/degradation than others. Where a compartment was found to be only slightly modified (i.e. with a high water table and locally abundant bog-moss (*Sphagnum sp.*), including less common species, such as papillose bog-moss (*S. papillosum*)), it was listed as near-natural. Where the water table was clearly lowered, the terrain often hummocked, with bare peat and clear signs of erosion and absent bog-moss (*Sphagnum sp.*), the compartment was classified as highly modified. In these compartments, hummocks were present without aquatic elements and, therefore, did not represent a natural surface pattern, as defined in section 5.2.5. All compartments contained a mosaic of near-natural and modified/highly modified areas.
- 5.3.2 An example of a near-natural peatland area is shown by Photo 11 in Appendix 5.2. The area contains abundant bog-moss (*Sphagnum sp.*), with flat-topped bog-moss, papillose bog-moss and the almost ubiquitous red bog-moss on the higher, slightly drier hummocks. Red bog-moss also occurs on wet heath. Where it is joined by papillose bog-moss, it often indicates a high water table and generally lower levels of disturbance.
- 5.3.3 An example of a modified peatland area is shown by Photo 12 in Appendix 5.2. The area contains a slightly hummocked terrain and the water table remains high. Although bog-moss (*Sphagnum sp.*) is abundant in places, it is less conspicuous. There are few bog pools with scarce or absent bog-moss (*Sphagnum sp.*) within them.

5.3.4 An example of a highly modified peatland area is shown by Photo 13 in Appendix 5.2. The area contains bare peat and raised hummocks dominated by woolly fringe-moss (*Racomitrium lanuginosum*) and lichen (*Cladonia sp.*). This tends to indicate a high level of modification as the hollows between them are largely absent of bog-moss (*Sphagnum sp.*).

### **Shallow Peat Areas**

5.3.5 The shallower peat areas present on the Site are largely M15 *Scirpus cespitosus-Erica tetralix* wet heath, with occasional minor patches of other non-mire communities such as M25a *Molinia caerulea-Potentilla erecta* mire. Where surveyed compartments tended towards these habitat types, such as transitional habitat on deeper areas of peat, these are discussed further in Table 5.5.3 below.

5.3.6 From the observation made during the condition survey and assessed in combination with the previous habitat data (Phase 1 and NVC survey as reported in Chapter 5 and Technical Appendix 5.1), the shallow peat areas were dominated by red bog-moss with drier hummocks and a lower water table and are classified as wet heath. Where there is a significant proportion of peat-forming vegetation in these areas, they are considered to be active peatland. However, given the extensive nature of the wet heath on the Site, it was given less priority in the peatland condition assessment over high and moderate quality blanket bog, particularly as the species found in wet heath typically require less specific conditions than many of those found in blanket bog. The species found in blanket bog typically require a more specific range of conditions, such as hydrological, to thrive and are therefore more susceptible to changes in habitat condition.

5.3.7 The focus of the remainder of this assessment is predominantly on peatland habitats that have a blanket bog component on deep peat (as shown on Figure 5.10), and their consideration as part of the design process. The impacts on Annex 1 habitat wet heath, is considered in full in Chapter 5.

### **Compartments**

5.3.8 Thirty-six compartments were identified, as shown on Figure 5.5, and their classification is detailed in Table 5.5.2.

**Table 5.5.2 – Peatland Compartments**

	Condition Category and Quality		
	Near-natural (High Quality)	Modified (Moderate Quality)	Highly Modified (Poor Quality)
<b>Compartment</b>	1a, 7, 9, 13, 15, 16, 17, 23 and 31	1a, 1b, 2, 3, 4, 5a, 5b, 6, 7, 8, 9, 10, 11, 12, 13, 14a, 14b, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30 and 31	1a, 1b, 2, 3, 5a, 5b, 7, 8, 9, 10, 11, 12, 13, 14b, 14c, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31 and 32
<b>Total</b>	<b>9</b>	<b>33</b>	<b>27</b>

5.3.9 The following factors were also noted:

- drainage (all artificially deepened natural channels) in Compartments 3, 9 and 14b;
- trampling (exacerbating erosion) in Compartments 5a and 29;
- burning (historic burning leading to erosion) in Compartments 7, 9 and 13; and
- actively eroding in Compartments 1b, 7, 9, 13. Some parts of virtually all compartments are actively eroding. Where pronounced, this is noted as highly-modified peatland. Other areas tend to be more discrete, normally towards the margins.

5.3.10 These factors were difficult to quantify as a percentage due to the small proportions present on the Site, therefore descriptions are provided where they were encountered.

