

## 9.9 INTERACTIONS

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits and therefore the predicted impact is short-term, negative and imperceptible with respect to the construction phase and long-term, neutral and imperceptible with respect to the operational phase in terms of human health impacts.

Interactions between air quality and traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be imperceptible.

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils and the water environment (hydrology) in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that interactions between air quality and land and soils and hydrology will be short-term and imperceptible.

Dust emissions have the potential to settle on plants causing impacts to local ecology. Mitigation measures during the construction phase of the proposed development will ensure that dust generation is minimised and the effect on biodiversity will be short term, imperceptible and neutral.

## 9.10 REFERENCES

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# 10 NOISE & VIBRATION

## 10.1 INTRODUCTION/METHODOLOGY

As detailed in Chapter 1 Introduction, this EIA Report has been prepared to accompany an application for the development of a gas-fired power plant including ancillary equipment and associated ancillary development on lands at Kilshane, Co. Dublin. The Proposed Development is on lands to the south of the Kilshane Road at to the west of the N2. The subject site is illustrated below.



**Figure 10.1 Proposed Development**

The nearest noise-sensitive locations (NSLs) are located to the west, north and east of the development lands on sections of the Kilshane Road; the majority of the NSLs are residential dwellings, and the remainder are commercial buildings.

### 10.1.1 METHODOLOGY

#### Proposed Approach

The following methodology has been adopted for this assessment:

- Review appropriate guidance, typical local authority planning conditions, etc. in order to identify appropriate noise criteria for the site operations;
- Carry out noise monitoring (e.g. in the vicinity of nearest sensitive properties/boundaries) to identify existing levels of noise in the vicinity of the development;
- Development of a detailed 3D noise model to consider the proposed development; and
- Comment on predicted levels against the appropriate criteria and existing noise levels and outline required mitigation measures (if any).

Appendix 10.1 of this document presents a glossary of the acoustic terminology used throughout this document. In the first instance it is considered appropriate to review some basic fundamentals of acoustics.

### **Fundamentals of Acoustics**

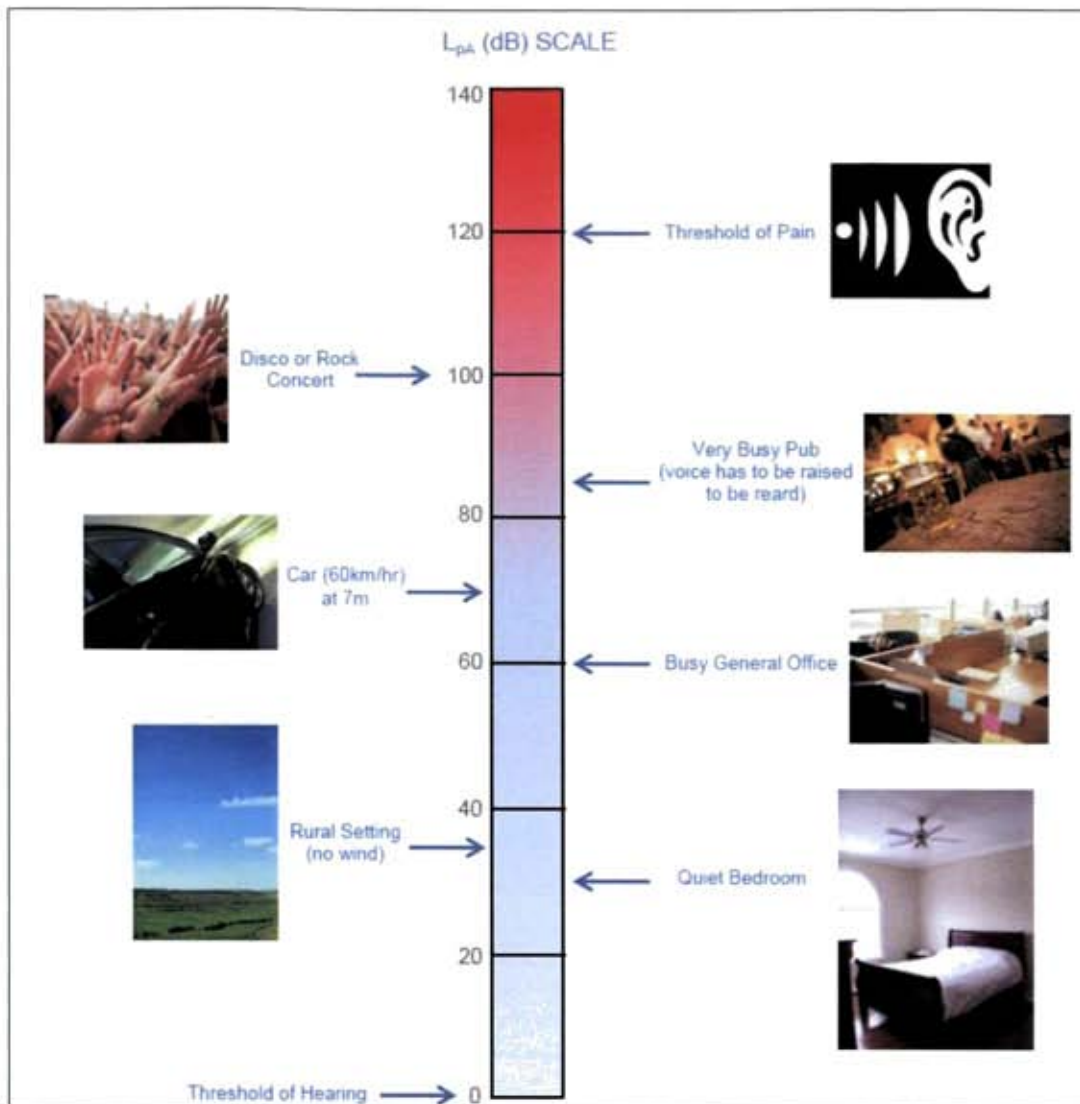
In order to provide a broader understanding of some of the technical discussion in this report, this section provides a brief overview of the fundamentals of acoustics and the basis for the preparation of this noise assessment.

A sound wave travelling through the air is a regular disturbance of the atmospheric pressure. These pressure fluctuations are detected by the human ear, producing the sensation of hearing. In order to take account of the vast range of pressure levels that can be detected by the ear, it is convenient to measure sound in terms of a logarithmic ratio of sound pressures. These values are expressed as Sound Pressure Levels (SPL) in decibels (dB).

The audible range of sounds expressed in terms of Sound Pressure Levels is 0dB (for the threshold of hearing) to 120dB (for the threshold of pain). In general, a subjective impression of doubling of loudness corresponds to a tenfold increase in sound energy which conveniently equates to a 10dB increase in SPL. It should be noted that a doubling in sound energy (such as may be caused by a doubling of traffic flows) increases the SPL by 3dB.

The frequency of sound is the rate at which a sound wave oscillates, and is expressed in Hertz (Hz). The sensitivity of the human ear to different frequencies in the audible range is not uniform. For example, hearing sensitivity decreases markedly as frequency falls below 250Hz. In order to rank the SPL of various noise sources, the measured level has to be adjusted to give comparatively more weight to the frequencies that are readily detected by the human ear. Several weighting mechanisms have been proposed but the 'A-weighting' system has been found to provide one of the best correlations with perceived loudness. SPL's measured using 'A-weighting' are expressed in terms of dB(A). An indication of the level of some common sounds on the dB(A) scale is presented in Figure 10.2.

The 'A' subscript denotes that the sound levels have been A-weighted. The established prediction and measurement techniques for this parameter are well developed and widely applied. For a more detailed introduction to the basic principles of acoustics, reference should be made to an appropriate standard text.



**Figure 10.2 dB(A) Scale & Indicative Noise Levels – (EPA: Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4 – 2012))**

**Significance of Impacts**

The significance of noise and vibration impacts has been assessed in accordance with the EPA Guidelines EIA Reports (2022); see Table 10.1 to Table 10.3. As these guidelines do not quantify the impacts in decibel terms further reference has been made to the draft 'Guidelines for Noise Impact Assessment' produced by the Institute of Acoustics/Institute of Environmental Management and Assessment Working Party.

With regard to the quality of the impact, ratings may have positive, neutral or negative applications where:

**Table 10.1 Quality of Potential Effects**

| Quality of Impact | Definition  |
|-------------------|---|
| Negative          | A change which reduces the quality of the environment (e.g. by causing a nuisance). |

| Quality of Impact | Definition   |
|-------------------|--|
| Neutral           | No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error. |
| Positive          | A change that improves the quality of the environment (e.g. by removing a nuisance).   |

The significance of an impact on the receiving environment are described as follows:

**Table 10.2 Significance of Effects**

| Significance of Impact on the Receiving Environment | Description of Potential Effect   |
|---|---|
| Imperceptible                                       | An effect capable of measurement but without significant consequences.  |
| Not Significant                                     | An effect which causes noticeable changes in the character of the environment but without significant consequences.               |
| Slight  | An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.                |
| Moderate  | An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. |
| Significant   | An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.                 |
| Very Significant                                    | An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.   |

The duration of effects as described in the EPA Guidelines are:

**Table 10.3 Duration of Effects**

| Duration    | Definition   |
|-------------|--|
| Momentary   | Effects lasting from seconds to minutes                                    |
| Brief       | Effects lasting less than a day  |
| Temporary   | Effects lasting one year or less   |
| Short-term  | Effects lasting one to seven years   |
| Medium-term | Effects lasting seven to fifteen years                                     |
| Long-term   | Effects lasting fifteen to sixty years                                     |
| Permanent   | Effects lasting over sixty years   |
| Reversible  | Effects that can be undone, for example through remediation or restoration |

## Construction Phase Guidance

### Criteria for Rating Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise.

The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a significant noise impact is associated with the construction activities.

The BS 5228 document sets out guidance on permissible noise levels relative to the existing noise environment. Table 10.4 sets out the values which, when exceeded, signify a significant effect at the facades of residential receptors as recommended by BS 5228 – 1.

**Table 10.4 Example Threshold of Significant Effect at Dwellings**

| Assessment category and threshold value period (LAeq) | Threshold value, in decibels (dB) |                              |                              |
|---|-----------------------------------|------------------------------|------------------------------|
|   | Category A <sup>Note A</sup>      | Category B <sup>Note B</sup> | Category C <sup>Note C</sup> |
| Night-time (23:00 to 07:00hrs)                        | 45                                | 50                           | 55                           |
| Evenings and weekends <sup>Note D</sup>               | 55                                | 60                           | 65                           |
| Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00) | 65                                | 70                           | 75                           |

Note A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

Note D) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

It should be noted that this assessment method is only valid for residential properties.

For the appropriate periods (i.e. daytime, evening and night time) the ambient noise level is determined and rounded to the nearest 5dB. Baseline monitoring carried out at the nearest noise sensitive locations (See Section 10.3) and considered in this assessment indicate that Category A applies based on the measured levels at UN1 and Category B applies based on the measured levels at UN2, as detailed in Table 10.5 is appropriate in this instance.

**Table 10.5 Rounded Baseline Noise Levels and Associated Categories**

| Period | Baseline Noise Category | Noise | Construction Noise Threshold Value LAeq,1hr (dB) |
|--------|-------------------------|-------|--|
|        |                         |       |  |

|   |     |       |
|---|-----|-------|
| Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00) | A-B | 65-70 |
|---|-----|-------|

See Section 10.4.1 for the assessment in relation to the proposed development. If the construction noise level exceeds the appropriate category value, then a potential significant effect is deemed to occur.

This assessment process determines if a significant construction noise impact is likely.

Notwithstanding the outcome of this assessment, the overall acceptable levels of construction noise set out in the Transport Infrastructure Ireland (TII) publication Guidelines for the Treatment of Noise and Vibration in National Road Schemes. The noise levels in Table 10.6 should not be exceeded at noise sensitive locations during the construction phase of the proposed development.

**Table 10.6 Maximum Permissible Noise Levels at the Facade of Dwellings during Construction**

| Days and Times                            | Noise Levels (dB re. $2 \times 10^{-5}$ Pa) |                   |
|---|---|-------------------|
|   | L <sub>Aeq</sub> (1hr)                      | L <sub>Amax</sub> |
| Monday to Friday 07:00 to 19:00hrs        | 70  | 80                |
| Monday to Friday 19:00 to 23:00hrs        | 60*   | 65*               |
| Saturdays 07:00 to 13:00hrs               | 65  | 75                |
| Sundays & Bank Holidays 08:00 to 16:30hrs | 60*   | 65*               |

Based on the above the following construction noise criteria are proposed for the site:

**70dB L<sub>Aeq,1hr</sub> at noise sensitive locations**  
**75dB L<sub>Aeq,1hr</sub> at commercial locations**

It will be required that noise-generating external construction activities associated with development shall take place between the hours of:

- Mondays to Fridays – 7am to 7pm
- Saturday – 7am to 2pm
- On Sundays and Public Holidays there should be no activity on the site.

If it is deemed necessary to conduct works outside these times, prior written approval will be sought from the relevant local authority.

#### Criteria for Rating Vibration Impacts

There are two aspects to the issue of vibration that are addressed in the standards and guidelines: the risk of cosmetic or structural damage to buildings; and human perception of vibration. In the case of this development, vibration levels used for the purposes of evaluating building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s.

There is no published statutory Irish guidance relating to the maximum permissible vibration level. The following standards are the most widely accepted in this context and are referenced here in relation to cosmetic or structural damage to buildings:

- British Standard BS 5228-2 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration (BSI 2014); and



- British Standard BS 7385-2 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration (BSI 1993)

BS 5228-2 and BS 7385-2 define the following thresholds for cosmetic damage to residential or light commercial buildings: PPV should be below 15 mm/s at 4 Hz to avoid cosmetic damage. This increases to 20 mm/s at 15 Hz and to 50 mm/s at 40 Hz and above. At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded. This is summarised in Table 10.7.

**Table 10.7 Allowable Vibration during Construction Phase**

| Type of building                           | Peak component particle velocity in frequency range of predominant pulse |   |
|--|--|---|
|  | 4 Hz to 15 Hz  | 15 Hz and above   |
| Unreinforced or light framed structures.   | 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz                           | 20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above |
| Residential or light commercial buildings. |  |   |

Note 1: Values referred to are at the base of the building.

Note 2: At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded.

Furthermore, BS 5228-2 and BS 7385-2 state that minor structural damage can occur at vibration magnitudes greater than twice those in Table 10.7 and major structural damage can occur at vibration magnitudes greater than four times those in Table 10.7.

BS 5228-2 also provides guidance relating to the human response to vibration. Guidance is again provided in terms of PPV in mm/s since this parameter is routinely measured when monitoring the structural effects of vibration. The potential human response at different vibration levels, as set out in BS 5228-2, is summarised in Table 10.8.

**Table 10.8 Guidance on human response to vibration levels**

| Vibration level Note <sup>A) B) C)</sup> (mm/s) | Effect  |
|---|---|
| 0.14  | Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration. |
| 0.3   | Vibration might be just perceptible in residential environments.  |
| 1.0   | It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.                  |
| 10  | Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.  |

Note A The magnitudes of the values presented apply to a measurement position that is representative of the point of entry into the recipient.

Note B A transfer function (which relates an external level to an internal level) needs to be applied if only external measurements are available.

Note C Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in

accordance with BS 6472-1 or -2, and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment.

#### Construction Phase Traffic

Vehicular movement to and from the construction site for the Proposed Development will make use of the existing road network. In order to assess the potential impact of additional traffic on the human perception of noise, the following two guidelines are referenced DMRB Noise and Vibration (UKHA 2020) and the EPA Guidelines (EPA, 2022). For construction traffic, due to the short-term period over which this impact occurs, the magnitude of impacts is assessed against the 'short term' period in accordance with the DMRB Noise and Vibration (UKHA 2020) document.

Table 10.9 sets out the classification of changes in noise level to impact on human perception based on the guidance contained in these documents.

**Table 10.9 Classification of magnitude of traffic noise changes in the short-term**

| Change in Sound Level (dB) | Subjective Reaction | DMRB Magnitude of Impact (Short-term) | EPA Significance of Effect |
|----------------------------|---------------------|---------------------------------------|----------------------------|
| Less than 1 dB             | Inaudible           | Negligible                            | Imperceptible              |
| 1 – 2.9                    | Barely Perceptible  | Minor                                 | Not Significant            |
| 3 – 4.9                    | Perceptible         | Moderate                              | Slight, Moderate           |
| ≥ 5                        | Clearly perceptible | Major                                 | Significant                |

#### **Operational Phase - Noise Guidance**

##### EPA NG4

It is understood that the development will operate under the provisions of an Environmental Protection Agency (EPA) Industrial Emissions (IE) license. The discussion of appropriate IE License noise emission criteria for the overall facility will be conducted in accordance with the NG4 document. This approach is summarized below in accordance with guidance detailed in Section 4 of the (EPA) document Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016.

##### Quiet Area Screening

The proposed development is not considered a quiet area in this instance as it fails to meet any of the criteria outlined in EPA's Guidance. The most stringent of these criteria are noted in bullet point and commented on below.

At least 3km from urban area with a population >1,000 people;

- The site within the Dublin agglomeration and is therefore located less than 3km from a population significantly greater than 1,000.

At least 3km away from any local industry;

- Other industrial sites operate within 3km of the site.

At least 5km away from any National Primary Route;

- A section of the N2 national road is located along the western boundary of the site.

#### Low Background Noise Area Screening

In order to establish whether the noise sensitive locations in the vicinity of the site would be considered 'low background noise' areas, the noise levels measured during the environmental noise survey need to satisfy all three of the following criteria:

- Arithmetic Average of  $L_{A90}$  During Daytime Period  $\leq 40$  dB  $L_{A90}$ , and;
- Arithmetic Average of  $L_{A90}$  During Evening Period  $\leq 35$  dB  $L_{A90}$ , and;
- Arithmetic Average of  $L_{A90}$  During Night-time Period  $\leq 30$  dB  $L_{A90}$ .

**Table 10.10 Comparison of Measurement Results with NG4 Low Background Noise Area Criteria**

| Location | Period     | $L_{A90,T}$ , dB | NG4 Screening (dB $L_{A90,T}$ ) | Satisfies All Criteria for Low Background Noise Area? |
|----------|------------|------------------|---------------------------------|---|
| UN1      | Daytime    | 60               | $\leq 40$                       | No  |
|          | Evening    | 57               | $\leq 35$                       |   |
|          | Night-time | 50               | $\leq 30$                       |   |
| UN2      | Daytime    | 65               | $\leq 40$                       | No  |
|          | Evening    | 61               | $\leq 35$                       |   |
|          | Night-time | 52               | $\leq 30$                       |   |

The arithmetic average  $L_{A90}$  results at the monitoring location considered here (see Section 10.3) are compared against the criteria in Table 10.10. The locations UN1 and UN2 would not be considered a 'Areas of Low Background Noise' as the measured noise levels do not satisfy the criteria.

#### Determining Appropriate Noise Criteria

Based on the EPA NG4 guidance, the following noise criteria are appropriate at the nearest NSL's to the facility:

- Daytime (07:00 to 19:00hrs) 55dB  $L_{Ar,15min}$
- Evening (19:00 to 23:00hrs) 50dB  $L_{Ar,15min}$
- Night time (23:00 to 07:00hrs) 45dB  $L_{Aeq,15min}$

During the night period, no tonal or impulsive noise from the facility should be clearly audible or measurable at any NSL. The applicable noise criteria identified are in line with the typical limit values for noise from licensed sites.

#### Assessment of Significance

The 'Guidelines for Environmental Noise Impact Assessment' produced by the Institute of Environmental Management and Assessment (IEMA) (2014) have been referenced in order to categorise the potential

effect of changes in the ambient noise levels during the operational phases of the proposed development.

The guidelines state that for any assessment, the potential significance should be determined by the assessor, based upon the specific evidence and likely subjective response to noise. Due to varying factors which effect human response to environmental noise (prevailing environment, noise characteristics, time periods, duration and level etc.) assigning a subjective response must take account of these factors.

The scale adopted in this assessment is shown in Table 10.11 below and is based on an example scale within the IEMA guidelines. The corresponding significance of effect presented in the EPA EIA Report Guidelines (2022) is also presented.

**Table 10.11 Noise Effect Scale**

| Noise Level Change dB(A) | Subjective Response                         | Long Term Impact Classification (IEMA, 2014) | Impact Guidelines on the Information to be contained in EIA Report's (EPA) |
|--------------------------|---|--|--|
| ≥ 0                      | No change                                   | Negligible                                   | Imperceptible  |
| ≥ 0 and < 3              | Barely perceptible                          | Not Significant                              | Not Significant  |
| ≥ 3 and < 5              | Noticeable                                  | Minor  | Slight Impact  |
| ≥ 5 and < 10             | Clearly perceptible                         | Moderate                                     | Moderate Impact  |
| ≥10                      | More than a doubling or halving of loudness | Major  | Significant Impact   |

The significance table reflects the key benchmarks that relate to human perception of sound. A change of 3dB(A) is generally considered to be the smallest change in environmental noise that is perceptible to the human ear. A 10dB(A) change in noise represents a doubling or halving of the noise level. The difference between the minimum perceptible change and the doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level.

It is considered that the ratings specified in the above table provide a good indication as to the likely significance of changes on noise levels in this case and have been used to assess the impact of operational noise.

The night-time conditions will dictate the design of the development from an acoustic perspective so this will be focused on in this assessment as compliance with the night-time criterion infers compliance with the daytime one.

#### Recommended Criteria

Following review of relevant guidance, the following noise criteria are proposed for the proposed development:

**Daytime Periods (Residential) – 55 dB LAeq,15min**  
**Daytime Periods (Commercial) – 55 dB LAeq,15min**  
**Evening Periods (Residential) – 50 dB LAeq,15min**  
**Night-time Periods (Residential) – 45 dB LAeq,15min**

These criteria apply at the façades of the locations.

Note plant noise emissions are to be designed such that they are not tonal and do not have impulsive characteristics or excessive low frequency noise at the nearest noise sensitive locations.

### **Operational Phase – Vibration Guidance**

Guidance as to an acceptable magnitude of vibration during the operational phase of the development is best taken from British Standard BS 6472 (1992): *Guide to Evaluation of human exposure to vibration in buildings (1Hz to 80Hz)*. The Standard contains recommendations that continuous vibration in residential buildings should not exceed nominally 0.3mm/s by daytime and 0.2mm/s by night-time.

It should be noted that the proposed development will not give rise to any significant levels of vibration off site and therefore the associated impact is not significant.

### **Forecasting Methods**

Construction noise calculations have been conducted generally in accordance with BS 5228: 2009+A1:2014: *Code of practice for noise control on construction and open sites - Noise*.

Prediction calculations for building services noise, car park activity and vehicle movements on site have been conducted generally in accordance with ISO 9613 (1996): *Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation*.

Changes in road traffic noise on the local road network have been considered using prediction guidance contained within *Calculation of Road Traffic Noise (CRTN)* issued by the UK Department of Transport in 1988.

## **10.2 THE PROPOSED DEVELOPMENT**

The proposed development is as described in Chapter 4.

In respect of operating hours of the proposed development, the following section from Chapter 4 is relevant:

*The plant is forecast to operate for between 22 and 95 hours in a year with an annual average of 46 hours. The plant is required to be available to follow dispatch instructions from EirGrid, the Transmission System Operator (TSO). The TSO will decide the actual operating hours of the unit depending on system needs at any point in time.*

In this assessment, the criteria in terms of noise level limits are appropriate for a continuously operating development, though as stated above the proportion of the time is equivalent to a number of days per year. The noise assessment presented here is therefore 'worst case'.

## **10.3 THE RECEIVING ENVIRONMENT**

An environmental noise survey has been conducted in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996: 2007: *Acoustics – Description, measurement and assessment of environmental noise*. Specific details are set out below.

### **Dates and Times of Noise Surveys**

Noise measurements were conducted using an unattended noise monitoring over five days that encompassed typical day, evening and night-time periods. The night survey represents the time of night that provides a measure of existing background noise levels during a period where people are attempting to go to sleep or are sleeping. As the development will have capacity to operate at any time of day or night, the potential impact during night time periods is the critical issue. The survey was conducted during the following periods:

- UN1: 16:20 hrs on Wednesday 20 April 2022 to 10:50 hrs on Monday 25 April 2022, and
- UN2: 16:10 hrs on Thursday 21 April to 10:50 hrs on Monday 25 April 2022

### Personnel and Instrumentation

AWN Consulting conducted the noise level measurements.

The noise measurements were performed using a Rion NL-52 Sound Level Analyzer (S/Ns 164427 and 186671). Before and after the survey the measurement apparatus was check calibrated using a Brüel & Kjær Type 4231 Sound Level Calibrator

### Measurement Locations

Figure 10.3 details the approximate location of the measurement positions identified above.



**Figure 10.3 Noise Survey Locations**

### Methodology

Sample periods for the noise measurements were 15 minutes. Results were saved to the instrument memory for later analysis. Survey personnel noted the primary noise sources contributing to noise build-up during installation and removal of the equipment from site.

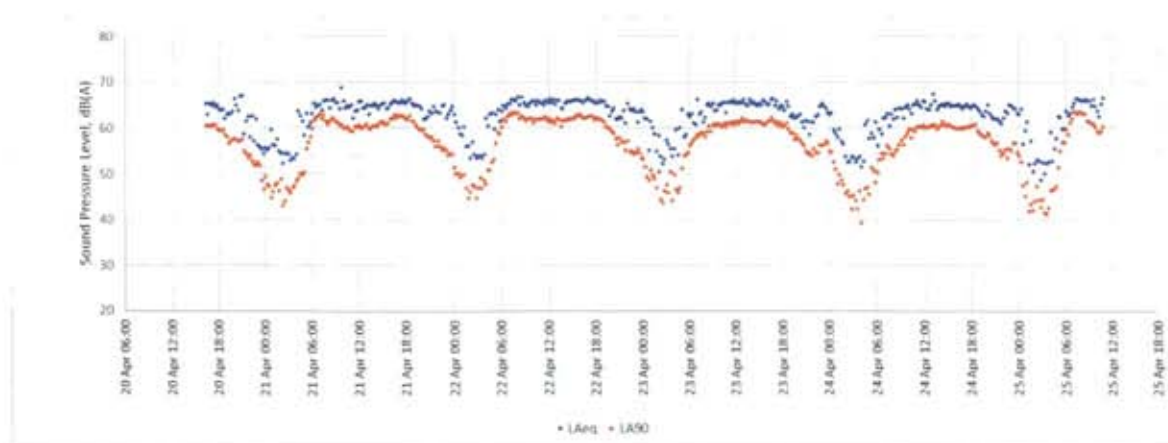
### Survey Results

#### Location UN1

The survey results for Location UN1 are summarised in Table 10.12 below.

**Table 10.12 Review of Typical Noise Levels**

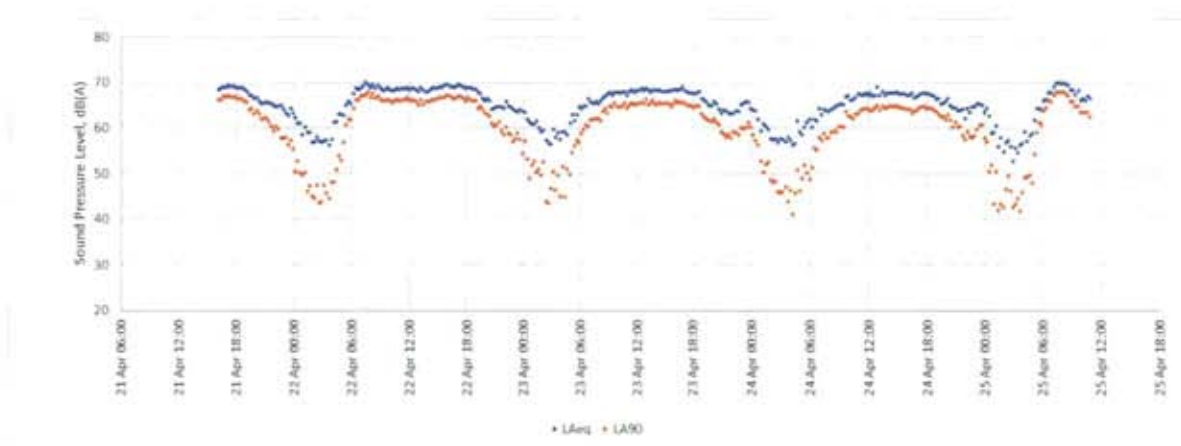
| Date      | Day       | Period  | Ambient Noise<br>dB LAeq,T | Background<br>Noise dB LA90,T |
|-----------|-----------|---------|----------------------------|-------------------------------|
| 20/4/2022 | Wednesday | Day     | 64                         | 60                            |
|           |           | Evening | 64                         | 56                            |
|           |           | Night   | 60                         | 50                            |
| 21/4/2022 | Thursday  | Day     | 65                         | 61                            |
|           |           | Evening | 64                         | 58                            |
|           |           | Night   | 61                         | 52                            |
| 22/4/2022 | Friday    | Day     | 66                         | 62                            |
|           |           | Evening | 64                         | 58                            |
|           |           | Night   | 60                         | 51                            |
| 23/4/2022 | Saturday  | Day     | 65                         | 61                            |
|           |           | Evening | 62                         | 56                            |
|           |           | Night   | 60                         | 49                            |
| 24/4/2022 | Sunday    | Day     | 65                         | 59                            |
|           |           | Evening | 63                         | 57                            |
|           |           | Night   | 61                         | 50                            |
| 25/4/2022 | Monday    | Day     | 66                         | 62                            |
| Overall   |           | Day     | 65                         | 60                            |
|           |           | Evening | 63                         | 57                            |
|           |           | Night   | 60                         | 50                            |

**Figure 10.4 Time History of Measured Noise Levels at UN1**Location UN2

The survey results for Location UN2 are summarised in Table 10.13 below.

**Table 10.13 Review of Noise Levels at UN2**

| Date      | Day      | Period  | Ambient Noise<br>dB LAeq,T | Background<br>Noise dB LA90 |
|-----------|----------|---------|----------------------------|-----------------------------|
| 21/4/2022 | Thursday | Day     | 69                         | 67                          |
|           |          | Evening | 66                         | 62                          |
|           |          | Night   | 63                         | 53                          |
| 22/4/2022 | Friday   | Day     | 69                         | 66                          |
|           |          | Evening | 66                         | 61                          |
|           |          | Night   | 62                         | 53                          |
| 23/4/2022 | Saturday | Day     | 68                         | 65                          |
|           |          | Evening | 65                         | 60                          |
|           |          | Night   | 61                         | 51                          |
| 24/4/2022 | Sunday   | Day     | 67                         | 63                          |
|           |          | Evening | 65                         | 60                          |
|           |          | Night   | 63                         | 52                          |
| 25/4/2022 | Monday   | Day     | 69                         | 66                          |
| Overall   |          | Day     | 68                         | 65                          |
|           |          | Evening | 65                         | 61                          |
|           |          | Night   | 62                         | 52                          |

**Figure 10.5 Time History of Measured Noise Levels at UN2**

These typical noise levels have been considered when discussing appropriate noise criteria in relation to the development (see Section 10.1.1.5).

#### Nearest Noise-Sensitive Locations

In the first instance it is considered appropriate to define a noise sensitive location (NSL). In this context, it is considered prudent to give consideration to the definition supplied by the Environmental Protection Agency (EPA) which states the following:



*"NSL – any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels."*

Figure 10.6 highlights the nearest noise sensitive locations for which noise predictions have been carried out. Descriptions of the locations are presented in Table 10.14



**Figure 10.6 Noise-Sensitive Locations**

**Table 10.14 Noise-sensitive Locations**

| Location Ref | Description   |
|--------------|---|
| R01          | Commercial property on Kilshane Road                        |
| R02          | Residential properties on Kilshane Road                     |
| R03          |   |
| R04          |   |
| R05          |   |
| R06          |   |
| R07          | Residential properties on North of Kilshane Cross / on R135 |
| R08          |   |
| R09          |   |
| R10          |   |

| Location Ref | Description  |
|--------------|--|
| R10          | Residential properties on Kilshane Road                      |
| R11          |  |
| R12          | Residential properties south of Kilshane Cross               |
| R13          |  |
| R14          | Residential properties at Ravenswood                         |
| R15          | Residential properties on Kilshane Road to southwest of site |
| R16          |  |

## 10.4 PREDICTED EFFECTS

The proposed development will involve the construction of gas-fired power plant and associated ancillary buildings and equipment, including the re-alignment of part of Kilshane Road, over an anticipated construction period of approximately 29 months.

When considering a development of this nature, the potential noise and vibration impact on the surroundings must be considered for each of two distinct stages:

- construction phase, and;
- operational phase.

The construction phase will involve extensive excavation, rock breaking, general site preparation over the development site and the erection of new buildings over a phased construction period. Comment will also be presented in the following sections in relation to construction traffic on local roads in terms of noise and vibration.

The primary sources of outward noise in the operational context are deemed long term and will involve:

- building services noise;
- emergency site operations, and;
- additional vehicular traffic on public roads.

These issues are discussed in detailed in the following sections.

### 10.4.1 CONSTRUCTION PHASE

The largest noise and vibration impact of the proposed development will occur during the construction phase due to the operation of various plant machinery and HGV movement to, from and around the site. However, the construction phase can be classed as a short-term phase.

The nearest residential NSLs to the site are at distances of approximately 50m from the nearest substantial construction works (i.e. the re-aligned road) and at more than 100m from the gas generator compound.

BS 5228-1 contains noise level data for various construction machinery. The noise levels relating to site clearance, ground excavation and loading lorries (dozers, tracked excavators and wheeled loaders) reach a maximum of 81 dB  $L_{Aeq,T}$  at a distance of 10 m. For this assessment, a worst-case scenario is assumed of 3 no. such items with a sound pressure level (SPL) of 81 dB at 10 m operating simultaneously along the closest works boundary. This would result in a total noise level of 86 dB at 10 m and an equivalent combined sound power level of 114 dB  $L_{WA}$ . This worst-case scenario is the typical assumption made for developments of this size, on the basis that it is unlikely that more than

3 no. items of such plant/equipment would be operating simultaneously in such close proximity to each other.

**Table 10.15 Predicted Construction Noise Levels**

| Description of Noise Source   | Calculated noise levels at varying distances<br>(dB L <sub>Aeq,1hr</sub> ) |      |      |      |       |
|---|--|------|------|------|-------|
|   | 50 m   | 60 m | 70 m | 80 m | 100 m |
| 3 no. items each with SPL of 81 dB at 10 m operating simultaneously | 70   | 68   | 67   | 66   | 64    |

The calculated noise levels in Table 10.15 show that there is predicted noise levels are within the adopted construction noise criteria of 70 dB L<sub>Aeq,1hr</sub>. This indicates that construction noise effects are negative, not significant and short-term.

### Construction Vibration

Potential for vibration impacts during the construction phase programme are likely to be limited to excavations and piling works to be used for foundations. For the purposes of this assessment the expected vibration levels during piling assuming augured or bored piles have been determined through reference to published empirical data. The British Standard BS 5228 – Part 2: Vibration, publishes the measured magnitude of vibration of rotary bored piling using a 600mm pile diameter for bored piling into soft ground over rock, (Table D.6, Ref. No. 106):

- 0.54mm/s at a distance of 5m, for auguring;
- 0.22mm/s at a distance of 5m, for twisting in casing;
- 0.42mm/s at a distance of 5m, for spinning off, and;
- 0.43mm/s at a distance of 5m, for boring with rock auger.

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition the range of vibration levels is typically below a level which would cause any disturbance to occupants of nearby buildings. This indicates that construction vibration effects are negative, not significant and short-term.

### Construction Traffic

In terms of the construction traffic on local roads that will be generated as a result of the proposed development the following comment is presented: Considering that, according to the calculation methods in Calculation of Road Traffic Noise (CRTN), in order to increase traffic noise levels by 1dB traffic volumes would need to increase by the order of 25%. With reference to Table 10.9 it is considered that a 1dB increase in traffic noise levels on the local road network, due to the construction phase, will not result in a significant noise impact.

## 10.4.2 OPERATIONAL PHASE

The primary sources of outward noise in the operational context are deemed medium term and will involve:

- power plant noise, and
- additional vehicular traffic on public roads.

These issues are discussed in following sections. See Appendix 10 for details of the noise modelling undertaken for this assessment and associated assumptions.

### Power Station Noise

In relation to the power plant noise there are two modes in which the dual-fuel power plant can operate:

- Gas fuel operation, and
- Liquid fuel operation.

Certain items of plant are relevant to only one mode: in gas fuel operation, the demineralised water pump, fuel oil pump and liquid fuel module do not operate; in liquid fuel operation, the fuel gas heater skid and separator skid do not operate. Both scenarios are evaluated in this assessment.

For details of the noise model and input information, see Appendices 10.2 and 10.3.

The results of the iterations of the noise model are presented and are compared to the relevant noise criteria as adopted for this assessment in Table 10.16 and Table 10.17. Note all plant will be selected such that no tonal or excessive low frequency noise emissions are evident at noise sensitive locations.

The predicted levels are based on a situation where the receiver is downwind of all noise sources. For the purposes of the assessment against the adopted criteria this is a robust worst-case assumption.

Noise contours for each scenario are presented in Figure 10.7 and Figure 10.8.

**Table 10.16 Comparison of Predicted Noise Levels vs. Adopted Noise Criteria**

| Location         | Gas Fuel Operation     |                        |           | Liquid Fuel Operation  |                        |           |
|------------------|------------------------|------------------------|-----------|------------------------|------------------------|-----------|
|                  | Predicted<br>dB LAeq,T | Criterion<br>dB LAeq,T | Complies? | Predicted<br>dB LAeq,T | Criterion<br>dB LAeq,T | Complies? |
| R01 <sup>A</sup> | 45                     | 55 (Daytime)           | ✓         | 46                     | 55 (Daytime)           | ✓         |
|                  |                        | --                     | --        |                        | --                     | --        |
|                  |                        | --                     | --        |                        | --                     | --        |
| R02              | 44                     | 55 (Daytime)           | ✓         | 45                     | 55 (Daytime)           | ✓         |
|                  |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|                  |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R03              | 42                     | 55 (Daytime)           | ✓         | 42                     | 55 (Daytime)           | ✓         |
|                  |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|                  |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R04              | 44                     | 55 (Daytime)           | ✓         | 44                     | 55 (Daytime)           | ✓         |
|                  |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|                  |                        | 45 (Night)             | ✓         |                        |                        | ✓         |
| R05              | 45                     | 55 (Daytime)           | ✓         | 45                     | 55 (Daytime)           | ✓         |
|                  |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|                  |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R06              | 39                     | 55 (Daytime)           | ✓         | 40                     | 55 (Daytime)           | ✓         |
|                  |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |

| Location | Gas Fuel Operation     |                        |           | Liquid Fuel Operation  |                        |           |
|----------|------------------------|------------------------|-----------|------------------------|------------------------|-----------|
|          | Predicted<br>dB LAeq,T | Criterion<br>dB LAeq,T | Complies? | Predicted<br>dB LAeq,T | Criterion<br>dB LAeq,T | Complies? |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R07      | 41                     | 55 (Daytime)           | ✓         | 42                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R08      | 41                     | 55 (Daytime)           | ✓         | 41                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R09      | 41                     | 55 (Daytime)           | ✓         | 41                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R10      | 44                     | 55 (Daytime)           | ✓         | 45                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R11      | 44                     | 55 (Daytime)           | ✓         | 44                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R12      | 41                     | 55 (Daytime)           | ✓         | 43                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R13      | 43                     | 55 (Daytime)           | ✓         | 45                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R14      | 37                     | 55 (Daytime)           | ✓         | 40                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R15      | 35                     | 55 (Daytime)           | ✓         | 37                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |
| R16      | 35                     | 55 (Daytime)           | ✓         | 37                     | 55 (Daytime)           | ✓         |
|          |                        | 50 (Evening)           | ✓         |                        | 50 (Evening)           | ✓         |
|          |                        | 45 (Night)             | ✓         |                        | 45 (Night)             | ✓         |

Note A R01 is a commercial NSL therefore criteria are not provided for evening and night-time periods.

