

- Severance;
- Driver Delay;
- Pedestrian Delay;
- Amenity; and
- Accidents and Safety.

9.21 Other effects are considered in chapters elsewhere within the EIA due to the specialist skills required; namely noise, vibration, visual impact, air pollution, dust and dirt and heritage and conservation. With regard to the remaining effects the guidance states that the following rules should be used as a screening process to delimit the scale and extent of the assessment:

- Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- Include any other specifically sensitive areas where traffic flows have increased by 10%, or more.

9.22 The IEA guidelines go on to state that any increases in traffic flows of less than 10% are generally accepted as having no discernible environmental impact as daily variance in traffic flows can be of equal magnitude.

9.23 The 30% threshold relates to the level at which humans may perceive change and there may therefore be an effect. Impacts above this level therefore do not suggest that there is a significant impact, only that further consideration is required to assess the significance.

9.24 Due to the effect of the ongoing COVID 19 restrictions, traffic survey data for use in the assessment would be obtained from historic data sources that will include the UK Department of Transport ("DfT") traffic survey database, Traffic Scotland database and other public datasets that are available.

9.25 Traffic data would be factored to future year conditions through the use of National Road Traffic Forecast ("NRTF") Low growth factors.

9.26 Further traffic data would be obtained from Crashmap UK for the B7078 within the vicinity of the site access junction to inform the accident review for the immediate road study area. A review of data for up to three years will be undertaken.

9.27 Once the assessment of potential effects has been made, appropriate measures to offset the effects will be proposed. Appropriate measures will include a Staff Travel Plan and an Operational Phase Deliveries Management Plan strategy.

Significance Criteria

9.28 The significance of the transport and access effects, adverse or beneficial, will be determined based on their magnitude and the sensitivity of the receptor.

9.29 The receptor will be road users, i.e. pedestrians, cyclists and motorists, of high sensitivity in order to provide a robust assessment.

9.30 The significance of change in traffic flow volume on road users for each of the environmental effects will be considered in relation to the significance matrix of Table 9.1.

Table 9.1: Matrix to determine the Significance of Effects

Magnitude of Change	Sensitivity of Receptor		
	High	Medium	Low
Major	Major Adverse / Beneficial	Major - Moderate Adverse / Beneficial	Moderate - Minor Adverse / Beneficial
Moderate	Major - Moderate Adverse / Beneficial	Moderate - Minor Adverse / Beneficial	Minor Adverse / Beneficial
Minor	Moderate - Minor Adverse / Beneficial	Minor Adverse / Beneficial	Minor - Negligible
Negligible	Negligible	Negligible	Negligible

9.31 Within the assessment the level of magnitude will be defined on the basis of relevant guidance and the application of standard transport planning practice. Considering Table 9.1 the following terms will be used to assess the significance of environmental effects:

- Major adverse or beneficial effect – where the Development would cause a significant improvement or deterioration to the receptor;
- Moderate adverse or beneficial effect - where the Development would cause a noticeable improvement or deterioration to the receptor;
- Minor adverse or beneficial effect - where the Development would cause a barely noticeable improvement or deterioration to the receptor; and

- Negligible effect – where the Development would cause no noticeable improvement or deterioration to the receptor.

9.32 Any impact moderate and above will be considered as significant.

9.33 The EIA chapter will reflect the findings of the TA, whilst assigning levels of significance to the perceived effects. The chapter will set out the requisite mitigation measures and the residual effects once these are incorporated into the proposals.

Potential Significant Effects

9.34 Table 9.2 sets out the anticipated significant effects on traffic and transport. This includes an analysis on what aspects can be scoped-in or scoped-out of the assessment due to the likelihood for significant environmental effects.

Table 9.2: Initial Traffic and Transport Effects Scoping Review

Topic Component	Construction Effect	Operation Effect	Commentary
The temporary change in traffic flows and the resultant, temporary effects on the study network during the construction phase	Temporary increase in traffic potentially resulting in significant effects affecting the criteria noted in 9.20.	None	The assessment will be reviewed with regards to percentage increases and reference to the IEA guidelines.
The change in traffic flows and the resultant effects on the study network during the operational	None	Temporary increase in traffic potentially resulting in significant effects affecting the criteria noted in 9.20.	The assessment will be reviewed with regards to percentage increases and reference to the IEA guidelines. Junction capacity assessments will be examined and considered in the TA.

9.35 The potential effects of these will be examined in detail.

9.36 The decommissioning phase of the proposed development is proposed to be screened out from the assessment. Traffic levels associated with this stage of the development's life cycle will be less than those associated with the construction and operational phases as elements such as access junctions are likely to be retained on site following the decommissioning of the plant. As such, the construction and operational phases represents the worst-case assessment scenarios. Notwithstanding this, the

Applicant proposes a condition on the planning permission to calculate the traffic related impacts during the decommissioning phase of development.

9.37 Included in the assessment will be a number of standard embedded mitigation measures. These will be assumed to be in place during the assessment stage and will included the following:

- A Construction Traffic Management Plan;
- The design of suitable access arrangements with full consideration given to the road safety of all road users;
- A Staff Sustainable Access Plan;
- Routing Agreement; and
- An Operational Phase Deliveries Management Strategy.

9.38 Some of the above measures will form planning conditions on the planning permission, requiring agreement with SLC at the appropriate phase of development.

9.39 Should additional mitigation be required, additional measures will be developed to address significant effects. These may also include the need for minor physical adjustments to approach arms at key junctions within the study area to ensure junctions operate at a suitable level of flow vs capacity.

Cumulative Effects

9.40 As set out in Chapter 4, a cumulative effects assessment will be undertaken as part of the EIA. The cumulative effects assessment will be presented within the Chapter. Within TA, only developments that are committed development, i.e., those that have a planning approval will be included in the assessment. Of these developments, only those that are likely to coincide with the peak of construction traffic activities will be included in the construction phase assessment.

9.41 The operational phase cumulative development will include the peak traffic flows from committed developments within the study road network. Peak traffic flows will be obtained from these applications for use in the cumulative assessment.

9.42 Where committed developments have no publicly available traffic flow details, the traffic flows for these sites will be considered to have been accounted for through the use of NRTF Low growth factors used to establish the future assessment years from the baseline traffic data.

9.43 Table 9.3 sets out the sites which will be scoped-in or scoped-out of the traffic and transport cumulative effects assessment.

