

| Project Code | Status | Overview | Grant Date | Project Area (sq m) | Characteristics of the potential interactions between the projects; sources and pathways | Is there a risk of in-combination effects |
|--------------|------------------------------------|--|------------|---------------------|--|---|
| | | additional 15 no. car park space, addition of a pedestrian entrance gate, omission of small grassed area & security hut, reduced landscaping plan, addition of external air conditioning plant & revised design for the sprinkler pump house, addition of an external caged access ladder & edge protection railing to the rear of the original building. Changes to the fenestration of the north elevation to include louvers replaced with windows in the office block, additional louvres & larger double doors installed in the plantroom & a louvered lantern roof section constructed above the plantroom. | | | keeping with the surrounding area. There are no significant in-combination effects identified. | |
| FW19A/0086 | Grant Permission | To relocate a standby generator with flue and associated fuel tank. All to be enclosed within a newly installed 83sqm steel framed cladded structure to match existing building facade, with associated steps and railings along with all associated civil, development and site services. | 2019/08/27 | 27,366 | This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified. | No |
| FW18A/0181 | Grant Permission & Grant Retention | To construct a 1,733 m2 extension to the existing premises to include office space, reception area, staff amenity spaces & plant room areas, the erection of a 41 m2 temporary modular building unit, construction of a 27 m2 security hut and fast action security gates, the construction of a 14 m2 extension to the existing sub-station, the construction of a 350 m3 water tank and associated 33 m2 sprinkler pump house, the realignment & expansion of the site boundary to include a new entrance, access gates, site fencing and a 136 space car park, revised visitor & universal parking areas, relocated attenuation area, 24 additional bicycle spaces and associated bicycle shelter, retention of a generator & | 2019/03/06 | 27,115 | This is a project with a short-term construction phase and is a medium project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified. | No |

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| | | associated tank and all associated civil, site development, site services and landscaping works. | | | | |
| FW19A/01 34 | Grant Permission | Proposed extension of playground area to include revised boundary realignment and new vehicular access. Additional Information Lodged on 14th Jan 2020 | 2020/03/19 | 23,430 | This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified. | No |
| FW21A/00 39 | Grant Permission | The application site is located within an overall landholding bound to the south by the R121/Cruiserath Road, to the west by the R121/ Church Road and to the north by Cruiserath Drive. The proposed development comprises the provision of artificial lighting to the substation compound, transformers, and Gas Insulated Switchgear (GIS) building permitted under An Bord Pleanála ref: 30683420 and to the client control building permitted under An Bord Pleanála ref: PL06F.248544/ Fingal County Council Reg. Ref: FW17A/0025, along with all associated site and ancillary works. | 2021/06/02 | 17,867 | This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified. | No |
| FW18A/01 21 | Grant Permission & Grant Retention | (i) construction of a two-storey office building with landscaped roof and central circular planted open courtyard. Ground / surface level will comprise entrance hall, 38 no. cycle spaces, 80 no. car spaces, bin store, plant room, store rooms, loading area and staff facilities including staff gym. First floor level will comprise a reception area, open plan office, office show space, staff training rooms, store rooms and staff facilities including WCs, staff kitchen, canteen and | 2018/11/13 | 13,806 | This is a project with a medium-term construction phase and is a medium project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required The proposed project is small in scale with a temporary construction phase but also in | No |

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|----------------|---------------------|--|------------|---------------------|--|---|
| | | <p>staff shop; and external terraces; (ii) new vehicular entrance on Cruiserath</p> <p>Drive; (iii) new / upgraded boundary treatment including sliding gate to site entrance; (iv) landscaping to comprise green roof and central circular planted open courtyard to new building, tree and hedgerow planting, and staff running track; (v) SuDS drainage and all other ancillary site development works necessary to facilitate the development. Retention permission is sought for a new 2.4m high fence inside the northern and western site boundaries.</p> | | | keeping with the surrounding area. There are no significant in-combination effects identified. | |
| FW18A/01 17 | Grant Permission | <p>Demolition of their existing store, and ancillary retail unit and sub-station. The construction of a licensed Discount Foodstore with ancillary off-licence sales and two retail units and public realm improvements; the provision of car and cycle parking; a new sub-station building, trolley bay; boundary treatments, hard and soft landscaping, drainage and underground services as required. The development includes all new signage including a single totem sign. The development also includes a new pedestrian access at the south of the site from the R121 footpath.</p> <p>Additional Information received 21/12/18. Granted Time Extension of 3 months 3/3/19. Clarification of Additional Information received 28/03/19.</p> | 2019/05/22 | 11,620 | <p>This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required</p> <p>The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified.</p> | No |
| FW17A/02 38 | Grant Permission | <p>Single storey extension (85 sq. m.) to rear of existing industrial building to house loading bay for new dock levellers.</p> <p>Minor exterior alterations to existing site layout (including 2 new security huts, a bicycle shelter and a smoking shelter and relocation of fencing, kerbing and car parking).</p> | 2018/04/04 | 6,411 | This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required | No |

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| | | | | | The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified. | |
| FW18A/0165 | Grant Permission | Permission for alterations to an existing building granted under planning Reg no. F07A/1297 consisting of an increase in internal floor space by the addition of a training room (100sq.m) and storage Room (66sq.m) at first floor level and construction of an internal access stairwell at Unit 622 Phase 3 Northwest Business Park, Kilshane Avenue, Ballycoolin, Dublin 15, D15VN36 | 2019/02/19 | 6,148 | <p>This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required</p> <p>The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified.</p> | No |
| FW21A/0233 | Grant Permission | Alterations to an existing building granted under planning reg. no. F07A/1297 consisting of an external extension of 190 sq.m at ground and first floor level consisting of a training room, stairwell and offices. | 2022/03/08 | 5,367 | <p>This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required</p> <p>The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified.</p> | No |
| FW20A/0164 | Grant Permission | The construction of a medium voltage (MV) substation. The MV substation building will have a total gross floor area of c. 30 sq.m, and an overall height of c. 4 metres. The proposed development includes the provision of electrical connections associated with the MV substation, along with all associated hard and soft landscaping, services, and all ancillary works. All on a site with an area of 0.33 hectares. The application site is located to the south of the data storage facility | 2021/01/14 | 4,218 | <p>This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required</p> | No |

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| | | permitted under An Bord Pleanála Reg. Ref. L06F.248544 / Fingal County Council Reg Ref. FW17A/0025, and within an overall landholding bound to the south by the R121/Cruiserath Road, to the west by the R121/Church Road and to the north by Cruiserath Drive. | | | The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified. | |
| FW18A/0069 | Grant Permission | European Property Fund Plc intend to apply for planning permission to alter and extend the Super Value retail, including a single storey extension (520sqm) to the rear and side of the existing retail unit, the relocation of some ground level plant and equipment to roof level, alterations to the existing car park, together with associated landscaping works. All at Supervalu, the Plaza, Tyrrelstown District centre Hollywood Road, Mulhuddart, Dublin 15. | 2018/11/26 | 1,721 | This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified. | No |
| FW20A/0210 | Grant Permission & Grant Retention | Planning permission for the revision of previously approved Planning Application FW20A/0011. The revisions include; 1 - To increase capacity from 38 to 44 children, 2 - Change operating hours from previously approved 8.30am - 5.30pm to 7.30am - 6.30pm Monday to Friday, 3 - Retention permission for a single storey roof structure covering the rear outdoor play area (built Autumn 2020), 4 - All associated site works. | 2021/03/15 | 276 | This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified. | No |
| FW18A/0095 | Grant Permission | For change of use from retail to pastoral centre, including minor internal alterations, minor alterations to the front and rear façade together with new signage all at unit 5 Block A, Tyrrelstown District Centre, Mulhuddart, Dublin 15. | 2018/09/24 | 252 | This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required | No |

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| | | | | | The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified. | |
| FW22A/0005 | Grant Permission | The proposed development comprises the fitting out as a canteen, with accompanying sanitary accommodation and office areas of the second floor level of an existing extension to the north of Unit 624, Northwest Business Park, Ballycoolin, Dublin 15, D15 ND71. All of the proposed works are to be carried out within an area of 380 sq.m. on the existing second floor level. No changes are proposed to the existing elevations other than the addition of 4 No. 1800 mm wide x 600 mm high ventilation louvres above the existing second floor glazing. Otherwise the appearance of the extension will be retained as permitted under Reg. Ref. FW18A/0181 and as subsequently amended by Planning Permission Reg. Ref: FW20A/0082. | 2022/04/12 | 246 | <p>This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required</p> <p>The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified.</p> | No |
| FW19A/0048 | Grant Permission | (1) Change of use of Ground Floor Unit from Retail to Childcare Use, (2) Upgrade of signage to front and (3) Ancillary Site Works. Additional Information received on 21.06.2019 | 2019/08/27 | 120 | <p>This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required</p> <p>The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified.</p> | No |
| FW17B/0010 | Grant Permission | Permission for single storey extension to the side of the existing house measuring 16 sq.m consisting of a new bedroom and bathroom along with associated site works associated with the development. | 2017/05/03 | 0 | This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This | No |

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|--------------|------------------|--|------------|---------------------|--|---|
| | | | | | <p>project will also be subject to EIA and AA assessments as required</p> <p>The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified.</p> | |
| FW17B/0025 | Grant Permission | Conversion of the existing garage into a study and a construction of a new toilet to the rear of the house and associated site services. | 2017/07/03 | 0 | <p>This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required</p> <p>The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified.</p> | No |
| FW22B/0015 | Grant Permission | Conversion of existing second floor attic into a habitable space, to facilitate two new bedrooms and ensuite. Works will include alterations to existing first floor layout to facilitate new access stair and the installation of four new roof lights to the front elevation, six new roof lights to the rear elevation and one new window to the gable elevation. It is also proposed to widen the existing single gate to the side of the property to incorporate a new double gate and all associated site works. | N/A | 0 | <p>This is a project with a short-term construction phase and is a small project in scale and thus the project will be in keeping with the current environment in the surrounding area. This project will also be subject to EIA and AA assessments as required</p> <p>The proposed project is small in scale with a temporary construction phase but also in keeping with the surrounding area. There are no significant in-combination effects identified.</p> | No |

ER APPENDIX 4

Appendix 4 - NRA Criteria for Rating the Magnitude and Significance of Impacts at EIA Stage National Roads Authority (NRA, 2009)

Table 1 Criteria for Rating Site Attributes – Estimation of Importance of Soil and Geology Attributes (NRA)

| Importance | Criteria | Typical Example |
|------------|---|--|
| Very High | <p>Attribute has a high quality, significance or value on a regional or national scale.</p> <p>Degree or extent of soil contamination is significant on a national or regional scale.</p> <p>Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale.</p> | <p>Geological feature rare on a regional or national scale (NHA). Large existing quarry or pit.</p> <p>Proven economically extractable mineral resource</p> |
| High | <p>Attribute has a high quality, significance or value on a local scale.</p> <p>Degree or extent of soil contamination is significant on a local scale.</p> <p>Volume of peat and/or soft organic soil underlying route is significant on a local scale.</p> | <p>Contaminated soil on site with previous heavy industrial usage. Large recent landfill site for mixed wastes.</p> <p>Geological feature of high value on a local scale (County Geological Site).</p> <p>Well drained and/or high fertility soils.</p> <p>Moderately sized existing quarry or pit.</p> <p>Marginally economic extractable mineral resource.</p> |
| Medium | <p>Attribute has a medium quality, significance or value on a local scale.</p> <p>Degree or extent of soil contamination is moderate on a local scale.</p> <p>Volume of peat and/or soft organic soil underlying route is moderate on a local scale</p> | <p>Contaminated soil on site with previous light industrial usage. Small recent landfill site for mixed wastes.</p> <p>Moderately drained and/or moderate fertility soils.</p> <p>Small existing quarry or pit.</p> <p>Sub-economic extractable mineral resource.</p> |
| Low | <p>Attribute has a low quality, significance or value on a local scale.</p> <p>Degree or extent of soil contamination is minor on a local scale.</p> <p>Volume of peat and/or soft organic soil underlying route is small on a local scale.</p> | <p>Large historical and/or recent site for construction and demolition wastes.</p> <p>Small historical and/or recent landfill site for construction and demolition wastes.</p> <p>Poorly drained and/or low fertility soils.</p> <p>Uneconomically extractable mineral resource.</p> |