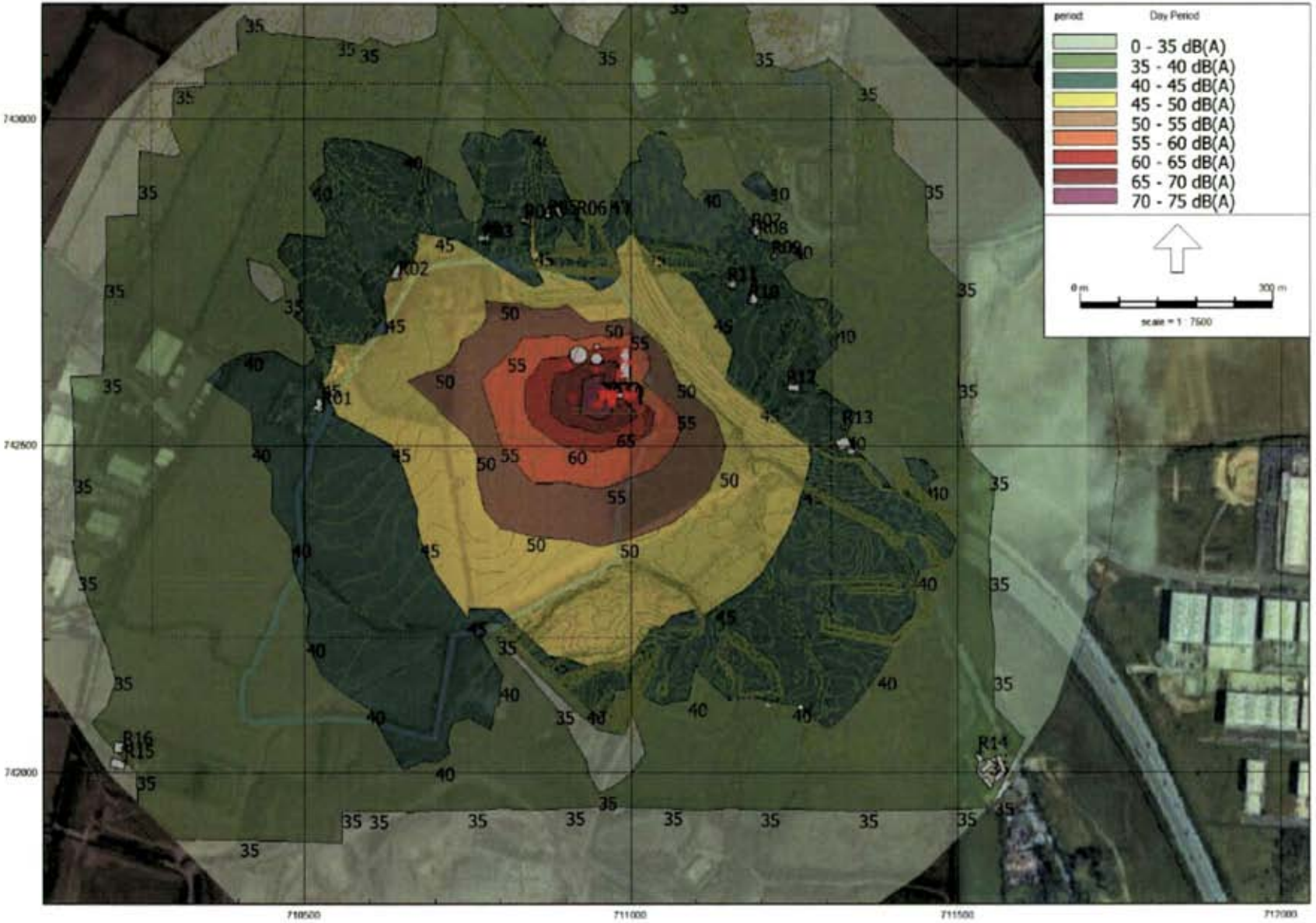


Figure 10.7 Noise Contours for Gas Fuel Operation

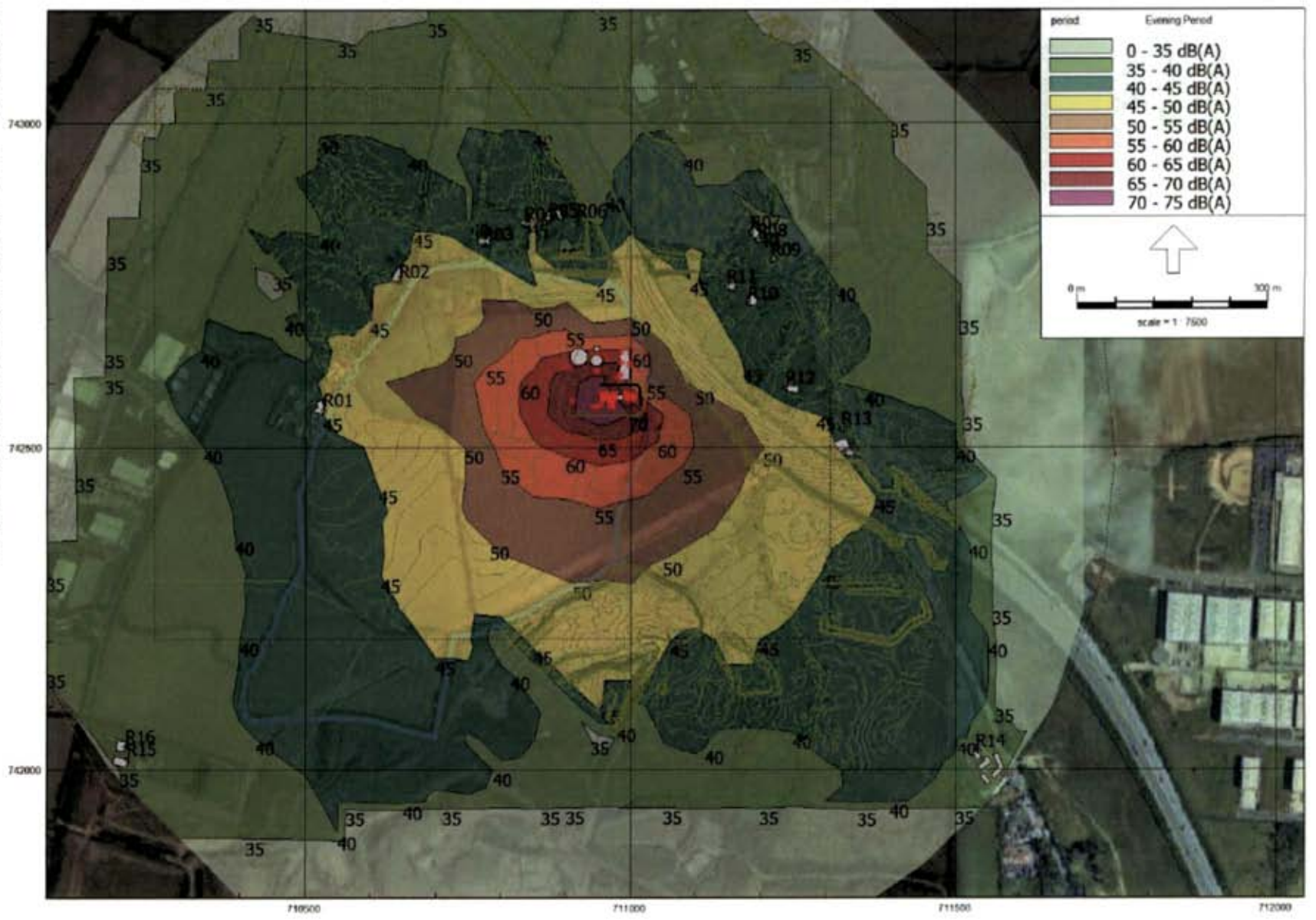


Figure 10.8 Noise Contours for Liquid Fuel Operation

### Review of Increases in Noise Level

As the power plant may be required to operate during day, evening or night periods, this section of the assessment focuses on night-time periods which are the most sensitive. The average background noise levels during night-time periods are, as presented in section 10.3.1.5, 50 dB LA90 at UN1 and 52 dB LA90 at UN2. Inspection of the noise level variation over the noise survey shows that the background noise reduced to levels of the order of 45 dB LA90 during the quieter parts of the night. The level of 45 dB LA90 is used in Table 10.17 and Table 10.18 to provide a conservative assessment of the increase in noise level.

**Table 10.17 Review of Increases in Night-time Noise Level – Gas Operation**

| Location | Predicted dB LAeq,T | Background dB LA90,15min | Cumulative | Change in Noise Level | EPA Glossary of Impacts |
|----------|---------------------|--------------------------|------------|-----------------------|-------------------------|
| R01      | 45                  | 45                       | 48         | +3                    | Slight                  |
| R02      | 44                  | 45                       | 48         | +3                    | Slight                  |
| R03      | 42                  | 45                       | 47         | +2                    | Not Significant         |
| R04      | 44                  | 45                       | 48         | +3                    | Slight                  |
| R05      | 45                  | 45                       | 48         | +3                    | Slight                  |
| R06      | 39                  | 45                       | 46         | +1                    | Not Significant         |
| R07      | 41                  | 45                       | 47         | +2                    | Not Significant         |
| R08      | 41                  | 45                       | 47         | +2                    | Not Significant         |
| R09      | 41                  | 45                       | 47         | +2                    | Not Significant         |
| R10      | 44                  | 45                       | 48         | +3                    | Slight                  |
| R11      | 44                  | 45                       | 48         | +3                    | Slight                  |
| R12      | 41                  | 45                       | 47         | +2                    | Not Significant         |
| R13      | 43                  | 45                       | 47         | +2                    | Not Significant         |
| R14      | 37                  | 45                       | 46         | +1                    | Not Significant         |
| R15      | 35                  | 45                       | 45         | 0                     | Imperceptible           |
| R16      | 35                  | 45                       | 45         | 0                     | Imperceptible           |

Review of the predicted increases in noise level for gas fuel operation at the nearest noise sensitive locations conclude that the associated effect ranges from 'imperceptible' at the R15 and R16 to the southwest, to 'not significant' and 'slight' at the locations closest to the proposed development.

**Table 10.18 Review of Increases in Night-time Noise Level – Liquid Fuel Operation**

| Location | Predicted dB LAeq,T | Background dB LA90,15min | Cumulative | Change in Noise Level | EPA Glossary of Impacts |
|----------|---------------------|--------------------------|------------|-----------------------|-------------------------|
| R01      | 46                  | 45                       | 49         | +4                    | Slight                  |
| R02      | 45                  | 45                       | 48         | +3                    | Slight                  |



|     |    |    |    |    |                 |
|-----|----|----|----|----|-----------------|
| R03 | 42 | 45 | 47 | +2 | Not Significant |
| R04 | 44 | 45 | 48 | +3 | Slight          |
| R05 | 45 | 45 | 48 | +3 | Slight          |
| R06 | 40 | 45 | 46 | +1 | Not Significant |
| R07 | 42 | 45 | 47 | +2 | Not Significant |
| R08 | 41 | 45 | 47 | +2 | Not Significant |
| R09 | 41 | 45 | 47 | +2 | Not Significant |
| R10 | 45 | 45 | 48 | +3 | Slight          |
| R11 | 44 | 45 | 48 | +3 | Slight          |
| R12 | 43 | 45 | 47 | +2 | Not Significant |
| R13 | 45 | 45 | 48 | +3 | Slight          |
| R14 | 40 | 45 | 46 | +1 | Not Significant |
| R15 | 37 | 45 | 46 | +1 | Not Significant |
| R16 | 37 | 45 | 46 | +1 | Not Significant |

Review of the predicted increases in noise level for gas fuel operation at the nearest noise sensitive locations conclude that the associated effect ranges from 'not significant' and 'slight'.

#### **Additional Vehicular Traffic on Public Roads**

In terms of the additional traffic on local roads that will be generated as a result of this development, the following comment is presented. With reference to Chapter 12, the proposed development will not add a significant amount of additional traffic to the surrounding road network during operation. Considering that in order to increase traffic noise levels by 1dB, traffic volumes would need to increase by the order of 25% it is considered that additional traffic introduced onto the local road network due to the proposed development will not result in a significant noise impact.

#### **Summary of Operational Impacts**

In terms of noise associated with the operation of the site, the associated effect is stated to be negative, imperceptible to slight and long-term.

There are no sources of vibration associated with the operation of the development will give rise to impacts at nearby noise sensitive locations. In terms of these the operational phase of the development the associated vibration effect is stated to be neutral, imperceptible and long-term.

## **10.5 MITIGATION AND MONITORING MEASURES**

### **10.5.1 CONSTRUCTION PHASE**

With regard to construction activities, reference will be made to BS5228 Parts 1 and 2, which offer detailed guidance on the control of noise and vibration from demolition and construction activities. Various mitigation measures will be considered and applied during the construction of the proposed development. Specific examples of such measures are:

- Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;

- Establishing channels of communication between the contractor/developer, Local Authority and residents;
- Appointing a site representative responsible for matters relating to noise and vibration;
- Monitoring levels of noise and/or vibration during critical periods and at sensitive locations; and
- All site access roads will be kept even so as to mitigate the potential for vibration from lorries.

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These may include:

- Selection of plant with low inherent potential for generation of noise and/ or vibration;
- Erection of barriers as necessary around items such as generators or high duty compressors; and
- Situate any noisy plant as far away from sensitive properties as permitted by site constraints and the use of vibration isolated support structures where necessary.

It is recommended that vibration from construction activities to off-site residences be limited to the values set out in Table 10.7. It should be noted that these limits are not absolute, but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage these limits may need to be reduced by up to 50%.

## 10.5.2 OPERATIONAL PHASE

### Power Station Noise

The sound power levels of the proposed plant items are detailed in Appendix 10.2. Noise from external plant will be minimised by purchasing low noise generating equipment and incorporating appropriately specified in line attenuators for stacks and exhausts where necessary. With due consideration as part of the detailed design process, this approach will result in the site operating well within the constraints of the best practice guidance noise limits that have been adopted as part of this detailed assessment.

The 12m high barrier also presented in Appendix 10.2 was designed in conjunction with the project engineering team to reduce noise levels at NSLs.

### Additional Vehicular Traffic on Public Roads

The noise impact assessment outlined previously has demonstrated that mitigation measures are not required.

## 10.6 RESIDUAL IMPACTS

This section summarises the likely noise and vibration impact associated with the proposed development, taking into account the mitigation measures.

### 10.6.1 CONSTRUCTION PHASE

During the construction phase of proposed development there will be some impact on nearby noise sensitive properties due to noise emissions from site traffic and other activities. The application of noise limits and hours of operation (i.e. as per Table 10.5, Table 10.6), along with implementation of appropriate noise and vibration control measures (as summarised in Section 10.6.1), will ensure that

noise and vibration impact is kept to a minimum. Also it is reiterated that any construction noise effects will be not significant, negative and short term in nature.

## 10.6.2 OPERATIONAL PHASE

### Power Station Noise

Proprietary noise and vibration control measures have been employed including plant selection and acoustic screening, in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at the façade of any nearby noise sensitive locations. In addition, noise emissions will be broadband in nature and should not contain any tonal or impulsive elements. The resultant noise effect is negative, not significant to slight and long-term.

### Additional Vehicular Traffic on Public Roads

Any change in noise levels associated with vehicles at road junctions in the vicinity of the proposed development is expected to be imperceptible. The resultant noise effect is neutral, imperceptible and long term.

## 10.7 CUMULATIVE IMPACT

### 10.7.1 EXISTING DEVELOPMENTS

The environmental noise surveys (Section 10.3) take account of any noise emissions from existing developments. It was noted that the existing ambient noise levels in the area were dominated by aircraft and road traffic noise from the local road network.

At certain locations during night-time periods where existing background noise levels were measured in the range of 45 to 50 dB  $L_{A90,15min}$ , low levels of plant noise from the proposed development may be audible during lulls in other sources (e.g. aircraft). Notwithstanding this, the resulting cumulative background noise levels will be within the adopted night-time noise criteria outlined in relevant EPA noise criteria that are applicable to the development.

### 10.7.2 FUTURE DEVELOPMENTS

#### Substation and Grid Connection

As part of a separate application, a substation is proposed within the development boundary, together with an associated grid connection along public roads to Cruiserath substation.

In the following extract from the "EirGrid Evidence Based Environmental Studies Study 8: Noise – Literature review and evidence based field study on the noise effects of high voltage transmission development (May 2016) states the following in relation to noise impacts associated with 220kV transformer installations:

*"The survey on the 220kv substation at Gorman indicated that measured noise levels ( $L_{Aeq}$ ) were approximately 43dB(A) at 5m from the most affected boundary of the substation. This is marginally above the WHO night-time threshold limit for preventing disturbance to sleep (i.e. 42dB). Spectral analysis of the noise from the Gorman substation demonstrated that there are a number of distinct tonal elements to noise in the low to mid frequency range. To avoid any noise impacts from 220kV substations at sensitive receptors, it is recommended that a distance of 20m is maintained between the nearest site boundary and the nearest sensitive receptor."*

Considering the distance between the proposed substation and the nearest off site locations of some 150m noise from this installation is not predicted to be an issue off site.

#### Other Developments

The Fingal County Council planning file has been reviewed and a number of developments in the local area have been identified, as listed in the accompanying Planning Application Report. These specific developments have been reviewed for any likelihood of a significant cumulative noise impact.

In respect of noise, taking into account the additional distance from these developments to noise-sensitive locations assessed here, and that the low number of operations hours per year of the proposed Kilshane Energy Centre, it is not considered that a significant cumulative noise or vibration impact is likely.

## **10.8 INTERACTIONS**

Chapter 12, Material Assets, Traffic and Transport was reviewed in the preparation of this chapter.

## **10.9 REFERENCES**

- EPA Guidelines on Information to be contained in Environmental Impact Statements (2002).
  - Draft 'Guidelines for Noise Impact Assessment' produced by the Institute of Acoustics/Institute of Environmental Management and Assessment Working Party.
  - British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise.
  - Transport Infrastructure Ireland (TII) publication Good Practice Guidelines for the Treatment of Noise and Vibration in National Road Schemes.
  - British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
  - British Standard BS 5228-2: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Vibration.
  - BS 4142:2014: Methods for rating and assessing industrial and commercial sound.
  - Environmental Protection Agencies Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (January 2016).
  - ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels.
  - British Standard BS 6472 (1992): Guide to Evaluation of human exposure to vibration in buildings (1Hz to 80Hz).
  - ISO 9613 (1996): Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation.
  - Calculation of Road Traffic Noise (CRTN) issued by the Department of Transport in 1988.
  - BS EN 1793-1:1998: Road traffic noise reducing devices – Test method for determining the acoustic performance – Part 1: Intrinsic characteristics of sound absorption
  - BS EN 1793-2:1998: Road traffic noise reducing devices – Test method for determining the acoustic performance – Part 2: Intrinsic characteristics of airborne sound insulation.
  - BS EN 1794-1:2003: Road traffic noise reducing devices. Non-acoustic performance. Mechanical performance and stability requirements
- BS EN 1794-2:2003: Road traffic noise reducing devices. Non-acoustic performance. General safety and environmental requirements.

# 11 LANDSCAPE & VISUAL IMPACT

This landscape and visual impact assessment has been prepared to identify and assess the effects on the appearance and character on the local environs arising from the proposed development.

This chapter analyses the existing landscape character and significance, and provides an evaluation of the potential for landscape and visual impacts of the development. The assessment is made having regard to the vulnerability of the landscape to change and to the location of visual receptors relative to the proposed development.

Visual Impacts are a combination of effects on visibility and on the overall character of the area. The main landscape features and landscape character areas were identified through a combination of site visit and documentation surveys.

Landscape impacts were analysed based on:

- The capacity of the existing landscape to absorb the proposed development;
- Effects on landscape character and features (e.g., removal or alteration);
- Proximity of sensitive viewpoints (e.g., routes) and visual receptors (dwellings)
- The details of the development.

Visual impacts are evaluated taking account of:

- The potential level of visual intrusion (i.e., effect impinged upon a view);
- The potential for visual impact dependant on the proximity and elevation of structures to a sensitive viewpoint/visual receptor.

The County Development Plan and Draft County Development Plan was consulted to identify Landscape Character Areas and significant landscape features. Related provisions of the Plan – such as the proximity of Protected Structures to the site, were also considered.

## 11.1.1 ASSESSMENT METHODOLOGY

Photomontages are used to simulate the likely visual changes that would result from the proposed development and are produced by combining computer generated renders of the proposal with photographs of the existing site.

Photo-montage production.

Photographs are taken from locations as advised by client with a full frame SLR digital camera and prime lens. The photographs are taken horizontally with a survey level attached to the camera. The photographic positions are marked (for later surveying), the height of the camera and the focal length of the image recorded.

In each photograph, a minimum of 3no. visible fixed points are marked for surveying. These are control points for model alignment within the photograph. All surveying is carried out by a qualified topographical surveyor using Total Station / GPS devices.

The photographic positions and the control points are geographically surveyed and this survey is tied in to the site topographical survey supplied by the Architect / client.

The buildings are accurately modelled in 3D CAD software from CAD drawings supplied by the Architect. Material finishes are applied to the 3D model and scene element, such as trees and planting are added to represent the proposed landscaping.

Where visible, new planting is represented at three stages of growth – Year 1, 3 and 5. Appendix 11 contains illustrations of visibility at these years.

Virtual 3D cameras are positioned according to the survey co-ordinates and the focal length is set to match the photograph. Pitch and rotation are adjusted using the survey control points to align the virtual camera to the photograph. Lighting is set to match the time of day the photograph is taken. The proposed development is output from the 3D software using this camera and the image is then blended with the original photograph to give an accurate image of what the proposed development will look like in its proposed setting.

In the event of the development not being visible, the roof line of the development is outlined in red.

### 11.1.2 WORST CASE ASSESSMENT

In accordance with EJAR methodology, best practice is to include the identification and description 'worst case' impacts along with representative views of how the development would affect the general area.

In the case of Landscape and Visual Impact Assessment this involves the following viewing points from where the development could possibly be seen:

- Views from gates and entrances offering the most unscreened views of the development site
- Views at locations where roadside hedges have gaps or gates offering unscreened views of the development site
- Views from Protected Structures and their context/setting
- Consideration of likely views in winter foliage of areas where trees offer screening.

Views were selected on the basis of the scoping described above, site visits as well as the consideration of 'worst case' described above.

View locations have been selected in an attempt to satisfy the following criteria:

- To obtain views from locations where the development would typically be visible from the public realm
- To illustrate 'worst case' views
- Concentrations of potential viewers
- Locations of amenity significance
- Locations of heritage significance

On the basis of these considerations, views were examined and modelled from 7 locations. The locations are shown on the following page while the following table provides a description of each location together with the reason for the selection of each.

A detailed description and photograph is given in Section 11.3.5 of the significance and sensitivity of each of the existing views ('baseline') and a description and photomontage of the effect on each view is given in Section 11.4

### 11.1.3 SCOPING



Figure 11.1 View location map

Table 11.1 View location & reason for selection

| View | Location   | Reason for Selection   | Landscape Significance                                     |
|------|--|--|--|
| 1    | North of site, on L3120 Kilshane Rd. beside site boundary          | Opposite entrance to a dwelling<br>Nearest northern view                             | Local residential significance<br>Low general significance |
| 2    | North of site on L3120 Kilshane Rd. beside site boundary           | Opposite entrance to a dwelling<br>Nearest northern view                             | Local residential significance<br>Low general significance |
| 3    | 78m north-east of site, on L3120 Kilshane Rd. beside site boundary | On elevated bridge with expansive views across site and distant countryside          | Medium general significance on account of elevated vista   |
| 4    | On R135 586m south-east of site – beside Ravenswood Estate         | Expansive and unscreened views across open countryside<br>Nearest south-eastern view | Local residential significance<br>Low general significance |
| 5    | 45m west of site on L3120 Kilshane Rd. beside site boundary        | Direct view toward site  | Low general significance                                   |
| 6    | 260m south-west of site on L3120 Kilshane Rd.                      | Nearest south-western public road  | Low general significance                                   |
| 7    | 613m west of site on Bay Lane                                      | Potential view from road oriented towards site.                                      | Low general significance                                   |

## 11.2 THE PROPOSED DEVELOPMENT

A description of the project is included in Chapter 4 - *Project Description* of the EIAR. The construction proposal is described in the accompanying Preliminary Construction and Environmental Management Plan (CEMP).

## 11.3 THE RECEIVING ENVIRONMENT

This section provides a description of the existing appearance and character of the area which establishes a reference - or 'baseline' against which to assess the likely effects of the project.

The northern urban fringe of Dublin City provides the overall receiving landscape environment for this project. These areas, occurring along the major roads that radiate outward into the commuter towns, and controlled by successive County Development Plans, are now beginning to radiate less by growing in parallel to the orbital M50 motorway.

Dublin has a relatively compact form with relatively high levels of land-use homogeneity that creates landscape zones of internally consistent character and appearance.

The immediate environs of the proposed development is one such area where medium-to-large-scale commercial, retail and light industrial developments occur adjacent to rural areas that consist of medium-large pasture fields. These rural areas are relatively level in the immediate vicinity resulting in a pattern of relatively regularly shaped fields – that are usually enclosed by mature field boundaries that contain many mature trees. Roads in the area contain related concentrations of individual dwellings – with larger plots on older major roads and smaller plots on side roads. Throughout most of this area the older rural roads are lined with tall hedgerows that typically restrict visibility of the surrounding countryside. Modern roads and motorways in the area generally have landscaped edges that consist of shrub and tree planting that screen views of the surrounding area.

### 11.3.1 THESE DEVELOPMENTS TOGETHER WITH A GENERAL RESTRICTING OF AGRICULTURE MEANS THAT THIS IS A DYNAMIC LANDSCAPE THAT IS CONTINUING TO EXPERIENCE DEVELOPMENT. CONTEXT

The project will take place within the Kilshane adjacent to Northwest Business Park. The site is currently a greenfield site and is surrounded by the N2 to the east and industrial units to the west. Figure 11.2 below shows the site in the context of the local landscape.

The area also contains urban fringe land uses, that in the immediate environs include:

- Dublin Airport
- Industrial and commercial large-medium-scaled buildings of an industrial/commercial character
- Northwest Business Park to the west
- The N2 National Road – to the east

Beyond the immediate environs lie pasture lands to the west and continuous urban fabric to the east.





**Figure 11.2 Local landscape context**

### 11.3.2 CHARACTER

The established character of the area arises from the mixture of land-uses and structures. The landscape character is of a type that is abundant in County Dublin and other cities in Ireland. The landscape character of the area is also robust – on account of the quantum of recent development.

The County Development Plan<sup>24</sup> identifies that the proposed Kilshane energy site is located in an area classified as “*High Lying Agriculture*”.

The local character comprises ‘*urban and urban fringe*’ because it is now largely surrounded by industrial, infrastructural and commercial development. This is reflected in the zoning of these lands as **HI - Heavy Industry - Provide for heavy industry**

### 11.3.3 SENSITIVITY

Landscape Sensitivity can be defined as the extent to which a landscape can accommodate change without unacceptable loss of existing character or interference with values.

#### General Sensitivities

The location has a low sensitivity to significant change of character arising from new development based on the Figure 11.5 above from the County Development Plan. The context and setting are not within or adjacent to any key scenic views or prospects as listed in Section 5 of the County Development Plan.

#### Landscape classification areas in County Dublin

The County Development Plan identifies that the proposed Kilshane energy site is located in an area classified as “Medium Sensitivity” in the County Development Plan 2017 - 2023. This is defined as

area of *"existing development and infrastructure. New development reinforces existing desirable land use patterns*

### **Local Sensitivities**

The environs have relatively low sensitivity to change for two reasons.

1. The established pattern of urban fringe development is well-established and pervasive. New developments of the same type and scale in this context have a very low potential to become conspicuous or the significantly alter the established appearance and character of the area.
2. The relatively flat topography and the heights of the ubiquitous 20 – 25m height of trees in field boundaries mean that visual impacts are generally confined unless new structures significantly exceed the height of a 5 – 7 story building.

### **11.3.4 SIGNIFICANCE**

The urban fringe occurs within the Lowland Farming Landscape of Dublin. These are the relatively flat areas of well drained, good quality soils.

These landscapes are of general significance because throughout history, they support most of the more intense agriculture of the county. As a result, these landscapes have significantly higher concentration of historic and archaeological remains – including large 18<sup>th</sup> C demesne landscapes. Today these working landscapes are more densely occupied than all other parts of the county – except coastal and urbanizing areas with associated concentrations of hedges, smaller settlements and associated roads and utilities.

While the local landscapes are of considerable significance as contexts for local communities and individual sites and structures, they do not have an overall significance arising out of scarcity or sensitivity.

### **11.3.5 EXISTING VIEWS**

The following pages provide a description of the existing views from 7 selected locations.

It should be noted that the numbering of the views which follow correspond to the numbering used in Appendix 11 which provides full page reproductions of each image shown in this chapter of the EIA.



Figure 11.3 Existing view 1



| Location        | Date     | Field of view | 35mm equivalent | Distance to site | Camera model  |
|-----------------|----------|---------------|-----------------|------------------|---------------|
| View 2 Existing | 08/11/21 | 74°           | 26mm            | 32m              | Canon EOS 5DS |



| View                          | Location   | Reason for Selection                                     |
|-------------------------------|--|--|
| VP2                           | North of site on L3120<br>Kilshane Rd. beside site<br>boundary | Opposite entrance to a dwelling<br>Nearest northern view |
| <b>Landscape Significance</b> | Local residential significance Low general significance        |  |

Figure 11.4 Existing view 2



Figure 11.5 Existing view 3



| Location        | Date     | Field of view | 35mm equivalent | Distance to site | Camera model  |
|-----------------|----------|---------------|-----------------|------------------|---------------|
| View 4 Existing | 05/11/21 | 79°           | 24mm            | 36m              | Canon EOS SD1 |



| View                          | Location   | Reason for Selection   |
|-------------------------------|--|--|
| <b>VP4</b>                    | On R135 586m south-east of site – beside Ravenswood Estate | Expansive and unscreened views across open countryside<br>Nearest south-eastern view |
| <b>Landscape Significance</b> | Local residential significance Low general significance    |  |

Figure 11.6 Existing view 4



| Location        | Date     | Field of view | Screen equipment? | Distance to site | Camera model  |
|-----------------|----------|---------------|-------------------|------------------|---------------|
| View 5 Existing | 10/09/22 | 74°           | 2mm               | 44.7m            | Canon EOS 5D5 |



| View                          | Location  | Reason for Selection    |
|-------------------------------|---|-------------------------|
| <b>VP5</b>                    | 45m west of site on L3120 Kilshane Rd. beside site boundary | Direct view toward site |
| <b>Landscape Significance</b> | Low general significance                                    |                         |

Figure 11.7 Existing view 5



| Location        | Date     | Field of view | 35mm equivalent | Distance to site | Camera model  |
|-----------------|----------|---------------|-----------------|------------------|---------------|
| View 6 Existing | 15/06/22 | NP            | 24mm            | 260m             | Canon EOS 30S |



| View                          | Location                                      | Reason for Selection              |
|-------------------------------|---|-----------------------------------|
| VP6                           | 260m south-west of site on L3120 Kilshane Rd. | Nearest south-western public road |
| <b>Landscape Significance</b> | Low general significance                      |                                   |

Figure 11.8 Existing View 6





Figure 11.9 Existing View 7

## 11.4 PREDICTED IMPACTS

There is no single definitive visual impact of a project. Instead, there are a series of effects - each different in appearance and degree - that occur throughout the area from which the project is visible. This section describes the visual impact from a number of locations some of which are immediately adjacent (e.g., View 1) and some of which are at greater distance.

Impacts on the character of an area combine the potential visual effects with those of additional sound, smells, traffic as well as knowledge of effects on local ecology and cultural heritage. These matters have been described in detail in other sections and find that there are no significant such effects that would be discernible beyond the site perimeter. For this reason, further evaluation of effects on the landscape are confined to visual impacts.

This section provides a commentary to accompany the 'before and after' photographic images. In each instance, a commentary is provided on how the 'Proposed' image illustrates the visual impact of the proposed development from the selected location. Each section concludes with a description of the visual impact from that location. (Note that larger versions of each photographic image are contained in Appendix 11)

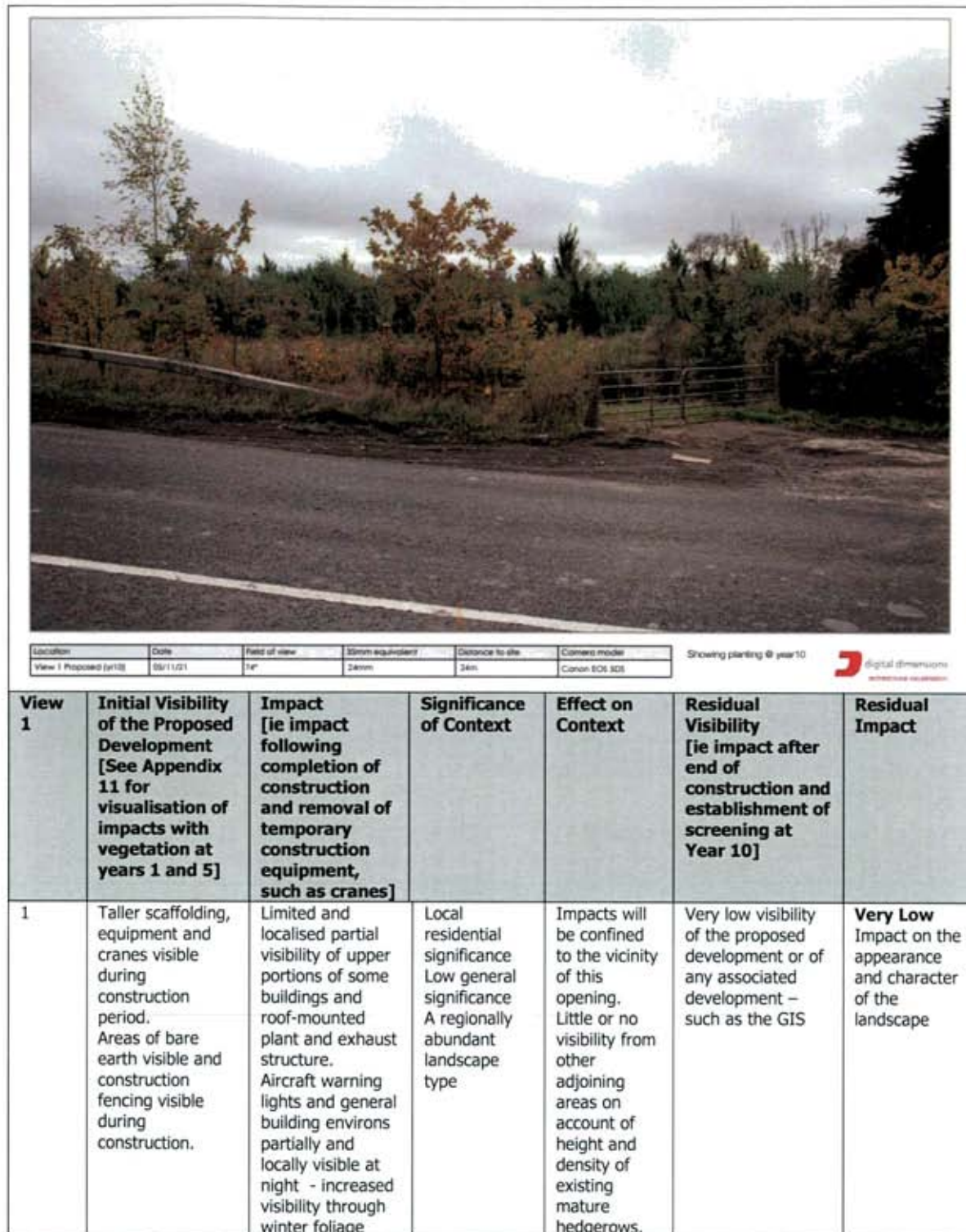
Note that the images included in this section are smaller views than are recommended – the A4 sized views when viewed at arm's length, better illustrate how the project will appear in reality.

Note also that the impacts are the permanent effects on the appearance and character of the area, following completion of construction and establishment of perimeter landscaping.

The visual impacts of the construction period – exposed structures, unfinished surface, perimeter fencing construction vehicles and cranes are of such limited duration, at such a distance from the public realm and so significantly screened that they are deemed to be imperceptible and so, while described, do are not considered further when describing the impact on the landscape.

All of the predicted impacts show how the development will appear in year 10 following the establishment of screen planting. Appendix 11 illustrates the predicted appearance at years 1 and 5 – so that initial impacts can be assessed.

