

07/08/2023

Project No: 2083-21

Geotechnical Risk Register - Construction of Letter Wind Farm Infrastructure (Turbines, Hardstands, access tracks, Substation, Compound and Grid Connection)

Risk Matrix			
Risk Impact	Risk Probability		
	Low (0-1)	Medium (2-3)	High (4-5)
Low (0-1)	Green	Green	Amber
Medium (2-3)	Green	Amber	Red
High (4-5)	Amber	Red	Red

Last Revised 07/08/2023

Issue 04 Amendments in Red Text

Ref	Activity	Owner	Hazard & Cause	Effect	Existing Safeguards	Probability (P)	Impact (I)	Risk=PxI	Mitigation Control	Updated Probability (P)	Impact (I)	Updated Risk=PxI
1	Construction	Contractor	Running sands and soft silts below groundwater level. (Poor ground conditions)	Difficulty excavating trench / instability.	Ground investigation completed. The base of the trench shall be above groundwater. Where this is not the case pumping to be deployed.	3	3	9	Invoke mitigation as outlined in PSHLRA; lightweight plant, restrict work during severe weather, etc.	1	3	3
2	Construction	Contractor	Superficial soils are composed of organic peat bog mantling tills (mineral soils) derived from limestone. Weak soils extend to depth in excess of 3.5m. Excavations, where kept open for an extended period of time will require side wall support. This stability can be expected to further deteriorate during wet weather when waterlogged, stockpiled soils will swell and could become unstable on or at slopes of <10 degrees to the horizontal.	Foundations placed on shallow soils may be susceptible to adverse settlement / subsidence		3	4	12	Pre-construction SI to inform selection of the appropriate foundation for each structure	1	4	4
3	Construction	Contractor	Peat stability assessment has identified organic soil thickness of >1.50m was recorded at 48.2% of the peat probe positions with the Letter Wind Farm landholding. 1.50m is generally the upper threshold for the suitability of traditional excavated access track construction. In the case of Letter Wind Farm 48.2% of the access track network would be best constructed using the "floated" road method	Excessive Settlement / Subsidence of access tracks		4	3	12	Use "floated" road construction method where peat thickness in excess of 1.50m	2	3	6

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4	Construction	Contractor	Watercourse crossings. Ground conditions can change significantly. Some localised steepening of ground slopes adjacent to the construction zone.	Carelessness can result in excavation spoil falling under the influence of gravity into watercourses.	Silt fences erected	2	3	6	Erect silt protection around watercourses before commencing work activities. Maintain the quality of this protection during the lifetime of the project. Do no side cast peat or mineral soil spoil within 50m of such watercourses. Instead move deposition to other locations along the route.	1	3	3
5	Construction	Contractor	Risk of Peat Slide. (Poor ground conditions)	Delay to project, damage to surrounding lands, infrastructure. Siltation of watercourse.	PSHLRA carried out	2	4	8	Invoke mitigation as outlined in PSHLRA	1	4	4
6	Construction	Contractor	Potential Instability due to the presence of dissolution features such as sinkholes, cavities etc.	Subsidence of structures and other infrastructure	Initial assessment has not recorded the presence of "karst" landscape at this site	3	3	9	Undertake pre-construction SI works to	1	3	3
7	Construction	Contractor	Areas of Geological Heritage or Geological Sensitivity. An historic peat slide has been identified <100m west of turbine T4.	Lands in the vicinity of this feature are unstable and liable to enter the adjacent watercourse, with the effect of reducing water quality and negatively impacting flora and fauna.	Area of instability has been defined by GSI on their online mapping database	4	3	12	This hazard is to be removed by culverting the stream for the extent of the landslide zone.	1	3	3
8	Construction	Contractor	Shallow Water Table Potentially Present at major structures	Inundation of excavations by groundwater, increased risk of slope instability, upthrust pressure on foundations	Water table will be monitored prior to construction so that an appropriate foundations solution can be designed for structures (e.g. selection of buoyant v non-bouyant foundation design)	3	4	12	Work to be restricted during severe weather condition. Light plant to be deployed to reduce ground pressures exerted. Side support to be employed to support steep sided excavations or slopes battered back to an appropriate angle. Use of engineered drainage and / or groundwater pumping to maintain water table at a suitable level during construction works.	2	4	8
9	Construction	Contractor	Extreme weather condition; heavy rainfall, winds, snowfall etc.	Entrainment of mineral soils, loss of stability of excavated and recently sidecast peat. Potential for surface water flows to reach sensitive watercourses. Result; potential delays, costs associated with pollution, problematic PR.	Restrict work activities during severe weather conditions	4	5	20	Quantify extreme or severe wather conditions for the workforce. E.g. More than 10mm of rain in 24 hour period. Use suitable equipment to record weather data and inform work schedule.	1	5	5
10	Construction	Contractor	Rising water levels. (Seasonal and / or extreme weather)	Stream level increase and flow velocity can increase rapidly. This can cause a significant increase in momentum within watercourse and undesirable erosion effects. Existing structures, bridges and culverts can be inundated or washed away	Restrict work activities during severe weather conditions	4	5	20	Review the up to date Met Eirrean forecast at the morning meeting. Advise all present of the forecast. Install water level monitors at main stream crossings and ask site supervisors to monitor on days where forecasts are less favourable. Agree on the maximum height that water can rise to without becoming problematic and agree protocol for stopping works when it is exceeded.	1	5	5