5.3.11 Target notes for each compartment are described in Table 5.5.3.

**Table 5.5.3 – Peatland Condition in Each Compartment**

Compartment	Grid Reference	Condition
1a	NH 38321 20099	Bog 95%: Near-natural 5%, Modified 80%, Highly Modified 15%. This compartment contains abundant common bog-moss ( <i>Sphagnum sp.</i> ) species in places, with a relatively high water table except for the area around a channel, which is eroding towards the lochan.
1b	NH 38525 20254	Bog 60%: Modified 60%, Highly Modified 40%. This compartment contains a high water table with bog-moss ( <i>Sphagnum sp.</i> ) locally abundant but tending towards M25a marshy grassland dominated by purple moor-grass ( <i>Molinia caerulea</i> ) in places. There is some localised micro-erosion where the water table has fallen.
2	NH 38486 20641	Bog 50%: Modified 50%, Highly Modified 50%. The compartment contains a scattering of common bog-moss ( <i>Sphagnum sp.</i> ) species. There is some indication of historic burning, with large areas tending towards M15c wet heath, particularly in the most highly modified north-west part. There is a small amount of erosion with bare peat to the east.
3	NH 38087 20399	Bog 40%: Modified 70%, Highly Modified 30%. Much of this compartment is M15 wet heath. Most of the bog lies in the east and south-east of the compartment, the rest sloping, naturally drained and grading into M15 wet heath above. In areas of the deepest peat, common bog-moss species ( <i>Sphagnum sp.</i> ) are abundant but hare's-tail cottongrass ( <i>Eriophorum vaginatum</i> ) is scarce. A natural channel to the north may have been artificially deepened in the past.
4	NH 38091 20887	Bog 50%: Modified 100%. Common species of bog-moss ( <i>Sphagnum sp.</i> ) are locally abundant but some areas are tending towards M15c wet heath on hummocks. The wettest area by the burn is M25a marshy grassland.
5	NH 37900 21200	This compartment is separated from Compartment 4 by an area dominated by M15 wet heath, with M25a marshy grassland adjacent to the stream.
5a		Bog 100%: Modified 50%, Highly Modified 50%. At the southern end around NH 37976 21136, the water table has dropped significantly. Though moderately rich in bog-moss ( <i>Sphagnum sp.</i> ), bog pools are confined to hollows with erosion around margins. About 15% of this compartment shows signs of trampling. At NH 37916 21141, there is localised

Compartment	Grid Reference	Condition
		bare peat from erosion when the channel water level is high.
5b		Bog 70%: Modified 20%, Highly Modified 80%. The north and north-west area around NH 38036 21324 has a lowered water table with drier hummocks, species-poor M3 bog pools and localised erosion. Drier hummocks are tending towards M15c wet heath. The remainder of the compartment is M15c, some on very shallow peat.
6	NH 38380 21587	Bog 50%: Modified 100%. Approximately 50% of this compartment is M15 wet heath with small patches of dry heath in the east. The wettest areas are concentrated around NH 38385 21670 but even here, the bog (M17 mire) is localised and modified.
7	NH 38242 21996	Bog 60%: Near-natural 5%, Modified 30%, Highly Modified 65%. The compartment is almost bisected north to south by shallower peat supporting M15 wet heath. The area to the west of this is less modified but sloping towards the loch. The area to the east is much more modified with a general lowering of the water table with more raised areas tending towards M15c wet heath. The bog pools are all species-poor M3 with only common cottongrass and bare peat. Micro-erosion is widespread suggesting that the area has been historically burned. At the point of the above grid reference there is an incised channel with eroding peat in places.
8	NH 39000 22000	Bog 60%: Modified 30%, Highly Modified 70%. The wettest part of the compartment is south-east beside the loch but in places it is also highly modified, with some incised, eroding channels of bare peat. In the west, a large area is sloping and tending towards M15b wet heath. Purple moor-grass is locally abundant, suggesting a tendency toward M25a marshy grassland. A patch of bog to the west of this compartment at NH 38677 21926 is highly modified, with deep, incised erosion of bare peat and a lowered water table.
9	NH 39349 21874	Bog 80%: Near-natural 20%, Modified 30%, Highly Modified 10%. This compartment is highly variable, with some areas showing a higher water table than others. However, though much of the compartment is affected to some extent by a lowering of the water table, some areas remain with a high water table and abundant bog-moss ( <i>Sphagnum sp.</i> ) including bog pools. The area of deepest peat is around NH 39331 21801 and supports the least modified M2 bog pools. In the more highly modified area, there is some indication of micro-

