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8.0 NOISE EMISSIONS

8.1 Monaghan County Council's Comments and Requests

"While Section 5 of the EIS contains a description of current ambient noise levels, the assessment of noise impacts from the development on the local neighbourhood is inadequate. This is because it is extremely difficult to extract from the text the precise nature of those impacts, particularly on residential dwellings in close proximity to the site. This is crucial for this project, given both its scale and the fact that 24-hour operation is proposed.

What is lacking is a dwelling specific assessment of noise impacts. The best that is portrayed are two drawings - Figure 5.4 and 5.5. However these are inadequately explained — there are, for example neither units of measure nor other indications of what the contours mean and little or no integration with the textual discussion. There are also no equivalent drawings showing construction noise impacts. The discussion submitted on plant noise mitigation appears to be a general review of the nature of noise, being often non-site specific and failing to set down clear and definite proposals for mitigation.

In light of the above comments and traffic forecasts (See Question 3), you are required to provide a full and adequate assessment of predicted noise impacts. This assessment should clearly identify the magnitude of relevant impacts in respect of each of the residences, farms and other land-users in close proximity to the site. It should cover both the construction and operational phase and must set out whether potential receptors are or not likely to suffer undue impacts, both in day-time and at night. If unacceptable impacts are identified, clear mitigation measures should be proposed."

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8.2 Response

The proposed development is a scheduled activity under the Integrated Pollution Control licensing scheme controlled by the Environmental Protection Agency (EPA).

All aspects of the licensed activity's potential impact on the environment are examined and determined under the EU Integrated Pollution Prevention and Control (IPPC) Directive 96/61/EC, including emissions to air and water, energy and resource use efficiency, environmental management systems, and waste and residuals management.

Licensing, waste management, effluent discharges, odour emissions, noise emissions and atmospheric discharges fall within the remit of the Authorised Regulatory Authority (EPA) under the IPPC Directive and not the Planning Authority.

Requests for additional information and clarification on this matter will however will dealt with here in the interest of transparency.

Noise Impact Assessment

In this chapter, noise impacts will be addressed with respect to noise sensitive dwellings in the vicinity of the proposed development. The assessments of impacts are reported separately for both the construction and operation phases.

A house location survey was completed in 2001 for the original application; a further survey was completed in 2005 to examine additional houses. Fig 8.1 presents an updated map of noise sensitive dwellings within a 1km radius of the development and replaces Fig 5.1 in chapter 5 of the original EIS document.

For clarity, the locations of houses are presented in different coloured bands of 200m increments from the proposed development. This can be summarised as follows:

Table 8.1 Distances of houses from proposed development

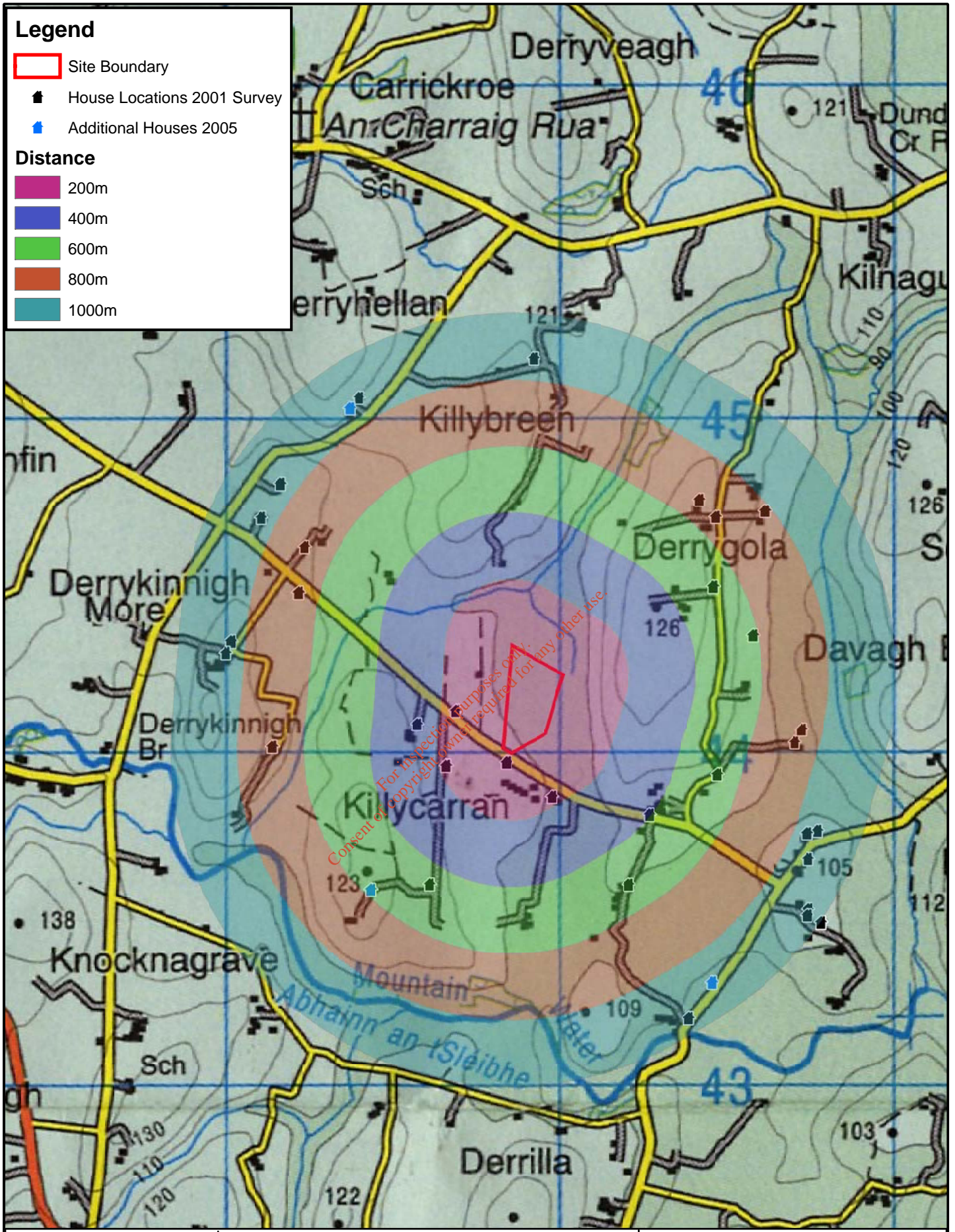
Distance from development, m	No of houses
0-200	4
201-400	2
401-600	6
601-800	8
801-1010	15
Total	35

The proposed development is in a moderately sparsely populated rural area. A total of 35 dwellings have been identified within a 1km radius of the site, this includes one additional house which is located just outside the 1 km radius but has been included for completeness. All residential dwellings are located along the main communication corridors or minor roads.

8.2.1 Impact during the Construction Phase

The information provided in the original application includes the predicted noise levels from construction plant and construction activities. These were calculated using procedures set out in BS 5228 Part 1:1997 and the results are expressed as $L_{Aeq(12\text{ hour})}$ dB(A) equivalent continuous noise levels, which is a standard unit used to express construction noise. Methodology and results are detailed in the original application and summarised below.

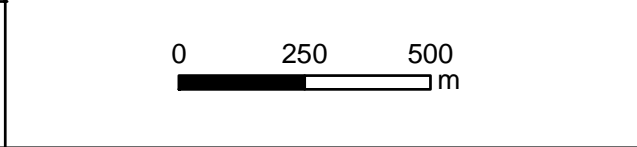
The nearest dwelling is over 180m from the site boundary. One dwelling on the map is at a shorter distance from the plant but does not represent a noise sensitive dwelling as it is associated with the development. Noise levels were calculated at reference distances from the boundary of the proposed development. Table 8.2 presents predicted noise levels from construction plant. A reference distance of 150m has been chosen to represent a worse case scenario although the nearest dwelling is at a distance of approximately 180m