Table 9.3: Traffic and Transport Cumulative Sites Review

No.	Planning Ref.	Site Name and Location	Distance & Direction	Scoped-in / Scoped-out
1	P/19/1258	Draffan Road – Wind Turbine	1.6km east	Scoped out – no publicly available traffic data available. Use of NRTF factors will account for any increase in traffic levels caused as a result of this development.
2	P/20/1670	Dovesdale Farm – Landfill time extension	240m north	Scoped in – traffic data available
3	P/18/1515	Stonehouse Hospital – Residential	2.4km west	Scoped out – no publicly available traffic data available. Use of NRTF factors will account for any increase in traffic levels caused as a result of this development.

10. Air Quality

Introduction

- 10.1 New developments can affect air quality and climate by generating dust during site preparation and construction, increasing emissions to air from processes and traffic during and post construction.
- 10.2 The ERF will be required to comply with the requirements of the Pollution Prevention and Control ("PPC") (Scotland) Regulations. The operation of the ERF would be regulated by the Scottish Environmental Protection Agency (SEPA) under the conditions of a PPC Permit.
- 10.3 The Waste Incineration BREF was published by the European Integrated Pollution Prevention and Control ("IPPC") Bureau in December 2019. The BREF introduces BAT-Associated Emission Limits ("BAT-AELs") which for some pollutants are more stringent than the Emission Limit Values ("ELVs") currently set out in the Industrial Emissions Directive ("IED"). Emissions from the ERF will comply with the BAT-AELs, or the emission limits from Annex VI Part 3 of the IED for waste incineration plants where BAT-AELs are not applicable. For the remainder of this chapter the anticipated emission limits, which are a combination of BAT-AELs and emission limits from the IED, are referred to as ELVs. The Waste Incineration BREF was published prior to the UK departure from the EU. It has been confirmed that this will be incorporated into UK law and therefore the BREF is still relevant for the ERF.

Baseline Conditions

- 10.4 A baseline study will be undertaken in order to identify key constraints to the proposed development in terms of air quality and odour.
- 10.5 A review of the mapped background data shows that concentrations at the site and the surrounding area are low and are well within the Air Quality Assessment Levels ("AQALs") set for the protection of human health. Furthermore, there are no other significant sources of atmospheric emissions in the area which are likely to increase baseline concentrations.
- 10.6 A review of SLC's Local Air Quality Management ("LAQM") reports has shown that there are three Air Quality Management Areas ("AQMA") declared within the authority area. These are located in Lanark, Rutherglen and East Kilbride. The Lanark AQMA is located closest to the proposed development and is located approximately 9.8 km to the south-east. There are no AQMA declared by other local authorities within 10 km of the proposed development.

Approach and Methodology

Approach to Baseline

- 10.7 Background data will be obtained from a number of sources including the mapped background data, local and national monitoring networks, the UK Air Quality Archive, and APIS. Consideration will be given to which sources of background data are most appropriate, with local monitoring taking precedence. For pollutants that are not monitored locally, the highest concentration within the modelling domain obtained from the DEFRA background maps and the Scotland specific mapped background datasets will be applied. For pollutants excluded from the background maps, conservative values will be obtained from national monitoring networks.
- 10.8 Background concentrations and nitrogen and acid deposition for European and UK designated ecological sites will be obtained from the 'site relevant critical loads' search tool in APIS. For locally-designated ecological sites, these values will be obtained using the 'search by location' tool in APIS, using the most applicable habitat type as determined by the ecology consultant.

Potential Effects

Construction Phase Dust

- 10.9 It is proposed to assess the impact of construction phase dust emissions qualitatively using the methodology outlined in the Institute of Air Quality Management ("IAQM") guidance document Guidance on the assessment of dust from demolition and construction (2016). This will be used to determine any potential risks from dust generating activities and recommend suitable mitigation measures and determine whether residual significant effects are likely.

Construction Phase Traffic Related Air Quality Effects

- 10.10 The IAQM (2017) document "Land-Use Planning & Development Control: Planning for Air Quality" (hereafter "the IAQM (2017) guidance") states that an air quality assessment is required where a development would cause a "significant change" in Light Duty Vehicles ("LDVs") or Heavy-Duty Vehicles ("HDVs"). The indicative criteria to progress to an assessment are:
- A change in LDV flows of:
 - more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA; or
 - more than 500 AADT elsewhere.
 - A change in HDV flows of:

- more than 25 AADT within or adjacent to an AQMA; or
- more than 100 AADT elsewhere.

10.11 Detailed traffic data for the project is not yet available. However, it is unlikely that the above criteria will be exceeded for the duration of the construction period.

Operational Phase Process Emissions

10.12 The PPC Permit will include both long and short-term limits on emissions to atmosphere on a range of combustion pollutants including metals, dioxins and furans.

10.13 Detailed dispersion modelling will be undertaken using the latest version of the ADMS model (currently version 5.2), developed and supplied by Cambridge Environmental Research Consultants ("CERC"). ADMS is routinely used for the modelling of emissions for planning and permitting purposes to the satisfaction of SEPA, the Environment Agency and Local Authorities. In line with the SEPA's requirements, a sensitivity study will also be undertaken using the USEPA AERMOD model. AERMOD will be run through ADMS 5.2 to ensure that the model inputs are consistent.

10.14 The modelling will take into account of existing and proposed buildings. At this stage it is proposed to use five years of sequential hourly meteorological data from the Drumbalin weather station. The modelling will be undertaken using the discharge stack gas flow parameters to be provided by the technology supplier and the BAT-AELs stated within Waste Incineration BREF, or the emission limits from Annex VI Part 3 of the Industrial Emissions Directive ("IED") for waste incineration plants where BAT-AELs are not applicable, e.g. for the half-hourly averages. The dispersion model will be used to predict the short term and long term process contributions from the ERF for the following pollutants at the appropriate averaging periods at the point of maximum impact and specific sensitive local receptors. This includes all those pollutants which would require assessment as part of the PPC permit application for the ERF:

- Oxides of nitrogen ('NOx', as NO₂);
- Sulphur dioxide;
- Particulate matter (as 'PM10' and 'PM2.5');
- Carbon monoxide;
- Hydrogen chloride;
- Hydrogen fluoride;

- Volatile organic compounds ("VOCs");
- Ammonia;
- Mercury compounds;
- Cadmium and thallium compounds;
- Other metals and their compounds (antimony, arsenic, cobalt, copper, chromium, lead, manganese, nickel and vanadium);
- Dioxins / furans;
- Dioxin-like polychlorinated biphenyls ("PCBs"); and
- Polycyclic aromatic hydrocarbons ("PAHs").