Compartment	Grid Reference	Condition
		erosion and possible evidence of historic burning, which would have slowly led to the larger scale erosion. The greatest erosion occurs in the area to the east of grid reference NH 39360 21764, incised to a depth of around 80cm, with bare peat and species-poor M3 bog pools. No drains occur but the natural channels may have been artificially deepened in the past.
10	NH 39305 21551	Bog 60%: Modified 90%, Highly Modified 10%. The western half of the compartment and the areas beside the loch are more sloping and tend to form a mosaic with around 60% M15 wet heath and 40% M17 bog. Within the bog, common bog-moss ( <i>Sphagnum sp.</i> ) species are moderately abundant. In the north-east on the boundary with Compartment 9, there is localised erosion with bare peat.
11	NH 38945 21478	Bog 60%: Modified 5%, Highly Modified 95%. For the most part, this compartment is highly modified due to a deeply incised eroding channel running north to south, with bare peat and exposed bedrock. As a result, the southern half is predominantly M15c wet heath. The most intact bog is confined to the northern half of the compartment.  To the south of Compartment 11, two small stretches of M11 <i>Carex demissa</i> – <i>Saxifraga aizoides</i> mire containing yellow saxifrage ( <i>Saxifraga aizoides</i> ) occur at NH 38899 21393 and NH 38844 21173. The former has only a small fragment of saxifrage remaining while the latter has a scattering stretching several metres from NH 38844 21173 down to NH 38879 21144. This species is locally scarce and an indicator of more calcareous conditions within a discreet area. It can easily be identified as a stony flush with a scattering of sedges ( <i>Carex sp.</i> )
12	NH 38926 20868	Bog 100%: Modified 60%, Highly Modified 40%. The north-east section of this compartment has a high water table but very little bog-moss ( <i>Sphagnum sp.</i> ), even in bog pools. Further south, the extent of bog-moss ( <i>Sphagnum sp.</i> ) increases but only common species are present and the bog pools are species-poor M3. Towards the western margin, the water table is substantially lower, with incised, eroding channels of bare peat.
13	NH 39029 20183	Bog 90%: Near-natural 30%, Modified 50%, Highly Modified 20%. Bog-moss ( <i>Sphagnum sp.</i> ) is locally abundant, with a high water table. Elsewhere, micro-erosion (possibly due to past burning) has exposed bare peat. The bare peat on the channel sides towards the loch is also eroding (<5% of total area of bog). The compartment extends north onto shallower peat with a high water table and scattered bog-moss ( <i>Sphagnum sp.</i> ).

Compartment	Grid Reference	Condition
14a	NH 39559 20375	Bog 10%: Modified 100%. The majority of this compartment is M25a marshy grassland with a high water table, no erosion and an absence of bog-moss ( <i>Sphagnum sp.</i> ).
14b	NH 39390 20551	Bog 80%: Modified 40%, Highly Modified 60%. A lowered water table has left dry hummocks and species-poor M3 bog pools.
14c	NH 39380 20700	Bog 70%: Modified 60%, Highly Modified 40%. A lowered water table to the south has led to highly modified conditions. Elsewhere, the compartment tends towards M25a marshy grassland in places. Bog-moss ( <i>Sphagnum sp.</i> ) is locally abundant but only scattered within the M25a areas where purple moor-grass dominates. Small areas (<5%) around the margins of bog pools have bare peat and are actively eroding. The northern quarter of this compartment slopes eastwards with M15 wet heath and M25a marshy grassland.
15	NH 39202 21106	Bog 90%: Near-natural 5%, Modified 95%. The least modified area lies to the west, close to where the substation is proposed. Bog-moss ( <i>Sphagnum sp.</i> ) is scattered throughout but is almost entirely species associated with wet heath i.e. red bog-moss and scarce compact bog-moss.
16	NH 39350 21290	Bog 100%: Near-natural 40%, Modified 60%. A small outlier of bog. Relatively abundant bog-moss ( <i>Sphagnum sp.</i> ), including a few bog pools.
17	NH 39595 21049	Bog 90%: Near-natural 5%, Modified 90%, Highly Modified 5%. Both the near-natural and highly modified parts of this compartment are within the area of deepest peat. The highly modified part has only localised bog-moss ( <i>Sphagnum sp.</i> ), drier hummocks turning to M15c wet heath and drains westwards. Elsewhere, the bog-moss ( <i>Sphagnum sp.</i> ) is relatively abundant in places.
18	NH 39590 21250	Bog 60%: Modified 80%, Highly Modified 20%. The compartment contains a mosaic of M15 wet heath and bog in which bog-moss ( <i>Sphagnum sp.</i> ) is only locally abundant in the wetter parts. Bog pools are species-poor M3.
19	NH 39780 21500	Bog 95%: Modified 80%, Highly Modified 20%. Bog-moss ( <i>Sphagnum sp.</i> ) is locally abundant but scarce in some places. Several small bog pools appear rich in bog-moss ( <i>Sphagnum sp.</i> ) but otherwise the general area is species-poor. Drier parts in the north-west and to the east beside the lochan have hummocks indicating a lowering of the water table and tending towards M15c wet heath.
20	NH 39867 21806	Bog 70%: Modified 30%, Highly Modified 70%.

