



Appendix 11F

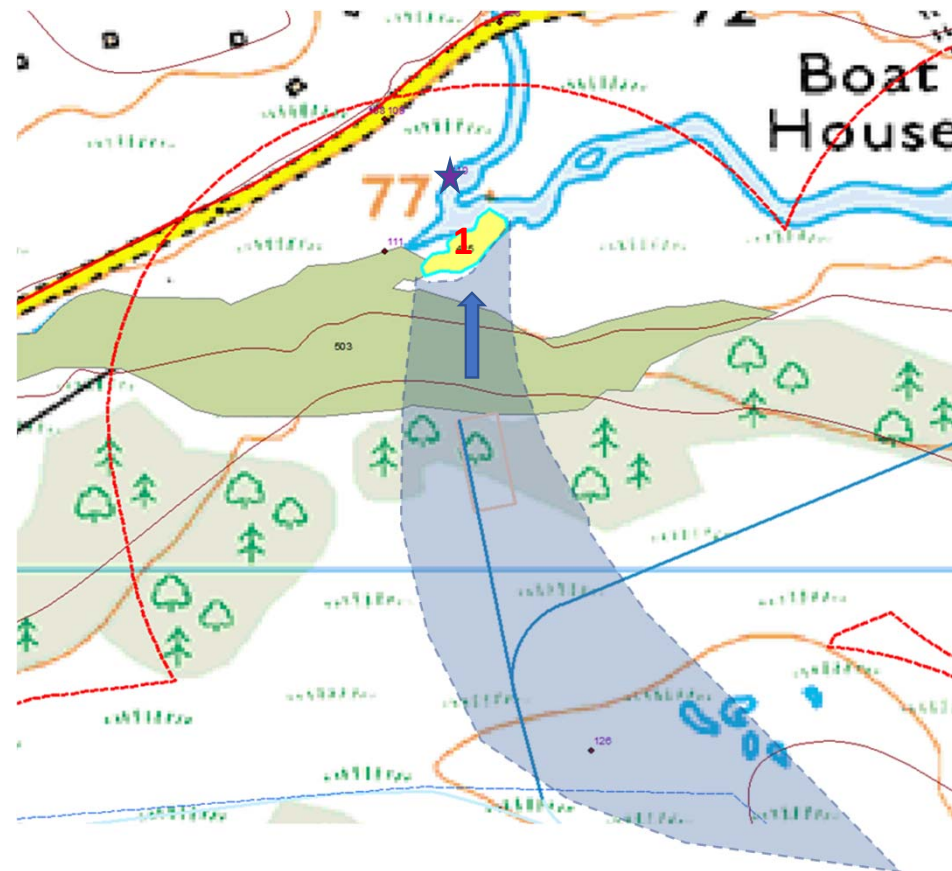
GWDTE Risk Assessment



habitat ID	NVC	SEPA groundwater dependency	Superficial deposits	Solid geology	Description	Hydrology	Assessed groundwater dependency	receptor ID	Relevant windfarm infrastructure	EIA value (ES Table 6.17)	Soil compaction on groundwater	Dewatering on groundwater	Site activities on groundwater	Soil compaction on surface water	Flowpath disruption on surface water	Ground disruption on surface water	Dewatering on surface water	Discharge on surface water	Site activities on surface water	Peat disturbance
1	M25a/M6ci/M4/M23	Moderate	Peat (up to 2 m)	Proto-cataclaste (acid gneiss with cataclastic fabric)	Small area of M25a on the outside of a meander and south bank of the Abhainn Ghrioda. The topography rises to the south steeply (with substantial rock outcrops), from approximately 77 mAOD to a peak > 90 mAOD 400 m to the south. A strip of forestry runs east to west on top of a break of slope approximately 110 m south of the habitat. Superficial peat is believed to be approximately 1.5 to 2 m thick on the higher slopes and less thick within the valley (0.5 to 1 m thick) at the habitat location.	The habitat is associated with the Abhainn Ghrioda and is likely to be maintained by throughflow on the steeply sloping peat valley sides to the south.	Moderate		Turbine 12 and associated track is 100 m south of the habitat, within 1 catchment	Low	Low (Negligible, NS)	Medium (Minor, NS)	Low (Negligible, NS)	Medium (Minor, NS)	Medium (Minor, NS)	Medium (Minor, NS)	Low (Negligible, NS)	Medium (Minor, NS)	Low (Negligible, NS)	Medium (Minor, NS)
2	M15b/H12a/U4b/MG	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Small area lying close to small tributary of Abhainn Ghrioda in an area of shallow peat and elevated ground (approximately 70 mAOD). The habitat corresponds to the higher area and there is little or no topographic catchment area. The M15 habitat community seems to be associated with rock outcrops and loose exposed rocks of old ruined buildings.	The habitat is probably fed by direct precipitation since there is no obvious surface water or groundwater catchment, with higher ground probably over a half a km away to the south.	Low		No further assessment required											
3	M23b/U4b rank/H10i	High	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Lies on catchment divide at Cnoc a' Chollich on elevated ground rising from 60 to 81 mAOD and surrounded by forestry. The habitat lies on a south facing slope to the north of Loch Breag. Cnoc a' Chollich. This area is known to have very thin peat cover (up to 0.5 m thick).	The habitat is on relatively high ground and is likely to be rainwater-dominated with a minimal surface or groundwater catchment.	Low		No further assessment required											
4	M25a	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	A flat area wet boggy area with numerous pools and deep peat (up to 4 m thick), with topography rising gently to the east and west. The area upon which the habitat represents an elevated flat region between catchments with poor drainage.	The habitat is on flat ground and is likely to be rainwater-dominated with a minimal surface or groundwater catchment.	Low		No further assessment required											
5	M15b/U5a/M6c	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	An area just south and adjacent to the A858, on a shallow slope, rising about 10 m above the road to 80 mAOD (a catchment divide between Abhainn a' Ghlinn Mhoir north and Abhainn Ghrioda and Loch a' Leadharain to the south) to the south. The boundary of the habitat seems to correspond to areas of historical peat cutting close to the vicinity of the road. Peat thicknesses are uncertain but believed to be about 0.5 to 1 m thick.	The habitat is on sloping ground, and whilst the potential catchment is small, peat throughflows from the south might help support the habitat.	Moderate		Turbine 20 is 70 m from the eastern edge of the habitat, buffer zone extends over part of habitat and 2 catchment	Low	Very Low (Negligible, NS)	Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)
6	M15b/M19a/M15c	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	An area just south and adjacent to the A858, on northern slopes of Cnoc Loch an Leadharain. This hill rises to the south from approximately 60 mAOD to a peak of 83 mAOD 200 m to the south (catchment divide between Abhainn a' Ghlinn Mhoir to the north and Loch a' Leadharain to the south). The habitat area corresponds to the bottom of the hill where the slopes are greater > 7 degrees. There is evidence of some historical peat cutting in the area which is believed to be 2 m thick in the area.	The habitat is on sloping ground with a reasonably sized catchment above it, and peat throughflows from the south might help support the habitat.	Moderate		Track runs through the extreme west of the habitat, with borrow pit search area encroaching on catchment and buffer extending across habitat, and central/main substation buffer across 3 part of catchment	Low	Very Low (Negligible, NS)	Medium (Minor, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Medium (Minor, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)