### 11.4.1 VIEW 1



**Figure 11.10 Proposed view 1 Predicted Visibility [Development screened by existing structures, mounding and vegetation]**

### 11.4.2 VIEW 2

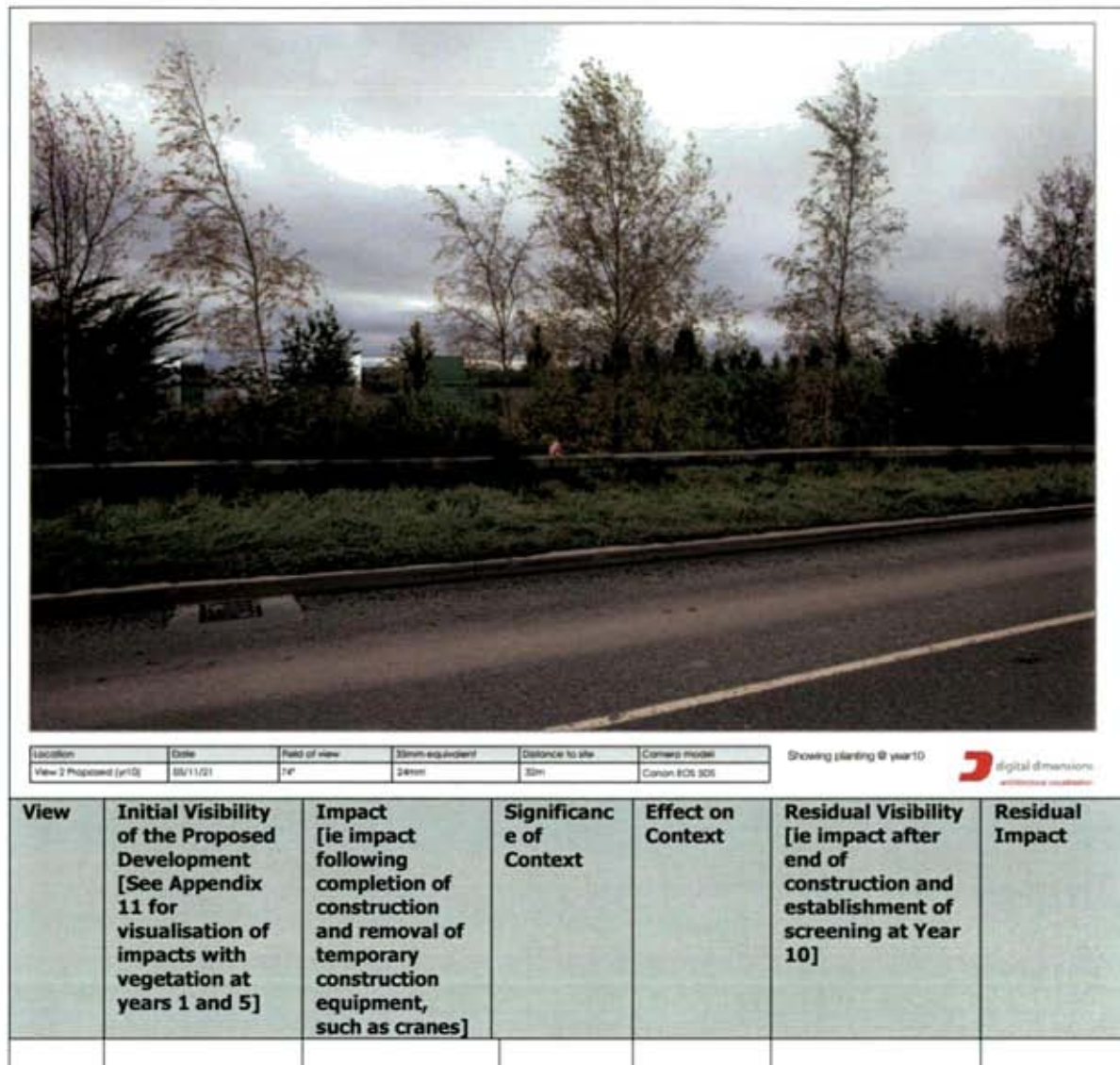


Figure 11.11 Proposed view 2

### 11.4.3 VIEW 3

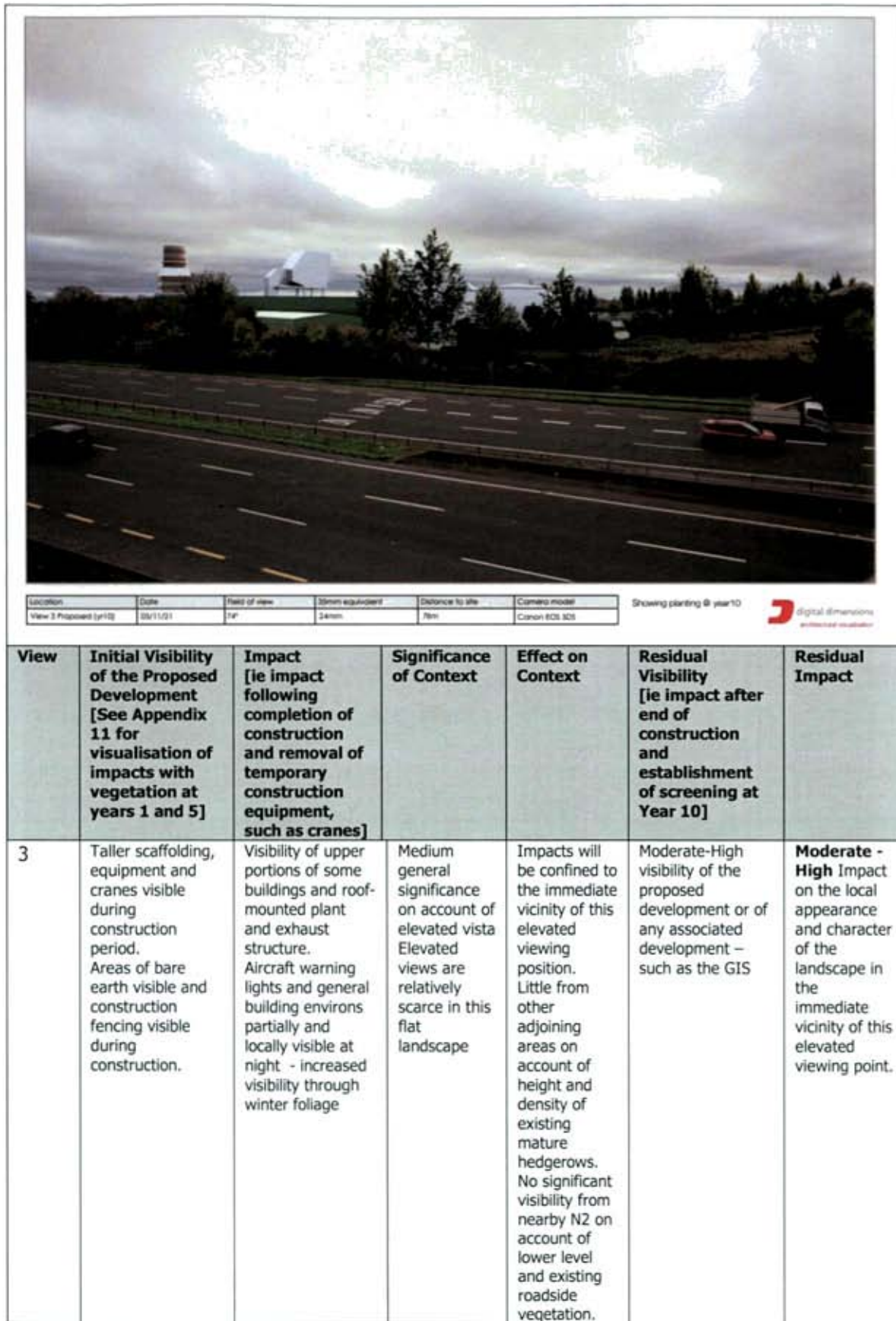


Figure 11.12 Proposed view 3

11.4.4 VIEW 4

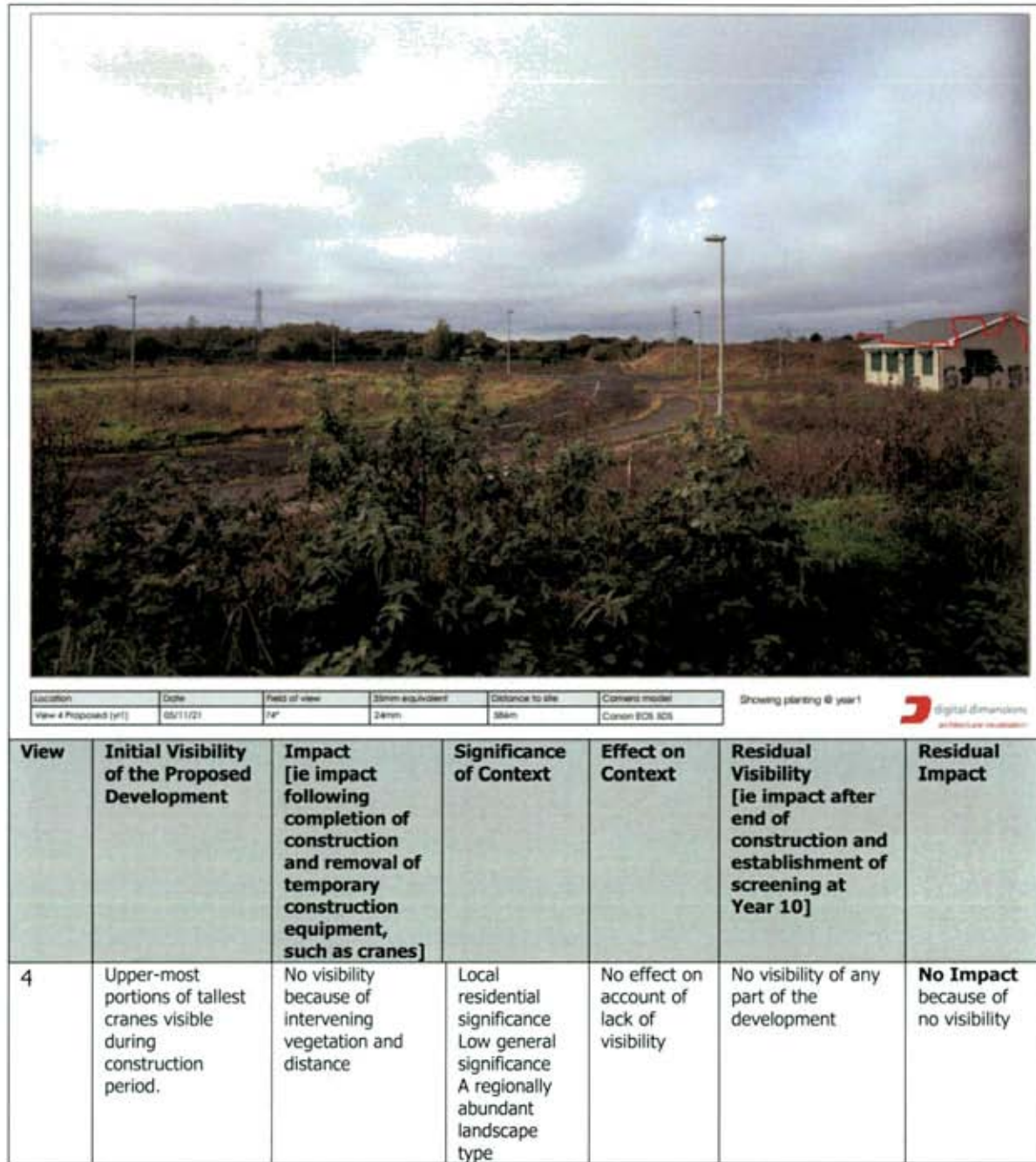


Figure 11.13 Proposed view 4

### 11.4.5 VIEW 5

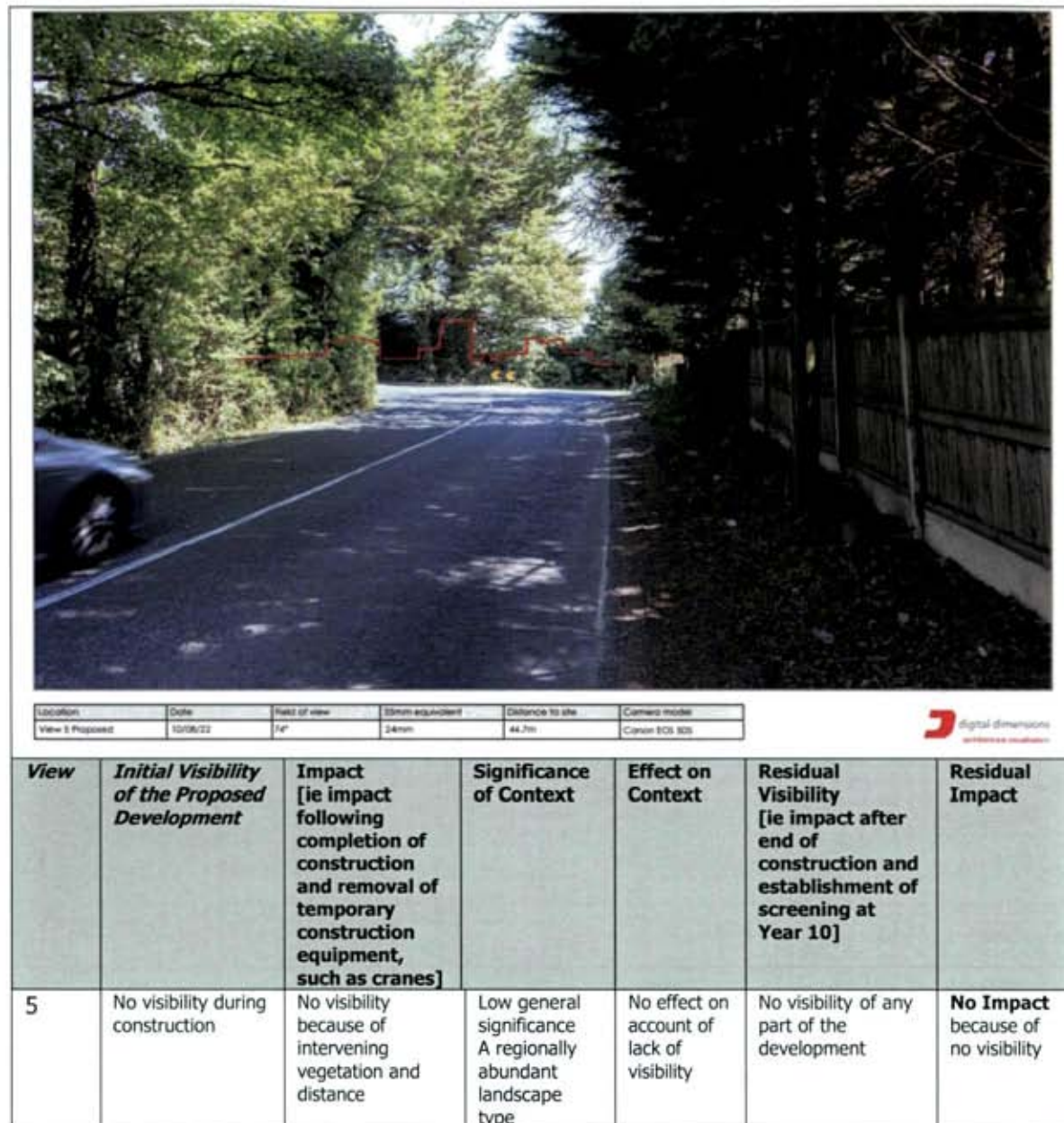


Figure 11.14 Proposed view 5

11.4.6 VIEW 6



| Location        | Date     | Field of view | Stim equipment | Distance to site | Camera model  |
|-----------------|----------|---------------|----------------|------------------|---------------|
| View 6 Proposed | 10/08/22 | 74°           | 24mm           | 240m             | Canon EOS 80D |



| View | Initial Visibility of the Proposed Development | Impact [ie impact following completion of construction and removal of temporary construction equipment, such as cranes] | Significance of Context  | Effect on Context                          | Residual Visibility [ie impact after end of construction and establishment of screening at Year 10] | Residual Impact                           |
|------|--|---|--|--|---|---|
| 6    | No visibility during construction              | No visibility because of intervening vegetation and distance  | Low general significance<br>A regionally abundant landscape type | No effect on account of lack of visibility | No visibility of any part of the development  | <b>No Impact</b> because of no visibility |

Figure 11.15 Proposed view 6



### 11.4.7 VIEW 7

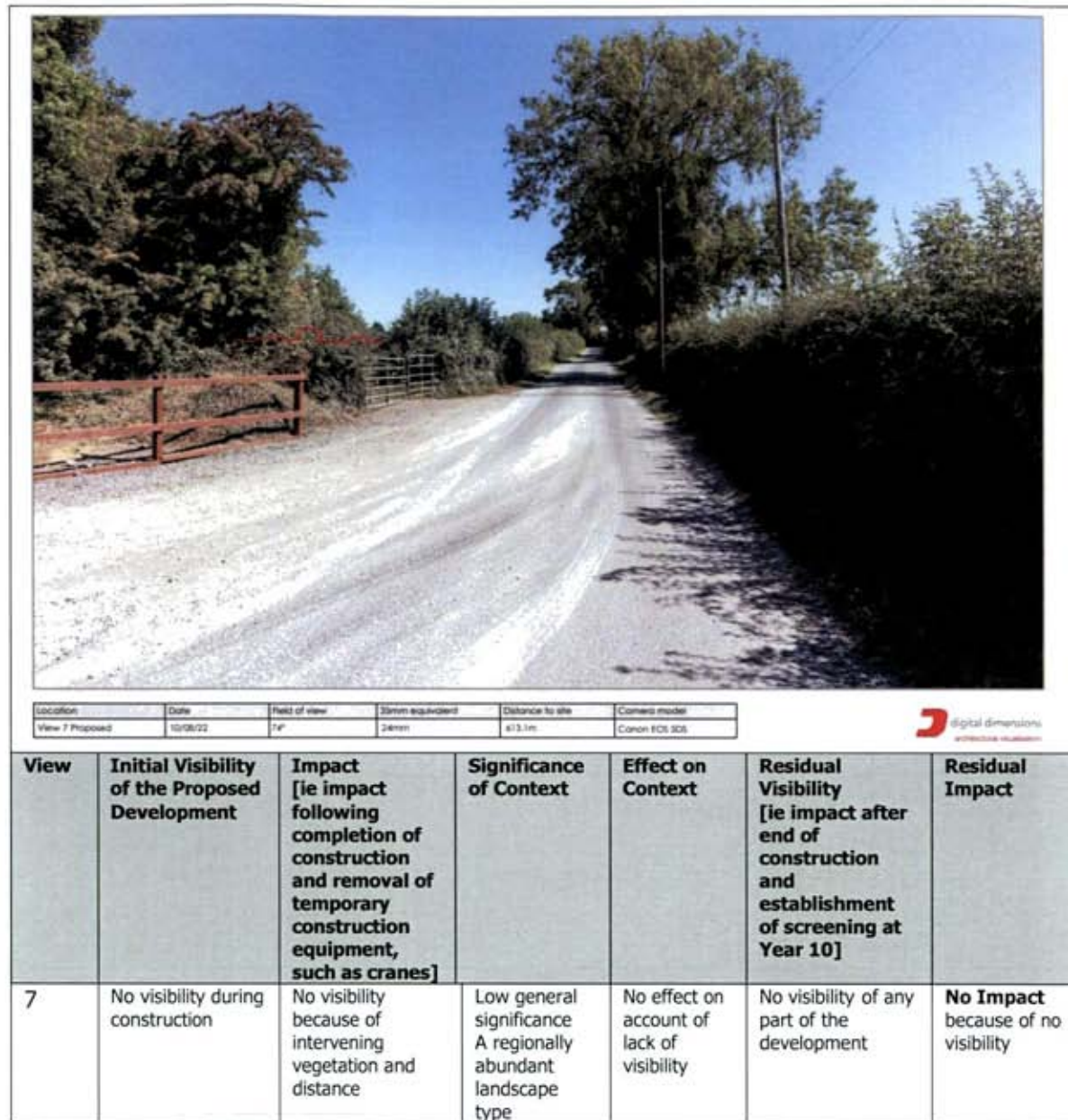
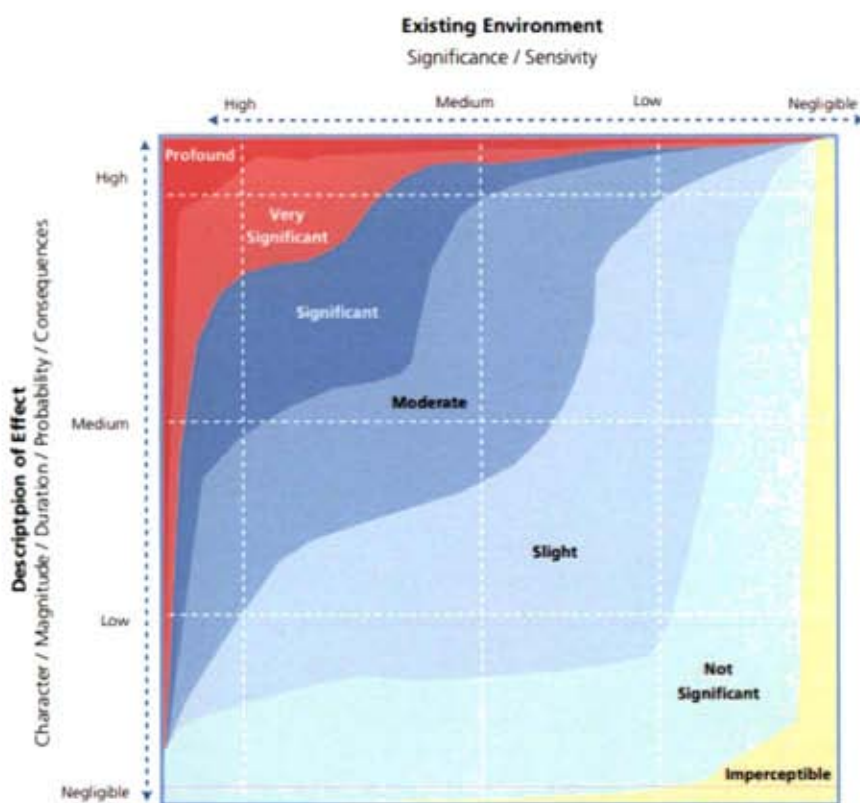


Figure 11.16 Proposed view 7

Table 11.2 Summary of visibility and context of effect for viewing points

| View | Initial Visibility of the Proposed Development   | Impact [ie impact following completion of construction and removal of temporary construction equipment, such as cranes]   | Significance of Context   | Effect on Context   | Residual Visibility [ie impact after end of construction and establishment of screening at Year 10]            | Residual Impact  |
|------|--|---|---|---|--|--|
| 1    | Taller scaffolding, equipment and cranes visible during construction period. Areas of bare earth visible and construction fencing visible during construction. | Limited and localised partial visibility of upper portions of some buildings and roof-mounted plant and exhaust structure. Aircraft warning lights and general building environs partially and locally visible at night - increased visibility through winter foliage | Local residential significance<br>Low general significance<br>A regionally abundant landscape type                      | Impacts will be confined to the vicinity of this opening. Little or no visibility from other adjoining areas on account of height and density of existing mature hedgerows.   | Very low visibility of the proposed development or of any associated development – such as the GIS             | <b>Not Significant</b><br>because of very low impact on the appearance and character of the landscape  |
| 2    | Taller scaffolding, equipment and cranes visible during construction period. Areas of bare earth visible and construction fencing visible during construction. | Limited and localised partial visibility of upper portions of some buildings and roof-mounted plant and exhaust structure. Aircraft warning lights and general building environs partially and locally visible at night - increased visibility through winter foliage | Local residential significance<br>Low general significance<br>A regionally abundant landscape type                      | Impacts will be confined to the vicinity of this opening. Little or no visibility from other adjoining areas on account of height and density of existing mature hedgerows.   | Very low visibility of the proposed development or of any associated development – such as the GIS             | <b>Not Significant</b><br>because of very low impact on the appearance and character of the landscape  |
| 3    | Taller scaffolding, equipment and cranes visible during construction period. Areas of bare earth visible and construction fencing visible during construction. | Visibility of upper portions of some buildings and roof-mounted plant and exhaust structure. Aircraft warning lights and general building environs partially and locally visible at night - increased visibility through winter foliage                               | Medium general significance on account of elevated vista<br>Elevated views are relatively scarce in this flat landscape | Impacts will be confined to the immediate vicinity of this elevated viewing position. Little from other adjoining areas on account of height and density of existing mature hedgerows. No significant visibility from nearby N2 on account of lower level and existing roadside vegetation. | Moderate-Significant visibility of the proposed development or of any associated development – such as the GIS | <b>Moderate - Significant</b><br>Impact on the local appearance and character of the landscape in the immediate vicinity of this elevated viewing point. |
| 4    | Upper-most portions of tallest cranes visible during construction period.  | No visibility because of intervening vegetation and distance  | Local residential significance<br>Low general significance<br>A regionally abundant landscape type                      | No effect on account of lack of visibility  | No visibility of any part of the development   | <b>Imperceptible</b><br>No Impact because of no visibility   |

|   |                                   |  |  |  |  |  |
|---|-----------------------------------|--|--|--|--|--|
| 5 | No visibility during construction | No visibility because of intervening vegetation and distance | Low general significance<br>A regionally abundant landscape type | No effect on account of lack of visibility | No visibility of any part of the development | <b>Imperceptible</b><br>No Impact because of no visibility |
| 6 | No visibility during construction | No visibility because of intervening vegetation and distance | Low general significance<br>A regionally abundant landscape type | No effect on account of lack of visibility | No visibility of any part of the development | <b>Imperceptible</b><br>No Impact because of no visibility |
| 7 | No visibility during construction | No visibility because of intervening vegetation and distance | Low general significance<br>A regionally abundant landscape type | No effect on account of lack of visibility | No visibility of any part of the development | <b>Imperceptible</b><br>No Impact because of no visibility |



There are seven generalised degrees of effect significance that are commonly used in EIA. Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound. Generalised definitions of each of these are provided in Table 3.4. When more specific definitions exist within a specialised factor or topic, e.g. biodiversity, these should be used in preference to these generalised definitions. (ref. Advice Notes<sup>48</sup>.)

Figure 11.17 Calibration of impact significance against EPA guidelines<sup>25</sup>

## 11.5 MITIGATION MEASURES

The layout avoids locations near the more sensitive northern and western parts of the site. It also retains much of the existing perimeter vegetation that provides good visual screening. The proposed development includes extensive re-use of excavated material to form screening berms while a

<sup>25</sup> Figure 3.5 EPA Environmental Impact Assessment Reports Guidelines

comprehensive site planting plan will augment the screening that is already provided by the existing perimeter vegetation that has been retained.

## **11.6 RESIDUAL IMPACTS**

The analysis provided in Table 11.2 above demonstrates that the majority of the landscape and visual impacts arising will consist of imperceptible or not significant residual impacts – with the exception of one localised moderate - significant impact on the local appearance and character of the landscape in the immediate vicinity of this elevated viewing point at View 3 where there will be localised visibility of the proposed development from an bridge across the N2.

## **11.7 CUMULATIVE IMPACT**

The cumulative impact of the proposed development with any/all relevant other planned or permitted developments including the proposed GIS (as outlined in Chapter 17 - *Interactions & Cumulative Effects*) are discussed below.

The proposed development, in combination with all other developments in the area that consist primarily of a concentration existing and emerging commercial, industrial and infrastructural development represents a continuation and consolidation of the established land-use patterns of the area as envisioned by the zoning of the Fingal County Development Plan.

# 12 MATERIAL ASSETS

## 12.1 INTRODUCTION

The prescribed environmental factor of Material Assets is described in the 2022 EPA Guidelines as including built services and infrastructure.

The related topics of water (supply and waste water) and roads and traffic are separately addressed in other chapters of this EIA, principally:

- Chapter 8 *Water & Hydrology*
- Chapter 13 *Traffic & Transportation*
- Chapter 14 *Waste Management*

This chapter covers the proposals for built services (except traffic) - comprising, energy demand and supply (electrical and gas) and water services. Material assets in the receiving environment are described in each of the relevant sections below.

## 12.2 ENERGY DEMAND

During the operational phase there will be energy resource requirements for operation of the proposed development, in the form of natural gas and electricity

During construction, resources consumed will mainly include use of fuels for construction related machinery, electricity to light the site and power tools.

### 12.2.1 ELECTRICAL SUPPLY

The proposed development will connect to a 220kV transmission system. The high voltage transmission line will supply back feed (import) power for facility loads when the combustion turbine is offline, and will serve as the transmission line for the combustion turbine when it is generating and exporting power to the grid.

Maximum import and export capacity are defined in the EirGrid Transmission Connection Agreement. Export power will meet EirGrid Grid Code requirements for voltage, frequency, and power factor.

When operational the plant will supply 293 MW of electricity to the National Grid.

### 12.2.2 GAS CONNECTION

Gas will be provided from the proposed gas yard to be owned and operated by Gas Networks Ireland. This has been sized to accommodate the demand from this proposal which is predicted to be a maximum hourly quantity of c. 850 MWt.

Gas Networks Ireland (GNI) have confirmed that supply of the proposed demand is feasible within the existing network.

## 12.3 WATER

### 12.3.1 FOUL WATER

There is no existing foul water connection on the site for the proposed development. It is proposed that an 80mm diameter rising main will be constructed from the on-site pumping station for a distance of 1,823m to the existing gravity foul network on Mitchelstown Road. A pre-connection enquiry has submitted to Irish Water with a reference number of CDS22004080, Irish Water are currently assessing this submission.

### 12.3.2 WATER SUPPLY

Calculation in the Engineering Planning Report indicate that the water demand of the proposed development will be 2,200l/day. It is proposed to connect to the 110mm Ø MOPVC watermain located to the southwest of the site on Kilshane Road to the 50.8 uPVC watermain adjacent to the site via a new 150mm Ø watermain.

A pre-connection enquiry has been submitted to Irish Water and has received a reference number of CDS22004080.

The levels of the changes in demand for these services relative to available network capacities are further discussed in Chapter 8 *Water & Hydrology*.

The detailed design for these water services is described in the separately submitted engineering reports.

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# 13 TRAFFIC & TRANSPORTATION

## 13.1 INTRODUCTION/METHODOLOGY

This chapter of the EIA assesses the likely traffic and transportation impacts on the receiving environment during the construction and operational phases of the Proposed Development. The existing and proposed transport infrastructure in the area is described, and an assessment of the current and the future traffic environment is made. The impact of the development in terms of public transportation, pedestrian and cycle is also assessed.

The chapter describes: the methodology; the receiving environment at the application site and surroundings; the characteristics of the proposal in terms of physical infrastructure; the potential impacts that proposals of this kind are likely to produce; the predicted impact of the proposal examining the effects of the Proposed Development on the local road network; the remedial or reductive measures required to prevent, reduce, or offset any significant adverse effects; and the monitoring.

The following methodology has been adopted for this assessment:

- Review of relevant available information including, current Fingal County Development Plan 2017-2023, existing traffic information and other relevant studies;
- Site visit to gain an understanding of the site access and observe the existing traffic situation.
- Consultations with Fingal County Council Roads Department to agree the site access arrangements and determine the scope of the traffic analysis required to accompany a planning application.
- Detailed estimation of the transport demand that will be generated by the Proposed Development. The morning and evening peak times will be addressed as well as an estimation of under-construction and potential future developments in the surrounding area.
- Assessment of the impact of traffic on local junctions, car parking requirements and accessibility of the site by sustainable modes including walking, cycling and public transport.

## 13.2 THE RECEIVING ENVIRONMENT

This section reviews the baseline conditions, providing backing information for the site in order to determine the significance of any traffic implications. It also considers the existing accessibility of the site by sustainable modes of transport.

### 13.2.1 SITE LOCATION

The site is located at Kilshane, Dublin 11, just west of the N2 Primary Road as shown in Figure 13.1 and is located approximately 2 km northwest of the M50.

The site is comprised of 5 agricultural fields (tillage), a farmhouse and associated structures. It totals c. 29 ha in area.

It is bound partially to the north and west by the Kilshane Road, it is further bound to the west by PD Flaherty logistics and agricultural lands, which also form the south-west part of the boundary. The remainder of the southern boundary is with the Roadstone quarry, Huntstown. The eastern and north-eastern boundary are again with agricultural land.



Figure 13.1 Site Location (Source Google Maps)

### 13.2.2 LOCAL ROAD NETWORK

There are three site access points to the subject site lands. The primary access point is current from Kilshane Road. - refer to Figure 13.2 below (facing east). The Kilshane Road at this location is a 2-lane carriageway with a posted speed limit of 80 km/hr. There are no dedicated cycle facilities at this location. The pedestrian footpath, on the northern side of the road, ends slightly out of image on the foreground, but extends east over the N2 flyover for approx. 385m. Refer to Figure 13.3, which outlines its extents.



Figure 13.2 : Kilshane Road Site Access Point (East View)



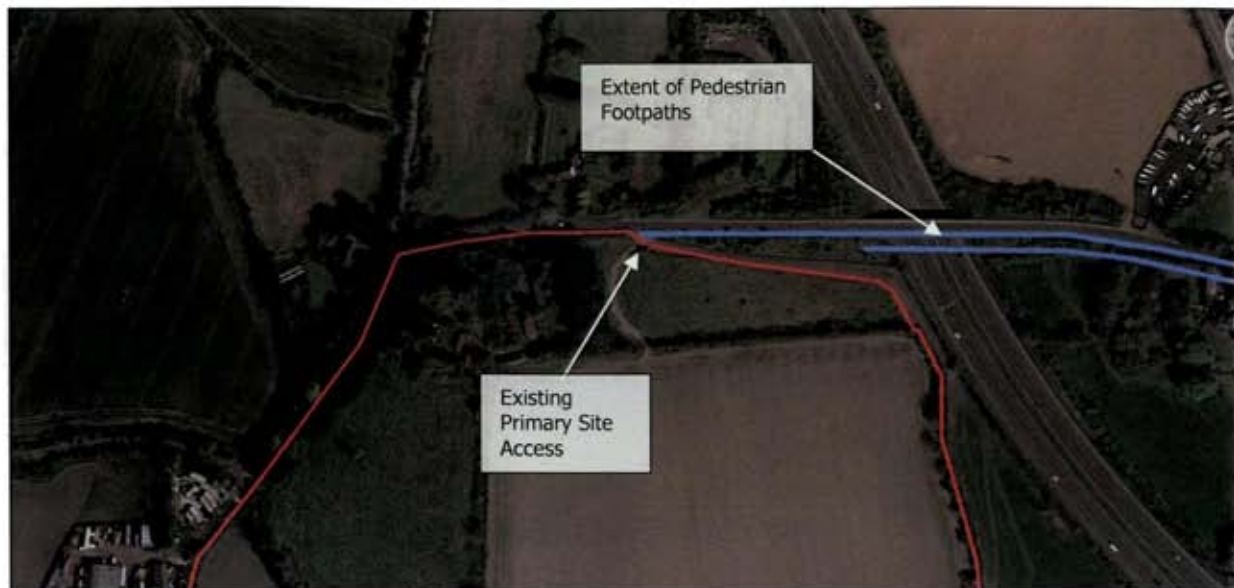
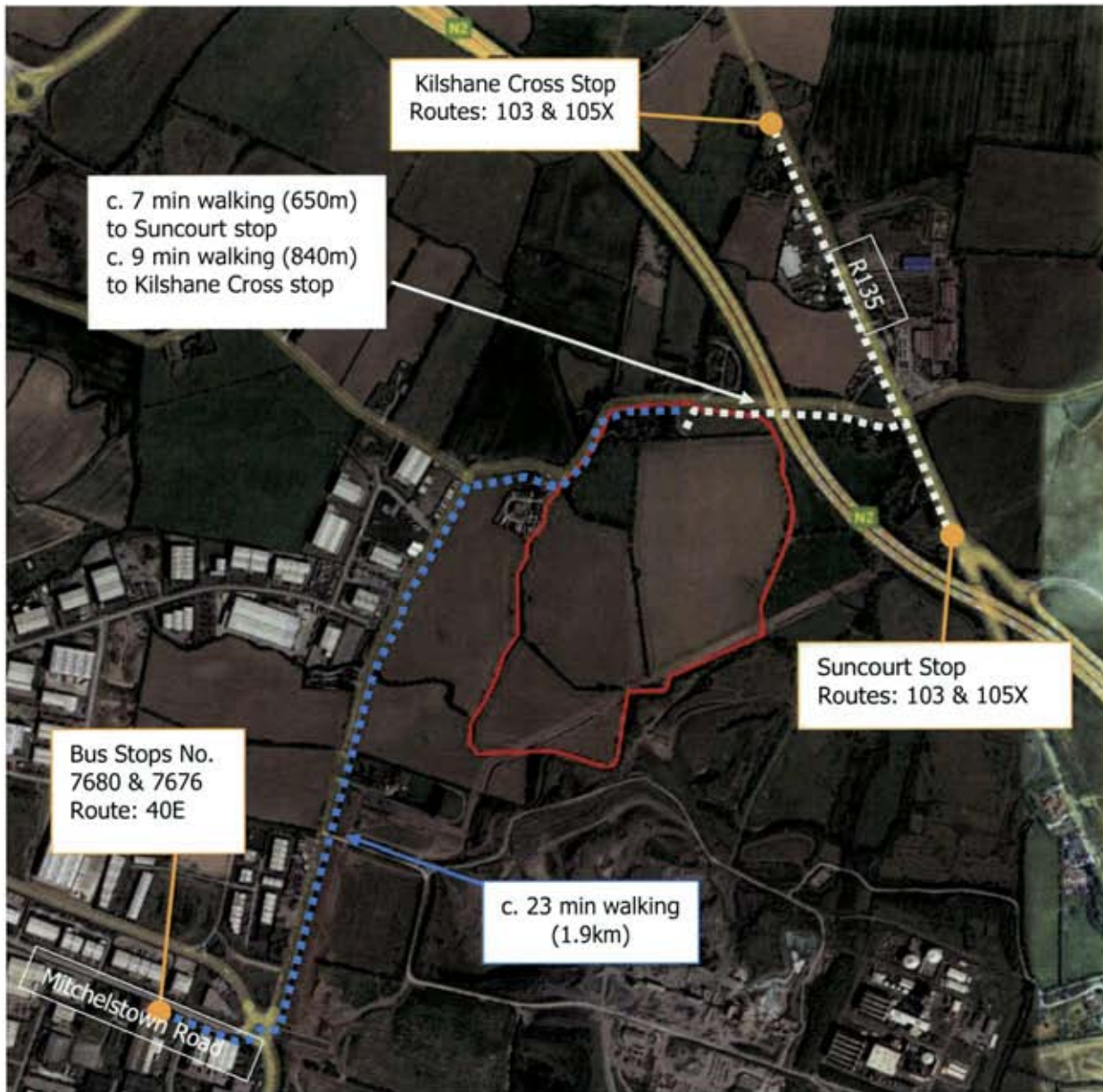


Figure 13.3: Existing Site Access

### 13.2.3 PUBLIC TRANSPORT FACILITIES

There are currently no public transport facilities to avail of on the Kilshane Road. The nearest public bus stops are located on the R135 and on the Mitchelstown Road at Northwest Business Park, to the east and southwest of the site, respectively. Details on current bus services and walking routes to/from the site are provided below.

- **Suncourt (Stop 101121)** on the R135. This is 650m (approx. 7 min walk) away from the existing site entrance. This stop is served by bus routes 103 & 105X in a southbound direction only – refer to Figure 13.4
- **Kilshane Cross (Stop 134321)** on the R135. This is 840m (approx. 9 min walk) away from the existing site entrance. This stop is served by bus routes 103 & 105X in a northbound direction only – refer to Figure 13.4
- **Northwest bus (Stops 7680 & 7676)** on the Mitchelstown Road at Northwest Business Park, serve route 40E (refer to Figure 13.4) in both directions and are 1.9km (approx. 23 min walk) away from the existing site entrance.



**Figure 13.4 : Kilshane Road**

A summary of the Monday to Friday operational services of the abovementioned routes is provided in Table 13.1.

**Table 13.1 Bus services**

| Route No. | Direction                              | Weekday Frequencies           |                               |
|-----------|--|-------------------------------|-------------------------------|
|           |  | AM (07:00 to 09:00)           | PM (17:00 to 19:00)           |
| 103       | Dublin City Centre to Ratoath          | Every 20 minutes (5 services) | Every 20 minutes (6 services) |
|           | Ratoath to Dublin City Centre          | Every 20 minutes (6 services) | Every 20 minutes (6 services) |
| 105X      | Dublin City Centre to Fairyhouse Cross | -                             | Every 30 minutes (3 services) |
|           | Fairyhouse Cross to Dublin City Centre | Every 30 minutes (3 services) | -                             |
| 40E       | Tyrrelstown to Broombridge Luas        | Every 30 minutes              | Every 30 minutes              |

|                                 |                                  |                                  |
|---------------------------------|----------------------------------|----------------------------------|
|                                 | (4 services)                     | (4 services)                     |
| Broombridge Luas to Tyrrelstown | Every 30 minutes<br>(4 services) | Every 30 minutes<br>(4 services) |

It should be noted that a continuous pedestrian footpath to all the closest bus stops from the subject site is currently not available and therefore would not be a very attractive mode of transportation for those traveling to/from the proposed development due to distance and safety concerns for pedestrians on sections of these roads.