Compartment	Grid Reference	Condition
		The compartment slopes in places and, therefore, is naturally drained. Partly as a result of this, many areas of bog are tending towards M15 wet heath and, therefore, have been graded as highly modified. Bog-moss ( <i>Sphagnum sp.</i> ) is very localised, mainly concentrated near small bog pools.
21	NH 40135 21800	Bog 80%: Modified 30%, Highly Modified 70%. North of the lochan, the area is sloping and mostly M15 wet heath. Elsewhere, large parts are highly modified due to a lowered water table and sunken, species-poor M3 bog pools with bare peat at their margins. The resultant hummocks are becoming relatively dry M15c wet heath. Approximately 80% of the highly modified area is undergoing some form of erosion. The bog extends towards the shores of the lochan to the south where it becomes slightly less modified.
22	NH 40175 21300	Bog 75%: Highly Modified 100%. A lowered water table has created hummocks, most of which are drying and approaching M15c wet heath. Bog-moss ( <i>Sphagnum sp.</i> ) is scarce over large areas and the bog pools are species poor M3.
23	NH 39726 20796	Bog 95%: Near-natural 10%, Modified 90%. The northern area in this compartment has a high water table and areas where Bog-moss ( <i>Sphagnum sp.</i> ) is locally abundant, including bog pools with abundant flat-topped bog-moss and other species. Though some hummocks occur, indicating a lowering of the water table in places, some parts have been categorised as near-natural due to the above. South of the loch, Bog-moss ( <i>Sphagnum sp.</i> ) is more scattered and the area more modified. A raised area in the south-west corner supports M15c wet heath, the reason why the compartment is not 100% bog.
24	NH 40000 20750	Bog 5%: Modified 100%. This compartment is predominantly M15 wet heath on shallow peat with exposed bedrock.
25	NH 40400 21395	Bog 10%: Modified 70%, Eroding 30%. Bog-moss ( <i>Sphagnum sp.</i> ) is confined to wetter areas adjacent to bog pools, but most pools are species-poor M3, some with eroding peat at the margins. The bog, and hence the deepest peat, lies to the south of the small lochan.
26	NH 40400 21740	Bog 60%: Highly Modified 100% (30% Eroding). Bog-moss ( <i>Sphagnum sp.</i> ) is confined to the edge of the otherwise species-poor M3 bog pools, some of which have eroding peat at their margins.
27	NH 40400 22000	Bog 80%: Modified 95%, Highly Modified 5%. The compartment contains a high water table in places but bog-moss ( <i>Sphagnum sp.</i> ) is patchy and bog pools

Compartment	Grid Reference	Condition
		are species-poor M3. The water table is lower in the west, with incised pools and eroding bare peat margins.
28	NH 40898 21932	Bog 70%: Modified 30%, Highly Modified 70%. The compartment is sloping and draining towards the main south-flowing channel and contains abundant hummocks with a low water table. Much of the area is approaching M15c wet heath. bog-moss ( <i>Sphagnum sp.</i> ) is generally scarce and the few bog pools are all species-poor M3. The bog is concentrated adjacent to the lochan and beside the north to south flowing stream. Elsewhere, only small patches occur.
29	NH 40800 21150	Bog 60%: Modified 60%, Highly Modified 40%. The highest water table occurs to the north-west beside the loch but bog-moss ( <i>Sphagnum sp.</i> ) is patchy and the bog pools are all species-poor M3. The area of deepest peat around NH 40712 21103 has the lowest water table and parts are highly modified, with sunken M3 bog pools and bare peat at the margins. Some areas are forming gullies and clearly eroding. There are signs of deer trampling throughout.
30	NH 40900 21220	Bog 10%: Modified 10%, Highly Modified 90%. The compartment contains a mosaic of wet heath and modified and highly modified bog in which M15 is dominant. The bog is on sloping ground and mostly poorly formed.
31	NH 40677 20322	Bog 100%: Near-natural 30%, Modified 50%, Highly Modified 20%. The north end and central parts within the area of deepest peat support near-natural bog with a high water table and abundant bog-moss ( <i>Sphagnum sp.</i> ). The most modified part is towards the southern margin where the topography is slightly raised, gently sloping and therefore more drained. Here, the water table is lower with drier hummocks. The majority of the area was probably once a lochan as parts appear to be in a relatively early stage of succession towards bog.
32	NH 40850 19900	Bog 60%: Highly Modified 100%. The bog is confined to raised, more drained areas with a lower water table. In places, common bog-moss species ( <i>Sphagnum sp.</i> ) are locally abundant. The driest parts are eroding, with drier hummocks tending to M15c wet heath. The area is eroding towards the main river channel with bare peat in meandering, incised channels and a few species-poor M3 bog pools. Much of the remainder of the compartment is tending towards M25a marshy grassland.

5.3.12 Proposed infrastructure locations within or near compartments that required further consideration during the design process are detailed in Table 5.5.4, including relevant information from previous survey results that was used to guide the peatland condition assessment and the

recommendations/actions taken. The compartments that required further consideration contained active, near-natural condition and/or active modified condition peatland of a high to moderate quality, respectively, that could potentially be impacted by proposed infrastructure. The impacts on peatland from construction, operation and decommissioning of the Proposed Development is assessed in Chapter 5, including mitigation requirements. This section details where impacts on peatlands were avoided or reduced as part of the design process.

**Table 5.5.4 – Recommendations for Design of Proposed Development**

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
2	Access track within compartment and outwith compartment to the east and west.	<p>The blanket bog contains abundant red bog-moss and papillose bog-moss, with dominant hare’s-tail cottongrass, indicating they are higher quality and support peat-forming vegetation.</p> <p>The wet heath in the north of the compartment and to the east and west of the compartment is dominated by common heather (<i>Calluna vulgaris</i>), deergrass (<i>Trichophorum cespitosum</i>), purple moor-grass and red bog-moss. The habitat doesn’t support a significant area of peat-forming vegetation in comparison to the blanket bog habitat.</p>	Avoid higher quality, active blanket bog to the south.	Access track sited within wet heath habitat to avoid higher quality, active blanket bog to the south.
6	Hardstanding and access track within compartment. Cross country cable, hardstanding and access track outwith compartment to the south.	<p>The wet modified bog is dominated by purple moor-grass, with abundant common heather, frequent hare’s-tail cottongrass, occasional common cottongrass and no bog-moss (<i>Sphagnum sp.</i>), therefore the habitat doesn’t support a significant area of peat-forming vegetation.</p> <p>The wet heath within the compartment and to the north and</p>	Avoid deepest areas of peat.	Design avoids the deepest areas of peat. Opportunities for further micro-siting may be possible during construction.