7	M25a/M17b/M1	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	An area to the south west of Loch a' Leadharain (to the north east) and Abhainn Ghrioda (to the south west). The habitat is on a north east facing slope above forestry and the loch and is on higher ground above 80 mAOD and rising to a peak of 89 mAOD. The higher ground is boggy with small lochans and likely to be poorly drained.	The habitat is towards the top of sloping ground, and whilst the potential catchment is small, peat throughflows from the south west might help support the habitat.	Moderate		Track crosses the southern catchment and track and Turbine 19 buffers extend across southern part of habitat, and habitat also within buffer of adjacent storage/laydown area 4 catchment	Low	Very Low (Negligible, NS)	Medium (Minor, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)
8	M15b/M17b	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	The habitat area extends from a catchment divide downslope to Loch a' Leadharain. Peat thicknesses are uncertain but believed to be about 0.5 to 1 m thick.	The habitat is on sloping ground, and whilst the potential catchment is small, peat throughflows from the north west might help support the habitat.	Moderate		Turbine 20 and track are adjacent (10 m) to the north east part of the habitat, turbine buffer zone extends over whole of habitat and catchment 5	Low	Very Low (Negligible, NS)	Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)
9	M15c/H10a/M15b	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	The habitat is adjacent (north off) to tributary of Abhainn Ghrioda which runs from Loch a' Leadharain to the south east. It is on lower ground at about 60 mAOD with the topography rising to the north and north east (>80 mAOD and >70 mAOD respectively). Upslope areas have been affected by peat cutting. The habitat is associated with the base of a large exposed south west facing outcrop of rock (approximately 5 m in height).	The habitat is on sloping ground with a reasonably sized catchment above it to the north, and peat throughflows might help support the habitat.	Moderate		170 m from trackway running through catchment area and within central/main substation and borrow pit buffer zones 6	Low	Very Low (Negligible, NS)	Medium (Minor, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Medium (Minor, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)
10	M6ci/U4b/M23b/MG	High	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Strip of M6ci on the north eastern banks of Loch a' Leadharain. The topography is generally flat rising by 20 m to the east. The habitat is associated with some outcrop exposures. On the loch shoreline peat faces of 1 to 1.5 m height were seen but no seepages identified.	The habitat is on the north eastern edge of Loch a' Leadharain, is supported by peat throughflows in the reasonably sized catchment to the east.	High		220 m from trackway running through the catchment area and within Turbine 20, central/main substation and borrow pit buffer zones. Borrow pit search area also clips eastern edge of catchment 7	Low	Very Low (Negligible, NS)	Medium (Minor, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Medium (Minor, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)
11	M15c/M19a	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Patch of M15c on upper southern slopes of Cnoc Loch a' Leadharain which rises to 83 mAOD to the north. Surface drainage suggests flow from the north east. The habitat could be associated with rock outcrops in the area.	The habitat is on sloping ground with a small upper and lower catchment (due to the shape of the habitat), and peat throughflows from the north west might help support the habitat.	Moderate		Track runs through the centre of the habitat. Central/main sub-station is adjacent to the habitat to the east and buffer extends across habitat and groundwater catchment area. The proposed borrow pit search area coincides with the eastern part of the habitat and catchment, and the buffer extends across entire area. 8	Low	Very Low (Negligible, NS)	High (Moderate, PS)	Low (Negligible, NS)	Very Low (Negligible, NS)	High (Moderate, PS)	High (Moderate, PS)	Very Low (Negligible, NS)	High (Moderate, PS)	Low (Negligible, NS)	High (Moderate, PS)
