

Request to the Board under Section 146B for Alterations to the approved UWF Grid Connection SID development. ABP-306204.19.

Approved by Board Order 08/02/2021

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1 Schedule 7A Information

1.1 Introduction and Summary Conclusions

This Schedule 7A information is attached to a request to An Bord Pleanála to make alterations to the terms of UWF Grid Connection development, which was authorised in 2021 under ABP-306204-19.

UWF Grid Connection development, consists of a new 110kV substation at Mountphilips, Newport, County Tipperary and, particular to this alteration request, **6.3km of the 30km underground 110kV cabling and ancillary works (herein called UGC)**. The UGC will connect the new substation at Mountphilips to the authorised, Upperchurch Windfarm Substation at Knockcurraghbola, Upperchurch, County Tipperary. The UGC will facilitate the export of electricity from Upperchurch Windfarm to the National Grid. UWF Grid Connection and Upperchurch Windfarm (collectively the Upperchurch Windfarm Project) are both Strategic Infrastructure Developments. The Upperchurch Windfarm Project is not yet constructed.

The alterations requested under 146B, relate to the UGC design and crossing methodology at bridges on the public road both in the vicinity of Newport Town and along the R503 Regional Road (Thurles to Limerick). This Schedule 7A Information relates to these alterations. A 10-year period during which the development can be constructed is assumed in this Schedule 7A information.

Potential effects of this Requested Alteration on the environmental topics were considered and an assessment was made whether the effects changed the significance of impact as assessed in the UWF Grid Connection 2019 EIAR. For this Schedule 7A assessment, the 2019 EIAR assessments were examined.

Regarding Population and Human Health; Land; Soils; Air; Climate and Landscape, the examination below assesses that there is no potential for material effects on these topics due to the nature of the herein Requested Alteration and also with the implementation of the relevant Mitigation Measures, Emergency Procedures, Schedule and timing of works, Surveying and monitoring measures, Best Practice Measures and Construction Methodologies previously authorised for the protection of the environment, which will also apply to the Requested Alterations works. See sections below – Population and Human Health (S.2.2); Land (S.2.3); Soil (S.2.4); Air (S.2.7); Climate (S.2.8); and Landscape (S.2.11). The Schedule 7A assessment concludes that the findings of the 2019 EIAR assessment for the UWF Grid Connection of Not Significant on Population and Human Health, Land, Soils, Air, Climate and Landscape will not change as a result of the Requested Alterations. This conclusion is based on the information hereunder.

Regarding Water, Biodiversity and Cultural Heritage, there is potential for effects on these topics;

- Water – because it is proposed to cross the UGC under watercourses at new locations.
- Biodiversity – because it is proposed to cable under agricultural/forestry lands, with some very short sections within the Slieve Felim to Silvermines Mountains SPA, rather than wholly within the public road.
- Cultural Heritage – because it is proposed to excavate the UGC works in alternative agricultural/forestry lands/farm tracks and on alternative Local Roads.

The appropriate competent experts were engaged to examine these three topics in more depth. All of the appropriate Mitigation Measures, Emergency Procedures, Schedule and timing of works, Surveying and monitoring measures, Best Practice Measures and Construction Methodologies

previously authorised for the protection of Water, Biodiversity and Cultural Heritage will also be implemented for the proposed Alterations. See sections below – Water (S.2.5); Biodiversity (S.2.6); and Cultural Heritage (S.2.10). The Schedule 7A assessment concludes that the findings of the 2019 EIAR assessment for the UWF Grid Connection of Not Significant on Water, Biodiversity and Cultural Heritage will not change as a result of the Requested Alterations. This conclusion is based on the information hereunder.

1.2 Locational Context of the Authorised UGC Route

The UGC is authorised for a route along public roads which pass in the vicinity of Newport Town and through rural countryside with agricultural grassland and forestry plantation on either side. The roads are delineated with housing schemes near Newport Town and Rear Cross village and outside these urban clusters, there are once-off rural houses and farmsteads scattered along public roads. There are 317 residences and 17 community facilities within 100m of the authorised UGC route.

The roads comprise the Limerick to Thurles Regional Road R503, numerous local county roads and private access roads serving domestic houses, farms and forests. 29.2km of the 30.5km of the authorised UGC is routed along the public road network, c.22km of which is along the R503 Regional Road.

The UGC is authorised for installation under or over 68 no. of watercourses. 3 no. of these are in agricultural lands at the Mountphilips Substation site (W1 to W3) and instream works are authorised to facilitate the installation of the UGC and new access road to the substation. The UGC is also authorised to be installed under or over a total of 63 existing watercourse crossing structures along the public road network (W4 to W66). Works at these watercourses are currently authorised to take place entirely within the public roadway, with works authorised to install the UGC in the deck of bridges and under or over culverts which will involve instream works at a number of crossings. Two (2) no. directional drills are also authorised at 2 no. bridges along the UGC route. The remaining 2 No. crossings (W67 and W68) are on private paved road through forested and agricultural lands.

The authorised UGC to be constructed within the regional Road R503, passes through part of the Slieve Felim to Silvermines Mountain SPA, entirely within the road corridor. The SPA is designated for the protection of the Hen Harrier bird.

The authorised route also overlaps the boundary of the Lower River Shannon SAC at Rockvale Bridge (B2) and at Anglesey Bridge (B15). The SAC is designated for the protection of a range of Qualifying Interests including Otter, Bottlenose Dolphin, aquatic habitats, salmonids, and freshwater aquatic species. See attached to this document Alteration [Figure 1: Overview on Discovery Mapping at the end of this document.](#)

1.3 General Environmental Sensitivity of the Area

The environmental sensitivity of the area along the route of the UGC relates to the presence of two European Sites – the Slieve Felim to Silvermine Mountain SPA and the Lower River Shannon SAC.

Otherwise, the UGC works are –

- not located within a coastal zone, nor the marine environment;
- not located within a wetland area or river mouth;
- not located within or adjacent to any Natural Heritage Area or Geological Heritage Area;

- not located within a densely populated area nor within a landscape or site of historical, cultural or archaeological significance; and finally
- not located in an area where there has already been a failure to meet the environmental quality standards laid down in EU legislation.

1.4 Consultation with Prescribed Bodies

1.4.1 Consultation with Tipperary County Council

A Road Opening Licence is required in order to install the UGC in the public road, with the terms to be agreed with Tipperary County Council Roads Section. The Council have requested that changes be made to the authorised crossing methods for some stone arch bridges along the route of the UGC. The authorised crossing method is by installation within the bridge decking. The Council have requested an alteration to the authorised crossing method so that selected bridges are either crossed by directional drill or that the watercourse is crossed by dam and overpump method off-road. During the design of a solution to these requested alterations, consultations were carried out with the project ecology and cultural heritage consultants. The project ecologist carried out consultations with National Parks and Wildlife Services (NPWS) and Inland Fisheries Ireland (IFI).

1.4.2 Consultation with NPWS

Alteration site walkovers consultation with senior NPWS staff took place on site on the 4th of November 2024. Some of the items that were discussed:

- Proximity to the Lower River Shannon SAC, drainage along the 3m ESB access road to drilling pit to the south of W101 and whether it should include a settlement pond to ensure any runoff water during construction is free from sediment before leaving the development. This road will also contain 3 swales to attenuate water.
- Access road to the north of W101 in close proximity to the Lower River Shannon SAC and whether it should be sloped away from the Newport River
- Top of access roads and whether they need to be at existing field height, i.e. road will not protrude above existing ground level.
- Temporary roads construction and whether they should be constructed consisting of geotextile matting and Clause 804 or similar and removed post construction.
- Slievefelim to Silvermines Maoutains SPA at location bridge B5 likely borders the road at this location. The applicant is advised to review SPA boundary for correctness off the 6-inch historical mapping.
- That there is no requirement for permanent roads in SPA as part of the proposed alterations, i.e. no permanent loss of habitat

All discussion points were considered and any advice has been incorporated into the project as part of the final design and as part of the drawings pack. The authorised mitigation measures for the protection of ecology, including hen harrier and otter will be carried out as part of the alteration works also.

1.4.3 Consultation with Inland Fisheries Ireland IFI

Consultation with senior IFI staff regarding the proposed Alterations, took place on site on the 26th of November 2024. Some of the items that were discussed:

- Drill pits in the region of the Watercourses W101 and W102 may have water ingress during drilling works, as such suspended solid settlement needs to be achieved so that water is free from sediment prior to any water leaving site.
- Any water in drill pits along the road should also be treated in a Siltbuster Unit or similar unit to remove sediment from water.
- Temporary roads consisting of geotextile matting and Clause 804 or similar will be constructed and removed post construction.
- Final watercourse crossing drilling methodologies to be reviewed by IFI prior to commencement of works.
- Although temporal restrictions may not apply on all new watercourses contained in the alterations, instream works should ideally be done in dry weather.

All of the above points have been incorporated into the project as part of the final design. The authorised mitigation measures and outline construction methodologies for the protection of water quality and morphology are incorporated into the alterations design for watercrossings.

1.5 Characteristics of the Requested Alteration

Alterations to the authorised UGC route and to the crossing methods for twelve (12) bridges along the route of the UGC is the subject of this 146B request. With the exception of both ends of the UGC route (Mountphilips Substation and Upperchurch Substation), the authorised UGC is located entirely within the fabric of the public road and bridges.

The UGC route can be divided into two sections;

- Section 1 in proximity to Newport Town (relates to 4 No. bridges)
- Section 2 along the Regional Road R503 (relates to 8 No. bridges)

1.5.1 Description of the proposed alterations on Section 1

The authorised UGC travels along the local road network, north of Newport town. Along the route, there are 4 no. bridges in proximity to Newport town. These are identified as bridges B1, B2, B3 and B4 on the attached Figures and Drawings (same numbering as in the project 2019 EIA Report and Drawings Pack).

It is already authorised that directional drill method for the UGC crossing be deployed for bridges B3 and B4 and that the UGC be installed in the deck of bridges B1 and B2. However Tipperary County Council have requested that the UGC is not installed in the deck of B2 - Rockvale Bridge crossing of the Newport River (aka Mulkear River) as is authorised. A study was undertaken on the feasibility of directional drilling the cabling under the Newport River at Rockvale Bridge. However, it was found that the bridge cannot be drilled due to its location on a severe bend affecting the manoeuvrability of the drill head. Directional drilling is also contraindicated by the height of Rockvale Bridge above the watercourse and the presence of rock beneath. For this reason Rockvale Bridge must now be avoided completely.

Therefore, it was required that an alternative crossing location for the Newport River is chosen. An alternative was identified using other public roads, agricultural lands and existing farm tracks and crossing the watercourses off-road at a more suitable location for directional drilling. The result is that B1, B3, B4 and critically Rockvale Bridge B2, are avoided altogether. It is now proposed that in total 3 no. watercourses will be crossed off-road along the altered route – the Newport River, Small River and

an unnamed watercourse. These proposed new crossing points are identified herein and in the Figures and Drawings as new W101, W102 and W103 respectively. The following crossing methods are proposed: directional drilling at W101 and W102 and installation of UGC above/below an existing masonry culvert at W103. A 3m wide stone access track will be provided over the altered UGC route in off-road lands, as per ESNB requirements for 110kV underground cables.