<sup>1</sup> Full details of where peatland habitats have influenced the design of the Proposed Development are also provided in Chapter 2.

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
		south is dominated by common heather, with frequent purple moor-grass, bog myrtle ( <i>Myrica gale</i> ) and rare red bog-moss, therefore the habitat doesn't support a significant area of peat-forming vegetation.		
7	Hardstanding and access track within compartment. Access track outwith compartment to the east.	<p>The blanket bog is dominated by red bog-moss, papillose bog-moss, blunt-leaved bog-moss (<i>Sphagnum palustre</i>) and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.</p> <p>The wet modified bog is dominated by purple moor-grass, with abundant common heather, frequent hare's-tail cottongrass, occasional common cottongrass and no bog-moss (<i>Sphagnum sp.</i>), therefore the habitat doesn't support a significant area of peat-forming vegetation.</p> <p>The wet heath is dominated by common heather, with frequent purple moor-grass and bog myrtle (<i>Myrica gale</i>), and rare red bog-moss, therefore the habitat doesn't support a significant area of peat-forming vegetation.</p>	<p>The hardstanding is located at the margin of the bog and would not have a direct impact. However, as the hardstanding is located up-slope, run-off could indirectly impact the bog.</p> <p>The access track should be microsituated to avoid the areas of deepest peat.</p>	<p>Standard mitigation, including drainage controls, will be implemented, as detailed in Chapter 5.</p> <p>Access track moved further north to avoid deepest areas of peat.</p> <p>Although there is unlikely to be sufficient transition distance to allow change from cut to floated track construction in this area, the options will be reviewed at detailed design stage.</p>
9	Hardstanding and access track within compartment.	The blanket bog is dominated by red bog-moss, papillose bog-moss,	The infrastructure doesn't encroach on the bog.	Standard mitigation, including drainage

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
	Access track and borrow pit search area outwith compartment to the east.	blunt-leaved bog-moss and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.	However, the infrastructure is located up-slope, therefore run-off could indirectly impact the bog.	controls, will be implemented, as detailed in Chapter 5.
10	Hardstanding within compartment. Access track outwith compartment to east and south-east.	<p>The blanket bog is dominated by red bog-moss, papillose bog-moss, blunt-leaved bog-moss and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.</p> <p>The wet modified bog is dominated by purple moor-grass, with occasional cow-horn bog-moss, blunt-leaved bog-moss, hare's-tail cottongrass and common cottongrass, indicating lower quality and a lack of significant peat-forming vegetation.</p>	Exposed bedrock shows where the peat is shallower, with a deeper area to the north. The hardstanding should be microsited to avoid what is some of the deepest peat on the Site. However, as the hardstanding is also located up-slope, run-off could indirectly impact the bog.	<p>The hardstanding has been positioned to avoid the deepest peat but further micrositing may be possible during construction.</p> <p>Standard mitigation, including drainage controls, will be implemented, as detailed in Chapter 5.</p>
11	Hardstanding and access track within compartment. Borrow pit search area outwith compartment to the west. Hardstanding and access track outwith compartment to the south.	<p>The blanket bog is dominated by red bog-moss, papillose bog-moss, blunt-leaved bog-moss and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.</p> <p>The wet heath within and to the south and west of this compartment is dominated by common heather, with frequent purple moor-grass and bog myrtle and rare red bog-moss,</p>	<p>The proposed hardstanding is located just northwards of the most intact bog within this compartment, therefore run-off could indirectly impact the bog.</p> <p>The borrow pit search area located immediately to the west of this compartment is on a very steep slope,</p>	<p>Infrastructure has been positioned to avoid high quality and active bog where possible.</p> <p>Standard mitigation, including drainage controls, will be implemented, as detailed in Chapter 5.</p> <p>Access track has been microsited to avoid the</p>

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
		<p>therefore the habitat doesn't support a significant area of peat-forming vegetation.</p>	<p>therefore control of any run-off will be important along with the careful reinstatement of the habitat following construction.</p> <p>The access track itself is located up-slope from the compartment, therefore, run-off could indirectly impact the bog.</p> <p>To the south of Compartment 11, two small stretches of M11 <i>Carex demissa</i> – <i>Saxifraga aizoides</i> mire containing yellow saxifrage (<i>Saxifraga aizoides</i>) occur at NH 38899 21393 and NH 38844 21173. The former has only a small fragment of saxifrage remaining while the latter has a scattering stretching several metres from NH 38844 21173 down to NH 38879 21144. This species is locally scarce and an indicator of more calcareous conditions within a discreet area. It can easily be identified as</p>	<p>more extensive area of M11.</p>