- 10.15 For those pollutants that have a short-term emission limit, the impact of the ERF operating at this short-term emission limit will also be considered.
- 10.16 Wind turbines have the potential to impact upon the dispersion of emissions. A review of the local area has shown there are a number of operational turbines. However, many of these are single small-scale generators of less than 1MW. These will have little influence of the wind flow patterns in the local area. However, there are a number of larger turbines which will have a greater potential to affect wind flow patterns. Any operational and committed wind turbines greater than 1MW located within 3km of the proposed development will be included in the dispersion model.
- 10.17 The dispersion modelling results will be used to determine the final stack height to minimise the impact upon the local environment whilst ensuring any limitations of the site are considered. This will include consideration of the ecological receptors. In addition, a sensitivity analysis will be included which will consider the effect that varying model assumptions has on the predicted impacts. This will be used to ensure the most appropriate model assumptions are used.
- 10.18 The significance of effects will be determined using the methodology outlined in the IAQM (2017) guidance. This guidance includes the following matrix which will be used to describe the impact based on the change in concentration relative to the AQAL and the overall predicted concentration with the scheme - i.e. the future baseline plus the process contribution.

Table 10.1: IAQM Magnitude of Change Descriptors

Site Name	% change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

10.19 The IAQM (2017) guidance does not provide any descriptors for averaging periods of between one hour and a year. Therefore, for these periods we will draw on the criteria detailed in IPPC H1 which states that:

“process contributions can be considered insignificant if:

- the long term process contribution is <1% of the long term environmental standard; and*
- the short term process contribution is <10% of the short term environmental standard.”*

10.20 The predicted concentrations at the point of maximum impact, and at a number of discrete receptor locations in the area surrounding the proposed development representative of local sensitive receptors, will be compared with the relevant AQALs. These receptors are detailed in Table 10.2 and include the closest residential properties in each wind direction along with any identified schools and hospitals within 2 km of the site. For those pollutants which have a short-term emission limit, the impact of the ERF operating at this short-term emission limit will also be compared with the relevant short term AQALs.

Table 10.2: Human Sensitive Receptors

Receptor Name	Location		Distance from ERF (m)
	X	Y	
Whitehill Farm	277746	645129	651
Westtown Residential	276799	644964	916
Spital House	277288	644833	842
Dovedale Farm	277125	646338	716
Lochhead Cottage	277763	646531	941
Burncrooks Farm	275861	645596	1,524
East Watstone Farm	276401	646592	1,347
Burns Wynd Residential	275534	646194	1,922

Receptor Name	Location		Distance from ERF (m)
	X	Y	
Sidehead Holdings Residential	275489	646058	1,933
Union Street	275615	646495	1,951
Reid Grove	275799	646677	1,877
Draffan Marshal Farm	278984	645471	1,613
Candermill Road	276769	646852	1,332
Burhead	279455	646558	2,254
Broomfield Lodge	278526	647395	2,069

- 10.21 Consideration will be made of the in combination impacts of vehicle and process emissions for those receptors within 200 m of the road network impacted by the proposed development.
- 10.22 The impact of metals emissions will be assessed using the methodology outlined in the Environment Agency note, 'Guidance to applicants on impact assessment for group 3 metals stack emissions' (June 2016, version 4) in lieu of any specific guidance from SEPA.
- 10.23 The PPC permit for the ERF will include limits on emissions of dioxins and dioxin-like PCBs. These have the potential to accumulate within the food-chain. The impact of this will be considered as part of the dioxin intake risk assessment, which considers the potential pathways for the pollutants to move through soil, plants and animals to humans using specialised software called I-RAP.
- 10.24 I-RAP implements the US Environmental Protection Agency's Human Health Risk Assessment Protocol ("HHRAP") for pathway assessment. The results will be taken from IRAP and the UK specific health criteria applied to assess the impact (this approach is accepted by SEPA). This approach is explained in the Environment Agency's document Human Health Toxicological Assessment of Contaminants in Soil, ref SC050021. This explains that dioxins and dioxin-like PCBs have a threshold level for toxicity, the Tolerable Daily Intake ("TDI"). This is "an estimate of the amount of a contaminant, expressed on a bodyweight basis, which can be ingested daily over a lifetime without appreciable health risk." A Mean Daily Intake ("MDI") is also defined, which is the typical intake from background sources (including dietary intake) across the UK.
- 10.25 The dispersion modelling will also be used to determine the visual impact of the plume based on the assessment criteria set out in SEPA's IPPC H1 guidance in lieu of any other criteria.
- 10.26 An assessment will be undertaken of the impact of emissions, including acid and nitrogen deposition at ecologically sensitive receptors identified within the screening distances for habitats. As previously requested by SEPA for similar projects, a screening distance of 15km will be used for European and

UK designated sites, while all other screening distances are taken from the IPPC H1. The screening distances are as follows:

- SPAs, SACs, Ramsar sites and SSSIs within 15km of the proposed development; and
- NNRs, LNRs, LWSs and ancient woodlands within 2km of the proposed development.

10.27 The ecological receptors identified are listed in the following table.

Table 10.3: Designated Ecological Receptors

Site	Location		Distance from ERF (km)
	X	Y	
Upper Nethan valley woods 1/ Clyde Valley Woods	279724	644575	2.6
Nethan Gorge / Clyde Valley Woods	280776	646250	3.4
Upper Nethan valley woods 2/ Clyde Valley Woods	281573	645606	4.2
Avondale/ Clyde Valley Woods	276526	647540	2.1
Milten Lochart wood/ Clyde Valley Woods	281106	648887	4.9
Townhead Burn/ Clyde Valley Wood	281898	648683	5.4
Gills Burn and Mare Gill / Clyde Valley Woods	282608	648119	5.8
Fiddler Gill / Clyde Valley Woods	283814	646807	6.5
Cartland Craigs / Clyde Valley Woods	286850	644640	9.5
Gleghorn Glen / Clyde Valley Woods	287776	645036	10.4
Hamilton High Parks 2 / Clyde Valley woods	273535	653386	8.6
Garrion Gill / Clyde Valley Woods	280072	651841	6.7
Jocks Gill wood / Clyde Valley Woods	281046	649917	5.6
Waukenwae Moss	269312	649935	9.1
Muirkirk Uplands and North Lowther Uplands	273823	636230	10.1
Cander Moss	277983	645898	0.6
Coalburn Moss	281962	637356	9.4
Falls of Clyde	288091	641936	11.3
Dunside	274893	636856	9.2
BirkenHead Burn	276262	635997	9.7
Blantyre Muir	266903	652563	12.5
Calder Glen	266029	654843	14.6
Hamilton Low Parks	273509	656098	11.1
Hamilton High Parks 1	273350	652904	8.3
Bothwell Castle Grounds	269844	658515	14.9
Milburn	278085	650995	5.3
Cander Moss 1	277944	645782	0.6