12	M15c/M15b/M17b/N	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Patch of M15c on catchment divide at Cnoc Loch a' Leadharain (Abhainn a' Ghlinn Mhoir catchment to the north and Loch a' Leadharain to the south). The habitat seems to be associated with rock outcrops and ruined buildings in the area on elevated ground upon which there is no apparent catchment.	The habitat is on sloping ground, and whilst the potential catchment is small, peat throughflows from the south might help support the lower slopes of the habitat.	Moderate		Central/main sub-station is adjacent to the habitat to the south and buffer extends across habitat and groundwater catchment area. The proposed borrow pit search area coincides with the central part of the habitat, and the buffer extends across 9 entire area.	Low	Very Low (Negligible, NS)	High (Moderate, PS)	Low (Negligible, NS)	Very Low (Negligible, NS)	High (Moderate, PS)	High (Moderate, PS)	Very Low (Negligible, NS)	High (Moderate, PS)	Low (Negligible, NS)	High (Moderate, PS)
13	M15b/U4b/M17a/M1	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Linear strip of M15b along southern edge of Bennadrove landfill. The topography above the landfill to the north rises to 119 m AOD (Cnoc nam Fiadh). The habitat is on a change of slope at 70 mAOD just above the flood plain of the Abhainn a' Ghlinn Mhoir to the south. This area below the habitat is affected by peat cutting further downslope.	The habitat has a large catchment to the north within the landfill boundary which will likely have an impact on the surface and groundwater flows in the area. Throughflows are still possible though.	Moderate		Track and Turbine 21 buffers intersect the western part of the habitat and 10 catchment	Low	Very Low (Negligible, NS)	Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)	Very Low (Negligible, NS)	Very Low (Negligible, NS)
19	M15b/M17b/M15c/H	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Very small area close to tributary of Abhainn Ghrioda. The habitat is adjacent (south of) to tributary of Abhainn Ghrioda which runs from Loch a' Leadharain to the south east. It is on lower ground at about 60 mAOD with the topography generally being flat. Upslope areas have been affected by peat cutting. This higher ground to the north is separated from the habitat by lower ground and the tributary. The habitat is possibly associated with rock outcrops with a south west aspect.	The habitat is on flat ground and is likely to be rainwater-dominated with a minimal surface or groundwater catchment, although surface water run off over outcrops could also supply this habitat.	Low		No further assessment required											
20	M25a/M6ci	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	A linear area running along a valley bottom, forming start of watercourse leading to Loch Speirag. The watercourse (shallow ditch) is within a shallow basin located between forestry in a flat lying area with elevated ground draining from the west. Peat is approximately 1.5 m thick in the area.	The habitat is associated with an unnamed inflow into Loch Speirag, and is supported by limited peat throughflows from a very small catchment.	Low		No further assessment required											
21	M6ci/U4	High	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Patch of M6ci lying to the east of Cnoc Loch a' Leadharain. A small area of undulating boggy, generally flat ground with occasional rock outcrops. The habitat is on a catchment divide (Loch a' Leadharain catchment to the south). There is apparently very little raised ground to generate any immediate groundwater catchment although the wider area is raised to the north west. The habitat is adjacent to the Maryback salt depot. There is evidence of peat cutting in the surrounding area and stunted forestry growth to the north west. The south and western boundaries of the habitat follow fence lines suggesting human influences on the ecology.	The habitat is on relatively high, flat ground and is likely to be rainwater-dominated with a minimal surface or groundwater catchment.	Low		No further assessment required											
22	M6ci	High	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Small area, lensoid in shape, on the banks of the Allt Hulaibie, at its southern extent. Channel is very narrow, approximately 20 to 30 cm in width, but relatively deep and fast flowing. Peat is between 1.5 and 2 m thick in the area. The habitat area is within a shallow basin, the highest area being to the north west. The catchment area is influenced by peat cutting and forestry drainage.	The habitat is associated with the Allt Hulaibie, and is supported by a large surface water and groundwater catchment.	High		Turbine 35, track and storage/laydown buffers extend across the habitat, and these and several other turbine and track buffers and a borrow pit buffer intersect the large catchment 11	Low	Low (Negligible, NS)	Medium (Minor, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Medium (Minor, NS)	Medium (Minor, NS)	Very Low (Negligible, NS)	Low (Negligible, NS)