This new route also has the added advantage of avoiding cabling 4km of public road and in particular, in the L2157 public road (north of Newport Town) which contains many services from a nearby Newport Regional Water Treatment plant.

See the following Figures and Appendices at the end of this document.

- **Figure 1: Overview on Discovery Mapping,**
- **Figure 2.1: Section 1 - Overview**
- **Figure 2.2: Section 1 - Aerial View (Map 1)**
- **Figure 2.3: Section 1 - Aerial View (Map 2)**
- **Figure 2.4: Section 1 - Aerial View (Map 3),**
- **Schedule 7A Appendix A: Site Photographs - Photos 1 to 22**

1.5.2 Description of the bridges and the proposed alterations on Section 2

There are eleven (11) no. bridges along the R503 Regional Road between Newport Town and the Kilcommon crossroad at Knocknabansha. These are bridges B5, B6, B7, B8, B9, B10, B11, B12, B13, B14 and B15 on the attached Figures and Drawings (same numbering as in the project 2019 EIA Report and Drawings Pack).

For bridges B8, B12 and B13 it has been determined by Tipperary County Council that it is acceptable to cross these bridges as authorised in the deck, because of the deep cover existing at these bridges.

Feasibility studies show that the dam and overpump option is suitable for 4 no. bridges, namely bridges B5, B9, B11 and B14. This is because of the low volume of water present at these crossings and also the local topography in the vicinity of the bridge facilitates access for construction personnel and vehicles. This method is now requested for B5, B9, B11 and B14. A 3m wide stone ESNB access track will be provided at bridge B9 where some of the lands are outside the SPA and at B11 where all of the lands are outside of the SPA. A temporary construction access track will be provided at bridges B5 and B14 which are inside the SPA and at B9 where some lands are inside the SPA. Where tracks are within the SPA they will be removed post-construction and the lands reinstated. Dam and overpump method is assessed for B5, B9, B11 and B14 in this Schedule 7A information.

At bridges B6 and B7 it has been determined that, due to cover also being present at these bridges, albeit not as deep as the B8, B12 and B13, crossing within the deck as authorised may also be acceptable in these bridges once the results of a full structural report are examined and a decision made at that stage, whether to crossing as authorised or to cross by directional drilling. This Schedule 7A assesses directional drill crossing in case this alternative is required ultimately by Tipperary County Council.

A bridge B10 which is not a stone arch bridge but rather a stone clapper bridge or culvert, the crossing will either be directionally drilled or replaced by a new culvert, whichever is deemed most practical at the time of construction. Works to replace existing culverts under the public road which will be

potentially required at up to 13 no. locations are already authorised. As there is potential for surface water quality effects during these works, project design mitigation measures were incorporated into the design of instream works in order to break the pathway between the works area (source) and the receptor (water course). With these design measures in place it is considered in the EIAR 2019 (S.11.4.4.4) that culvert replacement works will have an Imperceptible impact. The water quality at B10 is reported as Class 4, Poor Fisheries Value. Therefore any culvert replacement works will have an Imperceptible impact on surface water quality. Therefore culvert replacement is scoped out for further assessment and directional drill crossing for B10 is assessed as an alternative.

At B15 it is proposed to change from the authorised method in the bridge deck to directional drill methodology, with the drilling rig working from the road overhead. Directional drill at this bridge is the best option because the large volume of water beneath the bridge makes dam and overpump method unsuitable and there is sufficient space on the road to set up the drilling rig for work. Directional drill method is assessed for B15 in this Schedule 7A information.

See the following Figures and Appendices at the end of this document.

- [Figure 3.1: Bridges B5, B6 and B7](#)
- [Figure 3.2: Bridges B5, B6 and B7 - Aerial View](#)
- [Figure 4.1: Bridges B9, B10 and B11](#)
- [Figure 4.2: Bridges B9, B10 and B11 - Aerial View](#)
- [Figure 5.1: Bridges B14 and B15](#)
- [Figure 5.2: Bridges B14 and B15 - Aerial View](#)
- [Schedule 7A Appendix A: Site Photographs - Photos 23 to 32](#)

1.6 Environmental Protection

- An Environmental Management Plan was submitted as part of the authorised UWF Grid Connection application. This plan, which was further agreed with Tipperary County Council as part of pre-construction planning condition compliance, includes details for the construction of all elements of the subject development - UWF Grid Connection. Below is a list of authorised measures/plans that the Requested Alterations will utilise during the construction phase. It should be noted, none of the Requested Alterations will require additional Project Design Mitigation Measures, Emergency Procedures, Schedule and timing of works, Surveying and monitoring measures, Best Practice Measures or Construction Methodologies. They are all contained in the authorised Environmental Management Plan for the UWF Grid Connection project and which has been agreed with Tipperary County Council. The below items can be found in their full form at the end of this document as [Schedule 7A Appendix B](#).
- Project Design Mitigation Measures (authorised)
 - 69 Project Design (PD) Measures were submitted as part of the UWF Grid Connection application. The mitigation measures applicable to works within agricultural, forestry and riparian lands to protect ecology (including the Hen Harrier in situ and ex-situ the Slieve Felim to Silvermines Mountain SPA), protect water quality (including of the Lower River Shannon SAC) and to protect archaeology (including sub-surface archaeology) and also within the public road; for instream works; directional drilling

works; and construction of new roadways, will be implemented. Note, implementation of all project design measures is further conditioned in Condition 3 of the Planning Grant for the UWF Grid Connection project.

- Environmental Emergency Response Procedures (authorised)
 - Oil/Fuel Spillage
 - Significant Pollution Occurrence in Local Surface Waters
 - Frac-Out during Drilling Works
- Scheduling & Timing of Works Measures (authorised)
 - Included in the Project Design Measures identified above. These will be implemented in full.
- Environmental Surveying and Monitoring Measures (authorised)
 - Included in the Project Design Measures identified above. These will be implemented in full.
- Best Practice Measures (authorised)
 - Best Practice Measures for Protection of Surface Water Quality and Watercourse Morphology during instream works; Best Practice Measures to Protect Surface Water and Groundwater Quality during use of Cement Based Compounds
 - Best Practice Measures to Protect Surface Water and Groundwater Quality During Storage and Handling of Fuels, Oils and Chemicals
- Outline Construction Methodologies (authorised)
 - GC-OCM-01 - Pre-Construction Activities (including ecological confirmatory surveys);
 - GC-OCM-04 - Temporary Access Road
 - GC-OCM-05 - Instream Works
 - GC-OCM-06 - New Permanent Access Road
 - GC-OCM-11 - Reinstatement of Lands
 - GC-OCM-12 - 110kV Trenching & Ducting
 - GC-OCM-18 - Horizontal Directional Drilling

1.7 Implications for Expected Residues, Emissions, Wastes and Use of Natural Resources

Emissions: The Requested Alteration will not result in a material change to dust, exhaust, noise, vibration, light or electromagnetic radiation emissions during construction, as there will be no material changes to the construction or operational processes that cause emissions i.e. the volumes of excavations or construction traffic, nor to the noise or vibrations from construction works as a result of the alteration.

Wastes: Cabling in the bridge decking of 10 No. bridges will be excluded and therefore there will be slightly less arisings of bitumen bound surface dressing and thus arisings/spoiled soils waste, due to the Requested Alteration. In relation to general material waste, chemical waste or wastewater, the Requested Alteration will not result in a change to the wastes generated during construction because there will be negligible change in the materials and activities that cause wastes i.e. no change to the use and management of construction materials. There will be a small reduction in waste arisings from the public road.

Trench arisings in agricultural lands and existing tracks in Section 1 will be used to reinstate the trench. This will result in less bitumen arisings than the authorised trench. Difference in arising as a result of the alterations in Section 2 will be minor.

Use of Natural Resources including Land, Soils, Water and Biodiversity: There will be additional encroachment on agricultural and forestry lands to avoid bridge decking works. There will be a very small volume of additional excavation at the water crossing points, for both direction drilling and dam and overpump method. Circa. 25m of hedgerow will be removed as part of the alterations. This hedgerow will be replanted like for like in the vicinity.

1.8 Vulnerability to Major Accidents/Natural Disasters

As evaluated in EIAR 2019, the UWF Grid Connection is not vulnerable to Major Accidents, Natural Disasters or Climate Change. Due to the nature of the Requested Alteration (underground cabling and ancillaries), there will be no changes to the vulnerability of the development to major accidents, natural disasters or climate change, because there will be no material change to the size of the authorised development, and no change to the construction processes which will be employed during construction works. The Requested Alteration will not involve works in peatlands, and all water crossings from agricultural/forestry lands will be carried out in accordance with the authorised Construction Methodologies relevant to these activities (GC-OCM-01; GC-OCM-05; GC-OCM-12 to GC-OCM16 and GC-OCM-18) and the authorised Mitigation Measures.

2 Examination of Impact on Environmental Topics

2.1 Introduction

This is a request for alterations to the crossing method of eleven (11) bridges for the underground grid connection cabling and associated joint bays and ancillary works (herein called the UGC) part of the UWF Grid Connection development. The authorised method is to cross these bridges within the bridge decking. The proposed alterations are described in Section 1.5 above – Characteristics of the Requested Alterations. This section assesses the impact of the Requested Alterations as described in Section 1.5, on the environmental topics previously assessed in EIAR 2019.

2.1.1 Methodology

All of the environmental topics previously assessed in EIAR 2019 are evaluated. In each topic section;

- the baseline environment in the context of the requested alterations to the UGC is described;
- the impacts assessed in EIAR 2019 for each topic are presented and evaluated for potential to be impacted by the Requested Alterations. All impact pathways were considered;
- the potential for the Requested Alterations to affect these pathways is then evaluated. Any potential new pathways are also considered; and
- the impact of the Requested Alterations on the authorised impact of the UWF Grid Connection development, is determined.

The locational context of the Requested Alterations is illustrated in [Figure 1: Overview on Discovery Mapping](#)

2.1.2 Statement of Authority

The current baseline and potential for impacts from the Requested Alterations, on all the environmental topics was examined by EDL's experienced EIA practitioners - Phil Kenealy (Dip.EIA) and Conor Brett (B.Sc; Dip.EIA). Where it was scoped that there is potential for impacts due to the Requested Alterations, competent experts in these particular areas were engaged to carry out more detailed evaluations. It was considered that due to the nature of the Requested Alterations there is potential to impact Water (Section 2.5), Biodiversity (Section 2.6 and [Schedule 7A Appendix C - Biodiversity - Ecology Baseline Report](#)) and Cultural Heritage (Section 2.10 and [Schedule 7A Appendix F - Cultural Heritage Impact Assessment \(CHIA\)](#)).