Site	Location		Distance from ERF (km)
	X	Y	
Cander Moss 2	277798	646152	0.6
Cander Water	276859	646019	0.6
Canderdike-head Plantation	277301	647317	1.6
Cander Bridge Woodland	276531	647314	1.9
Loch Wood 1	277126	644326	1.4
Loch Wood 2	278358	644285	1.7

- 10.28 The IAQM guidance “A guide to the assessment of air quality impacts on designated nature conservation sites” was published in 2019 and updated in 2020 and sets out an approach to determining whether there will be a 'likely significant effect' on a habitat. Where this cannot be screened out the ecologist will determine whether in reality there will be a 'significant effect' or, for European designated sites, an 'adverse effect on the integrity of the site'.
- 10.29 When determining the impact of the process emissions from the ERF it is considered appropriate to give consideration to the guidance set by the Environment Agency but noting recent case law on the judgement of significance of air quality impacts at ecological sites.
- 10.30 For the purpose of the EIA, the following criteria will be used to screen out impacts that are not likely to have a significant effect on a habitat:
- The short-term PC is less than 10% of the short-term environmental standard; and
 - The long-term PC is less than 1% of the long-term environmental standard.
- 10.31 Where impacts cannot be screened out, further assessment will be undertaken by a suitably qualified ecologist, taking into consideration the background pollutant concentrations and deposition rates, including contributions from the existing facility and identified cumulative developments.

Operational Phase Traffic Related Air Quality Effects

- 10.32 Detailed traffic data for the project is not yet available. However, based on the location of the site in relation to the local road network, likely routing of vehicles, and location of sensitive receptors (human and ecological) there is likely to be the potential for the interaction between process and road traffic emissions. Therefore, detailed modelling of vehicle emissions will be undertaken using the dispersion model ADMS-Roads 4.1. The Design Manual for Roads and Bridges (“DMRB”) sets out a screening distance of 200 m beyond which significant air quality effects from road traffic are considered unlikely. On this basis, the impact of traffic-related emissions will be restricted to those human and ecologically sensitive receptors located within 200 m of a road which operational phase

vehicles are expected to travel. For these receptors the combined impact from process and traffic emissions will be assessed.

Potential Significant Effects

10.33 Table 10.4 sets out the anticipated significant effects on air quality. This includes an analysis on what aspects can be scoped-in or scoped-out of the assessment due to the likelihood for significant environmental effects.

Table 10.4: Initial Air Quality Effects Scoping Review

Topic Component	Construction Effect	Operation Effect	Commentary
Local air quality	The import and export of materials during the construction phase will give rise to the generation of exhaust emissions associated with road traffic.	The operation of the ERF and the delivery of waste to and from the site will result in atmospheric process and vehicle emissions.	Scoped-in for construction and operational phase vehicle and process emission effects.
Dust	The initial earthworks, construction, and movement of vehicles associated with the construction of the development will result in increased dust emissions onsite.	There will be minimal dust generating activities during the operational stage of the ERF.	Scoped-in for construction dust effects.
Impact on AQMAs	The import and export of materials during the construction phase will give rise to the generation of exhaust emissions associated with road traffic.	The operation of the ERF and the delivery of waste to and from the site will result in atmospheric process and vehicle emissions.	Scoped out as the closest AQMA is over 9km from the site and therefore the routing of vehicles would be such that it is unlikely that vehicles would travel through an AQMA.
Odour	There will be no releases of odour during the construction phase of the proposed development.	The operation of the ERF has the potential to give rise to fugitive releases of odour.	Scoped-in for operational phase odour effects.

10.34 The Air Quality and Odour chapter will address the following potential significant effects:

- Generation of dust emissions onsite during the initial earthworks, construction, and movement of vehicles off-site (trackout) (i.e. material transferred on vehicle wheels to the public highway) associated with the construction of the development;
- Generation of exhaust emissions from road traffic associated with the import and export of materials during the construction phase;
- Generation of exhaust emissions from road traffic associated with the import and export of materials during the operational phase;
- Operational emissions associated with the ERF;
- Fugitive releases of odour and dust during the operation of the development; and
- Cumulative operational emissions associated with any developments identified during the scoping process.

10.35 Where necessary mitigation measures will be outlined to control any adverse impacts.

Cumulative Effects

10.36 As set out in Chapter 4, a cumulative effects assessment will be undertaken as part of the EIA. The cumulative effects assessment will be presented within the Chapter. Table 10.5 sets out the sites which will be scoped-in the air quality cumulative effects assessment.

Table 10.5: Air Quality Cumulative Sites Review

No.	Planning Ref.	Site Name and Location	Distance & Direction	Scoped-in / Scoped-out
1	P/19/1258	Draffan Road – wind turbine	1.6 km east of the proposed development.	Scoped-in – The Draffan Road wind turbine has been scoped-in to the cumulative effects assessment as the wind turbine has the potential to affect the dispersion of emissions from the ERF.
2	P/20/1670	Dovesdale Farm – Landfill time extension	240m north of the proposed development.	Scoped-in – The Dovesdale Farm Landfill time extension has been scoped-in to the cumulative effects assessment as the waste transfer station and proposed extension to the existing inert landfill has the potential to cause cumulative odour impacts with the ERF.

No.	Planning Ref.	Site Name and Location	Distance & Direction	Scoped-in / Scoped-out
3	P/18/1515	Stonehouse Hospital - Residential	2.4km of the proposed development.	Scoped-in. This will need to be confirmed following receipt of the transport data.

11. Noise

Introduction

- 11.1 The proposed development has the potential to generate noise during demolition, site preparation, construction and operation. Additional road traffic has the potential to increase noise levels both during and post-construction.
- 11.2 The scope has been prepared by Ramboll.