Table 2 Criteria for Rating Site Attributes – Estimation of Importance of Hydrogeological Attributes (NRA)

| Importance | Criteria | Typical Examples |
|----------------|---|---|
| Extremely High | Attribute has a high quality or value on an international scale | Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status. |
| Very High | Attribute has a high quality or value on a regional or national scale | Regionally Important Aquifer with multiple well fields. Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status. Regionally important potable water source supplying >2500 homes. Inner source protection area for regionally important water source. |
| High | Attribute has a high quality or value on a local scale | Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source. |
| Medium | Attribute has a medium quality or value on a local scale | Locally Important Aquifer. Potable water source supplying >50 homes. Outer source protection area for locally important water source. |
| Low | Attribute has a low quality or value on a local scale | Poor Bedrock Aquifer Potable water source supplying <50 homes |

Table 3 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Soil/ Geology Attribute (NRA)

| Magnitude of Impact | Criteria | Typical Examples |
|---------------------|---|--|
| Large Adverse | Results in loss of attribute | Loss of high proportion of future quarry or pit reserves. Irreversible loss of high proportion of local high fertility soils. Removal of entirety of geological heritage feature. Requirement to excavate/remediate entire waste site. Requirement to excavate and replace high proportion of peat, organic soils and/or soft mineral soils beneath alignment. |
| Moderate Adverse | Results in impact on integrity of attribute or loss of part of attribute | Loss of moderate proportion of future quarry or pit reserves. Removal of part of geological heritage feature. Irreversible loss of moderate proportion of local high fertility soils. Requirement to excavate/remediate significant proportion of waste site. Requirement to excavate and replace moderate proportion of peat, organic soils and/or soft mineral soils beneath alignment. |
| Small Adverse | Results in minor impact on integrity of attribute or loss of small part of attribute | Loss of small proportion of future quarry or pit reserves. Removal of small part of geological heritage feature. Irreversible loss of small proportion of local high fertility soils and/or high proportion of local low fertility soils. Requirement to excavate/remediate small proportion of waste site. Requirement to excavate and replace small proportion of peat, organic soils and/or soft mineral soils beneath alignment. |
| Negligible | Results in an impact on attribute but of insufficient magnitude to affect either use or integrity | No measurable changes in attributes |
| Minor Beneficial | Results in minor improvement of attribute quality | Minor enhancement of geological heritage feature |
| Moderate Beneficial | Results in moderate improvement of attribute quality | Moderate enhancement of geological heritage feature |
| Major Beneficial | Results in major improvement of attribute quality | Major enhancement of geological heritage feature |

Table 4 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrogeological Attribute (NRA)

| Magnitude of Impact | Criteria | Typical Examples |
|---------------------|---|---|
| Large Adverse | Results in loss of attribute and /or quality and integrity of attribute | <p>Removal of large proportion of aquifer.</p> <p>Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or ecosystems.</p> <p>Potential high risk of pollution to groundwater from routine run-off.</p> <p>Calculated risk of serious pollution incident >2% annually.</p> |
| Moderate Adverse | Results in impact on integrity of attribute or loss of part of attribute | <p>Removal of moderate proportion of aquifer.</p> <p>Changes to aquifer or unsaturated zone resulting in moderate change to existing water supply springs and wells, river baseflow or ecosystems.</p> <p>Potential medium risk of pollution to groundwater from routine run-off.</p> <p>Calculated risk of serious pollution incident >1% annually.</p> |
| Small Adverse | Results in minor impact on integrity of attribute or loss of small part of attribute | <p>Removal of small proportion of aquifer.</p> <p>Changes to aquifer or unsaturated zone resulting in minor change to water supply springs and wells, river baseflow or ecosystems.</p> <p>Potential low risk of pollution to groundwater from routine run-off.</p> <p>Calculated risk of serious pollution incident >0.5% annually.</p> |
| Negligible | Results in an impact on attribute but of insufficient magnitude to affect either use or integrity | <p>Calculated risk of serious pollution incident <0.5% annually.</p> |

Table 5 Rating of Significant Environmental Impacts at EIS Stage (NRA)

| Importance of Attribute | Magnitude of Importance | | | |
|--------------------------------|--------------------------------|----------------------|-------------------------|----------------------|
| | Negligible | Small Adverse | Moderate Adverse | Large Adverse |
| Extremely High | Imperceptible | Significant | Profound | Profound |
| Very High | Imperceptible | Significant/moderate | Profound/Significant | Profound |
| High | Imperceptible | Moderate/Slight | Significant/moderate | Profound/Significant |
| Medium | Imperceptible | Slight | Moderate | Significant |
| Low | Imperceptible | Imperceptible | Slight | Slight/Moderate |

ER APPENDIX 5

**Appendix 5 - NRA Criteria for Rating the Magnitude and Significance of Impacts at EIA
Stage National Roads Authority (NRA, 2009)**

Table 1 Criteria for Rating Site Attributes – Estimation of Importance of Hydrological Attributes (NRA)

| Importance | Criteria | Typical Examples |
|----------------|---|--|
| Extremely High | Attribute has a high quality or value on an international scale | River, wetland or surface water body ecosystem protected by EU legislation e.g. 'European sites' designated under the Habitats Regulations or 'Salmonid waters' designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988. |
| Very High | Attribute has a high quality or value on a regional or national scale | River, wetland or surface water body ecosystem protected by national legislation – NHA status. Regionally important potable water source supplying >2500 homes. Quality Class A (Biotic Index Q4, Q5). Flood plain protecting more than 50 residential or commercial properties from flooding. Nationally important amenity site for wide range of leisure activities. |
| High | Attribute has a high quality or value on a local scale | Salmon fishery. Locally important potable water source supplying >1000 homes. Quality Class B (Biotic Index Q3-4). Flood plain protecting between 5 and 50 residential or commercial properties from flooding. Locally important amenity site for wide range of leisure activities. |
| Medium | Attribute has a medium quality or value on a local scale | Coarse fishery. Local potable water source supplying >50 homes. Quality Class C (Biotic Index Q3, Q2- 3). Flood plain protecting between 1 and 5 residential or commercial properties from flooding. |
| Low | Attribute has a low quality or value on a local scale | Locally important amenity site for small range of leisure activities. Local potable water source supplying <50 homes Quality Class D (Biotic Index Q2, Q1). Flood plain protecting 1 residential or commercial property from flooding. Amenity site used by small numbers of local people. |

Table 2 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrological Attribute (NRA)

| Magnitude of Impact | Criteria | Typical Examples |
|---------------------|---|---|
| Large Adverse | Results in loss of attribute | Loss or extensive change to a waterbody or water dependent habitat. Increase in predicted peak flood level >100mm. Extensive loss of fishery. Calculated risk of serious pollution incident >2% annually. Extensive reduction in amenity value. |
| Moderate Adverse | Results in impact on integrity of attribute or loss of part of attribute | Increase in predicted peak flood level >50mm. Partial loss of fishery. Calculated risk of serious pollution incident >1% annually. Partial reduction in amenity value. |
| Small Adverse | Results in minor impact on integrity of attribute or loss of small part of attribute | Increase in predicted peak flood level >10mm. Minor loss of fishery. Calculated risk of serious pollution incident >0.5% annually. Slight reduction in amenity value. |
| Negligible | Results in an impact on attribute but of insufficient magnitude to affect either use or integrity | Negligible change in predicted peak flood level. Calculated risk of serious pollution incident <0.5% annually. |
| Minor Beneficial | Results in minor improvement of attribute quality | Reduction in predicted peak flood level >10mm. Calculated reduction in pollution risk of 50% or more where existing risk is <1% annually. |
| Moderate Beneficial | Results in moderate improvement of attribute quality | Reduction in predicted peak flood level >50mm. Calculated reduction in pollution risk of 50% or more where existing risk is >1% annually. |
| Major Beneficial | Results in major improvement of attribute quality | Reduction in predicted peak flood level >100mm |

Table 3 Rating of Significant Environmental Impacts at EIS Stage (NRA)

| Importance of Attribute | Magnitude of Importance | | | |
|--------------------------------|--------------------------------|----------------------|-------------------------|----------------------|
| | Negligible | Small Adverse | Moderate Adverse | Large Adverse |
| Extremely High | Imperceptible | Significant | Profound | Profound |
| Very High | Imperceptible | Significant/moderate | Profound/Significant | Profound |
| High | Imperceptible | Moderate/Slight | Significant/moderate | Profound/Significant |
| Medium | Imperceptible | Slight | Moderate | Significant |
| Low | Imperceptible | Imperceptible | Slight | Slight/Moderate |

ER APPENDIX 7

APPENDIX 7 - GLOSSARY OF ACOUSTIC TERMINOLOGY

| | |
|---------------------|--|
| ambient noise | The totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, near and far. |
| background noise | The steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T ($L_{AF90,T}$). |
| broadband | Sounds that contain energy distributed across a wide range of frequencies. |
| dB | Decibel - The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 μ Pa). |
| dB L _{pA} | An 'A-weighted decibel' - a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. 'A'-weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies. |
| Hertz (Hz) | The unit of sound frequency in cycles per second. |
| impulsive noise | A noise that is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background. |
| L _{Aeq,T} | This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T). The closer the LAeq value is to either the LAF10 or L= value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of intermittent sources such as traffic on the background. |
| L _{AFN} | The A-weighted noise level exceeded for N% of the sampling interval. Measured using the "Fast" time weighting. |
| L _{AFmax} | is the instantaneous slow time weighted maximum sound level measured during the sample period (usually referred to in relation to construction noise levels). |
| L _{Ar,T} | The Rated Noise Level, equal to the LAeq during a specified time interval (T), plus specified adjustments for tonal character and impulsiveness of the sound. |
| L _{AF90} | Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval; it is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to estimate a background level. Measured using the "Fast" time weighting. |
| L _{AT(DW)} | equivalent continuous downwind sound pressure level. |
| L _{T(DW)} | equivalent continuous downwind octave-band sound pressure level. |
| L _{day} | L _{day} is the average noise level during the day time period of 07:00hrs to 19:00hrs |

| | |
|--------------------------|---|
| L _{night} | L _{night} is the average noise level during the night-time period of 23:00hrs to 07:00hrs. |
| low frequency noise | LFN - noise which is dominated by frequency components towards the lower end of the frequency spectrum. |
| noise | Any sound, that has the potential to cause disturbance, discomfort or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it, is known as noise. |
| noise sensitive location | 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. |
| octave band | A frequency interval, the upper limit of which is twice that of the lower limit. For example, the 1,000Hz octave band contains acoustical energy between 707Hz and 1,414Hz. The centre frequencies used for the designation of octave bands are defined in ISO and ANSI standards. |
| rating level | See L _A ,T. |
| sound power level | The logarithmic measure of sound power in comparison to a referenced sound intensity level of one picowatt (1pW) per m ² where: $L_w = 10 \text{Log} \frac{P}{P_0} \text{ dB}$ |
| | Where: p is the rms value of sound power in pascals; and P ₀ is 1 pW. |
| sound pressure level | The sound pressure level at a point is defined as: $L_p = 20 \text{Log} \frac{P}{P_0} \text{ dB}$ |
| specific noise level | A component of the ambient noise which can be specifically identified by acoustical means and may be associated with a specific source. In BS 4142, there is a more precise definition as follows: 'the equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval (L _{Aeq} , T)'. Tonal |
| 1/3 octave analysis | Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one-third of an octave each. |

ER APPENDIX 8

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The Tecpro Building,
Clonshaugh Business & Technology Park,
Dublin 17, Ireland.

T: + 353 1 847 4220
F: + 353 1 847 4257
E: info@awnconsulting.com
W: www.awnconsulting.com

**RESOURCE & WASTE
MANAGEMENT PLAN FOR
A PROPOSED
UNDERGROUND
TRANSMISSION LINE AND
SUBSTATION
AT
KILSHANE, CO. DUBLIN**

Report Prepared For

Kilshane Energy

Report Prepared By

David Doran, Environmental Consultant
&
Chonaiill Bradley, Principal Environmental
Consultant

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Cork Office



Unit 5, ATS Building,
Carrigaline Industrial Estate,
Carrigaline, Co. Cork.
T: + 353 21 438 7400
F: + 353 21 483 4606

AWN Consulting Limited
Registered in Ireland No. 319812
Directors: F Callaghan, C Dilworth,
T Donnelly, T Hayes, D Kelly, E Porter

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1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Resource & Waste Management Plan (RWMP) on behalf of Kilshane Energy. The development will principally consist of a new Kilshane 220kV single bay GIS Substation and approximately 4.7km of new 220kV Underground Cable (UGC) Circuit between the new Kilshane 220kV substation and the existing Cruiserath 220kV Substation.