2.2 Population & Human Health

2.2.1 Baseline Population & Human Health

Baseline: The route of the authorised UGC is along public roads, predominately the Limerick to Thurles Road (R503), in the Tipperary Electoral Districts (ED's) of Kilcomenty, Newport, Killoscully, Kilnarath, Abington, Foilnahan, and Upperchurch. Along the UGC route residences, businesses, accommodation and food services are concentrated in and around Newport town and to a much lesser extent in Rear Cross village. Outside of the urban clusters, the pattern is of once-off rural houses and farmsteads dispersed along public roads. There is one way-marked walk – Slievefelim Way, which overlaps the UGC route where a short section of the Way occurs on the regional road passing through Rear Cross village. Additionally, the Ormond Way walking and cycle routes pass through the eastern end of the UGC route in the Upperchurch Windfarm area. A scenic route is also located along the R503.

Alterations: The Requested Alterations are within the same ED's are already authorised and are in similar proximity to residences/businesses. There are no additional walking or cycling routes affected by the Requested Alterations.

2.2.2 Impact Pathways & Significance of Impact Evaluation from EIAR 2019

The impact pathways for effects on the sensitive aspects of Population & Human Health and the significance of these effects as contained in EIAR 2019, is presented in the Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|--|---|--|
| Population Local Economy - Gross Value Added to Businesses & Employment; Opportunities from construction contracts, purchasing of material and services, landowner payments, reduction in tourism revenue (construction stage) | Construction contracts, purchasing of material and services, landowner payments | Neutral (positive) |
| Human Health Local Residents & Community - Increased employment which is a wider determinant of health (construction & operational stage). | Construction contracts | Slight (positive) |
| Human Health Potential impacts on health due to cross-factor effects of reduction in drinking water quality, noise, dust, vibration (construction stage) and operational EMF. | Noise impacts from machinery, Air quality impacts from vehicle emissions and dust (PM10 and PM2.5), Contamination of water supply | Neutral |

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|---|---|--|
| Human Health Transient People - Potential impacts on health due to cross-factor effects of noise, dust, vibration (construction stage) and operational EMF. | Noise impacts from machinery, Air quality impacts from vehicle emissions and dust (PM10 and PM2.5), Construction traffic and road works along haul routes | Neutral |

2.2.3 Effects of the Requested Alterations on Population and Human Health

The Requested Alteration relates to utilising an alternative route for the UGC in proximity to Newport Town. The alternative route proposed includes public road, agricultural lands and farm lanes, avoids four (4) bridges and includes three (3) new off-road watercourse crossings. The Alterations also include deploying an alternative UGC crossing method at seven (7) bridges along the R503, comprising a change from installation of the UGC within the bridge decking as authorised, to directional drill and dam and overpump method. These works were assessed in the EIAR 2019 to positively impact the Local Economy.

See [Figure 1: Overview on Discovery Mapping at the end of this document](#)

Regarding effects on Population (Local Economy), the Alterations will effect no change in the value of construction contracts, nor in the requirement for materials and services, nor employment levels during the construction or operation of the UGC. There will be no additional effect from the Alterations on tourism revenue from minor road journey delays caused by roadworks being carried out on alternative Local Roads and on the R503 during construction.

Furthermore, there would be no change in indirect cross-factor impacts to Human Health as a result of contamination of water supplies, noise, dust, traffic during construction and operational EMF during operation, because the Requested Alteration will not materially change the construction activities, construction traffic, employment levels, emissions (including EMF), wastes, use of natural resources or material requirements associated with the authorised UGC and

All of the Project Design Mitigation Measures, Emergency Procedures, Schedule and timing of works, Surveying and monitoring measures, Best Practice Measures and Construction Methodologies previously authorised for the protection of Population and Human Health, will also be implemented for the Alterations.

Therefore the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Population (*Neutral positive*) due to increased activity in the Local Economy will not change as a result of the Requested Alteration. The significance of the impact on Human Health will remain *Neutral* as evaluated in EIAR 2019.

2.3 Land

2.3.1 Baseline Land

Baseline: The UGC placement is authorised for c.30km of public roads. In addition a c.700m length of the UGC is authorised on either end of the route (at each substation) through a mix of forested lands and agricultural lands and some private paved roads.

Alterations: The Requested Alteration relates to utilising an alternative route to the public road route for the UGC placement. The proposed new route includes agricultural lands and farm lanes, from Coole Crossroads to the junction of the R503 Thurles to Limerick Road, east of Newport town and additionally diverting into agricultural and forestry lands and deploying an alternative UGC watercourse crossing method for 4 No. watercourses along the R503. The Requested Alteration will involve the provision of new access tracks through agricultural lands (1100m in total), the utilisation of existing farm tracks (1800m) and instream works to cross under watercourses from lands, instead of in the decking of some bridges.

See [Schedule 7A Appendix A: Site Photographs](#)

2.3.2 Impact Pathways & Significance of Impact Evaluation from EIAR 2019

The impact pathways for effects on the sensitive aspects of Land and the significance of these effects as contained in EIAR 2019, is presented in the Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|---|---|--|
| Agricultural Land – impacts only relate to Mountphilips Site. | Trench and Foundation excavations, Construction of new access roads & upgrading of existing private roads | Imperceptible |
| Forestry Land – no impact pathways. | Trench and Foundation excavations, Construction of new access roads & upgrading of existing private roads | Neutral |

2.3.3 Effects of the Requested Alteration on Land

Agricultural and Forestry land can be impacted by trench excavations, construction of access roads and the upgrading of existing private roads. The proposed new works in short sections of agricultural lands, farm lanes and forestry lands will be similar to the authorised works at the Mountphilips Substation site. The Requested Alteration works will be small in scale and temporary and will be carried out in the same manner as the authorised works at the Mountphilips Substation site, including the relevant parts of the Project Design Mitigation Measures and Construction Methodologies listed in the authorised development EIAR 2019 for such works, per;

- Mitigation Measure PD05 (construction area boundary); PD15 (archaeology); and PD49 (IFI works period July, August, September for watercourse crossings); and

- Construction Methodology GC_OCM_05 and GC_OCM_07 (instream works); and GC_OCM_11 (reinstatement of lands).
- Additionally, all of the Emergency Procedures, Schedule and timing of works, Surveying and monitoring measures and Best Practice Measures previously authorised for the protection of Land, will also be implemented for the Alterations.

Therefore, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Agricultural Land (*Imperceptible*) and Forestry Land (*Neutral*) will not change as a result of the Requested Alteration.

2.4 Soil

2.4.1 Baseline Soil

Baseline: The GSI mapped bedrock along the UGC route comprises Silurian Meta-sediments and Volcanics on the eastern half of the route and a mixture of Dinantian Sandstones, Shales and Limestone and Old Red Sandstones on the western half of the route. The GSI mapped subsoils comprise mainly of shale and sandstone tills. The main soil types are poorly-draining and well-draining mineral soils. A small area of peat is mapped by GSI in the central part of the route, mainly upslope of the regional R503 road, however the road itself is underlain by competent soils and not peat.

Alterations: The mapped soils are the same for the alteration locations as the previously authorised locations. There is an area of mapped peat at Bridge B11 (R503) where it is proposed to divert into the adjacent agricultural lands and cross the UGC under the watercourse from there. The other area of GSI mapped peat relevant to this alteration, is at Bridge B15 (Anglesey Bridge). It is herein proposed to directionally drill below this bridge. Drill pits will be outside of the mapped peat area and therefore there will be no encroachment on mapped peat soils at this location.

See [Figure 4.2 \(for Bridge B11\)](#) and [Figure 5.1 \(for Bridge B15\)](#) for Aerial Views of the proposed Alterations - at the end of this document

2.4.2 Impact Pathways & Significance of Impact Evaluation from EIAR 2019

The impact pathways for effects on the sensitive aspects of Soil and the significance of these effects as contained in EIAR 2019, is presented in the Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|--|---|--|
| Local Soils & Subsoils - Excavation & Relocation of soils, subsoil and bedrock; compaction; erosion; contamination; ground instability | Groundworks, earthworks, Construction traffic movement, temporary infrastructure and temporary storage of overburden, Oils, Fuels and Chemicals, Cement Based compounds | Imperceptible - Slight |
| Soils of the Lower River Shannon SAC - Excavation & Relocation of soils, subsoil and bedrock; compaction; erosion; contamination | Groundworks, , storage of overburden, Oils, Fuels and Chemicals, Cement Based compounds | Imperceptible |

2.4.3 Effects of the Requested Alteration on Soil

The Requested Alteration relates to utilising an alternative route from the Mountphilips Substation to the junction of the R503 Thurles to Limerick Road, east of Newport town and excavation of soils, subsoils and bedrock along with new directional drilling locations along the proposed alternative route. There will also be some excavations in off-road lands adjacent to the R503. Soils can be impacted by groundworks, traffic movement, storage of overburden and spillage of fuels and cement.

The treatment of excavations of soils, subsoil and bedrock and protection from erosion, contamination and ground instability which is authorised for the Mountphilips site will be extended to the short sections of excavations for the diversion around Newport and adjacent to the R503. All of the Project Design Mitigation Measures, Emergency Procedures, Schedule and timing of works, Surveying and monitoring measures, Best Practice Measures and Construction Methodologies previously authorised for the protection of Soils, will also be implemented for the Alterations.

The area of GSI mapped peat adjacent to the R503 at Bridge B11, was found to be firm and dry with no peat present at the crossing point or along the proposed off-road route during site investigations in 2024 (see [Schedule 7A Appendix A: Site Photographs - Photo 28](#)). Furthermore, the diversion of 130m into the off-road area will be on grasslands adjacent to the R503 road, and it is considered that there is no risk of landslip at the altered crossing point.

The altered UGC route will not be materially closer to any pNHA, NHA or Geological Heritage Site, than the authorised UGC route.

Therefore, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Local Soils, Subsoils and Bedrock (*Imperceptible-Slight*) and Soils of the River Shannon SAC (*Imperceptible*) will not change as a result of the Requested Alteration.

2.5 Water

The assessment of the effects on Water of the Requested Alteration to the UGC route has been carried out by David Broderick, P.Geo (BSc, H.Dip Env Eng, MSc.), Hydrogeologist with Hydro-Environmental Services (HES), a specialist geological, hydrological, hydrogeological and environmental practice. David was involved in the design of the authorised UWF Grid Connection and authored the 2019 EIAR Water assessments.

See [Schedule 7A Appendix A: Site Photographs](#) showing the lands where works will be carried out for this Requested Alteration.

2.5.1 Baseline Water

Baseline and Alterations: In relation to surface water, the UGC is predominately located in the Lower Shannon & Mulkear Hydrometric Area, with the remainder located in the Suir Hydrometric Area. Regarding groundwater bodies, the UGC route, is mostly located in the Slieve Phelim GWB, with a minority occurring in the Templemore A GWB.

There are three Irish Water public supply wells in Castlewaller townland, and three private wells and one old unused pump within 50m downslope of the authorised UGC placement, where it is routed along the R503 regional road. The surface water source for the Newport Regional Supply is abstracted from the Newport River (aka Mulkear), c.370m upstream of Rockvale Bridge. The altered UGC route will be further downstream from the abstraction point and therefore there is no potential for impacts to this supply.