Baseline Conditions

- 11.3 The dominant noise source on site is road traffic noise from the M74 and the B7078 Carlisle Road to the east of the site. The M74 and B7078 are approximately 360m and 280m from the main eastern site boundary, respectively (not including the proposed site access road).
- 11.4 Some noise may also be audible from HGV movements associated with the William Hamilton & Sons site and the Dovesdale Farm Landfill Site which are approximately 200m to the north of the site at the closest point.
- 11.5 A baseline noise survey was completed to inform the Carlisle Road Resource Recovery Facility planning application between 3-4 June 2010 and 14-15 June 2010. A vibration survey was completed on 3 June 2010.
- 11.6 Baseline noise survey is typically considered to be representative for a period of 3 years and so updated baseline noise monitoring is proposed.
- 11.7 An updated vibration survey is not proposed as the survey and assessment of the Carlisle Road Resource Recovery Facility application deemed that operational HGV vibration associated with the site would not adversely affect the nearest receptors. Given the distances to the nearest receptors outlined below, vibration from operational HGVs is not expected to be perceptible at the nearest receptor locations.

Approach and Methodology

- 11.8 Figure 11.1 below shows the identified noise receptors, and the approximate red line boundary in red. All receptor locations will be assessed for noise impacts. Both construction and operational vibration will not be assessed to any receptor location, given the distances between the site boundaries and the nearest receptors. Construction and operational vibration are not expected to give rise to significant effects.

Figure 11.1: Identified Noise Receptors



Baseline Approach

- 11.9 A baseline noise survey will be undertaken to determine the noise levels on site and at the nearest sensitive receptors. This will include both attended and unattended noise measurements.
- 11.10 It should be noted that these locations and outline approach are subject to consultation with SLC and may be subject to change due to access arrangements. Alternate locations may need to be considered if surveys cannot be completed at the proposed locations.

Table 11.1: Outline Noise Survey Locations

Ref	Attended / Unattended	Proposed Dates and Times	Further Commentary
1	Unattended	February 2021. Unattended survey of up to one week in duration.	At a location representative of 155 Cander Bank off the B7078 (approximately 800m north east of the site boundary)
2	Unattended	February 2021. Unattended survey of up to one week in duration.	At a location representative of Lochhead Cottage off the B7078 (approximately 540m north east of the site boundary)
3 / 6	Unattended	February 2021. Unattended survey of up to one week in duration.	At a location representative of commercial units at Whitehill (approximately 500m south of the site boundary) and of the William Hamilton & Sons site (approximately 200m north of the site boundary)
4 / 5	Unattended and/or Attended	February 2021. Unattended survey of up to one week in duration. Attended measurements of 15 minutes in duration.	At a location representative of receptors which are approximately between 700-800m to the south west of the site boundary.

11.11 It is not expected that surveys will be completed at the receptor locations, as shown in Figure 11.1, but instead proxy locations will be used to measure noise levels that are representative of the noise levels at the identified receptor locations.

11.12 Surveys will be completed as far as practicable outside of Covid-19 lockdown measures. Any restrictions may reduce road traffic noise levels. However, the basis for the survey would be to set operational noise limits for fixed plant and machinery. If noise limits were set against a slightly lower background due to reduced road traffic noise levels, this would be a worst-case scenario as if the existing background noise levels increase due to increased road traffic flows, this would provide a higher level of masking noise for the proposed site operation. This therefore reduces the potential for significant impacts at the nearest sensitive receptors.

Potential Effects

Construction Noise

- 11.13 An outline assessment of construction noise will be provided to the methodology of BS 5228:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*.
- 11.14 The potential for construction noise effects will be assessed in accordance with the guidance set out in BS 5228. Assumptions will be made regarding construction plant where required, as it is not expected that detailed construction plant and methodology information will be available at the time of producing the planning application. Using the baseline noise survey results, construction noise thresholds will be set to the 'ABC Method' set out in Annex E of the guidance.
- 11.15 However, it will be noted that construction calculations at distances of 300m or greater from the site should be treated with caution, due to the influence of meteorological effects with distance from the site.

Construction HGV Noise

- 11.16 Any increase in ambient noise levels due to construction HGVs will be assessed by calculating the change in basic noise level at a notional receptor location at 10m from the road source, to the methodology of the *Calculation of Road Traffic Noise (CRTN) 1988* memorandum. The magnitude of impact for changes in noise levels will be assessed to LA 111 *Noise and Vibration (2020)*.

Construction Vibration

- 11.17 Construction vibration will not be assessed to any receptor location as the nearest receptor location is approximately 200m from the northern site boundary at the William Hamilton & Sons site. Construction vibration will not be perceptible at distance greater than or equal to 200m from the site.
- 11.18 Construction HGV vibration will not be assessed to any receptor location.

Operational ERF Noise Assessment

- 11.19 Fixed plant noise and on-site HGV noise will be assessed to BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*. Noise emission limits from proposed fixed plant will be set in accordance with this guidance.
- 11.20 Plant rating noise level limits will be set equal to the representative background noise levels, with penalties applied based on the expected future characteristics of the site noise emissions.

11.21 Noise modelling of the proposed facility will be undertaken to predict noise emissions levels at the nearest noise-sensitive receptors to be assessed against the plant noise limits.

Operational Road Traffic Noise Assessment

11.22 Changes in road traffic noise levels will be assessed to CRTN memorandum. The magnitude of impact for changes in noise levels will be assessed to LA 111.

Potential Significant Effects

11.23 Table 11.2 sets out the anticipated effects due to noise and vibration. This includes an analysis on what aspects can be scoped-in or scoped-out of the assessment due to the likelihood for significant environmental effects.

Table 11.2: Initial Noise and Vibration Effects Scoping Review

Topic Component	Construction Effect	Operation Effect	Commentary
Construction Noise	Yes	No	Scoped in.
Construction HGV Noise	Yes	No	Effects will be assessed but effects are not expected to be significant
Construction Vibration	No	No	Scoped out – justification presented previously.
Operational ERF Noise	No	Yes	Scoped in.
Operational ERF Vibration	No	No	Scoped out – justification presented previously.
Operational Road Traffic	No	Yes	Effects will be assessed but effects are not expected to be significant

11.24 Operational road traffic noise will be assessed based on the data provided by the transport consultant. However, effects are not expected to be significant.