**Figure 8.1
Noise Sensitive
Receptors**



Scale: 1:15,000



Prepared by: R.H.
 Checked by: C.O.S.
 Created in: ArcGIS 9.1
 Drawing date: 16/03/05
 Drawing No: 2005_105_Fig 8.1

Ordnance Survey Ireland
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Table 8.2 Noise from Construction Plant

Item of Plant	Sound Power Levels (dBA)	Percentage On-Time	Distance from Site (m)	Predicted Noise Level, LAeq(12 h)
Compressor	102	100%	150	46.6
Welding Generators	70	66%	150	13.0
Pneumatic Breakers	109	33%	150	48.9
Cranes	102	50	150	43.6
Wheeled Loader	104	66%	150	47.0
Excavator	111	50%	150	52.6
Site Truck	110	50%	150	51.6
Bulldozer	112	50 %	150	53.6
Piling Rig	115	66 %	150	58
Truck Concrete Mixer	108	50%	150	49.6
Poker Vibrators	112	75%	150	53.6

Table 8.3 presents further information that has been given for construction activities. It is noted that these activities are not coincidental so the noise is not additive.

Table 8.3 Noise Impact of Construction Activities

Distance from Site	50m	100m	150m	200m	500m	1000m
Activity	LAeq (12 hour) dBA					
Earth Moving	70.2	62.7	58.3	55.2	45.2	37.7
Piling	68.5	62.0	58.0	53.5	43.5	36.0
Concreting	67.3	59.8	55.4	52.3	42.3	34.8

Earthworks on site have the potential for elevated noise and vibration impacts. Earth moving equipment has the potential for increased noise levels and also a certain degree of vibration. Excavation and piling activities, particularly where rock is encountered has the potential to cause disturbance. Piling noise and vibration will be temporary during the construction of the power station foundations and the impacts are reduced in the plant layout by locating all major structures towards the rear of the site at a maximum distance to the nearest residences.

No significant benefits are obtained from producing noise modelling contours for construction noise due to the changeable and short-term nature of many of the activities listed. Noise limits as specified in BS 5228:1997 recommend the following criteria to be achieved at any noise sensitive premises:

Table 8.4 Noise Criteria as specified in BS 5228:1997

Leq (1hour)	Time period.
65 dB(A)	0800 hours - 1800 hours Monday - Friday inclusive And 0800 -1300 Saturdays excluding public holidays and Sundays.
45dB(A)	Any other time.

Note:

An appropriate correction shall be applied in the case of tonal or impulsive components in the measurements of noise in accordance with the provisions of ISO 1996.

The figures presented in Tables 8.2 and 8.3 indicate that no adverse noise levels will be experienced at noise sensitive dwellings during the construction phase. The data given represents a worse case of anticipated noise levels in close proximity to the proposed development. Dwellings situated further away from the site will be affected to a lesser extent by operations from the site. There is a likelihood of disturbance from construction traffic at residences along the roads serving the site but this will be transient in nature and not expected to significantly contribute to noise.

Construction Traffic

The impacts of construction traffic have been detailed in Chapter 7 of the original EIS. Traffic volumes are described in terms of Passenger Carrying Units (PCUs) where 1 PCU is equivalent to one passenger car or light private goods vehicle and one heavy goods vehicle (HGV) is equivalent to 3 PCUs. Peak construction traffic volumes are expected to be approximately 50 passenger cars, peaking in the morning and evening at the beginning and end of the shift. Construction HGVs are expected to be in the order 15 HGVs per day (equivalent to 45 PCU's), with a total two way peak of 12 PCU's. Peak hourly flow has been calculated at 30 PCU's for personnel and 4 PCU's for HGV's. This represents an increase of 34 PCU's or 117% increase over the surveyed traffic flows of 29 PCU's.

