



Ref: 06S.VA0019

West Dublin 220/110 kV Substation and Associated Works
Response to submissions received by An Bord Pleanála

March 2016



DOCUMENT AMENDMENT RECORD

Client: EirGrid

Project: West Dublin 220/110 kV Substation and Associated Works

Title: Response to submissions received by An Bord Pleanála

PROJECT NUMBER: 7568				DOCUMENT REF: 7568-01			
Revision	Description & Rationale	Originated	Date	Checked	Date	Authorised	Date
A	Issue to EirGrid	AAM	16/03/16	DC	22/03/16	DG	29/03/16
TOBIN Consulting Engineers							

1 INTRODUCTION

EirGrid has applied for statutory approval for the West Dublin 220/110 kV Substation and Associated Works (An Bord Pleanála reference 06S.VA0019). This Strategic Infrastructure Development (SID) is required to reinforce the electricity supply in the Grange Castle area of west Dublin, south of Adamstown, County Dublin.

Eight submissions were received by An Bord Pleanála during the period of statutory consultation. By correspondence dated 9th March 2016, An Bord Pleanála requested EirGrid to provide a written response to these submissions. EirGrid's response to each submission is detailed herein.

1.1 EIRGRID'S RESPONSE

1. Submission received from Inland Fisheries Ireland (dated 3rd February 2016).

Response:

We note that Inland Fisheries Ireland generally have no objection to the application as proposed, subject to two qualifications, below:

Inland Fisheries Ireland requires that *"All crossings in the Griffeen Catchment should at a minimum be completed by temporary diversion or by fluming; crossing by open cut is unacceptable in a Salmonid channel"*. EirGrid is happy to comply with this. Any in-stream works will be carried out with the written approval of the Inland Fisheries Ireland. There will be no discharge of suspended solids or any other deleterious matter to watercourses.

EirGrid also confirms that all works will be completed in accordance with the mitigation detailed in the Planning and Environmental Considerations Report.

EirGrid also confirms that water crossings will be constructed in accordance with the requirements of the Office of Public Works Section 50 of the EU (Assessment and Management of Flood Risks) Regulations SI 122 of 2010 and Section 50 of The Arterial Drainage Act, 1945 Consent requirements, for approval by Inland Fisheries Ireland.

2. Submission received from Transport Infrastructure Ireland (dated 4th February 2016).

Response:

Transport Infrastructure Ireland submission confirms that it has no specific comment to make in relation to the proposal. No further response to this submission is therefore necessary.

3. Submission received from John and Beverley Power (dated 15th February 2016)

Response:

It appears that the received submission is actually a submission in respect of a proposed Compulsory Purchase Order relating to the planning upgrading of the R120. EirGrid has no responsibility for this separate process, nor does it intend to acquire lands from the subject parties to facilitate the proposed transmission infrastructure development.

Other details of the submission are relevant to the proposed development, and relate to the following issues:

- Location of cabling in the R120
- Location of cabling in the 12th Lock Bridge
- Technical and safety concerns with respect to the R120 Road Improvements
- Energy Reuse Efficiency of Data Centres
- Oral hearing

EirGrid's response is as follows:

Location of cabling in the R120

It is noted that South Dublin County Council has received Part 8 Approval for the upgrade of the Adamstown Road Improvement Scheme (R120). The R120 road upgrade extends south from the railway bridge at Adamstown for a distance of approximately 1.2 km in the townlands of Adamstown, Ballymakailly and Grange. This road upgrade includes works to the 12th Lock Bridge.

It is confirmed that the preferred cable route option for the West Dublin 220/110 kV Substation and Associated Works project to connect the western interface compound with the substation site is via this approved R120 road upgrade. Route Option B will only be used in the eventuality that the R120 road upgrade does not proceed, or has not proceeded at the time of construction of the transmission infrastructure development, should it be approved.

Throughout the West Dublin 220/110 kV Substation and Associated Works project, EirGrid has consulted with South Dublin County Council and it has been confirmed that there is capacity for the proposed 220 kV circuits in ducts which will be laid within the approved R120 road upgrade. If statutory approval is granted for the West Dublin 220/110 kV Substation and Associated Works project and the road upgrade works proceed, EirGrid proposes to lay the 220 kV cables in that ducting which is constructed as part of the R120 road upgrade works, including where it crosses the 12th Lock Bridge.

Location of cabling in the 12th Lock Bridge

As noted above, the preferred cable route option will be by way of ducts which will be located in the deck of the 12th Lock Bridge, as part of the approved upgrade of the R120. Trenchless construction methods for crossing the Grand Canal will only be used in the eventuality that the R120 road upgrade does not proceed or has not proceeded at the time of construction of the transmission infrastructure development, should it be approved.

Technical and safety concerns with respect to the R120 Road Improvements

EirGrid has no comment on technical or safety matters relating to the approved R120 road upgrade, other than as noted above in respect of their ability to accommodate the proposed 220 kV cables.

Energy Reuse Efficiency of Data Centres

The submission contains extensive information related to the reuse of energy from data centres. It is noted that this is not a matter relating to the provision of transmission infrastructure development. EirGrid has no comment on matters outside its statutory remit.

Oral Hearing

The holding of an oral hearing is at the discretion of An Bord Pleanála.

4. Submission received from JFOC Design – Ted and Henry Crowley (dated 15th February 2016)

Response:

The submission makes observations on the following:

- Location of western interface compound and adjacent tower
- Access Route

EirGrid's response is as follows:

Location of western interface compound and adjacent tower

The submission stresses the development potential of the Observers' lands, particularly with reference to its locational context to the south of the mainline railway, adjacent to Adamstown railway station, and the development of the SDZ to the north thereof. The submission envisages future development on the Observers' lands as "a mirror image of the Adamstown development". As a consequence of this, the need to protect the future viability of the lands is stressed.

It is noted at the outset of this response that the Observers' lands are not part of the Adamstown SDZ. Neither are they zoned for development. Neither are they zoned in any statutory documents for longer-term development. It is noted that the lands to the north in Adamstown SDZ, and the lands of Grange Castle, Profile Park, and other undeveloped lands to the west of the emerging business and commercial areas are all zoned for development.

The process and reasoning in identifying the location of the western interface compound location is documented within the Stage 1 and 2 Reports, which form part of our application.

The early stages of the project included the identification of 11 sites as feasible substation sites, and five sites as feasible interface compound sites, including two sites, referred to in Reports as T1 and T2, on the Observers' lands. In particular, due to the orientation of the road network through the study area, and the benefits of routing the cable circuits in roadways, it was identified that two 220 kV circuits could be routed from the western part of the study area along the R120, and two 220 kV circuits could be routed along the eastern part of the study area along the R136 and R134. One interface compound would therefore be developed in the vicinity of the R120 road and another interface compound site would be developed in the vicinity of the R136 road.

The primary issue of feedback in respect of consultation held on the Stage 1 Report (which first presented these site and route options) was for maximum removal of the existing 220 kV overhead line and associated pylons. Subsequently, an evaluation of all five feasible interface compound site options (T1 –T5) found that Option T2 emerged as the least constrained western circuit route option, from a technical, environmental, and cost perspective.

Notwithstanding this however, EirGrid considered that the maximum removal of the existing overhead lines and tower structures in this urban area was a significant community benefit of the project. As such, a more westerly Option - T1 – was identified for the western interface compound site. The identified western interface compound will allow for approximately 860m of existing 220 kV overhead line to be removed from the Observers' lands, including four existing double-circuit pylons. These existing pylons extend across the view shed of the core Adamstown SDZ area. Again, it is considered that this is an important community benefit to this part of West Dublin – indeed; the Observation submission acknowledges the removal of the existing 220 kV overhead line.

The submission requests consideration of an option of moving further west; however, we have noted that this was previously considered by the project team. It was noted that this option would require a considerably greater length of underground cable, requiring more land for cable laying and access routes; it would be further away from the project demand and the new substation site;

it would also be further away from the R120 road; it would also involve four more land folios. As a result this option was deemed more constrained than the proposed site location.

EirGrid discussed the future road (shown on Figure 1 in the submission) with South Dublin County Council, who confirmed that, while this is a strategic objective, there are no plans in place to develop the road in the short term.

On balance, having regard to all issues of proper planning and sustainable development, it is considered that the proposed location for the western compound is the most appropriate.

Landscape and Visual Amenity

The currently proposed removal of approximately 3 km of existing double-circuit 220 kV overhead line in the townlands of Gollierstown, Finnstown, Adamstown, Grange, Esker South and Kishoge, including the removal of 13 associated towers will improve the visual amenity of the area significantly. Residential properties in Adamstown located along the southern fringe of the housing estates facing Station Road (R 5787-1/R 5787-2) and Adamstown Avenue (L1058) as well as the railway line will mostly benefit from the removal of the existing 220 kV towers and conductors. Two images from locations where the towers will be removed are included overleaf. There will also be a positive impact on the landscape character which is to transform further into a suburban / light industrial townscape in the future.

The proposed interface compound will be seen in the context of existing power, road, bridge and rail infrastructure. The proposed screen planting around the compound (refer to the landscape masterplan presented in Appendix 8 of the Planning and Environmental Considerations Report) will reduce the visual effect of the new structures at ground level. The upper parts of the proposed western compound, such as tower and gantry structures will remain visible due to their height.

In terms of visual impact, the location of the western compound further west along the railway line may reduce the extent of visibility of the proposed development from future developments at Adamstown. However, considering cumulative effects with existing surrounding infrastructure and the proposed removal of existing 220 kV transmission line, no major remaining landscape and visual impacts could be found within the study area which would warrant a re-location of the compound further to the west. The relocation of the proposed western interface compound further to the west would result in similar residual landscape and visual effects as identified for the currently proposed location.

Plate 1 Existing view southeast from Adamstown Avenue of a 220 kV tower which is proposed to be removed



Plate 2 Existing view east of 220 kV towers proposed to be removed when located on Station Road (R 5787-1/R 5787-2) running along the train tracks to Adamstown Train Station



Access route

The submission notes that there are inadequate details of the access route. As the Board may be aware, and which was discussed with the Observers during consultation meetings in respect of the proposed development, a permanent 8m wayleave will be required along the length of the underground cable route. The landowner will continue to have full ownership and access to the wayleave, however there are some restrictions on development; for example it can continue to be used for agricultural purposes or a roadway but buildings or deep rooted vegetation such as trees are not permitted in the wayleave.

ESB requires this access route to be marked but does not require a high quality surface. However, a cable access route to the western interface compound can be developed to a high quality standard suitable for future access to the lands if so required. In the absence of such requirement, however, precise details (e.g. details of road side kerbs, road gullies etc) for the access route have not been prepared. EirGrid will continue to consult with the Observers regarding details of the access route, and are happy to accept any condition of approval which requires access road details to be agreed with the Planning Authority and/or the landowner.

The submission requests a location of the compound and cable route in closer proximity to the railway line. However, it is confirmed in the application that Irish Rail requires a separation distance of approximately 10m from the edge of the railway line to the edge of the cable; this has dictated the location of the circuit route adjacent to the rail line as now proposed. This has been incorporated into the design of the wayleave and access route to the western compound.

5. Submission received from South Dublin County Council (dated 16th February 2016)

Response:

The submission made by South Dublin County Council raises the following issues;

- Heritage issues
- Surface water and flooding
- Construction and demolition waste
- Landscape and visual amenity
- Carrying capacity and safety of road network serving the proposed development
- Environmental carrying capacity of the site
- Contributions

EirGrid's response is as follows:

At the outset, EirGrid notes the conclusion of the submission that the proposal is consistent with the Regional Planning Guidelines for the Greater Dublin Area, and is permitted in principle under the zoning objectives of the County Development Plan. In addition, the Development Plan supports the development of energy infrastructure.

It is also acknowledged that the proposed development fulfils Policy EC2 of the Development Plan in respect of removal of the existing “Adamstown pylon” – and indeed a considerable number of other existing pylons and overhead line in the vicinity of the built areas of Adamstown, and this part of West Dublin. In this particular respect, the submission notes that the proposed development provides a significant “community gain” to its receiving environment.

We also note the significant history of permitted development in this wider area, as provided in the submission, which in combination with the zoning objectives for the area, demonstrates that the proposed substation will occur within an existing and evolving urban area, and therefore must be understood in this context of built form.

Heritage Issues

The South Dublin County Council (SDCC) submission recommends re-routing the preferred cable route to the west of the pond areas, located to the west of the R120. This has been addressed in more detail at response No. 8 below, with regard to the submission of the Department of Arts, Heritage and the Gaeltacht. In summary, a minor revision to the cable route is identified in this area to avoid the woodland habitat and ponds. Please refer to response No. 8 and Figures 1 and 2 presented in Appendix 1.

Bats were considered by our Ecologists when considering the lighting required for the operational stage of the project. Some bat species can be sensitive to the effects of strong lighting. The proposed cable route will not result in increased lighting along its length. The only proposed new lighting at the proposed substation will be sensor security lighting. It is considered that bats in this area would have already acclimatised to the existing and emerging built structures and roadways, as well as their associated lighting, and therefore it is expected that the impacts, if any, to the local bat populations will be minor.

EirGrid proposes to use available ducting within the upgraded R120 road including where it crosses the 12th Lock Bridge. This ducting will be installed during the road upgrade. Therefore EirGrid does not propose to design an otter bridge crossing at the 12th Lock Bridge.