No water dependent habitats occur within, or in close proximity to either the authorised or altered UGC route.

Regarding flood risk, the proposed altered UGC placement will be undergrounded along the public road with some diversions off-road, but in the vicinity and therefore will not present any increased flood risk. As previously authorised, where existing culverts along the UGC route require replacement, the hydraulic capacity of the culvert will be sized to cope with a minimum 100-year flood (with freeboard) and will be at least 900mm in diameter. Flood zones mapped along the UGC route are typically associated with the larger stream and river crossing locations. Two rivers along the alteration route have mapped flood areas, Newport River (new W101) and Bilboa River (Anglesey Bridge B15). It is now proposed to drill under both these rivers. Drill Pits at W101 and at B15 will be located outside of the mapped flood areas. Further, drilling works will not be scheduled where there is a risk of flooding (authorised mitigation measure PD25)

See all Figures at the end of this document

2.5.2 Impact Pathways & Significance of Impact Evaluation from EIAR 2019

The impact pathways for effects on the sensitive aspects of Water and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|---|--|--|
| <u>Local Surface Water Bodies</u> – water quality impacts due to earthworks; dewatering of excavations; morphology; watercourse crossings; contamination; directional drilling; run-off from new culverts. Flood risk due to new culverts. | Earthworks/Storage of Overburden, Excavation Dewatering, Watercourse crossing, in-stream works, Oils, Fuels and Chemicals, Cement Based Compounds, Groundworks for directional drilling, culvert replacement works, bridge works, works near watercourses, works over watercourse crossing structures, Watercourse Crossing Works including directional drilling works | Imperceptible |
| <u>Local Groundwater Bodies</u> - water quality impacts due to dewatering of excavations and contamination. | Fuels, oils and hydrocarbons, Cement based compounds, Excavation Dewatering | Imperceptible |
| <u>Local Wells & Springs</u> - water quality impacts due to contamination; | Fuels, oils and hydrocarbons, Cement based compounds, Excavation Dewatering | No likely impacts |
| <u>Water quality of the Lower River Shannon SAC</u> - impacts due to earthworks; dewatering of excavations; in-stream works; watercourse crossings; contamination; directional drilling; run-off from new culverts. Flood risk due to new culverts. | Earthworks/Storage of Overburden, Excavation Dewatering, Watercourse crossing, in-stream works, Oils, Fuels and Chemicals, Cement Based Compounds, Groundworks for directional drilling, culvert replacement works, bridge works, works near watercourses, works over watercourse crossing structures, Watercourse Crossing Works including directional drilling works | Imperceptible |
| Water Quality of the Lower River Suir SAC - impacts due to contamination. | Earthworks, Watercourse crossing in-stream works, Oils, Fuels and Chemicals, Cement Based Compounds | No Likely Impact |
| <u>Local Water Dependent Habitats</u> - Drainage of Marsh Fritillary habitat (construction/operational stage) | Earthworks | No potential for Impact |

2.5.3 Effects of the Requested Alteration on Water

As stated in EIAR 2019: Chapter 11: Water; Section 11.2.1.3 - the primary sensitivities with respect to the local surface water bodies will be effects on water quality and effects on morphology which will be important to protect in terms of the overall Water Framework Directive status of the waterbody.

Water quality in local groundwater bodies and local wells & springs can be affected by contamination from hydrocarbons and cement compounds. The Requested Alterations involving directional drilling and dam and overpump rather than installation of the UGC in bridge decking, have the potential to impact water quality and morphology.

2.5.4 Effects of the Requested Alteration on Water

The alternative watercourse crossing methods proposed for the UGC installation at the crossing locations (i.e. directional drilling and over pumping) are standard techniques that are regularly used for negotiating watercourses.

Directional drilling has the benefit of avoiding any direct effects to watercourses altogether. The directional drilling works will be carried out by an experienced Drilling Contractor and supervised and managed by a competent and experienced Mud Engineer who understands the technicalities and challenges of drilling works. Horizontal Directional Drilling (HDD) is a method routinely used for installing cabling below watercourses, bridges and roads. HDD poses no more of a risk to groundwater than water well drilling, where drilling fluids and bentonite are also commonly used. The drilling fluids and bentonite used will be non-toxic. There is likely to be some localised turbidity effects in the groundwater during the drilling works (similar to water well drilling) but these effects will be temporary and brief. Risks posed by fuel/oil are no greater than other construction activities. Mitigation against water quality effects from sediments, bentonite, and potential frac-out are provided in the 2019 EIAR. The proposal for new directional drilling at 6 No. locations will not result in increased negative effects on water receptors/WFD status assuming all proposed mitigation measures in the 2019 EIAR are employed.

Dam & Overpump: As described in the 2019 EIAR, any instream works associated with over pumping will not be undertaken without isolation of flow within the watercourse, prior to the in-stream works commencing. This will be completed by over pumping, flume (pipe) or diversion method. The works will not negatively affect the overall surface water body status, and the magnitude of impact of the Alteration works will not change from the original findings of the 2019 EIAR.

All proposed construction methodologies for the requested alterations have been assessed in the 2019 EIAR, along with an array of mitigation measures specific to each of the crossing methods. The IFI will be consulted in advance of any works being undertaken and any seasonal restrictions for in-stream works will be adhered to.

All potential surface water and groundwater effects arising from the proposed alternative crossings methods and alternative UGC route will remain as Imperceptible, meaning that there is no potential to significantly affect Local Wells & Springs, Lower River Shannon SAC or Local Water Dependent Habitats.

2.5.5 Conclusion for the likely effects on Sensitive Aspects of Water

Therefore, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Local Surface Water Bodies, Local Groundwater Bodies or to water quality in the downstream Lower River Shannon SAC (all Imperceptible) will not change as a result of the Requested Alteration. As before, there is no change to the significance of the impact on Local Wells & Springs, water quality of the Lower River Suir SAC which is over 11km distant from the works (no alterations in the River Suir catchment); and Local Water Dependant Habitat which is upslope of the works (*all No likely impact*).

2.6 Biodiversity

The assessment of the effects on Biodiversity of the Requested Alteration to the UGC route has been carried out by Mr Howard Williams BSc CEnv MCIEEM CBiol MRSB MIFM Lead Ecologist with INIS Environmental Consultants Ltd.

See [Schedule 7A Appendix A: Site Photographs](#) showing the lands where works will be carried out for this Requested Alteration.

2.6.1 Aquatic Habitats & Species

2.6.1.1 Baseline - Aquatic Habitats & Species

Baseline: The majority of the authorised UGC route is located within the Lower Shannon catchment with only a small proportion located in the Suir catchment. With regards to Aquatic Habitats, works associated with the authorised UGC include:

- Installation of the UGC in the deck of 13 No. bridges (B1, B2, B5, B6, B7, B8, B9, B10, B11, B12, B13, B14, B15),
- Crossing 2 No. bridges by directional drill (B3 and B4),
- Increasing height of road and parapet walls at 3 No. bridges (B2, B11, B15),
- Replacement of the existing culverts at 13 No. locations, i.e. Instream works. 12 of these 13 No. locations are assessed as sub-optimum or poor fisheries value, and 1 No. location assessed as optimum fisheries value.

The majority of the 63 No. watercourses along the route of the authorised UGC are characterised as minor streams and land drains. 14 No. of the 63 No. watercourses are classed as having optimal fisheries value, however the majority (49 out of 63) have low or no fisheries value.

| Bridge/ Crossing ID | 2019 Watercourse Numbers | FIAR Fisheries Values | Authorised works | Requested (assessed) | Alteration |
|------------------------|--------------------------------|---------------------------------|---|-------------------------|------------|
| B1 | W5 | Class1, Optimal Fisheries | Install UGC in deck of bridge | Omitted | |
| B2 | W7 | Class1, Optimal Fisheries | Install UGC in deck of bridge, raise road level and parapet walls | Omitted | |
| B3 | W8 | Class1, Optimal Fisheries | Directional Drill | Omitted | |
| B4 | W9 | Class1, Optimal Fisheries | Directional Drill | Omitted | |
| W101 | n/a | Class1, Optimal Fisheries | n/a | Directional Drill | |
| W102 | n/a | Class1, Optimal Fisheries | n/a | Directional Drill | |

| | | | | |
|------|-----|--------------------------------|---|--|
| W103 | n/a | Class 3, Sub-optimal Fisheries | n/a | Install UGC over/under existing culvert |
| B5 | W21 | Class 3, Sub-optimal Fisheries | Install UGC in deck of bridge | Divert around bridge - Dam and over pump (instream works) |
| B6 | W22 | Class 3, Sub-optimal Fisheries | Install UGC in deck of bridge | Directional Drill |
| B7 | W23 | Class 3, Sub-optimal Fisheries | Install UGC in deck of bridge | Directional Drill |
| B9 | W33 | Class1, Optimal Fisheries | Install UGC in deck of bridge | Divert around bridge - Dam and over pump (instream works) |
| B10 | W35 | Class 4, Poor Fisheries | Install UGC in deck of bridge | Directional Drill or replace with pre-cast culvert |
| B11 | W36 | Class1, Optimal Fisheries | Install UGC in deck of bridge, raise road level and height of the parapet walls | Divert around bridge - Dam and over pump (instream works) |
| B14 | W49 | Class1, Optimal Fisheries | Install UGC in deck of bridge | Divert around bridge - Dam and over pump (instream works) |
| B15 | W53 | Class1, Optimal Fisheries | Install UGC in deck of bridge, raise road level and parapet walls | Directional Drill |

Alteration along Section 1: The alterations include the following:

- The Alterations include an addition of 2 No. new watercourse crossings crossed by Directional Drill, namely W101 and W102. The UGC will be installed over or under existing culvert at W103. No instream works are proposed at these locations. The Alterations avoids 2 No. bridge crossings within the bridge decking and directional drilling at 2 No. bridge crossing.

Alteration along Section 2: The alterations include the following:

- The requested alterations include instream works at an additional 4 No. locations on the UGC route on the R503. It is proposed to alter the crossing method from within the deck of Bridges B5, B9, B11 and B14 to cabling under the bed of the watercourse in close proximity to the bridges. Bridges B5 is assessed in 2019 EIAR as having sub optimal fisheries value. B9, B11 and B14 are assess as having optimal fisheries value. All of the proposed instream works are in the Lower River Shannon catchment.
- To change the crossing method from within the deck of 4 No. Bridges (B6, B7, B10 and B15), to drilling under the bridge and watercourse. Drilling work does not have the potential to effect Aquatic Habitats & Species.

The alterations will exclude works in 8 No. bridge decks, excludes works to parapet walls and road levels at 3 No. bridges.