## 13.3 OVERVIEW OF THE DEVELOPMENT PROPOSALS

The development proposals comprise of the following three projects each under separate planning applications:

### 13.3.1 KILSHANE POWER STATION AND ROAD REALIGNMENT

The subject site is located at lands at Kilshane Road, Kilshane, Finglas, Dublin 11. The proposed development consists of the following:

1. The construction of a Gas Turbine Power Generation Station with an output of up to 293 Megawatts. The proposed station will consist of 1 No. Gas Turbine, 1 No. 28m high exhaust stack partially enclosed by a 12m high acoustic wall, 1 No. single-storey admin building and warehouse (c. 926m<sup>2</sup>), 1 No. single story Packaged Electronic/Electrical Control Compartment (PEECC) (c. 72m<sup>2</sup>), 1 No. single-storey Continuous Emission Monitoring System (CEMS) shelter (c. 14.8m<sup>2</sup>), 1 No. 16.2m high 24.4mØ Fuel Oil Tank, 1 No. 15.30m high 9.2mØ Raw/Fire Water Tank, 1 No. 16.2m high 18.3mØ Demin Water Tank, and miscellaneous plant equipment.
2. The demolition detached residential dwelling (c. 142 m<sup>2</sup> GFA) and associated farm buildings (c. 427 m<sup>2</sup> GFA) located in the northwest corner of the subject site to facilitate the proposed development.
3. Road improvement works to 493.34 m Kilshane Road (L3120), including the realignment of a portion of the road (293.86 m) within the subject site boundary and the provision of new footpaths, off-road cycle ways, together with the construction of a new roundabout linking the proposed realignment of Kilshane Road back to the existing road network to the northeast of the subject site and to the proposed internal road network to serve the proposed development.
4. The construction of Gates, Low Wall and Railings fronting the realigned Kilshane Road and a private internal road network providing for vehicular, cyclist and pedestrian access to serve the development. Construction of site perimeter Fencing of 3m high.
5. Total provision of 26 No. Car Parking Spaces including 1 No. Disabled Parking Space and 2 No. EV Electrical Charging Points.
6. Provision of security lighting columns to serve the development and the installation of Closed-Circuit Television System (CCTV) for surveillance and security purposes.
7. Provision of 20 No. Sheltered Bicycle Parking Spaces.
8. Provision of hard and soft landscaping works, tree planting and boundary treatments.
9. Provision of new on-site pumping station to serve the development.
10. Underground Surface Water Attenuation Area to serve the development.

### 13.3.2 KILSHANE POWER 220KV SUBSTATION AND UNDERGROUND CABLE

The subject application is comprised of a GIS compound and c. 4.7km of 220Kv underground cabling to connect to the existing 220Kv Substation located at Cruiserath, as specified by EirGrid as part of the connection agreement. The proposed GIS compound is comprised of a single story structure, 26m long by 19.5m wide, and will contain the switchgear room, control room, workshop, battery room, generator room, and staff welfare facilities, and all ancillary service connections. The perimeter of the building will be formed by a circulatory footpath and access road Internal to the compound which will be provided security by 2.6m high green galvanised steel palisade fencing. The subject application is

separate from, but associated with, a planning application for a gas-fired power generation plan. The subject application provides the infrastructure required for the delivery of the electricity generated to the national grid.

### **13.3.3 AGI GAS CONNECTION**

The subject application is comprised of a connection to the gas mains network, and c. 570m to 590m long supply pipework from the mains to the secure AGI compound. The AGI compound comprises an internal access roadway and local surface water drainage system, PIG Trap (launch and receiving point for inspection and maintenance modules), heat exchangers, meters and boiler, regulator & instrument housing, and all ancillary service connections. The compound will be secured by means of security fencing. The subject application is separate from, but associated with, a planning application for a gas-fired power generation plant. The subject application provides the infrastructure required for the delivery of gas to the power plant facility.

### **13.3.4 PHYSICAL INFRASTRUCTURE**

#### **Proposed Site Access Arrangement and Realignment of Kilshane Road**

Access to the subject development is proposed via a new roundabout on Kilshane Road – See Figure 13.5. The Kilshane Road forms the northern and western approaches of the roundabout whilst the Site Access Road forms the eastern approach.

It is expected that due to the nature of the Kilshane Road – a “country” 2-lane carriageway with an 80 kph speed limit in a generally industrial area and subject to heavy HGV usages, and its history of collisions as showed in Section 2.4 above, that upgrade works to the Kilshane Road may be required as part of any development of the subject site.

As part of the subject development works a portion of the Kilshane Road bounding the site on the north-western boundary is proposed to be realigned and upgraded. The proposed realignment of the road is illustrated in Figure 13.5. The upgraded layout consists of the construction of dedicated footpaths and cycle lanes along both sides of the road. Cycle lanes and footpaths are both 2m wide and are separated from the road by a 2m wide grass verge and swale. Access to existing residential units to the west of Kilshane Road where the realignment is proposed, will be provided via a new access from the realigned road. Details of the proposal are shown on Waterman Moylan Drawing No. 21-099-P121 and 21-099-P122 accompanying the documentation package. The realignment and upgrade of the Kilshane Road are proposed to occur simultaneously with the construction of the proposed gas turbine power generation station.

The existing site access to the site (off Kilshane Road on the northern boundary) is proposed to be retained to serve the lands to the east of the subject development site.

#### **Internal Pedestrian and Cycling Infrastructure**

All footpaths for the proposed development will be provided in accordance with Section 4.3.1 of the DMURS which suggests that a minimum 1.8m footpath should be provided. It should be noted that the internal layout of the proposed development provides 2m wide pedestrian pathways on both sides of the roads, separated from the road by a 2m wide grass verge and swale.

Cycle paths along the realigned section of the Kilshane Road (within the subject site) have been designed in accordance with the National Cycle Manual.

#### **Car Parking**

Car parking standard for new developments are set out in Table 12.8 of the current Fingal Development Plan 2017 – 2023, which states that general industrial developments should comprise of one car parking space per every 40 sqm of GFA.

The proposed development will comprise of 26 no. staff car parking spaces on site (including 1 no. disabled parking space and 2 no. electrical charging points) and given the number of employees working on a typical and on the busiest days of the development, it is considered appropriate. For average and maximum number of staff working on site on a typical and on the busiest days, refer to Section 4.1 of TTA.

#### **Cycle Parking**

Cycle parking standards for new developments are set out in Table 12.9 of the current Fingal Development Plan 2017 – 2023, which state that general industrial developments should comprise of one cycle parking space per every 80 sqm of GFA.

The proposed development will comprise of 40 no. sheltered bicycle parking spaces on site and given the number of employees working on a typical and on the busiest days of the development, it is considered appropriate. For average and maximum number of staff working on site on a typical and on the busiest days, refer to section 4.1 of TTA

### **Overall Site Masterplan**

The subject application for the power station is a small section of the 29 ha lands. As part of the application, a potential future development is included on the remaining lands to the south of development within the site ownership boundary. The 29 ha lands are currently under the ownership of the project client. This Masterplan includes the construction of several industrial units in line with the Fingal County Council Zoning.

The Overall site Masterplan includes the additional area for expansion. Table 13-2 below shows the masterplan schedule of accommodation. The Masterplan includes the gas turbine power station and 11 industrial commercial units. The gas power plant is the existing subject application and is shown on the masterplan shown in the table below.

**Table 13.2 Masterplan Schedule of Accommodation**

| Building | Area - GFA (sqm) | Car Parking Spaces* |          |
|----------|------------------|---------------------|----------|
|          |                  | Required            | Provided |
| Unit 1   | 2,800            | 28                  | 28       |
| Unit 2   | 3,400            | 34                  | 40       |
| Unit 3   | 4,000            | 40                  | 40       |
| Unit 4   | 6,500            | 65                  | 71       |
| Unit 5   | 6,500            | 65                  | 65       |
| Unit 6   | 3,400            | 34                  | 40       |
| Unit 7   | 3,400            | 34                  | 38       |
| Unit 8   | 6,500            | 65                  | 66       |
| Unit 9   | 3,900            | 39                  | 40       |
| Unit 10  | 1,200            | 12                  | 12       |
| Unit 11  | 1,000            | 10                  | 10       |
| Total    | 42,600           | 426                 | 450      |

\*Car parking standards are based on the Fingal County Council Development Plan 2023 – 2029 Draft



**Figure 13.5 Masterplan Site**

#### **Kilshane Road/Bay Lane Junction**

There is a potential future development near the proposed development at the junction of Kilshane Road/Bay Lane west of the subject development. The nature of the development is confidential however through coordination with the neighbouring developers engineers (Clifton Scannell Emerson) there will be upgrade to the junction at Kilshane Road and Bay Lane junction. A new priority roundabout is proposed.

If both projects get approval, there is potential that both the Kilshane proposal and junction upgrade at Kilshane Road/Bay Lane will begin concurrently. Coordination between both engineering teams has been agreed prior to the submission of either planning application. Both projects are independent of each other and refusal of permission for the neighbouring project will not impact the ability on the subject application to be delivered.

A coordinated design has been prepared by Waterman Moylan and Clifton Scannell Emerson as shown on accompanying Waterman Moylan Drawings P140 and P141.



**Figure 13.6** Kilshane Road/Bay Lane Junction Upgrade

## 13.4 PREDICTED EFFECTS

### 13.4.1 INTRODUCTION

The potential impacts of the Proposed Development from a traffic and transport perspective at both construction and operational stage are outlined in the following sections.

### 13.4.2 CONSTRUCTION TRAFFIC

#### Construction Traffic Impact

The construction traffic for all three development proposals from section 13.3 have been considered as part of the construction traffic impact. All three development proposals will occur at the same time.

During the construction period for the proposed development, there will be a number of high activity periods where construction related traffic will be highest. The most active of these periods are likely to be:

- a) Demolition of the existing building and removal of demolition waste off site.
- b) Excavation to reduced levels including the road realignment (approximately 64,500m<sup>3</sup>).
- c) Construction of the actual buildings.
- d) Excavation and installation of the GIS Grid Connection pipes.
- e) Excavation and installation of the AGI Gas Connection pipes.

The nature of the construction process is such that the traffic generated will comprise short periods of high activity interspersed with longer periods with relatively low level of truck movements into and out of the site over the 3-year construction period.

#### Car Parking During Construction

Due to the location of the proposed site and lack of access from public transport and pedestrian cycling car parking will be provided during the construction stage. A total of 216 construction parking spaces will be provided.

#### Trip Generation – Construction Traffic

In order to calculate the maximum peak hour trips for the proposed site, all three development proposals had to be considered. A preliminary construction programme was created in order to figure

out the maximum peak hour for the site. The construction traffic there will be combination of cars, light goods vehicles (LGVs) and heavy goods vehicles (HGVs). See Appendix 13-1 for the full construction programme.

The peak construction traffic for the AM and PM peak hours are outlined below:

- Maximum number of construction staff is 271 (246 construction personnel and 25 HGV staff)
- Assuming a 1.5 vehicle occupancy for construction personnel vehicles this will give a total of 164 vehicles (Cars and LGVs) arriving and departing the site for the daily traffic movements, respectively.
- HGV Movements will assume one driver per HGV Vehicle.
- 75% of the personnel construction vehicles will arrive/depart during the AM and PM peak hours. It is assumed that there will be 0 trips departing the site in the AM peak hour and 0 trips arriving in the PM peak hour.
- For HGV movements during the peak hours it is assumed that 15% of the daily HGVs will arrive and depart in the AM and PM peak hours.

Therefore, the trips used for the potential impact junction assessment is set out in the table below.

**Table 13.3 Construction Trips Generated – AM and PM Hours**

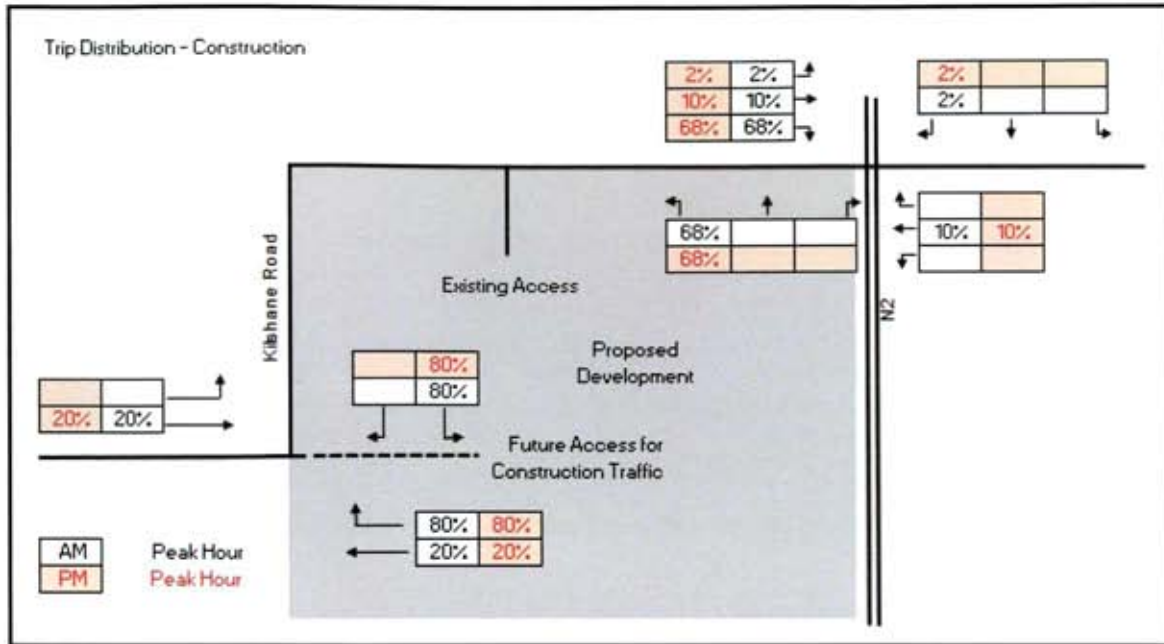
| Peak Hour | AM Peak Hour |          | PM Peak Hour |          |
|-----------|--------------|----------|--------------|----------|
|           | Inbound      | Outbound | Inbound      | Outbound |
| Trips     | 132          | 2        | 9            | 125      |

Junction modelling software normally utilises a common unit to represent general mixed-traffic on a road network – known as Passenger Car Unit (pcu). The conversion factor assigned to Heavy Goods Vehicles (HGV), so that an equivalent pcu value is generated, is 2.3. This is in line with TII 'Project Appraisal Guidelines for National Roads Unit 5.2 – Data Collection' which references the typical pcu values suggested by Transport for London (TfL). As such, for modelling purposes and in order to obtain the equivalent pcu values, the HGV trips as summarised above were expanded by a 2.3 factor. The construction traffic in the figure below includes cars and HGV and accounts for this expansion.

#### **Trip Assignment – Construction Traffic**

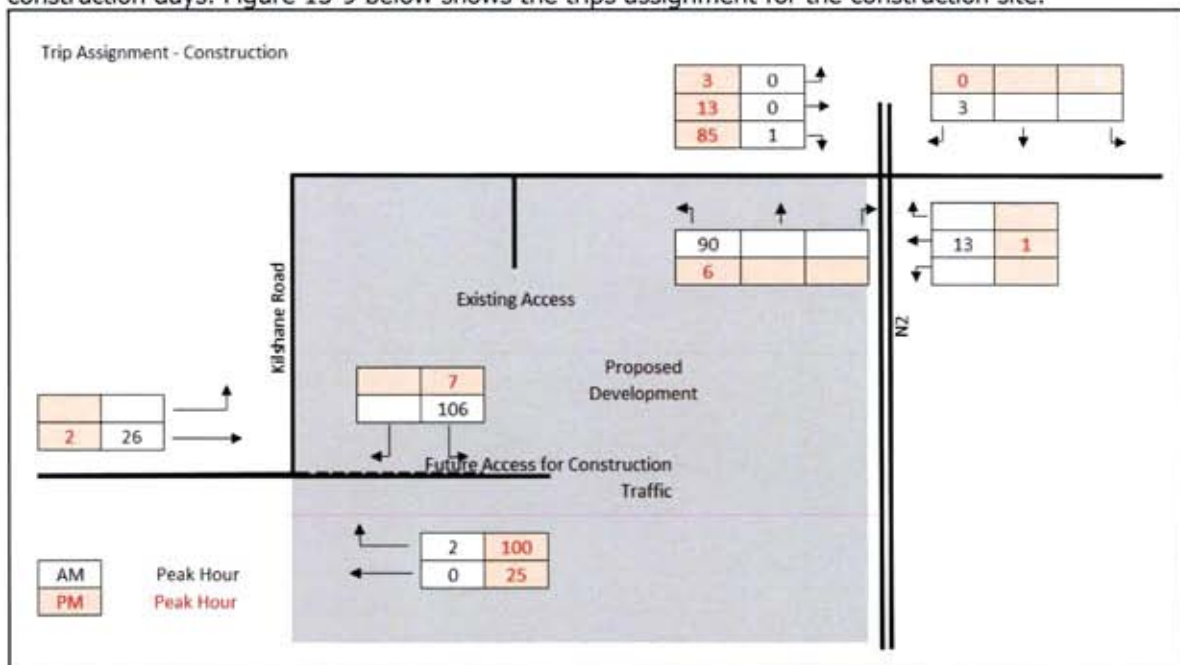
It is anticipated that the construction traffic access to the site will be provided via the existing entrance only once for the site clearance phase. Construction traffic is then proposed to access the site from the west via a priority-controlled junction just west of where the proposed roundabout is projected. At that stage, the proposed roundabout and the realigned section of the Kilshane Road are likely to be under construction and the baseline flows/construction traffic will use the existing alignment of the Kilshane Road. Based on that, trip distribution for the construction traffic via the western construction access is presented in the figure below.





**Figure 13.7 Construction Traffic – Trip Distribution**

Using the trips generated and the figure above, the trip assignment can be completed for the busiest construction days. Figure 13-9 below shows the trips assignment for the construction site.



**Figure 13.8 Construction Traffic – Trip Assignment**

### 13.4.3 OPERATIONAL TRAFFIC

#### Operational Traffic Impact

The Proposed Development will generate a number of trips by vehicles. These trips may have an impact on the surrounding road network and could contribute to increased congestion. The operational trips generated here are for all three development proposals.

Traffic count data was obtained for the purposes of the planning application. The data surveyed is expected to reflect the peak traffic conditions on the local road network. An estimation of the traffic generation and distribution of the Proposed Development has been set out below. This will be compared to the background traffic counts in order to ascertain the impact the Proposed Development will have on the local road network.

**Trip Generation – Operational Traffic**

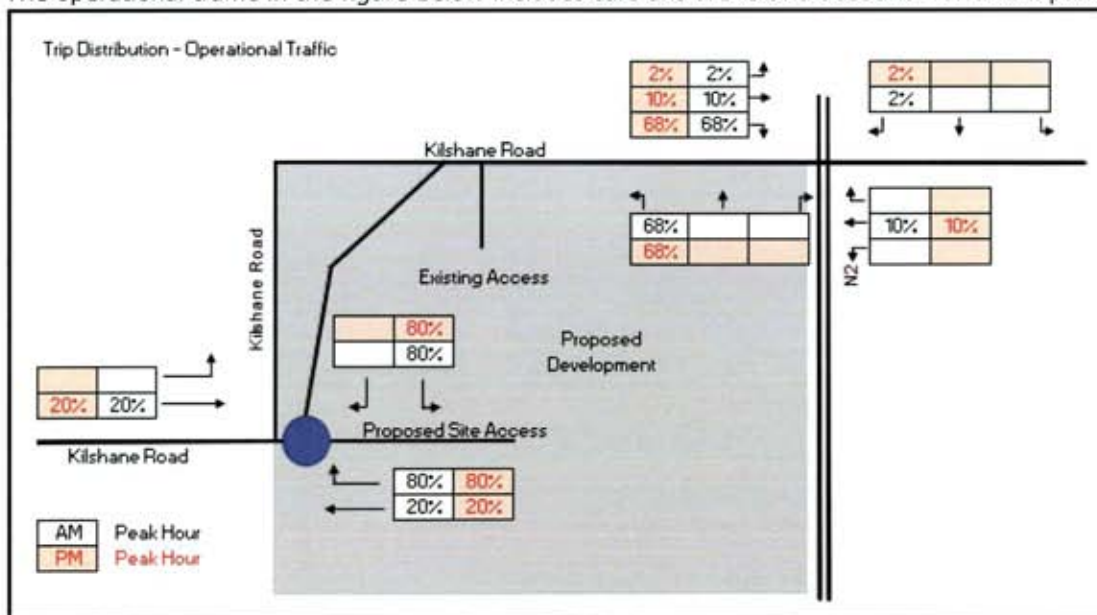
Below is the information for the operational phase provided by the developer which was used to estimate the operational traffic to/from the development.

- o **Average and maximum number of staff:** 1-2 people increasing to 50 during outage (only every few years).
- o **Average and maximum number of daily HGV deliveries:** average of 1 per week.

Again, based on the provision of public transport in the area and the access routes to the closest bus stops, it has been assumed that staff trips to/from the site will be made by car. To carry out a conservative appraisal of the proposed roundabout and the surrounding road network during the operational stage, for the purpose of this assessment, it has been assumed that the proposed development will generate the following trips during the busiest operational day (during an outage with an HGV delivery):

- a) attract 25 inbound car trips in the AM peak hour and generate 25 outbound car trips in the PM peak hour, conservatively assuming that every 2 staff will share a car to travel to/from the site and these will occur during the morning and evening peak hours.
- b) attract/generate 1 inbound and 1 outbound HGV trip in the AM peak hour. No HGV delivery trip was assumed in the PM peak hour for the operational phase.

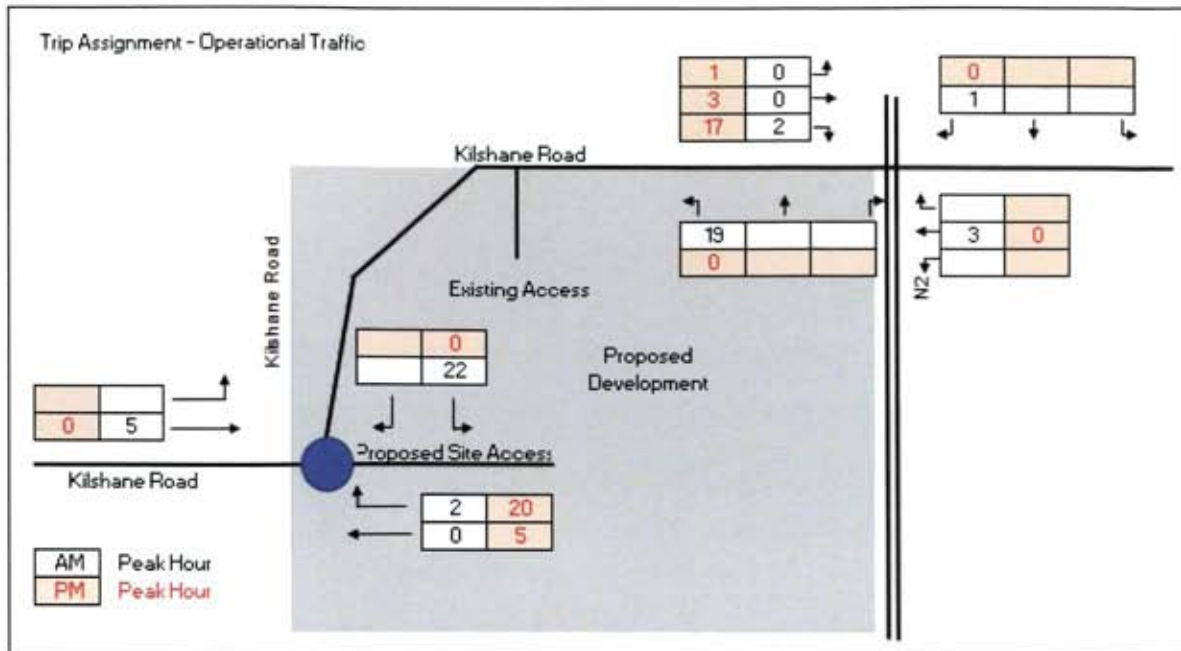
The same unit conversion exercise carried out for the HGV construction traffic has been undertaken for the HGV operational traffic. The HGV trips as summarised above were expanded by a 2.3 factor. The operational traffic in the figure below includes cars and HGVs and accounts for this expansion



**Figure 13.9 Operational Traffic – Trip Distribution**

**Trip assignment – Operational Traffic**

During the operational phase, the proposed roundabout and the realignment of the Kilshane Road will be in place. The access road to the proposed development will form the eastern approach of the roundabout whilst the Kilshane Road will form the northern and western approaches.



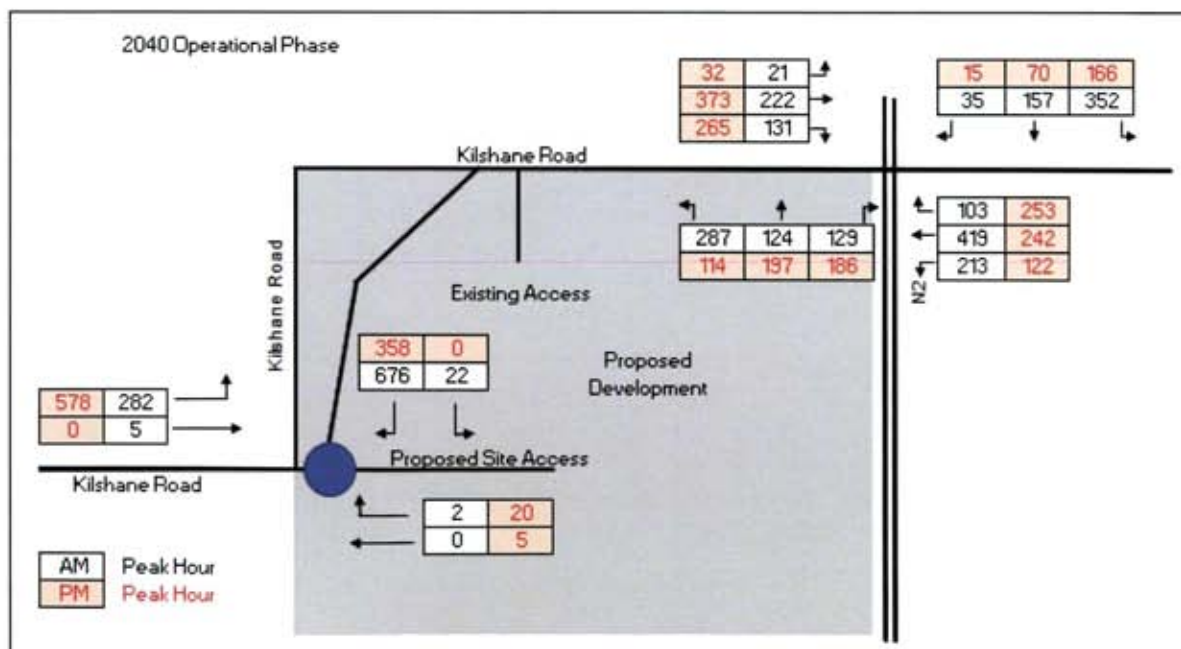
**Figure 13.10 Operational Traffic – Trip Assignment**

It is estimated that the development proposals will be operational by 2025. Therefore, in accordance with the Traffic and Transport Assessment Guidelines (TII / NRA) published in May 2014, the +15-year scenario for junction assessment is 2040.

The background traffic growth rates used to factor up the 2022 flows are in accordance with the 'Table 6.1: Link-Based Growth Rates: Metropolitan Area Annual Growth Rates' within the TII Publications – Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (May 2019).

This is:

- **1.210** (Central Growth) growth factor from 2022 to 2040.

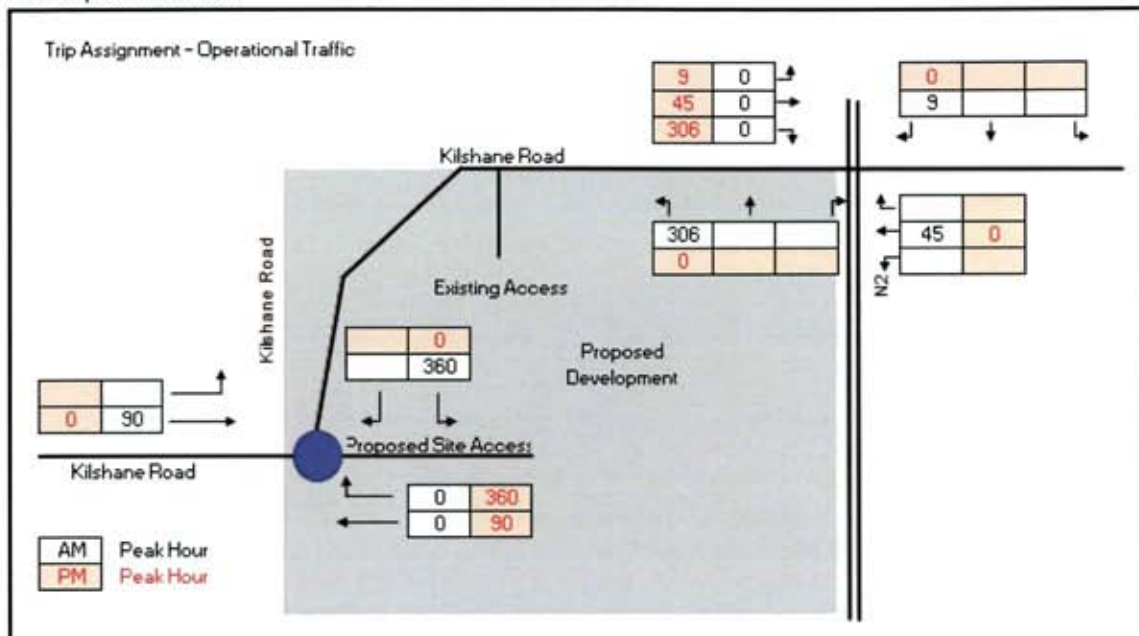


**Figure 13.11 Traffic Forecast 2040 (Operational Phase)**

**Masterplan – Operational Traffic**

In order to have a more robust assessment of the local road network and junctions. Additional junction analysis was completed for both junction with the inclusion of the Masterplan Development. The Masterplan is expected to have at least 500+ employees with a car being the primary method of transport to the site. A conservative 450 trips inbound during the AM peak hour and 450 trips outbound in the PM peak hour is estimated by the Masterplan. This is based on the number of car parking spaces provided.

The masterplan will use the same Trip Distribution as the proposed site as shown in above. The figure below shows the trip assignment for the overall masterplan and 2040 operational forecast with the masterplan included.



**Figure 13.12 Trip Assignment – Masterplan Site**

**Do-Nothing Scenario**

Should the Proposed Developments not take place, the access roads and infrastructure will remain in their current state and there will be no change. Background traffic would be expected to grow over time.

**Junction Assessment**

There are various modelling software packages available to assess every type of junction. Waterman Moylan uses ARCADY, TRANSYT and PICADY to analyse roundabouts, signalised and priority junctions, respectively.

ARCADY is a software for modelling roundabouts. This programme utilises roundabouts geometry and traffic flows input by the user to determine Ratio of Flow to Capacity (RFC) and queue length for each link on the roundabout.

TRANSYT (Traffic Network Study Tool) software is a widely accepted software for modelling signalised controlled junctions. This programme utilises the phases and traffic flows input by the user and optimises phase timings over a cycle time. The outputs of a TRANSYT assessment include a Degree of Saturation percentage (DOS%) figure and queue length for each link on the road network.

PICADY is software for modelling priority-controlled junctions. This programme utilises junction's geometry and traffic flows input by the user to determine Ratio of Flow to Capacity (RFC) and queue length for each link on the junction.

Typically, a junction is said to be working satisfactory when the DOS/RFC of each link does not exceed 85%/0.85. Acceptable DOS/RFC values are considered to be in the range of 85%/0.85 to 100%/1.0 with higher values indicating restrained movements.

The performance of the junctions has been analysed for the critical AM and PM peak hours (08:00 to 09:00 and 17:00 to 18:00) for the following junctions:

- Junction 1 – Existing Site Entrance (Priority T-Junction)
- Junction 2 – Proposed Entrance (Priority Roundabout)
- Junction 3 – Existing Kilshane Cross Junction (Signalised Crossroads)

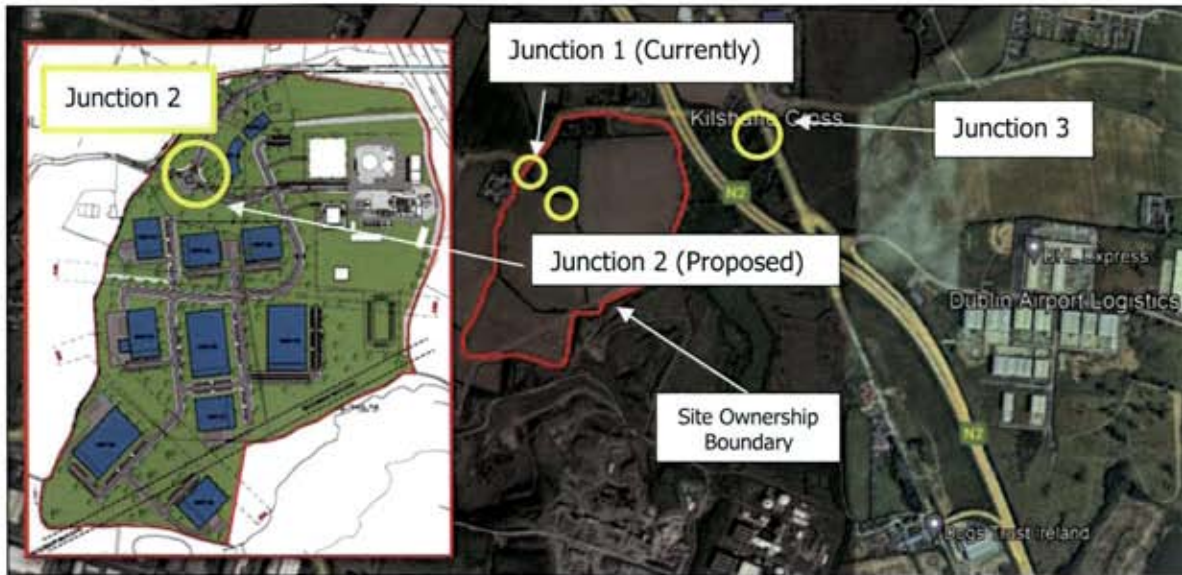


Figure 13.13 Location of Junctions Assessed

**Construction Impact – Assessment Scenarios**

The following scenarios were analysed as part of the junction impact assessment:

Junction 1 (Existing Site Entrance):

- 2024 (Construction Stage): 2022 flows factored up + proposed development’s construction traffic + committed development (Reg. Ref. FW20A/0126).

Junction 3 (Kilshane Cross Junction):

- 2024 (Construction Stage): 2022 flows factored up + proposed development’s construction traffic.

**Construction Impact – Junction Assessment Results**

Junction 1 (Existing Site Entrance):

Junction 1 has been assessed using the programme PICADY. The analysis results are summarised in the table below. Full PICADY output report is provided in Appendix 13-2. The arms of the junction were labelled as follows within the PICADY model:

- Arm A: Kilshane Road (N).
- Arm B: Existing Site Access Road (S).
- Arm C: Kilshane Road (W).

**Table 13.4 Junction 1 – PICADY Analysis Results (Construction Phase)**

| Stream                         | AM (08:00 to 09:00) |      | PM (17:00 to 18:00) |      |
|--------------------------------|---------------------|------|---------------------|------|
|                                | Queue (PCU)         | RFC  | Queue (PCU)         | RFC  |
| <b>2024 Construction Phase</b> |                     |      |                     |      |
| <b>Stream B-C</b>              | 0.0                 | 0.00 | 0.1                 | 0.05 |
| <b>Stream B-A</b>              | 0.0                 | 0.00 | 0.5                 | 0.29 |
| <b>Stream C-AB</b>             | 0.2                 | 0.08 | 0.0                 | 0.01 |

From the PICADY analysis results as summarised above, Junction 1 would operate well within capacity for the future assessment Scenario 1 (2024 + proposed development's construction traffic) during both peak hours, with the highest RFC at 0.08 and as corresponding queue of 0.2 vehicle recorded in the AM and with the highest RFC at 0.29 and a corresponding queue of 0.5 vehicle recorded in the PM.

#### Junction 3 (Kilshane Cross Junction):

Kilshane Cross Junction is an existing junction to the west of the proposed development. The junction's current configuration is a signalised crossroads junction. As part of the committed development (Reg. Ref. FW20A/0126) the eastern arm of the junction will be upgraded to include a left-turning lane and cycle lanes either side, this is explained in Section 13.7 below. For the purposes of this traffic assessment, it is assumed that the left-turning upgrade will be completed by 2024. The layout of the junction configuration is laid out as followed:

- Arm A: L3120 Kilshane Road (E)
- Arm B: R135 (S)
- Arm C: L3120 Kilshane Road (W)
- Arm B: R135 (N)

**Table 13.5 Junction 3 – TRANSYT Analysis Results (Construction Phase)**

| Arm                            | Direction | AM Peak Hour |             | PM Peak Hour |             |
|--------------------------------|-----------|--------------|-------------|--------------|-------------|
|                                |           | DOS%         | Queue (Veh) | DOS%         | Queue (Veh) |
| <b>Construction Stage 2024</b> |           |              |             |              |             |
| A                              | L         | 39           | 5.54        | 21           | 2.94        |
|                                | S/R       | 99           | 25.62       | 87           | 17.31       |
| B                              | S/L       | 66           | 10.93       | 87           | 11.71       |
|                                | R         | 65           | 4.33        | 78           | 6.87        |
| C                              | S/R/L     | 106          | 41.44       | 96           | 30.54       |
| D                              | R         | 72           | 10.60       | 65           | 5.34        |
|                                | S         | 32           | 3.93        | 28           | 1.97        |
|                                | L         | 29           | 1.16        | 12           | 0.45        |

The construction stage the AM Peak hour is over capacity with the highest DOS of 106% and a corresponding queue of 41.44 vehicles. While this is over capacity the construction phase of the proposed development is temporary and there will be acceptable for the construction period.

#### **Operational Impact – Assessment Scenarios**

The following scenarios were analysed as part of the junction impact assessment:

#### Junction 2 (Proposed Roundabout Entrance):

- 2040 (Operational Phase): realignment of Kilshane Road and proposed roundabout in place + 2022 flows factored up + proposed development's operational traffic.
- 2040 (Masterplan): realignment of Kilshane Road and proposed roundabout in place + 2022 flows factored up + proposed development's operational traffic + Masterplan Developments operational traffic

#### Junction 3 (Kilshane Cross Junction):

- 2022 (DO NOTHING): Baseline 2022 flows
- 2040 (DO NOTHING): 2022 flows factored up 2040 (Operational Phase): realignment of Kilshane Road and proposed roundabout in place + 2022 flows factored up + proposed development's operational traffic.
- 2040 (Masterplan): realignment of Kilshane Road and proposed roundabout in place + 2022 flows factored up + proposed development's operational traffic.