Cumulative Effects

11.25 As set out in Chapter 4, a cumulative effects assessment will be undertaken as part of the EIA. The cumulative effects assessment will be presented within the Chapter. Table 11.3 sets out the sites which will be scoped-in or scoped-out of the noise and vibration cumulative effects assessment.

Table 11.3: Noise and Vibration Cumulative Sites Review

No.	Planning Ref.	Site Name and Location	Distance & Direction	Scoped-in / Scoped-out
1	P/19/1258	Draffan Road - Wind Turbine	1.6km east	Scoped-out – a noise assessment has not been submitted to inform this application. Cumulative noise impacts therefore cannot be determined.
2	P/20/1670	Dovesdale Farm – Landfill time extension	240m north	Scoped-out – not deemed to be required as the plant noise limits that are set for the proposed development will take into account the existing baseline noise levels at the nearest receptors. The baseline levels at these receptors is not expected to change significantly due to the landfill time extension.
3	P/18/1515	Stonehouse Hospital – Residential	2.4km west	Scoped-out – development is deemed to be of sufficient distance from the site to not be affected by the proposed development.

12. Climate Change

- 12.1 New development can affect climate by generating carbon dioxide (“CO₂”) emissions during and post construction. ERF developments that generate Combined Heat and Power (“CHP”) can reduce CO₂ emissions by displacing other fuels, such as coal and gas, and diverting waste from landfill. There is also the potential for new developments to be vulnerable to risks associated with climate change.
- 12.2 The Scope has been prepared by Fichtner.

Baseline Conditions

GHG Emissions

- 12.3 The current baseline to which CO₂ emissions from the proposed development will be compared to is emissions from landfill. This provides the most likely alternative treatment for residual waste which will be treated at the proposed development. The approach to calculate the future baseline Greenhouse Gas (“GHG”) emissions scenario is set out within the Approach and Methodology section below.

Climate Change Resilience

- 12.4 Information on current climate will be sourced from historical climate averages data from the period 1981-2010, provided by the Met Office, from Drumalbin meteorological station. This is the most recent set of 30-year averages and the nearest meteorological station (16 km to the south east). Therefore, it is considered the most appropriate data. The approach for the future baseline climate scenario is set out within the Approach and Methodology section below.

Approach and Methodology

- 12.5 The Climate Change EIA chapter will be prepared in accordance with the EIA Regulations. It will provide the information as required by Schedule 4 of the EIA Regulations. In lieu of any statutory methodologies, this assessment will follow the appropriate methodologies from the Institute of Environmental Management and Assessment (“IEMA”) guidance for Greenhouse Gas (“GHG”) emissions and Climate Change Resilience¹¹.

¹¹ Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (IEMA, June 2020)

GHG Emissions

- 12.6 The additional CO₂ emissions from the proposed development will be calculated in line with the methodology presented in both the IEMA guidance 'Assessing Greenhouse Gas Emissions and Evaluating their Significance', and the UK Government guidance document 'Energy recovery for residual waste – a carbon based modelling approach'. The calculation will consider:
- The emissions from the waste to be combusted;
 - The emissions associated with the transport of the waste to the proposed development;
 - Offset of emissions generated from the grid electricity for the additional power generated by the proposed development;
 - Carbon savings from any additional metals recovery at the proposed development;
 - Offset of emissions which would be generated by the waste being disposed in landfill (the alternative);
 - Offset of the emissions which would be generated by sending the waste to landfill (the alternative); and
 - Offset of emissions generated from the grid electricity for the power which would have been generated by waste in landfill.
- 12.7 When considering the impact of the proposals it is important to consider the alternative which would be sending the waste to landfill, and generating electricity via gas-fired power stations. This approach is supported by the Department for Environment Food and Rural Affairs ("DEFRA") guidance 'energy from waste – a guide to the debate' which states that "a gas fired power station is a reasonable comparator as this is the most likely technology if you wanted to build a new power station today". This approach was also accepted by the Planning Inspector on recent Development Consent Order ("DCO") applications.
- 12.8 Due to the anticipated policy initiatives, it is expected that the biogenic contribution of residual waste will decrease in future. Therefore, waste composition changes will be considered within the future baseline. The expected changes to electricity production in the UK, which electricity produced by the proposed development will displace, will also be considered within the future baseline.
- 12.9 To determine the significance of effect, the net carbon emissions from the proposed development will be compared to the carbon emissions from the local authority and the sector (Industrial and

Commercial Other Fuels). The values will be sourced from the most recent UK local and regional CO₂ emissions data tables (currently 2018). In lieu of any values for waste as an individual sector, the Industrial and Commercial Other Fuels sector will be used, within which waste is included amongst other fuels. The significance of the emissions will be defined based on a >1% difference to the carbon emissions from the local authority and the Industrial and Commercial Other Fuels sector being considered significant, and a <1% difference being insignificant.

12.10 To determine the significance of future effect, the net carbon emissions from the proposed development will be compared to the UK Carbon Budgets for the periods 2023-2027, 2028-2032 and 2033-2037. The most recent sixth carbon budget (2033-2037) was published in December 2020. There are currently no further published budgets for periods beyond 2037, but future carbon budgets will decrease towards net zero by 2050. The significance of the emissions will be defined based on a >1% difference to the future UK carbon budget being considered significant, and a <1% difference being insignificant.

Climate Change Resilience

12.11 The future climate change baseline will be calculated using the baseline data from Drumalbin and the climate change predictions as published by The UK Climate Projections ("UKCP"). UKCP18 is the latest generation of national climate change projections and will be used to form the future baseline in this assessment unless any more recent datasets are released prior to submission of the EIAr. The predictions of a 'high emissions scenario' (RCP8.5) will be used from the region of West Scotland for 2050. The 50% percentile will be used to provide a central estimate across the models.

12.12 Receptors associated with the proposed development which are vulnerable to climate change are listed below:

- Plant buildings and operation;
- Vehicular access to site (for workers and waste);
- Grid connection and local users; and
- On Site workers.

12.13 For each receptor, the impact of each predicted climatic effect will be assessed on a qualitative basis taking into consideration the sensitivity and magnitude at each receptor for each climate change effect. This will incorporate the design mitigation associated with each receptor. There is no specific

guidance for assigning significance in the IEMA guidance. Therefore, we will use descriptors of 'negligible', 'minor', 'moderate', and 'major'.

Potential Significant Effects

12.14 Table 12.1 sets out the anticipated significant effects on climate change. This includes an analysis on what aspects can be scoped-in or scoped-out of the assessment due to the likelihood for significant environmental effects.