This plan will provide information necessary to ensure that the management of Construction & Demolition (C&D) waste at the site is undertaken in accordance with the current legal and industry standards including the *Waste Management Acts 1996* as amended and associated Regulations ¹, *Environmental Protection Agency Act 1992* as amended ², *Litter Pollution Act 1997* as amended ³ and the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* ⁴. In particular, this Plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This RWMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of waste to be generated by the proposed development and makes recommendations for management of different waste streams. The RWMP should be viewed as a live document and should be regularly revisited throughout a project's lifecycle so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and that data is collected on an ongoing basis so that it is as accurate as possible

2.0 CONSTRUCTION & DEMOLITION RESOURCES AND WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Irish Government issued a policy statement in September 1998, *Changing Our Ways* ⁵, which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2013).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled '*Recycling of Construction and Demolition Waste*' ⁶ concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan, '*A Waste Action Plan for a Circular Economy*' ⁷ (WAPCE), replaces the previous national waste management plan, '*A Resource Opportunity*' (2012), and was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to an altered economical model, where climate and environmental challenges are turned into opportunities.

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) ⁸ 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. It is anticipated that the Strategy will be updated in full every 18 months to 2 years.

The Environmental Protection Agency (EPA) of Ireland issued '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*' in November 2021 ⁹. These guidelines replace the previous 2006 guidelines issued by The National Construction and Demolition Waste Council (NCDWC) and the Department of the Environment, Heritage and Local Government (DoEHLG) in 2006 ¹⁰. The guidelines provide a practical approach which is informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project, including consideration of the deconstruction of a project. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- Design teams roles and approach;
- Relevant EU, national and local waste policy, legislation and guidelines;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for Resource Waste Manager (RWM) and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and
- Details of consultation with relevant bodies i.e. waste recycling companies, Local Authority, etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a RWMP for developments. The new guidance classifies developments on a two-tiered system. Developments which do not exceed any of the following thresholds may be classed as Tier 1 development:

- New residential development of less than 10 dwellings.
- Retrofit of 20 dwellings or less.
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m².
- Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m²; and

- Demolition projects generating in total less than 100m³ in volume of C&D waste.

A development which exceeds one or more of these thresholds is classed as Tier-2 projects.

This development requires a RWMP as a Tier 2 development as it is above following criterion:

- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m².

Other guidelines followed in the preparation of this report include '*Construction and Demolition Waste Management – a handbook for Contractors and Site Managers*'¹¹, published by FÁS and the Construction Industry Federation in 2002 and the previous guidelines, 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' (2006).

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The proposed development is located in the Local Authority area of Fingal County Council (FCC).

The *EMR Waste Management Plan 2015 – 2021* is the regional waste management plan for the FCC area published in May 2015. Currently the EMR and other regional waste management plans are under review and the Regional Waste Management Planning Offices expect to publish the final plan in 2022.

The regional plan sets out the following strategic 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 50% of managed municipal waste by 2020; 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.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130 - €150 per tonne of waste which includes a €75 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015*.

The *Fingal Development Plan 2017 – 2023*¹² came into effect on March 2017 and sets out a number of objectives for the Fingal region in line with the objectives of the regional waste management plan.

Objectives:

- Objective **WM03** Implement the provisions of the Eastern Midlands Region Waste Management Plan 2015 -2021 or any subsequent Waste Management Plan applicable within the lifetime of the Development Plan. All prospective developments in the County will be expected to take account of the provisions of the Regional Waste Management Plan and adhere to the requirements of that Plan.
- Objective **WM07** Promote the increased re-use of waste in accordance with the Eastern Midlands Region Waste Management Plan 2015 -2021 (or any subsequent plan).
- Objective **WM18** Ensure that construction and demolition Waste Management Plans meet the relevant recycling / recovery targets for such waste in accordance with the national legislation and regional waste management policy.
- Objective **DMS36** *Ensure all new residential schemes include appropriate design measures for refuse storage areas, details of which should be clearly shown at pre-planning and planning application stage. Ensure refuse storage areas are not situated immediately adjacent to the front door or ground floor window, unless adequate screened alcoves or other such mitigation measures are provided.*
- Objective **DMS37** *Ensure the maximum distance between the front door to a communal bin area does not exceed 50 metres.*

With regard to C&D waste specifically, the Development Plan requires that a 70% target for the re-use, recycling and recovery of man-made C&D waste in Ireland by 2020 is required in compliance with the EC (Waste Directive) Regulations 2011.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the development are:

- Waste Management Act 1996 (No. 10 of 1996) as amended.
- Environmental Protection Agency Act 1992 (No. 7 of 1992) as amended.
- Litter Pollution Act 1997 (No. 12 of 1997) as amended.
- Planning and Development Act 2000 (No. 30 of 2000) as amended ¹³.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act* as amended and subsequent Irish legislation, is the principle of "Duty of Care". This implies that the waste producer is responsible for waste from the time it is generated through until its legal recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. Following on from this is the concept of "Polluter Pays" whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the Developer ensures that the waste contractors engaged by demolition and construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a

contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments* or a Waste or Industrial Emissions Licence granted by the EPA. The COR / permit / licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

3.0 DESIGN APPROACH

The client and the design team have integrated the '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects*' guidelines into the design workshops, to help review processes, identify and evaluate resource reduction measures and investigate the impact on cost, time, quality, buildability, second life and management post demolition and construction. Further details on these design principals can be found within the aforementioned guidance document.

The design team have undertaken the design process in line with the international best practice principles to firstly prevent wastes, reuse where possible and thereafter sustainably reduce and recover materials. The below sections have been the focal point of the design process and material selections and will continued to be analysed and investigated throughout the design process and when selecting material.

The approaches presented are based on international principles of optimising resources and reducing waste on construction projects through:

- Prevention;
- Reuse;
- Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and
- Flexibility and Deconstruction.

3.1 Designing For Prevention, Reuse and Recycling

Undertaken at the outset and during project feasibility and evaluation the Client and Design Team considered:

- Establishing the potential for any reusable site assets (buildings, structures, equipment, materials, soils, etc.);
- The potential for refurbishment and refit of existing structures or buildings rather than demolition and new build;
- Assessing any existing buildings on the site that can be refurbished either in part or wholly to meet the Client requirements; and

- Enabling the optimum recovery of assets on site.

3.2 Designing for Green Procurement

Waste prevention and minimisation pre-procurement have been discussed and will be further discussed in this section. The Design Team will discuss proposed design solutions, encourage innovation in tenders and incentivise competitions to recognise sustainable approaches. They should also discuss options for packaging reduction with the main Contractor and subcontractors/suppliers using measures such as 'Just-in-Time' delivery and use ordering procedures that avoid excessive waste. The Green procurement extends from the planning stage into the detailed design and tender stage and will be an ongoing part of the long-term design and selection process for this development.

3.3 Designing for Off-Site Construction

Use of off-site manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). The decision to use offsite construction is typically cost led but there are significant benefits for resource management. Some further considerations for procurement which are being investigated as part of the planning stage design process are listed as follows:

- Modular buildings as these can displace the use of concrete and the resource losses associated with concrete blocks such as broken blocks, mortars, etc.;
 - Modular buildings are typically pre-fitted with fixed plasterboard and installed insulation, eliminating these residual streams from site.
- Use of pre-cast structural concrete panels which can reduce the residual volumes of concrete blocks, mortars, plasters, etc.;
- The use of prefabricated composite panels for walls and roofing to reduce residual volumes of insulation and plasterboards;
- Using pre-cast hollow-core flooring instead of in-situ ready mix flooring or timber flooring to reduce the residual volumes of concrete/formwork and wood/packaging, respectively; and
- Designing for the preferential use of offsite modular units.

3.4 Designing for Materials Optimisation During Construction

To ensure manufacturers and construction companies adopt lean production models, including maximising the reuse of materials onsite. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities. This includes investigating the use of standardised sizes for certain materials to help reduce the amount of offcuts produced on site, focusing on promotion and development of off-site manufacture.

3.5 Designing for Flexibility and Deconstruction

Design flexibility has and will be investigated throughout the design process to ensure that where possible products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled. Material efficiency is being considered for the duration and end of life of a building project to produce; flexible, adaptable spaces that enable a resource-efficient, low-waste future change of use; durability of materials and how they can be recovered effectively when maintenance and refurbishment are undertaken and during disassembly/deconstruction.

4.0 DESCRIPTION OF THE DEVELOPMENT

4.1 Location, Size and Scale of the Development

The proposed development primarily comprises the provision of a 220kV Gas Insulated Switchgear (GIS) substation and associated Air Insulated Switchgear (AIS) compound on lands at Kilshane Road, Kilshane, Finglas, Dublin 11, and an underground 220kV transmission line connection from the proposed GIS substation to the existing Cruiserath 220kV GIS substation, located within an overall landholding bound to the south by the R121/Cruiserath Road, to the west by the R121/ Church Road and to the north by Cruiserath Drive, along with all associated and ancillary works.

The proposed development is located within the townlands of Kilshane, Bay, Hollywoodrath, Tyrrelstown, and Cruisrath. The application site has an area of c. 13 hectares.

The proposed 220kV GIS substation is to be located on lands at Kilshane Road, Kilshane, Finglas, Dublin 11, and will include a proposed GIS substation building with a gross floor area of 475 sq.m, within a c. 2.6 metre fenced compound. The proposed GIS substation building has a maximum height of c. 13.5 metres, excluding lighting protection masts c. 2 metres in height at roof level. The GIS substation building will accommodate a switchgear room, control room, battery room, workshop, generator room, and staff facilities. A 220kV AIS compound, including AIS electrical equipment within a fenced compound will be provided to the east of the GIS substation.

The proposed underground 220kV transmission line will run west from the proposed substation site at Kilshane Road, following Bay Lane to the west, before turning south at the roundabout at the western end of Bay Lane. The route then extends southwest along public roads to the R121. The transmission line then proceeds south along the R121 until it reaches Cruiserath substation, leaving the road and entering the substation compound from the west. The proposed underground 220kV transmission line will have a length of c. 4.69 km.

The development includes adjacent access paths, connections to the two substations (existing and proposed), provision of a medium voltage rural supply to the GIS substation (extending to the southwest of the GIS substation along Kilshane Road), surface treatments, joint bays and communications chambers on the transmission line route, services, 2 no. parking spaces within the substation compound, all associated construction works, and all ancillary works.



Figure 3.1 Proposed Site Location Map (Drawing Number: A1071-MCD-00-XX-DR-C-2120)

4.2 Details of the Non-Hazardous Wastes to be Produced

There will be soil and stone excavated to facilitate the installation of the transmission line, site levelling and construction of new foundations. The development engineers (H&MV Engineering) have estimated that 3,950m³ of material will need to be excavated to do so. It is currently envisaged that all of the excavated material will need to be removed offsite due to the limited opportunities for reuse on site. This will be taken for appropriate offsite reuse, recovery, recycling and / or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, plastics, metals and waste from contractors generated. Plastic and cardboard waste from packaging and supply of materials will also be generated. The contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

Waste will also be generated from construction workers e.g. organic / food waste, dry mixed recyclables (waste paper, 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 infrequently from site offices.

4.3 Potential Hazardous Wastes Arising

4.3.1 Contaminated Soil

Site investigations (SI) and environmental soil testing will be undertaken prior to the removal of any material from the site. Due to the nature of the project and the long distance that it covers, it is not currently possible to undertake SI investigations without causing disruptions.

If any potentially contaminated material is encountered, it will need to be segregated from clean / inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous*'¹⁴ using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*¹⁵, which establishes the criteria for the acceptance of waste at landfills.

In the event that Asbestos Containing Materials (ACMs) are found within the excavated material, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*. All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the construction phase, the contractor will notify FCC and provide a Hazardous / Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal / treatment, in addition to information on the authorised waste collector(s).

4.3.2 Fuel/Oils

Fuels and oils are classed as hazardous materials; any on-site storage of fuel / oil, and all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and the site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel / oil waste generated at the site.