23	M6ci/M19a/M17b	High	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	A linear area of M6ci lying along the banks of the Abhainn Lacasdail along the extreme northern boundary of the proposed site. Additional M19a/M17b communities are found along the eastern strip of this habitat. The habitat is identified as narrow strips at lowest points around watercourses, sometimes forming gullies with steep sloped banks where flushes are formed (occasionally formed of thick peat 1 to 3 m thick possible). The river meander is cut deep into the topography and peat forming small flood plains. On the slopes the peat has complex surface drainage likely to aid surface runoff.	The habitat is associated with the Abhainn Lacasdail, but is supported by peat throughflows in the small but very steeply sloping catchment to the south.	High		Turbine 32 with its associated trackway 100 m south of the west of the habitat and within its catchment, whilst Turbine 33 is just to the east of the catchment 12	Low	Low (Negligible, NS)	Medium (Minor, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Medium (Minor, NS)	Low (Negligible, NS)	Low (Negligible, NS)
24	M15b/M17a/M6ci/M	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	A narrow area fringing the south western edge of Loch Garbhaig. The loch is surrounded by flat ground (around 100 mAOD) but then the topography rises steeply to the south to Beinn Hulaibaidh (153 mAOD). The peat thickness is variable but thick in places. The habitat seems to correspond to an area along a break in slope along the loch shoreline where peat may have been eroded.	The habitat is on the south western edge of Loch Garbhaig, abd is supported by peat throughflows in the large catchment to the south west.	Moderate		Turbine 26 with its associated trackway 100 m south west of the habitat and within its catchment, whilst Turbine 27 is just to the east of the catchment 13	Low	Low (Negligible, NS)	Medium (Minor, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Medium (Minor, NS)	Low (Negligible, NS)	Low (Negligible, NS)
25	M15b/M6ci/U4a/M15	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Patch of M15 on the south facing slope of Beinn Hulaibaidh in an area of relatively shallow peat. It is located on the eastern bank of the Allt A'irigh na Beiste watercourse and bounded to the east by forestry. The habitat is on the southern aspect of the lower slopes. The habitat is located within a settlement of ruined housing. As a result it is possible that human activity could have changed the natural drainage in this area.	The habitat is associated with the Allt A'irigh na Beiste, but is supported by peat throughflows in the large steeply sloping catchment to the north.	Moderate		Turbine 24 west of habitat's catchment, but associated trackway 14 dissects it	Low	Low (Negligible, NS)	Medium (Minor, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Low (Negligible, NS)	Medium (Minor, NS)	Low (Negligible, NS)	Low (Negligible, NS)
26	M25a/M19a/M17a	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	A linear area on the banks of the Allt Greidag, north of the A858. There is evidence of peat cutting along the road to the south. The area is low lying rising gently to the west.	The habitat is associated with the Allt Greidag and is supported by limited peat throughflows from a very small catchment.	Low		No further assessment required											
27	M15b/c	Moderate	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Linear area associated with a change in slope and the flood plain of the Abhainn Ghrioda (could have been the original watercourse path). The area is low lying rising gently to the north and south. Alluvial deposits in the flood plain area could change sub-surface flows and conditions in the area.	The habitat is associated with an apparent former course of the Abhainn Ghrioda, and is supported by limited peat throughflows from a small catchment.	Low		No further assessment required											
28	M6ci	High	Peat	Proto-cataclaste (acid gneiss with cataclastic fabric)	Small patch of M6 on the inside of a tight meander on the Abhainn Ghrioda, just downstream of Loch a' Chlachain. The area is low lying rising gently to the north and south. Alluvial deposits in the flood plain area could change sub-surface flows and conditions in the area.	The habitat is associated with the Abhainn Ghrioda, and is supported by limited peat throughflows from an indistinct catchment.	Low		No further assessment required											



