336-006-RP01

Flood Risk Assessment

Corriemoillie BESS

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Contents

1 Introduction

Haydn Evans Consulting Ltd (HEC) has been commissioned by Field Corriemoillie Ltd (hereafter referred to as the Client) to carry out a Flood Risk Assessment (FRA) to support a planning application for the construction and operation of a Battery Energy Storage System (BESS) of up to 200 MW with associated infrastructure (including cable route to substation), access and ancillary works (including landscaping and biodiversity enhancement).

The FRA should be read in conjunction with the Drainage Impact Assessment (DIA) which has been prepared for this site; HEC document reference 336-006-RP02 dated 6th September 2024.

1.1 Site Proposal

The proposed development has a total development footprint of approximately 3.014 hectares (ha) across the 18.3 ha site.

The Proposed Development principally comprises a BESS that will import and export electricity from the adjacent, existing Corriemoillie Substation.

It includes one battery compound comprising battery storage units arranged into rows, medium-voltage (MV) skids and associated ancillary equipment, a substation compound which accommodates high-voltage grid transformers, switchgear and a control building, as well as site-wide supporting infrastructure including underground cabling, access tracks, fencing, attenuation basins, biodiversity enhancements and landscaping measures. Whilst the exact specifications are subject to detailed design, the principal components described form the basis of the Section 36 application to allow environmental assessments and mitigation to be appropriately scoped.

2 Location & Existing Conditions

2.1 Site Location

The site is located approximately 620 metres (m) to the northwest of Corriemoillie, Highlands, centred on approximate Ordnance Survey (OS) grid reference 234862,864215 (see red line on Figure 1).

Figure 1: Site location map

The site is generally surrounded by greenfield land.

The site is accessed off the A832 to the south of the site. The track travels north, passing the Corriemoillie Substation before reaching the site.East of the site, the Allt Coire Mhuilidh flows in a southerly direction.

2.2 Existing Topography

A topographical survey has been produced for the site (see Appendix A). The survey shows ground levels to generally fall from north-west to south-east. Ground levels in the north-west are circa 189 metres Above Ordnance Datum (mAOD), falling to circa 121 metres (mAOD) in the south-east. Ground levels undulate across the site.

The survey shows vegetation around the perimeter of the site.

2.3 Existing Sewer/Water Assets

Scottish Water (SW) sewer records for the site have been obtained (see Appendix B). The records show no foul or surface water sewers in the vicinity of the site. No sewer records have been obtained.

2.4 Existing Drainage Regime

There is no formal drainage regime for this site, surface water is likely to flow overland following the ground topography. Various ditches/depressions are shown on the topographical survey, which intercept overland flow and direct it towards the south-east.

2.5 Ground Conditions

British Geological Survey (BGS) mapping confirms the site to have a bedrock geology of Crom Psammite Formation (Psammite) (see Figure 2).

Superficial deposits across the site vary. Glacial Deposits (Diamiction, gravel, sand, and silt) are shown to be present across the most-part of the site, with areas of Alluvium (clay, silt, and gravel) and some limited Peat as identified on initial ground investigation work undertaken (see Figure 3).