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
			a stony flush with a scattering of sedges ( <i>Carex sp.</i> ) The access track proposed in this area should be microsited to avoid these small patches.	
12	Access track within compartment and outwith compartment to the west, north-west and north. Borrow pit search area and hardstanding outwith compartment to the south-west and north-west, respectively.	<p>The blanket bog is dominated by hare's-tail cottongrass and deergrass, with abundant red bog-moss, indicating it supports a significant area of peat-forming vegetation although the habitat quality itself is low, given the lack of species diversity.</p> <p>The wet heath surrounding this compartment is dominated by common heather, with frequent purple moor-grass and bog myrtle and rare red bog-moss, therefore the habitat doesn't support a significant area of peat-forming vegetation.</p>	<p>The borrow pit search area is located to the north/north-west around NH 38700 21100. This is entirely on M15c wet heath and some distance from the compartment, but located up-slope, therefore run-off could indirectly impact the bog.</p> <p>The hardstanding is located around 100 m to the south-west at NH 38700 20690 on a sloping mosaic of wet heath, dry heath and purple moor-grass <i>Molinia caerulea</i>. There are scattered fragments of poorly-formed bog but on shallow peat, therefore no adjustment to the infrastructure location is required.</p>	<p>Standard mitigation, including drainage controls, will be implemented, as detailed in Chapter 5.</p> <p>Access track has been microsited to avoid the deepest areas of peat. Opportunities for further micrositing may be possible during construction.</p> <p>Although there is unlikely to be sufficient transition distance to allow change from cut to floated track construction in this area, the options will be reviewed at detailed design stage.</p>

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
			The access track should be microsited to avoid the areas of deepest peat or a floating track construction should be used.	
15	Substation and access track.	<p>The blanket bog is dominated by red bog-moss, papillose bog-moss, blunt-leaved bog-moss and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.</p> <p>The wet heath to the west of this compartment is dominated by common heather, with frequent purple moor-grass and bog myrtle and rare red bog-moss, therefore the habitat doesn't support a significant area of peat-forming vegetation.</p>	<p>The substation option at NH 3918 2110 would be partly on highly modified bog, turning to M15c wet heath but also only slightly modified, near-natural bog with a high water table and <i>Sphagnum</i>-rich bog pools. Shifting the location 100 m south or south-west would avoid the richest part of the bog. The other option at NH 3905 2089 or a point somewhere between these two locations also appears more suitable in terms of having much less impact on the bog and areas of deep peat.</p>	<p>A point between the two substation options has been selected to avoid the higher quality areas of bog.</p>
16	Hardstanding and access track to the north. Batching plant search area to the south.	<p>The blanket bog is dominated by red bog-moss, papillose bog-moss and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.</p>	<p>This compartment contains mostly M15 wet heath, with only small patches tending towards bog. However, the area drains towards the richest part of</p>	<p>Standard mitigation, including drainage controls, will be implemented, as detailed in Chapter 5.</p>

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
		<p>The wet heath is dominated by common heather, with frequent bell heather (<i>Erica cinerea</i>) and purple moor-grass and occasional hare's-tail cottongrass. The area in the south also supports rare red bog-moss, papillose bog-moss and feathery bog-moss, indicating some peat-forming capability, though a significant area of peat-forming vegetation is not considered to be present.</p>	<p>the bog in this compartment, therefore run-off could indirectly impact the bog.</p>	
17	<p>Hardstanding and access track.</p>	<p>The blanket bog is dominated by red bog-moss, papillose bog-moss, blunt-leaved bog-moss and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.</p> <p>The wet modified bog is dominated by purple moor-grass, with rare cow-horn bog-moss and blunt-leaved bog-moss, indicating lower quality and a lack of significant peat-forming vegetation.</p> <p>The wet heath at the hardstanding location is dominated by common heather, with abundant red bog-moss and frequent hare's-tail cottongrass, indicating it supports peat-forming vegetation.</p>	<p>The hardstanding is located on a mosaic of M15c wet heath, with around 20% bog that is not species-rich, therefore no adjustment to the location is required. The access track to the north would be better located to the west, passing through the area of more degraded bog.</p>	<p>Access track has been micrositied to the west on the approach to the hardstanding to avoid better quality areas of bog.</p>

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
18	Access track.	<p>The blanket bog is dominated by red bog-moss, papillose bog-moss, blunt-leaved bog-moss and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.</p> <p>The wet modified bog is dominated by purple moor-grass, with occasional cow-horn bog-moss, blunt-leaved bog-moss, hare's-tail cottongrass and common cottongrass, indicating lower quality and a lack of significant peat-forming vegetation.</p> <p>The wet heath to the east of the compartment is dominated by common heather, with abundant hare's-tail cottongrass and red bog-moss, indicating it supports peat-forming vegetation.</p>	Avoid higher quality blanket bog and deepest areas of peat through micrositing.	<p>Access track has been microsited to avoid the deepest areas of peat.</p> <p>Opportunities for further micrositing may be possible during construction.</p> <p>Although there is unlikely to be sufficient transition distance to allow change from cut to floated track construction in this area, the options will be reviewed at detailed design stage.</p>
22	Access track within compartment. Borrow pit search area outwith compartment to the south, and hardstanding and access track outwith compartment to the west.	<p>The blanket bog is dominated by red bog-moss, papillose bog-moss, blunt-leaved bog-moss and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.</p> <p>The wet modified bog is dominated by purple moor-grass, with abundant boy myrtle, indicating</p>	The area north of the borrow pit search area at NH 40073 21276 is the least modified, with a high water table and abundant bog-moss <i>Sphagnum sp.</i> Immediately to the south-west, it becomes highly modified, with hummocks tending towards wet heath. To the south, the	Use of the borrow pit will be reviewed at detailed design stage.