4.3.3 Invasive Plant Species

A site walkover survey will take place prior to any excavations taking place of the proposed development site to determine the presence or absence of any Third Schedule invasive species. This will include a walkover of the entire site, and around part of the outside perimeter to search for any invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011.

4.3.4 Other Known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner / cartridges, batteries (Lead, Ni-Cd or Mercury) and / or fluorescent tubes and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes, if generated, will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

5.0 ROLES AND RESPONSIBILITIES

The *Best Practice Guidelines on the Preparation of Resource Waste Management Plans for Construction and Demolition Projects* promotes that a RM should be appointed. The RM may be performed by number of different individuals over the life-cycle of the Project, however it is intended to be a reliable person chosen from within the Planning/Design/Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project RWMP are complied with. The RM is assigned the requisite authority to meet the objective and obligations of the RWMP. The role will include the important activities of conducting waste checks/audits and adopting construction and demolition methodology that is designed to facilitate maximum reuse and/or recycling of waste.

5.1 Role of the Client

The Client are the body establishing the aims and the performance targets for the project.

- The Client has commissioned the preparation and submission of a preliminary RWMP as part of the design and planning submission;
- The Client is to commission the preparation and submission of an updated RWMP as part of the construction tendering process;
- The Client will ensure that the RWMP is agreed on and submitted to the local authority prior to commencement of works on site;
- The Client is to request the end-of-project RWMP from the Contractor.

5.2 Role of the Client Advisory Team

The Client Advisory Team or Design Team is formed of architects, consultants, quantity surveyors and engineers and is responsible for:

- Drafting and maintaining the RWMP through the design, planning and procurement phases of the project;
- Appointing a RM to track and document the design process, inform the Design Team and prepare the RWMP.
- Including details and estimated quantities of all projected waste streams with the support of environmental consultants/scientists. This should also include data on waste types (e.g. waste characterisation data, contaminated land assessments, site investigation information) and prevention mechanisms (such as by-products) to illustrate the positive circular economy principles applied by the Design Team;
- Managing and valuing the demolition work with the support of quantity surveyors;
- Handing over of the RWMP to the selected Contractor upon commencement of construction of the development, in a similar fashion to how the safety file is handed over to the Contractor;
- Working with the Contractor as required to meet the performance targets for the project.

5.3 Future Role of the Contractor

The future construction Contractors have not yet been decided upon for this RWMP. However, once select they will have major roles to fulfil. They will be responsible for:

- Preparing, implementing and reviewing the RWMP throughout the construction phase (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines;
- Identifying a designated and suitably qualified RM who will be responsible for implementing the RWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;
- Implementing waste management policies whereby waste materials generated on site are to be segregated as far as practicable;
- Renting and operating a mobile-crusher to crush concrete for temporary reuse onsite during construction and reduce the amount of HGV loads required to remove material from site;
- Applying for the appropriate waste permit to crush concrete onsite;
- Identifying all destinations for resources taken off-site. As above, any resource that is legally classified as a 'waste' must only be transported to an authorised waste facility;
- End-of-waste and by-product notifications addressed with the EPA where required;
- Clarification of any other statutory waste management obligations, which could include on-site processing;
- Full records of all resources (both wastes and other resources) should be maintained for the duration of the project; and
- Preparing a RWMP Implementation Review Report at project handover.

6.0 KEY MATERIALS & QUANTITIES

6.1 Project Resource Targets

Project specific resource and waste management targets for the site have not yet been set and this information should be updated for these targets once these targets have been confirmed by the client. However, it is expected for projects of this nature that a minimum of 70% of waste is fully re-used, recycled or recovered. Target setting will inform the setting of project-specific benchmarks to track target progress. Typical Key Performance Indicators (KPIs) that may be used to set targets include (as per guidelines):

- Weight (tonnes) or Volume (m^3) of waste generated per construction value;
- Weight (tonnes) or Volume (m^3) of waste generated per construction floor area (m^2);
- Fraction of resource reused on site;
- Fraction of resource notified as by-product;
- Fraction of waste segregated at source before being sent off-site for recycling/recovery; and
- Fraction of waste recovered, fraction of waste recycled, or fraction of waste disposed.

6.2 Main Construction and Demolition Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in Table 6.1. The List of Waste (LoW)

code (applicable as of 1 June 2015) (also referred to as the European Waste Code (EWC)) for each waste stream is also shown.

Table 6.1 Typical waste types generated and LoW codes (individual waste types may contain hazardous substances)

| Waste Material | LoW/EWC Code |
|--|---------------------|
| Concrete, bricks, tiles, ceramics | 17 01 01-03 & 07 |
| Wood, glass and plastic | 17 02 01-03 |
| Treated wood, glass, plastic, containing hazardous substances | 17-02-04* |
| Bituminous mixtures, coal tar and tarred products | 17 03 01*, 02 & 03* |
| Metals (including their alloys) and cable | 17 04 01-11 |
| Soil and stones | 17 05 03* & 04 |
| Gypsum-based construction material | 17 08 01* & 02 |
| Paper and cardboard | 20 01 01 |
| Mixed C&D waste | 17 09 04 |
| Green waste | 20 02 01 |
| Electrical and electronic components | 20 01 35 & 36 |
| Batteries and accumulators | 20 01 33 & 34 |
| Liquid fuels | 13 07 01-10 |
| Chemicals (solvents, pesticides, paints, adhesives, detergents etc.) | 20 01 13, 19, 27-30 |
| Insulation materials | 17 06 04 |
| Organic (food) waste | 20 01 08 |
| Mixed Municipal Waste | 20 03 01 |

* Individual waste type may contain hazardous substances

7.0 RESOURCE AND WASTE MANAGEMENT

7.1 Demolition Waste Generation

There will be no demolition associated with this development.

7.2 Construction Waste Generation

Table 7.1 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports*¹⁶ and the joint EPA & GMIT study¹⁷.

The construction element of the proposed development will consist of the construction of GIS substation building with a gross floor area of 475 sq. m and an underground 220kV transmission line (c. 4.69 km in length).

Table 7.1, below, shows the estimated construction waste generation for the proposed development based on the area of construction and other information available to date, along with indicative targets for management of the waste streams. The estimated amounts for the main waste types (with the exception of soils and stones) are based on

waste generation rate per m². These have been calculated from the schedule of development areas provided by the design team.

Table 7.1 Predicted on and off-site reuse, recycle and disposal rates for construction waste

| Waste Type | Tonnes | Reuse | | Recycle / Recovery | | Disposal | |
|--------------|-------------|-------|------------|--------------------|-------------|----------|------------|
| | | % | Tonnes | % | Tonnes | % | Tonnes |
| Mixed C&D | 10.7 | 10 | 1.1 | 80 | 8.6 | 10 | 1.1 |
| Timber | 7.9 | 40 | 3.2 | 55 | 4.4 | 5 | 0.4 |
| Metals | 3.7 | 5 | 0.2 | 90 | 3.3 | 5 | 0.2 |
| Concrete | 1.7 | 30 | 0.5 | 65 | 1.1 | 5 | 0.1 |
| Other | 4.2 | 20 | 0.8 | 60 | 2.5 | 20 | 0.8 |
| Total | 28.2 | | 5.8 | | 19.9 | | 2.6 |

In addition to the waste streams in Table 7.1, there will be c. 3,950m³ of soil and stones excavated to facilitate the installation of the transmission line, site levelling and construction of new foundations. Any suitable excavated material will be temporarily stockpiled for reuse as fill, where possible, but reuse on site is expected to be limited and all of the excavated material is expected to be removed off- site for appropriate reuse, recovery and / or disposal.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

7.3 Proposed Resource and Waste Management Options

Waste materials generated will be segregated on- site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off- site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source, where feasible at the Kilshane Energy site at Kilshane Road, Kilshane, Finglas, Dublin 11. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Dublin region that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring disposal off- site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

During construction, some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (per Article 30 (1) (b) of the Waste Collection Permit Regulations 2007, as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste off- site in their work vehicles (which are not designed for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

Written records will be maintained by the contractor(s), detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contactors who collect waste from the site and COR / permit / licence for the receiving waste facility for all waste removed off- site for appropriate reuse, recycling, recovery and / or disposal

Dedicated bunded storage containers will be provided for hazardous wastes which may arise, such as batteries, paints, oils, chemicals, if required.

The anticipated management of the main waste streams is outlined as follows:

Soil and Stones

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. The excavations are required to facilitate construction works so the preferred option (prevention and minimisation) cannot be accommodated for the excavation phase.

When material is removed off- site it could be reused as a by-product (and not as a waste). If this is done, it will be done in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material.

The next option (beneficial reuse) may be appropriate for the excavated material, pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end use.

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27. Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27. Article 27 will be investigated to see if the material can be imported onto this site for beneficial reuse instead of using virgin materials.

If the material is deemed to be a waste, then removal and reuse / recovery / disposal of the material will be carried out in accordance with the *Waste Management Acts 1996* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

Bedrock

While it is not envisaged that bedrock will be encountered, if bedrock is encountered, it is anticipated that it will not be crushed on site. Any excavated rock is expected to be removed off-site for appropriate reuse, recovery and / or disposal. If bedrock is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from FCC.

Silt & Sludge

During the construction phase, silt and petrochemical interception will be carried out on run-off and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed off-site.

Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction works are expected to be clean, inert material and should be recycled, where possible. If concrete is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from FCC.

Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues, etc., will be disposed of in a separate skip and recycled off-site.

Metal

Metals will be segregated, where practical, and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the construction phases will be stored in a separate skip, pending collection for recycling. The site Manager will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

Glass

Glass materials will be segregated for recycling, where possible.

Waste Electrical & Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages / receptacles / pallets pending collection for recycling.

Other Recyclables

Where any other recyclable wastes, such as cardboard and soft plastic, are generated, these will be segregated at source into dedicated skips and removed off- site.

Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip / receptacle will be examined by a member of the waste team (see Section 9.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Asbestos Containing Materials

Any asbestos or ACM found on- site should be removed by a suitably competent contractor and disposed of as asbestos waste. All asbestos removal work or encapsulation work must be carried out in accordance with *S.I. No. 589 of 2010 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*.

Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and / or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

On-Site Crushing

It is currently not envisaged that the crushing of waste materials will occur on- site. However, if the crushing of material is to be undertaken, a mobile waste facility permit will first be obtained from FCC and the destination of the accepting waste facility will be supplied to the FCC waste unit.

7.4 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by a weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project Waste Manager (see Section 9.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Acts 1996* as amended, *Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit & Registration) Regulations 2007* and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project RM (see Section 9.0) will maintain a copy of all waste collection permits on-Site.

If the waste is being transported to another site, a copy of the Local Authority waste COR / permit or EPA Waste / Industrial Emissions Licence for that site will be provided to the

nominated project RM (see Section 9.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from DCC (as the relevant authority on behalf of all Local Authorities in Ireland) and kept on-Site along with details of the final destination (COR, permits, licences, etc.). A receipt from the final destination of the material will be kept as part of the on-Site waste management records.

All information will be entered in a waste management recording system to be maintained on-Site.

8.0 ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is outlined below. The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

8.1 Reuse

By reusing materials on site, there will be a reduction in the transport and recycle / recovery / disposal costs associated with the requirement for a waste contractor to take the material off-Site. Clean and inert soils, gravel, stones, etc., which cannot be reused on-Site may be used as access roads or capping material for landfill sites, etc. This material is often taken free of charge or at a reduced fee for such purposes, reducing final waste disposal costs.

8.2 Recycling

Salvageable metals will earn a rebate, which can be offset against the costs of collection and transportation of the skips.

Clean, uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste.

Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes, such as timber, from a site than mixed waste.

8.3 Disposal

Landfill charges are currently at around €130 - €150 per tonne which includes a €75 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015*. In addition to disposal costs, waste contractors will also charge a collection fee for skips.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc., is also used as fill / capping material, wherever possible.

9.0 TRAINING PROVISIONS

A member of the construction team will be appointed as the RM to ensure commitment, operational efficiency and accountability in relation to waste management during the C&D phases of the development.

9.1 Waste Manager Training and Responsibilities

The nominated RM will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site.

The RM will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the RM to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The RM will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The RM will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this RWMP.

9.2 Site Crew Training

Training of site crew in relation to waste is the responsibility of the RM and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the RWMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

10.0 TRACKING AND TRACING / RECORD KEEPING

Records should be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arisings on Site.