### Operational Impact – Junction Assessment Results

#### Junction 2 (Proposed Roundabout Entrance):

Junction 2 is the new roundabout which is proposed to provide the access to the subject development when fully constructed and operational. The proposed roundabout has been modelled for the operational phase - for the future assessment year of 2040 with and without the masterplan. Junction 2 has been modelled based on its proposed layout and the ARCADY analysis results is summarised in Table 13-7 below. Full ARCADY output report is provided in Appendix 13-2. The arms of the proposed roundabout were labelled as follows within the ARCADY model:

- Arm 1: Proposed Site Access Road (E).
- Arm 2: Kilshane Road (W).
- Arm 3: Kilshane Road (N).

**Table 13.6 Junction 2 – ARCADY Analysis Results (Operational Phase)**

| Arm                      | AM (08:00 to 09:00) |      | PM (17:00 to 18:00) |      |
|--------------------------|---------------------|------|---------------------|------|
|                          | Queue (PCU)         | RFC  | Queue (PCU)         | RFC  |
| 2040 (Operational Phase) |                     |      |                     |      |
| <b>Arm 1</b>             | 0.0                 | 0.00 | 0.0                 | 0.03 |
| <b>Arm 2</b>             | 0.06                | 0.26 | 1.3                 | 0.53 |
| <b>Arm 3</b>             | 1.4                 | 0.54 | 0.5                 | 0.28 |
| 2040 (Masterplan)        |                     |      |                     |      |
| <b>Arm 1</b>             | 0.0                 | 0.00 | 1.1                 | 0.54 |
| <b>Arm 2</b>             | 0.8                 | 0.34 | 2.1                 | 0.64 |
| <b>Arm 3</b>             | 6.4                 | 0.84 | 0.5                 | 0.27 |

From the ARCADY analysis results as summarised above, the proposed Junction 2 would operate within capacity for the future assessment Scenario 2 (2040 + proposed development's operational traffic) during both peak hours, with the highest RFC at 0.84 and as corresponding queue of 6.4 vehicles recorded in the AM and with the highest RFC at 0.64 and a corresponding queue of 2.1 vehicle recorded in the PM.

#### Junction 3 (Kilshane Cross Junction):

Kilshane Cross Junction is an existing junction to the west of the proposed development. The junction's current configuration is a signalised crossroads junction. As part of the committed development (Reg. Ref. FW20A/0126) the eastern arm of the junction will be upgraded to include a left-turning lane and cycle lanes either side, this is explained in Section 13.7 below. For the purposes of this traffic assessment, it is assumed that the left-turning upgrade will be completed by 2024. The layout of the junction configuration is laid out as followed:

- Arm A: L3120 Kilshane Road (E)
- Arm B: R135 (S)
- Arm C: L3120 Kilshane Road (W)
- Arm B: R135 (N)

**Table 13.7 Junction 3 – TRANSYT Analysis Results (Operational Phase)**

| Arm                    | Direction | AM Peak Hour |             | PM Peak Hour |             |
|------------------------|-----------|--------------|-------------|--------------|-------------|
|                        |           | DOS%         | Queue (Veh) | DOS%         | Queue (Veh) |
| <b>Do Nothing 2022</b> |           |              |             |              |             |
| A                      | L         | 38           | 5.51        | 20           | 2.83        |
|                        | S/R       | 91           | 19.38       | 80           | 14.94       |
| B                      | S/L       | 92           | 16.27       | 86           | 11.38       |
|                        | R         | 30           | 3.52        | 51           | 5.38        |
| C                      | S/R/L     | 83           | 13.10       | 80           | 19.34       |
| D                      | R         | 81           | 11.97       | 71           | 5.57        |

|                               |       |     |       |     |        |
|-------------------------------|-------|-----|-------|-----|--------|
|                               | S     | 37  | 4.40  | 30  | 2.02   |
|                               | L     | 8   | 0.87  | 6   | 0.39   |
| <b>Do Nothing 2040</b>        |       |     |       |     |        |
| A                             | L     | 38  | 6.03  | 24  | 3.43   |
|                               | S/R   | 90  | 21.31 | 96  | 23.67  |
| B                             | S/L   | 77  | 14.06 | 94  | 15.58  |
|                               | R     | 72  | 5.37  | 84  | 8.47   |
| C                             | S/R/L | 94  | 18.01 | 95  | 28.84  |
| D                             | R     | 78  | 12.38 | 74  | 6.46   |
|                               | S     | 35  | 4.55  | 32  | 2.29   |
|                               | L     | 31  | 1.24  | 14  | 0.52   |
| <b>Operational Stage 2040</b> |       |     |       |     |        |
| A                             | L     | 38  | 6.03  | 24  | 3.43   |
|                               | S/R   | 92  | 22.40 | 99  | 27.55  |
| B                             | S/L   | 80  | 15.20 | 98  | 17.82  |
|                               | R     | 72  | 5.37  | 90  | 9.47   |
| C                             | S/R/L | 96  | 19.11 | 96  | 31.29  |
| D                             | R     | 79  | 12.81 | 75  | 6.59   |
|                               | S     | 35  | 4.55  | 32  | 2.29   |
|                               | L     | 32  | 1.28  | 14  | 0.52   |
| <b>2040 Masterplan</b>        |       |     |       |     |        |
| A                             | L     | 47  | 6.71  | 24  | 3.39   |
|                               | S/R   | 124 | 73.38 | 132 | 102.21 |
| B                             | S/L   | 115 | 71.87 | 102 | 21.00  |
|                               | R     | 62  | 4.90  | 96  | 11.34  |
| C                             | S/R/L | 96  | 19.11 | 149 | 196.04 |
| D                             | R     | 67  | 11.32 | 75  | 6.59   |
|                               | S     | 30  | 4.25  | 32  | 2.29   |
|                               | L     | 40  | 1.66  | 14  | 0.52   |

As can be seen in the Table above, Kilshane Cross Junction will remain under capacity for the Baseline 2022 scenario for the AM and PM Peak hour periods. During the construction stage the AM Peak hour is over capacity with the highest DOS of 92% and a corresponding queue of 16.27 vehicles and the PM Peak hour is over capacity with the highest DOS of 86% and a corresponding queue of 11.38 vehicles. While this is over capacity the construction phase of the proposed development is temporary and will be acceptable for the construction period.

During the 2040 Operational Stage, the AM peak hour has a DOS% of 96% and a corresponding queue of 19.11 and the PM peak hour has a DOS% of 99% and a corresponding queue of 27.55. While both the AM and PM peak hours near over capacity for Kilshane Cross Junction, this has been modelled on the worst-case scenario. The worst-case scenario (a power outage) will only occur every few years. Therefore, the over-capacity of the junction is acceptable given that Kilshane Cross Junction is at high capacity without the inclusion of operational traffic.

The inclusion of the Masterplan causes Kilshane Cross Junction to go significantly over capacity in the AM and PM peak hour period. An upgrade may be required for Kilshane Cross Junction, this would be designed under the potential future application for the Masterplan. Not the existing subject application.

## 13.5 MITIGATION AND MONITORING MEASURES

### 13.5.1 INTRODUCTION

This section of the report discusses mitigation measures to reduce the impact of the Proposed Developments on the surrounding area during the construction and operational phases.



### 13.5.2 CONSTRUCTION PHASE

It is proposed that a Construction Environmental Management Plan (CEMP) will be prepared by the appointed contractor in order to reduce or prevent any potential impacts of the construction phase of the Proposed Developments on the safety and amenity of other users of the public road. A Preliminary CEMP for the Kilshane Development has been prepared as a guide to the appointed contractor and is included under a separate cover for the planning application. The contractor will prepare the final CEMP and will consider the following aspects:

- Dust and dirt control measures.
- Noise assessment and control measures
- Routes to be used by vehicles
- Working hours of the site
- Details of construction traffic forecasts
- Time when vehicle movements and deliveries will be made to the site
- Facilities for loading and unloading
- Facilities for parking cars and other vehicles

In addition to the above, a detailed Construction Traffic Management Plan (CTMP) will be prepared by the main contractor. A Preliminary CTMP for the Kilshane Development has been prepared which will guide the Contractor and this is submitted as a stand-alone document. This document will outline proposals in relation to construction traffic and associated construction activities that impact the surrounding roads network. The document will be prepared in coordination and agreed with the local authority.

Care will be taken to ensure temporary car parking is provided within the site for contractor's vehicles. It is likely that construction will have an imperceptible impact on pedestrian and cycle infrastructure.

Through the implementation of the CEMP and CTMP, it is anticipated that the effect of traffic during the construction phase will have a slight effect on the surrounding road network for short-term period.

To reduce the volume of construction traffic movements during the construction phase, it is proposed that excavated material be stored on site to be transported off site outside the peak hours in order to ease congestion for the surrounding road network. The subject is 29 ha in area and with the proposed development comprising of a small portion of this, there is plenty of space for the excavated material to be temporarily held.

The construction compound and temporary facilities will be decommissioned, and any affected areas will be reinstated. Reinstatement will begin as construction work is entering into its final phase and the facility is placed into operation. As craft levels are decreased the facilities which support those craft will be downsized or removed entirely. Rock material used for hard standing at the construction craft parking area will be removed from site. Construction craft facilities such as the craft break trailer, construction safety trailer, and craft badging trailer will be removed from the site as construction activities subside. The areas where these trailers were placed will be graded and improved in accordance with project landscaping plan. The next facilities to be removed will be the construction contractor's staff trailer and construction warehouse. These facilities will be removed as the permanent onsite facilities are brought into service and are available for technical staff and material storage. The areas occupied by the construction staff trailer and warehouse will be graded and landscaped upon their removal. Large areas of the site will receive rock hard standing to provide a stable and mud storage and staging area during construction. The hard standing staging areas will be removed at the end of the construction activities and the areas will be incorporated into the project landscaping plan. The end objective of the project reinstatement plan is to remove temporary facilities and equipment from the project to allow normal operation of the facility.

If both the Kilshane proposal and upgrades to the junction between Kilshane Road and Bay Lane receive approval coordination between both construction contractors and Fingal County Council will be required. Detailed project programme will be required by both parties to minimise long term impacts of each project by not delaying either project.

### **13.5.3 OPERATIONAL PHASE**

The Proposed Development is situated adjacent to suitable infrastructure and transport services for travel by sustainable modes. A key barrier to modal shift towards sustainable modes of travel is often a lack of information about potential alternatives to the car. As such, it is proposed that employees will be made aware of potential alternatives including information on walking, cycle routes and public transport.

Staff will be encouraged to avail of these facilities for travel to and from work. Provision of this information will be made during the sales process and will be included in the new worker's pack upon the sale of each unit, as this represents the best opportunity to make residents aware and to secure travel behaviour change. Daily operational traffic will be only 1 or 2 staff per day and will have an insignificant impact on the road network.

A Travel Plan has been included in this application under separate cover. This Plan sets out method to reduce the dependence on private car journeys and encourage residents within the development to avail of sustainable forms of transport such as walking, cycling and public transport.

## **13.6 RESIDUAL IMPACTS**

### **13.6.1 INTRODUCTION**

The residual impacts outlined below show the impact of the proposed development with the above mitigation measures in place.

### **13.6.2 CONSTRUCTION PHASE**

Provided the above mitigation measures and management procedures outlined in the Construction Management Plan and the Construction Traffic Management Plan are incorporated during the Construction Phase, the residual impact upon the local receiving environment is predicted to be short-term in the nature and slight in terms of effect.

#### **'WORST-CASE' SCENARIO**

The 'worst-case' scenario for the construction phase is for the mitigation measures to fail and cause significant and long term effects to the area. These impacts would include long traffic delays and possible detours along Kilshane Road. The 'worst-case' scenario would also affect the construction timeline and increase the construction programme.

### **13.6.3 OPERATIONAL PHASE**

Provided the above mitigation measures and procedures outlined in the Travel Plan provided under a separate cover are incorporated into the operational phase of the proposed development, the residual impact upon the local receiving environment is predicted have permanent effects and not significant in terms of effect.

#### **'Worst-case' Scenario**

The 'worst-case' scenario for the operational phase is for slight, permanent effects to the local road network. These would include long delays at nearby junctions due to the impact of the proposed development operational traffic should mitigation measures fail.

## 13.7 CUMULATIVE IMPACT

This section assesses any indirect and cumulative impacts of the proposed development with relevant developments or projects in the vicinity of the site.

**Table 13.8 Cumulative Impacts**

|  |  |
|--|--|
| <p><b>REG REF</b><br/><b>CLIENT</b><br/><b>DEVELOPMENT DESCRIPTION</b></p> | <p>FW22A/0108<br/>IPUT PLC<br/>The development amends a permitted warehouse development (as granted under FCC Reg. Ref. FW20A/0126), specifically lands relating to Unit No. 2. The proposed amendments will principally consist of the following modifications to permitted Warehouse Unit No. 2: The change of use of ancillary office space at first floor level (c. 264 sq m) to storage space; the addition of an internal loading platform; revised ground floor layout including the addition of an assembly room, alteration of the office layout and replacement of the marshalling office with truckers toilet (no change to permitted gross floor area at ground floor level); revised Photovoltaic Panels (PV) arrangement (reduced from 392 to 138 No. and reduced area from c. 638 sqm to c. 247 sqm); provision of 3 No. elevational signs (each measuring 5 metres x 2 metres) on the north, south and west elevations; revised parking layout including the reduction of the total number of car parking spaces from 81 No. to 80 No.; modifications to HGV yard layout including the addition of 18 No. van parking spaces in the permitted yard area; addition of a traffic island to the HGV entrance to the west; modifications to boundary treatments including addition of a gate and fencing to the fire tender access to the east; addition of a security barrier to the staff/visitor car parking entrance/exit to the west; extension of permitted cycle path and provision of a bike shelter; addition of a WEEE store; provision of a canopy over a proposed bailer and compactor zone; reorientation of the heat pump enclosure; elevational changes including reduction of precast concrete wall cladding to loading docks and the addition and repositioning of fire escape doors; and all associated development works above and below ground. Retention permission is sought for the modification of the roof design of permitted Unit No. 2 including a minor increase to parapet height from 17.02 metres to 17.07 metres.</p> |
| <p><b>DECISION</b><br/><b>CUMULATIVE IMPACT ASSESSMENT</b></p>             | <p>Granted<br/>The inclusion of the left turn lane along Kilshane Road will bring a positive effect to the road network and has been taken into account for the junction modelling.<br/>No other cumulative impacts are anticipated with this development</p>  |
| <p><b>REG REF</b><br/><b>CLIENT</b><br/><b>DEVELOPMENT DESCRIPTION</b></p> | <p>FW21A/0151<br/>Huntstown Power Company Limited<br/> <ul style="list-style-type: none"> <li>• Demolition of 2 no. existing residential dwellings and ancillary structures to the east of the site (c.344qm total floor area);</li> <li>• Construction of 2 no. data hall buildings (Buildings A and B) comprising data hall rooms, mechanical and electrical galleries, ancillary offices including meeting rooms, workshop spaces, staff areas including break rooms, toilets, shower/changing facilities, storage areas, lobbies, outdoor staff areas, loading bays and docks, associated plant throughout, photovoltaic panels and screened plant</li> </ul> </p>   |

- areas at roof levels, circulation areas and stair and lift cores throughout;
- External plant and 58 no. emergency generators located within a generator yard to the east and west of Buildings A and B at ground level. The area is enclosed by a c.6.5m high louvred screen wall;
  - The proposed data halls (Buildings A and B) are arranged over 3 storeys with a gross floor area of C.37,647sqm each;
  - The overall height of the data hall buildings is c28m to roof parapet level and c32m including roof plant, roof vents and flues. The total height of Buildings A and B does not exceed 112m OD (above sea level);
  - The proposed development includes the provision of a temporary substation (c.32sqm), water treatment building (c. 369sqm and c.7.7m high), 7 no. water storage tanks (2,800m3 in total and c.6.4m high each), 2 no. sprinkler tanks (c.670m3 each and c.7.9m high each) with 2 no. pump houses each (c.40sqm and c. 6m high each);
  - The total gross floor area of the data halls and ancillary structures is c.75,775sqm;
    - All associated site development works, services provision, drainage upgrade works, 2 no. attenuation basins, landscaping and berming (c.6m high), boundary treatment works and security fencing up to c.2.4m high, new vehicular entrance from the North Road, secondary access to the south west of the site from the existing private road, all internal access roads, security gates, pedestrian/cyclist routes, lighting, 2 no. bin stores, 2 no. bicycle stores serving 48 no. bicycle spaces, 208 no. parking spaces including 10 no. accessible spaces, 20 no. electric vehicle charging spaces and 8 no. motorcycle spaces;
    - Existing electricity overhead lines traversing the site will be undergrounded under concurrent application Ref. FW21A/0144;
    - A proposed 220kv substation located to the south west of this site will be subject of a separate Strategic Infrastructure Development application to An Bord Pleanála under section 182A of the Planning and Development Act 2000 (as amended);
    - An Environmental Impact Assessment Report (EiAR) is submitted with this application.

AI received 11/02/2022

AI deemed significant \*\*

revised public notices 24/2/2022

Granted

**DECISION  
CUMULATIVE IMPACT  
ASSESSMENT**

The Planning Authority (FCC) granted permission for the application subject to 30 no. condition(s). The conditions relate to working hours, noise control, construction height limits, drainage and waste management. Therefore, there are no cumulative impacts anticipated with this development

**REG REF  
CLIENT  
DEVELOPMENT  
DESCRIPTION**

FW21A/0250

Kilshane Energy Ltd

Planning permission is being sought for a development that will consist of the following;

- 1)The construction of a Gas Turbine Power Generation Station with an output of up to 293 Megawatts. The proposed station will consist of 1 no. Gas Turbine, 1 no. 28m high Exhaust Stack, 1 no. 2 story Admin Building (c. 680 m2), 1 no. single storey Workshop (c. 661 m2), 1 no. single storey Plant Room Building (c. 608 m2), 1 no.

single storey Dew Point Heater Boiler Building (c. 52 m<sup>2</sup>), 1 no. single storey Electrical Module for Fuel Gas Area Building (c. 45 m<sup>2</sup>), 1 no. single storey Packaged Electronic Electrical Control Compartment building (PEECC) (c. 150 m<sup>2</sup>), 1 no. single storey EORoom Building (c. 227 m<sup>2</sup>), 1 no. single storey Fuel Gas Block Building (152 m<sup>2</sup>), 1 no. single storey Continuous Emission Monitoring System (CEMS) Building (c. 9 m<sup>2</sup>), 1 no. single storey Fuel Oil Treatment & Forwarding Building (c.59 m<sup>2</sup>), an Above Ground Installation (AGI) area consisting of 1 no. single storey Instrument Building (c. 28.5 m<sup>2</sup>), 1 no. single storey Regulator Building (47 m<sup>2</sup>), 1 no. single store Boiler Building (c. 28 m<sup>2</sup>), and 1 no. single storey Analyser Kiosk (6 m<sup>2</sup>), 2 no. 20 m high diesel storage tanks and recessed bund area, 1 no. 17 m high Raw and Fire Fighting Water Tank, miscellaneous plant and equipment.

2)2. The realignment of a a portion (263 m) of the Kilshane Road within the subject site boundary, including the provision of new footpaths and offroad cycle ways, together with the construction of a new roundabout linking the proposed realignment of Kilshane Road back to the existing road network to the north west of the subject site and to the proposed internal road network to serve the proposed development.

3)The construction of Entrance Gates, 1 no. single storey security office (40 m<sup>2</sup> GFA) and a private internal road network providing for vehicular, cyclist and pedestrian access to serve the development.

4)Total provision of 20 no. Car Parking Spaces including 2 no. disabled parking spaces and 4 no. Electrical Charging Points.

5)Provision of lighting columns to serve the development and the installation of Closed-Circuit Television System (CCTV) for surveillance and security purposes.

6)Provision of 20 no. Sheltered Bicycle Parking Spaces.

7)Provision of hard and soft landscaping works, tree planting and boundary treatments.

8)Construction of a Wastewater Treatment Plant and Percolation Area together with a Surface Water Attenuation Area to serve the development.

9)All associated site works necessary to facilitate the development.

**REFUSE PERMISSION**

There are no cumulative impacts anticipated with this development

**DECISIONS  
CUMULATIVE IMPACT  
ASSESSMENT**

**REG REF  
CLIENT  
DEVELOPMENT  
DESCRIPTION**

FW21A/0230  
Kilshane Energy Ltd.  
1.The construction of a Gas Turbine Power Generation Station with an output of up to 293 Megawatts. The proposed station will consist of 1 no. Gas Turbine, 1 no. 28m. high Exhaust Stack, 1 no. 2 storey admin building (c. 680m<sup>2</sup>), 1 no. single storey workshop (c. 661m<sup>2</sup>), 1 no. single storey plant room building (c. 608m<sup>2</sup>), 1 no single storey Dew Point Heater Boiler building (c. 52m<sup>2</sup>), 1 no. single storey electrical module for fuel gas area building (c. 45m<sup>2</sup>), 1 no. single storey Packaged Electronic Electrical Control Compartment Building (PEECC) (c. 150m<sup>2</sup>), 1 no. single storey E-Room building (c. 227m<sup>2</sup>), 1 no. single storey Fuel Gas Block building (152m<sup>2</sup>), 1 no. single storey Continuous Emission Monitoring System (CEMS) building (c. 9m<sup>2</sup>), 1 no. single storey Fuel Oil Treatment & Forwarding Building (c. 59m<sup>2</sup>), an above ground installation (AGI) area consisting of 1 no. single storey Instrument Building (c. 28.5m<sup>2</sup>), 1 no. single storey Regulator building

**DECISION  
CUMULATIVE  
IMPACT  
ASSESSMENT**

(47m<sup>2</sup>), 1 no. single storey Boiler Building (c. 28m<sup>2</sup>), and 1 no. single storey Analyser Kiosk (6m<sup>2</sup>), 2 no. 20m high Diesel Storage Tanks and Recessed Bund Area, 1 no. 17m high Raw and fire Fighting Water Tank, miscellaneous plant and equipment.

2. The realignment of a portion (263m) of the Kilshane Road within the subject site boundary, including the provision of new footpaths and off-road cycle ways, together with the construction of a new roundabout linking the proposed realignment of Kilshane Road back to the existing road network to the north west of the subject site and to the proposed internal road network to serve the proposed development.
3. The construction of entrance gates, 1 no. single storey security office (40m<sup>2</sup> GFA) and a private internal road network providing for vehicular, cyclist and pedestrian access to serve the development.
4. Total provision of 20 no. car parking spaces including 2 no. disabled parking spaces and 4 no. electrical charging points.
5. Provision of lighting columns to serve the development and the installation of closed-circuit television system (CCTV) for surveillance and security purposes.
6. Provision of 20 no. sheltered bicycle parking spaces.
7. Provision of hard and soft landscaping works, tree planting and boundary treatments.
8. Construction of a Wastewater Treatment Plant and Percolation Area together with a Surface Water Attenuation Area to serve the development.
9. All associated site works necessary to facilitate the development.

**INVALID PLANNING APPLICATION**  
There are no cumulative impacts anticipated with this development

**REG REF  
CLIENT  
DEVELOPMENT  
DESCRIPTION**

F21A/0144  
TLI Group Ltd.  
The development will consist of the installation of electrical infrastructure between Finglas substation and Huntstown Power Station to facilitate the retirement of existing Electricity Supply Board overhead powerlines and facilitate site clearance for the future development of a data centre and substation (subject to separate planning applications). This will include (i) the installation of approximately three underground cable circuits of 1.2km length (110kV) and one circuit 1.2km length (38kV) and associated underground ducting, joint bays and infrastructure between the existing ESB Finglas substation and an agreed location within Huntstown Power Station (ii) installation of one c.28m double circuit 110 kV cable end tower and one c.17 single circuit 110kV angle mast (iii) removal of 10Nr. existing 110kV timber polesets, 9 Nr. existing 38kV timber polesets, 3 Nr. 38kV lattice steel tower & associated overhead line electrical infrastructure; all associated and ancillary site development, landscaping and construction works, all within the townlands of Johnstown, Huntstown, Coldwinters & Baleskin at Blanchardstown & Finglas, County Dublin. An Environmental Impact Assessment report (EIAR) has been prepared and will be submitted to the Planning Authority with the planning application.

**DECISIONS  
CUMULATIVE IMPACT  
ASSESSMENT**

Granted  
The Planning Authority (FCC) granted permission for the application subject to 7 no. condition(s). The conditions relate to working hours,

noise control, drainage and waste management. Therefore, there are no cumulative impacts anticipated with this development

|   |  |
|---|--|
| <b>REG REF</b><br><b>CLIENT</b><br><b>DEVELOPMENT</b><br><b>DESCRIPTION</b> | FW20A/0063<br>Rathdrinagh Land Limited (RLL)<br>The construction of a single storey 5,000m <sup>2</sup> research and development building, which will specialise in developing pilot scale circular economy solutions for a range of discarded resources; including associated office and welfare facilities. The development includes fencing and boundary treatment, signage, internal access roadways and a site entrance. Permission is also sought for all associated site works and services.  |
| <b>DECISION</b><br><b>CUMULATIVE IMPACT</b><br><b>ASSESSMENT</b>            | AI deemed significant 01/04/21<br>Revised notices received 19/04/21<br>Refused Permission<br>There are no cumulative impacts anticipated with this development   |
| <b>REG REF</b><br><b>CLIENT</b><br><b>DEVELOPMENT</b><br><b>DESCRIPTION</b> | FW19A/0015<br>Viridian Renewables ROI Limited<br>The development will consist of a Battery Energy Storage System (BESS) which will include up to 9 no. containerised battery storage modules ( up to 14m length, 2.44m wide and 2.9m high) and ancillary equipment including up to: 9 no transformers (2.5m wide and 2.9m high), 7 no. power conditioning unit blocks (8m length and 1.5m wide), 1 no. power conditioning unit block (5m length by 5m wide), 9 no. switchgear units (1.5m length, 1.5m wide and 1.6m high), a sub-station container (4.5m length, 3.0m wide and 3.0m high) and all other associated site development works as required to facilitate the development. The BESS will be contained within a 0.0507 hectare site located entirely within the boundary of the existing Huntstown Power Station which is regulated by the Environmental Protection Agency through Industrial Emission Licenses P0483-04 AND P777-02.                                |
| <b>DECISION</b><br><b>CUMULATIVE IMPACT</b><br><b>ASSESSMENT</b>            | Granted permission<br>The Planning Authority (FCC) granted permission for the application subject to 7 no. condition(s). The conditions relate to working hours, noise control, drainage and waste management. Therefore, there are no cumulative impacts anticipated with this development  |
| <b>REG REF</b><br><b>CLIENT</b><br><b>DEVELOPMENT</b><br><b>DESCRIPTION</b> | FW18A/0082<br>Viridian Renewables ROI Limited<br>The development is a wastewater treatment plant comprising a 3m high bunded area enclosing self-bunded chemical tank 1 (c.100m <sup>3</sup> & 8.49m high), ammonia stripping plant (up to 12.15m high & c. 98m <sup>2</sup> ), solid separation building (c. 62.66m <sup>2</sup> & 5.55m high), digestate storage tank (c. 2,000m <sup>3</sup> & 9.94m high), digestate treatment tank (c. 1,267m <sup>3</sup> & 9.94m high), flotation unit building (c. 51m <sup>2</sup> & 9.94m high), vacuum degassing tower (18m high), roof mounted blowers (2m high), 4no. mixing tanks (rectangular tanks: c. 8m <sup>3</sup> & 2m high, cylindrical tanks: c. 3.5m <sup>3</sup> & 2m high), conveyor 1 (7.7m long), conveyor 2 (9m long), & a pipe bridge (c. 8m high & 17.3m long); & a yard containing 2no. skips (c. 2.5m high), big bag system (c. 2.25m <sup>2</sup> & 2.5m high), 3no. self-bunded chemical tanks to the south |

**DECISION  
CUMULATIVE IMPACT  
ASSESSMENT**

(c. 6m<sup>3</sup> & 2m high), an underground pump station, Motor Control Centre (MCC) room (2.46m high & 19.5m<sup>2</sup>), self-bunded chemical tank 2 (6.97m high & c. 30m<sup>3</sup>), self-bunded chemical tank 3 (5.34m high & c. 20m<sup>3</sup>), self-bunded chemical tank 4 (c. 25m<sup>3</sup> and 6.84m high), auxillary building (190m<sup>2</sup> & 8m high), a spare skip and including all stairwells, pathways and ancillary development. The wastewater treatment plant permitted under planning ref. FW13A/0089 will be substituted for the proposed wastewater treatment plant. The boundary will be landscaped in accordance with planning ref. FW13A/0089. Planning ref. FW13A/0089 is the subject of an Industrial Emissions Licence issued by the EPA (ref. P0993-01).  
Granted permission  
The Planning Authority (FCC) granted permission for the application subject to 4 no. condition(s). The conditions relate to working hours, noise control, drainage and waste management. Therefore, there are no cumulative impacts anticipated with this development

**REG REF  
CLIENT  
DEVELOPMENT  
DESCRIPTION**

FW17A/0012  
Roadstone Ltd  
The development will comprise an increase in the permitted intake rate of construction and demolition (C&D) waste at the facility from a maximum of 24,950 tonnes per annum at present to 95,000 tonnes per annum in future years.  
The application provides for continuation and intensification of waste recovery activity at the established C&D waste recovery facility (Planning Ref. F02A/0602) on a 1.9 hectare site within the Central Quarry, in the immediate near-term (up to 2-3 years).  
It also provides for relocation of C&D waste recovery activities to a new waste recovery facility on a 5.2 hectare site in north-eastern corner of the Huntstown Quarry Complex and construction of a hardstanding area, waste processing shed, surface water processing shed, surface water management infrastructure and internal access roads at the new recovery facility.  
The proposed development requires a review of the existing waste licence (Ref.W0277-01) by the Environmental Protection Agency. An Environmental Impact Statement (EIS) will be submitted to the planning authority in connection with the application.  
Granted permission  
The Planning Authority (FCC) granted permission for the application subject to 13 no. condition(s). The conditions relate to working hours, noise control, drainage and waste management. Therefore, there are no cumulative impacts anticipated with this development

**DECISION  
CUMULATIVE IMPACT  
ASSESSMENT**

**REG REF  
CLIENT  
DEVELOPMENT  
DESCRIPTION**

FW13A/0012  
Stream BioEnergy Limited  
Planning permission for the construction of a Renewable Bioenergy Plant to generate up to 3.8MW of electricity from 90,000 tonnes of non-hazardous biodegradable waste per annum utilising Anaerobic Digestion (AD) technology on a 2.38 hectares site within Roadstone Wood's Huntstown Quarry, Huntstown, North Road, Finglas, Dublin 11. The proposed plant will comprise the following elements:  
(i) 13.9m high main building (4958.5 sq. m. floor area) incorporating feedstock reception and processing areas, digestate treatment areas, storage areas, workshop and including a 3 storey administration and welfare area (1744.8 sq. m. floor area);



- (ii) Digestion Tank Farm (4m high bund) enclosing 4 no. digester tanks (up to 25.4m max. height, c.5000m<sup>3</sup>), 2 no. digestate treatment tanks (up to 25.4m max. height, c.5000m<sup>3</sup>), 2 no. digester feed buffer tanks (up to 17.6m max. height, 1800m<sup>3</sup>), and 2 no. pre-pasteurisation tanks (up to 12.8m max. height, 700m<sup>3</sup>) [total 10 no. tanks], to include stairwell towers and gantries;
- (iii) Wastewater Treatment Plant Tank Farm (4m high bund) enclosing 3 no. SBR Aeration tanks (up to 16.0m max. height, c.2200m<sup>3</sup>), sludge tank (up to 10.8m max. height, c.75m<sup>3</sup>), process water tank (up to 22.9m max. height, 2000m<sup>3</sup>) and process liquor tank (up to 22.6m. max. height, 2400m<sup>3</sup>) [total 6 no. tanks], to include stairwell towers and gantries;
- (iv) 2 no. enclosed Combined Heat and Power 2MW engines (3.6m high: 65.8 sq. metres floor area each), 28m high stack, 13.7m high gas holder (1800m<sup>3</sup>), 8.2m high biogas flare stack, 2 no. 12m high gas scrubbers, gas treatment equipment enclosed in 1.8m high container (30.6 sq. m floor area) and 2.5m high container (78.8 sq. m floor area), 3 no. banded electrical transformers (4.8m high) and 3.0m high sub-station (51.9 sq. m. floor area);
- (v) Various plant and vessels including 2 no. pasteurisation units (5.85m high) each containing heat exchanger and 3 no. c.24m<sup>3</sup> tanks, 2.5m high ferric chloride storage tank (c.15m<sup>3</sup>), 5m high caustic storage tank (c.35m<sup>3</sup>), storm water tank (up to 21m max. height, c.2000m<sup>3</sup>), 4 no. liquid waste tanks (up to 10.5m max. height, c.90m<sup>3</sup>), enclosed pump equipment (2m high, 10 sq. m floor area), boiler, and enclosed air blower unit (3m high, 36 sq. m floor area);
- (vi) Odour Control System (15.7m high: 313.8 sq. m. floor area) and 25m high stack;
- (vii) Approx. 100mm diameter 1000m long rising main with connection into existing mains sewer at North Road, and package pumping station (2m high: 29.7 sq. m. floor area)
- (viii) 2 no. weighbridges, office (17.2 sq. m. floor area), banded vehicle refuelling area with diesel storage tank (c.5000 litres), 2 no. wheel washes and vehicle wash, inner and outer 2.4m high mesh panel perimeter fencing with 7m wide entrance gate and 5.5m wide exit gate, 5 no. directional signs (total area of 8.8 sq. m), pipebridge and walkway, lighting, landscaping, 22 no. car parking spaces and bicycle rack, internal circulation roads, concrete foundation slabs and all site works, facilities and services.

Access is at an existing permitted vehicular access at North Road and vehicles will avail of existing quarry circulation roads.

This application is accompanied by an Environmental Impact Statement (EIS) and a Natura Impact Statement (NIS). This application relates to a development that will require an Industrial Emissions Directive licence from the Environmental Protection Agency. The Planning Application, EIS and NIS may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority during its public opening hours (9.30 - 16.30 Monday – Friday) at Fingal County Council, Grove Road, Blanchardstown, Fingal, Dublin 15. A submission or observation in relation to the Application may be made in writing to the Planning Authority on payment of a fee of €20, within the period of 5 weeks, beginning on the date of receipt by Fingal County Council of the Application, and such submissions or observations will be considered by the Planning Authority in making a decision on the application. The Planning Authority may grant permission subject to or without conditions, or may refuse to grant permission.

**DECISION** | Granted permission

|  |   |
|--|---|
| <p><b>REG REF</b><br/><b>CLIENT</b><br/><b>DEVELOPMENT DESCRIPTION</b></p> | <p>FW12A/0022<br/>Roadstone Wood Ltd<br/>Permission / permission for continuation of use of all existing authorised facilities and activities within a planning application area of c.167.5 hectares as followings:</p> <ul style="list-style-type: none"> <li>• Extraction, crushing, screening and processing of rock (authorised by Reg. Ref. No. F03A/1430 / PL 06F.206789) from the Northern, Western, Central and Southern Deposits for a period of 35 years.</li> <li>• Total Extraction area of c.55.9 hectares within a total landholding of c.211 hectares</li> <li>• Crushing, Screening and Processing Plant</li> <li>• Block Manufacturing Facility &amp; Block Yard</li> <li>• Paving Display Centre &amp; Offices</li> <li>• Machinery Maintenance Building</li> <li>• Offices, Staff Facilities, Laboratory</li> <li>• Concrete Batching Plant &amp; Associated Plant</li> <li>• Asphalt Plant &amp; Associated Plant</li> <li>• Stockpile Materials Shed associated with Asphalt Plant, granted under P. Reg. Ref. F06A/0923 (ABP Ref: PL 06F.219655).</li> <li>• Weighbridge, Bunded Fuel Storage &amp; Oil Interceptor</li> <li>• Security Huts (3 no.), Truck Wash Bays &amp; HGV Load Spray Bars (P. Ref. FW09A/0099 in respect of amendment to Condition 14 of F03A/1430)</li> <li>• Bord na Mona Moving Bed Biological Reactor &amp; Percolation Area</li> <li>• Stockpiles Storage Areas &amp; Plant Storage Yard</li> <li>• Stables (22 no.) &amp; Horse exercise paddock</li> <li>• Existing Site Accesses (2 no.) onto the R135 North Road (Revised Entrance P. Ref. F06A/0164 &amp; ABP Ref: PI 06F.217413P) &amp; Kilshane Road.</li> <li>• Restoration of any worked out extraction areas, including for 5 years after the cessation of quarrying activities.</li> <li>• All other ancillary buildings, plant and facilities for the production of building products, including aggregates, ready-mix concrete, asphalt, tarmacadam and architectural blocks and all ancillary site works.</li> </ul> <p>This Planning Application will be accompanied by an Environmental Impact Statement (EIS).Permission / permission for continuation of use for development at Huntstown.</p> |
| <p><b>DECISION</b><br/><b>CUMULATIVE IMPACT ASSESSMENT</b></p>             | <p>Granted permission<br/>The Planning Authority (FCC) granted permission for the application subject to 24 no. condition(s). The conditions relate to working hours, noise, dust and vibrations control, drainage, waste management, operating hours. Therefore, there are no cumulative impacts anticipated with this development</p> <p style="text-align: right;">13-09-2022FW22A/0204<br/>FINGAL CO CO PL DEPT</p>   |
| <p><b>REG REF</b><br/><b>CLIENT</b><br/><b>DEVELOPMENT DESCRIPTION</b></p> | <p>F04A/1430<br/>Huntstown Power Company Ltd.<br/>Increase the nominal power output of Huntstown Combined Gas Turbine (CCGT) Power Generation Station as granted under Reg. Ref. F98A/1313 (An Bord Pleanála ref. PL06.F110954) and as amended by permission for alterations to Phase 1 (Reg. Ref. F00A/0957; F01A/1046 and to phase 2 (Reg. Ref. F03A/0272). The proposed increase in nominal power output is from an output of up to 600 MW, as described in grant of permission Reg. Ref. F98A/1313, to a nominal power output of 740 MW.</p>  |

This application relates to development for which an integrated Pollution Control License under Part IV of the Environmental Protection Agency Act, 1992 has been obtained (Ref. No. 483). The proposal results from increases in the efficiency of CCGT plant and can be achieved within the terms of integrated pollution control licence No. 483 and the physical dimensions and operational parameters permitted under the relevant permissions outlined above. Phase 1 of the scheme has been constructed and is operational. The application is for an area of 995 hectares.  
Grant Permission

**DECISION**

|   |   |
|---|---|
| <b>REG REF<br/>CLIENT<br/>DEVELOPMENT<br/>DESCRIPTION</b> | <p>F03A/1430<br/>Roadstone Dublin Limited<br/>The contribution of extraction, crushing, screening and processing of rock (authorised by Reg. Ref. F93A/1134), from the northern, central, western and southern deposits for 20 years (c. 57.5 ha total extractive area in a c. 205 ha overall site); the continuance indefinitely of all authorised crushing, screening and processing plant, block manufacturing plant (2,452 sqm) block yard) (17.2 ha), paving display area (636 sqm), paving centre (180 sqm), machinery maintenance building (1,456 sqm), offices (174 sq.m), staff facilities (48 sqm), laboratory (68 sqm), concrete batching plant, asphalt plant, weightbridge, 2 no. truck wash bays, 4 no. security huts, Bord na Mona moving bed biological reactor and percolation area, stockpiles and all ancillary buildings, plant and facilities for the production of building products including aggregates, ready made concrete, asphalt, tarmacadam and architectural blocks and all ancillary site works; progressive restoration of the worked out extractive areas including for 5 years after the cessation of quarrying; and for the retention of plant storage yard (site area c. 1.86 ha). Existing access will continue at the N2 North Road and Kilshane Road. This application is accompanied by an Environmental Impact Statement. This development is in the townlands of Coldwinters, Kilshane, Hunstown, Johnstown, Grange and Cappogue.<br/>Grant Permission</p> |
| <b>DECISION<br/>CUMULATIVE<br/>IMPACT<br/>ASSESSMENT</b>  | <p>The Planning Authority (FCC) granted permission for the application subject to 30 no. condition(s). The conditions relate to working hours, noise, dust and vibrations control, drainage, waste management, operating hours. Therefore, there are no cumulative impacts anticipated with this development</p>  |
| <b>REG REF<br/>CLIENT<br/>DEVELOPMENT<br/>DESCRIPTION</b> | <p>F98A/1313<br/>CRH Estates Ltd.<br/>Gas-fired Combined Turbine Electricity generation station with an output of up to 600 MW, to be developed in two phases. The application includes two turbine halls, two heat exchange boilers, four 33.5 metre high stacks, two air cooled condenser units, two storey administration and control building, workshop, stores, electrical switchyard, above-ground installation for gas supply, reserve fuel storage tanks, miscellaneous plant and equipment, site and landscaping works wastewater treatment plant and the demolition of an existing dwelling.<br/>The application relates to a development that comprises of or is for the purpose of activity that requires a license under Part 1V of the Environmental Protection Agency Act 1992. An Environmental Impact</p>  |



journeys and a shift towards sustainable transport options such as walking, cycling and the use of public transport such as buses and trains.