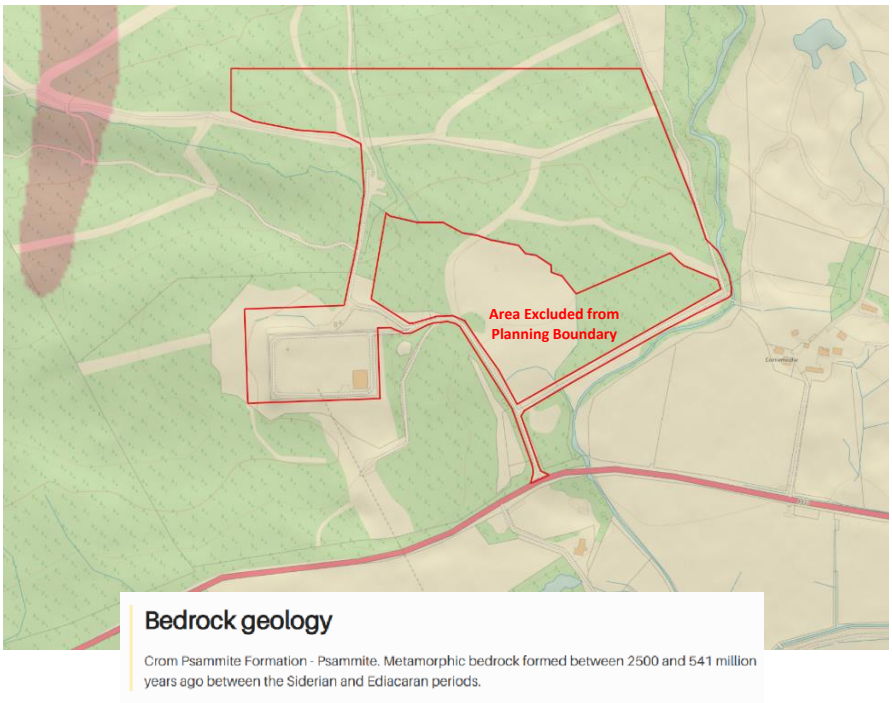

Figure 2: BGS Geology Map of Bedrock geology

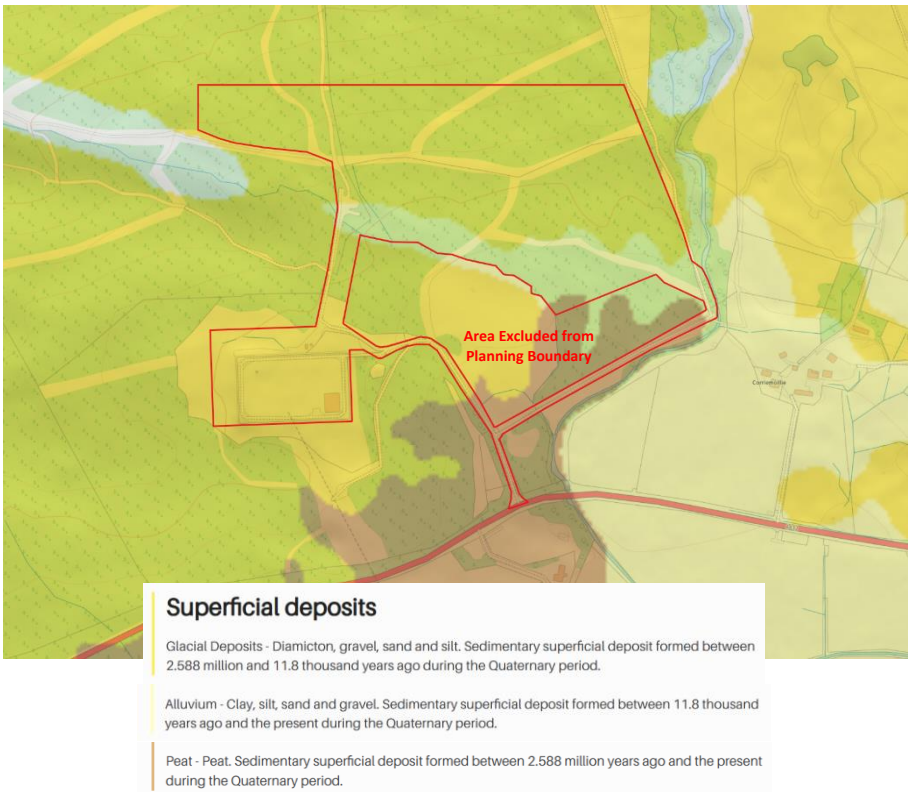

Figure 3: BGS Geology Map of Superficial Deposits

The Geoenvironmental and Geotechnical Desk Study undertaken by GDG which forms part of the overall submission for this project states:

'The Hydrogeological Map of Scotland from the BGS indicates that there is not expected to be a superficial aquifer underlying the Site. The bedrock aquifer beneath the entire Site is the Morar Group unit, which is a low-productivity aquifer. Groundwater flow in this aquifer occurs almost entirely through fractures and other discontinuities, with small amounts present in the near-surface weathered zone and secondary fractures.

It is noted that a historical ground investigation at the Corriemoillie Substation, located 200m southeast of the Site, encountered shallow groundwater strikes between 0.40 and 0.80m below ground level (bgl).'

3 Planning Policy Context

3.1 National Planning Framework 4 (NPF4 Adopted 2023)

The National Planning Framework 4 (NPF4, 2023) includes government policy for developments and meeting the challenges of climate change and flood risk.