Ecological mitigation measures detailed in the Planning and Environmental Considerations Report will be implemented as part of the project.

Material Assets / Surface Water Drainage

A desktop study of all of the known utility services in the area was completed during the constraints stage of the project. These include electricity infrastructure, water and wastewater services, gas pipelines, UPC services, the Dublin T50 multi duct fibre optic and BT services. These services are predominantly within the existing road infrastructure within the study area. As noted in Section 7.4.1 of the Planning and Environmental Considerations Report, potential exists to disrupt these existing utility services. However, further consultation will be undertaken with utility providers prior to any construction works to determine if new infrastructure has been installed and to inform utility providers of the proposed construction works programme. The laying of the 220 kV cables will be carried out by experienced contractors liaising with utility providers to minimise any disruption to service.

Consultation was undertaken with South Dublin County Council with regard to existing services, and information was received from South Dublin County Council Roads Department related to existing and proposed services in the R120 and R134, as well as built record of services in the R136. This information has been used in the planning and design of the circuit routes.

Planning Drawing 7568-2108 indicates the planned connections to foul water, water supply and discharge point for surface water in respect of the proposed substation compound. Further details related to the services for the site are provided in the Engineering Services Report accompanying the planning application. It will be noted that the substation is essentially an unmanned facility,

Construction and Demolition Waste

All waste arising from the development will be disposed of at a waste facility authorised under the Waste Management (Facility Permit and Registration) Regulations 2007 (as amended) to accept the categories of waste. This will be transported by an authorised waste collection permit holder. Copies of disposal records will be maintained on site for inspection by Authorised Persons as appointed under the Waste Management Act, 1996.

Landscape and Visual Amenity Assessment

The South Dublin County Council (SDCC) submission including the report of the Urban Design Officer recommends the re-location of the western interface compound further west to minimise visual impacts from future sub-urban developments at Adamstown. A detailed response in relation to landscape and visual matters has been included in Section 4 (Submission received from JFOC Design – Ted and Henry Crowley, dated 15th February 2016) above.

The report of the Urban Design Officer includes also a recommendation to move the eastern interface compound further to the east to reduce the prominence of electricity infrastructure at the

roundabout and crossing point between the R136 and the Ninth Lock Road, which is a gateway to the sub-urban development located further north.

The relocation of the eastern interface compound further east would result in an increased visual impact for existing residences located north of the Ninth Lock Road. An existing 220 kV tower is currently located adjacent to the roundabout resulting in landscape and visual effects. The replacement of this existing tower and the construction of the interface compound will intensify the electricity infrastructure at this point. The proposed boundary planting (refer to the landscape masterplan presented in Appendix 8 of the Planning and Environmental Considerations Report) can be thickened along the site boundary in order to increase the screening effects of the proposed boundary planting at road and footpath level. Sections above underground cables where no planting can take place can be screened by feature structures in order to ensure continuous screening around the compound site. However, the upper sections of the tower and gantry structures will not be able to be screened and will remain visible. Tall feature screening structures are not envisaged as these are likely to increase the impact on the visual amenity in the area due to the height and bulk required to screen the proposed interface compound.

Carrying capacity and safety of road network serving the proposed development

As part of the West Dublin 220/110 kV Substation and Associated Works project, it is proposed to use the upgraded R120 and R134 roads, as well as the existing high-quality R136, in which to lay the four No. proposed underground 220 kV cable routes between the proposed substation and the two separate interface compound sites. The methodology used for laying the cables will involve the excavation of trenches within a construction corridor and the installation of cable ducts within those trenches; refer to Plate 3.

For clarity it is confirmed that the preferred option for the construction of the proposed 220 kV circuits is to install circuits as part of the upgrading of the R120 and R134 to the west and south and to install the circuits in new ducts on the R136 road to the east. It is confirmed that existing ducting on or adjacent to the R136 is not sufficient for the proposed circuits. The proposed location of the circuits are shown on the submitted planning drawings; site location/layout maps (7568-2001, 2002, 2003 & 2004) showing the circuit corridor, as well as details for the 220 kV circuit route and the cable joint bay details (7568-2142 & 2145).

Plate 3 **Typical HV duct installation in roadways**



As detailed in Chapter 16 of the Planning and Environmental Considerations Report, activities that will be carried out on the public roads, are as follows;

- cable route construction;
- cable pulling operations;
- opening of temporary and permanent accesses;
- road reinstatement works; and
- deliveries of construction plant and materials to on-road site locations.

Planning Drawing No. 7568- 2001 shows the extent of the 220 kV circuits that are to be installed as part of this project. It is envisaged that only a single circuit will be constructed at a time and that a live carriageway on the R136 road will be kept open in both directions between 7am and 7pm Monday to Friday.

Each of the 220 kV circuits will require joint bays at approximately 350m to 500m centres to allow for connection of lengths of cable. The envisaged location of joint bays is provided on Planning Drawing No. 7568-2001. The joint bays are reinforced concrete structures 6m long, 2.5m wide and approximately 1.8m deep. A detail for the joint bays is provided in Plate 4.

Plate 4 High Voltage Cable Joint Chamber



Table 16-1 in the Planning and Environmental Considerations Report provides a summary of the envisaged construction programme and includes for cable route works.

It is noted that a road opening licence will be required in advance of the works and the developer will ensure that the appointed contractor complies with the requirements of South Dublin County Council to allow ensure a comprehensive application is prepared, which addresses all relevant matters.

A temporary Traffic Management Plan will be developed, in advance of the works, by the principal contractor in accordance with Chapter 8 of the Traffic Signs Manual 2010 and in conjunction with the local authority. These will form part of a construction and Traffic Management Plan to reduce the potential impacts associated with the cable laying operations and other works. This Traffic Management Plan will detail proposed traffic management measures to cater for all road users and identify measures to segregate construction traffic and plant.

The implementation of an approved Traffic Management Plan will minimise the potential for traffic and transport impacts during construction activities. This Traffic Management Plan will comply with the requirements set out by the local authority. All project staff and material suppliers will be required to adhere to the Traffic Management Plan. As outlined above, the principal contractor shall agree and implement monitoring measures to monitor the effectiveness of the Traffic Management Plan.

A Site Engineer / Clerk of Works will be employed by the developer who will consult with South Dublin County Council and who will monitor and report on the overall construction works, traffic management and health and safety. In accordance with legislation a PSCS will be appointed by the developer, who will have overall responsibility for the works.

Contributions

We note the request in the submission for the provision of a security bond in respect of works to roads. We would again note that the majority of the proposed preferred cable route will use ducts already laid in the upgraded roads. Notwithstanding this, under the provisions of section 182(B) (5) of the Planning and Development Act 2000 (as amended), An Bord Pleanála may attach to an approval such conditions as it sees appropriate, including payments of financial contributions. This is a matter for the discretion of the Board, and EirGrid will of course comply with any such conditions.

However, it is noted that Development Contribution Schemes prepared under Section 48 of the Planning and Development Act are explicitly restricted to Section 34 development. As such, they do not appear to relate to Strategic Infrastructure Development proposed under Section 182A of the Act, as occurs in this instance.

6. Submission received from Uisce Éireann (Irish Water) (dated 19th February 2016)

Response:

EirGrid consulted with Irish Water throughout the pre-application stages of the project. The submission from Irish Water notes that it proposes to construct a major watermain in this area, along the R120, as part of the Leixlip Saggart Scheme. EirGrid will of course consult with Irish Water further to provide details of the proposed cable locations in the event of a grant of statutory approval.

For the information of the Board, a desktop study of all known utility services in the area was completed during the constraints stage of the project. These include electricity infrastructure, water pipelines, gas pipelines, UPC services, the Dublin T50 multi duct fibre optic and BT services. These services are predominantly within the existing road infrastructure within the study area.

In addition to the above, consultation will be undertaken with Irish Water prior to any works to determine if new water infrastructure has been installed. The laying of the 220 kV cables will be carried out by contractors under the supervision of the relevant utility company where appropriate to ensure conformity to technical specifications and standards as well as to minimise any disruption to services.

7. Submission received from Marie Crosbie C/O Brendan Steen Solicitors (dated 19th February 2016)

Response:

The submission is stated to have been made by Brendan Steen, on behalf of Ms. Marie Crosbie, and raises the following issues:

- Lack of consultation – non-awareness of the proposed development
- Consent not sought for submission of planning application on Ms. Crosbie's lands
- Belief that permission should be sought for a single route
- Requirement for and Appropriate Assessment
- Requirement for an Environmental Impact Statement

EirGrid responds as follows:

It is not correct that there was a lack of consultation or awareness of the Observer of the proposed development.

As noted in the application particulars, following the identification of a study area in respect of the proposed development, and identification of constraints therein, 11 sites were identified as feasible for the location of the planned substation. One of these sites (referred to as Site B in the Stage 1 Report) is land owned by Ms. Crosbie (Folio 1257).

Ms. Crosbie was initially consulted (21st January 2015) prior to the publication of the Stage 1 Report to inform her that her land (Folio 1257) had been identified as a feasible site location. Consultation with Ms. Crosbie continued throughout the development of the project, to inform her of the projects progress, to notify her of consultation periods and events and to invite her to consult with EirGrid. This consultation included phone calls, letters and providing copies of the published reports and mapping.

The project team held a meeting with Ms. Crosbie on the 24th June 2015 at her residence. This meeting discussed the basis for the project, and why site options, including her land, was selected. It also discussed what would be required if Cable Route Corridor Option B (alternative route) was progressed.

Ms. Crosbie was also consulted for permission to carry out environmental surveys on her land. This was granted but later withdrawn.

If Cable Route Option A is progressed, the 220 kV cables will be placed within the R120 road upgrade for which South Dublin County Council has received Part 8 Approval. EirGrid does not impact on Ms. Crosbie's land under this option.

The submission suggests that Environmental Impact Assessment (EIA) is required for the proposed development. An EIA Screening Report was completed as part of the West Dublin 220/110 kV Substation and Associated Works project. This report notes that the proposed development, including removal of a section of the existing Inchicore- Maynooth 220 kV double-circuit overhead line, is not likely to have significant effects on the natural environment or any designated site. Therefore, EirGrid has concluded that EIA is not required for this project under the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (also as amended). The EIA Screening Report is Appendix 2-1 to the Planning and Environmental Considerations Report. However, the need for EIA is clearly a matter for the Competent Authority – An Bord Pleanála.

As the Board will be aware, environmental studies were carried out and a Planning and Environmental Considerations Report was prepared to ensure that the potential for environmental impact arising from the proposed development was considered and addressed thoroughly. This Planning and Environmental Considerations Report accompanies the Planning Application submission.

The submission suggests that Appropriate Assessment is required for the proposed development. An Appropriate Assessment Screening was undertaken as part of the West Dublin 220/110 kV Substation and Associated Works project. This report concluded, based on the best available scientific information, that there will be no significant direct or indirect impacts to the conservation objectives of the habitats or species of the listed European Sites within a 15 km radius of the proposed works either alone or in combination with other plans or projects, as a result of the proposed development. It also states EirGrid's conclusion that the West Dublin 220/110 kV Substation and Associated Works project does not need to proceed to Stage Two of the Appropriate Assessment process.

This assessment was based on consideration of the proposed project and the use of good environmental management practice. The Appropriate Assessment Screening Report is Appendix 9-1 to the Planning and Environmental Considerations Report. Again, we note that the requirement for Appropriate Assessment in respect of this proposed development is a matter for An Bord Pleanála as Competent Authority.

8. Submission received from the Department of Arts, Heritage and Gaeltacht (dated 22nd February 2016)

Response:

The submission made by the Department of Arts, Heritage and the Gaeltacht addresses the following issues:

- Archaeology
- Nature Conservation

EirGrid responds as follows:

Archaeology

EirGrid employed an archaeological consultant from the outset of the West Dublin 220/110 kV Substation and Associated Works project. An archaeological assessment was undertaken for the project and is detailed in Chapter 12 of the Planning and Environmental Considerations Report. Mitigation measures recommended within the Planning and Environmental Considerations Report, including those in Section 12.5 and Table 12.8 have been/will be carried out.

EirGrid engaged with the DAHG in the pre-application phase of this project, where the benefit of archaeological testing was raised. Since the submission of our planning application (An Bord Pleanála reference 06S.VA0019), EirGrid's archaeological consultant Moore Group has carried out archaeological testing (between the 22nd and 24th of February 2016) at the proposed substation site and at the eastern interface compound under licence No. 15E0551 (access was not facilitated for the western interface compound site). An Archaeological Testing Report was produced and is included in Appendix 2 to this response submission. This Report has been separately sent to the DAHG and to the Planning Authority – South Dublin County Council.

The test trenches exposed a number of modern drainage channels and a natural sterile stratigraphy elsewhere. The anomalies can be accounted for by modern disturbance, drains and geology. There was no evidence for any features of archaeological potential.

The Report also recommends that a programme of archaeological monitoring be carried by a suitably qualified archaeologist during topsoil stripping for the project works. This is consistent with the mitigation measures we have already submitted to An Bord Pleanála in Chapter 12 of the Planning and Environmental Considerations Report. EirGrid will ensure this monitoring programme is completed. If archaeological material is encountered the National Monuments Service will be informed and, in consultation, an agreed mitigation strategy will be put in place.

Nature Conservation

The submission notes a woodland area off the western side of the R120 which contains a pond area. The NPWS notes a high probability that smooth newts occur at the pond area and that this habitat is one of potential value.