2.6.1.2 Authorised Impacts, as per EIAR 2019 - Aquatic Habitats & Species

The sources of impacts, impact pathways for Aquatic Habitats and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|--|--|--|
| Aquatic Habitats & Species - Decrease in instream aquatic habitat quality; Changes to flow regime; Disturbance or displacement of fish and aquatic species; Riparian habitat degradation; Spread of invasive aquatic species | Instream works; culvert replacement works; parapet works; new crossing structures; excavation works; drilling works; reinstatement works; movement of soils and machinery; operating machinery; noise and human disturbance; use of hydrocarbons & cement-based compounds. | Slight to Slight-Moderate (adverse) |

2.6.1.3 Assessment of the effects of the Requested Alteration on the results of the EIAR 2019 - Aquatic Habitats & Species

Section 1: The requested alteration relates to utilising an alternative route along Section 1 which will result in the crossing of the Newport River (aka Mulkear) and the Small River further downstream than the authorised route. The requested alteration involves trenching in agriculture lands, along sections of public road and along existing farm lanes, directional drilling under 2 No. watercourses (W101 and W102) and crossing over/under existing culvert at W103. This results in no instream works along Section 1. The directional drilling method of crossing watercourses has already been authorised for the UWF Grid Connection at bridges B3 and B4, which are now being omitted.

The new watercourse crossing is also proposed at W103, will involve trenching under or above an existing culvert in a private road. This crossing is 400m upstream of authorised watercourse crossing W10, which will now also be omitted. The crossing methodology employed at W103 is similar to the crossing methodologies already authorised at W10 and elsewhere along the route of the grid connection.

Section 2: Along the R503, 4 No. bridges will now be crossed by horizontal directional drilling instead of in the deck of the bridge (B6, B7, B10 and B15). The requested alteration will also involve the installation of the grid connection under 4 No. watercourses in agricultural lands (B9 and B11) and forestry lands (B5 and B14) instead of decking in the adjacent bridge. 3 No. of these watercourses (B9, B11 and B14) have been assessed as having Class 1, Optimal Fisheries Value and 1 No. watercourses (B5) assessed as First/second order streams of Class 3, Sub-optimal fisheries value.

As part of the 2019 EIAR, methodologies and mitigation measures were proposed for directional drilling at bridge B3 and B4 and instream works at the Mountphilips Substation Site. The same crossing methodology and mitigation measures will be put in place for Directional Drilling works and Instream works locations associated with the Requested Alterations.

Overall, the requested alteration does not involve the works within any new sub catchments, or river basins. Furthermore, no new crossing methodologies are proposed as part of the Requested Alteration

i.e. it is proposed to use only those crossing methodologies that are already authorised for the development.

The ESB access road for W101 involves establishing a new private road to the drilling pits on the north and south side of W101. This road will run down a slope towards the Newport River.

Design and mitigation measures will be implemented to attenuate and control run-off and direct it into settlement ponds. The ESB Access track will have the following incorporated into its design as discussed with IFI and NPWS during on-site consultations. These can also be found on Figure A below.

The following measures are included in the road design,

- Settlement pond at the drilling pits. Water from these settlement pond will be pumped out and removed off site for disposal.
- The settlement ponds along the access roads. The southern settlement pond outlet weir will release water over the c.50m vegetation between the road and the river. The northern settlement pond will drain away from the river through vegetation.
- Interceptor swales on roadway directing water from the roadway into the drains and into the settlement ponds.
- All elements of the alterations at this location (W101) will be protected by double silt fencing between the works and Newport River.
- Access road will be sloped away from the Newport River.

Vegetation removal of the scrub habitat will be limited to preserve the existing vegetation's ability to attenuate run-off.

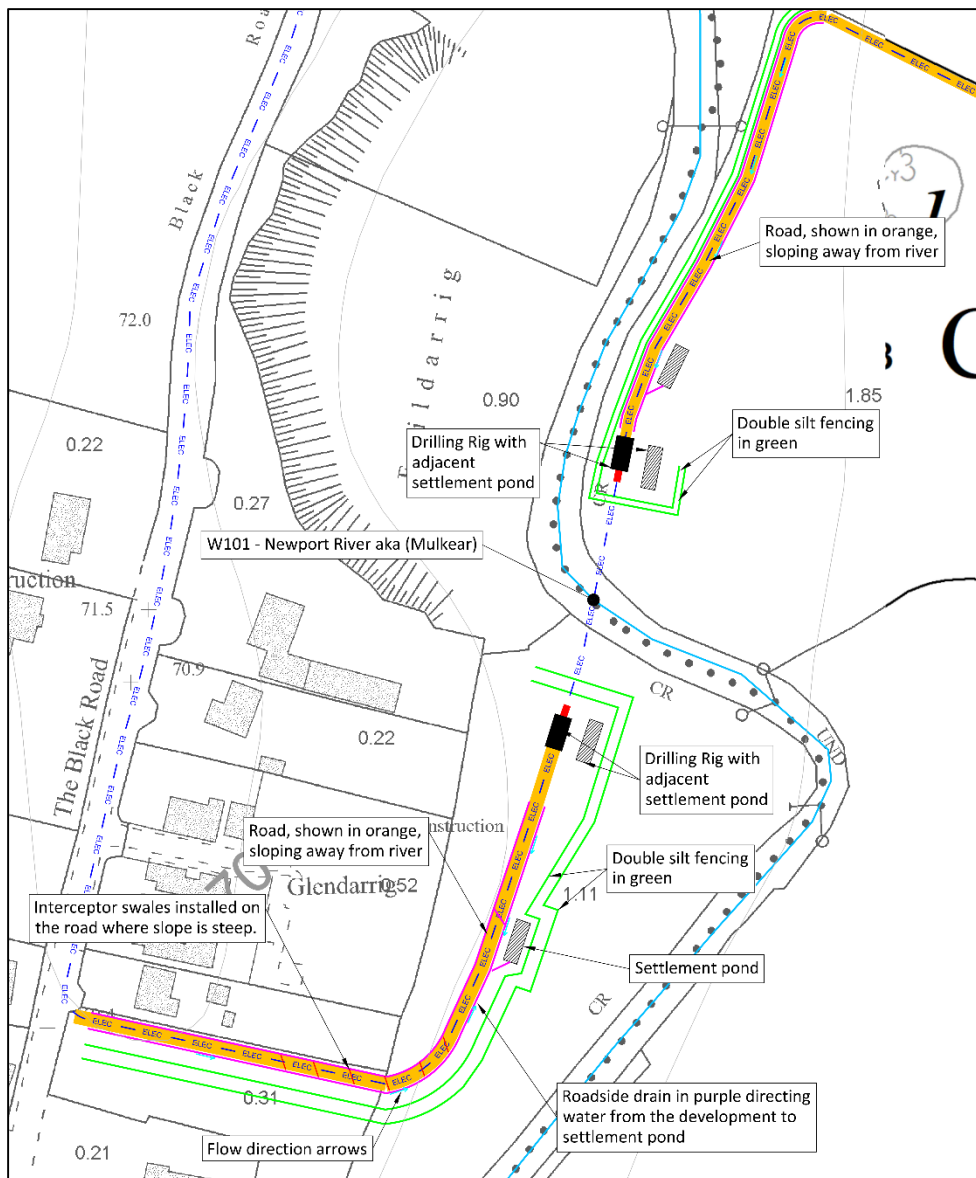


Figure A: Figure above shows indicative drainage design at W101 - Newport River.

In relation to Aquatic Habitats, there are 36 No. Authorised Mitigation Measures (See [Schedule 7A Appendix B](#) - PD15-PD50). These measures will also be implemented for the requested alterations locations.

In summary, the singular change regarding impacts on aquatic habitats is that the magnitude and likelihood of effects is unchanged for crossing W102 to B15. At W101, the access road and drainage design and the authorised mitigation measures (PD15-PD50) will reduce the likelihood and magnitude of effects from the surface run-off during the construction and operational phase related to the proposed alterations at W101.

Therefore, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Aquatic Habitats & Species (*Slight/Slight-Moderate adverse*) will not change as a result of the requested alteration.

2.6.2 Terrestrial Habitats

2.6.2.1 Baseline - Terrestrial Habitats

Baseline for Section 1 and Section 2: Due to the location of the authorised UGC primarily within paved roads, the immediate vicinity of the roads is dominated by agricultural grassland and other habitats reflective of this e.g. roadside hedgerows, treelines and earth banks, with numerous dwellings, farm buildings and associated gardens, amenity grassland, hedges and lawns. The wider surrounding environment is representative of typical upland habitats and includes lands under active management for agriculture and forestry.

The authorised route between Mountphilips Substation and the junction with the R503 (around Newport Town), is almost entirely on the public road including crossing within the bridge decking of 2 No. bridges (B1, B2) and directional drilling of 2 No. bridges (B3, B4). The Requested Alteration includes the omission of Bridges B1 – B4 and diversions into agricultural and forestry lands and farm tracks.

The authorised route along the R503 is entirely within the public road including crossing the 8 No. bridges subject of this alteration request, within the bridge decking. The Requested Alteration includes diversion into agricultural and forestry lands to cross 4 No. watercourses by dam and overpump method and to directionally drill under the remaining 4No. watercourses, with the drilling rig working from the road above.

See [all Figures at the end of this document](#) and [Schedule 7A Appendix A: Site Photographs](#)

The Ecological evaluation and effect assessment within this section follows a methodology that is set out in Chapter 3 of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009). The guidelines provide a basis for determination of whether any particular site is of importance on the following scales:

- International Importance
- National Importance
- County Importance
- Local Importance (Higher Value)
- Local Importance (Lower Value)

The NRA Ecological Impact Guidelines (2009) clearly sets out the criteria by which each geographic level of importance can be assigned. Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and of any importance only in the local area. Internationally Important sites are either designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected flora and fauna. All habitats and species within the proposed development sites were assigned a level of significance on the above basis.