Table 12.1: Climate Change Effects Scoping Review

Topic Component	Construction Effect	Operation Effect	Commentary
GHG emissions from the operation of the proposed development	-	Increase in CO ₂ emissions leading to increased global warming.	Scoped in. A Carbon Assessment will be carried out to calculate the carbon emissions associated with the operation of the proposed development. The net carbon emissions associated with the operation of the proposed development will be calculated which will include the offset of emissions from the alternative disposal route. The net emissions will be compared to the baseline and UK Carbon Budgets.
GHG emissions from the construction of the proposed development	Increase in CO ₂ emissions leading to increased global warming.	-	Scoped in. A qualitative analysis will be carried out. The GHG emissions during construction will be a very small percentage of the emissions during the lifetime of the development.
Vulnerability of the proposed development to climate change: Sea level rise	-	Sea level rise could cause flooding of the area.	Scoped out. There are no anticipated impacts as the location of the proposed development is approximately 160 m above sea level.
Vulnerability of the proposed development to climate change: Storm surge and storm tide	-	Storm surge and storm tide could cause flooding of the area.	Scoped out. There are no anticipated impacts as the location of the proposed development is approximately 160 m above sea level.

Topic Component	Construction Effect	Operation Effect	Commentary
Vulnerability of the proposed development to climate change: Increased winter precipitation		Increased winter precipitation could lead to fluvial or pluvial flooding of the proposed development and access to the proposed development.	Scoped in. The significance of impact of increased winter precipitation will be assessed.
Vulnerability of the proposed development to climate change: decreased summer precipitation	-	Decreased precipitation may lead to drought.	Scoped out. There are no expected impacts of drought to the proposed development, access or grid connection.
Vulnerability of the proposed development to climate change: snow and ice	-	Snow and ice has the potential to impact access to the proposed development and the potential to cause damage to the proposed development buildings and grid connection due to excessive loading.	Scoped out. The UKCP18 predictions anticipate less snow and ice than the current baseline. Therefore, the risk from snow and ice is not anticipated to increase due to climate change.
Vulnerability of the proposed development to climate change: Increase in winter temperatures	-	Increase in temperatures have the potential to cause damage to the buildings and workers.	Scoped out. Anticipated increases in winter temperatures do not exceed the current baseline for other times of the year and so are not expected to have any significant impact.
Vulnerability of the proposed development to climate change: Increase in summer temperatures		Increase in summer temperatures above the baseline have the potential to cause damage to the buildings and workers.	Scoped out. Increases in temperatures are not expected to have an impact on the proposed development or access. Increases in temperatures could affect electrical infrastructure and conditions within working areas. However, cooling systems will be included in the design to allow for a range of ambient

Topic Component	Construction Effect	Operation Effect	Commentary
			temperatures which will include increases due to climate change.
Vulnerability of the proposed development to climate change: Solar radiation	-	Solar radiation has the potential to cause heat damage to the proposed development and workers.	Scoped out. The impact of solar radiation on the proposed development, access and grid connection is not considered to be of significant impact. Any influence on temperatures will be covered within increase in temperatures.
Vulnerability of the proposed development to climate change: increased frequency and magnitude of wind and storms	-	Gusts in wind have the potential to damage the proposed development building and have the potential to lead to obstruction of access routes.	Scoped in. The significance of impact of increased winds and storms will be assessed.
Vulnerability of the proposed development to climate change: Relative humidity	-	Humidity can impact the performance of energy systems and workers.	Scoped out. Humidity is not included in the UKCP18 predictions and is not predicted to have a significant impact on the proposed development, access or grid connection.
Vulnerability of the proposed development to climate change: Water quality and soils	-	Water availability has the potential to cause changes to the mobilisation of pollutants. More acidic soils and/or water can increase the deterioration of building materials. Soil stability may be altered by a change in water availability.	Scoped out. The design of the proposed development will mitigate any significant impacts of changes to water quality and soils on the proposed development, access, and grid connection.

12.15 Based on the above, the following topic areas will be scoped into the assessment due to the likelihood for significant effects:

- GHG emissions from the construction and operation of the proposed development
- Vulnerability of the proposed development to the following climate change effects;
- Increased winter precipitation; and
- Increased frequency and magnitude of wind and storms.

12.16 The EIA will also set out how the proposed development provides resilience to the effect of climate change on the national grid – i.e. the benefits the proposed development can bring to local users.

Cumulative Effects

GHG Emissions

12.17 The assessment of the significance of GHG emissions considers the cumulative impact over the lifetime of the development and takes into account changes in waste composition and the energy mix. It is not possible to account for each individual development set out in Chapter 4 in terms of the cumulative impact on GHG emissions. Whilst the Draffan Road wind turbine will provide green energy to the grid this is already accounted for in the changes to the energy mix for future years. Therefore, it is proposed to scope out a separate cumulative effects section for GHG emissions.

Climate Change Resilience

12.18 The assessment of climate change resilience considers how the proposed development is designed to allow for climate change events again it is not possible to consider account for each individual development set out in Chapter 4. Whilst these may all have small effects on climate change the future predictions would account for these. Therefore, it is proposed to scope out a separate cumulative effects section for climate change resilience.

13. Scoped-out Environmental Assessment Topics

13.1 This Chapter of the report sets out those environmental topics which are not anticipated to be subject to significant environmental effects for the purposes of the EIA process. As such, it is proposed that the following environmental topics are scoped out, with a detailed justification presented below in this Chapter.

- Ground Conditions;
- Land Resources;
- Water Resources and Flood Risk;
- Lighting;
- Daylight, Sunlight and Overshadowing;
- Waste;
- Accidents and Disasters; and
- Socioeconomics.

13.2 A series of standalone technical assessments will be submitted for a number of these technical disciplines as part of the planning submission. In the event that these surveys identify the potential for significant environmental effects, these will be reconsidered and determined whether they should form part of the EIA. However, at this point in time and based on the available evidence it is not anticipated there will be significant effects and these can be scoped-out.

Ground Conditions

Introduction

13.3 The existing ground conditions on site have the potential to mobilise contaminants which may be present during the construction phase, thus exposing any sensitive receptors (ecology, waterbodies and human) to contaminated material. The potential ground conditions effects are primarily limited to the construction phase when the ground disturbance works take place.