Access for environmental surveys was not facilitated for the area of lands that include the western interface compound site and access route. As a consequence, no smooth newt survey was conducted in the pond area.

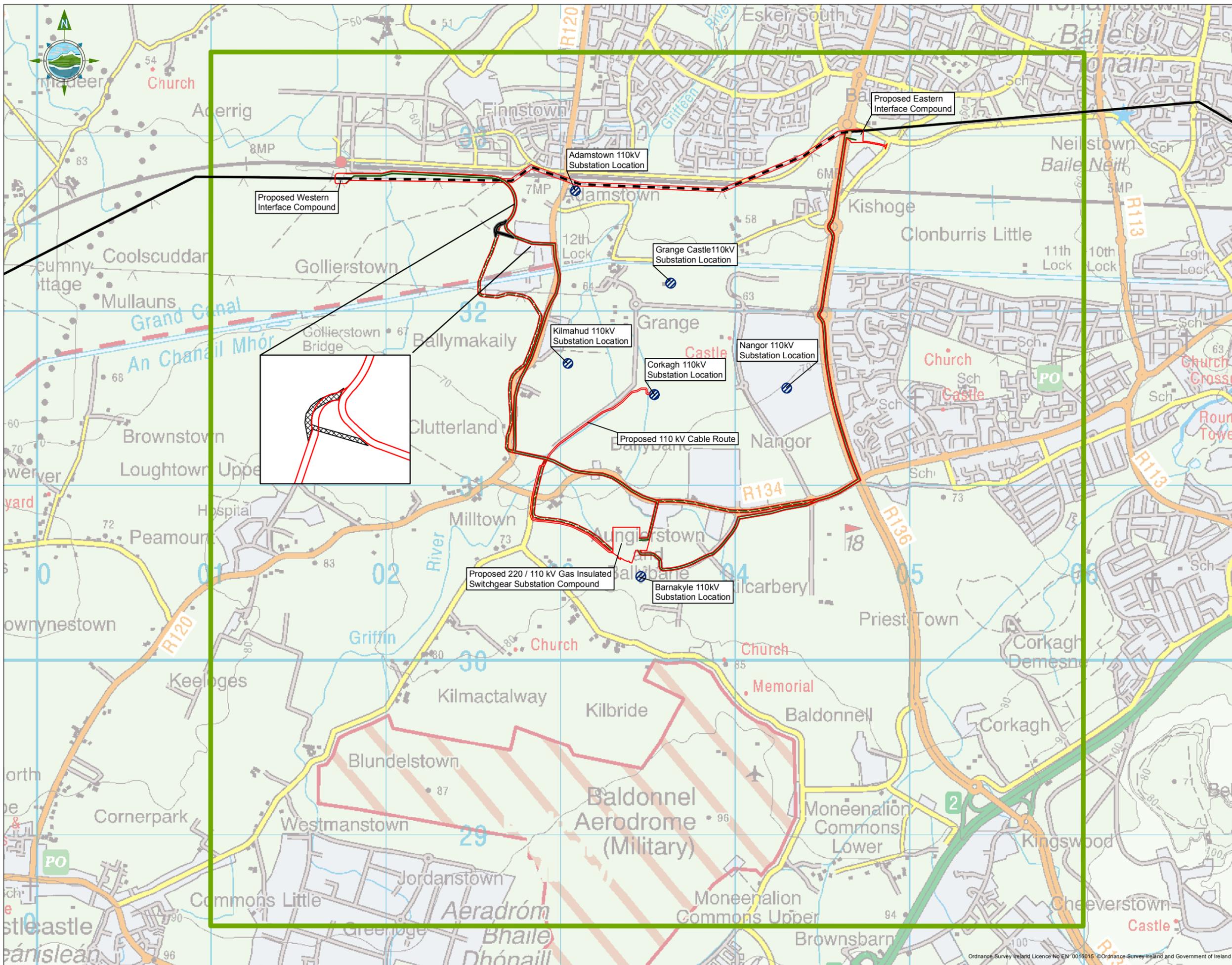
Given the recommendations of the NPWS, EirGrid has identified a minor revision to the preferred cable route (Cable Route Corridor Option A) in this area for the consideration of the Board. This minor revision is shown on Figures 1 and 2 (contained in Appendix 1), and involves the 220 kV cables running to the west of the woodland habitat – essentially in the corridor identified for alternative Cable Route Corridor Option B, with some provision made for an adequate cable bend radius -, and along the entire length of the existing private laneway adjacent to Lucan Sarsfields GAA club.

This modified route option would therefore not run through the woodland habitat, including the pond area. This minor revision to the proposed cable route would not result in significant or adverse effects on the environment.

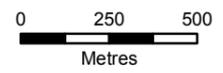
A survey for otter was undertaken as part of the ecological assessment by qualified Ecologists. Signs of otter were only noted at the Grand Canal as detailed in Chapter 9 of the Planning and Environmental Considerations Report. Otter were not noted along the River Griffeen and its tributaries during the ecological assessment.

Prior to any works, EirGrid will employ a qualified Ecologist who will carry out an otter survey. This will include looking for evidence of the presence of otter for a 100m upstream and downstream of crossing points along the Griffeen River or any of its tributaries. The results of this otter survey will be provided to the NPWS. If any breeding or resting places of otters, namely holts or couches, are discovered within the construction area of the cables, licences to derogate from the Habitats Directive and interfere with these places will be applied for to NPWS before any work on this project is undertaken.

Appendix 1



- ### Legend
- Study Area
 - 220kV Line
 - Length of 220kV line to be removed
 - Planning Application Boundary
 - Preferred 220 kV Double Circuit Route Corridor
 - Alternative 220 kV Double Circuit Route Corridor
 - Existing / Proposed Substation Location
 - Proposed revision to 220kV Double Circuit route corridors



- ### NOTES
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
A	MAR-2016	Issued	G.F.	A.A.

Client:

Project: West Dublin 220/110 kV Substation and Associated Works

Title: West Dublin 220/110kV Substation and Associated Works Project

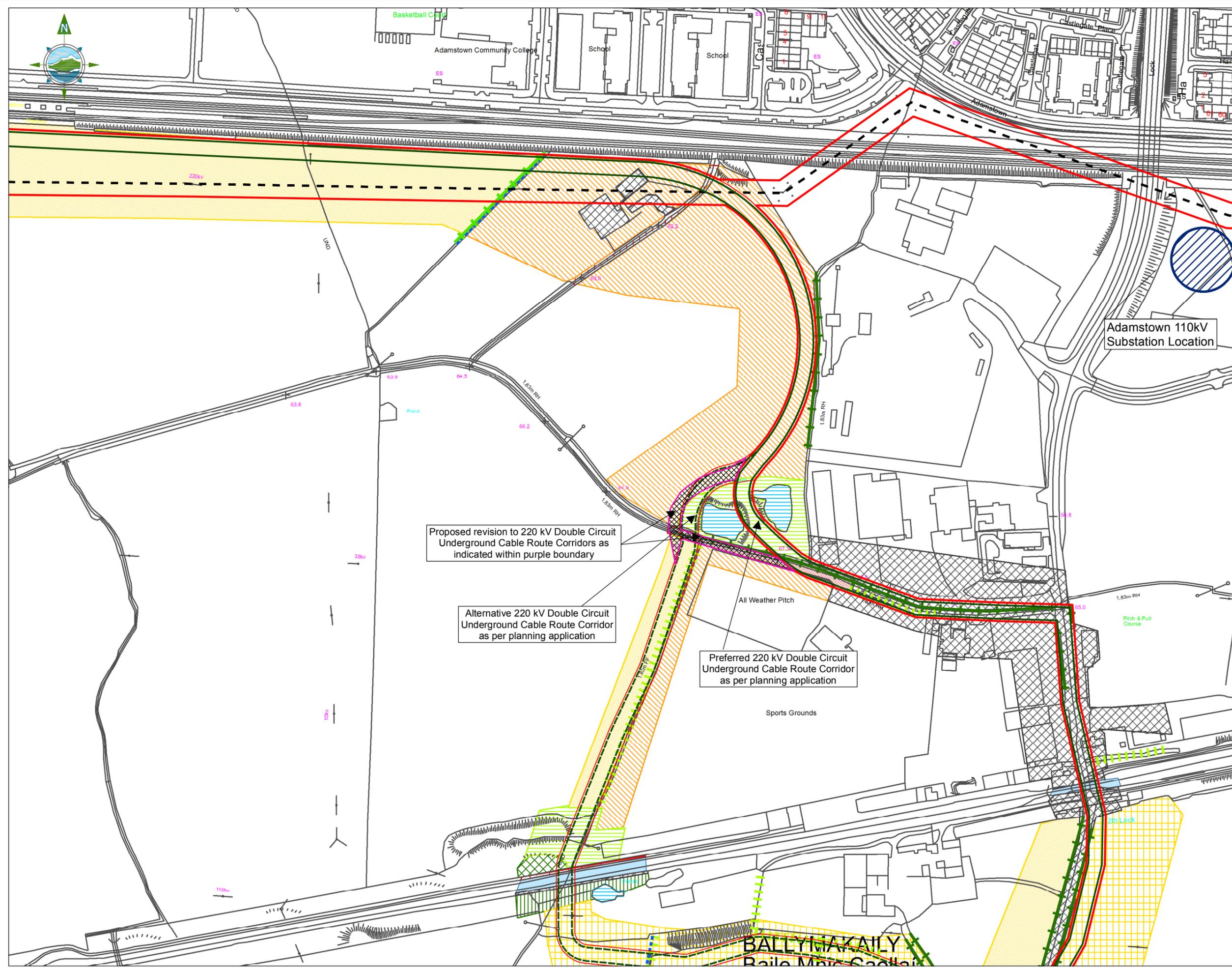
Scale @ A3: 1:20,000

Prepared by: G.Fil Checked: A.Austin Date: March 2016

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Legend

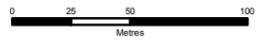
- 220kV Overhead Line
- - - Length of 220kV line to be removed
- Planning Application Boundary
- Preferred 220 kV Double Circuit Underground Cable Route Corridor
- - - Alternative 220 kV Double Circuit Underground Cable Route Corridor
- Existing / Proposed Substation Location

Fossit Level 2 Habitat

- GA - Grasslands
- WN - Semi natural woodlands
- FL - Lakes and ponds
- ED - Disturbed ground
- WL - Linear woodland/scrub

Fossit Level 3 Habitat

- FW2 - Depositing/lowland rivers
- FW4 - Drainage ditches
- WL1 - Hedgerows
- WL2 - Treelines
- BC1 - Arable crops
- BL3 - Buildings and artificial surfaces
- ED2 - Spoil and bare ground
- ED3 - Re-colonising bare ground
- FL8 - Other artificial lakes and ponds
- FW3 - Canals
- GA2 - Amenity grassland (improved)
- GS1 - Dry calcareous and neutral grassland
- GS2 - Dry meadows and grassy verges
- WD1 - (Mixed) broadleaved woodland
- WD5 - Scattered trees and parkland
- WN6 - Wet willow-alder-ash woodland
- WS2 - Immature woodland
- WS3 - Ornamental/non-native shrub



Issue	Date	Description	By	Chkd.
A	MAR-16	Issued	G.F.	D.C.

Client:

Project: **West Dublin 220/110 kV Substation and Associated Works**

Title: **Proposed circuit route revision**

Scale @ A3: 1:3,000
 Prepared by: G.Fil Checked: A.Austin Date: March 2016
 Project Director: D.Grehan

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Figure 2

Appendix 2

To Licensing Section, National Monuments, DAHG & National
Museum of Ireland

*Report on the Archaeological Testing of an Interface
Compound at Kishoge and a 220/110 kV Substation at
Aungierstown/ Ballybane, Co. Dublin*

Prepared by:

Billy Quinn

Licence No:

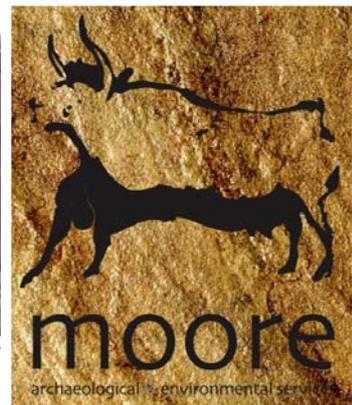
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Client

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Co. Dublin

Date:

3rd March 2016



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1 Introduction

MOORE GROUP was commissioned by Tobins Consulting Engineers to undertake a programme of archaeological testing at two sites in West Dublin as part of Eirgrid's West Dublin 220/110 kV Substation project. The project involves the development of a new substation in a green field site at Ballybane/Aungierstown and the development of an interface compound at Kishoge (site T5), South County Dublin. Access to site T1 (a proposed western interface compound) was not permitted.

Earthsound Archaeological Geophysics carried out surveys of the proposed development works at both Kishoge and Ballybane in October 2015 (detection Device no. 15R0116). At the interface site in Kishoge dipolar anomalies detected suggested that the land has been used for the deposition of debris or imported soils, causing the magnetic interference. This interference appeared to be truncated by a number of possible ditches which, it was suggested, relate to underlying features or may be an artefact of the deposition of the debris or imported soils. At Ballybane, the proposed sub-station site, a series of circular and sub-circular trends were detected across the northern survey area. These may represent archaeological ditches or geological trends. Five possible pits were also detected which may be archaeological or agricultural in origin.