| Location | Habitats effected (in order moving west to east) | Importance | Works - if greater than Local importance (Lower value) |
|-------------------------------------|--|--------------------------------|--|
| Mountphilips Substation to new W101 | BL3 - Buildings and artificial surfaces | Local Importance (Lower value) | |

| | | | |
|-----------------------|---|---------------------------------|---|
| | GA1 - Improved agricultural grassland | Local Importance (Lower value) | |
| W101 to new W102 | GA1 - Improved agricultural grassland | Local Importance (Lower value) | |
| | BL3 - Buildings and artificial surfaces | Local Importance (Lower value) | |
| | WL1 - Hedgerow | Local Importance (Higher value) | 8m of roadside hedgerow removal. Hedgerow will be replanted like for like adjacent to the existing hedgerow |
| W102 to R503 Junction | GA1 - Improved agricultural grassland | Local Importance (Lower value) | |
| | BL3 - Buildings and artificial surfaces | Local Importance (Lower value) | |
| | ED3 -- Recolonising bare ground | Local Importance (Lower value) | |
| B5 | WD4/WS2 - Conifer plantation/Immature woodland | Local Importance (Higher value) | Low suitability for nesting Hen Harrier ; it is noted that this habitat is located immediately adjacent to a busy regional road. No permanent habitat loss in this habitat within the SPA. Works will be temporary in nature and 1.2km from any historical Hen Harrier nest site. |
| | FW2 - Depositing/lowland river | Local Importance (Lower value) | |
| B9 | GS4 Wet Grassland | Local Importance (Higher value) | UGC Cable only works - No permanent habitat loss in this habitat. Works will be temporary. |
| | FW2 - Depositing/lowland river | Local Importance (Higher value) | Dam and overpumping watercourse following authorised construction methodologies and mitigation measures |
| | GA1/GS4 Improved agricultural grassland/Wet grassland | Local Importance (Lower value) | |
| B11 | BL3 - Buildings and artificial surfaces | Local Importance (Lower value) | |
| | FW2 - Depositing/lowland river | Local Importance (Higher value) | Dam and overpumping watercourse following authorised construction methodologies and mitigation measures |
| | WL2 - Treelines | Local Importance (Higher value) | No tree felling at this location. Alteration route utilises a break in the treeline |

| | | | |
|-----|---------------------------------------|---------------------------------|---|
| | GA1 - Improved agricultural grassland | Local Importance (Lower value) | |
| B14 | WS1/WL2 Scrub/Treelines | Local Importance (Higher value) | UGC Cable only works - No permanent habitat loss in this habitat. Works will be temporary. |
| | GS4/WS1 Wet Grassland/Scrub | Local Importance (Higher Value) | UGC Cable only works - No permanent habitat loss in this habitat. Works will be temporary. |
| | FW2 - Depositing/lowland river | Local Importance (Higher value) | Dam and overpumping watercourse following authorised construction methodologies and mitigation measures |
| | WN5/WS1 - Riparian Woodland/Scrub | Local Importance (Higher value) | UGC Cable only works - No permanent habitat loss in this habitat. Works will be temporary. |

Alteration along Section 1: The Alteration includes a linear trench along 1800m of public road, 1100m of agricultural lands, 1800m of farm track, and 950m of 3m wide ESB access tracks. The terrestrial habitats present along the UGC altered route in Section 1 were all of Local Importance (low value), with the exception of the limited riparian woodland areas at the water crossing points W101 and W102 which are of Local Importance (High Value). All proposed ESB access tracks, 950m in total, are located in terrestrial habitats of Local Importance (low value).

See [Figures 1, 2.1, 2.2 and 2.3 for an overview and aerial view of the proposed works](#). See also [Key map Figure – Photos 1 and Photos 2 and Site Photographs Photos 1- 22](#)

Alteration along Section 2: The alterations on the R503 include a trench on forestry lands for 250m, agricultural lands for 220m and 150m of 3m wide ESB access tracks. Terrestrial habitats at the off-road works locations (B5, B9, B11 and B14) varied from Local Importance (Low Value) to Local Importance (High value). The Local Importance (High value) habitat is limited to the riparian woodland areas along the watercourses and the sections of wet grassland mosaic and riverbank vegetation. All other habitats were of Local Importance (Low value). The sections of ESB access track, 150m in total, are not proposed for terrestrial habitats higher than Local Importance (Low value). Therefore, no permanent change to habitats higher than Local Importance (Low value)

See [Figure 3.1 & 3.2 \(Bridge B5\), Figures 4.1 & 4.2 \(Bridges B9 and B11\), Figures 5.1 & 5.2 \(Bridge B14\)](#). See also [Key map Figure – Photos 3 and Site Photographs Photos 23, 24, 26, 27, 28, 29, 30 and 31](#).

Directional Drilling works along the Regional Road R503 at 4 No. Bridges (B6, B7, B10 and B15) will take place under the bridge/watercourse. The directional drilling rig will be set up on the public road and will not impact any of the habitats considered of Local Importance (High Value).

See [Figure 3.1 & 3.2 \(Bridge B6 and B7\), Figures 4.1 & 4.2 \(Bridges B10\), Figures 5.1 & 5.2 \(Bridge B15\)](#). See also [Key map Figure – Photos 3 and Site Photographs Photos 25 and 32](#).

2.6.2.2 Authorised Impacts, as per EIAR 2019 - Terrestrial Habitat

The sources of impacts, impact pathways for Terrestrial Habitats and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|--|--|--|
| Terrestrial Habitats - Reduction in Terrestrial Habitats; Habitat degradation; Hedgerow Severance; Loss of High Nature Value Trees; Surface or Ground water dependant habitat degradation; Direct loss of Flora Protection Order species; Introduction or spread of invasive species (construction stage) | UGC: Movement of soils and machinery Ancillary works for Mountphilips Substation: Excavation works; vegetation clearance for site entrance works and access road works; new hardstanding areas, storage of materials. | Imperceptible |

2.6.2.3 Assessment of the effects of the Requested Alteration on the results of the EIAR 2019 - Terrestrial Habitat

Although the requested alteration will involve additional works at off road locations in agricultural and forestry lands, the works will take place predominantly in habitats of local importance (lower value), with limited interaction with riparian habitats of local importance (higher value). Interaction with these riparian habitats will occur at bypassing works at bridge B5 and B14. These works will be temporary in nature, and these areas will be reinstated following completion of cabling works under direct supervision of an ecologist. Directional drilling works at W101 and W102 will not interact with the riparian areas at these crossings. Furthermore, no riparian habitats are present at watercourse crossings at bypassing works locations for B9 and B11.

A total of 950m of new ESB access tracks will be constructed along Section 1, and 150m in total of new ESB access tracks will be constructed along Section 2. All new tracks will be in habitats of local importance (lower value) e.g. GA1 and ED3.

The carrying out of the construction works for the UWF Grid Connection in off road lands is already authorised at the Mountphilips Substation Site where circa 400 metres of new access track is authorised in agricultural lands. These same construction methodologies and mitigation measures will be employed for the requested alterations at off road works locations.

Overall, it is considered that the requested alteration works at off road locations will be small in scale, with no permanent change to terrestrial habitats of local importance (higher value) or higher. Furthermore the requested alteration will be carried out in the same manner as the authorised works in lands at the Mountphilips Substation Site and will be constructed in accordance with the authorised construction methodologies and mitigation measures.

In relation to Terrestrial Habitats, there are 4 No. of Authorised Mitigation Measures (See [Schedule 7A Appendix B](#) - PD05, PD32, PD43, PD57). These measures will also be implemented for the requested alterations locations.

Therefore it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Terrestrial Habitats (*Imperceptible*) will not change as a result of the requested alteration.

2.6.3 Hen Harrier

2.6.3.1 Baseline - Hen Harrier

Surveys for the UWF Grid Connection over the period 2017 – 2021, recorded 15 No. nest sites in the Slievefelim to Silvermines Mountains SPA, with 2 No. of these nest sites (identified in 2018), within 1km of the authorised UGC route. All of these nests were located within the boundary of the Slievefelim to Silvermines Mountain SPA. Habitats along the authorised UGC route are wholly unsuitable for nesting Hen Harrier, with 89% of habitat unsuitable within 50m and 66% of habitat unsuitable within 2km, of the UGC route. This undoubtedly reflects the fact that farming, community pitches, housing estates, rural villages and other human activities close to the road have altered significant parcels of land and introduced levels of human activity such that they are unsuitable for Hen Harrier.

The closest recorded Hen Harrier nest to the Section 1 alterations is 1.2km. The alterations at this location are located in public road and an existing farm track.

The closest recorded historical Hen Harrier nest to the Section 2 alterations is 1.5km northeast of Bridge B5. The alterations at this location are located in forestry lands.

No Annex I Habitats were recorded within the 50m study area of the Requested Alterations that overlap with the Slievefelim to Silvermines Mountains SPA. Only the watercourses were assessed to be of importance to this site as a provider of habitat for prey items of Hen Harrier, but not key aspects of the SPAs Conservation.

Following the site consultation with NPWS, habitat within the 50m baseline of the B5 crossing was advised to be of potential suitability for Hen Harrier as nesting and foraging habitat (WD4/WS2). This was based on the mix of ferns, scrub and low vegetation. Although of low suitability due to the proximity to the R503 road, this area of habitat is considered of potential importance for Hen Harrier based on advice from NPWS. This habitat is isolated to the area west of the B5 stream.

2.6.3.1.1 Slievefelim to Silvermines Mountains SPA

The Slievefelim to Silvermines Mountains SPA is designated for the protection of Hen Harrier.

Baseline along Section 1: Within the Section 1 area, the authorised UGC route around Newport Town is within the public road corridor and is predominately outside of the SPA boundary, except for 120m along a section of the R503 and with works in Rockvale Bridge B2 also overlapping the SPA.

Alteration along Section 1: The requested alteration involves the avoidance of the boundary of the SPA at Rockvale Bridge and along the R503, by using an alternative route which will involve 220m of UGC within the SPA boundary; 150m under existing hardcore farm track in the vicinity of W103 and 70m under public road in the vicinity of the R503.

Section 1 of the Requested Alteration will also include a total of 950m of new 3m wide ESB stone access track will be constructed over the altered route of the UGC, however, none of these new tracks will occur within the SPA boundary and therefore the Requested Alteration will not result in any permanent habitat loss within the SPA site along Section 1. The new crossings at W101 and W102 will not pass through or be in proximity of this SPA site.

See

- **Figure 6.1: Designated Sites proximate Section 1 (Map 1)**

- **Figure 6.2: Designated Sites proximate Section 1 (Map 2)**
- **Figure 6.3: Designated Sites proximate Section 1 (Map 3)**

Baseline along Section 2: The authorised UGC route (located entirely in the public road R503) passes through/in the vicinity of the boundary of the Slievefelim to Silvermines Mountains SPA for 8km along the R503.

Alteration along Section 2: At the 8 No. bridges on the R503 subject to this alteration request (B5, B6, B7, B9, B10, B11, B14 and B15) the UGC is authorised to cross within the bridge decking. These bridges are located either within (c.260m in total) or in the immediate vicinity of the SPA. It is proposed that these bridges will be crossed as follows;

- B5, B9, B11 and B14 will be avoided through crossing the watercourse at a suitable off-road location adjacent to the bridge, by installing the UGC through agricultural and forestry lands in the vicinity and crossing the watercourse using a dam and overpump method. The lands at the altered crossing locations comprise conifer plantation (B5), grassland (B9), grassland and hardcore (B11) and conifer plantation and scrub (B14). 260 linear meters of UGC trench will be located in the SPA boundary for works adjacent to bridges B5, B9 and B14. Any associated habitat loss would be temporary, as these trench works will be backfilled and regrowth of habitat appropriate plants will be facilitated where the track is within the SPA.
- 4 No. Bridges (B6, B7, B10 and B15) to be crossed by directional drilling method under the bridge rather than in the bridge decking, with the works carried out from the R503 corridor.

Section 2 of the Requested Alteration will include a total of 150m of new stone access tracks, which will be constructed over the proposed altered route of the 110kV through off-site lands at bridge B9 and B11. However, these new tracks will not be located within the SPA boundary. Both tracks will run on the eastern side of the cable crossing outside the SPA and therefore the Requested Alteration will not result in any permanent habitat loss within the SPA site along Section 2.