The Policy 22 guidance states *"Development proposals at risk of flooding or in a flood risk area will only be supported if they are for essential infrastructure, water compatible uses, redevelopment of an existing building or site for an equal or less vulnerable use, or redevelopment of previously used sites in built up areas."*

The protection offered by an existing formal flood protection scheme or one under construction can be considered when determining flood risk. All risks of flooding are understood and addressed; there is no reduction in floodplain capacity, increased risk for others, or a need for future flood protection schemes; the development remains safe and operational during floods; flood resistant and resilient materials and construction methods are used; and future adaptations can be made to accommodate the effects of climate change.

Development proposals will not increase the risk of surface water flooding, manage all rain and surface water through sustainable urban drainage systems (SUDS), and seek to minimise the area of impermeable surface. These proposals will be supported if connecting to public water mains; however, if not feasible the applicant will need to demonstrate that water for consumption is sourced from a sustainable source. Proposals which create, expand or enhance opportunities for natural flood risk management, including blue and green infrastructure, will be supported."

3.2 Highland-wide Local Development Plan (HwLDP, Adopted 2023)

On 5 April 2012 the Highland-wide Local Development Plan was adopted by the Council and was constituted as the local development plan in law. The Plan sets out a vision statement and spatial strategy for the area, taking on board the outcomes of consultation undertaken during preparation of the plan. Policy 64 is relevant to this assessment and reads as follows:

Policy 64 Flood Risk

Development proposals should avoid areas susceptible to flooding and promote sustainable flood management.

Development proposals within or bordering medium to high flood risk areas, will need to demonstrate compliance with Scottish Planning Policy (SPP) through the submission of suitable information which may take the form of a Flood Risk Assessment.

Development proposals outwith indicative medium to high flood risk areas may be acceptable. However, where:

- better local flood risk information is available and suggests a higher risk;
- a sensitive land use (as specified in the risk framework of Scottish Planning Policy) is proposed, and/or;
- the development borders the coast and therefore may be at risk from climate change;

a Flood Risk Assessment or other suitable information which demonstrates compliance with SPP will be required.

Developments may also be possible where they are in accord with the flood prevention or management measures as specified within a local (development) plan allocation or a development brief. Any developments, particularly those on the flood plain, should not compromise the objectives of the EU Water Framework Directive.

Where flood management measures are required, natural methods such as restoration of floodplains, wetlands and water bodies should be incorporated, or adequate justification should be provided as to why they are impracticable.

3.3 Scottish Environment Protection Agency (SEPA)

SEPA is an independent advisor on flood risk, providing flood risk advice for certain consultations. SEPA document '*Technical Flood Risk Guidance for Stakeholders'* outlines the information required to be submitted as part of a FRA.

4 Flood Risk Assessment

4.1 Introduction

The main sources of flooding that have been assessed as part of this report, in line with the NPPF, as follows:

- Tidal and Fluvial;
- Pluvial;
- Groundwater;
- Sewers; and
- Reservoirs and other artificial sources.

4.2 Tidal and Fluvial

Tidal, or coastal flooding from the sea, is the inundation of land along the coast usually caused by high tides or storm surge. Fluvial, or river flooding, occurs when the water level in a river, lake or stream rises and overflows onto neighbouring land because of the capacity of rivers being exceeded by the river flow.

Due to the location of the site (inland), the site is not at risk of tidal flooding.

SEPA flood maps have been reviewed. There are no Main Rivers within the site boundary. The SEPA website confirms the site location is not in an area at likelihood of flooding and is therefore classified as being at less than 0.1% annual risk of flooding from rivers and seas (see Figure 4).