The work was carried out at the request of Eirgrid. Testing involved the mechanical excavation of twelve trenches was carried out between the 22nd and 24th of February 2016 in bright and dry conditions.

1.1 Description of Project

EirGrid has identified the need to reinforce the electricity network in west Dublin as there is a substantial amount of new demand (144 MVA) seeking to connect to the network in the Grange Castle area. This new demand cannot be supplied on the existing 110 kV network as it has reached its supply capacity. The proposed reinforcement comprises a new 220/110 kV Gas Insulated Switchgear (GIS) substation at Ballybane/Aungierstown which will connect to the existing Inchicore/Maynooth 220 kV double-circuit overhead line, which passes through the area. The project also involves the removal of approx. 3km of existing overhead line and towers and developing of new interface compounds at Gollierstown and Kishoge

2 Existing Environment

2.1 Locational Details

The sites are in South County Dublin, to the west of the City, the proposed substation, in Ballybane is located to the south of the R134 on the Nangor Road. The interface site is at Kishoge west of the R136 near the Ninth Lock Road.

Table 1 Location details

County		Dublin (South County)
Substation Site	Area	Greenfield site serviced by new access road
	Townland	Ballybane and Aungierstown
	RMP Site/s	250m from 'the zones of notification' for RMP's DU021-108 & DU021-109 a concentric enclosure and an enclosure
Interface compound T2	Area	West of a roundabout junction of the R136 and the Ninth Lock Road.
	Townland	Kishoge
	RMP Site/s	No RMPs

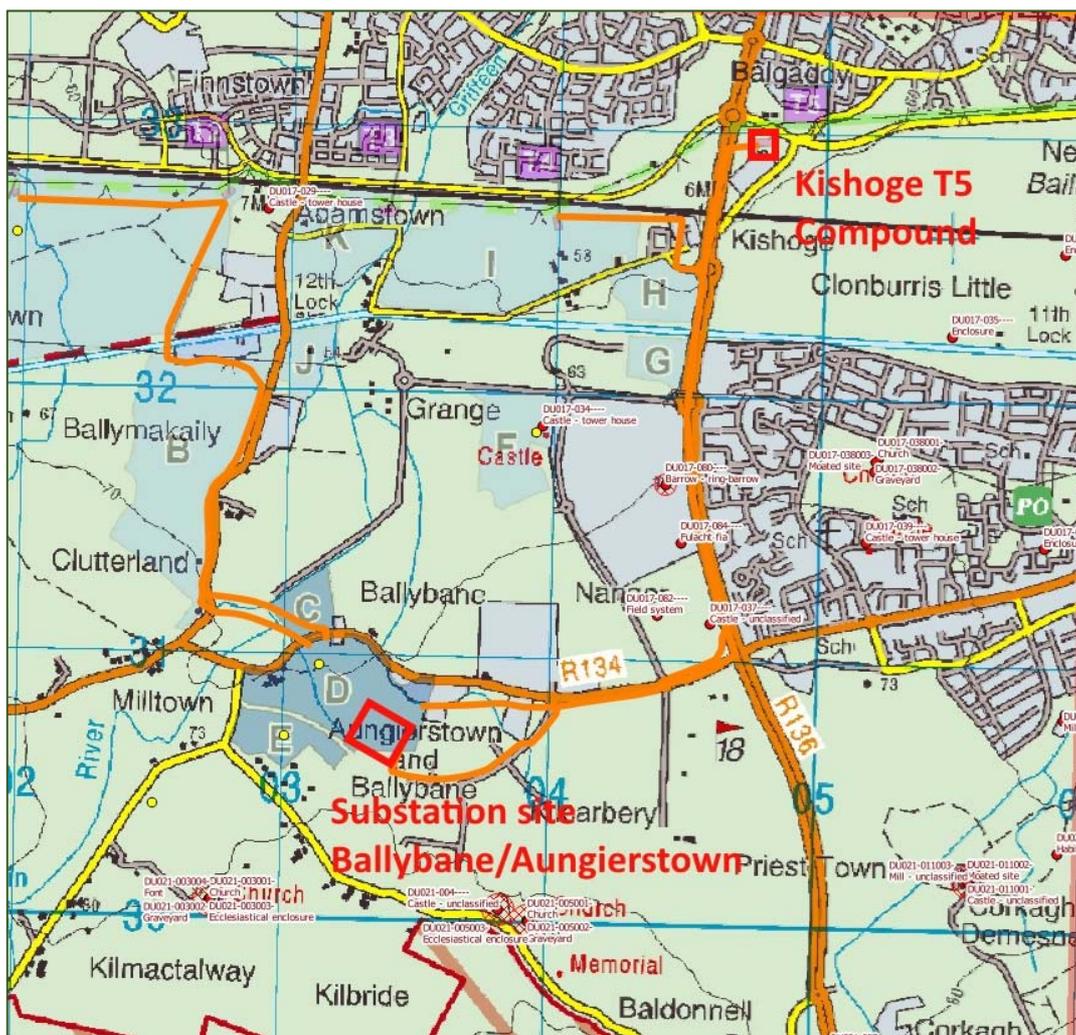


Figure 1 Site location map showing substation site and Interface site, and adjacent archaeological sites.

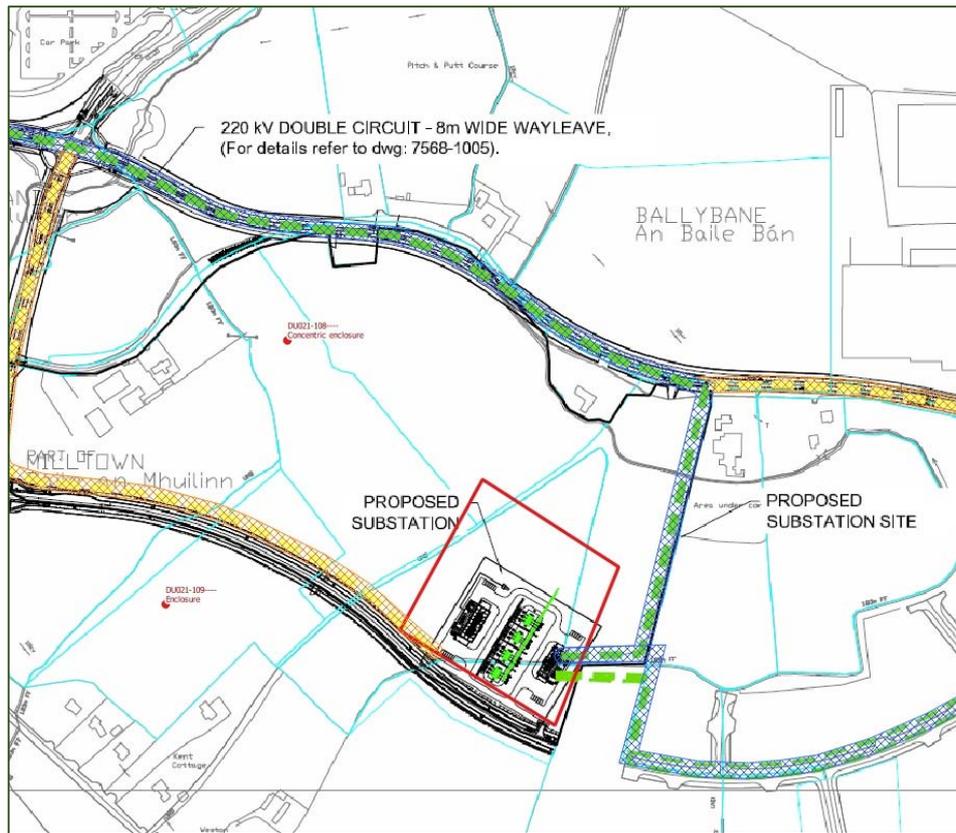


Figure 2 Substation site at Ballybane/Aungierstown

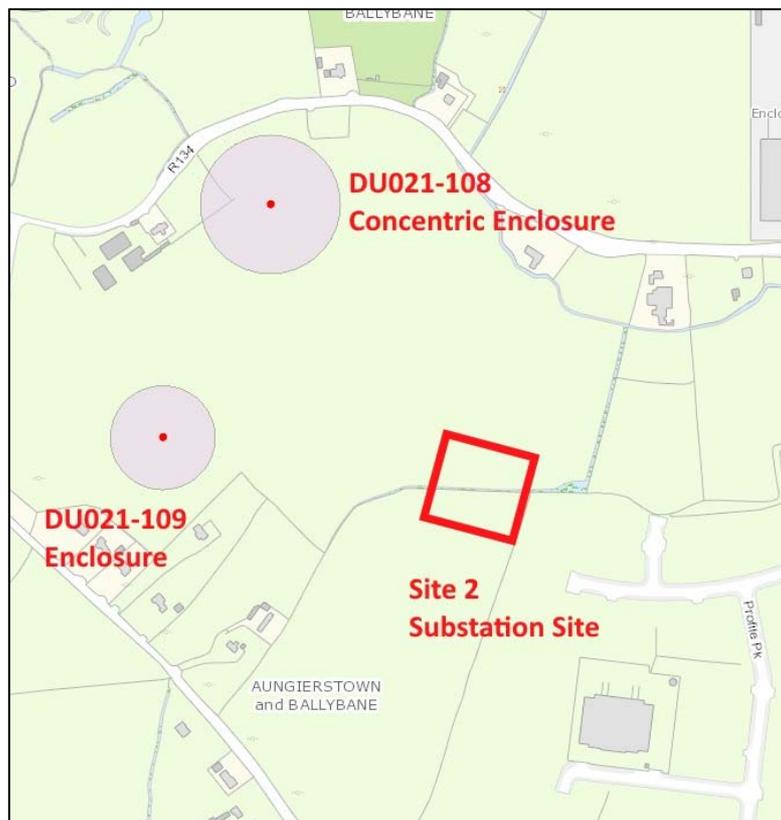


Figure 3 Substation site in red and adjacent archaeological sites.

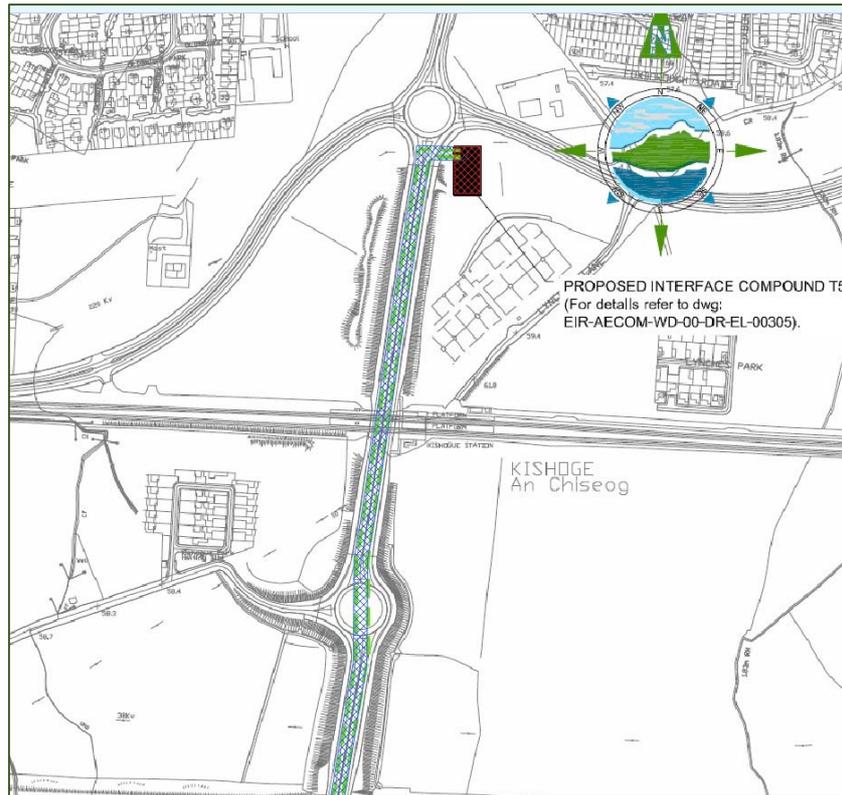


Figure 4 Site 3 Interface compound beside roundabout on R136 Kishoge



Figure 5 Kishoge Site, no adjacent monuments.

3 Existing Environment-Baseline Data

3.1 Archaeological & Historical Background

3.1.1 Mesolithic Period (8000-4000 BC)

The Mesolithic (middle stone age) people were the first inhabitants of Ireland, arriving about 9000 years ago. They were a mobile society relying on wild resources for food, which was hunted and gathered using stone tools as well as boats, nets and traps. Settlement was in temporary and semi-permanent groups of huts constructed of wood slung with hide, which may have operated as seasonal or hunting camps. Mesolithic activity to date shows a marked concentration in the north-east of Ireland this can in part be attributed to both the availability of flint and the large number of antiquarians and collectors in the region and suggests that activity in this period was widespread in the country, with settlers probably utilising the extensive coastline for fish and shellfish. It is estimated that throughout the Mesolithic period the population of Ireland was probably never more than a few thousand. Due to the transitory nature of Mesolithic encampments evidence for settlement activity can be scarce and in many cases can only be determined by flint scatters. Flint scatters have been found as stray finds throughout Dublin particularly near waterways.