The Co-ordinator, in consultation with the Developer, the Occupiers, and the Local Authority or its agents, will agree annual targets, following completion and analysis of the travel survey, for increasing the percentage of non-car modes.

The Co-ordinator will:

- Meet with officers of the Local Authorities or its agents within a period of 6 months following occupation of the building(s) and thereafter every 12 months to assess and review progress of the Plan and agree objectives for the next 12 months, and
- Prepare and submit to senior management of the Developer, the Occupier(s) and the Local Authorities or its agents, an annual Monitoring Report.

## 13.9 DIFFICULTIES ENCOUNTERED WHEN COMPILING

There were no difficulties encountered in compiling this Chapter.

## 13.10 REFERENCES

- Dublin BusConnects Website: [New Dublin Area Bus Network - BusConnects](#)
- Design Manual for Urban Roads and Streets (DMURS), Department of Transport, Tourism and Sport
- Fingal Council Development Plan 2017 – 2023.
- Fingal City Council Draft Development Plan 2023 - 2029
- NRA Guidelines, Traffic and Transportation Assessment Guidelines (2014), National Roads Authority
- Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, (May 2019), Transport Infrastructure Ireland Publications
- Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts, (2016), Transport Infrastructure Ireland Publications
- Sustainable Urban Housing: Design Standards for New Apartments, (2020), Department of Housing, Planning and Local Government

Transport for Ireland (TFI): [www.transportforireland.ie](http://www.transportforireland.ie)

# 14 WASTE MANAGEMENT

## 14.1 INTRODUCTION/METHODOLOGY

This chapter evaluates the impacts, if any, which the proposed development may have on Material Assets as defined in Directive 2014/52/EU, the EPA EIA Report Guidelines 2022 and EPA Draft Advice Notes for EIS 2015.

This chapter has also been prepared to address the issues associated with material assets during the construction and operational phases of the proposed development as described in Chapter 2.

A site-specific Resource Waste Management Plan (RWMP) has been prepared by AWN Consulting Ltd to deal with waste generation during the excavation and construction phases of the proposed Development and has been included as Appendix 15. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' document produced by the National Construction and Demolition Waste Council (NCDWC) in conjunction with the Department of the Environment, Heritage and Local Government (DoEHLG)(2006).

The Chapter has been prepared in accordance with European Commissions Guidelines, Guidance on the preparation of the Environmental Impact Assessment Report (2017), the EPA Guidelines on the Information to be contained in EIA (2022) and the EU Commission Notice on changes and extensions to projects, 2021.

These documents will ensure the management of wastes arising at the Development Site in accordance with legislative requirements and best practice standards.

### 14.1.1 Methodology

The assessment of the impacts of the proposed development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This Chapter is based on the proposed development, as described in Chapter 2 (Description of the Proposed Development) and considers the following aspects:

- Legislative context;
- Construction phase (including site preparation, demolition, excavation and construction);
- Operational phase; and
- Decommissioning Phase

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the Construction and Operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the proposed development have been calculated and are included elsewhere in this chapter. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National

Waste Statistics, data recorded from similar previous developments, Irish and US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 6 of this EIA (Soils and Geology).

### 14.1.2 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended). European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 14.1 **Figure 14.1**).



**Figure 14.1 Waste Hierarchy (Source: European Commission)**

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 14.2).



**Figure 14.2 Circular Economy (Source: Repak)**

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland, was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, A Resource Opportunity, in 2015.

One of the first actions to be taken from the WAPCE was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021). The guidance documents, Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the Eastern Midlands Region (EMR) Waste Management Plan 2015 – 2021, BS 5906:2005 Waste Management in Buildings – Code of Practice, the Fingal County Council (FCC) (Segregation Storage, Presentation and of Household and Commercial Waste) Bye-Laws (2020), the EPA National Waste Database Reports 1998 – 2018 and the EPA National Waste Statistics Web Resource.

### 14.1.3 Terminology

Note that the terminology used herein is consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

**Waste** - Any substance or object which the holder discards or intends or is required to discard.

**Prevention** - Measures taken before a substance, material or product has become waste, that reduce:



- the quantity of waste, including through the re-use of products or the extension of the life span of products;
- the adverse impacts of the generated waste on the environment and human health; or
- the content of harmful substances in materials and products.

**Reuse** - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

**Preparing for Reuse** - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

**Treatment** - Recovery or disposal operations, including preparation prior to recovery or disposal.

**Recovery** - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

**Recycling** - Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

**Disposal** - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I of the Waste Framework Directive sets out a non-exhaustive list of disposal operations.

## 14.2 THE PROPOSED DEVELOPMENT

The proposed development site is located on an approximately 13 ha site in the townland of Kilshane, and Piperstown, Kilshane Road, Dublin 11. The proposed development comprises the construction of a gas turbine power generator station with an output of up to 293 Megawatts, the application of which includes a turbine, an associated exhaust stack, two air cooled condenser units, administration and control building, workshop, stores, fuel gas area, electrical module for fuel gas area, step-up transformer, black start diesel generator, transfer compound, three reserve fuel storage tanks and recessed bund area, miscellaneous plant, and equipment.

The proposed development will also include 26 no. staff car parking spaces, site and landscaping works, and all associated ancillary site development infrastructure such as foul and surface water drainage works and internal roads, footpaths, access routes, and all associated engineering and construction site works necessary to facilitate the development. Additionally, the proposal includes the realignment of a section of the Kilshane road and construction of a new roundabout junction (bounding the site to the east).

A full description of the proposed development can be found in Chapter 4 (Description of the Proposed Development). The characteristics of the proposed development that are relevant in terms of waste management are summarised below.

### 14.2.1 Demolition Phase

The demolition stage will involve the demolition of the existing residential and farm buildings, along with hardstanding areas on site, as well as from the further excavation of the building foundations.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific RWMP in Appendix 15. The RWMP provides an estimate of the main

waste types likely to be generated during the C&D phase of the proposed development. The reuse, recycling/recovery and disposal rates have been estimated using the EPA National Waste Reports and these are summarised in Table 14.1.

**Table 14.1 Predicted on and off-site reuse, recycle and disposal rates for construction waste**

| Waste Types                       | Waste tonnes | Reuse/Recovery |             | Recycle |             | Disposal |             |
|-----------------------------------|--------------|----------------|-------------|---------|-------------|----------|-------------|
|                                   |              | %              | Tonnes      | %       | Tonnes      | %        | Tonnes      |
| Glass                             | 11.3         | 0              | 0.0         | 85      | 9.6         | 15       | 1.7         |
| Concrete, Bricks, Tiles, Ceramics | 64.3         | 30             | 19.3        | 65      | 41.8        | 5        | 3.2         |
| Plasterboard                      | 4.8          | 30             | 1.4         | 60      | 2.9         | 10       | 0.5         |
| Asphalts                          | 1.3          | 0              | 0.0         | 50      | 0.6         | 50       | 0.6         |
| Metals                            | 18.9         | 5              | 0.9         | 80      | 15.1        | 15       | 2.8         |
| Slate                             | 10.1         | 0              | 0.0         | 85      | 8.6         | 15       | 1.5         |
| Timber                            | 15.1         | 10             | 1.5         | 60      | 9.1         | 30       | 4.5         |
| Asbestos                          | 0.3          | 0              | 0.0         | 0       | 0.0         | 100      | 0.3         |
| <b>Total</b>                      | <b>126.0</b> |                | <b>23.2</b> |         | <b>87.7</b> |          | <b>15.2</b> |

## 14.2.2 Construction Phase

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be topsoil and subsoil generated from site clearance and excavations required to facilitate the construction of foundations, the installation of services and roads for the development. Excavated material will be reused on site where possible with the remainder made available for re-use off-site. The volume of material to be excavated has been estimated at c. 64,500m<sup>3</sup>. It is anticipated that all of this material will be reused onsite for infilling and landscaping works where possible. If material is deemed unsuitable and has to be removed offsite it will be removed from site for appropriate offsite reuse, recovery, recycling and / or disposal.

If the material that requires removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under regulation 15 (By-products) (Previously Article 27 of the European Communities (Waste Directive) Regulations 2011) of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020. For more information in relation to the envisaged management of by-products and waste, refer to the RWMP (Appendix 15).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2019). Environmental soil analysis will be carried out prior to removal of the material on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste, including potential pollutant concentrations and leachability. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction phase workers e.g. organic / food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the Construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP (Appendix 15). The RWMP provides an estimate of the main waste types likely to be generated during the Construction phase of the proposed development. These are summarised in Table 14.2.

**Table 14.2 Predicted on and off-site reuse, recycle and disposal rates for construction waste**

| Waste Types  | Waste tonnes | Reuse/Recovery |             | Recycle |             | Disposal |            |
|--------------|--------------|----------------|-------------|---------|-------------|----------|------------|
|              |              | %              | Tonnes      | %       | Tonnes      | %        | Tonnes     |
| Mixed C&D    | 22.0         | 10             | 2.2         | 80      | 17.6        | 10       | 2.2        |
| Timber       | 18.7         | 40             | 7.5         | 55      | 10.3        | 5        | 0.9        |
| Plasterboard | 6.7          | 30             | 2.0         | 60      | 4.0         | 10       | 0.7        |
| Metals       | 5.3          | 5              | 0.3         | 90      | 4.8         | 5        | 0.3        |
| Concrete     | 4.0          | 30             | 1.2         | 65      | 2.6         | 5        | 0.2        |
| Other        | 10.0         | 20             | 2.0         | 60      | 6.0         | 20       | 2.0        |
| <b>Total</b> | <b>66.7</b>  |                | <b>15.2</b> |         | <b>45.3</b> |          | <b>6.3</b> |

### 14.2.3 Operational Phase

The new development will give rise to a wide variety of waste streams during the operational phase, i.e. when the project is completed, open and occupied. Operational waste will be generated on a daily basis by the operator.

#### Segregation of Waste Materials Onsite

All waste materials will be segregated into appropriate categories and will be stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site. It is envisaged that waste types will be generated by staff employed at the facility and from office administration work.

The total estimated waste generation for the proposed Development for the main waste types, based on the AWN waste generation model (WGM) and data from the already operating buildings onsite, is presented in Table 14.3, below, and is based on the uses and areas as advised by the Project Architects.

**Table 14.3 Estimated Waste Generation During Operational Phase Main Waste Types**

| Waste Type                         | Waste Volume (m <sup>3</sup> / week) |
|------------------------------------|--------------------------------------|
| General Waste - 20 03 01           | 0.01                                 |
| Dry Mixed Recyclables - 15 01 06   | 0.13                                 |
| Confidential Paper - 20 01 01      | 0.02                                 |
| Biodegradable Food Waste- 20 01 08 | 0.15                                 |
| <b>Total</b>                       | <b>0.31</b>                          |

Dedicated waste storage areas (WSA) along with a facility operational waste management system for the sorting, storing and collection of waste is already in place for the existing development. It has been designed to maximise recycling rates and minimise waste across the entire centre.

All waste receptacles stored on site are collected from the service yard or waste storage rooms by the permitted waste contractor and taken to registered, permitted and/or licensed facilities.

### 14.3 RECEIVING ENVIRONMENT

In terms of waste management, the receiving environment is largely defined by Fingal FCC as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the *Eastern Midlands Region Waste Management Plan 2015 – 2021*, which sets out the following targets for waste management in the region:

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 55% of managed municipal waste by 2025; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of “70% preparing for reuse, recycling and other recovery of construction and demolition waste” (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

Ireland achieved 84 per cent material recovery of such waste in 2019, and therefore surpassed the 2020 target and is currently surpassing the 2025 target. The National Waste Statistics update published by the EPA in November 2021 identifies that Ireland’s current against “Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)” was met for 2020 at 51% however they are currently not in line with the 2025 target (55%).

The Fingal County Development Plan 2017 – 2023 (2017) and the Draft Fingal County Development plan 2023-2029 (2022) set out objectives for the FCC area which reflect those sets out in the regional waste management plan.

In terms of physical waste infrastructure, FCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the EMR Waste Region for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, municipal waste landfills, material recovery facilities and waste transfer stations.

### 14.4 PREDICTED EFFECTS

This section details the potential waste effects associated with the proposed development.

#### 14.4.1 Construction Phase

The proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction (see appendix 15 for further detail). General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored in the construction site compound or adjacent to it, on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the Development Site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including

pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant and negative**.

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the Development Site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

There is a quantity of excavated material which will need to be excavated to facilitate the proposed Development. A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 6. It is anticipated that none of excavated material will need to be removed off-site. If material has to be removed correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

#### 14.4.2 Operational Phase

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant and negative**.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

Waste contractors will be required to service the proposed development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant and negative**.

#### 14.4.3 Do Nothing Scenario

If the proposed development was not to go ahead (i.e. in the Do-Nothing scenario) there would be no demolition, excavation, construction or operational at this site. There would, therefore, be a neutral effect on the environment in terms of waste.

## 14.5 MITIGATION MEASURES

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concept of the 'waste hierarchy' is employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal.

### 14.5.1 Construction Phase

The following mitigation measures will be implemented during the construction phase of the proposed development:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of The EPA, *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)* and is included as Appendix 15. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 15) in agreement with FCC and in compliance with any planning conditions, or submit an addendum to the RWMP to FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.

The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.

It has been calculated by the project design team that none of excavated material will need to be removed off-site. If material has to be removed offsite then correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

Building materials will be chosen to 'design out waste';

On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:

- o Concrete rubble (including ceramics, tiles and bricks);
- o Metals;
- o Glass;
- o Hazardous material; and
- o Timber.

Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal);

All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;

Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably banded areas, where required);

A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;

- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with regulation 15 (By-products) (Previously Article 27 of the European Communities (Waste Directive) Regulations 2011) of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020. EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, and the EMR Waste Management Plan 2015 – 2021. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

### 14.5.2 Operational Phase

The following mitigation measures will be implemented during the operational phase of the proposed development:

All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins, skips or other suitable receptacles in a designated, easily accessible areas of the site.

The Operator / Buildings Manager of the Site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this sites current Operational Waste Strategy, ensuring a high level of recycling, reuse and recovery at the Site of the proposed Development.

The Operator / Buildings Manager will regularly audits the onsite waste storage facilities and infrastructure, and maintain a full paper trail of waste documentation for all waste movements from the site.

The following mitigation measures will be implemented:

The Operator will ensure on-site segregation of all waste materials into appropriate categories, including (but not limited to):

- o Organic waste;
- o Dry Mixed Recyclables;
- o Mixed Non-Recyclable Waste;
- o Glass;
- o Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment;
- o Waste Electrical and Electronic Equipment
- o Hazardous waste; and
- o Cleaning chemicals (paints, adhesives, resins, detergents, etc.).

The Operator will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;

The Operator will ensure that all waste collected from the Site of the proposed development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and

The Operator will ensure that all waste leaving the Site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the proposed Project is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, the *EMR Waste Management Plan (2015 - 2021)* and the FCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

## 14.6 RESIDUAL IMPACTS

The implementation of the mitigation measures outlined in Section 15.5 and in Appendix 15 will ensure that high rates of reuse, recovery and recycling are achieved at the Site of the proposed development during the construction and operational phases. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

### 14.6.1 Construction Phase

A carefully planned approach to waste management as set out in Section 15.5.1 and adherence to the RWMP (which include mitigation) (Appendix 15) during the construction phase will ensure that the predicted effect on the environment will be **short-term, imperceptible and neutral**.

### 14.6.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 15.5.2 will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be **long-term, imperceptible and neutral**.

### 14.6.3 Conclusion

The full and proper implementation of the mitigation measures set out herein and, in the RWMP (Appendix 15), no likely significant negative effects are predicted to occur as a result of the construction or operational of the proposed development.

## 14.7 CUMULATIVE IMPACTS

The following considers the cumulative impacts of the proposed development and proposed and permitted and operating facilities in the surrounding area in relation to Material Assets – Waste Management. This considers the proposed development and other surrounding proposed and permitted developments considered in Chapter 4.

As has been identified in the receiving environment section all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

### 14.7.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase.

Developments that potentially could overlap during the construction phase of note:



- **FW22A/0108**
- **FW21A/0151**
- **F21A/0144**
- **FW19A/0015**
- **FW18A/0082**

Due to the high number of waste contractors in the Kildare region as provided from the National Waste Collection Permit Office and the Environmental Protection Agency there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be **short-term, imperceptible and neutral**.

### 14.7.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area, and the indicative future masterplan development, will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a **long-term, imperceptible and neutral**.

## 14.8 INTERACTIONS

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR.

### 14.8.1 Land, Soils, Geology & Hydrogeology

During the construction phase, excavated soil, stone, gravel and clay (c.64,500 m<sup>3</sup>) will be generated from the excavations required to facilitate site levelling and construction of new foundations. It is estimated that none of the excavated material will need to be removed off-site. If material has deemed unsuitable or is unable to be reused onsite it will be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 15 and the requirements of the RWMP (Appendix 15), will ensure the effect is **long-term, imperceptible and neutral**.

### 14.8.2 Traffic and Transportation

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the Site during the construction phase of the proposed Development. The increase in vehicle movements as a result of waste generated during the construction phase will be

*temporary* in duration. There will be an increase in vehicle movements in the area a during the operational phase. Traffic-related impacts during the construction phase and operational phase are addressed in Chapter 13 (Traffic and Transportation). Provided the mitigation measures are adhered to, the predicted effects are ***short to long-term, imperceptible*** and ***neutral***.

### 14.8.3 Population and Human Health

The potential impacts on human beings are in relation to incorrect management of waste during construction phase, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP (Appendices 15.1), and the mitigation measures in Chapter 15, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be ***long-term, imperceptible and neutral***.

## 14.9 REFERENCES

- Dublin BusConnects Website: [New Dublin Area Bus Network - BusConnects](#)
  - Design Manual for Urban Roads and Streets (DMURS), Department of Transport, Tourism and Sport
  - Fingal Council Development Plan 2017 – 2023.
  - Fingal City Council Draft Development Plan 2023 - 2029
  - NRA Guidelines, Traffic and Transportation Assessment Guidelines (2014), National Roads Authority
  - Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, (May 2019), Transport Infrastructure Ireland Publications
  - Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts, (2016), Transport Infrastructure Ireland Publications
  - Sustainable Urban Housing: Design Standards for New Apartments, (2020), Department of Housing, Planning and Local Government
- Transport for Ireland (TFI): [www.transportforireland.ie](http://www.transportforireland.ie)

# 15 ARCHAEOLOGY & CULTURAL HERITAGE

## 15.1 INTRODUCTION

This chapter presents the findings of an archaeological and cultural heritage impact assessment on the site of the proposed development located in Kilshane townland, Finglas, Co. Dublin (ITM 710777, 742666). The site is located c. 9km northwest of Dublin City Centre and is partially adjacent to and west of the M2 Motorway, south of Kilshane Rd., and to the north of Huntstown Quarry, close to the Huntstown Power Station (Figure 15.1). The site consists of five fields, with residential houses - Woodlands and Bungalow Farm occupying the northern part of the site.

The site lies within an area that was subject to a geophysical survey carried out under licence no. 22R0092<sup>xi</sup>, and subsequently, the site was subject to test trenching under licence no. 22E0348<sup>xii</sup>. The proposals for the site comprise the construction of a new Open Cycle Gas Turbine (OCGT), associated buildings, carparks, access roads and landscaping. A full project description is presented in Chapter 4 of this EIAR.

## 15.2 METHODOLOGY

This chapter's methodology is guided by a legislative framework that governs how aspects of archaeological, cultural and architectural heritage are protected. It has been prepared in compliance with all relevant EIAR legislation and guidance, including the recently published guidelines by the Environmental Protection Agency (EPA, 2022)<sup>xiii</sup>.

### 15.2.1 DOCUMENTARY SOURCES

For the purposes of this report, archaeology, architectural & cultural heritage is considered to include the following elements:

- Sites listed in the Sites & Monuments Record (SMR)
- Record of Monuments & Places (RMP)
- National Monuments
- Archaeological sites listed on the National Monuments Service website
- Sites reported in the Excavations Database
- Any previously unrecorded sites
- A list of protected monuments.
- A list of architectural heritage structures (NIAH)
- A list of protected structures (Fingal County Development Plan 2017-2023)

The following sources were consulted in order to identify and map archaeological sites within and adjacent to the proposed development site:

#### **Sites and Monuments Record (SMR) and Record of Monuments & Places (RMP) <sup>xiv</sup>**

A primary cartographic source and base-line data for the assessment was the consultation of the Sites and Monuments Record (SMR) and Record of Monuments and Places (RMP) for County Dublin<sup>xv</sup> (Figure 15.1). All known recorded archaeological monuments are indicated on 6-inch Ordnance Survey (OS) maps and are listed in this record<sup>xvi</sup>. The SMR/RMP is not a complete record of all monuments as newly discovered sites may not appear in the list or accompanying maps. In conjunction with the consultation of the SMR and RMP, the electronic database of recorded monuments that may be accessed on their website<sup>xvii</sup> was also consulted.

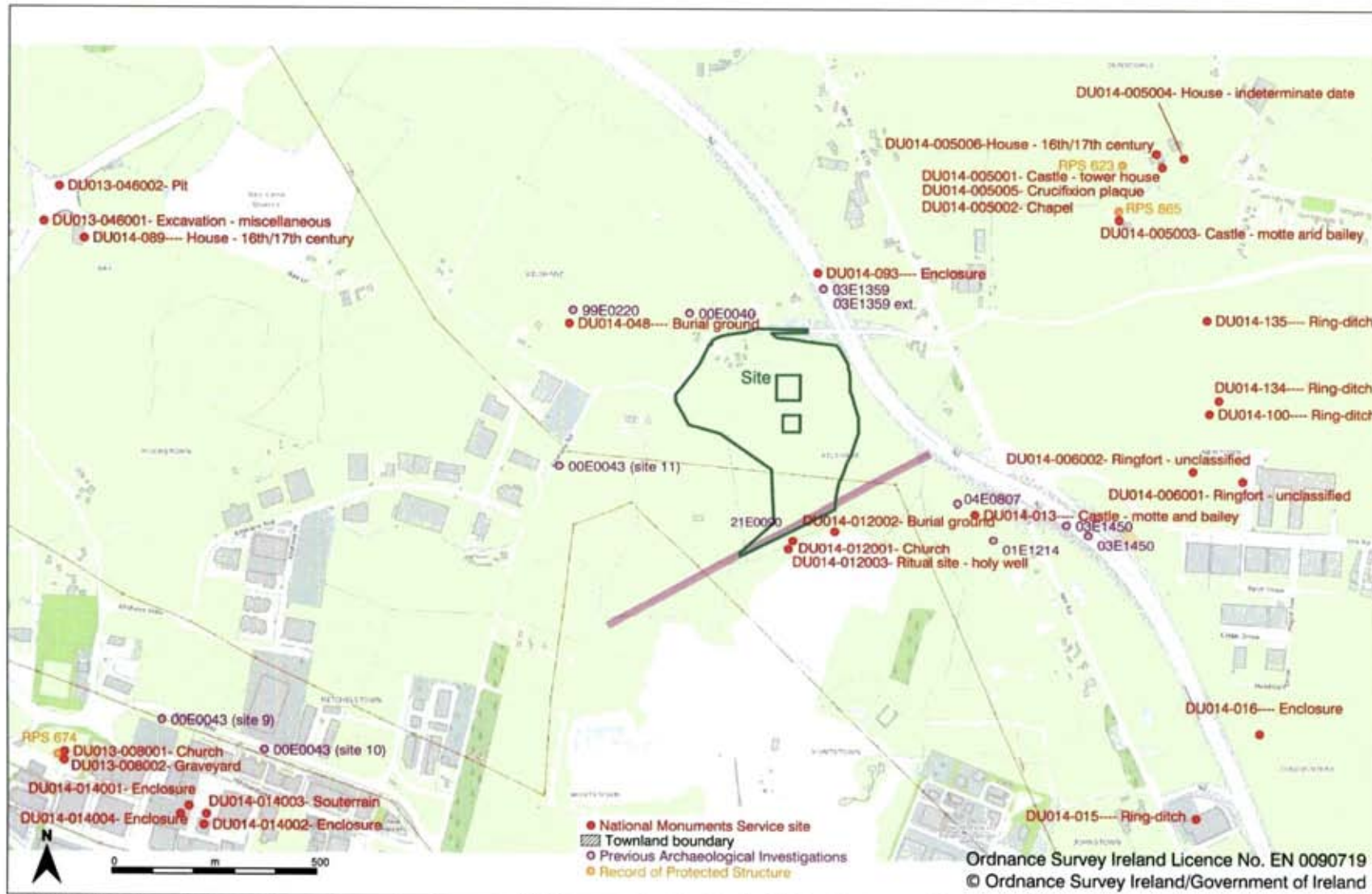


Figure 15.1 Location of site and nearby Recorded Monuments, Protected Structures and excavations.

### **National Monuments<sup>xviii</sup>**

A List of Monuments covered by Preservation Orders and a List of National Monuments in the ownership/guardianship of the Minister for Housing, Local Government & Heritage. National Monuments in the ownership/guardianship of the Minister for Housing, Local Government & Heritage are listed on the Department's website<sup>xix</sup>.

### **Excavations Database<sup>xx</sup>**

The excavations database is an annual account of all excavations carried out under license. The database includes excavations from 1970 to present. This database was consulted as part of the desktop research for this assessment to establish if any archaeological excavations had been carried out on or near to the proposed development area.

### **Topographical Files, National Museum of Ireland**

The topographical files of the National Museum of Ireland contain information pertaining to archaeological finds (mainly artefactual) and excavations in numerous townlands throughout the country, which were reported to the museum from the 1920s. While many of these findspots are not recorded monuments, they can provide an indication of archaeological activity in a townland and consequently add to the archaeological potential of an area.

### **Cartographic Sources**

A number of cartographic sources were also consulted as part of the desktop assessment, namely the Down Survey maps of the area (1656-8), the first edition 6-inch (1836) and the 25-inch edition (1906) OS maps and available aerial photography.

### **Tangible Cultural Heritage Area**

Cultural heritage is a broad term encompassing aspects of archaeology as well as architecture. Both elements can be expressed in landscape and can relate to designated landscapes, historic places, monuments, settlements, including buildings and structures.

Tangible cultural heritage areas within the site were identified via examination of Ordnance Survey mapping and as a result of the site visit.

### **Protected Structures (RPS)<sup>xxi</sup>**

The Fingal County Development Plan 2017-2023<sup>xxii</sup> was consulted. These contain a list of Architectural Conservation Areas and a Record of Protected Structures for the County. The latter lists cultural heritage sites, buildings of historic, architectural, -cultural, scientific and/or artistic interest. These are protected by the Local Government (Planning and Development) Act 1999 and the Planning and Development Act 2000 (Part IV Architectural Heritage).

### **Architectural Heritage (NIAH)<sup>xxiii</sup>**

The following additional sources were also consulted in order to inform the assessment of all aspects of the archaeological resource within and adjacent to the proposed development site and that the assessment is cognisant of all relevant policies and objectives.

- Report on Geophysical Survey at Kilshane, County Dublin (22R0092), Leigh, J.M. 2022.

Geophysical Survey, in the form of magnetic gradiometry, is a non-intrusive method that is used in



Figure 15.2 Aerial view of site.

Irish Archaeology. It is a method for rapidly mapping archaeological objects, structures, deposits and other features, including geological anomalies, that survive beneath the ground surface. The results are presented as a grey-scale map of anomalies detected that are interpreted by an experienced archaeologist. A licence to carry out work is required and is granted by the Department of Housing Local Government and Heritage following submission of a licence application for the site in question. (in this case Licence Number 22R0092 was granted to Joanna Leigh). Upon completion of the survey, a report detailing the results of the work carried out is submitted to the Department and the National Museum of Ireland.

- Report on Archaeological Test Excavation, Kilshane Energy, Co. Dublin (22E0348) Lynn C., Long C., 2022)

Archaeological test trenching is carried out in advance of construction and is undertaken across the footprint of development. Test trenches are excavated to facilitate the early identification of archaeological deposits and features. In this case, test trenching was carried out following a geophysical survey. In such instances, the trenches are placed to target anomalies detected in order to assess their significance, extent and depth. The results allow for an informed decision on how best to deal with any discovered archaeological finds or features prior to works on site commencing. A licence to carry out work is required and is granted by the Department of Housing Local Government and Heritage following submission of the licence application for the site in question (in this case, Licence Number 22E0348 was granted to Chris Lynn). Upon completion of the survey, a report detailing the results of the work carried out is submitted to the Department and the National Museum of Ireland.

### 15.2.2 SITE INSPECTION

A site inspection was conducted by Billy Quinn of ACSU on Tuesday, the 9th of August, 2022. The site is located partially adjacent to and west of the M2 Motorway, south of Kilshane Rd. and to the north



**Figure 15.3 South field, facing southwest. West boundary detail: bottom left along the boundary facing south; bottom right, wet ditch boundary facing north**



**Figure 15.4** South field, facing northwest. Showing the area of the enclosure being stripped under archaeological supervision.



**Figure 15.5** Northeast field, facing south. Detail showing farmer access roads, bottom left facing southeast, bottom right, facing south.

of Huntstown Quarry and Power Station, to the north of Dublin City. It consists of four distinct areas; south, northwest, northeast and north (Figure 15.2).

The south part of the site consists of a majority of a large field up until recently under crop, bounded by mature hedges and trees from north, south and west, with a wet ditch forming the west boundary of the field. Electric pylons run east to west within the central portion of the field (Figure 15.3). The water-mains infrastructure bound the site from the south. The access to the field is from the north. At



the time of the visit, the area of the enclosure was being stripped under archaeological supervision (**Figure 15.4**).

The northeast area consists of a portion of an overgrown field with two farmer access lanes off Kilshane Rd.; one leading to the southern field and the other southeast one to fields adjacent to and east of the site (**Figure 15.5**).

The northwest area consists of a field with tall grasses, bounded by mature hedges and trees. Kilshane Rd. bounds the site from the west; adjacent and to the north is the area consisting of a modern house, farmyard and a number of ancillary structures (**Figure 15.6**)



**Figure 15.6 Northwest field, facing northeast. Bottom left: view along the west boundary facing north, bottom right: view towards the house, farmyard and ancillary structures facing north.**

### 15.3 THE PROPOSED DEVELOPMENT

The proposed development area is located in the townland of Kilshane, and lies to the west of the M2 Motorway, south of Kilshane Rd., and to the north of Huntstown Quarry.

The site comprises greenfield and consists of a portion of an arable field and pasture land with modern dwellings and ancillary structures within the northern portion of the site. It is now proposed to develop the site. The development will include the construction of a new Open Cycle Gas Turbine (OCGT), associated buildings, car parks, access roads and landscaping.

A full project description is presented in Chapter 4 of this EJAR.

## 15.4 THE RECEIVING ENVIRONMENT

Archaeology is considered here to include all recorded monuments listed in the Record of Monuments and Places (RMP) and in the Sites and Monuments Record (SMR), National Monuments (i.e. those in the ownership/guardianship of the state), previously unrecorded sites, sites reported in the Excavations Database if not included in the RMP and find spots or sites listed in the Topographical Files.

### 15.4.1 NATIONAL MONUMENTS

The term 'National Monument' is defined by the National Monuments Act (1930) as being 'a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic, or archaeological interest attaching thereto'. The aforementioned Act states that the consent of the Minister is required for archaeological works at or near a national monument in the ownership or guardianship of the Minister or a local authority or to which a preservation order applies. The Minister is required to consult with the Director of the National Museum of Ireland in relation to such an application for consent. No National Monuments are located on or within close proximity to the proposed development site. Dunsoghly Castle (DU014-005001-) is a National Monument No. 230 in state ownership that is located c. 0.9 kilometres (km) to the northeast.

### 15.4.2 RECORDED MONUMENTS

There are no monuments as listed in the Record of Monuments and Places nor in the Sites and Monuments Record located within the site boundary. There are three monuments located within a field to the south of the site; these consist of Church DU014-012001- with associated Burial ground DU014-012002- and Ritual site – holy well DU014-012003-, however these are not scheduled for inclusion in the next revision of the Record of Monuments and Places, are located within an area that was extensively quarried and a part of the Hunstown Quarry. Furthermore, the monuments are not visible on ground level and monitoring of the water-mains infrastructure of an area adjacent to and south of the current site (21E0090) did not identify any features of archaeological interest. The nearest monument to the site, scheduled for inclusion in the next revision of the Record of Monuments and Places is an enclosure DU014-093---- located c. 140m to the north. These are one of the most common field monuments in Ireland. This type of monument is defined by an enclosing element such as a bank, wall, fosse, scarp. Some enclosures have no surface expression, the upstanding elements were usually removed in the past as a result of land reclamation/farming; some can be indicated on cartographical sources or manifest as a cropmark on aerial imagery, while others remain unknown; such as the monument located within the current site. These are identified as a result of archaeological investigations. The enclosures can be of various shapes and sizes and date from prehistory onwards. Enclosure DU014-093---- was identified during investigations (03E1359) in advance of the N2 Finglas-Ashbourne Road Scheme in 2004. The enclosure was dated to the Neolithic period, with later activity dating to Bronze Age and expressed in a series of deposits and features, including hearth and cremation pits. The enclosure consisted of an irregular ditch measuring between 1.9m to 3.8m was recorded surrounding an egg shaped area measuring 38.5m by 27.5m.

The following is a list of 18 monuments (**Table 15.1**) located within a 1km radius of the site (Figure 15.1). The entry below is derived from the National Monuments Service Archaeological Survey Database

**Table 15.1 Recorded monuments within 1 km of the centre of the development site**

| RMP/SMR       | Classification             | Townland | ITM E  | ITM N  |
|---------------|----------------------------|----------|--------|--------|
| DU014-001---- | Castle - motte             | KILSHANE | 710410 | 743822 |
| DU014-005001- | Castle - tower house       | DUNSOGLY | 711764 | 743185 |
| DU014-005002- | Chapel                     | DUNSOGLY | 711765 | 743172 |
| DU014-005003- | Castle - motte and bailey  | DUNSOGLY | 711656 | 743051 |
| DU014-005004- | House - indeterminate date | DUNSOGLY | 711806 | 743202 |

| RMP/SMR       | Classification            | Townland                             | ITM E  | ITM N  |
|---------------|---------------------------|--------------------------------------|--------|--------|
| DU014-005005- | Crucifixion plaque        | DUNSOGLY                             | 711762 | 743175 |
| DU014-005006- | House - 16th/17th century | DUNSOGLY                             | 711748 | 743211 |
| DU014-006001- | Ringfort - unclassified   | NEWTOWN (Coolock By.,<br>Finglas ED) | 711962 | 742457 |
| DU014-006002- | Ringfort - unclassified   | NEWTOWN (Coolock By.,<br>Finglas ED) | 711827 | 742447 |
| DU014-012001- | Church                    | KILSHANE                             | 710876 | 742260 |
| DU014-012002- | Burial ground             | KILSHANE                             | 710975 | 742277 |
| DU014-012003- | Ritual site - holy well   | KILSHANE                             | 710869 | 742258 |
| DU014-013---- | Castle - motte and bailey | NEWTOWN (Coolock By.,<br>Finglas ED) | 711319 | 742325 |
| DU014-048---- | Burial ground             | KILSHANE                             | 710300 | 742841 |
| DU014-093---- | Enclosure                 | KILSHANE                             | 710927 | 742924 |
| DU014-100---- | Ring-ditch                | NEWTOWN (Coolock By.,<br>Finglas ED) | 711913 | 742603 |
| DU014-134---- | Ring-ditch                | NEWTOWN (Coolock By.,<br>Finglas ED) | 711929 | 742619 |
| DU014-135---- | Ring-ditch                | NEWTOWN (Coolock By.,<br>Finglas ED) | 711916 | 742790 |

### 15.4.3 PREVIOUSLY UNRECORDED SITES

An irregular-shaped enclosure with an outer ditch delimiting an area measuring 88m by 66m and a number of responses suggesting habitation activity were identified during the geophysical survey (22R0092) of the site. The enclosure had no surface expression and was not visible on any examined cartographic or aerial sources. Subsequent test trenching (22E0348) confirmed the presence of an enclosure complex with associated internal and external features, provisionally dated to the Medieval Period. In addition, a pit with charcoal and pyrolithic material was identified during test trenching. These features are currently being preserved by record through full archaeological excavation under licence from the National Monuments Service.

### 15.4.4 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

The site was subject to archaeological assessments on two occasions in the first half of 2022. One of the fields within the site was subject to a geophysical survey under licence no. 22R0092<sup>xxiv</sup> and was a part of a bigger area subject to survey. This identified the presence of archaeological remains on site in the form of an enclosure and other archaeological activity (see 0 for details). Subsequent, test trenching of the current site was undertaken under licence no. 22E0348<sup>xxv</sup>, confirming the presence of the enclosure and additional features of archaeological significance (see 0 for details). Furthermore, the area adjacent to and south of the site was subject to investigations in 2021. This was in relation to an upgrading of the water-mains infrastructure between Ballycoolen and Kingstown townlands (21E0090). No features were exposed during the monitoring.

The area is rich in previously unknown monuments that were identified as a result of archaeological investigations. These include enclosure DU014-093 (03E1359); unenclosed cemetery, now Burial Ground DU014-048----(99E0220); investigations of Castle - motte and bailey DU014-013---- that identified additional features (01E1214, 04E0807); excavation of a burnt spread (03E1450), and a number of enclosures identified via geophysical survey 21R0134 and subsequently subject to investigations (21E0398, 21E0580, and 22E0045).