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
		<p>lower quality and a lack of peat-forming vegetation.</p> <p>The wet heath to the west of the compartment is dominated by common heather and deergrass, with abundant purple moor-grass and red bog-moss, therefore the habitat doesn't support a significant area of peat-forming vegetation. The wet heath to the south of the compartment is dominated by common heather, with abundant hare's-tail cottongrass and red bog-moss, indicating it supports peat-forming vegetation.</p>	<p>topography steepens and there is very little bog. If a borrow pit is required at this location, the southern part of the borrow pit search area would be more suitable.</p>	
24	Hardstanding, access track and cross country cable within compartment and outwith compartment to the south-east.	The wet heath is dominated by common heather, with abundant hare's-tail cottongrass and red bog-moss, indicating it supports peat-forming vegetation.	This compartment is predominantly M15 wet heath on shallow peat with exposed bedrock. However, the hardstanding should be micrositied to avoid deeper areas of peat.	Hardstanding micrositied to avoid deeper areas of peat.
25	Borrow pit search area within compartment. Hardstanding and access track outwith compartment to the south.	The blanket bog is dominated by red bog-moss, papillose bog-moss, blunt-leaved bog-moss and hare's-tail cottongrass, indicating it is higher quality and supports peat-forming vegetation.	Bog-moss <i>Sphagnum sp.</i> is confined to wetter areas adjacent to bog pools, but most pools are species-poor M3, some with eroding peat at the margins. The bog and deepest peat are to the	Use of the borrow pit will be reviewed at detailed design stage.

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
		The wet heath surrounding the compartment is dominated by common heather and deergrass, with abundant purple moor-grass, red bog-moss, soft bog-moss ( <i>Sphagnum tenellum</i> ) and blunt-leaved bog-moss, therefore the habitat supports a significant area of peat-forming vegetation.	south of the small lochan, therefore any excavation/construction should avoid this area.	
28	Access track within compartment, with hardstanding and access track outwith the compartment to the south.	The wet heath within and surrounding the compartment is dominated by common heather and deergrass, with abundant purple moor-grass, red bog-moss, soft bog-moss and blunt-leaved bog-moss, therefore the habitat supports a significant area of peat-forming vegetation.	Avoid deepest areas of peat through micro-siting.	Access track has been micro-sited to avoid the deepest areas of peat. Opportunities for further micro-siting may be possible during construction. Although there is unlikely to be sufficient transition distance to allow change from cut to floated track construction in this area, the options will be reviewed at detailed design stage.
29/30	Hardstanding and access track.	The blanket bog is dominated by common heather and deergrass, with abundant red bog-moss, papillose bog-moss, blunt-leaved bog-moss and hare's-tail cottongrass, indicating it is higher	The hardstanding and access track cut through the area of most heavily eroded bog, therefore the location is of no ecological significance beyond direct	Access track has been micro-sited to avoid the deepest areas of peat. Opportunities for further micro-siting may be

Compartment	Proposed Infrastructure	Previous Phase 1 and NVC Survey Results	Notes and Recommendations for Design	Design Changes <sup>1</sup> and Further Action
		<p>quality and supports peat-forming vegetation.</p> <p>The wet modified bog is dominated by common heather, deergrass and lichen (<i>Cladonia sp.</i>), with abundant red bog-moss, indicating some peat-forming capability.</p> <p>The wet heath surrounding the compartments is dominated by common heather and deergrass, with abundant purple moor-grass, red bog-moss, soft bog-moss and blunt-leaved bog-moss, therefore the habitat supports a significant area of peat-forming vegetation.</p>	<p>disturbance to peat. However, the track should be microsited to avoid the deeper areas of peat.</p>	<p>possible during construction.</p> <p>Although there is unlikely to be sufficient transition distance to allow change from cut to floated track construction in this area, the options will be reviewed at detailed design stage.</p>

## **Summary of Peatland Quality**

### **Near-natural (High Quality)**

- 5.3.13 Nine compartments support higher quality (near-natural condition) peatland at a small percentage of the total area of peatland present (ranging from 5% to 40% of the compartment). When compared with peatlands in the surrounding area that are notified as SSSIs and truly approaching a natural condition, none of the peatland present on the Site is of a similar high quality. This comparison was made based on the personal experience of the surveyor and using JNCC guidance on SSSI selection (JNCC, 1994).