3.1.2 Neolithic Period (4000-2500 BC)

The practice of farming spread from the Middle East, through eastern and southern Europe to reach Ireland via Britain around 4000BC. Ireland's Mesolithic hunters were, over a period of time, displaced or assimilated by the new Neolithic settlers. This transition fundamentally changed the local economy from one based on hunting and foraging to one of cereal cultivation and livestock rearing. The arrival of the first farmers resulted in land clearance by burning or chopping down trees with stone axes. There were no indigenous cereal crops but the settlers brought with them wheat and barley as well as domesticated sheep, goats and cattle. Tending of crops and animals required a more sedentary lifestyle and larger permanent settlements.

Farming required new skills and, more importantly, new tools. This demand resulted in the development of specific crafts. Polished stone axes, ards (ploughs), flint tools for harvesting crops, and stone saddle querns for grinding the grain required the exploitation of specific stone sources. Flint remained an important stone for the production of tools and weapons, objects such as javelin heads, mace heads, polished axes and fine leaf and lozenge shaped arrowheads were used for both hunting and warfare. During this period the first long distance trade networks were established. Stone axes from Britain, a flint axe from Scandinavia, pitchstone from Scotland, and jadeite axes from the Alpine area of northern Europe have all been found throughout the country. Pottery also makes its first appearance in the archaeological record. The pots were handmade, coil built, and fired in bonfires or pits. The earliest pots were mainly undecorated round bottomed bowls, although decoration became more common in the later part of the period. Towards the end of the Neolithic a great diversity in pottery styles existed and flat based pottery was introduced.

Other significant changes included the development of a ritual landscape dotted by large megalithic (from the Greek mega – large and lith – stone) monuments built as communal tombs or for ceremonial

purposes. These monuments indicate status, knowledge of engineering, and the ability to organise resources, including labour. These tombs are divided into four classes; court tombs, portal tombs, passage tombs and wedge tombs.

Excavations carried out in advance of the development of the Grange Castle Business Park in nearby Kishoge exposed a Neolithic settlement centred on a rectangular house with associated pits. Rough flint scraping tools and flint waste flakes were retrieved from the features excavated on the site, but none of these were obviously diagnostic.

3.1.3 The Bronze Age (2500 -500 BC)

As stone tools were replaced by the use of copper, later combined with tin to make bronze, the structure of society also changed over centuries. The somewhat crude copper objects were soon replaced by more durable bronze tools including axes, swords, spears, knives, halberds and cauldrons. Gold jewellery from this period in the form of lunulae, torcs and bracelets are amongst the finest in Europe and hint at the presence of new social elites. In a domestic context, dwellings changed from a general rectangular plan, typical of the Neolithic, to circular arrangements evidenced on excavation by postholes and slot trenches. Middle Bronze Age and Late Bronze Age settlements are usually located on well drained soils suitable for agriculture and near rivers or fording points for ease of transport and communication.

While some communal megalithic monuments, particularly wedge tombs continued to be used, the Bronze Age is characterised by an expansion of settlement from hill slopes and uplands into lower lying areas.

Fulachtaí Fia are generally considered to be evidence of Bronze Age activity. These sites consist of small, horseshoe shaped mounds, which are composed of burnt and fire cracked stones with a central pit or trough. They may have functioned as cooking places. An example of this site type was excavated in Nangor Townland by Ian Doyle in 2000. The site consisted of a small pit or trough, a spread of heat-cracked stone and a linear feature to the south-west of the trough.

3.1.4 Iron Age (500 BC-500 AD)

In late Bronze Age Ireland the use of the metal reached a high point with the production of high quality decorated weapons, ornament and instruments, often discovered from hoards or ritual deposits. The Iron Age however is known as a 'dark age' in Irish prehistory. Iron objects are found rarely, but there is no evidence for the warrior culture of the rest of Europe, although the distinctive La Tené style of art with animal motifs and spirals was adopted.

Political life in the Iron Age seems to have been defined by continually warring petty kingdoms vying for power. These kingdoms, run on an extended clan system, had their economy rooted in mixed farming and, in particular, cattle. Settlement was typically centred on a focal hillfort with satellite ringforts. The Curragh plain would have formed part of the ancient kingdom of Leinster with Royal Dún Ailinne at its centre. Iron Age sites found in nearby Cherryville during the works for the Kildare Bypass included a bowl furnaces with a large amount of slag.

3.1.5 Early Medieval Period (c.500 AD-1200 AD)

Settlement during this period is defined by the ringfort, thought to be small farmsteads, enclosing houses, farm buildings and animal pens, enclosed as protection against raiders or wild animals. Some examples have two (bivallate) or three (trivallate) banks and fosses, but these are less common and have been equated with higher status sites belonging to upper grades of society. Excavations of the interiors suggest that the houses were small circular huts, built of stakes with a double skin of wattle and a thatched roof. Their distribution in the region is dispersed and widespread. Many of these sites have been destroyed in modern times but survive as cropmarks. More recently following a review of high resolution aerial imagery a number of enclosures have been discovered notably in Ballybane (DU021-108 & 109). These sites are located to the west of the substation site and appear to have associated field systems.

The introduction of Christianity to Ireland in the fifth century had a profound impact on Gaelic society, not in the least in terms of land ownership and the development of churches and religious houses. The most significant ecclesiastical centre to the proposed development would have been the pre-Norman monastic foundation associated with St. Mochua in nearby Clondalkin. This settlement is mentioned in the Annals as having been attacked by the Vikings under Olaf the White in 1833. The townlands of Grange and Kilmahudderick subsequently became associated with St. Marys Cistercian Abbey (Abbey Street, Dublin) and was held by the monks until the dissolution of 1540-41.

3.1.6 Medieval Period onwards (1200 AD-1700 AD)

The late medieval period coincides with the arrival of the Anglo Normans in 1169. Their impact on the archaeological, cultural and political landscape transformed the country and over time the tuath system was replaced by a feudal system ruled by lords and barons. Towns began to develop and monument types associated with this period include motte and baileys, moated sites and later stone castles, in particular tower houses. In the vicinity of the project area are three castles, Adamstown (DU017-029 - tower house, Nangor (DU017-037 castle –unclassified) and at Grange (DU017-034–Castle – tower house). Adamstown castle was a three storied structure, oblong in plan with a projecting turret and stepped crenellations. It was demolished in the 1960s.

Nangor Castle was in the ownership of the de Vardon family in the fourteenth century. In 1532 Finian Bassenett was residing at Nangor. In the Seventeenth century the castle was redeveloped into a country residence for Faulkner family. All buildings on the site were recently demolished leaving no surface trace of the earlier structure.

From previous archaeological investigations in the area evidence suggests that extensive early medieval and post-medieval activity survives in the wider vicinity.

Grange castle is shown on the Down Survey (1655-6). It is now attached to a farmhouse. The castle stands as a three storey high rectangular tower. A drawing by Beranger in 1773 shows stepped crenellations at parapet level (Harbison 1998, 168-9). In 1997 monitoring and excavation were undertaken in the vicinity of the castle, in advance of the construction of an access road and the excavation of foul sewers for a Business Park at Grange Castle. A curving ditch was identified

orientated north-east/south-west. It was 30m in length, 0.8-0.9m deep, and 1.2-2.4m wide. A decorated bone comb, stick-pin and knife gave the later ditch phase a terminus ante quem of from the 12th to the 13th century AD. A stone causeway, 0.5-0.6m wide and 0.06-0.1m deep, crossed the ditch. The evidence suggests that extensive early medieval and post-medieval activity survives in this area; the ditches can be interpreted as medieval field boundaries (O'Brien, R. 1998, 26).

3.1.7 Post Medieval History

Ireland in the seventeenth century saw massive social and political upheaval a result of the Confederate wars, the Cromwellian response and finally the Wars of the two kings. The impact on the local population was catastrophic resulting in a third of the population dying from warfare, famine and plague. In lieu of payment many of the Parliamentarian soldiers were given land grants. Other new arrivals into the country were Huguenot refugees fleeing persecution in France. The Williamite victory in Ireland ensured British and Protestant dominance over Ireland. Until the 19th Century, Ireland would be ruled by what became known as the 'Protestant Ascendancy', the mostly English Protestant ruling class. Significant demesnes in the area include Nangor, Corkeagh and Castlebagot.

With the country pacified Ireland and particularly Dublin and its environs saw a growth in economic growth from the mid eighteenth century. This was based on an improvement in agricultural prices to service demand in the colonies. This upturn resulted in population growth, with cheap labour came much needed infrastructural development. In the vicinity of the project area is the Grand Canal, this project was first conceived in 1751 when a group of private investors and public officials established a working group called "The Commissioners of Inland Navigation". The intention of this group was to consider the commercial viability of a canal that traders would pay to use to transport goods to and from Dublin.

In 1757 the Irish Parliament granted Thomas Omer, Engineer £20,000 to start construction of the canal. By 1759 he reported that 3km in the Bog of Allen and 13km of canal from the River Liffey near Sallins towards Dublin were complete. Omer also was responsible for the design of the lock and lock houses. The two storey lock keepers cottage at Ballymakailly is a particularly fine example (NIAH reg. No. 11204056).

3.1.8 Sites and Monuments Record, Kishoge

There are no SMR's within 1km of the interface site at Kishoge



Figure 6 Interface site Kishoge

3.1.9 Sites and Monuments Record Ballybane

There are two sites in the vicinity of the substation site .DU021-108 a concentric enclosure and DU021-109 an enclosure site both in Ballybane. These sites have no above ground expression and were identified by recently made available aerial imagery (Google Earth and Bing). There are linear and curvilinear features radiating from the concentric enclosure and may relate to early field systems.

SMR No	Class	Townland	ITM Reference (E,N)	Distance
DU021-108	Concentric enclosure, Not indicated on any OS map a large concentric enclosure is visible as a crop-mark on an aerial photo. A second enclosure (DU021-109----) is visible to the SW	BALLYBANE	703060, 730985	240m from sub station
DU021-109	Enclosure, not indicated on any OS map this enclosure is as a crop-mark on an aerial photo. A second larger enclosure (DU021-108----) is visible to the NE.	BALLYBANE	702937, 730716	250m from 'zone of notification'



Figure 7 Cropmark of Concentric Enclosure DU021-108, Ballybane.



Figure 8 Cropmark for enclosure DU021-109 Ballybane

3.1.10 Previous Archaeological Fieldwork

The Excavations Bulletin is both a published annual directory and an on-line database that provides summary accounts of all the excavations carried out in Ireland – North and South – from 1970 to 2010 (currently the latest edition). The database gives access to summary descriptions of almost 15,000 reports and can be browsed or searched using multiple fields, including Year, County, Site Type, Grid Reference, Licence No., Sites and Monuments Record No. and Author. The online database (<http://excavations.ie>) covers the years from 1970 to 2000, with the years 2001 and 2010 published in book form.

The following list the records for the subject areas:

Site name	Grange Castle International Business Park, Grange and Kishoge
License No.	00E0061
Licence holder	Ian W. Doyle
Site type	Various
ITM	E 604180m, N 732147m
Test-trenching was carried out at Grange Castle International Business Park, Clondalkin, Dublin 22, on a site owned by South Dublin County Council, during February 2001. The greater part of	

this site is currently under development as a business park by Wyeth Medica Ireland.

The assessment was concerned with the area immediately south of the Grand Canal in Grange and Kishoge townlands. It is intended to construct an attenuation lake in this area, which will aid drainage. The lake structure will measure approximately 250m north-west/south-east by 90m. An underground 110kV electricity cable will run through this area and towards the west for a length of approximately 1.5km. The terrain in the areas to be affected is relatively low-lying and the land has been used for agricultural purposes. The centre of the area intended for the attenuation lake was subjected to ground disturbance in the recent past. This disturbance appears to have been associated with the diversion of a stream and ground was stripped to bedrock in places.

Sixteen trenches were opened by mechanical excavator. These were placed in the areas which would be subjected to disturbance by the attenuation lake and the electricity cable way-leave.

Trench 1 was located at the western end of the lake and associated roadway. It revealed a long linear feature cutting natural subsoil. Where sectioned, the cut for this feature, which measured 2.6m east-west by 16.5m with a depth of 0.35m, comprised a sloping-sided flat-bottomed gully. The upper fill consisted of a moderately compact light brown clay silt with occasional inclusions of mollusc shells and small pebbles. The lower fill comprised a moderately compact grey clay with occasional mollusc shell inclusions. A small undated hearth was revealed in Trench 4, which was also located to the west of the lake.

Trench 13 was opened on the line of the electricity cable way-leave, at a point where a mound and masonry wall were observed in the extreme north-eastern corner of the field. What is likely to be a modern agricultural feature was revealed, comprised of a mound, a stone wall and a metallised surface. This is likely to represent a watering-hole for livestock formed by excavating a depression, placing the upcast to the west into a mound, which was then revetted with a low masonry wall. A metallised surface was then placed at the point of animal access.

Site name	Grange Castle International Business Park, Grange and Kishoge
License No.	01E0718 ext.
Licence holder	Ian W. Doyle
Site type	Post Medieval
ITM	E 719482m, N 736542m

The archaeological assessment carried out in this area during February 2001 (see below, No. 438) recommended that an archaeologist be present to monitor the stripping of topsoil.

The initial recognition of archaeological features was compromised somewhat by the contractor stripping a quantity of topsoil before informing the archaeologist. However, several metallised surfaces, field drains, pits and gullies of post-medieval and modern date were recognised during the stripping when an archaeological presence was maintained.