A waste tracking log should be used to track each waste movement from the site. On exit from the site, the waste collection vehicle driver should stop at the site office and sign out as a visitor and provide the security personnel or RM with a waste docket (or Waste Transfer Form (WTF) for hazardous waste) for the waste load collected. At this time, the security personnel should complete and sign the Waste Tracking Register with the following information:

- Date
- Time
- Waste Contractor

- Company waste contractor appointed by, e.g. Contractor or subcontractor name
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- EWC / LoW

The waste vehicle will be checked by security personal or the RM to ensure it has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site.

The waste transfer docket will be transferred to the RM on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the FCC Waste Regulation Unit when requested.

Alternatively, each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste docket / WTF maintained on file and available for inspection on site by the main contractor as required. These subcontractor logs will be merged with the main waste log.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times and will be periodically checked by the RM. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and COR / permit / licence for the receiving waste facilities and maintain a copy on file, available for inspection on site as required.

11.0 OUTLINE WASTE AUDIT PROCEDURE

11.1 Responsibility for Waste Audit

The appointed RM will be responsible for conducting a waste audit at the site during the C&D phase of the proposed development. Contact details for the nominated RM will be provided to the FCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

11.2 Review of Records and Identification of Corrective Actions

A review of all waste management costs and the records for the waste generated and transported off-site should be undertaken mid-way through the construction phase of the proposed development.

If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery / reuse / recycling targets for the site. Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Upon completion of the C&D phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling / reuse / recovery figures for the development.

12.0 CONSULTATION WITH RELEVANT BODIES

12.1 Local Authority

Once construction contractors have been appointed and have appointed waste contractors, and prior to removal of any C&D waste materials off-site, details of the proposed destination of each waste stream will be provided to the FCC Waste Regulation Unit.

FCC will also be consulted, as required, throughout the excavation and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

12.2 Recycling / Salvage Companies

The appointed waste contractor for the main waste streams managed by the construction contractors will be audited in order to ensure that relevant and up-to-date waste collection permits and facility registrations / permits / licences are held. In addition, information will be obtained regarding the feasibility of recycling each material, the costs of recycling / reclamation, the means by which the wastes will be collected and transported off-site, and the recycling / reclamation process each material will undergo off-site.

13.0 REFERENCES

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12. Fingal County Council (FCC), *Fingal Development Plan 2017-2023* (2017)
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ER APPENDIX 9

past | present | future

ACS



**Archaeological Impact Assessment of proposed
220kV Gas Insulated Switchgear (GIS) Substation and
Underground 220kV Transmission Line Connection to the
Existing Cruiserath 220kv Substation at
Kilshane, Bay, Hollywoodrath, Tyrrelstown, and Cruiserath
Co. Dublin**

Client

Kilshane Energy Ltd.

ITM: 710899, 742533 (E); 710234, 742328 (S); 707525, 741755 (W)

RMP/SMR Nos: DU013-046002-, DU013-046001-, DU013-045001-,
DU013-045002-, DU013-043----, DU013-042

Magda Lyne

7 September 2022

ACSU Ref.: 2220

ARCHAEOLOGICAL
CONSULTANCY
SERVICES UNIT

HEAD OFFICE

Unit 21
Boyne Business Park
Greenhills, Drogheda
Co. Louth
Tel: 041 9883396
Tel: 041 9835422
Fax: 041 2130310
info@acsu.ie
www.acsu.ie

PROJECT DETAILS

| | |
|--------------------------------|--|
| Project | A proposed 220kV Gas Insulated Switchgear (GIS) Substation and Underground 220kV Transmission Line Connection to the Existing Cruiserath 220kv Substation at Kilshane, Bay, Hollywoodrath, Tyrrelstown, and Cruiserath, Co. Dublin |
| Report Type | Archaeological Impact Assessment |
| Archaeologist | Magda Lyne |
| Client | Kilshane Energy Ltd. |
| Site | Kilshane, Bay, Hollywoodrath, Tyrrelstown, and Cruiserath, Co. Dublin |
| Townlands | Kilshane, Bay, Hollywoodrath, Tyrrelstown, and Cruiserath |
| ITM Refs | 170899, 742533 (E); 710234, 742328 (S); 707525, 741755 (W) |
| RMP/SMR Nos | DU013-046002-, DU013-046001-, DU013-045001-, DU013-045002-, DU013-043----, DU013-042 |
| Protected Structure No. | N/A |
| Report Date | 7 September 2022 |
| ACSU Ref. | 2220 |

| Revision | Date | Description | Status | Author | Reviewed | Approved |
|----------|------------|-------------------|--------|--------|----------|----------|
| 0 | 07.09.2022 | Assessment Report | Final | M.L | L.C | D.M |
| | | | | | | |

NON-TECHNICAL SUMMARY

This report presents the findings of an archaeological impact assessment undertaken on behalf of the client to accompany a planning application for a proposed 220kV Gas Insulated Switchgear (GIS) Substation and Underground 220kV Transmission Line Connection to the Existing Cruiserath 220kV Substation at Kilshane, Bay, Hollywoodrath, Tyrrelstown, and Cruiserath, Co. Dublin (710899, 742533 (E); 710234, 742328 (S); 707525, 741755 (W)). This development is associated with the proposed Open Cycle Gas Turbine at Kilshane, Co. Dublin. This assessment is based on the findings of a desktop study and aims to identify and describe known and potential archaeological and cultural heritage constraints within the study area and offer recommendations for the mitigation of such potential impacts.

The development is to consist of a 220kV Gas Insulated Switchgear (GIS) substation, associated Air Insulated Switchgear (AIS) and an underground 220kV transmission line connection from the proposed GIS substation to the existing Cruiserath 220kV GIS substation. The line extends over c. 4.69 km and will connect the proposed GIS Kilshane Substation (ITM 710899, 742533) to the existing Cruiserath GIS substation (ITM 707525, 741755) and run within Kilshane Road, Bay Lane, Cherryhound Tyrrelstown Link Road and Church Road.

The location of the proposed GIS Kilshane Substation and a portion of the proposed service is within the proposed Open Cycle Gas Turbine at Kilshane, currently a greenfield site, that was subject to geophysical survey 22R0092. The survey identified an enclosure and archaeological activity. Subsequent test trenching 22E0248 confirmed the presence of enclosure complex and associated features, preservation by record (excavation) is being carried out at present. The service line runs within the archaeologically sensitive area; the portion along Bay Lane is located to the south of a burial ground DU014-048--- with fields adjacent to the north (22R0201; 22R0059) and south (21R0134, 21E0398, 21E0580, 22E0045) of the lane subject to archaeological investigations with significant previously unknown archaeological sites identified. The portion along Cherryhound & Tyrrelstown Link Road was subject to archaeological assessments, including a geophysical survey (08R017) and subsequent test trenching (07E1147) associated with the construction of the link road. These identified a number of archaeological monuments; that were excavated under licences E3917 - E3920. The excavated monuments included pit DU013-046002-, Excavation – miscellaneous DU013-046001-, two cremation pits DU013-044002-; DU013-045002-, Kiln DU013-044001- and ring-ditch DU013-045001-. The kiln was dated to the middle Iron Age (BC 160 – AD 50); while the ring ditch returned a Middle Bronze Age date (BC 1370-1110). Medieval activity (DU013-046001-), dating to the 13th and 14th centuries based on material evidence, was represented by two ditches, a pit and a deposit of clay, and might be linked to the former house, depicted on the Down Survey 1655-56, a monument House - 16th/17th century DU014-089----. Investigations to the south of the link road, adjacent to the roundabout with Ratoath Road exposed a number of enclosures and barrows of Bronze Age date (16E0125). The site contains no protected structures listed in the Fingal Development Plan 2017 – 2023 or sites listed within the National Inventory of Architectural Heritage (NIAH). The nearest such structure is located c. 0.66km south of the west extent of the development and consists of Mulhuddart Church (in ruins) and Graveyard (RPS 670).

Cartographic and aerial imagery was reviewed as a part of this assessment. Kilshane Road, Bay Lane and Church Road were depicted since the 1760 mapping. These roads have since been upgraded and connected by the Cherryhound Tyrrelstown Link Road, which was in use by 2013; prior, the route was a part of agricultural fields. It appears that a number

of townland boundaries depicted on the OS mapping located in this area correspond with the boundaries depicted on the Down Survey Map of 1655-56. Furthermore, some potential cropmarks on aerial photography to the north of the link road, within agricultural fields were noted, including three possible enclosures, a possible ring-ditch, possible mounds or large pits, linear and curvilinear anomalies, and a northwest to southeast anomaly corresponding with a road depicted on the 1836 OS map, realigned by the time of the 1906 OS map.

The archaeological investigations at the location of the GIS Kilshane Substation are currently ongoing. The service line will run largely within the footprint of the existing roads. Due to the nature and location of the works test trenching is not recommended. The western portion will run within the footprints of upgraded Church Road and modern Cherryhound Tyrrelstown Link Road. This is unlikely to impact any archaeological remains. Kilshane Rd and Bay Lane were not upgraded in recent years, however. Furthermore, 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, monitoring of all groundworks should be conditioned within any grant of permission for this development. This should be carried out by a licence eligible archaeologist working under licence from the Department of Housing, Local Government and Heritage.

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| Figure 7: | Aerial view of site, showing extent of proposed transmission line connection |

1. INTRODUCTION

This report presents the findings of an archaeological impact assessment undertaken on behalf of the client to accompany a planning application for a proposed 220kV Gas Insulated Switchgear (GIS) Substation and Underground 220kV Transmission Line Connection to the Existing Cruiserath 220kv Substation at Kilshane, Bay, Hollywoodrath, Tyrrelstown, and Cruiserath, Co. Dublin (ITM 710590, 472630 (E); 710234, 742328 (S); 707525, 741755 (W); Figures 1-2). This assessment is based on the findings of a desktop study and aims to identify and describe known and potential archaeological and cultural heritage constraints within the study area and offer recommendations for the mitigation of such potential impacts.

The development is to consist of a 220kV Gas Insulated Switchgear (GIS) substation, associated Air Insulated Switchgear (AIS) and an underground 220kV transmission line connection from the proposed GIS substation to the existing Cruiserath 220kV GIS substation. The line extends over c. 4.69 km, and will connect the proposed GIS Kilshane Substation (ITM 710899, 742533) to the existing Cruiserath GIS substation (ITM 707525, 741755) and run within Kilshane Road, Bay Lane, Cherryhound Tyrrelstown Link Road and Church Road.

The site is located within a sensitive area with a number of monuments listed in the Record of Monuments and Places and the Sites and Monuments Record as well as sites that were previously unknown and identified as a result of archaeological investigations and subsequently excavated.

2. THE DEVELOPMENT

2.1 Proposal

This archaeological impact assessment has been carried out in relation to a proposed 220kV Gas Insulated Switchgear (GIS) Substation and Underground 220kV Transmission Line Connection to the Existing Cruiserath 220kv Substation.

The proposed development primarily comprises the provision of a 220kV Gas Insulated Switchgear (GIS) substation and associated Air Insulated Switchgear (AIS) compound on lands at Kilshane Road, Kilshane, Finglas, Dublin 11, and an underground 220kV transmission line connection from the proposed GIS substation to the existing Cruiserath 220kV GIS substation, located within an overall landholding bound to the south by the R121/Cruiserath Road, to the west by the R121/ Church Road and to the north by Cruiserath Drive, along with all associated and ancillary works.

The proposed development is located within the townlands of Kilshane, Bay, Hollywoodrath, Tyrrelstown, and Cruiserath. The application site has an area of c. 13 hectares.

The proposed 220kV GIS substation is to be located on lands at Kilshane Road, Kilshane, Finglas, Dublin 11, and will include a proposed GIS substation building with a gross floor area of 475 sq.m, within a c. 2.6 metre fenced compound. The proposed GIS substation building has a maximum height of c. 13.5 metres, excluding lighting protection masts c. 2 metres in height at roof level. The GIS substation building will accommodate a switchgear room, control room, battery room,

workshop, generator room, and staff facilities. A 220kV AIS compound, including AIS electrical equipment within a fenced compound will be provided to the east of the GIS substation.