See

- **Figure 6.4: Designated Sites proximate to Bridges B5, B6 and B7**
- **Figure 6.5: Designated Sites proximate to Bridges B9 and B10**
- **Figure 6.6: Designated Sites proximate to Bridges B11**
- **Figure 6.7: Designated Sites proximate to Bridges B14 and B15**

During 2024 surveys, no Annex I Habitats were recorded within the 50m study area of the Requested Alterations that overlap with the Slievefelim to Silvermines Mountains SPA. Only the watercourses were assessed to be of importance to the SPA, as a provider of habitat for prey items of Hen Harrier but do not fall under the Conservation Objectives for this Species of Conservation Interest in this SPA. A small area (0.045Ha) of the WD4/WS2 habitat within the B5 baseline area is of low suitability for nesting Hen Harrier and as such, has some importance for the SPA, however, it is noted that this habitat is located immediately adjacent to a busy regional road.

2.6.3.2 Authorised Impacts, as per EIAR 2019 - Hen Harrier

The sources of impacts, impact pathways for Terrestrial Habitats and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|---|---|--|
| Hen Harrier – Reduction in or loss of suitable nesting habitat or winter roosting habitat; Permanent or temporary reduction or loss of suitable foraging habitat; Reduction in prey item species; Mortality of Hen Harrier in or at nest sites or roost sites; Disturbance/displacement of nesting or roosting Hen Harrier; Disturbance/displacement of Hen Harrier during the breeding season. | Noise and visual intrusion; operating machinery; presence of construction personnel; human activity; electrical parts (EMF). Mountphilips Substation site only: New above ground structures, new access road. | Not Significant to Imperceptible |

2.6.3.3 Assessment of the effects of the Requested Alteration on the results of the EIAR 2019 - Hen Harrier & the Slievefelim to Silvermines Mountain SPA

The requested alteration will involve works in off road lands outside and within the Silvermines to Slievefelim SPA boundary.

Section 1: the majority of the requested alterations are located in improved agricultural grassland outside of the SPA, which is considered unsuitable for nesting habitat or foraging habitat. The closest recorded Hen Harrier nest to the requested alterations in Section 1 is 1.2km away. In terms of disturbance, this is farther away than the nearest works location under the authorised UWF Grid Connection.

Section 2: works will occur in off road lands at 4 No. bridges (B5, B9, B11, B14), in order to avoid these bridges. While some suitable habitat may be present, such as at the location of B5 which will involve temporary removal of a limited amount of low suitability habitat (WD4/WS2). The removal of vegetation is temporary in nature and limited to a 4m wide track. The works in the off road lands will occur immediately adjacent to the bridge. Due to the currently existing high levels of disturbance associated with this Regional Road and, taking into consideration the unsuitability of habitats beside a road for nesting Hen Harrier, the significance of any disturbance or displacement effects will not be any greater than already authorised.

In relation to loss of habitats, the works within the SPA for the requested alteration will be temporary in nature. There will be no new permanent access roads constructed within the boundary of the SPA. The construction of 1100m of new access roads outside of the SPA will be constructed within improved agricultural grasslands which are sub optimal habitats for foraging Hen Harrier. These types of habitats are never used by breeding Hen Harrier. In relation to Hen Harrier, there are 7 No. of Authorised Mitigation Measures (See [Schedule 7A Appendix B](#) - PD01, PD02, PD03, PD05, PD07, PD11, PD58). These measures will be implemented for the requested alterations locations. The most relevant are:

- PD01 - Construction works on the public roadway for the 110kV UGC during the Hen Harrier breeding season (March to August inclusive) will only be carried out under the direct supervision of a full time onsite Hen Harrier specialist and the Project Ecologist. The presence of this full time Hen Harrier specialist will ensure that any potential for disturbance of breeding hen harrier is avoided. The works will only take place following completion of confirmatory Hen Harrier breeding surveys, which will be initiated in February and continue for the entire breeding season, in order to identify any pre-breeding nuptial activity, nesting activity and active nests within 1km of the works. The survey methodology will be sufficient to ensure that a Hen Harrier breeding site is not overlooked. No construction works will be carried out during the breeding season within 1km of a pre-nesting breeding site and/or nest or within 1km of breeding sites already identified during the previous six years.
- PD58 requires Hedgerow removal and clearance of any other breeding bird vegetation will take place outside of the bird breeding season

Therefore, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Hen Harrier (not significant/imperceptible) will not change as a result of the requested alteration.

2.6.4 General Birds

2.6.4.1 Baseline - General Birds Species

Baseline: Meadow Pipit habitat is widespread along the authorised UGC route. In addition to red-listed Meadow Pipit, Snipe and Grey Wagtail, amber-listed Kingfisher and green-listed Dipper were recorded during UWF Grid Connection surveys. Four buildings with suitability for Barn Owl occur along the authorised UGC route, however no evidence of Barn Owls were recorded during surveys. While some suitable foraging habitat occurs in the surrounding and wider area for Merlin, Red Grouse and Curlew – none were recorded during surveys.

Alteration along Section 1: The alterations in Section 1 are predominately on public roads, agricultural lands and existing farm track. Habitats directly affected by the alterations are assessed as no higher than Local Importance (low value). There will be a small section (c. 8m) of hedgerow removed to gain access to W102. This will be replanted alongside the new access road.

Alteration along Section 2: The alterations in Section 2 contain off road works at 4 No. locations (B5, B9, B11 and B14). B5 and B14 are on forestry land and B9 and B11 on agricultural lands. 16m in total of hedgerow will be removed and replaced to gain access to bridges B9 and B11. This will be replanted alongside the new access road. Habitats directly affected by the alterations are assessed as no higher than Local Importance (High value). The Local Importance (High value) habitat is limited to the riparian areas along the watercourses.

2.6.4.2 Authorised Impacts, as per EIAR 2019 - General Birds Species

The sources of impacts, impact pathways for General Bird Species and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|--|--|--|
| General Bird Species – Habitat Loss and Disturbance/Displacement (construction stage); Habitat Enhancement (operational stage) | Construction Works; excavation; movement of soils and machinery; noise, visual intrusion and human activity. Upperchurch Windfarm Hen Harrier Scheme Mountphilips Substation site only: Land take; reinstatement of vegetation; replanting of trees/hedgerow. | Imperceptible (adverse) to Slight (positive) |

2.6.4.3 Assessment of the effects of the Requested Alteration on the results of the EIAR 2019 - General Bird Species

While the requested alteration will involve works in off road lands these works will be temporary in nature, and the construction of 1100m of new access track will be similar in effect to the new access track for (c.400 metres) already authorised for agriculture lands at the Mountphilips Substation Site. 8m of hedgerow will be permanently removed along Section 1 and 16m of hedgerow will be permanently removed along Section 2. These hedgerows will be replanted at the same/adjacent locations, this will result in an imperceptible impact on bird species.

In relation to General Birds Species, there are 5 No. of Authorised Mitigation Measures (See **Schedule 7A Appendix B** - See PD05, PD58, PD59, PD60 and PD62). These measures will also be implemented for the requested alterations locations. These measures include measures for the protection of red and amber listed bird species such as timing restrictions for vegetation clearance and hedgerow removal.

Therefore it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Bird Species (imperceptible adverse to Slight Positive) will not change as a result of the requested alteration.

2.6.5 Bats

2.6.5.1 Baseline - Bats

Baseline: Suitable roosting and foraging habitat occur alongside the authorised route of the UGC, with relatively high activity levels recorded during surveys conducted for the consented UGC in 2019. The most frequently recorded species were Common pipistrelles, followed by Soprano Pipistrelles, Leisler's Bat, *Myotis* spp., and Brown Long-eared Bat, in order of abundance. Lesser-Horseshoe Bats were not recorded. During surveys for the authorised UGC, all 15 No. bridges along the UGC route were surveyed for their suitability to bats. The results of these surveys were that 8 No. had Moderate suitability for roosting bats, 5 No. had Low suitability, and 2 No. had Negligible suitability.

Alterations: The alterations works will omit works from 10 No. bridges along the route. The off road works will not encroach on lands with any particular value to bat species. The requested alteration

will not involve the felling of any mature or semi mature trees which could potentially provide bat roosts

Bat suitability surveys did not form part of the 2024 survey effort because it is proposed to avoid works in the structure of all of these bridges. A small number of trees will be felled at bridge B14. These a coniferous tree species and have negligible suitability for bats.

2.6.5.2 Authorised Impacts, as per EIAR 2019 - Bats

The sources of impacts, impact pathways for Terrestrial Habitats and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|--|--|--|
| Bats – Destruction or disturbance of bat roosts in trees or bridges; severance of commuting routes/feeding areas; disturbance/displacement due to lighting. | Trenching works for the UGC, and works to parapet walls. Mountphilips Substation site only: Removal of mature trees, trimming and pruning of mature trees and hedgerows; site clearance; artificial lighting; above ground structures | Imperceptible |

2.6.5.3 Assessment of the effects of the Requested Alteration on the results of the EIAR 2019 - Bats

The requested alteration will not involve the felling of any mature or semi mature trees which could potentially provide bat roosts. In addition, the avoidance of bridges (11 No.) along the UWF Grid Connection will result in the avoidance of potential impacts to bats which may use these bridges.

While there will be additional works in off road lands, with works taking place in proximity to mature trees, these works are similar in scale to the construction of the authorised UWF Grid Connection at the Mountphilips Substation Site and short in duration. There is no potential for impacts at the 4 No. bridges where directional drilling is proposed because the proposed drilling works will avoid the need for any construction work (e.g. trenching) at the bridge.

In relation to Bats, there are 4 No. of Authorised Mitigation Measures (See [Schedule 7A Appendix B - PD57, PD64, PD65, PD66](#)). These measures will also be implemented for the requested alterations locations.

Therefore, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Bat Species (Imperceptible adverse to Slight Positive due to hedgerow planting) will not change as a result of the requested alteration.

2.6.6 Non-Volant Mammals

2.6.6.1 Baseline - Non-Volant Mammals

Baseline: Evidence of otter, badger, fox, pine marten, deer and squirrel species were recorded during surveys for the authorised UGC route. However, given the location of the UGC predominately on the public road corridor, few records occurred along the route, with no active breeding or resting places recorded for otter or badger.

Alterations: Surveys were conducted in 2024 and early 2025 for Otter at all crossings and no sightings, or secondary evidence was observed. Suitability was assigned to watercourse crossings due to stream condition, slope of riverbanks and any other viable criteria to inform the suitability for Otter at these watercourse crossing locations. It was found that there is a high suitability watercourse at the B15 Bilboa River crossing and at W101 Newport River crossing and moderate suitability at the B11 and B14 crossing. All other crossings points have a low suitability for otter.

Based on the evidence from the biodiversity chapter of the UWF Grid Connection EIAR 2019 and the suitability of habitat for Otter within the ecological baseline, Otter is considered a key receptor for the Requested Alterations.