In Kishoge townland, to the south-west of the area intended for the attenuation lake, the remains of a subrectangular structure, which appears to have burnt down, were detected. This consisted of what appeared to be the remains of slot-trenches cut into natural boulder clay with a fill of oxidised clay and charcoal. The feature measured 5.8m east-west by 4.6m and appeared to have been truncated through intensive ploughing. Access to this area was not available at the time of the assessment owing to dumping and storage of building materials. This area was later excavated by Edmond O'Donovan (see below, No. 438).

Site name	Grange Castle International Business Park, Grange and Kishoge
License No.	01E0754
Licence holder	Ian W. Doyle
Site type	Medieval field system
ITM	E 704328m, N 731197m

Excavations were carried out in Nangor townland, west of Clondalkin, Dublin 22, during October

2000–January 2001. The excavations revealed a medieval ditch complex. The northern area of the site is presently under development as a biotechnology campus.

Construction of the campus commenced in September 2000. The area excavated in Nangor is south of the construction site and outside the immediate area of impact. No detailed development is presently intended for the greater part of this area. However, additional excavation was undertaken to mitigate the impact of a gas pipeline and associated access road in part of the area formerly occupied by the Nangor Castle gardens. Nangor Castle (RMP 17:37) is located immediately outside the southern boundary of the Wyeth Medica Ireland site. References to a castle at this site date from the 15th–16th centuries. All buildings on the site were demolished during the 1970s, but an area of archaeological potential surrounds the site.

Trench 1, which measured 60m north–south by 33m, was located some 90m to the north-west of the castle site. Geophysical survey and subsequent test-trenching had suggested that the area of Trench 1 held archaeological potential. Excavation in Trench 1 commenced in October 2000 and continued until December 2000. Activity assigned to Phase I in this trench consisted of a linear feature and a pit, both of which cut natural subsoil. These features did not produce pottery or finds. The pit consisted of a rectangular cut into natural subsoil, which contained a series of ash deposits. Areas of oxidised or fire-reddened soil present on the north-east and south-west sides are indicative of in situ burning. This cut was filled with a series of sterile silty layers and dumps of ash.

The Phase I activity was succeeded by a medieval phase of activity which consisted of further linear features, pits and cobbled surfaces. These were assigned to a single general phase which is capable of further subdivision based on stratigraphic grounds. Finds retrieved from the fills of these features include approximately 1000 sherds of Leinster Cooking Ware and Dublin-type wares, and assorted iron finds including nails, an armour-piercing arrowhead, a buckle, a key and an intact iron sickle.

Trench 2, located to the east, detected a similar sequence of linear features, which contained sherds of medieval pottery in their fills. Trench 3, to the south of Trench 1, detected shallow linear features running on an east–west axis. These linear features were succeeded by a pit and a metallised surface, both of which were directly associated with medieval pottery.

Trench 4, located to the west, was excavated to examine a ditch encountered during an earlier assessment. A ditch orientated north-west/south-east with steep sloping sides and a rounded U-shaped base was revealed. It was 1.05m wide, narrowing to 0.3m at the base, with a maximum depth of 1.1m. Its fill contained occasional fragments of animal bone, from which a radiocarbon date of cal. AD 601–883 was obtained.

Trench 5, located to the south-east of Trench 4, uncovered further medieval linear features. A narrow ditch which ran across the trench on a south-east/north-west axis is likely to represent a continuation of a similar feature encountered in Trench A to the south. A series of post-medieval field boundaries was also detected in Trench 5.

Trench A was excavated to the south of Trench 5 on the line of the gas pipeline and associated roadway. Excavation in this area revealed an undated metallised surface and a series of ditches/gullies. Excavation of these commenced in January 2001. Although there were relatively few finds from these features, their stratigraphic relationship indicates that there were five phases of ditches and gullies in the trench dating from medieval to modern times.

The excavation of Trench B, an extension of Trench A, revealed one feature of interest, a substantial medieval ditch which cut into natural subsoil. This was found in the extreme eastern end of the trench. The ditch ran through Trench B, outside the northern and southern limits of excavation. The cut measured 10m north–south by 2.5m, with a depth of 1.1m as exposed, and had sloping sides and a rounded base. The ditch ran on a north–south axis with a slight curve towards the north-east. In overall plan the ditch appears to have been subcircular, enclosing an area to the east of Trench B. The fills of the ditch comprised black sticky silts with organic content. The lower and upper fills contained medieval pottery. No trace of an enclosing bank was detected in the area opened for examination; however, the depth of overburden, composed of cultivated soils, in this area may be in part composed of a levelled bank.

Trench C to the north-east of Trench B did not detect the ditch. No archaeological material was detected in Trench C, where it was found that modern disturbance had removed the old ground surface.

In total, some 1600 sherds of native medieval pottery were recovered from the Nangor excavations. It is of some interest that only two sherds of imported medieval pottery were recovered. The excavated linear features at Nangor may represent the remains of medieval field boundaries with associated water-management gullies. The presence of such linear

features, which can be dated to the medieval period by the presence of Leinster Cooking Ware and Dublin-type wares, argues for land enclosure during the medieval period. That cereal production was the purpose of such enclosures may be suggested by evidence from pollen and macro-plant analysis. The examination of a wide range of medieval samples from the Nangor excavations has shown a predominance of wheat over other plant remains.

Site name	Grange Castle International Business Park, Grange and Kishoge
License No.	04E0299
Licence holder	Red Tobin
Site type	Burnt Mounds
ITM	E 703396m, N 731729m

Excavations were carried out during works on the Griffeen River realignment, part of ongoing infrastructure works within the precincts of the Grange International Business Park. The works are principally aesthetic in purpose, designed to enhance the appearance of the park and to highlight the river, which otherwise would have flowed behind the Takeda Pharmaceuticals complex. The area stripped will also accommodate the extended road network that will serve the business park when it is fully occupied.

Topsoil-stripping for this realignment commenced in early December 2003 and continued intermittently until May 2004. Topsoil-stripping revealed the locations of three burnt mounds. Of these three features, two were excavated, as the development was likely to have a total impact on them. The third mound was preserved in situ, as it was located outside the development area.

The first mound was excavated between 16 and 18 February 2004 and the second was excavated from 5 April 2004.

Burnt Mound 1, 303279.542 231522.602

During the monitoring of the topsoil removal this site was identified as an irregularly shaped deposit of firing material (heat-shattered stone and blackened soil). The burnt-mound material extended 28m east-west along the northern edge of the stripped corridor and extended to the south by 8m from the northern baulk. The feature lay c. 25m to the west of the Griffeen River on gently undulating pasture sloping to the south. The evidence from initial survey work and subsequent excavation suggests that the main spread of this site remains preserved in situ to the south of this location.

The nature and extent of the mound material was exaggerated by plough action, which had dragged it from its original focal point to extend over 28m in length. After the removal of topsoil, etc., the F2 mound of firing material extended little more than 0.5m from the limit of the excavation. From this southern extremity, the mound rose to the north to a maximum height of 0.65m at the northern limit of the excavation. No cut features were exposed during the excavation.

Burnt Mound 2, 303104.7 231270.2

The realigned Griffeen crosses the course of the old river at two locations. To allow for the excavation of the first of these crossings it was necessary to divert the Griffeen into a third channel. During stripping prior to this channel being dug the second burnt mound was found. During the topsoil removal this site was identified as an irregularly shaped deposit of firing material (heat-shattered stone and blackened soil).

The area of excavation measured 13m east-west by 17.5m. A silted-up streambed abutted the southern part of the mound. The stream appears originally to have flowed from east-north-east to south-west. It had a width of 3-5m, but the length could not be discerned as it extended beyond the limit of excavation. The stream fill contained water-rolled stones, pebbles and a

dark-grey silt with a minimum depth of 0.1m. Wood residue, possibly alder, was in evidence here and was probably indicative of remnants of fen woodland. This stream system is likely to have been the reason for siting the burnt mound at this location.

One of the earliest features on the site was a grouping of stake-holes cut into the clayey peat. These formed a semicircular band. All were comparable in shape and size and all contained the same fill. They ranged in depth from 5mm to 2mm with a diameter of 6-12mm. Small amounts of heat-affected pebbles and small stones around the sides of the stake-holes may be evidence for packing material. The function of the complex is not clear. Some stake-holes are vertical, while others have been driven into the ground at an angle. They follow a vague northeast to south-west pattern, but the angled stakes do not appear to offer support to each other or to any possible structure.

The burnt mound was situated on the northern bank of the silted up stream. The bank was steep-sided. The main concentration of firing material is in the west. No evidence for a trough was found and the only evidence of activity associated with the burnt mound appears to be the stake-hole complex. The mound measured 11m east-west by 4.5m. It is more likely that the original east-west dimensions were closer to being 6m, with a depth of 0.12-0.25m.

Covering and surrounding the burnt mound was a layer of peat measuring 4.64m from north to south by 14.7m, with a surviving depth of 0.2-0.45m. This was a moist dark-reddish-brown peat of moderate compaction that contained inclusions of sphagnum moss, plants and wood. It was most pronounced to the south of the burnt mound, sloping downwards to the stream.

A third burnt mound was recorded during the course of the topsoil-strip. The site was not fully exposed but was identified by a number of concentrations of the characteristic firing material. This site was not impacted on by the development and it was possible to preserve it in situ. It was first sealed using a double layer of geotextile material and then covered by a soil bund forming the boundary between the business park and the pitch-and-putt course.

Site name	Grange/Ballybane/Nangor
License No.	13E0435
Licence holder	Gill McLoughlin
Site type	Furnace pit (monitoring)
ITM	E 703978m, N 703391m
<p>Monitoring of a proposed central carriageway at Grange Castle Business Park, Co. Dublin was carried out from 1-8 November 2013. Monitoring followed an archaeological appraisal carried out in September 2013 and geophysical survey was previously carried out throughout the entire area of Grange Castle Business Park.</p> <p>Two features of archaeological interest were identified during monitoring of topsoil stripping in the east of the development area in Nangor townland. These features comprised a small bowl furnace (0.36m x 0.33m x 0.15m) filled with charcoal-rich soil and slag, and a shallow oval pit (0.97m x 0.69m x 0.1m) filled with charcoal, thought to be a charcoal clamp. These features were located approximately 35m apart and may have been associated with each other.</p> <p>It is anticipated that specialist analyses in the form of charcoal analysis, radiocarbon dating and metallurgical analysis will be carried out on the material retrieved from the features excavated at the site</p>	

3.1.11 Cartographic Research

Analysis of historic mapping shows how the landscape has changed over time. The comparison of editions of historic maps can show how some landscape features have been created, altered or removed over a period of time. Sometimes features that appear on these early maps are found to be of potential archaeological significance during fieldwork. For this study the following historic maps were consulted:

- First edition Ordnance Survey 6" Map circa 1837.
- Second edition Ordnance Survey 6" Map.

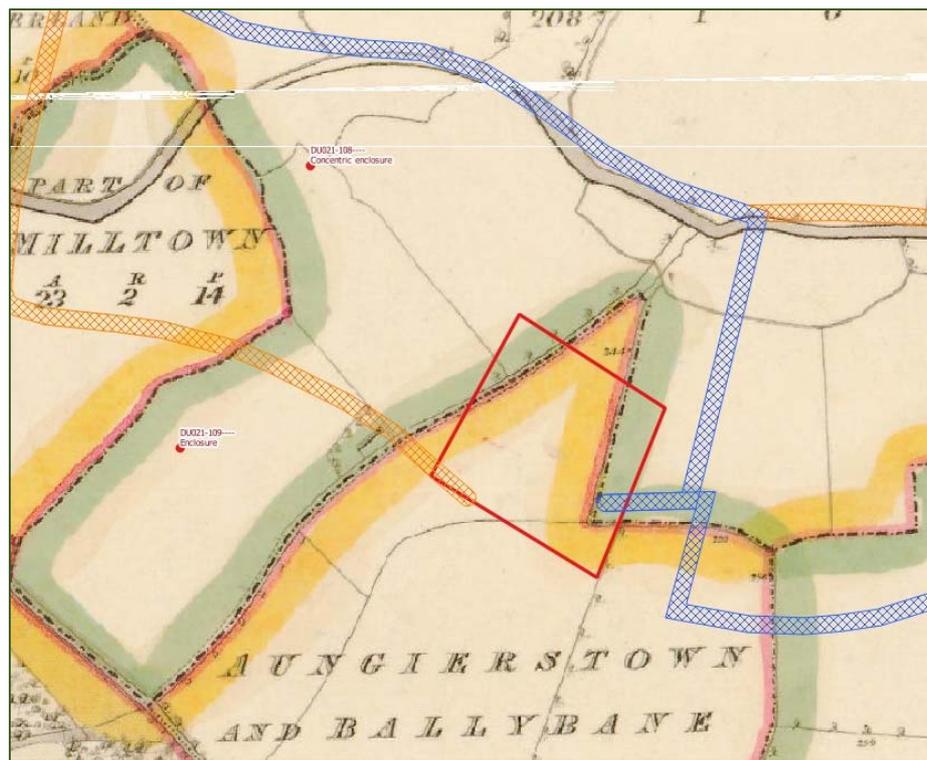


Figure 9 Extract from 1st Ed OS map showing Site 2 Substation Ballybane/ Aungiersdtown