Photograph looking south



Legend

- Development Boundary
- - - Track 100m buffer
- Catchment Boundaries
- - - Storage Areas/ Substations/ Laydown 250m Buffer
- Borrow pit
- Storage Areas Substations Laydown

Internal Access Tracks

- Other tracks
- Consented Location
- Existing Track
- New Hardstanding
- New Track

GWDTEs

- Low
- High
- Moderate
- Borrow Pits 250m buffer



Possible groundwater flow



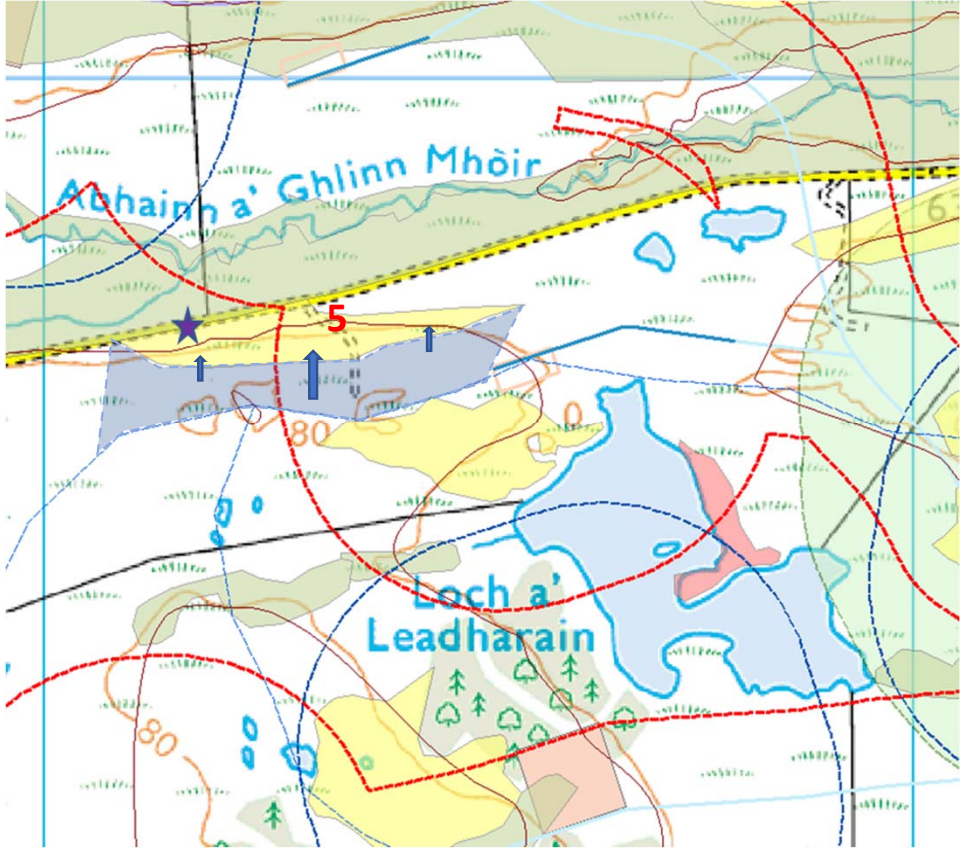
Possible groundwater catchment area