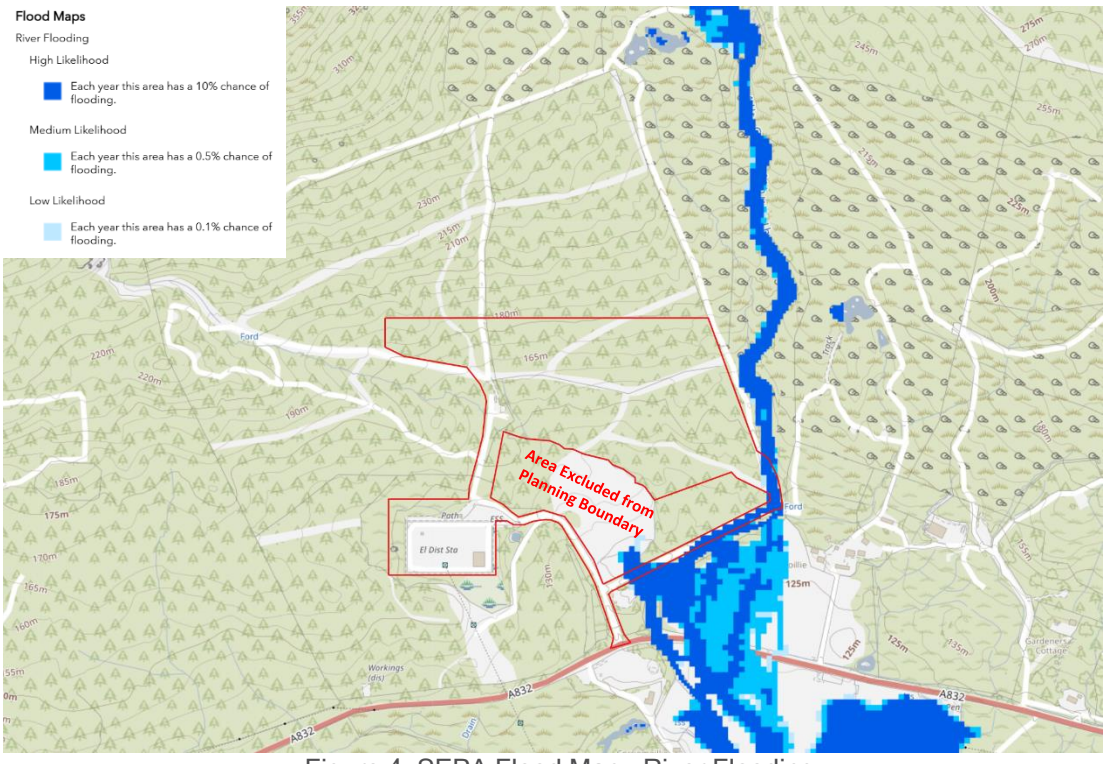

Figure 4: SEPA Flood Map – River Flooding

The closest area shown to be at risk of flooding appears to be associated with the river/watercourse 'Allt Coire Mhuilidh' located approximately 33m east of the site at its closest point. The watercourse flows in a southerly direction, away from the site, and is at a lower level

than the site. The site is therefore not at risk of flooding from this source. The site is not located on a flood plain and there is therefore no reduction in flood plain capacity.

The site is at low risk of flooding from tidal and fluvial sources.

4.3 Pluvial

Pluvial, or surface water flooding, occurs when heavy rainfall creates a flood independent of an overflowing water body. Pluvial flooding can occur in any location and is usually a result of intense rainfall saturating an urban drainage system, rainfall run-off on elevated terrain or where natural ground has been paved. Surface water run-off can be channelled either by natural features such as valley lines or by artificial features such as highways, to low points in the topography. If surface water is not able to flow away from topographical low points, then pluvial flooding can occur.

The SEPA Surface Water Flooding map (see Figure 5) shows the site to have small, localised areas of surface water flooding. This is believed to be due to the topography of the land, where low points allow surface water to pond.