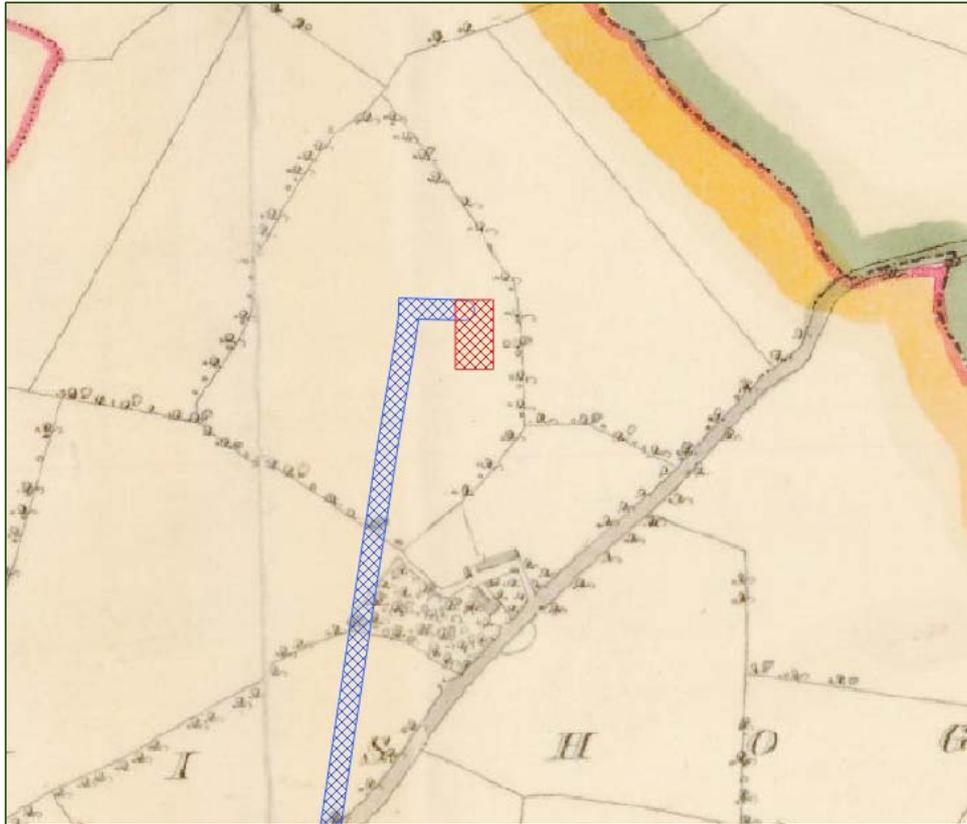


Figure 10 Interface Compound, Kishoge, Site 3

4 Geophysical Survey

Earthsound Archaeological Geophysics carried out a survey over the footprint of the proposed development works at both Kishoge and Ballybane in October 2015 (detection Device no. 15R0116). At the interface site (Site 1) dipolar anomalies detected suggests that the land has been used for the deposition of debris or imported soils, causing the magnetic interference. This interference appears to be truncated by a number of possible ditches which may relate to underlying features or may be an artefact of the deposition of the debris or imported soils.

At Ballybane (Site 2) a series of circular and sub-circular trends were detected across the northern survey area. These may represent archaeological ditches or geological trends. Five possible pits were also detected which may be archaeological or agricultural in origin.

A series of linear negative magnetic trends were detected across the northern survey area. These are archaeological in origin and their negative nature suggests the presence of stone remains such as walls or stone-filled ditches. A number of possible ditches were detected on the edge of these walls or stone filled ditches. The combined orientation and formation of the remains suggests that they represent relict boundaries once sub-dividing the survey area.

Two relict field boundaries were detected which correspond to boundaries shown on the OS mapping of the area. A break within the eastern boundary was also detected. Three areas of magnetic disturbance were detected across the site, these are likely to be modern in origin and associated with agricultural processes or the destruction of the relict field boundaries.

Figures 8 & 9 show both sites, note

- Green indicates Archaeology
- Blue indicates possible Archaeology
- Orange indicates pits
- Light blue possible ditch
- Relict field boundaries

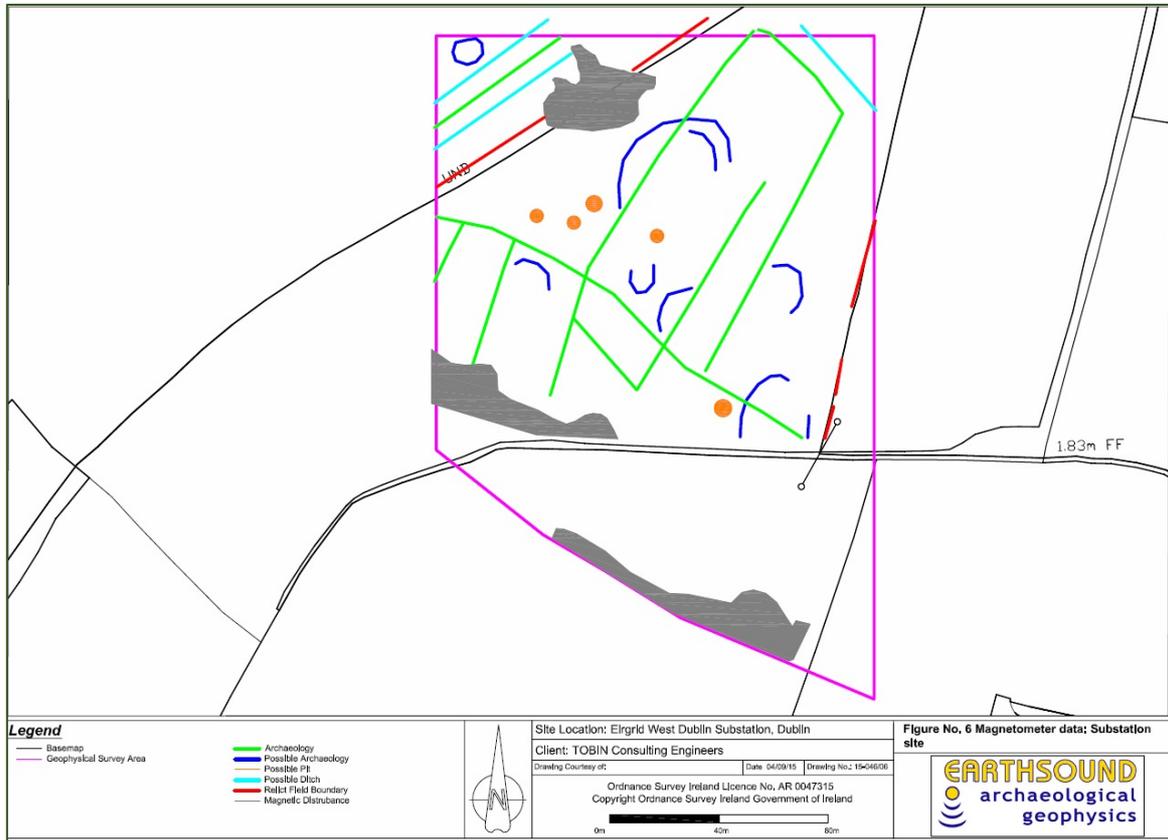


Figure 11 Geophysics results from substation site.

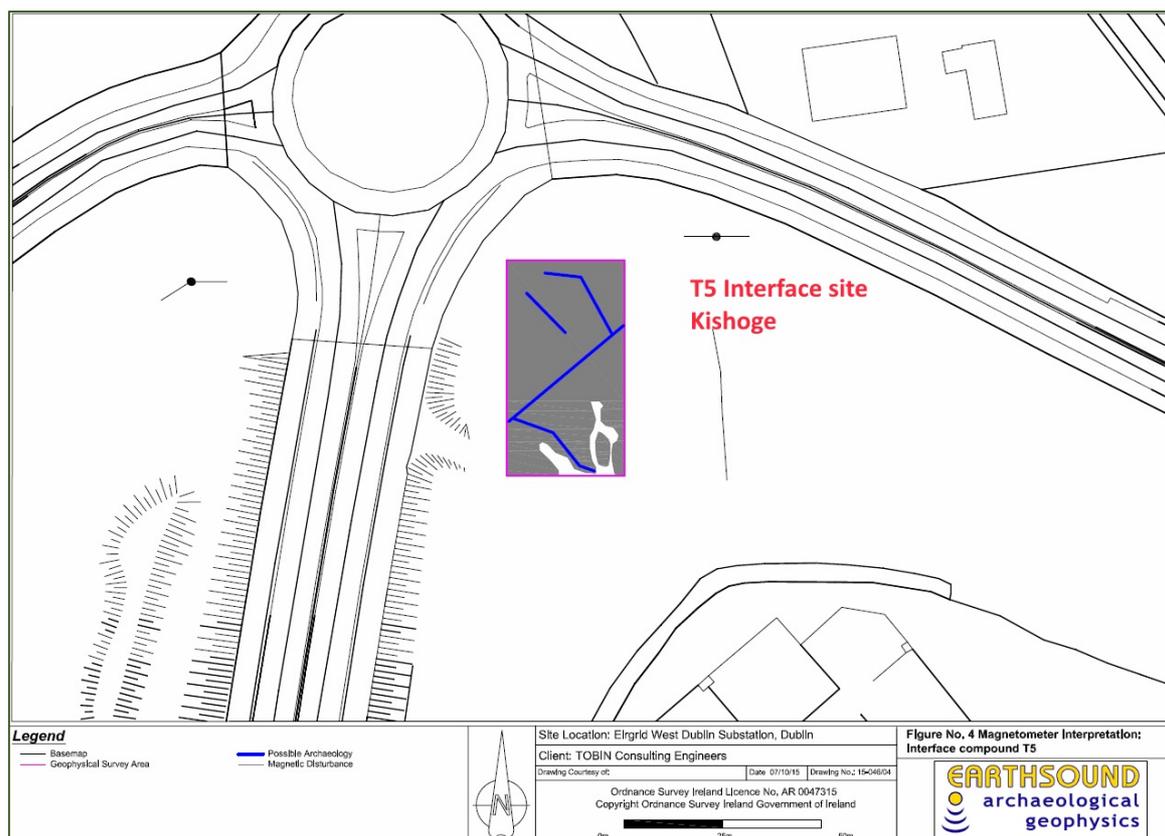


Figure 12 Kishoge site, Blue represents possible archaeology

5 Archaeological Testing

The definitions cited below are those published by the Department of Arts, Heritage, Gaeltacht and the Islands.

'Test excavation is that form of archaeological excavation where the purpose is to establish the nature and extent of archaeological deposits and features present in a location which it is proposed to develop (though not normally to fully investigate those deposits or features) and allow an assessment to be made of the archaeological impact of the proposed development. It may also be referred to as archaeological testing' (DAHGI 1999a, 27).

'Test excavation should not be confused with, or referred to as, archaeological assessment which is the overall process of assessing the archaeological impact of development. Test excavation is one of the techniques in carrying out archaeological assessment which may also include, as appropriate, documentary research, fieldwalking, examination of upstanding or visible features or structures, examination of aerial photographs, satellite or other remote sensing imagery, geophysical survey, and topographical assessment' (DAHGI 1999b, 18).

5.1 Results of the Archaeological Testing

Archaeological testing at both Ballybane/Aungierstown and Kishoge, Co. Dublin took place between the 22nd -24th of February 2016 in dry and bright weather conditions. The proposed substation site was accessed via a new business park access road south of the New Nangor Road (R134). The site consists

of an improved tillage field to the north, cut by a ditch to the south. The field was originally subdivided into a smaller sub triangular plot, the boundary of which has in recent years been cleared away. Due to regular ploughing the site was relatively even under foot. The test trenches were excavated by a 15 tonne backhoe excavator using a 1.2m wide ditching bucket. All the test trenches were deliberately sited to target sub-surface anomalies identified during the geo-physical survey. These anomalies were variously interpreted as possible pits, ditches or relict boundaries. The results of the testing are described below:

5.1.1 Ballybane substation site, testing results



Figure 13 Proposed testing regime for Ballybane Aungiersstown.