The proposed underground 220kV transmission line will run west from the proposed substation site at Kilshane Road, following Bay Lane to the west, before turning south at the roundabout at the western end of Bay Lane. The route then extends southwest along public roads to the R121. The transmission line then proceeds south along the R121 until it reaches Cruiserath substation, leaving the road and entering the substation compound from the west. The proposed underground 220kV transmission line will have a length of c. 4.69 km.

The development includes adjacent access paths, connections to the two substations (existing and proposed), provision of a medium voltage rural supply to the GIS substation (extending to the southwest of the GIS substation along Kilshane Road), surface treatments, joint bays and communications chambers on the transmission line route, services, 2 no. parking spaces within the substation compound, all associated construction works, and all ancillary works.

2.2 Archaeological Requirements

This archaeological impact assessment was carried out at the request of the client to accompany a planning application. It was undertaken to assess the archaeological potential of the site, and determine if any archaeological constraints are apparent in relation to the proposed development.

2.3 Methodology

A desktop survey was carried out involving a literature review and consultation of the Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR) compiled and updated by the National Monuments Service and the National Historic Properties Service of the Department of Housing, Local Government and Heritage. The RMP is comprised of manuals that list all known archaeological sites and monuments in a county with accompanying maps (based on Ordnance Survey (OS) six-inch maps) locating these sites. All sites included in the RMP are protected under the National Monuments Acts (1930–2004). The SMR consists of all records stored in the Archaeological Survey of Ireland national database and is presented in the Historic Environment Viewer, which also includes sites listed in the National Inventory of Architectural Heritage. The last published RMP for County Dublin is dated 1998, and as such many of the sites listed in the SMR are scheduled for inclusion in the next revision of the RMP.

The Topographical Files of the National Museum of Ireland were also consulted to assess the area's archaeological potential. These files list, on a townland basis, all archaeological artefacts in the care of or known to the museum. Such a record can provide evidence for human settlement or activity in the absence of physical remains or documentary references. The results of previous and ongoing archaeological investigations were also taken into account in order to evaluate the level of archaeological remains coming to light in the area. Historical maps held by the Map Library of Trinity College Dublin and aerial photography from the Geological Survey of Ireland were both consulted. These sources can indicate areas of

archaeological potential through features like curving field boundaries, crop marks and soil marks and can provide information regarding the nature and extent of recorded archaeological sites that have become denuded since the early 19th century. Historical maps are also useful in identifying other features of cultural heritage significance.

The *Fingal Development Plan 2017 – 2023* was consulted as this contains a Record of Protected Structures. Further buildings and features of architectural interest in the area that are not included on the Record of Protected Structures are detailed in the National Inventory of Architectural Heritage (NIAH) for County Dublin. The site visit was not carried out.

3. ARCHAEOLOGICAL ASSESSMENT

3.1 Archaeological & Historical Background

The area of proposed works spans over townlands of Kilshane, Bay, Hollywoodrath, Tyrrelstown, and Cruiserath; located within the Barony of Castleknock; Cruiserath Kilshane and Tyrrelstown are in the Civil Parish of Finglas while Bay and Hollywoodrath are within the Civil Parish of Mulhuddart. An examination of the Placenames Database of Ireland (www.logainm.ie) can reveal important information about the natural and cultural heritage of an area. Kilshane (*Cill Sheáin*) indicates a church in the townland and was mentioned in 1326, Bay (*An Bhá the Baye*) was mentioned in 1547 and was depicted on the Down Survey Map of 1654-56, Hollywoodrath (*Ráth an Alabhóidigh*); mentioned in 1534 as Holywoodesrath, Tyrrelstown (*Baile an Tirialaigh*) was mentioned in 1540 as Thurrelstowne, and Cruiserath (*Ráth an Chrúisigh*) was mentioned as le Rath in 1326 and by 1360

The site and wider environs is well represented in the archaeological record, containing evidence for prehistoric, mostly Bronze Age and Medieval remains. For example, a ring-ditch (SMR No. DU013-045001) identified as an anomaly during geophysical survey 08R017, was subject to test trenching 07E1147 and was subsequently excavated E3918; its location is registered as adjacent to the south part of the site. It measured 4.2m internally, a pit with charcoal and cremated bone located within it was dated to the Middle Bronze Age (BC 1370-1110 BC). A circular pit located c. 6m to the southeast of the ring ditch contained charcoal and cremated bone of an adult or older adolescent. Further examples of ring ditch in the form of cropmark were identified within the west part of the site. It is likely additional such features might be still unknown. This is further testified by the results of investigations to the south of the site, identifying a number of previously unknown monuments. During the archaeological investigations, including geophysical survey, test trenching and excavation (16E0125), an area of significant Bronze Age activity was identified. Monuments included truncated remains of a triple-ditched ring barrow measuring c. 32m in diameter, a circular ring ditch or ring barrow measuring between 12-14m and a double-ditched ringfort measuring 45m that was preserved in situ, while tree enclosures measuring between 15 and 35m were excavated (O'Donovan, et al, 2017). Penannular enclosure with southeast entrance had an external diameter of 13m and was dated to middle Bronze Age based on pottery. The ditch had a u-shaped profile and was between 0.7m - 1m wide and 0.2m - 0.5m deep. Associated features included pits and curvilinear trenches forming a structure. The triple ditched Bronze Age ring barrow measured 31.5m. The inner ditch enclosed an area of 6m with centrally located cremation and another cremation to the south. Evidence for recutting the ditches was apparent. The circular ring-barrow measuring 14.5m

was enclosed by a V-shaped ditch measuring 2.5-3.1m in width and 1.5m -1.72m deep. A slot trench was exposed and interpreted as possibly representing a small house foundation or a small ring barrow.

These monuments represent places of burial, ceremony and ritual practices that can date from the Neolithic to the Iron Age, but also continue in use into the early medieval period. Towards the end of the Neolithic and the beginning of the Bronze Age, features known as 'barrows' emerged, and these can be defined as earthen or earth/stone construction mounds with a surrounding ditch or ditches, sometimes with a low external bank, typically less than 30 metres in diameter and most commonly associated with cremation burials (O'Sullivan and Downey 2012). In 2002, in advance of the gas pipeline works from North Dublin to Limerick, ring-ditches/barrows were excavated at Flemingtown, Co. Meath, Dalystown 1, Co. Westmeath, Knockuregare, Co. Limerick and Rath, Co. Dublin (Grogan et al. 2007). All of these sites had substantial ditches, the largest having an external diameter of 38.75m. The excavations provide evidence for this type of funerary site occurring throughout the Bronze Age (2450–800 BC) and highlighted the significance of liminal space for death and burial in the form of ceremonial enclosures. McGarry (2009) states that of all the barrows excavated in Ireland, about half of them have produced the remains of a single person, most commonly found under the mound and central to the barrow. Almost all sites, however, produce cremated human remains spread throughout the fill of the barrow ditches. This can be seen at sites such as Ballybeen, Co. Antrim (Mallory 1984) and Ballydribbeen, Co. Kerry (Dunne 2003). Another interesting feature of barrows is the presence or absence of an 'entrance' or break in the ditch, which provides a causeway into the monument. Entrances are present in a number of ring-ditches and ring-barrows and although the entrance may be orientated in any direction, there is a clear preference for them facing either east or southeast. It must be noted, however, that there are also many instances where entrances are not present, such as Donacarney, Co. Meath (Stirland 2017).

Fulachtai fia comprise the most commonly discovered evidence for prehistoric settlement across Ireland and represent the use of pyrolithic technology to boil water, with those noted in close proximity to a trough generally interpreted as cooking/industrial sites (Hawkes 2018). These sites generally consist of a low mound of charcoal-enriched soil mixed with an abundance of heat-shattered stones, commonly forming a horseshoe shape in proximity to a trough, and are found in low-lying marshy areas or close to streams. Often these sites have been ploughed out and survive as a spread of heat-shattered stones in charcoal-rich soil with no surface expression. These are often found in wet areas with access to water such as the eastern part of the site. Such feature was excavated to the northeast under licence 13E0010. A pit and amorphous spread of fire cracked stone in a charcoal enriched silty clay fanning with associated trough and hearth were excavated. The trough measuring 0.9m in length and 0.5m in depth returned 2 sigma cal BC 2139-1984.

The landscape of the site also contains a high distribution of early medieval and medieval burial practices and activity/settlement as indicated by the presence of enclosures and excavated pits and kilns. A cemetery, now Burial Ground DU014-048, was identified during gas pipeline monitoring in 1988. The site is located to the north of Bay Lane junction with Kilshane Rd. 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. In recent years, fields adjacent to the north (22R0201; 22R0059) and south (21R0134, 21E0398, 21E0580, 22E0045) of the

lane were subject to archaeological investigations with significant previously unknown archaeological sites identified. The survey of the fields to the north of the lane was successful in identifying the location of a small, ditched enclosure and associated linear responses, and likely relate to the burial ground excavated in 1988 and 1989 (22R0059; Nicholls, 2022) while the field adjacent and to the west of it revealed extensive evidence for ancient occupation, seemingly involving an enclosure, land divisions and other settlement-related activity (22R0201). Early medieval and medieval periods were a time when settlement occurred as dispersed defended homesteads on lakes and across the wider landscape (O'Sullivan et al. 2010). Two large areas were subject to geophysical survey; one measuring 18 hectares located to the south of Kilshane Road (22R0092) and a large area measuring 12 hectares located adjacent to and south of Bay Lane (21R0134); the former identified an enclosure and archaeological activity while the other recorded indications of several enclosures. Following geophysical survey 22R0092 test trenching was carried out 22E0348 confirming the presence of the enclosure complex with associated features and additional deposits, preservation by record was recommended and is ongoing. The other area to the south of Bay Lane, 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). Three enclosures visible as cropmarks with no surface expression were identified as cropmarks within the field adjacent to Ratoath Rd and link road. Furthermore, features such as pits, ditches and kilns representing previously unknown archaeological features were identified as a part of archaeological assessments previously and excavated within footprint of the road. Suggesting additional such features might be present within the site.

A kiln is a structure designed specifically for the drying of a commodity. Hot air, from an open fire, reaches the cereals within the drying chamber via the flue. Experiments by Monk and Kelleher (2005), on keyhole-shaped kilns, have shown that a number of factors were essential in determining their success when drying cereals. An important aspect was the temperature of the air, when entering the kiln, and this was influenced by such things as the weather, the direction of the wind and the proximity of the fire. It was demonstrated that the temperature could be controlled by placing the fire within a depression, just before the mouth of the flue, and through the regular opening of the roof on the kiln superstructure. The wind could be controlled through the correct alignment of the kiln and by the use of windbreaks. The flue length was a key factor because

longer flues were less likely to result in the accidental burning of the cereals. For shorter flues, baffle stones were sometimes used as they prevented sparks from the fire reaching the drying chamber. The more successful experiments were also carried out in kilns where the drying chamber was set at a higher level than the flue mouth. The orientation of the kiln and the location of the drying chamber, in relation to the flue, were essential in maximising efficiency. Orientation was influenced by local factors such as topography, wind direction and the proximity of settlement. In their study of kiln orientation, Monk and Kelleher (2005) have demonstrated that the majority were aligned either north/south or east/west. It was also noted that many were set into slopes, with the chambers upslope, or boundaries such as ditches or field fences.

Kilns are essential for cereal crop processing and especially to ripen the crop after damp harvests and/or in short growing seasons. However, the drying of cereals prior to threshing, following a damp harvest or a short growing season, is only one aspect of a kiln's function. An equally important function of the cereal-drying kiln is to harden the grain to allow for effective milling (Monk 1994). This was relevant both for small-scale and larger-scale production as grinding the grain, without prior drying, was more difficult and resulted in the clogging of the quern surface. Cereal-drying kilns were used for the production of malt and evidence for this has been detected at Corbally, Co. Kildare (Tobin 2003). They were also utilised for the drying of grain, to reduce the moisture content prior to storage, and to fumigate for insect pests (Monk 1994).