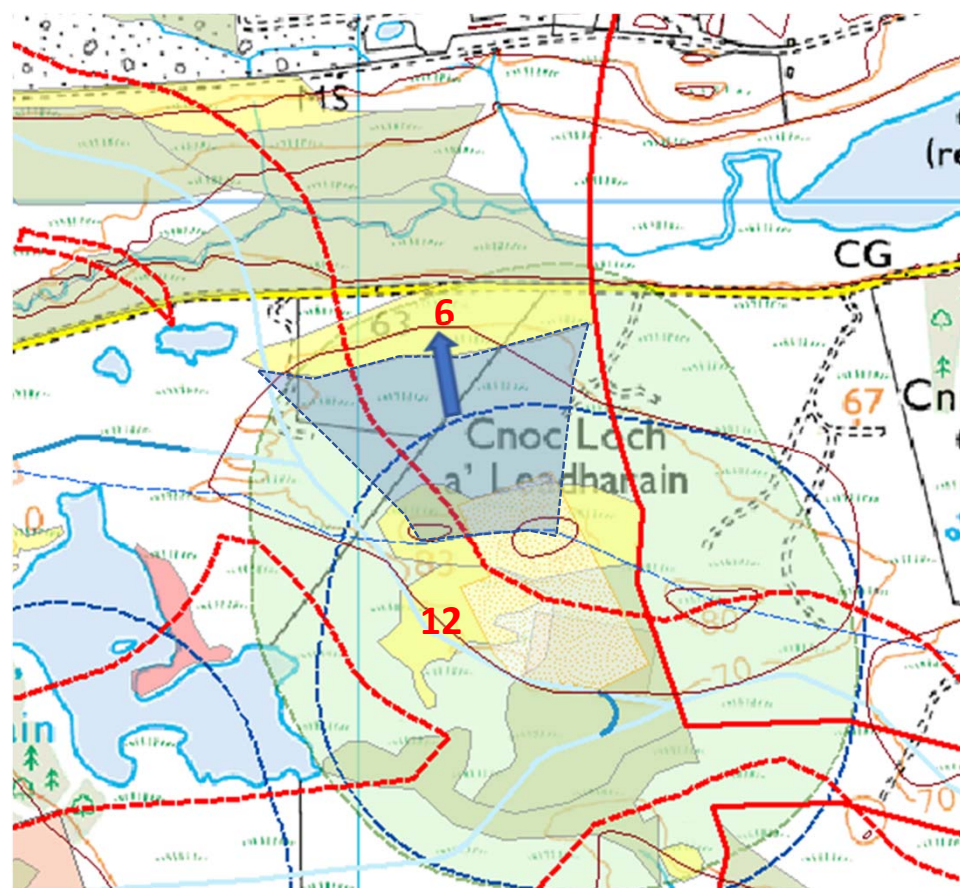


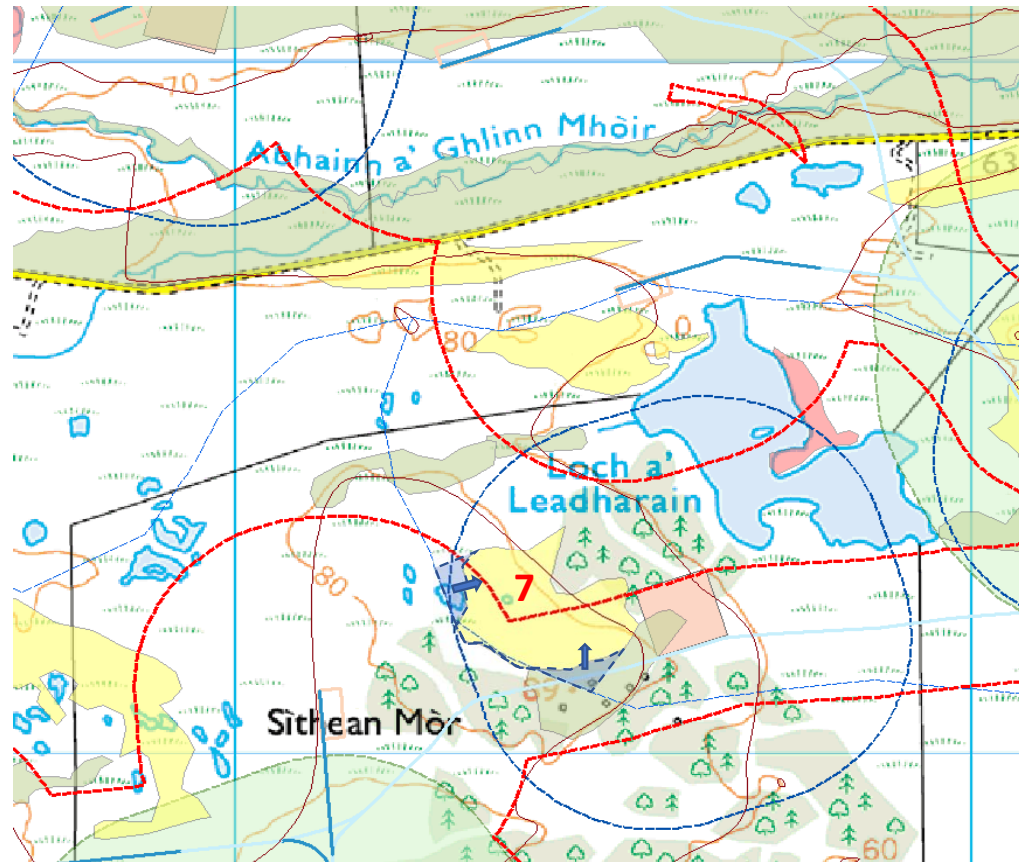
Photograph location



Photograph looking east

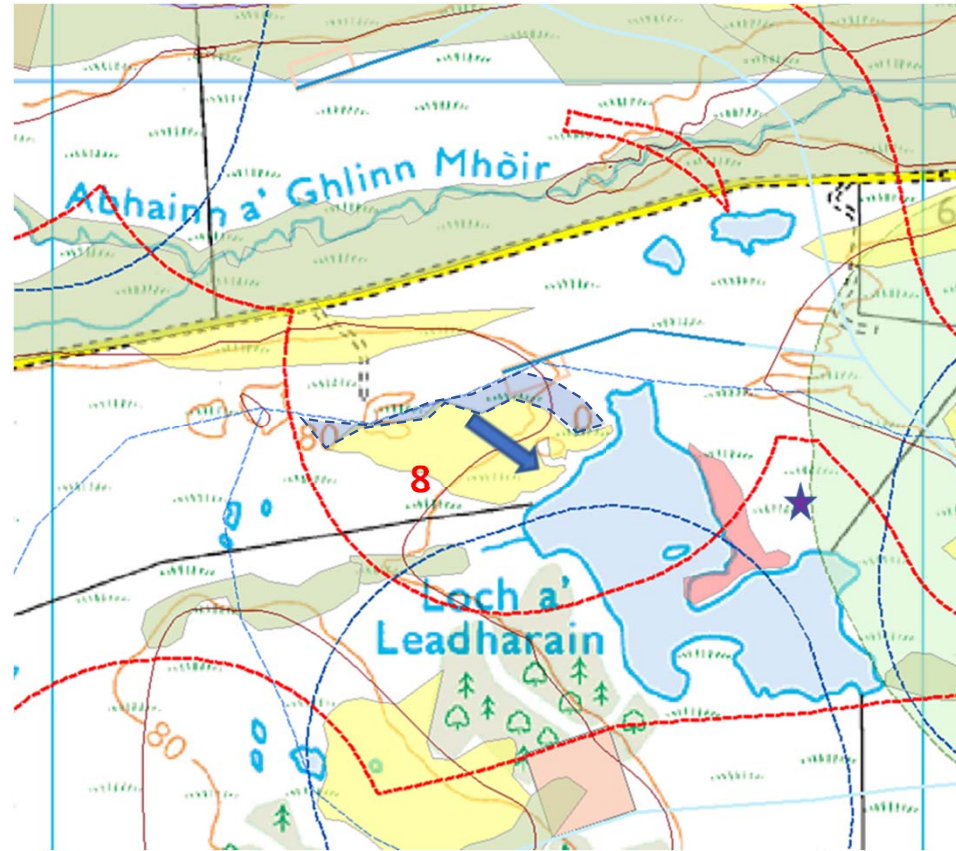






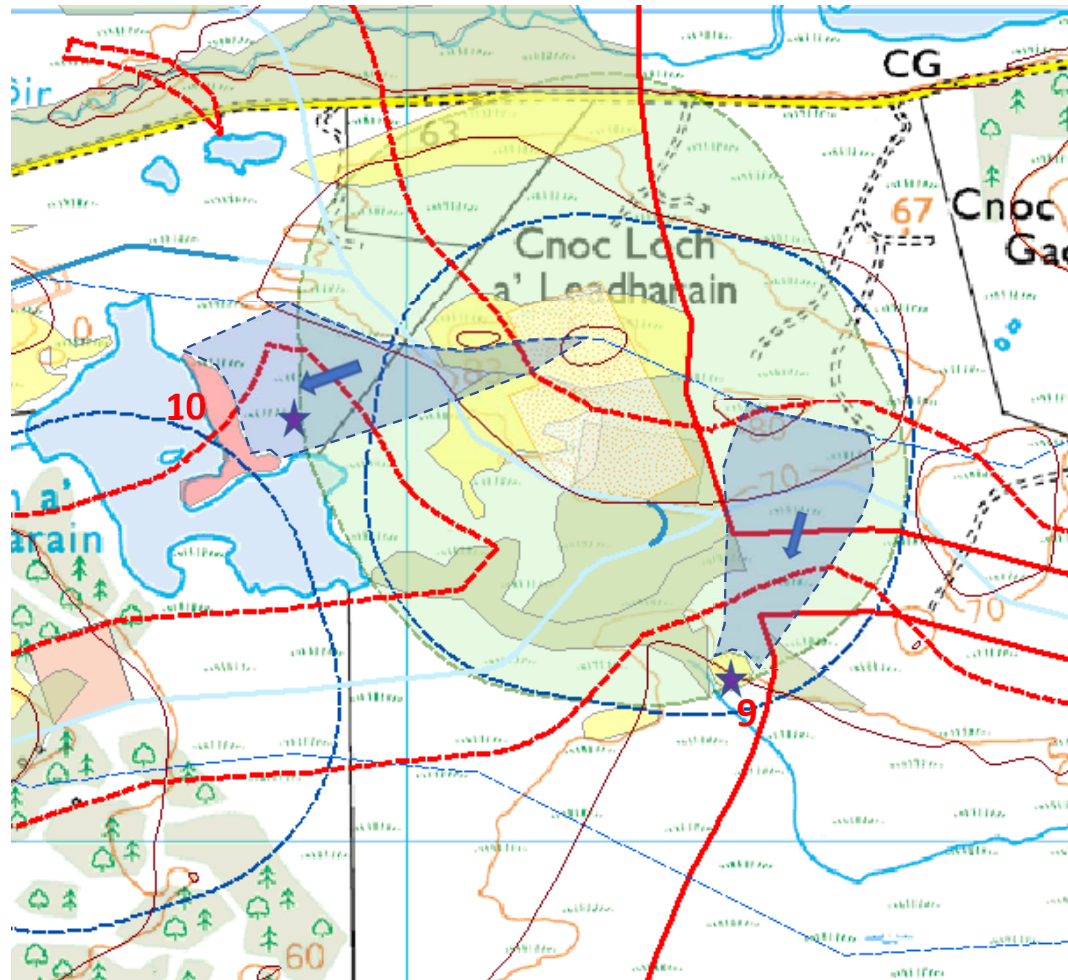