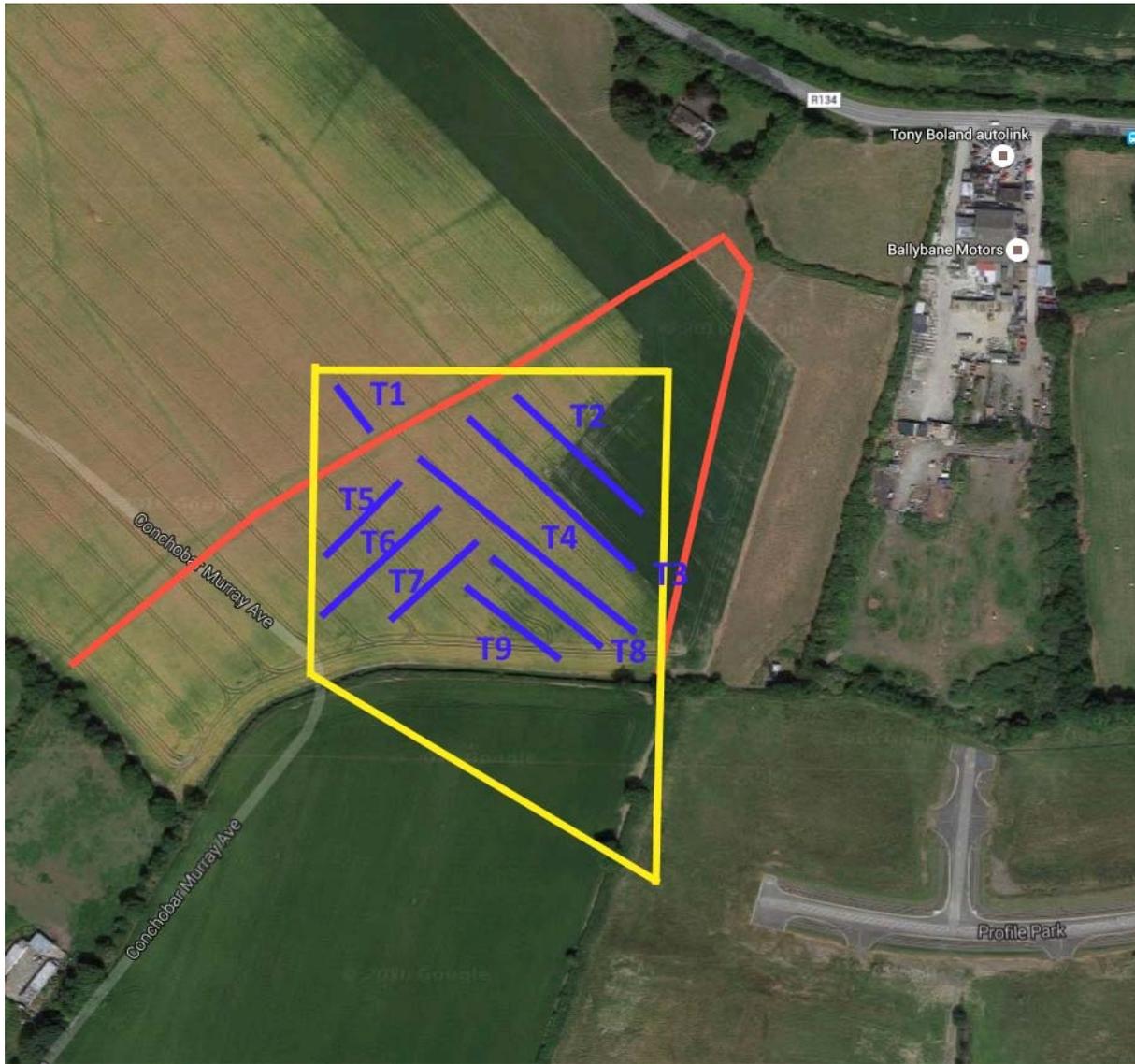


Figure 14 Aerial showing location of trenches 1-9 in Substation Site.

Ballybane /Aungierstown Substation site

Site 2 Trench No	Location/ Reason	Dimensions	Stratigraphy	Finds/features/ Comments
T1	Possible Archaeology/ archaeological site	24m by 1.2m	Topsoil 250mm Subsoil to 500mm	Modern drain
T2	Possible archaeological site	50m by 1.2m	Topsoil 250mm Subsoil to 500mm	Modern drain
T3	Curvilinear feature and ditches	75m by 1.2m	Topsoil 250mm Subsoil to 500mm	Modern sewer line
T4	Curvilinear feature and ditches	110m by 1.2m	Topsoil 250mm Subsoil to 500mm	Modern sewer line
T5	Possible pit and archaeological site	45m by 1.2m	Topsoil 250mm Modern drain Subsoil to 500mm	No archaeological features
T6	Possible pit and archaeological site	60m by 1.2m	Topsoil 250mm Modern drain Subsoil to 500mm	No archaeological features
T7	Possible pit and archaeological site	45m by 1.2m	Topsoil 250mm Sewer pipeline Subsoil to 500mm	No archaeological features
T8	Possible archaeological site	50m by 1.2m	Topsoil 250mm Sewer pipeline Subsoil to 500mm	No archaeological features
T9	Possible pit and archaeological site	30m by 1.2m	Topsoil 250mm Subsoil to 500mm	No archaeological features

5.1.1.1 Trench 1

Excavation throughout the site was carried out by a 15 tonne excavator with a 1.2m wide ditching bucket in dry and bright weather conditions. Trench 1 was located in the north west corner of the site in relatively even ground. The trench measured 24m in length and was dug to an average depth of 500mm. The topsoil was a rich humic material and the subsoil contained a high inclusion of angular stones. The only notable feature was a drainage channel at the west of the trench and was orientated north to south.



Plate 1 Trench 1 looking northwest with modern drainage channel visible.



Plate 2 Trench 3 looking southeast.

5.1.1.2 Trench 2

Trench 2 was similar to that in Trench 1, it was 1.2m in width, 50m in length and was excavated to an average depth of 500mm. The trench was orientated NW SE, the topsoil was a rich humic material and the subsoil contained a high inclusion of angular stones. A drainage channel was uncovered at the eastern end of the trench and was orientated north south.



Plate 3 Trench 4 looking southeast.

5.1.1.3 Trench 3

Trench 3 was similar to that in Trench 1-2, it was 1.2m in width, 75m in length and was excavated to an average depth of 500mm. The trench was orientated NW SE. The topsoil was a rich humic material and the subsoil contained a high inclusion of angular stones. The trench was waterlogged after excavation with a number of springs visible in the excavated area. A modern sewer line was exposed at the east of the trench at a depth of 1.2m.

5.1.1.4 Trench 4

Trench 4 was similar to that in Trench 1-3, it was 1.2m in width, 110m in length and was excavated to an average depth of 500mm. The trench was orientated NW SE. The topsoil was a rich humic material and the subsoil contained a high inclusion of angular stones. The trench was waterlogged after excavation. A modern sewer line was exposed at the east of the trench at a depth of 1.2m.



Plate 4 Trench 5 looking northeast.

5.1.1.5 Trench 5

Trench 5 was similar to that in Trench 1-4, it was 1.2m in width, 45m in length and was excavated to an average depth of 500mm. The trench was orientated SW NE. The topsoil was a rich humic material and the subsoil contained a high inclusion of angular stones. No features were uncovered in this trench.

5.1.1.6 Trench 6

Trench 6 was similar to that in Trench 1-5, it was 1.2m in width, 60m in length and was excavated to an average depth of 500mm. The trench was orientated SW NE. The topsoil was a rich humic material and the subsoil contained a high inclusion of angular stones. No features were uncovered in this trench.

5.1.1.7 Trench 7

Trench 7 was similar to that in Trench 1-6, it was 1.2m in width, 45m in length and was excavated to an average depth of 500mm. The trench was orientated SW NE. The topsoil was a rich humic material and the subsoil contained a high inclusion of angular stones. No features were uncovered in this trench.



Plate 5 Trench 7 looking northeast.

5.1.1.8 Trench 8

Trench 8 was similar to that in Trench 1-7, it was 1.2m in width, 50m in length and was excavated to an average depth of 500mm. The trench was orientated NW SE. The topsoil was a rich humic material and the subsoil contained a high inclusion of angular stones. No features were uncovered in this trench.

5.1.1.9 Trench 9

Trench 9 was similar to that in Trench 1-8, it was 1.2m in width, 30m in length and was excavated to an average depth of 500mm. The trench was orientated NW SE. The topsoil was a rich humic material and the subsoil contained a high inclusion of angular stones. No features were uncovered in this trench.

5.1.2 Kishoge site T5, testing results

The proposed interface compound at Kishoge is located to the south east of a roundabout at the junction of the R136 and the Ninth Lock Road. The field contains a high voltage tower and is over sailed with power lines, internally the ground is off rough pasture with evidence of previous infill. This infilling was confirmed by the geophysical results, frequent 'iron spikes' were interpreted as relating to the importation of soils/debris. Three trenches were excavated across this area, the results are as follows:

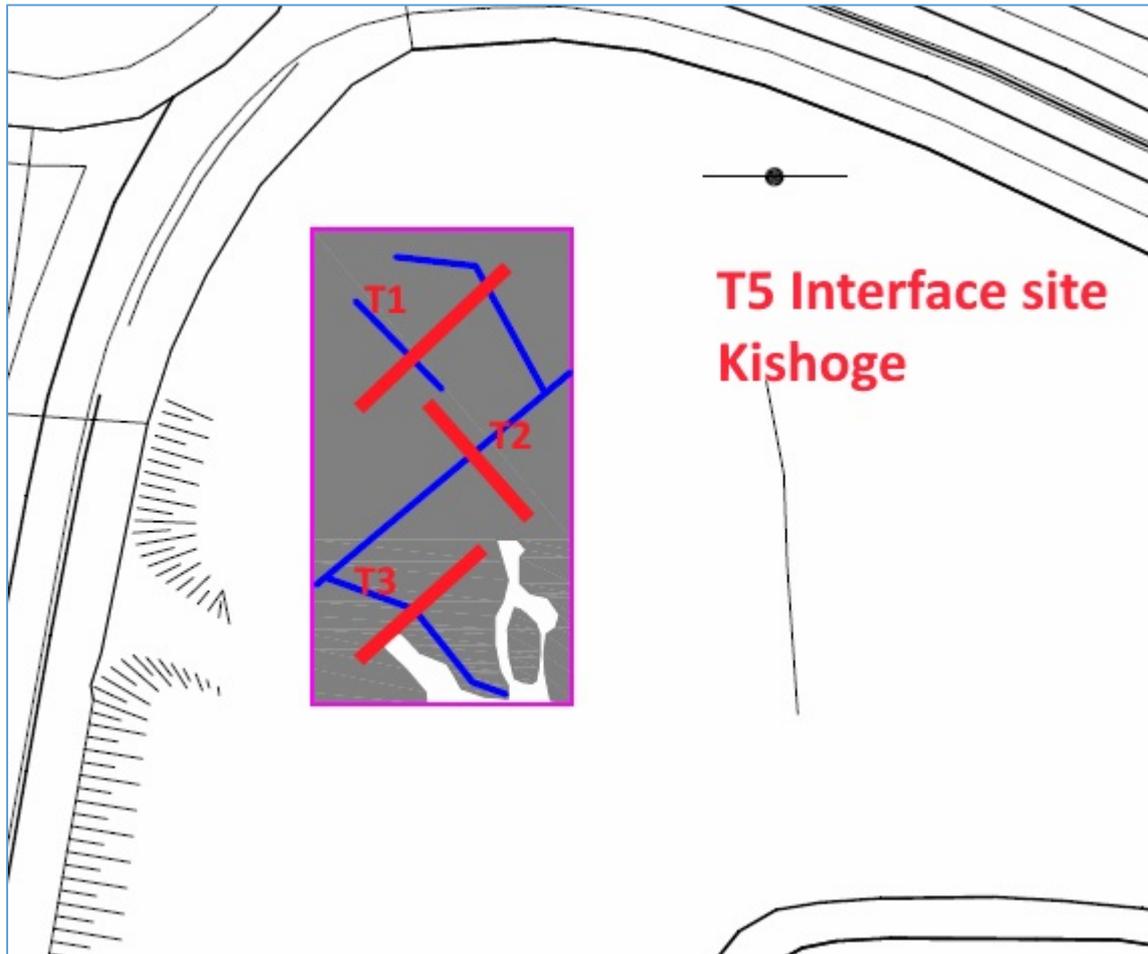


Figure 15 Proposed testing regime for Kishoge Site.

Kishoge Interface site

Site 1 Trench No	Location/ Reason	Dimensions
T1	Investigate possible linear archaeological feature detected by geophysics	40m by 1.2m
T2	Investigate possible linear archaeological feature detected by geophysics	40m by 1.2m
T3	Investigate possible linear archaeological feature detected by geophysics	40m by 1.2m

5.1.2.1 Trench 1

Excavation throughout the site was carried out by a 13 tonne excavator with a 1.2m wide ditching bucket in dry and bright weather conditions. Trench 1 was located in the north west corner of the site in relatively even ground. The trench measured 32m in length and was dug to an average depth of 1.6m. There were no archaeological remains. The site contained a mixture of builder's rubble and topsoil that had been dumped on the site. Subsoil, a boulder clay, was exposed at between 1.2m and 1.3m.



Plate 6 Trench 1 Looking west across plough furrows.

5.1.2.2 Trench 2

Trench 2 was located in the centre of the site in relatively even ground. The trench measured 30m in length and was dug to an average depth of 1.6m. There were no archaeological remains. The site contained a mixture of builder's rubble and topsoil that had been dumped on the site. Subsoil, a boulder clay, was exposed at between 1.2m and 1.3m.



Plate 7 North facing section of test trench 3.

5.1.2.3 Trench 3

Trench 3 was located in the north east corner of the site in relatively even ground. The trench measured 40m in length and was dug to an average depth of 1.2m. There were no archaeological remains. The site contained a mixture of builder's rubble and topsoil that had been dumped on the site. Subsoil, a boulder clay, was exposed at 1m in depth.

6 Conclusions and recommendations

Archaeological testing at the site of a proposed substation site at Ballybane and the interface compound at Kishoge, Co. Dublin was undertaken between the 22nd and 24th of February 2016. The test trenches were purposely sited on both sites to provide coverage for the new development and to investigate geophysical anomalies identified in an earlier survey. The trenches exposed a number of modern drainage channels across the site and a natural sterile stratigraphy elsewhere. The anomalies can be accounted for by modern disturbance, drains and geology. There was no evidence for any features of archaeological potential.

Nonetheless, given the proximity of the proposed development to the levelled ringfort there is still the potential for discreet archaeological features to be encountered. Therefore, it is recommended that a programme of archaeological monitoring be carried by a suitably qualified archaeologist during topsoil stripping for the works. If archaeological material is encountered the National Monuments Service will be informed and in consultation an agreed mitigation strategy will be put in place.

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