The details of these investigations (**Table 15.2**; see Figure 15.1), where available, are derived from the Summary Accounts of Archaeological Excavations in Ireland ([www.excavations.ie](http://www.excavations.ie)).

#### Table 15.2 Previous excavations carried out.

| Excavations.ie reference  | Licence No. | Site Type  | Investigation Type |
|---|-------------|--|--------------------|
| 2021:237 -<br>Ballycoolen/Cloghran/Grange/Huntstown/<br>Kilshane/Newtown/St.<br>Margaret's/Millhead/Kingstown, Dublin | 21E0090     | Small pit  | Monitoring         |
| 2004:0612 - KILSHANE, Dublin  | 03E1359     | Neolithic segmented enclosure, Early Bronze Age activity | Excavation         |
| 1999:253 - KILSHANE, Dublin   | 99E0220     | Unenclosed cemetery                                      | Monitoring         |
| 2001:456 - Newtown, Dublin<br>2002:0636 - Newtown, Dublin   | 01E1214     | Site of motte and bailey                                 | Test trenching     |
| 2008:481 - Newtown, Dublin  | 08E0043     | No archaeological significance                           | Monitoring         |
| 2021:352 - Kilshane, Dublin   | 21E0398     | Bronze Age   | Test Trenching     |
| 2022:045 - Kilshane, Dublin   | 21E0580     | Rectilinear ditched enclosure                            | Excavation         |

No features were exposed during the monitoring in 2021 (21E0090) of an area adjacent to and south of the site; however, a single sherd of medieval Leinster Cooking Ware was recovered from topsoil. A Prehistoric enclosure DU014-093---- located c. 140m to the north of the site, was identified and partially excavated (03E1359) in advance of the N2 road scheme. The site was identified as a neolithic segmented enclosure and included cremation pits and a single crouched inhumation in the centre of the enclosure as well as Early Bronze Age activity.

An unenclosed cemetery, now Burial Ground DU014-048, was identified during gas pipeline monitoring in 1988. The site is located c. 360m northwest of the current site. The area to be impacted upon by the pipeline was excavated, revealing the remains of 123 individuals. Subsequent test trenching was carried out under licence 99E0220, suggesting the burials did not extend eastwards.

Investigations of the Castle - motte and bailey DU014-013---- located c. 325m to the southeast of the site included archaeological monitoring of engineering test pits and boreholes (01E1214).

Subsequently, the site was subject to a geophysical survey, and test trenching (04E0807) was carried out in order to define an appropriate buffer zone. Archaeological deposits associated with enclosing elements of the motte were identified (ditches C3, C4 and C5) as well as a burnt mound (C15). Preservation in situ was recommended.

A Burnt spread was excavated as a part of the N2 road scheme, c. 0.5km to the east of the site. Two areas were excavated, a spread measuring 3.5m by 10m, two pits and a sub-circular trough were preserved by record (excavated).

A large area measuring 12 hectares located c. 430m to the west of the site was subject to a geophysical survey (21R0134); indications of several enclosures were recorded. The area was subject to subsequent investigations (21E0398, 21E0580, and 22E0045), confirming the presence of features of archaeological significance. Test trenching under licence 21E0398 confirmed the presence of a rectilinear enclosure (Site A), a D shaped enclosure, a sub-circular enclosure (Site B), a second larger rectilinear enclosure (Site C), two additional sites; a ditch with charcoal-rich fill, burnt pit and former field system, a linear ditch, two possible curvilinear ditches, a pit and a post-hole (Site E). Sites C, D and E were excavated under licence 21E0580. The enclosure in Site C measured 44m by 37m, with a ditch ranging from 2.5 to 4m in width and 0.8 to 2.4m in depth. The entrance was recorded at the southern side. The ditch at its deepest was just to the west of the entrance; it was suggested that this area also functioned as well. Pits, gullies and disturbed areas of burning were also preserved by record. Finds included a fragment of lignite bracelet, a fragment of a polished stone axe and several flint artefacts. The site was provisionally dated to the Early Medieval Period, and is awaiting a radiocarbon date. Site D comprised of two pits, a shallow ditch and a large and deep pit. The pit was interpreted as a waterhole and measured 6.05 by 7.62m and was 1.68m deep. Both smaller pits contained charred cereal, one interpreted as a cereal drying kiln. These were provisionally dated to the later Iron Age/Early Medieval Period. Site E was relatively modern in date and consisted of linear ditches, gullies and drains forming part of a field system. The remaining sites are being excavated under a separate licence (22E0045).

### Geophysical Survey (22R0092)

The geophysical survey of the present site was conducted April/May 2022 by Joanna Leigh of J.M. Leigh Surveys Ltd. under licence 22R0092<sup>xxvi</sup> issued by the Department of Housing, Local Government and Heritage. A detailed gradiometer survey was undertaken of an area measuring c. 18 hectares. One of the fields subject to survey is a part of the current site while the northeast and northwest fields were found not to be suitable for the survey. The survey was undertaken using a Bartington GRAD 601-2 instrument.

Anomalies recorded within the site consist of Anomalies 1-11 (**Figure 15.7**). See the extract below from the survey report:

#### Area A

5.1 *In the north there are a series of responses and trends (1) which form an irregular oval pattern. These are indicative of an archaeological enclosure. The probable enclosure measures 86m x 66m and comprises of numerous linear responses, indicative of activity. A curvilinear response (2) within the enclosure may represent an internal sub-circular enclosure, measuring c. 17m in diameter.*

5.2 *To the east of the enclosure (1) there is an area of increased response (3) which comprises of isolated responses. Although it is possible that this results from more recent ground disturbance, an archaeological interpretation must be considered. It is possible that a spread of burnt material and isolated pit-type features is represented here.*

5.3 *Linear trends and responses (4) appear to extend from the enclosure (1). These may represent associated ditched features. Linear trends (5) appear to extend from the enclosure to the east and lead to a series of responses (6) of interest.*

5.4 *Along the eastern extent of the area surveyed, a parallel series of responses (6) are indicative of ditched features. It is likely that these continue to the east, and perhaps represent the western extent of a double ditched enclosure feature. This is speculative but must be considered.*

5.5 *The responses (6) appear to continue to the south as faint linear trends (7). This may suggest some plough damage may have occurred.*

5.6 *A linear response (8) extends north to south, through the southern half of the survey area. The association of this with the enclosure is unclear, and it may represent a separate phase of activity.*

5.7 *Further linear responses and trends (9) appear to be parallel and perpendicular with (8), suggesting they may be associated. The responses (9) are somewhat overshadowed by magnetic disturbance from an electricity pylon, and interpretation is hindered. However, the responses form clear rectilinear patterns and are indicative of archaeological ditched features. These may represent former field divisions of archaeological interest.*

5.8 *Distinct small areas of increased response (10) are recorded in the south of the survey area. Interpretation is tentative as these may result from more recent ground disturbance. However, it is possible that broad pit-type features are represented here.*

5.9 *Numerous isolated responses are located throughout the area. Although some of these may represent more deeply buried ferrous debris, they may equally represent archaeological isolated pit-type features. The responses (11) are considered to be of clear archaeological potential.*

### Test Trenching (22E0348)

Following the geophysical survey (22R0092), the site was subject to a programme of archaeological testing (22E0348<sup>xxvii</sup>). The area tested included the northwest and northeast field that were not subject to the geophysical survey. Test trenching confirmed the presence of the enclosure complex with associated features and additional deposits (**Figure 15.7**, **Figure 15.9**). Preservation by record of features identified and monitoring was recommended and agreed upon with the Department of Housing, Local Government & Heritage; the excavation is ongoing. Monitoring will be carried out in due course.

See the extract below detailing the findings taken from the testing report:

*A total of 33 test trenches were excavated across the site. The majority of trenches, trenches 1-14, 22-24 and 26-33, did not contain archaeology. Where these trenches overlay potential features identified in the geophysical survey they were revealed to be modern drains, plough furrows, farming*

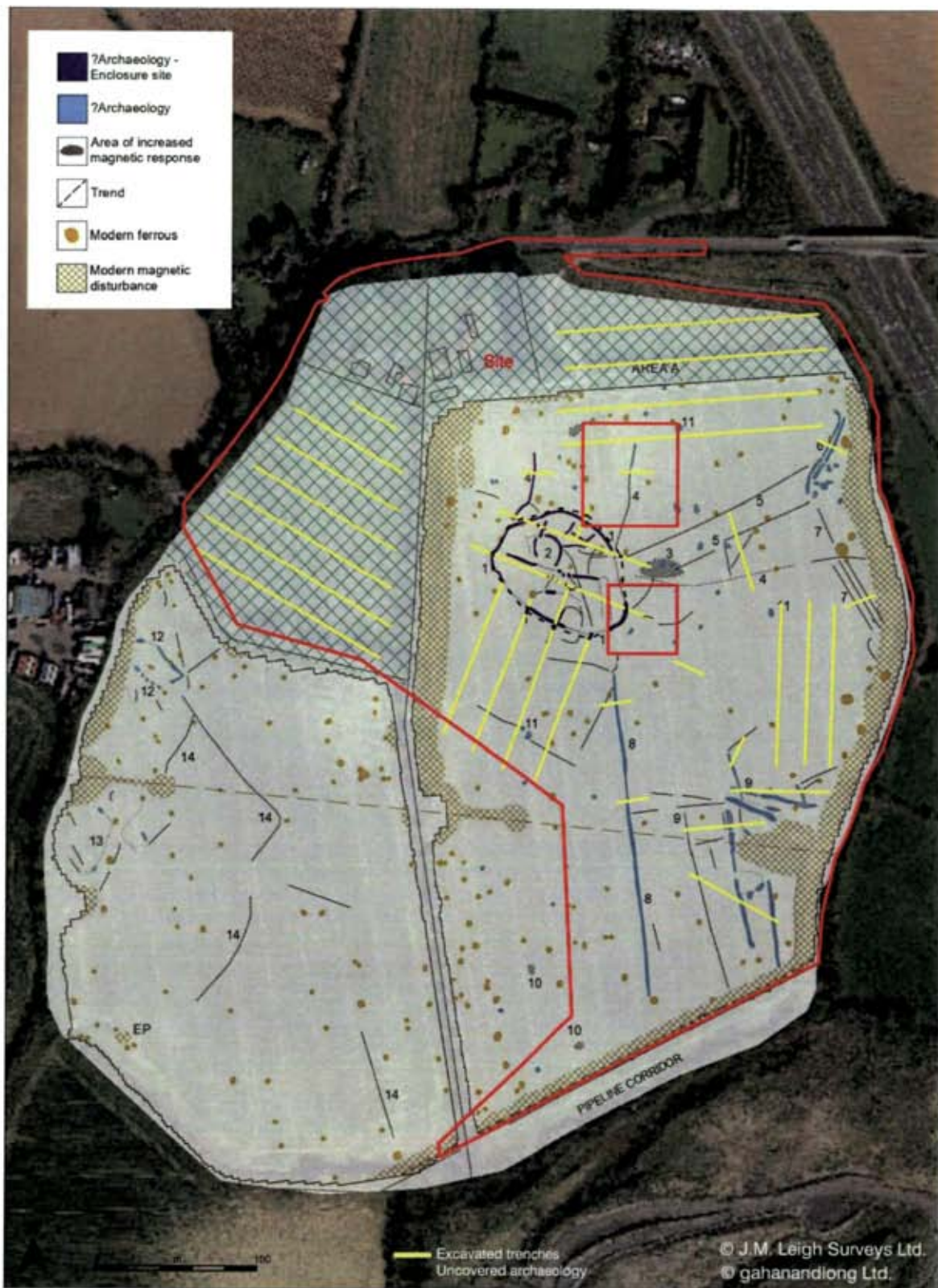


Figure 15.7 Showing interpretation of geophysical survey results (22R0092) and excavated test trenches (22E0348).

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**Figure 15.8 Enclosure ditch C7; to the left, southeast facing section in Trench 20; to the right, southwest facing section in Trench 15.**

"tramlines" or were simply not present. The remaining Trenches 15-21 produced features which corresponded with the enclosure complex recorded in the Geophysical Survey. The exception was trench 25 which contained a shallow pit [3] filled with charcoal and pyrolithic material which does not correspond to any geophysical anomaly. A probable Palaeochannel was present in trenches 15, 17, 22 and 23. The enclosure ditch [7] was cut into this geological feature. At the eastern extent of trench 17 a curvilinear gully [58], which lay outside the enclosure, also does not correspond to any geophysical anomaly.

The enclosure ditch [7] was uncovered in trenches 15-21. Four box sections were put into the ditch to confirm its north, south, east, and west extent. These sections revealed that the ditch generally had an inconsistent width of 1.22m (box 1 trench 16) to 2.5m (box 4 trench 20) and depth of 0.25m (box 1 trench 16) to 0.9m (box 4 trench 20). The ditch seems to be wider and correspondingly deeper at its southern and eastern extent. However, each feature generally had consistent fills, a top fill of a compact grey, brown sandy clay [8] and a basal fill of a compact grey sticky clay [28]. Box 3 in trench 17 had a different top fill [44] which was a compact dark grey clay with frequent charcoal inclusions. The middle fill varied in each section. It was not present in box 1 trench 16, in box 2 trench 15 the middle fill was [77], a grey clay with frequent stones representing a wall, in trench 17 box 3 the middle fill was [45] a light grey silty clay with frequent charcoal inclusions and in box 4 trench 20 the middle fill was [27] a mottled grey, brown clay. All four of the sections reveal that the base of the ditch contains a channel or groove, flanked either side by a row of postholes. The ditch may have represented the foundations of a wall or stockade, which would explain the variable width and depth of the feature and the large number of postholes contained within it. Animal bone inclusions were uncovered from all box sections through the feature.

The interior of the enclosure contained a number of features. Trench 15 contained an oval pit [93] with a width of 0.85m and a depth of 0.23m, extending beyond the limits of excavation to the south. Its fill [94] was a dark brown clay with occasional flat stone inclusions. Bone was recovered from the feature. Feature [78], also in trench 15, was a linear sub-oval feature that extends north-east beyond the limits of the trench. It had a width of 0.66m and a depth of 0.31m. Its top fill [79] was a light orange, brown clay, its basal fill [80] was a lens of charcoal and burnt clay. This feature may have been a kiln. Trench 17 contained a curvilinear slot trench [29], probably representing a structure. It had a width of 0.64m and a depth of 0.35m. It had an internal diameter of 5m. It contained two fills, the top fill [30] was a brown sticky clay with occasional charcoal inclusions. The basal fill [31] was a loose grey silty clay. Two postholes had been cut into the base of the slot trench, [32] and [34]. Both had a diameter and depth of 0.1m. No features were identified within the structure, but animal bone was recovered from the surface of the interior. 1.1m to the west of [29] was a posthole or shallow pit [36]. It had a diameter of 0.23m and a depth of 0.17m and a single fill [37] which was a brown sandy clay. A second curvilinear slot trench, [72] was then present within the trench 3.35m to the west of [36]. It had a width of 0.12m and a depth of 0.1m and had an internal diameter of 5.6m. Its single fill [73] was a brown, grey clay with occasional stone inclusions. The interior of [72] contained a number of small shallow pits [66], [68], [70] and postholes [38], [40] and [42]. All six features had a similar

fill of a brown, grey clay. A potential metallised surface was present in both trenches 15 and 17. In trench 15 it had a width of 13m and in trench 17 16m.

Outside the enclosure a further 4 features were identified. In trench 15 a shallow pit [74] was uncovered at its north-western end which may have formed part of anomaly 14 from the geophysical report. The pit extends beyond the trench to the north and has a width of 1.55m and a depth of 0.23m. Its top fill [76] was a brown clay, its basal fill [75] was a dark grey charcoal rich clay. Animal bone was recovered from [75]. Trench 17 a curvilinear slot trench [58] is present 10.5m to the southeast of the enclosure ditch [7]. It extends to the northeast for 5m beyond the limit of excavation. It had a width of 0.5m and a depth of 0.2m. It contained a single fill [59] which was a brown sandy clay. At the excavated terminus of [58] three stakeholes were uncovered, [60], [62] and [64]. [58] may represent a windbreak for activity beyond trench 17 to the north. In trenches 19 and 20 a linear gully [5] extending northwest to southeast through both trenches was uncovered. It did not appear in trenches 18 or 20. A box section was inserted into it in trench 20. This showed the gully had a width of 0.62m and a depth of 0.21m. It contained a single fill [6] which was a grey, brown sandy clay with frequent charcoal inclusions. Animal bone was uncovered from this feature. Feature [3] was uncovered in trench 25, 4.4m from the north end of the trench. It was sub-oval in shape with a length of 1.5m, a width of 0.7m and a depth of 0.08m. It contained a single fill [4] which was a compact dark grey clay with frequent charcoal inclusions and small burnt stones.



Figure 15.9 Sub-oval pit C3 in Trench 25.

#### 15.4.5 SITES REPORTED IN THE EXCAVATIONS DATABASE

Several sites were reported in the excavations database, including enclosure DU014-093 (03E1359); cemetery, now Burial Ground DU014-048----(99E0220); investigations of Castle - motte and bailey DU014-013---- that identified additional features (01E1214, 04E0807); burnt spread (03E1450), and a number of enclosures identified via geophysical survey 21R0134 and subsequently subject to investigations (21E0398, 21E0580, and 22E0045).

#### 15.4.6 TOPOGRAPHICAL FILES

The topographical files of the National Museum of Ireland were consulted. No find spots are recorded in the files for Kilshane townland.

#### 15.4.7 PLACENAME EVIDENCE

The database of Irish placenames, [www.logainm.ie](http://www.logainm.ie) was consulted for the meaning of the placenames within and surrounding the proposed development site.



The site is fully located within the townland of Kilshane. Kilshane townland is located in the parish of Finglas in the barony of Castleknock. The townland name *Cill Sheáin* means 'John's Church'. The townland is referred to as 'Kilshaane' in 1326 in a Calendar of Archbishop Alen's Register (ed. McNeill, 1950). The townlands with a name containing Cill suggest a church located within the townland boundaries. To the south of the site, on the 1836 map, an area depicted as 'Old Burying Ground' and *Church Well*, representing monuments recorded as church DU014-012001-; Burial ground DU014-012002- and Ritual site - holy well DU014-012003-. At present, no surface remains of the ecclesiastical complex are present, as the site is located within the Hunstown Quarry.

#### 15.4.8 RECORD OF PROTECTED STRUCTURES

The Fingal County Development Plan 2017-2023 was consulted to determine if any protected structures were present within the proposed development site. No such structures were listed within the site boundary.

Three such sites are located in the environs of the site, including:

- Motte and Bailey (RPS 865; DU014-005003-); Dunsoghly, St. Margaret's, Co. Dublin' Archaeological site of man-made mound, forming part of an Anglo-Norman defended residence known as a motte and bailey castle (excludes modern house and outbuildings on the motte).
- Dunsoghly Castle (RPS No. 623; DU014-005001-; National Monument No. 230 (State Ownership)); Dunsoghly, St. Margaret's, Co. Dublin' Intact four-storey 15th century square Tower House with large square corner towers. It has retained a substantial amount of its original roof timbers. Adjoining the tower house is a small single-storey chapel with inscribed stone with 1573 date.
- Cloghran Church (in ruins) & Graveyard (RPS 674, DU013-008002-; DU013-008001-); Cloghran Church (in ruins) Blanchardstown Corporate Park 2, Cloghran, Blanchardstown, Dublin 15. Remains of footings of medieval church in ruins within square graveyard that is now sited on the edge of a Business Park.

#### 15.4.9 NATIONAL INVENTORY OF ARCHITECTURAL HERITAGE SITES

In addition, the database of the National Inventory of Architectural Heritage was also consulted. The nearest site listed is Gate Lodge (NIAH Reg. No. 11347003), located c. 2.44km to the northwest. It is associated with Hollywoodrath House (NIAH Reg. No. 11347001), located c. 2.42km to the northwest.

#### 15.4.10 CARTOGRAPHIC SOURCES AND AERIAL IMAGERY

Cartographical sources and aerial imagery were examined.

Potential archaeological or cultural heritage features are marked on maps and provide a useful resource in identifying sites particularly if they no longer have any above-ground remains.

A review of the available aerial photography for the area was also undertaken as part of this assessment. Unrecorded archaeological sites can often be identified in aerial photographs as cropmarks or differential growth in a field.

##### Cartographical Sources

A review of available historic mapping for the area was carried out to include the 6-inch 1836 (Figure 15.11) and the 25-inch 1906 (Figure 15.12) and Cassini 6-inch 1935-38 (Figure 15.13) editions of the Ordnance Survey maps, in addition to *An actual survey of the county of Dublin* of 1760 by John Rocque - southwest sheet (Figure 15.10).

The 1760 map shows the site as pasture land consisting of two fields to the south of the road that runs within the footprint of the current Kilshane Rd. Two settlements are depicted to the south of the site; HuntsTown and Newtown. There is no indication of the ecclesiastical enclosure.

The Ordnance Survey maps of 1836 and 1906 do not depict any buildings within the site. The 1836 map shows the site within three fields, located adjacent and to the south of the east to west aligned road in the southeast portion of the townland. The boundaries are depicted as lined with trees, and to the west stands *Kilshane House*.



Figure 15.10 Extract from an actual survey of the county of Dublin by John Rocque - southwest sheet (1760), showing approximate location of site

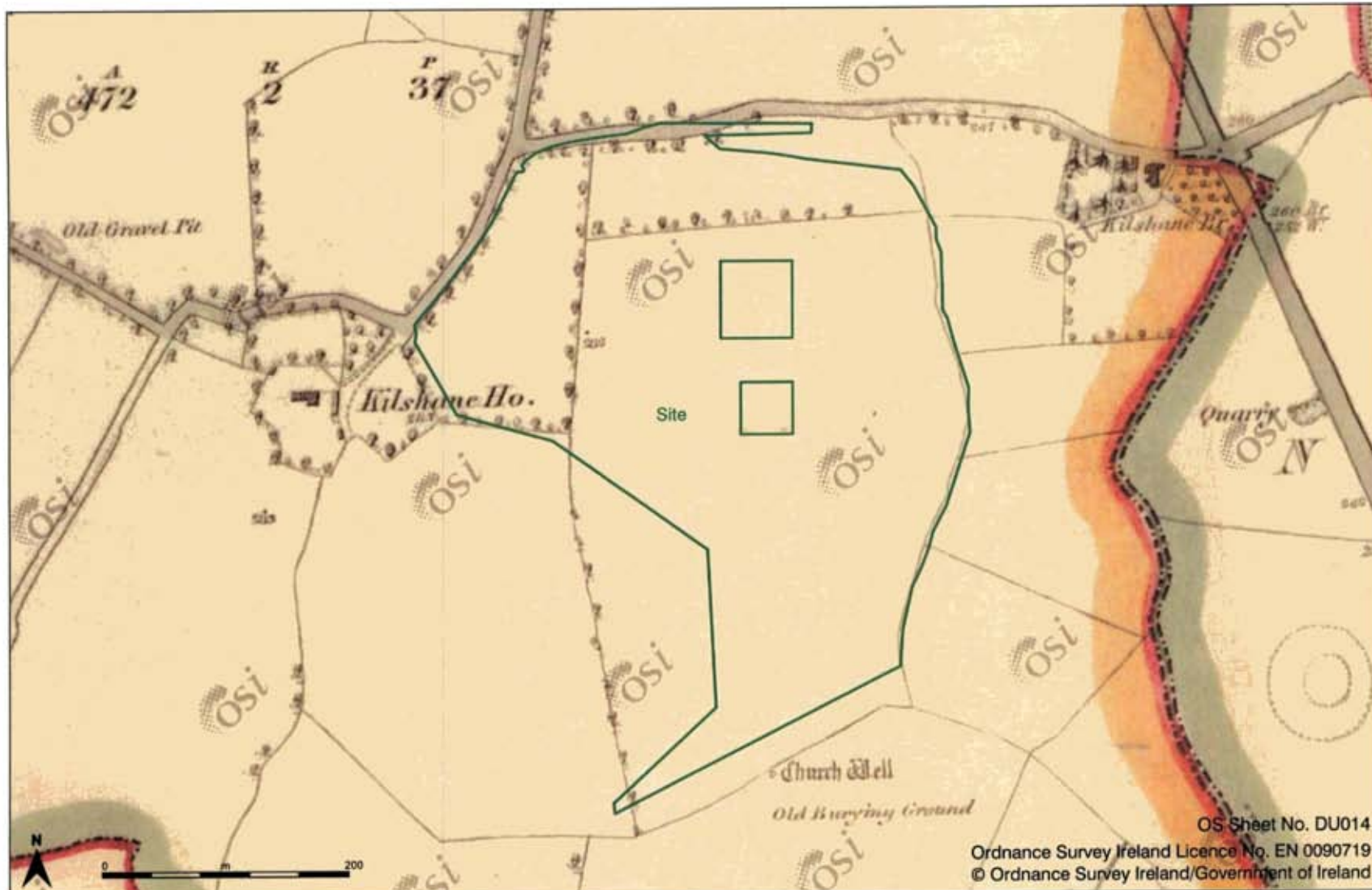


Figure 15.11 Extract from first Edition OS 6 inch map (1836), showing location of site.

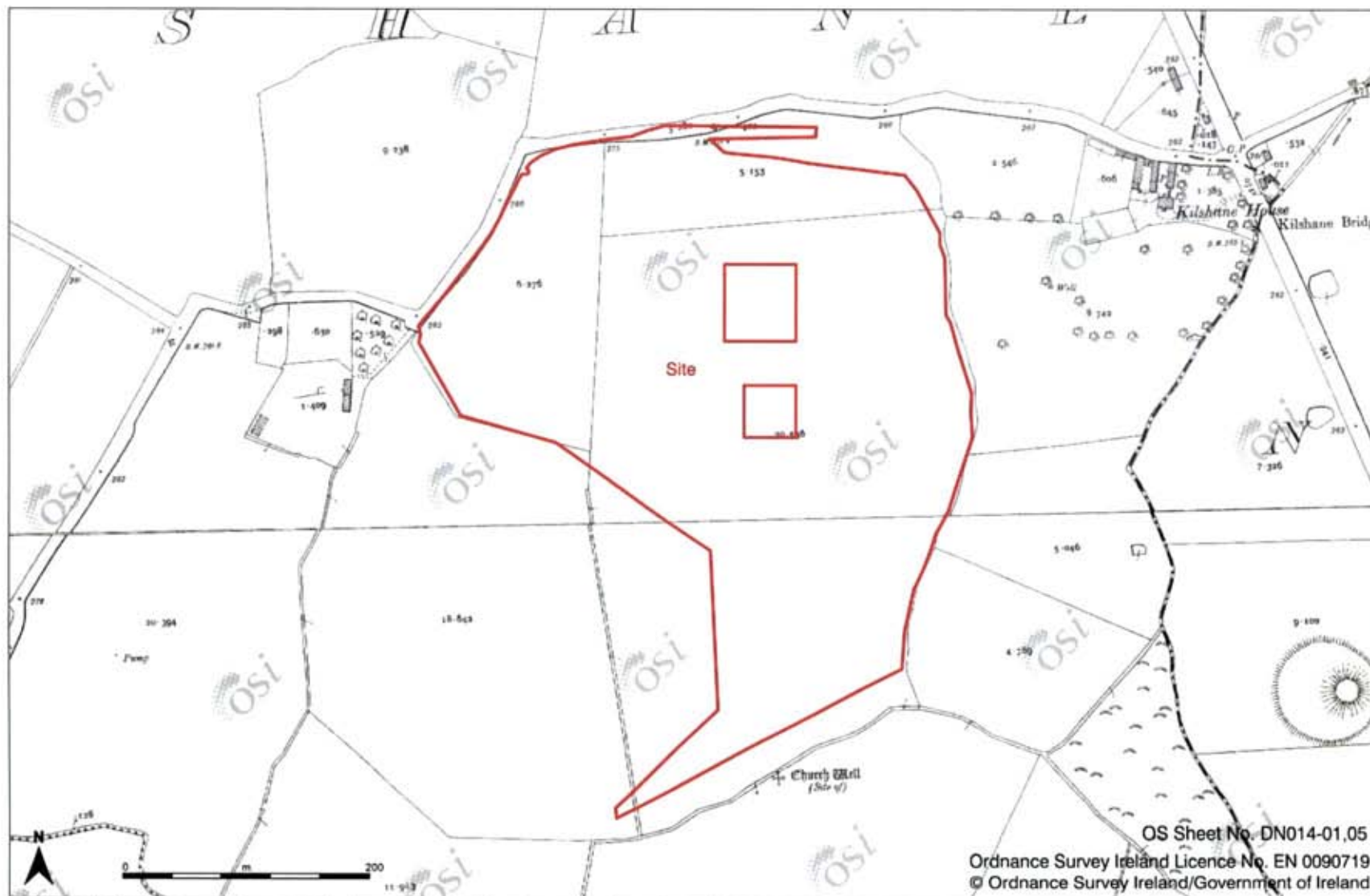
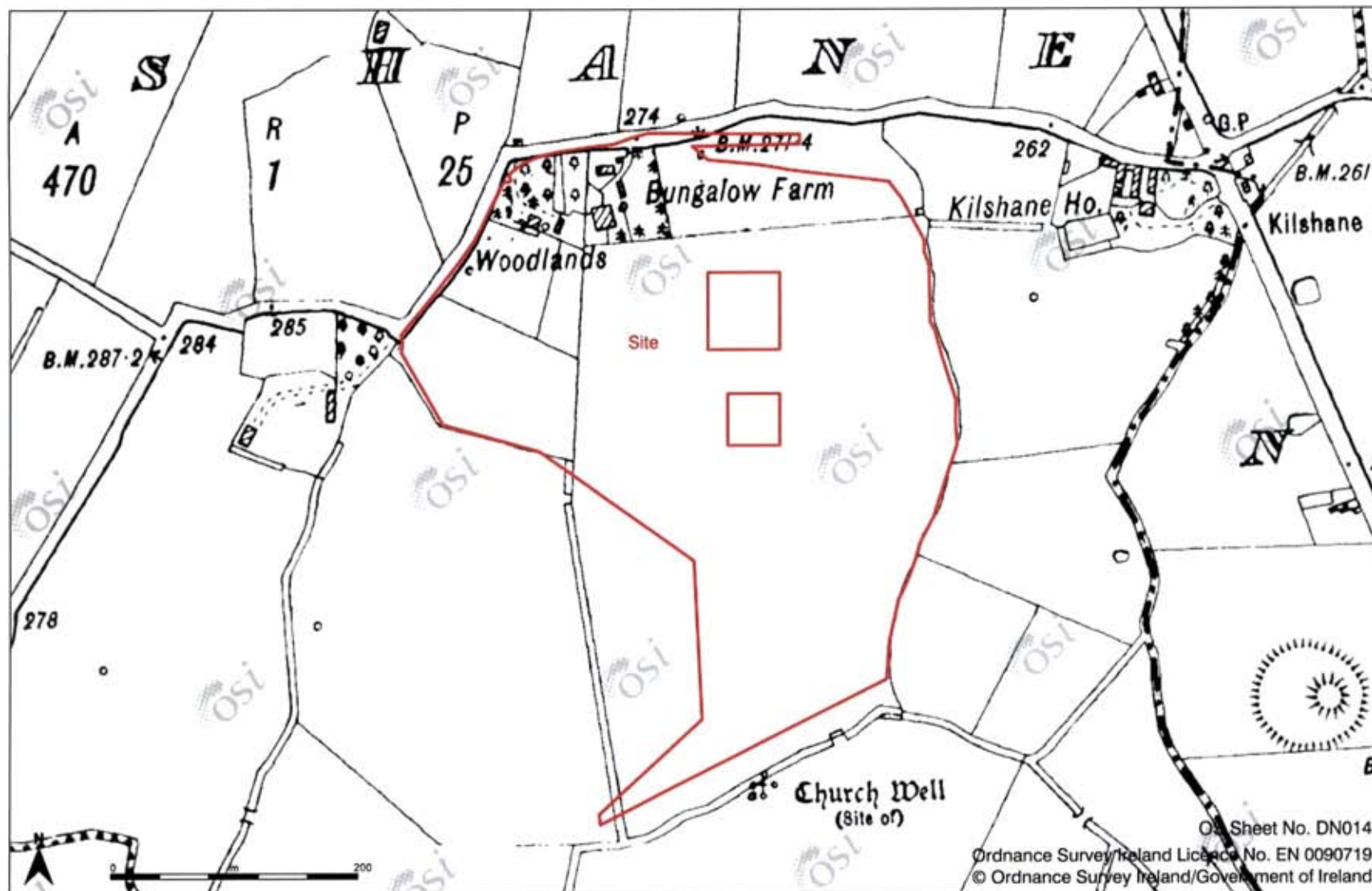
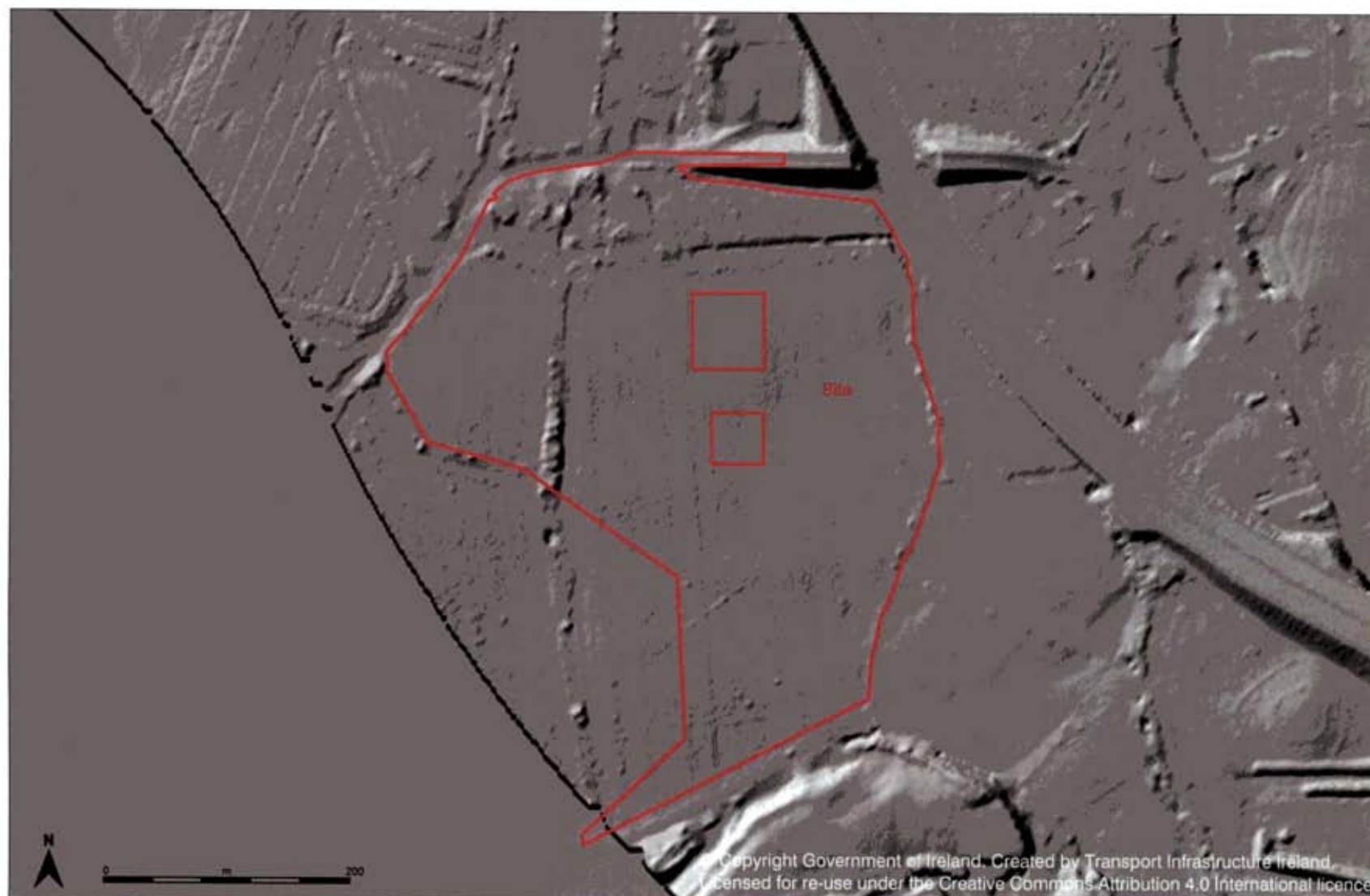


Figure 15.12 Extract from 25-inch map (1906), showing location of site



Figure

15.13 Extract from Cassini edition Ordnance Survey (OS) 6-inch map (1935-38), showing location of site



**Figure 15.14 LiDAR (multi hillshading), showing location of site.**



Figure 15.15 LiDAR (Principal component analysis of hillshading), showing location of site

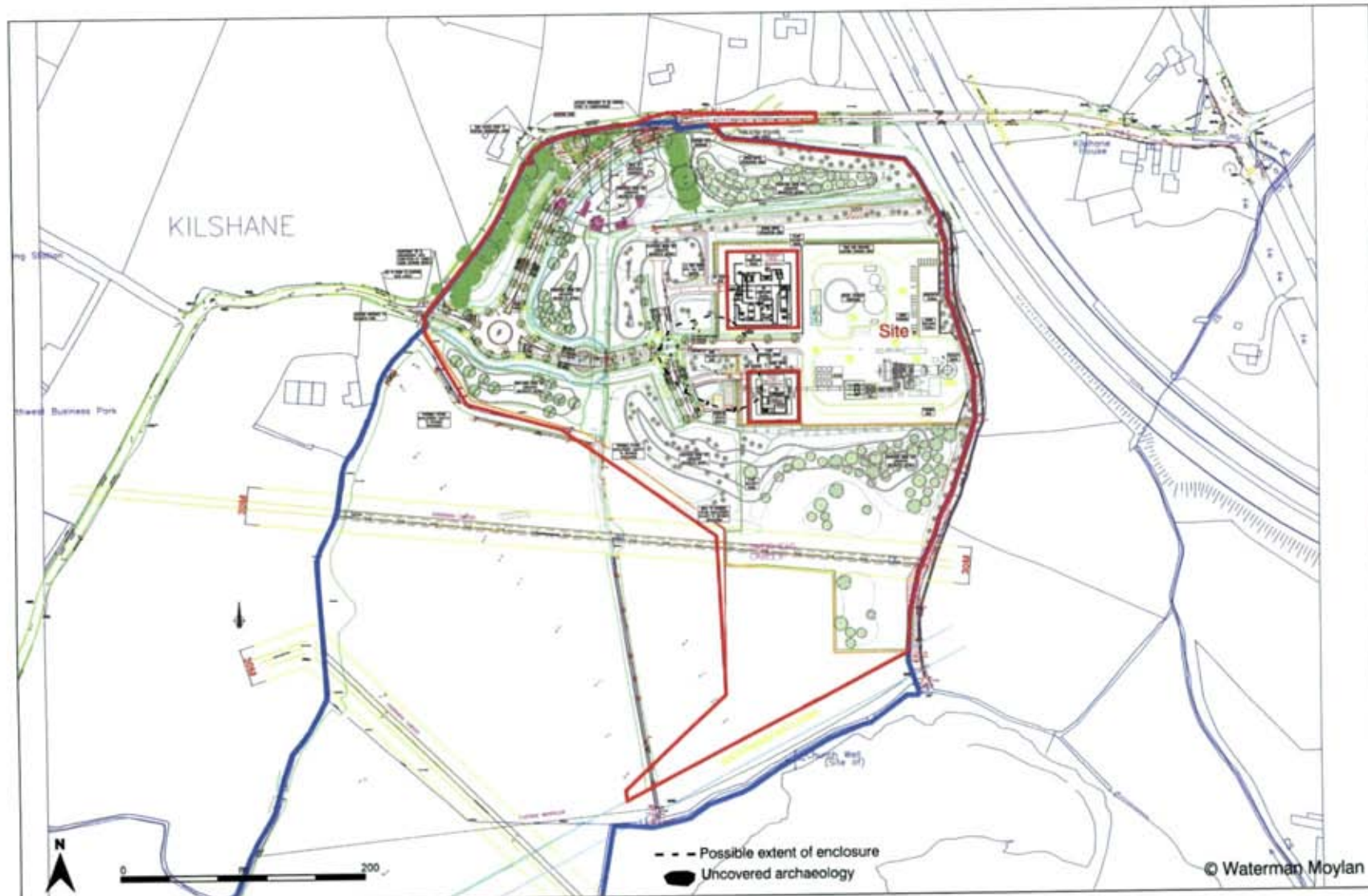


Figure 15.16 Details of proposed development site showing the location of the enclosure.