Baseline Conditions

Geology

- 13.4 The anticipated geological sequence at the site has been identified using information from the following sources. These were accessed in December 2020.
- British Geological Survey online maps (BGS)¹²; and
 - Envirocheck report (2020)¹³.
- 13.5 The British Geological Survey online maps indicate that the geology underlying the site is comprised of superficial deposits comprising Devensian Till (predominantly clay and boulders and stones, and occasional thin horizons of sand and gravel) over bedrock of the Scottish Lower Coal Measures Formation and the Scottish Middle Coal measures Formation. In addition, it is anticipated that Made Ground will be present onsite due to the former uses onsite (such as mining and farming).
- 13.6 The borehole record NS74NE/417 (the borehole was located approximately 20 m north of the site boundary), obtained from the BGS, indicated the presence of ironstone bands and beds of fire clay. These may have been worked in addition to the coal seams recorded by the Coal Authority (CA).
- 13.7 A northwest to southeast trending fault is recorded northeast of the site but does not significantly affect the stratigraphy and outcrop of the coal seams indicated to be present across the site¹⁴.

Hydrogeology and Hydrology

- 13.8 The Coal Measures strata beneath the site are classified by Scottish Environment Protection Agency ("SEPA") as a Moderately Permeable Aquifer. These are described as fractured or potentially fractured rocks that do not have high primary permeability. Although these formations will seldom produce large quantities of water for abstraction, they are important for local supplies and in supplying base flow to rivers. Two Issues (springs) were recorded within woodland, one approximately 190 m south of the site and another approximately 245 m north of site (near to Overton Farm); these springs feed into Cander Water. The site is not located within a Source Protection Zone ("SPZ"). A well is located approximately 20 m northwest of the site, which is associated with Overwood. The expected groundwater flow direction is towards Cander Water (southwest direction), however due to presence of the fault onsite this may affect groundwater flow.

¹² <https://mapapps.bgs.ac.uk/geologyofbritain/home.html>. Date accessed 14/12/2020.

¹³ Envirocheck Report. December 2020. Order number: 270428801_1_1

¹⁴ <http://www.largeimages.bgs.ac.uk/iip/mapsportal.html?id=1002332>. Date accessed 14/12/2020.

- 13.9 No surface water features are present onsite. The nearest surface water feature (the river Cander Water) is located approximately 40 m west of the site. Cander Water (Scottish Environmental Protection Agency (SEPA) Ref. Cander Water/White Corse Burn, watercourse ID: 10078) was assessed by SEPA in 2018 to be of 'Moderate' overall status, of 'Moderate' overall ecological status and 'Moderate' Physio-Chemical status under the Water Framework Directive (WFD).
- 13.10 Annie's Burn is located approximately 100 m west of the site and is a tributary to Cander Water. No groundwater or surface water abstractions were recorded onsite or within 500 m of the site.
- 13.11 For further information in relation to the water environment reference should be made to the water resources and flood risk assessment Section.

History

- 13.12 The site in 1858 is shown on historical maps as to have been used as agricultural fields (grazing pasture) associated with the adjacent Overwood Farm, to the north of site. However, potential workings are shown on historical maps from this time to have been present on the western portion of the site. Overwood Quarry was located approximately 80 m north of the site and a smithy, associated with Overwood Quarry, was present (approximately 160 m north of the site). In addition, a well was located within the Overwood Farm. A railway line was recorded on historical maps dating to 1912 to the west of the site, approximately 324 m from the site boundary.
- 13.13 By 1958, a mine with a mine tramway running southeast to northeast was recorded on the historic maps, approximately 296 m south of the site. By 1963, the historic mapping also recorded two slag heaps approximately 200 m within the offsite Overwood Quarry and approximately 197 m south of the site. By the 1980s the offsite tramway was no longer present on the historic mapping. The 1971 to 1975 historical mapping shows remains of earthworks approximately 320 m southeast of the site. By 2004, the historic maps show no changes.

Mining/Quarrying

- 13.14 The site is designated Development High Risk Area by the Coal Authority ("CA"). The CA indicates that there are recorded shallow mine workings underlying the site and there is an associated risk of probable mine workings. The CA records indicate several mine entries approximately 100m south of the site. The mine entries are identified as adits associated with Overwood Mine. The Northern Mine Research Society¹⁵ notes the presence of Overwood Mine, which correlates with the mine entries

¹⁵ <https://www.nmrs.org.uk/mines-map/coal-mining-in-the-british-isles/collieries-of-the-british-isles/coal-mines-scotland/>. Date accessed 14/12/2020.

identified by the Coal Authority, dating from 1937 to 1954. The mine owner was recorded by the society as Overwood Coal Co. Limited.

Mineral Resources

- 13.15 Superficial deposits, comprising Glacial Till, are unlikely to be of economic or material value in the future. Solid strata beneath the site includes a number of coal seams, with associated fireclays, ironstones and sandstone, each of which could be considered a resource to be worked in the future, subject to feasibility, licence and planning consents. The South Lanarkshire mineral deposits and extraction plan shows the site to be in an area of existing 'bings' (spoil tips) referenced Point 13 (Overton). The proposed development will sterilise those reserves at shallow depth in the vicinity of the site for the lifetime of the development.
- 13.16 As the Coal Authority records show that shallow seams of coal have already been worked beneath the site, the reserves of other resources such as fireclay and ironstone may also been removed historically. If coal seams were worked historically using 'pillar and stall' or 'stoop and room' methods the remaining coal can be assessed as resource, which would be sterilised by the development.

Geomorphology

- 13.17 No nationally or regionally important geological or geomorphological areas or sites are present on site or in the vicinity of this site. As such, the proposed development is not considered to adversely impact on such receptors. Shallow soils are likely to comprise low permeability glacial till which are unlikely to be subject to significant impacts from the proposed development.

Sensitive Land Use

- 13.18 No environmentally sensitive land uses have been recorded within 500 m of the site. The nearest environmentally sensitive land use is a SSSI, (Cander Moss designated for ecological significance) located approximately 500 m northeast of the site.

Ground Gas, Including Radon

- 13.19 Ground gases may be generated from the natural organic matter within the Made Ground, the Coal Measures strata and from the historic mine workings underlying the site. Ground gas generation would be greater for materials with a high organic content (such as within the Coal Measures) and the potential for ground gas production may be increased through past mining activity and changes in stresses compared to the current situation. Increasing hard cover across the site may also cause ground gas migration routes to change.