Appendix to Chapter 12: Air

Appendix 12.1: Air Quality Monitoring & Standards

The data and descriptions in this appendix have informed the cumulative evaluations in the EIA Main Report.

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A12.1 AIR QUALITY MONITORING & STANDARDS

A12.1.1 EPA Monitoring Programme Results

The EPA and Local Authorities have undertaken air quality monitoring programmes in recent years. They have divided the country into various Air Quality Zones[1]. Zone A is defined as Dublin and its environs, Zone B is defined as Cork City, Zone C is defined as 23 urban areas with a population greater than 15,000 and Zone D is defined as the remainder of the country. The UWF Grid Connection and the Whole UWF Project is within Zone D. The most recent annual report on air quality "*Air Quality Monitoring Report 2017*"[2], details the range and scope of monitoring undertaken throughout Ireland.

Long-term PM_{10} monitoring is carried out at two rural Zone D locations, Killkitt and Claremorris[2]. The annual average concentration measured at these sites from 2012 - 2017 ranged from 8 - 13 µg/m^3. The average result for both locations indicates an upper average annual mean concentration of no more than 11 µg/m^3. The long term results for both locations show that levels of PM_{10} are well below the annual mean limit value of 40 µg/m^3. There was one exceedance (in Claremorris) of the 24-hour PM_{10} concentration of 50 µg/m^3 (35 exceedances are permitted per year). Based on the above information an estimate of the 2020 background PM_{10} concentration for the region of the Whole UWF Project is 11 µg/m^3.

The results of $PM_{2.5}$ monitoring at a Zone D site in over the period 2012 - 2017 indicated an average $PM_{2.5}/PM_{10}$ ratio ranging from 0.50 – 0.62[2]. Long-term average $PM_{2.5}$ concentrations measured at these locations were significantly lower than the annual average limit value of 25 µg/m^3. Based on this information, the conservative ratio of 0.65 was used to generate a rural background $PM_{2.5}$ concentration in 2020 of 7.2 µg/m^3.

Long-term NO_2 monitoring was carried out at the three rural Zone D locations in Ireland[2]. The NO_2 annual average in 2017 across all three sites ranged from 3 - 7 µg/m^3. The NO_2 annual average result for the period 2012 – 2017 ranged from 2 - 11 µg/m^3. Hence long-term average concentrations measured at these locations were substantially lower than the annual average limit value of 40 µg/m^3. Based on the above information, a conservative estimate of the background NO_2 concentration, for the region of the Whole UWF Project is 7 µg/m^3.

In summary, existing baseline levels of PM_{10}, $PM_{2.5}$ and NO_2 based on extensive long-term data from the EPA are well below ambient air quality limit values in the study area. There is no monitoring of baseline dust concentrations (PM greater than 10 microns) but these are also predicted to be low.

A12.1.2 Air Quality Standards

Air Quality Standards were established under EU Directive 2008/50/EC which sets limit values for certain air pollutants in order to protect against human health and ecological impacts. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors, such as natural background levels, environmental conditions and socio-economic factors, may be considered.

The limit values are presented in Table 1 below.

[1] EPA (2017) Air Monitoring Data (http://www.epa.ie/whatwedo/monitoring/air/)

[2] EPA (2018) Air Quality Monitoring Report 2017 (& previous annual reports 2010 - 2016)

Table 1 Air Quality Standards Regulations 2011

Pollutant	Regulation[3]	Limit Type	Value
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3 PM_{10}
		Annual limit for protection of human health	40 µg/m^3 PM_{10}
$PM_{2.5}$	2008/50/EC	Annual limit for protection of human health	25 µg/m^3 $PM_{2.5}$
Nitrogen Dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3 NO_2
		Annual limit for protection of human health	40 µg/m^3 NO_2
		Critical Load for protection of vegetation	30 µg/m^3 NO + NO_2

[3] Based on EU Directive 2008/50/EC