Four such monuments were excavated within the site and nearby, the earliest kiln, DU013-044001- produced a middle Iron Age date (160 BC – AD 50; O'Hara R. 2008). In addition, early medieval kilns were also excavated (18E0662 ;03E1360, 13E0010). The kiln excavated under licence 18E0662 was interpreted as cereal drying kiln and recorded as a single earth fast burnt pit feature that returned date of cal AD589-659. Two early medieval kilns were excavated under licence 03E1360. One was reused on a number of occasions, and the other was a smaller keyhole-shaped kiln with no flue. The fills of the latter kiln contained a latticework of wooden stakes likely representing a drying rack or superstructure associated with the kiln. Two corn drying kilns, excavated under licence 13E0010, were also dated to the early medieval period (2-sigma cal 1045-1093 AD). The concentration of kilns in such relatively small area, is indicative of a rise in the use of arable farming, particularly in the early medieval period. Monk and Kelleher (2005) have devised a preliminary chronological framework for the development of cereal-drying kilns in Ireland. They suggest that figure-of-eight kilns, and related dumbbell kilns, date to the early medieval period followed by keyhole-shaped kilns which are predominantly associated with the high middle-ages. The problems pertaining to devising such a chronological framework are related to the lack of fully published excavation reports. This problem is furthered because drying kilns rarely produce evidence for their close dating as samples taken are usually derived from later deposits. When radiocarbon dates are forthcoming, it is not clear what material was used and from what layer the sample was taken (Monk and Kelleher 2005). Bearing these factors in mind, the following chronological sequence for the development of cereal-drying kilns in Ireland is a preliminary one and may be subject to change with increased publication and more precise sampling strategies. Monk and Kelleher's (2005) dating of figure-of-eight and keyhole kilns, to the early and later middle ages respectively, is followed although there is preliminary evidence now to date figure-of-eight kilns to an approximate period between the fourth and seventh centuries. Also there is evidence for oval and sub-oval kilns dating to the Iron Age (such as DU013-044001-), and that these were precursors for the slightly later figure-

of-eight and dumbbell types. Indeed, both types of kiln may have functioned contemporaneously for a short period until it was realised perhaps that the figure-of-eight kiln functioned more efficiently.

Medieval activity recorded as Excavation – miscellaneous DU013-046001-, included an early medieval pit (AD660-780) and two linear ditches containing locally made pottery dated to the 13th and 14th centuries. The activity might be linked to the former house, depicted on the Down Survey 1655-56, a monument House - 16th/17th century DU014-089---- located just outside and to the east of the site. It is possible that the building was a tower house; however, the monument location is uncertain. It was suggested that the site of Bay House indicated on the 1836 OS map might be the location; however, no remains of the tower house were identified, and the monument is not scheduled for inclusion in the next revision of the Record of Monuments and Places.

Three possible enclosures were identified as cropmarks and have no surface expression and might date to the prehistoric or medieval period. Ditched enclosures are seen in the form of ringforts and non-circular enclosures. The Ringfort, as the name suggests, implies a circular enclosure with a minimum of one ditch and possible accompanying banks. They were generally circular, measuring circa. 24 – 60 metres in diameter. Early Irish laws stated that circularity was a feature of the model ringfort (Stout 1997). However, with the increase of development, more and more non-circular enclosures are coming to light. Therefore, for the purpose of this discussion, all of the above enclosures will be discussed under the category 'ditched enclosures'. The majority of early medieval ditched enclosures date to the sixth to ninth centuries AD, and we see a significant decline in their use in the tenth century (O'Sullivan, Nicholl 2010). Though a site in Laytown, Co. Meath (McConway, 2002) could have a fourth-century date, other sites such as Ballynacarriga, Co. Cork (Noonan, 2004) and Raystown, Co. Meath (Seaver 2005) were probably occupied from the 5th century well into the 11th century.

Ditched enclosures are generally regarded as enclosed farmsteads, and the defences are thought to have been built in order to protect against cattle raids (Stout 1997). Some have provided little evidence for structures, suggesting the enclosure was used for storing cattle, known as a 'bodun', though the majority provide evidence to suggest they were inhabited settlements, with houses, farmyards, outbuildings and animals (O'Sullivan, Nicholl 2010). Excavated items retrieved from ringforts are of a domestic, craft or agricultural nature (Monk, 1995). Some larger sites such as Raystown, Co Meath fulfilled many functions; there was evidence for animal husbandry, cereal and grain processing, milling, burial and metallurgy (Seaver, 2016).

Ditched enclosures are the commonest field monument in Ireland. The majority of ditched enclosures were univallate with one bank and fosse. In many cases, the banks do not survive. There are, however, bivallate enclosures, for example, Cloonaboy, Co. Mayo (Gillespie & Kerrigan, 2010) and multivallate enclosures, such as Garranes, Co. Cork (O'Riordan 1942). While ringforts were generally 24 – 60 metres in diameter, the majority of non-circular enclosures were between 50m and 70 metres in diameter. Ditched enclosures tend to be situated on sloping or well-drained hilly ground with good views (Stout, 1997). Ditched enclosures usually are found in clusters within a townland (Edwards, 1990).

Ditched enclosures usually have an entrance at the southeast. This is to avoid the prevailing cold westerly and northerly winds that the enclosure would be exposed to (Stout 1997). The entrance passage at Rath II at Ballypalady, Co. Antrim ranged from 0.76m at the outer end to 1.5m at the inner opening, suggesting it was not intended for keeping large livestock (O'Sullivan, Nicholl, 2010).

Evidence from excavations shows that enclosing ditches were, in some cases, allowed to silt up and had refuse deliberately dumped into them. Layers of slag were dumped into the ditch at Lisleagh, Co. Cork (Monk, 1995).

Many sites, like that at Lissachiggeel, Co. Louth had either cobbles or paving stones providing a dry passage into the enclosure. These entrances were known in early Irish literature and legal sources as the 'airdrocht' and were to be kept clean (O'Sullivan, Nicholl, 2010). O'Sullivan wrote that it was not unusual to see pathways laid within the interior to steer movement towards a particular direction and "upon entering the site, a person was often persuaded by laid pathways to move directly and immediately to the house doorway" (ibid.). The pathway was meant to be kept clean and dry, and likely, ditches and gullies would function as drainage features to keep the area dry.

Early Medieval houses within ditched enclosures tended to be circular or round, made of stone or post-and-wattle walls. The roofs were thatched with reeds, turf or straw. According to the eight-century law text *Crith Gablach*, a typical farmer's house was 6-8 metres in diameter. Archaeological evidence shows that the majority were 4 to 5 metres in diameter, and some were significantly larger, at 6 to 10 metres in diameter (ibid.). As pointed out by Mc Cormick, Kerr, Mc Clatchie and O'Sullivan, because of the basket-like construction, any recuts or changes to the early medieval houses are rarely seen in the archaeological record (McCormick, Kerr, McClatchie, O'Sullivan 2011). It was likely that the lifespan of a medieval house would have lasted for just a short period of time (20 to 30 years); with good maintenance, a house could have stood for 50 to 60 years (O'Sullivan, Nicholl, 2010).

Associated with the enclosures and often found in its environs are fire pits, storage pits, refuse pits, a cooking pit and cereal-drying kilns. O'Sullivan and Nicholls wrote that pits are "one of the more enigmatic elements to be found within the enclosure...their function...difficult to discern. They would have been used for a variety of purposes; probably reused and cleaned-out many times and countless, no doubt, had multiple functions over their lifetime" (ibid.). According to Mc Cormick, Kerr, Mc Clatchie and O'Sullivan cereal drying kilns are generally not associated with ditched enclosures, however there are several examples of sites with associated kilns, such as Johnstown 1, Co. Meath, Gortygrigane, Co. Tipperary and Camlin, Co. Tipperary (Cited in McCormick, Kerr, McClatchie & O'Sullivan 2011).

In the post-medieval period, the portions of the site were a part of demesne lands. Including Bay Ho., and two extensive areas of Hollywoodrath House and Tyrrelstown Ho. both with associate gardens and Gate Lodges; all depicted on the 1836 map. A number of boundaries shown represent townland boundaries and appear to correspond with the boundaries depicted on the Down Survey Map of 1655-56. The boundaries appear to remain unchanged; this is likely as some of these also serve as wet ditches removing excess water and feeding it to the Ward River.

3.2 Recorded Monuments

A number of monuments are recorded within the footprint of proposed works. These were identified as a result of archaeological investigations within the footprint of Cherryhound Tyrrelstown Link Road (geophysical survey 08R017; test trenching 07E1147 and were subsequently excavated under licences E3917 - E3920), including pit DU013-046002-; excavation miscellaneous DU013-046001-; ring ditch DU013-045001- cremation pit DU013-045002-, cremation pit DU013-043----, Kiln - corn -drying DU013-042----

Furthermore, a monument House - 16th/17th century DU014-089---- is located just outside and to the east of the site and Burial ground DU014-048---- lies just to the north of Bay Lane.

The following is a list of relevant archaeological monuments located in the environs of the site. The entries have been revised and updated in the light of recent research and are available in the National Monuments Service Archaeological Survey Database (<http://maps.archaeology.ie/historicenvironment/>).

Table 1: Recorded Monuments in the environs of the site

| RMP No./ SMR No. | Class/Site Type | Description |
|------------------|----------------------------|---|
| DU014-048---- | Burial ground | Topsoil removal prior to construction of a gas pipeline in 1988 exposed the remains of several skeletons. The follow-up excavations revealed 123 skeletons, many of whom were children and adolescents (Gowen 1989, 17). These were aligned roughly east-west in the Christian manner, many haphazardly placed. Some of the individuals had stones around and under the heads. The presence of 'pillowstones' may indicate an 9th-13th-century date for the site. |
| DU013-046002- | Pit | The site was subject to geophysical survey (08R017) and excavation (Licence no. E3919) in advance of the construction of the Tyrrelstown to N2 Link Road. This monument consisted of a rectangular pit (1.94m x 0.95m) containing occasional charcoal identified as alder, ash, hazel and wild cherry. Charred oat grains were abundant and had been processed prior to deposition in the pit. Burnt animal bone was also recovered indicating domestic use. The pit was radiocarbon dated to AD 660-780 (O'Hara R. 2008, 4). |
| DU013-046001- | Excavation - miscellaneous | The site was subject to geophysical survey (08R017) and excavation (Licence no. E3919) in advance of the construction of the Tyrrelstown to N2 Link Road. This monument consisted of two ditches, a collection of isolated pit features and a deposit of clay (8.65m x 5.65m) containing medieval pottery. The pottery assemblage is locally-produced ware dated to the 13th and 14th centuries AD. While there was no conclusive settlement features it is possibly linked to medieval settlement at the former location of Bay House (DU014-089----) (O'Hara R. 2008, 3). |
| DU014-089---- | House - 16th/17th century | The Down Survey (1655-6) map shows a dwelling in this townland. This may be on the site of Bay House which is marked on the 1937 OS 6 inch edition as 'Bay House (in Ruins)'. Now a concrete works. Excavation (Licence no. E3919) in the vicinity in advance of road development, uncovered medieval activity. |
| DU013-042---- | Kiln - corn-drying | A corn-drying kiln associated with a collection of pits and gullies was excavated ahead of the Tyrrelstown to N2 Cherryhound Interchange link road in 2008 (E3920). The kiln was a SE-NW orientated, steep-sided hollow with a concave |