Construction HGVs have the potential to cause noise nuisance and both ground and airborne vibration when passing houses in close proximity to the road. The houses most affected by this will be the two residences in closest proximity to the plant. These are located near the roadside and will also experience the highest volume of site- related traffic. Other houses along the route will have more dispersed volumes of site-related traffic and are also located distances from the road to provide good attenuation from noise. Maximum increases in noise are expected for approximately 1 hour at either side of the work shift. Noise levels from construction traffic will be

minimal during the day and mainly confined within the vicinity of the site. Construction is to be completed in stages over approximately a 25 month period and thus impacts are temporary

Recommended noise preventative and mitigation measures include:

- Conducting construction activities according to recommendations under BS 5228: 1997 "Noise Control on Construction and Open Sites;
- Use of construction equipment to comply with the relevant noise control legislation as listed in the original application;
- Restricting construction work to daytime hours thus quiet evening and night-time noise levels will remain unaffected;
- Establishing communication links between the developer, contractor, Local Authority and local residents;
- Locating pumps and generators in positions that cause the least noise disturbance. As soon as possible, an initial temporary power connection will eliminate the requirement for generator use;
- Traffic management during the construction phase to minimise traffic impacts occurring as a result of during construction.

8.2.2 Impact of the Operation Phase

In examining the noise impacts during the operation phase, reference is made to information as presented in the original EIS. The principal sources of noise were identified and noise modelling was conducted to examine the impact on the surrounding environment. The impacts associated with activities and their likelihood to cause disturbance in the nearby dwellings is assessed with reference to standard limits as applied by the EPA of an L_{Aeq} of 55dB(A) during the day (over the requisite time interval) to avoid annoyance and an L_{Aeq} of 45dB(A) for night-time to prevent sleep disturbance.

Noise contour maps were generated from source noise information as presented in the original application. Additional explanation was requested on two drawings - Figure 5.4 and 5.5 of the original EIS application. These are presented as Figures 8.2 and 8.3 below and further discussed.

Figure 8.2 presents plant noise contours expressed as sound pressure level dB(A) based on noise information given for the individual items of plant.

Figure 8.3 presents a wider view to encompass the predicted sound pressure levels in dB(A) at the nearest dwellings. No scale is given but the two nearest dwellings are included on the map to represent the most affected locations.

Baseline measured community noise levels are contained in Appendix 5 of the original application. Noise levels, as described by L_{Aeq} , range from 40.2 dB(A) at site 6 to 56.4dB(A) at site 1. Full details are given in Chapter 5 of the original EIS and associated Appendix 5.

Measurement locations in closest proximity: Locations 1, 2 and 3 within 200m of the proposed development have average existing noise levels in the L_{Aeq} range of 44.6 to 56.4 dB(A) and L_{A90} levels in the range of 40.3 to 47.9. L_{A90} figures give a good indication of background noise levels in the absence of traffic etc. L_{Aeq} values however will be strongly influenced by intermittent noise such as traffic particularly at these locations due to their close proximity to the adjacent road.

Noise modelling results indicate that a sound pressure level in the range of 40 to 45 dB(A) will contribute to background noise levels at the nearest dwellings. This will have a minimal impact based on existing noise levels at these locations as described. The magnitude of the impact will depend on existing conditions but a 1-3 dB(A) increase is likely based on L_{Aeq} measurements for nearest residences.

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Figure 8.2 Noise Contour Map of Plant Noise



Fig 5.4 Plant noise contours expressed as sound pressure level dB(A)

Figure 8.3 Noise Contour Map of Residential Noise



Fig 5.5 Residential Noise Contours as represented by sound pressure level dB(A)

Vehicular Movements

Vehicular movements associated with the site include staff car parking, service access traffic and loading activities. The primary traffic will be due to delivery of SMC, PL or Woodchips, removal of ash and staff vehicles. Traffic movements are detailed in Chapter 7 of the original EIS.

In relation to surface car parking areas, noise levels measured 10m beyond the boundary of a busy car park during peak periods are typically in the order of 50 dB $L_{Aeq,1hr}$. Taking into account the distance to the nearest noise sensitive location (180m), screening by the proposed development noise levels will be well within daytime criterion of 55 dB $L_{Aeq,1hr}$ for any carparking activities.