Photograph looking west





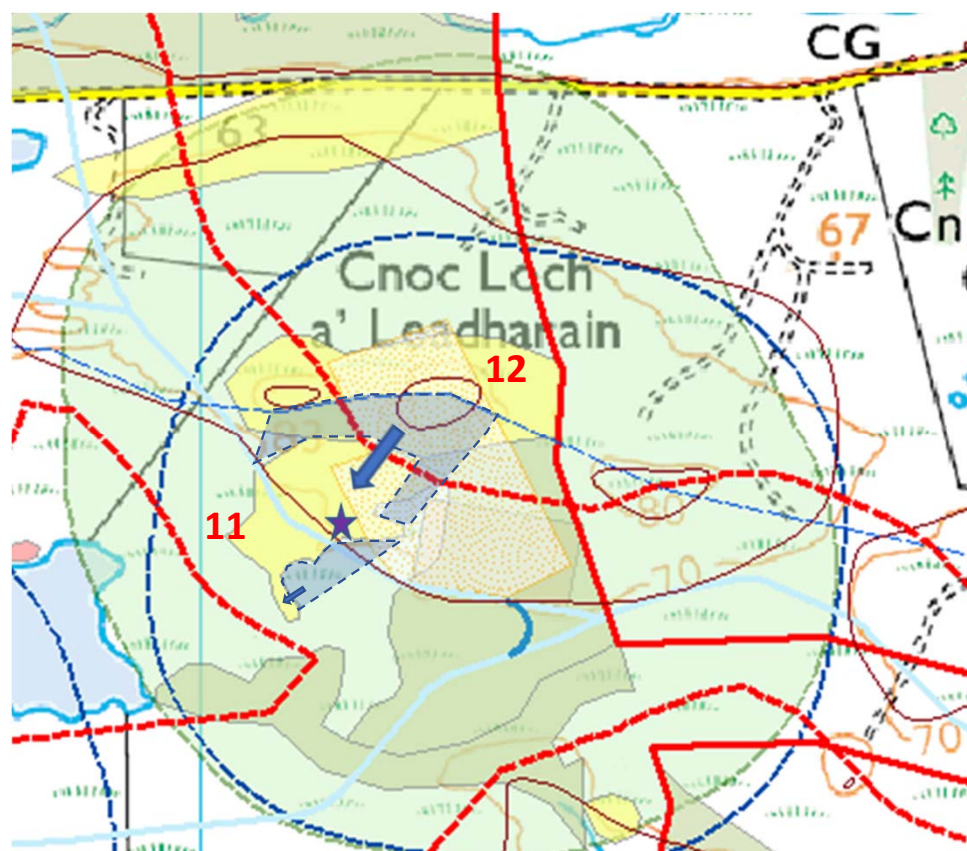
Photograph of GWDTE 10 looking west

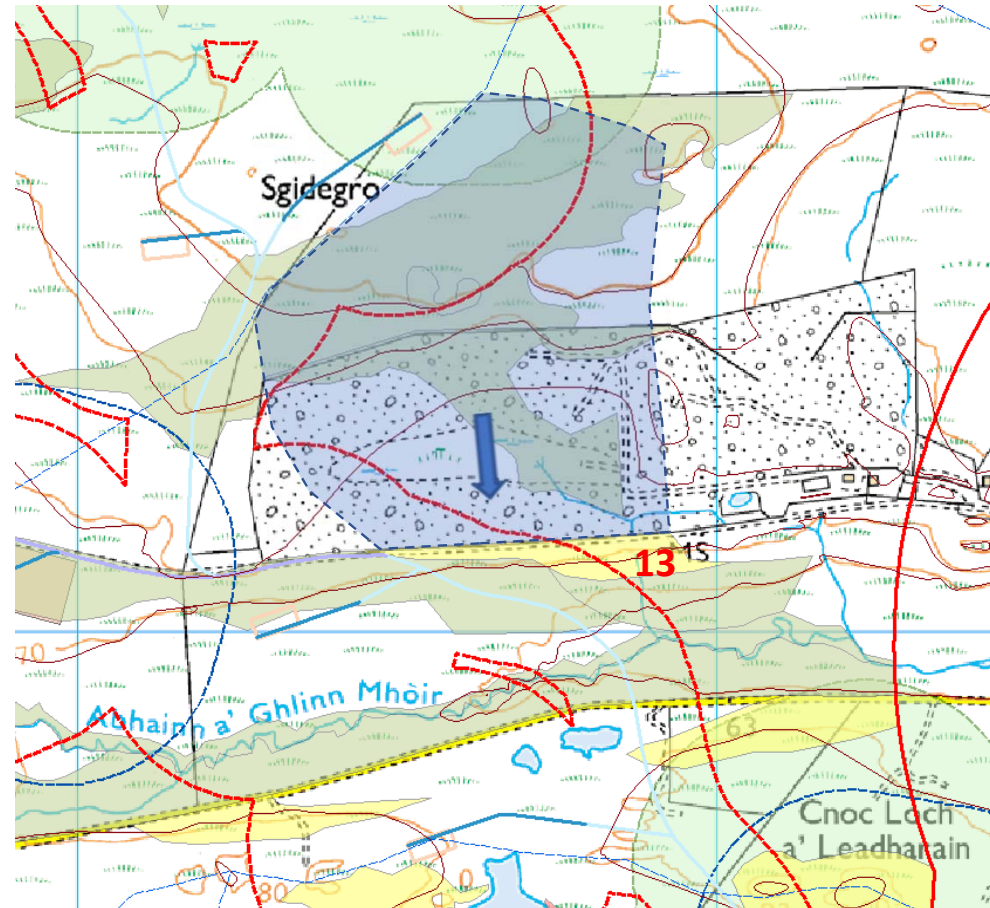


Photograph of GWDTE 9 looking north



Photograph looking north east







Photograph looking south