### **Modified (Moderate Quality)**

- 5.3.14 Thirty-three compartments support moderate quality (modified condition) peatland (ranging from 5% to 100% of the compartment). These areas are considered to be functioning as a peatland, with actively growing bog-moss (*Sphagnum sp.*) and the laying down of peat. The significance of the modified category needs to be taken in context, particularly where the percentage of modification is low. If the compartment also supports a relatively high percentage of near-natural peatland then the low percentage of modified peatland is a positive sign for active and high quality peatland, such as is present in Compartments 9, 13, 16 and 31. However, if the majority is highly modified, it is a negative sign for active peatland and for peatland quality, such as present in Compartments 2, 5a, 5b, 7, 8, 11, 14b, 20, 21, 22, 26, 28, 30 and 32. That being the case, the percentage of modified peatland present is of less significance than the percentage of near-natural and highly-modified peatland present.

### **Highly Modified (Poor Quality)**

- 5.3.15 Twenty-seven compartments support poor quality (highly modified condition) peatland (ranging from 5% to 100% of the compartment). This is used to denote degraded areas, large parts of which are no longer functioning as an active peatland. This is usually in the form of a hummock and hollow terrain where the drier hummocks tend towards wet heath. The sunken hollows (sinking as the water table falls and erosion occurs) could still support areas of functioning peatland, but more frequently they contain species-poor bog pools and bare, eroding peat. Where this erosion is pronounced, clear channels are formed and the rate of erosion increases further.

## **Summary of Peatland Condition Factors**

### **Bog-moss (*Sphagnum sp.*) Cover**

- 5.3.16 The only species recorded in any abundance in the compartments and in the shallow peat areas was red bog-moss, a species that is common in wet heath. The main exception was where M2 bog pools were recorded, with flat-topped bog-moss and, to a lesser extent, feathery bog-moss. Papillose bog-moss was also found to be a conspicuous indicator that less common species were present and, therefore, where this species was recorded, or where M2 bog pools were recorded, approached near-natural and were active, peat-forming areas. These results are also reflected in the habitat and species data already gathered for the Site, which are provided in Chapter 5 and Appendix 5.1.

### **Bare Peat**

- 5.3.17 Bare peat was confined to the margins of species-poor M3 bog pools and a few deeper channels. The surface area was usually too small to record as a percentage of the peatland.

### **Drainage**

- 5.3.18 Though no artificial drainage channels were recorded, in some places it appeared that natural channels could have been artificially deepened in the past.

### **Burning**

- 5.3.19 Though no signs of recent burning were recorded, it seems likely from the condition of most of the peatland that burning has occurred in the past. The evidence for this historic burning is secondary (in that no actual burned vegetation remains) in the form of peat loss and erosion, commencing with micro-erosion to the presence of incised channels with bare peat.

### **Grazing and Trampling**

- 5.3.20 Deer signs were widespread. However, grazing was not particularly evident and trampling was only noted where it was clearly leading to a degree of erosion. However, it seems likely that levels were much higher in the past.

### **Peat Loss**

- 5.3.21 Though widespread, this was normally in the form of hummock and hollow terrain, with the higher, drier parts tending to wet heath and the lower parts still retaining some semblance of bog. In some places, micro-erosion was evident, but larger, deeper channels with bare peat were generally localised, usually approaching bog margins.

## **5.4 Actions Taken**

### ***Proposed Infrastructure***

- 5.4.1 Compartments 7, 9, 10, 11, 12, 15, 16, 17, 22, 24, 25 and 29 contained proposed infrastructure that required consideration in or close to the compartment as they contained active, near-natural condition and/or active modified condition peatland of a high to moderate quality that could potentially be impacted by proposed infrastructure. These areas were considered during refinement of the final design layout as far as possible. For the most part, appropriate mitigation during construction, such as avoiding run-off onto adjacent better-quality peatland and the maintenance of hydrological connectivity, will avoid potential impacts. Impacts are fully assessed and considered in Chapter 5, with appropriate construction mitigation identified. Micrositing of the hardstanding in Compartment 10 and 24, the access track in Compartment 7, 11, 12, 17 and 29, the borrow pit search area in Compartment 11, 22 and 25, and the substation in Compartment 15 will also avoid areas of better-quality, active peatland and this was taken into account during the design process.

## 5.5 References

JNCC (1994). *Guidelines for the Selection of Biological SSSI's, Part 2: Detailed Guidelines for Habitats and Species Groups, Chapter 8: Bogs*. Available at: <https://data.jncc.gov.uk/data/20534790-bb45-4f33-9a6c-2fe795fb48ce/SSSIs-Chapter08.pdf>. Accessed on: 7 September 2020.

JNCC (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. JNCC, Peterborough.

Norfolk Wildlife Trust (2021). *Guidance Notes for Recording DAFOR*. Available at: <https://www.norfolkwildlifetrust.org.uk/documents/downloads/cwa/handout-9-using-dafor>. Accessed on: 19 May 2021.

Rodwell, J.S. (2006). *National Vegetation Classification: User's Handbook*. JNCC, Peterborough.

The Heather Trust, Peatland Action, Crichton Carbon Centre, LandForm Research and the Field Studies Council (2017). *Peatland Condition Assessment*. Available at: <https://www.nature.scot/sites/default/files/2017-10/Guidance-Peatland-Action-Peatland-Condition-Assessment-Guide-A1916874.pdf>. Accessed on: 7 September 2020.