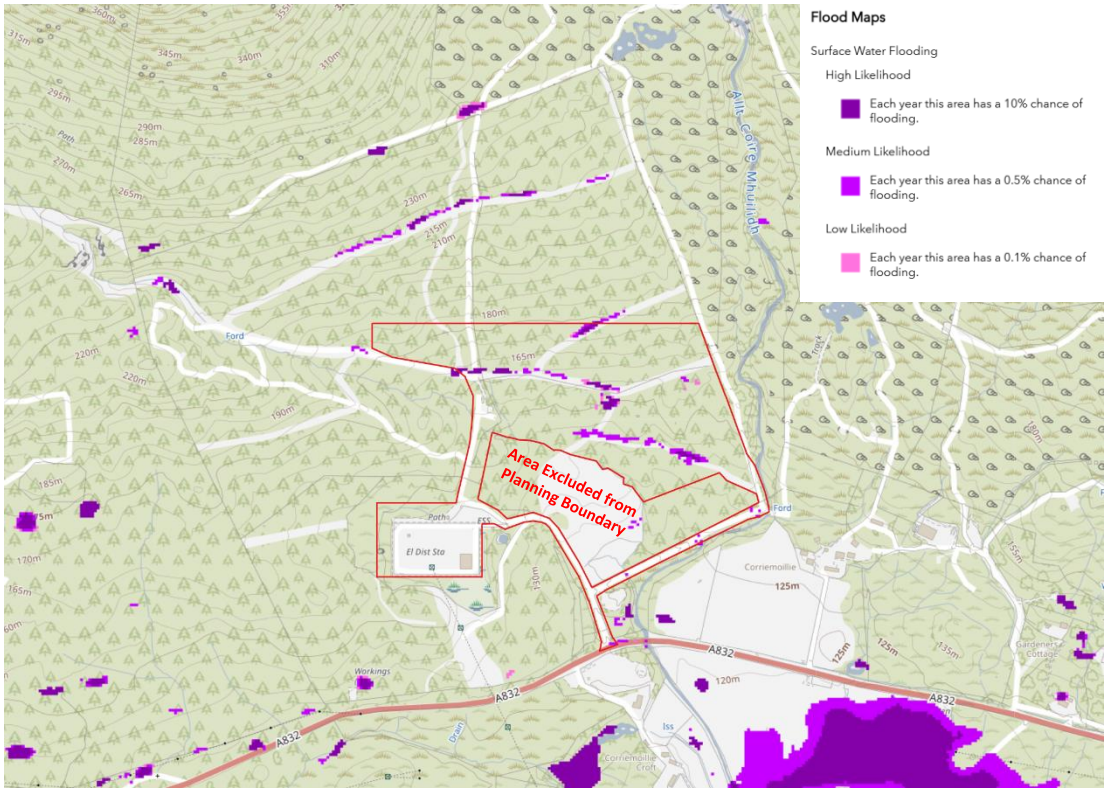

Figure 5: SEPA Surface Water Flooding map

OS mapping contours show ground levels to rise significantly to the north-west and therefore surface water could be shed towards the site from this direction. The upstream catchment comprises greenfield land and is shown to include areas of tree plantations. Due to the gradient of the upstream catchment, the likely rate and volume of surface water shed towards the site could be high, however, the extensive existing ditch network crossing the upstream catchment area would provide interception to the flow. It is assumed that the levels across this area undulate (similar to the on-site levels) and therefore surface water could pond in the lower areas; this is shown on the SEPA mapping.

The proposed surface water drainage strategy for the site is provided in the HEC DIA report (reference 336-006-RP2). The DIA report provides information on how the drainage proposals for the site mimic the existing drainage regime and restrict run-off to greenfield run-off rates; this

mitigates the potential for any surface water flooding to occur at the site and reduces the risk of surface water flooding to off-site receptors.

The site is at a low risk of flooding from this source.

4.4 Groundwater

Groundwater flooding generally occurs when water levels below the ground rise during wet winter months; these levels usually fall again in the summer months as water flows out into rivers.

As discussed in Section 2.5, borehole data recorded 250m away logged the presence of shallow groundwater.

Due to the ground conditions on and around the site (i.e. steep topography. Highland location) groundwater is likely to be perched and related to rainfall, rather than there being a high groundwater table at the site.

Further investigation into onsite groundwater levels is required to establish the risk of groundwater flooding to the site, however, if groundwater did express at the surface, it would flow overland towards the south-east of the site as per the existing regime.

The site is considered to be at a low risk of flooding from this source.

4.5 Sewers

Scottish Water sewer mapping confirms that there are no sewers in the vicinity of the site and therefore the risk of flooding from this source is low.

4.6 Reservoirs & Artificial Sources

A review of OS mapping shows that there are no significant water bodies (lakes, large ponds, reservoirs etc.) within the immediate vicinity of the site that appear likely to pose a risk to the site.

The flood risk from the failure of a reservoir has been reviewed, the site not in an area at risk of flooding from reservoirs.

The site is at low risk of flooding from these sources.

5 Summary and Conclusion

HEC has been commissioned by Field to carry out an FRA to support a planning application for the construction and operation of a Battery Energy Storage System (BESS) of up to 200 MW with associated infrastructure (including cable route to substation), access and ancillary works (including landscaping and biodiversity enhancement) on land adjacent Corriemoillie Substation.

The site is at a low risk of flooding from all sources and meets the requirements of the NPF4 in terms of appropriate development.

The proposals for the Site do not increase on or off-site flood risk and should therefore be found acceptable.

Appendix A – Existing & Proposed Site

Field drawing BTGBCOR01-005.1 – Detailed Site Plan

Highland Surveyors Ltd drawing 24019-01 Dated 18/06/2024 - Topographical Survey

Castle Keep Surveys drawing OV Dated 28/09/2022 – Topographic / Lidar Survey