It is estimated that the maximum 2-way truck movements will be 10 to 12 per hour to include delivery of material and removal of ash. This will be managed to prevent unnecessary peak volumes during the day. Deliveries will be restricted to day-time hours to prevent evening and night-time disturbance thus it is anticipated that noise at the nearest dwellings will be well within daytime criterion of 55 dB $L_{Aeq,1hr}$ and night time criterion of 45dB $L_{Aeq,1hr}$.

The Plant will be operated on a 3 shift basis but the majority of employees will only work one shift. Other shifts will be covered by a minimum of two personnel (Operation Engineer and Operation Assistant). A maximum of 21 staff vehicles will cause minor surges in traffic during the start and end of the day shift but this will be during standard work times and will thus not result in significant disturbance. Only minor movements of staff vehicles will occur at other times.

Vibration issues are deemed insignificant from operations at the proposed development. The major source of vibration disturbance will be from movements of heavy goods vehicles on roads adjacent to the site. Vibrations of this kind are small and not generally likely to cause structural damage, disturbance due to noise is more likely as low frequency vibration becomes airborne. Correct traffic management practices to prevent unnecessary surges in traffic and maintenance of haulage vehicles will be required ensure that disturbance is minimised. Further mitigation measures are outlined below.

Mitigation Measures

The following mitigation measures are recommended together with those presented in section 5.8.3 of the EIS application.

- Noisier plant is located to the rear of the facility away from nearest dwellings to provide adequate separation distances from nearest dwellings;
- Site layout to provide natural screening from buildings to prevent noise propagation;
- Good process design -utilising “low noise options” and equipment choice;
- Good operational and management practice backed up by an environmental management system. This will include regular maintenance of equipment to prevent generation of noise and turning off equipment and fans when not in use;
- Screening banks (berms) will be constructed at boundaries near the main plant area to minimise the transmission of noise off site;
- Restriction of noisier operations to day-time hours including truck deliveries confined to between 8:00 and 18:00 will minimise disturbance at sensitive times.

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The area around Emyvale is underlain by Carboniferous aged rocks, comprising of various aged limestones, siltstones and mudstones. Drilling on site has shown that overburden deposits are quite thick, in the order of 24 to 30 metres and are comprised of low permeability clays.

The predicted impacts are outlined as follows:

a) Abstraction from Groundwater

It is intended to abstract groundwater on the site for use as potable and process water in the proposed development. A trial well carried out during the investigation has been shown to be capable of yielding in the order of 650m³ per day. There is one domestic well in use close to the site, owned by the site owner.

b) Removal of overburden Cover and Bedrock

It is not proposed that any significant volume of overburden or bedrock will be removed from the site. The materials balance for the site in Section 11.2.3 outlines quantifiable amounts of overburden strip and re-use for specific site activities. Overall, it is the aim of the developer to re-use any topsoil or overburden where practicable on the site itself to avoid any adverse impacts.

c) Accidental Oil spills or leaking effluent containment

It is possible that accidental oil or chemical spills may occur from tanks, vehicles, plant machinery or domestic effluent collection facilities at the site construction compounds

d) Impact on the hydrological regime of Natural Heritage Areas

There are no Natural Heritage Areas or Special Areas of Conservation within 5km of the site

Proposed Mitigation Measures

- Vegetation and topsoil will be stockpiled on the site for later use.
- Overburden excavated during site development will be utilised on site for levelling and also utilised for screening berms.
- Good construction practice will be adhered to in order to minimise any negative impacts.
- Temporary silt traps or sedimentation tanks will be designed to minimise sedimentation during construction
- The total site area is approximately 0.033km². The total amount of Hardstanding , which consists of asphalt paving and concrete paving is approximately 0.00732 km² this will add protection to the underlying aquifer
- Domestic Effluent arising from the site constructions will be collected and transported off-site according to good practice guidelines.
- In the unlikely event of spill leakage to groundwater, the low vulnerability of the overburden will act as a partial barrier slowing pollutant flow.