An area to the south of the site is labelled as *Church Field*, with *Church Well*, and *Old Burying Ground*. To the southeast, a monument representing a Moat is shown and labelled in the adjacent townland of Newtown. In the townland of Huntstown, further south, Huntown House is shown and labelled.

There were no major changes to the field system within the site by the time of the 1906 map; a minor portion of the west boundary of the southern field is now shown as a wet ditch. It appears that Kilshane House was moved to the east and is depicted on a plot adjacent to the junction with a turnpike road connecting Finglas to Ashbourne. The area of the former Kilshane House is now shown with only two rectangular buildings and what appears to be the foundations of the former house. This suggests the house was perhaps destroyed and moved to the east of the site.

The Cassini map of 1935-38 shows the site divided into seven fields, with the northwest portion occupied by buildings labelled as Woodlands and Bungalow Farm with associated accesses and ancillary structures. Furthermore, what appears to be wells, modern in origin, are depicted within the northeast and northwest field.

## 10 Aerial Imagery

Aerial photographs dating between 1995 and 2013 from the Ordnance Survey of Ireland and in addition, Google Earth imagery dating between 2008 and 2022 were also reviewed.

The site has remained unchanged since the 1935-38 map with the field boundary layout as on the 1836 map. The area to the south of the site is shown as a large, well-established quarry by 1995. A minor north portion of the northwest field appears to be used as a paddock or perhaps vegetable garden. By 2008 the M2 motorway to Ashbourne, located to the east of the site, and road improvements associated with Kilshane Rd. adjacent and to the north of the site were complete. The northern field is occupied by a house and ancillary structures associated with the farmyard. In 2021 earthworks from a linear scheme can be seen running roughly northeast-southwest, outside and along the south boundary of the field. These were associated with the upgrading of the water mains, were archaeologically monitored, and no features were identified. Furthermore, LiDAR imagery, including multihillshade (**Figure 15.14**) and PCA (**Figure 15.15**), were examined. The anomalies visible appear ephemeral, and as the site was since subject to archaeological assessment, these are not of archaeological significance.

### 15.4.11 TANGIBLE CULTURAL HERITAGE

Ordnance Survey maps of the area were examined, and a walk-over survey was carried out in order to identify any features of cultural heritage and any features of interest. A Tangible Cultural Heritage Area might include boundaries/field divisions, any structures, buildings, features of archaeological, cultural or heritage significance.

It appears that the north to south aligned boundary between the south and northwest field was depicted since the 1760 map. However, this portion of the boundary appears to be already compromised during drainage works and is shown as a wet ditch by the time of the 1907 map.

## 15.5 PREDICTED EFFECTS

### 15.5.1 EFFECTS ON RECORDED ARCHAEOLOGICAL MONUMENTS

There will be no effects, indirect or otherwise, on recorded archaeological monuments as no recorded monuments are located within the proposed development site. There are three monuments located within a field to the south of the site; these consist of Church DU014-012001- with associated Burial ground DU014-012002- and Ritual site – holy well DU014-012003-. These are located within an area that was extensively quarried and a part of the Huntstown Quarry, not visible on ground level and monitoring of the water-mains (21E0090) did not identify any features of archaeological interest. Furthermore, these are not scheduled for inclusion in the next revision of the Record of Monuments and Places. The nearest monument to the site scheduled for inclusion in the next revision of the Record of Monuments and Places for County Dublin is enclosure DU014-093---- located c. 140m to

the north. The site was identified in advance of the N2 Finglas-Ashbourne Road Scheme in 2004, and was subject to investigations (03E1359).

### **15.5.2 EFFECTS ON KNOWN AND POTENTIAL ARCHAEOLOGICAL FEATURES**

The proposed development will have a negative, permanent, profound effect on known archaeological features identified as a result of geophysical survey and test trenching consisting of an enclosure complex and associated features and pit. A potential effect on the archaeological resource that may be located between excavated test trenches lies in the uncovering of sub-surface archaeological features during groundworks associated with the construction of the proposed buildings and associated infrastructure within the site. Should any additional, at present unknown archaeological features be present within the site, the proposed development will have a negative permanent and profound effect on such remains.

### **15.5.3 EFFECTS ON PROTECTED STRUCTURES AND ARCHITECTURAL HERITAGE SITES**

There will be no effects on architectural heritage as no Protected Structures or sites listed within the National Inventory of Architectural Heritage (NIAH) are located within the proposed development site.

### **15.5.4 INDIRECT EFFECTS**

Indirect effects are those which the proposed development may have a negative (or positive) effect on the wider archaeological landscape or surrounding architectural heritage. Indirect effects may include a visual impact on the surrounding archaeological landscape.

The introduction of the proposed development to the area will not result in a change to the general setting of any of the monuments or protected structures, as none are present within or in the immediate environs of the site. Furthermore, the site is well screened by mature hedges and trees that will be retained. The proposed development will therefore have no indirect effects either temporary or permanent, on the wider cultural heritage of the area.

## **15.6 MITIGATION AND MONITORING MEASURES**

The predicted effect on known and unknown archaeological monuments and features is regarded as negative, permanent, and profound. The predicted effects on recorded archaeological and architectural heritage are regarded as being none. No effects on the recorded archaeological resource (RMPs) were identified, and no indirect or visual effects on the nearest recorded monument outside the proposed development site boundary were noted.

The following mitigation measures will be carried out subject to the approval of the National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage (DHLGH), and further mitigation may be sought by the NMS.

- A Previously unknown monument; an enclosure and features of archaeological significance were exposed as a result of pre-construction assessments (22R0092<sup>xxviii</sup>; 22E0348<sup>xxix</sup>) within the site. Following consultation with the National Monuments Service it was decided that the features identified and any associated features exposed will be preserved by record through full archaeological excavation; these archaeological investigations are currently underway.
- Monitoring of all groundworks associated with the proposed development will be carried out, should additional features or deposits of archaeological significance be exposed during monitoring, then further mitigation measures will be implemented. This will be carried out by experienced, licence eligible archaeologists working under licence from the Department of Housing, Local Government and Heritage.

- Adequate time and resources will be provided by the developer for the resolution of any archaeology identified within the development site, which will be directly impacted by groundworks. Time and resources will also be allowed for any post-excavation work and specialist analysis necessary following any archaeological excavation that takes place.
- A report is required to be compiled on completion of any archaeological excavation required and will be submitted to the relevant authorities.
- Significant archaeological features were identified during archaeological assessment, if a phased development is being considered, the Construction and Environmental Management Plan (CEMP) for the site will be updated, and all archaeological mitigation measures will be outlined in the CEMP.

## 15.7 RESIDUAL IMPACTS

The residual effects are likely to be neutral and none to imperceptible on implementation of the proposed mitigation measures. **Table 15.3** below summarises the residual effects of the proposed development on the archaeological landscape. Residual impacts are defined as the overall effect of the development on archaeology on the basis of implementing the mitigation measures recommended in this report.

**Table 15.3 Summary of Residual Impacts**

| Potential Effects  | Mitigation strategy   | Residual impacts |
|--|---|------------------|
| <b>Construction Effects</b>  |   |                  |
| Topsoil removal associated with development. Excavation of foundations and service trenches etc. | Archaeological Excavation and Monitoring of all groundworks associated with the development.<br><br>Archaeological excavation of features and deposits identified during geophysical survey and test trenching within the proposed development at the pre-construction phase is currently ongoing.<br><br>Monitoring to be carried out of all groundworks associated with the proposed development. Consultation with Licensing Section of the National Monuments Service should additional archaeological sites or features be uncovered. Excavation and recording of any archaeological features identified thus preserving them by record. | None             |
| Effects to recorded monuments - none   | No mitigation required.   | None             |
| <b>Operational Effects</b>   |   |                  |
| Nearby Recorded Monuments and Protected Structures are screened from view.                       | No mitigation required.   | None             |

## 15.8 CUMULATIVE EFFECTS

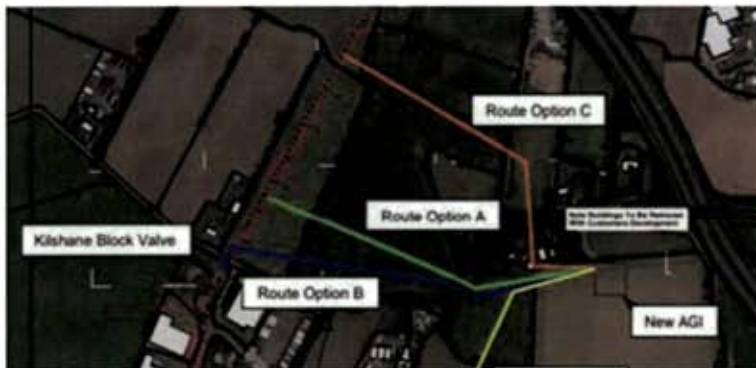
The EPA 2022<sup>xxx</sup> guidelines define cumulative impact as 'The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects'.

A number of previous developments have taken place in the overall environs of the site, and permission for others has been granted by the local authority. The site lies within a sensitive landscape with a number of monuments present. These are mostly represented by remains that were previously unknown, with no surface expression and identified as a result of archaeological investigations. In such cases, if preservation in situ is not possible, preservation by record (full excavation) mitigates the impact of the development on archaeological remains and is carried out in consultation with the Department of Housing Local Government and Heritage.

In terms of cumulative impacts, subject to permission, the proposed 220kV Gas Insulated Switchgear (GIS) Substation and Underground 220kV Transmission Line Connection to the Existing Cruiseraith 220kV Substation (referred to below as GIS and Grid connection) and Above Ground Installation (referred to as AGI and Gas) are the most relevant, as the proposed development will necessitate the construction of these.

An Archaeological Impact Assessment (contained in Appendix 17) was carried out for the GIS and Grid connection in September 2022 by ACSU. It is proposed that the GIS and Grid connection will run largely within the footprint of the existing roads. This is unlikely to impact any archaeological remains; however, an area of increased potential was identified along Bay Lane, particularly the stretch in the environs of the archaeological monument, Burial Ground DU014-048----. In order to mitigate the potential impact on archaeological remains, archaeological monitoring of groundworks was recommended to be carried out at this location. There will be no residual impact as a result and therefore no additional cumulative impact when taken into account with the present development.

At present, there are three proposed routes for the AGI (Above Ground Installation) and Gas infrastructure (Figure 15.16). The project is still at a pre-planning stage, and each route will require a full archaeological assessment in due course. The proposed routes will run westwards to the gas main constructed in the late 1980s. This gas main impacted archaeological remains, now recorded monument Burial Ground DU014-048----. The proposed routes A and B run across fields that were subject to geophysical surveys in 2022 (22R0059, 22R0269). These routes will impact the archaeological remains identified. This impact, however, can be mitigated through preservation by record (excavation). Route C crosses fields that have not been assessed to date.



**Figure 15.17 Three proposed GAS route options.**

The direct effects arising from other nearby projects have been or will be dealt with through mitigation measures that include archaeological assessment at a pre-planning stage and archaeological excavation where remains have been identified. As a result there will be no cumulative impact as suitable mitigation measures have already or will be employed. The AGI and Gas route selected will be dealt with prior to its construction, while the GIS and Grid connection will be subject to archaeological monitoring during the construction phase.

Consequently, there will be no increase in direct or indirect cumulative effects on the Archaeological and Cultural Heritage resource from these projects when considered together with the proposed development

## 15.9 INTERACTIONS

There are no interactions between the Archaeological and Cultural Heritage Resource and other disciplines in relation to the proposed development

### 15.10 REFERENCES

- <sup>1</sup> Leigh, J. M. 2022 Geophysical Survey Report. Kilshane, County Dublin (22R0092), unpublished report by J.M. Leigh Surveys.
- <sup>1</sup> Lynn, C., Long, C. 2022 Archaeological Test Excavation Report: Kilshane Energy, Co. Dublin (22E0348), unpublished report by Gahan and Long.
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- <sup>1</sup> [https://www.archaeology.ie/sites/default/files/media/pdf/Archaeology-RMP-Dublin-Map-\(1998\)-0014.pdf](https://www.archaeology.ie/sites/default/files/media/pdf/Archaeology-RMP-Dublin-Map-(1998)-0014.pdf)
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- <sup>1</sup> [https://www.fingal.ie/sites/default/files/2019-03/Fingal%20Development%20Plan%202017-2023%20-%20Written%20Statement\\_compressed\\_compressed.pdf](https://www.fingal.ie/sites/default/files/2019-03/Fingal%20Development%20Plan%202017-2023%20-%20Written%20Statement_compressed_compressed.pdf)
- <sup>1</sup> <https://www.buildingsofireland.ie/>
- <sup>1</sup> Leigh, J. M. 2022 Geophysical Survey Report. Kilshane, County Dublin (22R0092), unpublished report by J.M. Leigh Surveys.
- <sup>1</sup> Lynn, C., Long, C. 2022 Archaeological Test Excavation Report: Kilshane Energy, Co. Dublin (22E0348), unpublished report by Gahan and Long.
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- <sup>1</sup> Lynn, C., Long, C. 2022 Archaeological Test Excavation Report: Kilshane Energy, Co. Dublin (22E0348), unpublished report by Gahan and Long.
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- <sup>1</sup> Lynn, C., Long, C. 2022 Archaeological Test Excavation Report: Kilshane Energy, Co. Dublin (22E0348), unpublished report by Gahan and Long.
- <sup>1</sup> [https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR\\_Guidelines\\_2022\\_Web.pdf](https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf)

# 16 ACCIDENT & DISASTER RISKS

## 16.1 INTRODUCTION

The proposed development is a Gas Turbine Power Generation Station with an output of up to 293 MW at Kilshane, Co. Dublin. The gas supply will be backed up by emergency generators fuelled by bulk gas oil storage on site capable of providing for 3 days' supply. It is proposed to store 5,000 tonnes (6098 m<sup>3</sup>) of fuel oil in a bulk storage vessel with a nominal capacity of 5,122 tonne (6,246 m<sup>3</sup>).

The Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. 209 of 2015) (COMAH Regulations 2015) sets out quantities of dangerous substances for which lower and upper tier COMAH status apply. For gas oils (including diesel fuels, home heating oils and gas oil blending streams) the qualifying quantity for the application of lower tier requirements is 2,500 tonnes and for upper tier requirements it is 25,000 tonnes. Therefore, the proposed power plant will be classified as a lower tier COMAH establishment. A COMAH Land Use Planning Assessment has been prepared is separately submitted for the proposed development.

An assessment of Major Accidents to the Environment (MATTEs) at Kilshane Energy Limited has also been prepared and is separately submitted as part of the planning application. This has been prepared and completed in accordance with the environmental risk assessment methodology recommended by the Chemical and Downstream Oil Industries Forum (CDOIF, 2017).

In order to ensure a comprehensive assessment of potential environmental effects due to risks of major accidents and/or disasters as relevant to the development, this chapter presents an additional review of the characteristics of the proposed development and of the project location to consider potential for accident scenarios that are outside the scope of the COMAH Regulations.

In assessing likely potential and predicted impacts, account has been taken of both the importance of the attributes and the predicted scale and duration of the likely impacts.

### 16.1.1 METHODOLOGY

The assessment has been carried out generally in accordance with the following guidelines:

- EPA 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2022);
- EPA 'Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (2015);
- National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Hydrology for National Road Schemes' (2009).

In the EIA assessment, consideration is given to both the importance of an attribute and the magnitude of the potential environmental impacts of the proposed activities on that attribute. The principal attributes (and impacts) to be assessed include the following:

- Potential hazard arising from risk of major accident.
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any)
- Loss of containment of fuel/chemical materials

### Sources of Information

The collection of baseline regional data was undertaken by reviewing the following sources:

- Office of Public Works (OPW) flood mapping data ([www.floodmaps.ie](http://www.floodmaps.ie)).

Site specific data was derived from the following sources:

- Various site plans and drawings.
- COMAH Land Use Planning Assessment
- Assessment of Major Accidents to the Environment (MATTEs)

## 16.2 THE PROPOSED DEVELOPMENT

The proposed development is described in Chapter 4 *Project Description*. It has been designed to adhere to strict safety standards covering all aspects of fit-out and operation. These standards ensure that potential for major accidents is comprehensively addressed in full compliance with legislation and best practice and that safeguards are put in place where appropriate. These standards cover all aspects of construction, industrial design, operation and fire safety.

The proposed development will be subject to an Industrial Emissions (IE) Licence prior to operation. This will include measure to address potential accident sources in the proposed facility. Operation of the proposed facility will be subject to continued compliance with EPA approved accident prevention measures. These measures will ensure that accident risks arising from the operation of the proposed development are comprehensively addressed so that potential for major accidents is adequately controlled in full compliance with all applicable standards and best practice including EU Best Available Technology (BAT) standards.

## 16.3 THE RECEIVING ENVIRONMENT

### 16.3.1 SITE DESCRIPTION

The site is comprised of 5 agricultural fields (mostly tillage), a farmhouse and associated structures. It totals c. 29 ha in area. A topographic survey of the area indicated that the site generally slopes from west to east with a high point of 82.90 m OD Malin on the western boundary, and a low of 77.27 m OD Malin on the eastern boundary.

The nearest dwellings are located almost immediately outside the northern boundary of the site

### 16.3.2 WATER BODIES AND FLOOD RISK

The subject site is currently a greenfield site, used for agricultural purposes. There is no existing surface water drainage network adjacent to or on-site.

The site is comprised of multiple fields separated by hedgerows, and generally slopes from west to east. Surface water, rainfall, is generally percolated through the site via grass and soil. The topographic survey has confirmed that the internal and boundary hedgerows contain ditches which convey flow to the Huntstown Stream to the east of the site, during heavier rainfall events. These ditches only serve the subject site and the agricultural fields immediately to the west, located between the subject site and the Kilshane Road, and does not convey any upstream watercourse.

As described in detail in the accompanying Flood Risk Assessment screening report, there is no risk of flooding affecting the site from fluvial or coastal sources, since the site lies within Flood Zone C (i.e., where the probability of flooding from rivers is less than 0.1% or 1 in 1000). This takes full account of historical flood risk data and of standard allowances to take account of climate change effects.

### 16.3.3 SEISMIC ACTIVITY

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating the slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a result.

In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have also occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities.

There are no active volcanoes in Ireland.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies (DIAS) has been recording seismic events in Ireland since 1978. The station configuration has varied over the years. However, currently there are five permanent broadband seismic recording stations in Ireland including IWEX on Carrickbyrne Hill, Co. Wexford, running from 01/01/2011 and operated by DIAS. The seismic data from the stations comes into DIAS in real-time and are studied for local and regional events.

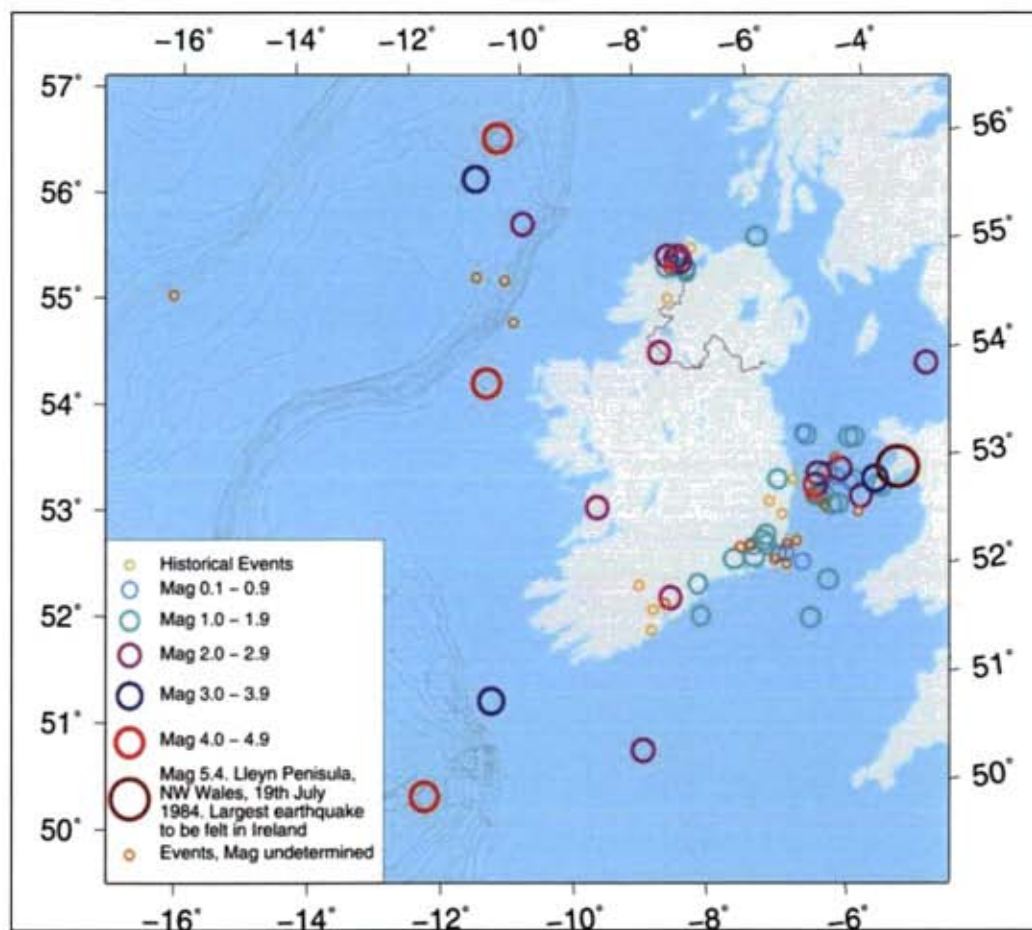


Figure 16.1 Seismic movements

Figure 16.1 above indicates the principal events have occurred along/ beyond the east, south-east and south of Ireland with seismic movements generally up to 1.9 magnitude recorded on land with no seismic events recorded in the vicinity of the Kilshane Energy site.



## 16.4 PREDICTED IMPACTS

Due to the comprehensive controls and design standards that have been followed during initial design and that will be followed during detailed design combined with the measures contained in the Preliminary CEMP there is no significant potential for the proposed development to give rise to significant adverse effects on the environment due to accidents or disasters. This applies to accidents/disasters arising from external factors as well as accidents arising from activities at the site. All risks can be considered to be negligible.

The COMAH assessment concludes that the level of individual risk on and off-site is acceptable. While the MATTEs concludes that the risks are Tolerable and Broadly Acceptable. As such the impact is considered to be **long term, imperceptible** and **neutral**.

## 16.5 MITIGATION AND MONITORING MEASURES

No specific measures are required or proposed as part of the EIA process.

## 16.6 MONITORING

No specific monitoring is required or proposed as part of the EIA process.

## 16.7 RESIDUAL IMPACT

The residual impact is considered to be *imperceptible* and *neutral*.

# 17 INTERACTIONS & CUMULATIVE EFFECTS

## 17.1 INTRODUCTION

This chapter of the EIAR identifies and outlines where and how interactions between the various impacts identified in the different chapters have been addressed in this EIAR. This covers both the construction and operational phases of the proposed development.

The project team, including a variety of specialist environmental consultants, each one an expert in their chosen field, assessed the potential impact arising from the construction and operation of the proposed development. The interaction of environmental aspects was clearly identified at an early stage in the project to be an important factor to be considered in the full evaluation of the environmental impacts associated with the proposed development.

In the interests of clarity, significant interactions and inter-dependencies have been taken into consideration, and are addressed, under each specialist heading in the EIAR. We refer the reader to the relevant chapters.

Section 17.2 below shows identifies where there is significant potential for interactions. Section 17.3 outlines the types of interactions considered under each topic.

## 17.2 MATRIX OF INTERACTIONS

This section of the EIAR provides a simple matrix identifying environmental components and recording where interactions are identified. These are then expanded upon in the text that follows, with cross references made to the more detailed assessments outlined in the relevant chapters of the EIAR.

Again, for detailed descriptions and accounts, we refer the reader to the relevant sections of the EIAR.

**Table 17.1 Matrix of Interactions**

| Interaction                         | Population & Human Health |     | Biodiversity |     | Land, Soils, Geology & Hydrogeology |     | Water & Hydrology |     | Air Quality & Climate |     | Noise & Vibration |     | Landscape & Visual |     | Material Assets |     | Traffic & Transport |     | Waste Management |     | Archaeology & Cultural Heritage |     |   |
|-------------------------------------|---------------------------|-----|--------------|-----|-------------------------------------|-----|-------------------|-----|-----------------------|-----|-------------------|-----|--------------------|-----|-----------------|-----|---------------------|-----|------------------|-----|---------------------------------|-----|---|
|                                     | Con.                      | Op. | Con.         | Op. | Con.                                | Op. | Con.              | Op. | Con.                  | Op. | Con.              | Op. | Con.               | Op. | Con.            | Op. | Con.                | Op. | Con.             | Op. | Con.                            | Op. |   |
| Population & Human Health           |                           |     | x            | x   | x                                   | x   | x                 | x   | ✓                     | x   | ✓                 | ✓   | ✓                  | x   | x               | ✓   | x                   | x   | x                | x   | x                               | x   |   |
| Biodiversity                        |                           |     |              |     | ✓                                   | x   | ✓                 | ✓   | ✓                     | x   | ✓                 | x   | x                  | x   | x               | x   | x                   | x   | ✓                | x   | x                               | x   |   |
| Land, Soils, Geology & Hydrogeology |                           |     |              |     |                                     |     | ✓                 | ✓   | x                     | x   | x                 | x   | x                  | x   | x               | x   | x                   | x   | x                | x   | ✓                               | x   |   |
| Water & Hydrology                   |                           |     |              |     |                                     |     |                   |     | x                     | x   | x                 | x   | x                  | x   | x               | x   | x                   | x   | x                | x   | x                               | x   |   |
| Air Quality & Climate               |                           |     |              |     |                                     |     |                   |     |                       |     | x                 | ✓   | x                  | x   | x               | x   | ✓                   | x   | x                | x   | x                               | x   |   |
| Noise & Vibration                   |                           |     |              |     |                                     |     |                   |     |                       |     |                   |     |                    | x   | x               | x   | x                   | ✓   | x                | x   | x                               | x   |   |
| Landscape & Visual                  |                           |     |              |     |                                     |     |                   |     |                       |     |                   |     |                    |     |                 | x   | x                   | x   | x                | x   | x                               | x   |   |
| Material Assets                     |                           |     |              |     |                                     |     |                   |     |                       |     |                   |     |                    |     |                 |     |                     | x   | x                | x   | x                               | x   |   |
| Traffic & Transport                 |                           |     |              |     |                                     |     |                   |     |                       |     |                   |     |                    |     |                 |     |                     |     |                  | ✓   | x                               | x   | x |
| Waste Management                    |                           |     |              |     |                                     |     |                   |     |                       |     |                   |     |                    |     |                 |     |                     |     |                  |     | ✓                               | x   | x |
| Archaeology & Cultural Heritage     |                           |     |              |     |                                     |     |                   |     |                       |     |                   |     |                    |     |                 |     |                     |     |                  |     |                                 |     | x |

**Key**

|   |                    |
|---|--------------------|
| x | No Interaction     |
| ✓ | Weak Interaction   |
| ✓ | Some Interaction   |
| ✓ | Strong Interaction |

Con. ⇔ construction phase  
 Op. ⇔ operational phase  
 See following pages for descriptions of interactions and cumulative that correspond to grid boxes marked with a 'tick'.  
 Boxes with an 'x' indicate that no interactions or cumulative effects are likely to occur.

## 17.3 INTERATCIIONS

### 17.3.1 POPULATION & HUMAN BEINGS

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#### Noise & Vibration

The increasing industrial activity has the potential to increase ambient noise levels at nearby sensitive receptors for people – dwellings and amenities. The assessment of operational noise in this EJAR has identified that the proposed development sound emissions are unlikely to result in the facility sound emissions exceeding standard noise level limits at nearby residences or commercial premises.

During construction, the implementation of of best practicable means and the measures included in the Preliminary CEMP will ensure there are no significant effects arising from the proposed development. The predicted construction traffic noise impacts are anticipated to be negligible. The Noise & Vibration impacts of the proposed development are addressed in Chapter 10.

#### Landscape & Visual Impacts

Increasing industrial development has the potential to reduce visual amenity for sensitive receptors. The existing MSD facility is well integrated into its surrounding environment. The proposed building will continue with this visual integration. The Landscape & Visual impacts of the proposed development are addressed in Chapter 11. No significant effects are predicted.

#### Traffic & Transportation

There will be increased traffic on local road networks particularly during the construction period – which has potential to affect the perception of local amenity. Operational traffic volumes are anticipated to be negligible. Construction traffic noise impacts are also anticipated to be not significant given that they will be will be temporary and outside of road network peak times.

The Traffic & Transportation impacts of the proposed development are addressed in Chapter 13.

### 17.3.2 BIODIVERSITY

#### Land, Soils, Geology & Hydrogeology

The assessment in Chapter 7 finds that there will be no significant impacts on land, soils, geology or hydrogeology during construction or operation. Spoil handling and storage during construction are detailed in the Preliminary CEMP. The Land, Soils, Geology & Hydrogeology impacts of the proposed development are addressed in Chapter 7.

#### Water and Hydrology

Without careful preparation and safeguards such as construction surface water controls, there could be threats to biodiversity. The main contaminants arising from construction activities may include suspended solids, hydrocarbons and concrete/cement products. Measures included in Chapter 8 and the Preliminary CEMP will ensure there is no impact as a result of this. Water and hydrology impacts of the proposed development are addressed in Chapter 8.

#### Air Quality & Climate

Sensitive species of flora and fauna could be affected by changes in air quality. During the construction phase measures to control fugitive emissions of dust will ensure there will be no significant effects on air quality beyond the construction site boundary. When operational, there will be no significant effects at any sensitive receptors. The Air Quality & Climate impacts of the proposed development are addressed in Chapter 9.

### Noise & Vibration

Construction activities and increasing industrial activity has the potential to increase ambient noise levels at sensitive habitats. No specifically sensitive ecological habitats or species are present at the site. The assessment of operational noise has identified that the proposed development sound emissions are unlikely to result in the facility sound emissions exceeding the noise level limits in the facility IEL. Overall, the proposed development is not considered to give rise to any significant effects at sensitive habitats during operation.

During construction the implementation of best practicable means and the measures included in the Preliminary CEMP will ensure no significant effects are caused by the proposed development. The predicted construction traffic noise impacts are anticipated to be negligible. The Noise & Vibration impacts of the proposed development are addressed in Chapter 10.

### Waste Management

Construction waste removal has potential to spread invasive species. No species listed in Schedule 3 of the *Birds and Natural Habitats Regulations* have been identified on sites. Therefore, it has been determined that there is no likelihood that invasive species will be spread as result of the proposed development. The Waste Management impacts of the proposed development are addressed in Chapter 14.

## **17.3.3 LAND, SOILS, GEOLOGY & HYDROGEOLOGY**

### Water and Hydrology

Land, soils, geology & hydrogeology affect surface water through a number of means which have potential to interact with surface water, particularly during construction activity – e.g., surface water management in excavations and construction dust. Measures included in Chapter 8 and the Preliminary CEMP will ensure there is no impact as a result of this. Water and Hydrology impacts of the proposed development are addressed in Chapter 8.

### Air Quality & Climate

Excavation and removal of soil and stone has the potential to impact on air quality through the generation of dust. Due to the small scale of these activities, it is considered that as a result of the good practice mitigation measures proposed, fugitive dust emissions will be negligible. The Air Quality & Climate impacts of the proposed development are addressed in Chapter 9.

### Waste Management

The proposed development has been designed to minimise the quantity of material to be excavated, maximise reuse onsite and subsequently minimise the quantity of material requiring removal off-site as a waste. Waste impacts of the proposed development are addressed in Chapter 14 Waste Management.

### Archaeology

Excavation on a greenfield site presents a potential effect on buried archaeology. Pre-construction archaeological resolution of the site combined with appropriate licences archaeological monitoring of all subsequent topsoil removal associated with site preparation will ensure the full recognition and recording of any potential subsurface finds or features. It is not anticipated therefore that there will be any residual impact on the archaeological heritage of the area. The Land, Soils, Geology and Hydrogeology impacts of the proposed development are addressed in Chapter 7 and Archaeology is addressed in Chapter 15.

### **17.3.4 AIR QUALITY & CLIMATE**

#### Noise & Vibration

Air quality mitigation through emissions abatement equipment at emission points can cause noise effects. The installation and specification of equipment outlined in Chapter 10 will ensure the proposed development does not give rise to any significant effects at NSLs. The Noise & Vibration impacts of the proposed development are addressed in Chapter 10.

#### Traffic and Transportation

Increase in traffic volumes can affect air quality through increased emissions. The mitigation measures outlined in will ensure the proposed development does not give rise to any significant effects. Traffic impacts of the proposed development are addressed in Chapter 13 Traffic and Transportation.

### **17.3.5 NOISE & VIBRATION**

#### Traffic and Transportation

Increase in traffic volumes can affect noise levels. Road traffic noise levels are anticipated to be negligible. Construction traffic noise impacts are also anticipated to be not significant given their temporary nature .Traffic impacts of the proposed development are addressed in Chapter 13 Traffic and Transportation

### **17.3.6 TRAFFIC AND TRANSPORTATION**

#### Air Quality & Climate

Increase in traffic volumes can affect air quality through increased emissions. The mitigation measures outlined in will ensure the proposed development does not give rise to any significant effects. Traffic impacts of the proposed development are addressed in Chapter 13 *Traffic and Transportation*.

## 17.4 CUMULATIVE EFFECTS

Cumulative effects are addressed within Chapters 5 to 16 of this EJAR. A number of chapters present this under a distinct heading. In others it is addressed within the baseline and impacts sections where planned or permitted development is taken account of where relevant and significant.

Other projects considered in undertaking this assessment are as referred to in individual chapters and as listed in the Planning Application Report which also accompanies the application. They also include the AGI and Gas pipeline connection and the GIS and Grid connection projects as outlined in Chapters 2 and 4.

## LIST OF SOURCES

This list contains most of the sources used for the descriptions and assessments included in this EIA. Other sources are given in the body of the report and the end of each chapter

<sup>1</sup> Source: *Google Maps*

<sup>2</sup> Adapted from *Glossary of Impacts* contained in, draft revised *Guidelines on the information to be contained in Environmental Impact Assessment Reports*, EPA, 2017.

<sup>3</sup> Including *EIA Guidance - Screening*, *EIA Guidance - Scoping* and *EIA Guidance - EIA Report*, all EC, 2017.

<sup>4</sup> Schedule 6, 1 (d) of S.I. No. 296/2018, as transposed from Article 5, 1 (d) of Council Directive 2011/92/EC (as amended by Directive 2014/52/EU)

<sup>5</sup> *Guidelines on the Information to be contained in Environmental Impact Assessment Reports*, EPA, 2022.

<sup>6</sup> *Directive 2010/75/EU Industrial Emissions Directive* (2010), European Commission

<sup>7</sup> *Environmental Protection Agency Act 1992, as amended* (1992), Government of Ireland

<sup>8</sup> *EPA (Industrial Emissions) (Licensing) Regulations, 2013, S.I. No. 137 of 2013* (2013), Government of Ireland

<sup>9</sup> *EPA (Industrial Emissions) (Licensing)(Amendment) Regulations 2020, S.I. No. 190 of 2020* (2020), Government of Ireland

<sup>10</sup> *EPA (Industrial Emissions) (Licensing) Regulations, 2013, S.I. No. 137 of 2013* (2013), Government of Ireland

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<sup>xiv</sup> [www.maps.archaeology.ie/historicenvironment](http://www.maps.archaeology.ie/historicenvironment)

<sup>xv</sup> [https://www.archaeology.ie/sites/default/files/media/pdf/Archaeology-RMP-Dublin-Manual-\(1998\)-0013.pdf](https://www.archaeology.ie/sites/default/files/media/pdf/Archaeology-RMP-Dublin-Manual-(1998)-0013.pdf)

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<sup>xvii</sup> [www.maps.archaeology.ie/historicenvironment](http://www.maps.archaeology.ie/historicenvironment)

<sup>xviii</sup> <https://www.archaeology.ie/sites/default/files/media/pdf/monuments-in-state-care-dublin.pdf>

<sup>xix</sup> [www.archaeology.ie](http://www.archaeology.ie)

<sup>xx</sup> [www.excavations.ie](http://www.excavations.ie)

<sup>xxi</sup> <https://consult.fingal.ie/system/files/materials/2018/App%20Record%20of%20Protected%20Structures.pdf>

<sup>xxii</sup> [https://www.fingal.ie/sites/default/files/2019-03/Fingal%20Development%20Plan%202017-2023%20-%20Written%20Statement\\_compressed\\_compressed.pdf](https://www.fingal.ie/sites/default/files/2019-03/Fingal%20Development%20Plan%202017-2023%20-%20Written%20Statement_compressed_compressed.pdf)

<sup>xxiii</sup> [www.buildingsofireland.ie](http://www.buildingsofireland.ie)

<sup>xxiv</sup> Leigh, J. M. 2022 Geophysical Survey Report. Kilshane, County Dublin (22R0092), unpublished report by J.M. Leigh Surveys.

<sup>xxv</sup> Lynn, C., Long, C. 2022 Archaeological Test Excavation Report: Kilshane Energy, Co. Dublin (22E0348), unpublished report by Gahan and Long.

<sup>xxvi</sup> Leigh, J. M. 2022 Geophysical Survey Report. Kilshane, County Dublin (22R0092), unpublished report by J.M. Leigh Surveys.

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<sup>xxix</sup> Lynn, C., Long, C. 2022 Archaeological Test Excavation Report: Kilshane Energy, Co. Dublin (22E0348), unpublished report by Gahan and Long.

<sup>xxx</sup> [https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR\\_Guidelines\\_2022\\_Web.pdf](https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf)

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