| RMP No./ SMR No. | Class/Site Type | Description |
|------------------|-----------------|--|
| | | oxidised base. It contained four stratified deposits representing successive phases of use. Charcoal remains of alder, hazel, cherries, elm and Maloideae were present. It was radiocarbon dated to AD1020-1180 . A single piece of flint and a single fragment of Dublin-type ware were recovered in the topsoil (O' Hara , R. 2011, 104). |
| DU013-044001- | Kiln | Excavated (Licence no. E3918) in advance of the construction of the Tyrrelstown to N2 Link Road, this monument consisted of an oval kiln. (1.2m x 0.5m). It contained a single mixed deposit including charcoal identified as alder, hazel, ash, cherry/blackthorn and willow/poplar. No charred grain was recovered. The kiln was radiocarbon dated to the middle Iron Age (160 BC – AD 50) (O'Hara R. 2008, 2). |
| DU013-044002- | Cremation pit | Excavated (Licence no. E3918) in advance of the construction of the Tyrrelstown to N2 Link Road, this monument consisted of an irregular pit. (2m x 1.6m). It had been significantly disturbed by tree boles and the single fill included charcoal (alder, hazel) and small amounts of barley, false oat-grass tubers and grass. The cremated bone recovered was identified as that of an adult human (O'Hara R. 2008, 2). |
| DU013-045002- | Cremation pit | Excavated (Licence no. E3918) in advance of the construction of the Tyrrelstown to N2 Link Road, this monument consisted of a circular pit (0.4m diam.) and was located 6m SE of a ring ditch (DU013---0001-). The pit contained a deposit of charcoal (alder and ash) and cremated bone of an adult or older adolescent (O'Hara R. 2008, 3). |
| DU013-045001- | Ring-ditch | Excavated (Licence no. E3918) in advance of the construction of the Tyrrelstown to N2 Link Road, this monument consisted of an annular ring ditch (4.2m int. diam.). The interior contained a deposit of charcoal and cremated bone (0.3m diam.) placed slightly off-centre within the enclosing ditch. Charcoal from this deposit was identified as hazel while charred barley grains could indicate food offerings placed on the pyre. It was radiocarbon dated to the Middle Bronze Age, 1370-1110BC (O'Hara R. 2008, 3). |
| DU013-043---- | Cremation pit | Excavated (Licence no. E3917) in advance of the construction of the Tyrrelstown to N2 Link Road, this monument consisted of a cluster of three cremation pits. Pit 1 (0.47m x 0.40m) contained a mix of cremated human bone, charcoal and fragments of burnt clay. While the weight of cremated bone recovered was a fraction of a cremated individual analysis revealed the burial to be an older adolescent or perhaps an adult (O'Hara R. 2008, 2). Pit 2 (0.27m x 0.25m) contained a mix of cremated human bone, charcoal and fragments of burnt clay. While the weight of cremated bone recovered was a fraction of a cremated individual analysis revealed the burial to be an older adolescent or, perhaps, an adult. A charred false oat-grass tuber was identified and may have been used as kindling for the funeral pyre (O'Hara R. 2008, 2). Pit 3 (0.5m x 0.4m) was located immediately adjacent to Pit 2 and contained cremation deposit placed within a coarse pottery vessel. The burial was radiocarbon dated to the Late Bronze Age (1010-840 cal. BC). The vessel which survived to a height of 12cm is a Late Bronze age vessel similar to domestic vessels of the same date (O'Hara R. 2008, 3). |

3.3 Previous Archaeological Investigations

The location of the proposed GIS Kilshane Substation and a small section of the proposed pipeline is located within the proposed Open Cycle Gas Turbine development which is currently a greenfield site. This was subject to geophysical survey in 2022 (22R0092). The survey identified an enclosure and archaeological activity. Subsequent test trenching 22E0248 confirmed the presence of an enclosure complex and associated features and preservation by record (archaeological excavation) was approved by the National Monuments Service and is being carried out at present. This will effectively mitigate the impact on the archaeological features.

The footprint of the Cherryhound Tyrrelstown Link Road was subject to archaeological assessments, including a geophysical survey (08R017) and subsequent test trenching (07E1147). These identified a number of archaeological monuments that were excavated under licences E3917 - E3920 (O'Hara, 2008a-d). Furthermore, a number of investigations took place in areas adjacent to the proposed works, these are also listed in Section 3.1.

Listed below (Table 2) are the investigations relevant to the site. The details are derived from the *Summary Accounts of Archaeological Excavations in Ireland* (www.excavations.ie).

Table 2: Previous archaeological investigations in the environs of the site

| Site | Licence No. | Site Type | Investigation Type |
|--|--------------|--|-------------------------------|
| 2008:369 - Tyrrelstown to Cherryhound Interchange, Bay/Cherryhound/ Cloghran/ Cruiserath/Goddamendy/ Hollywodrath/Killamonan, Dublin | 07E1147 | Various | Test Trenching |
| 2008:372 - Bay 3, Dublin | E003919 | Multi-period | Excavation |
| 2008:371 - Bay 2, Dublin | E003918 | Bronze Age burial and Iron Age hearth/kiln | Excavation |
| 2008:370 - Bay 1, Dublin | E003917 | Late Bronze Age cremations | Excavation |
| 2008:464 - Hollywodrath 1, Dublin | E003920 | Early medieval | Excavation |
| 2018:212 - Hollywodrath, Dublin | 18E0662 | Charcoal-production pit | Test trenching and excavation |
| 2004:0483 - CHERRYHOUND, Dublin | 03E1360 ext. | Early medieval corn-drying kiln | Test trenching and excavation |

| Site | Licence No. | Site Type | Investigation Type |
|--|-------------|---|-------------------------------|
| 2013:538 - Killamonan, Dublin | 13E0010 | Two corn drying kilns, three sub rectangular pits and a small hearth site | Test trenching and excavation |
| 1999:253 - KILSHANE, Dublin | 99E0220 | Unenclosed cemetery | Monitoring |
| 2022:045 - Kilshane, Dublin | 21E0580 | Rectilinear ditched enclosure | Excavation |
| 2021:352 - Kilshane, Dublin | 21E0398 | Bronze Age | Test trenching |
| 2017:647 - Bay Lane, Mulhuddart, Dublin 16, Dublin | 17E0611 | No archaeology found | Test trenching |
| 2021:139 - Cruiserath, Mulhuddart, Dublin 15, Dublin | 20E0643 | Kiln, barrow, enclosure ditch and pits | Test trenching |
| 2019:699 - Cruiserath, Dublin | 19E0483 | No archaeological significance | Test trenching |

The location of the proposed GIS Kilshane Substation and a small section of the proposed pipeline is located within the proposed Open Cycle Gas Turbine development, currently a greenfield site. The area was subject to geophysical survey (22R0092) that identified an enclosure and associated archaeological activity. This was conducted in April/May 2022 by Joanna Leigh of J.M. Leigh Surveys Ltd.

Following the survey, the area was tested and included the northwest and northeast field that were not subject to the geophysical survey. Test trenching (22E0248) confirmed the presence of the enclosure complex with associated features and additional deposits. A total of 33 test trenches were excavated across the site. Archaeological remains were identified in trenches 15-21 and 25. The archaeological features identified were described by Lynn and Long (2022) as

....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 metalised 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.

The footprint of the Cherryhound Tyrrelstown Link Road running along the site's southwest extent was subject to archaeological assessments, including a geophysical survey (08R017) and subsequent test trenching (07E1147). These identified a number of archaeological monuments; that were excavated under licences E3917 - E3920 (O'Hara, 2008a-d). The excavated monuments included the already mentioned pit DU013-046002-, Excavation – miscellaneous DU013-

046001-, two cremation pits DU013-044002-; DU013-045002-, Kiln DU013-044001- and ring-ditch DU013-045001- located in an area adjacent to the south portion of the site. The kiln was dated to the middle Iron Age (BC 160 – AD 50), while the ring ditch returned a Middle Bronze Age date (BC 1370-1110). Medieval activity (DU013-046001-), dating to the 13th and 14th centuries based on material evidence, was represented by two ditches, a pit and a deposit of clay, and might be linked to the former house, depicted on the Down Survey 1655-56, a monument House - 16th/17th century DU014-089---- located just outside and to the east of the site.

3.4 Protected Structures, National Inventory of Architectural Heritage (NIAH)

The site contains no protected structures listed in the Fingal Development Plan 2017 – 2023 or sites listed within the National Inventory of Architectural Heritage (NIAH). The nearest such structure is located c. 0.66km south of the western extent of the development and consists of Mulhuddart Church (in ruins) and Graveyard (RPS 670).

3.5 Topographical Files of the National Museum of Ireland

The Topographical Files of the National Museum of Ireland were consulted and listed no finds within the townlands of Kilshane, Bay, Hollywoodrath, Tyrrelstown, or Cruiserath.

3.6 Cartographic Review

An examination of pre-Ordnance Survey mapping included the Down Survey Map 1654-56 and Rocque's 1760 map. The map of 1654-56 depicts the townlands of Bay with a building shown within the townland; representing registered monument House - 16th/17th century DU014-089----. Rocque's map of 1760 (Figure 3) shows roads running roughly within the footprints of Kilshane Road, Bay Lane and Church Road.

Ordnance Survey maps of the area were examined to identify any possible archaeological features and trace the site's development during the 19th and early 20th centuries.

The Ordnance Survey Mapping of 1836, 1906 and 1935-38 was reviewed (Figures 5-6). The proposed location of the Kilshane substation is within a large agricultural field that has remained unchanged from the 1836 map until the present. The 1836 map shows Kilshane Road, Bay Lane and Church Road but with more detail. Kilshane Ho. is depicted to the south of Kilshane Road, Old Gravel Pit and a number of houses with trees growing along the north side and along Bay Lane that runs past Bay Ho. depicted to the south of it, with associated demesne lands and its very west extent is a townland boundary with Hollywoodrath. From that point, the site crosses an area depicted as agricultural fields until it joins Church Lane with a pond, and buildings shown. It runs along the demesne lands associated with Tyrrelstown House with a band of trees along the west side screening the road from the house. A number of boundaries shown represent townland boundaries and appear to correspond with the boundaries depicted on the Down Survey Map of 1655-56. A road that Bay Lane meets

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at its west extent, running northwest to southeast, as depicted on the 1836 map, was realigned and moved further to the west by the time of the 1906 map, where the current Ratoath Road now is. The 1906 maps show the roads largely unchanged, and the buildings adjacent to the road depicted previously are not shown. *Fox Covert* and *Bay House* with annotation *In Ruins* are depicted to the south of Bay Lane, and only a small band of trees along the west side of Church Road is now shown.

No changes are apparent from the examination of the 1935-38 Cassini map in relation to the site.

3.7 Aerial Photography Review

In addition to examining the various editions of the OS maps, aerial photographs from the Geological Survey of Ireland, dating from between 1995 and 2013, and the google aerial imagery dating between 2002 and 2022 were consulted.

The proposed location of the Kilshane substation is within a large agricultural field that has remained unchanged since 1995. Most of the footprint of Kilshane Road and Bay Lane appears largely unchanged since the 1995 aerial, with few buildings adjacent to it. By 2003 a large quarry adjacent and north of Bay Lane was established. A portion of Church Road with associated roundabouts was upgraded by 2003; this was associated with the residential development to the west of it. The 2004-2006 aerial shows the construction of the N2 underway and complete by 2008 with upgrades to the west portion of Kilshane Road. In 2012 the new road Cherryhound Tyrellstown Link Road with associated roundabouts was constructed, linking Bay Lane with Church Road.

4. CONCLUSIONS & RECOMMENDATIONS

The proposed service line runs within Kilshane, Bay, Hollywoodrath, Tyrellstown, and Cruiserath townlands. The proposed service will run within the footprint of public roads largely and measures c. 4.69km in length. The line will connect the GIS Kilshane Substation (ITM 710899, 742533; E) to the existing Cruiserath GIS substation (ITM 707525, 741755 W) and run within Kilshane Road, Bay Lane, Cherryhound Tyrellstown Link Road and Church Road.

The location of the proposed GIS Kilshane Substation and a small section of the proposed pipeline is located within the proposed Open Cycle Gas Turbine development, currently a greenfield site. The proposed pipeline and sub-station lie within an archaeologically sensitive area with archaeological monuments recorded and sites identified as a result of recent archaeological investigations. This area is currently under archaeological excavation which was approved by the National Monuments Service. This excavation will mitigate any impact on archaeological features from the proposed development of the sub-station and section of pipeline within the extent of the site. Archaeological sites within the footprint of the Cherryhound Tyrellstown Link Road were also previously preserved by record (excavated).

The archaeological excavations at the location of the GIS Kilshane Substation are currently ongoing. The proposed pipeline will run largely within the footprint of the existing roads. Due to the nature and location of the works largely within public roads, test trenching is not recommended. The western portion will run within the footprints of upgraded Church Road and

modern Cherryhound Tyrrelstown Link Road. This is unlikely to impact any archaeological remains as these roads were previously assessed and all features identified were subjected to full archaeological excavation. Kilshane Rd and Bay Lane were not upgraded in recent years, however. Furthermore, an area of increased potential was identified along Bay Lane, particularly the stretch in the environs of the archaeological monument, Burial Ground DU014-048---- which has been recently found to be quite extensive.

In order to mitigate any potential impact on previously unknown archaeological remains, should they be present, archaeological monitoring of all groundworks should be conditioned within any grant of permission for this development. This should be carried out by a licence eligible archaeologist working under licence from the Department of Housing, Local Government and Heritage.

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First edition 6-inch Ordnance Survey map (1836-43)

Rocque's 1760, An actual survey of the county of Dublin (northwest and southwest sheet)

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Google Earth Pro (aerial photography) 1985-2022

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