2.6.6.2 Authorised Impacts, as per EIAR 2019 - Non-Volant Mammals

The sources of impacts, impact pathways for Non-Volant Mammals and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|--|---|---|
| Non-Volant Mammals – Disturbance/Displacement; habitat loss, physical injury | Noise and human disturbance; visual intrusion; operating machinery, construction/ trenching works near and at watercourses; construction & delivery traffic; Mountphilips Substation site only: Land take; construction of new access roads and compounds. | Slight adverse (Otter), Not Significant to Imperceptible adverse (Badger) |

2.6.6.3 Assessment of the effects of the Requested Alteration on the results of the EIAR 2019 - Non-Volant Mammals

The authorised UWF Grid Connection works involve both directional drilling and installation of UGC within the bridge deck. The requested alteration will involve directional drilling under watercourses and under bridges where there is suitable habitat for Otter i.e there is potential for greater disturbance to Otter to that already authorised related to the mitigation measures for Horizontal Directional Drilling (HDD). Works at off road lands are proposed in the vicinity of bridge B14 which is assessed as having moderate suitability for Otter. However, the implementation of the authorised mitigation measures for Otter for the requested alteration at the watercourse crossing locations will ensure that Otter is not significantly affected by the works.

While the route of the UGC crosses the SAC boundary (of which Otter is a Qualifying Interests) at W101 and at Anglesey Bridge B15 - the drill pits for the HDD at these two crossing points will all be located outside of the SAC, with no requirement for works within the SAC boundary. The method of crossing watercourses by directional drilling has been authorised for the UGC (i.e. at B3 and B4, though it is noted that both of these crossing points are now being avoided with the altered route), and the following authorised mitigation measures will be implemented for HDD works at W101, W102, B6, B7, B10 and B15 along the Requested Alteration

- PD45 for monitoring of the waterbed during HDD works,
- PD52 pre-construction surveys for Otter,
- PD53, PD54, PD55, PD56 measures for works within 150m of an active holt identified during pre-construction surveys.

The authorised development includes a crossing of the Newport River at Rockvale Bridge involving the installation of cables in the bridge deck, masonry works to raise the height of the parapet walls and road surfacing works to raise the height of the public road. These authorised works would be expected to take 2-3 weeks to complete. The crossing of the Newport River now avoids Rockvale Bridge, and it is requested that the crossing point is now 1700m downstream at W101. While the works at W101 will be carried out in agricultural grassland rather than the public road corridor, the works to construct a new access road and carry out HDD works will take a similar length of time - i.e. 3 weeks, with works in similar proximity to the watercourse.

In relation to disturbance effects, it is considered that the authorised works (in the deck of B2 Rockvale Bridge (authorised W7, now avoided), and also associated with the authorised drilling works at B3 and B4 (at W8 and W9, now avoided), would also cause some disturbance/displacement to Otter, with slight adverse effects predicted during the 2019 EIAR evaluation. It is considered that, even with the change in crossing point of the Newport River from Rockvale Bridge to W101, that the duration of the crossing works and proximity to the watercourses associated with the Requested Alteration is not materially different to the authorised works, and therefore, **overall the findings of the 2019 evaluation for the UWF Grid Connection of disturbance effects to Otter (slight adverse) will not change as a result of the requested alteration.**

In relation to habitat loss, due to the separation of the drill pits from the crossing points, the temporary nature of habitat loss associated with the cable trench and the drilling pits, the small extent of low suitability habitat loss associated with the new access roads and the length of these new access roads (1700m) associated with the proposed off-road locations and also in the context of the abundance of suitable habitat in the surrounding areas, it is considered that the **findings of the 2019 evaluation for the UWF Grid Connection of habitat loss effects to Otter (Neutral) will not change as a result of the requested alteration**

In relation to Badger and other non-volant mammals, the carrying out of works in agricultural and forestry lands along Section 1 and Section 2 will be limited in extent and temporary in duration. These works will be similar to that works in agricultural land being carried out at the authorised Mountphilips Substation Site. It is considered, with the implementation of the mitigation measure already authorised – PD67 for Badger, **that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Badgers and other mammals (not significant/imperceptible adverse) will not change as a result of the requested alteration.**

In summary, in relation to non-volant mammals, there are 8 No. of authorised Mitigation Measures (See [Schedule 7A Appendix B](#) - PD04 (work during daylight hours), PD45, PD52, PD53, PD54, PD55,

PD56 and PD67). These measures will also be implemented at the locations of the requested alterations.

2.6.7 Amphibians, Reptiles and Marsh Fritillary

2.6.7.1 Baseline - Amphibians, Reptiles and Marsh Fritillary

Baseline and alterations: No Smooth Newts, Common Frogs or Common Lizard were recorded during 2019 or 2024 surveys. No Marsh Fritillary suitable habitat was recorded during 2024 surveys.

2.6.7.2 Authorised Impacts, as per EIAR 2019 - Amphibians, Reptiles and Marsh Fritillary

The sources of impacts, impact pathways for Amphibians, Reptiles and Marsh Fritillary and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|---|---|--|
| Amphibians & Reptiles – Disturbance/Displacement; Habitat Loss/Reduction, physical injury | Noise and human activity; operating machinery. Mountphilips Substation site only: Permanent land cover change. | Neutral |
| Marsh Fritillary – Disturbance/Displacement; Habitat Loss/Reduction, physical injury | Excavations; movement of soils and machinery; operating machinery. | No Likely Impact |

2.6.7.3 Assessment of the effects of the Requested Alteration on the results of the EIAR 2019 - Amphibians, Reptiles and Marsh Fritillary

Where the requested alteration works will take place in off road locations the habitats generally comprise improved agricultural grasslands with some small areas of commercial forestry. No smooth newts, common frogs or common lizards were recorded during either 2019 or 2024 surveys. Furthermore, no suitable Marsh Fritillary habitat was recorded at the off road locations associated with the requested alteration. It is considered that requested alteration will not result in any additional impacts to Amphibians, Reptiles and Marsh Fritillary.

In relation to Amphibians, Reptiles and Marsh Fritillary, there are 3 No. of Authorised Mitigation Measures (See [Schedule 7A Appendix B](#) - PD04 work during daylight hours and PD68 protection of amphibians/reptiles). These measures will also be implemented for the requested alterations locations.

Therefore it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Amphibians, Reptiles and Marsh Fritillary (*Neutral for amphibians and reptiles and No Likely Impact for Marsh Fritillary*) will not change as a result of the requested alteration.

2.6.8 **Authorised Mitigation Measures**

A suite of Mitigation and Monitoring Measures are included in the EIAR 2019, and form part of the UWF Grid Connection grant of permission. **Schedule 7A Appendix B** comprises the full Mitigation Measures & Monitoring Arrangements for UWF Grid Connection as authorised, which were included as a separate (Chapter 19) in EIAR 2019.

These Mitigation Measures will also apply to the Requested Alteration works in order to avoid, prevent or reduce significant effects on the receiving environment. Monitoring arrangements will involve an Environmental Clerk of Works team, monitoring the implementation of the Mitigation Measures.

2.6.9 **Authorised Construction Methodologies/Best Practice Measures**

Best Practice Measures and Construction Methodologies which are part of the Environmental Management Plan, are authorised as part of UWF Grid Connection development. The implementation of these measures and methodologies will be supervised by a full-time Environmental Clerk of Works, during the construction period. **Schedule 7A Appendix B** comprises the full suite of Best Practice Measures and Construction Methodologies for UWF Grid Connection as authorised.

These Best Practice Measures and Construction Methodologies will also apply to the Requested Alteration works in order to ensure that the effects of the development will be within the authorised parameters.

2.6.10 Potential to change the findings of Appropriate Assessment Report 2019

2.6.10.1 2019 Appropriate Assessment Report - Stage I Screening

As part of the 2019 application an Appropriate Assessment Report (AA) was undertaken. Stage 1 of the 2019 AA Report concluded the following:

“The results are that there is no potential for UWF Grid Connection to cause any effects to the following 19 No. European Sites (16 SACs, 3 SPAs): Anglesey Road SAC (002125), Bolingbrook Hill SAC (002124), Keeper Hill SAC (001197), Silvermine Mountain SAC (000939), Silvermine Mountain West SAC (002258), Philipston Marsh SAC (001847), Kilduff, Devilsbit Mountain SAC (000934), Glenstal Wood SAC (001432), Slieve Bernagh Bog SAC (002312), Lough Derg, North-East Shore SAC (002241), Glenomra Wood SAC (001013), Tory Hill SAC (000439), Ratty River Cave SAC (002316), Askeaton Fen Complex SAC (002279), Barrigone SAC (000432), Curraghchase Woods SAC (000174), Lough Derg (Shannon) SPA (004058, River Shannon and River Fergus Estuaries SPA (004077), and Stack's to Mullaghareirk Mountains, West Limerick Hills & Mount Eagle SPA (004161). Therefore, these EU sites have been ‘Screened Out’ at Stage One of the Appropriate Assessment process. “

Screening of the Requested Alteration, alone and in-combination, was carried out for its potential to cause significant effects to the above listed sites. It is evaluated that due to the location of the works within the same local river catchments and involving the same extent and type of works as the authorised works, with no changes to the transport routes for the project, that the above listed sites can be screened out as there is no likelihood of significant effects to these sites as a result of the Requested Alteration.

Screening of the Lower River Shannon SAC (002165): As part of the 2019 Appropriate Assessment Report (Stage I), the following qualifying interests of the Lower River Shannon SAC were screened out, because the authorised UWF Grid Connection has no likelihood of causing effects to these Qualifying Interests:

- Freshwater Pearl Mussel [1029]
- Bottlenose Dolphin [1349]
- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries (1130)
- Mudflats and Sandflats not covered by seawater all the time (1140)
- Coastal Lagoons (1150)
- Large shallow inlets and bays (1160)
- Reefs (1170)
- Salicornia and other annuals colonizing mud and sand [1310]
- Atlantic Salt Meadows (1330)
- Mediterranean Salt Meadows (1410)
- Perennial Vegetation of Stony Banks (1220)
- Vegetated Sea Cliffs (1230)

The Requested Alteration was evaluated, alone and in-combination, for its potential to cause significant effects to the above listed Qualifying Interests and it is considered that due to (a) no material change to the location of the project or nature of project works in relation to these Qis, with the Requested Alteration works within the same local river catchments and involving the same type of works as the authorised works, (b) there is no requirement to change component transport routes associated with the project, and (c) no material change to the separation distance or hydrological

connectivity to the above listed QIs, there is no likelihood of the Requested Alteration causing significant effects to these Qualifying Interests, and that the Requested Alteration will not change the findings of the 2019 Stage 1 Screening in relation to these Qualifying Interests of the Lower River Shannon SAC.

Screening of the Lower River Suir SAC (002137): Only the eastern extremity of the authorised UWF Grid Connection is located within the catchment of the Lower River Suir SAC. No alterations are required to any part of the authorised UWF Grid Connection where it occurs within the catchment of the Lower River Suir SAC, and there is no requirement to change component transport routes associated with the project, therefore there is no potential for the Requested Alterations to change the findings of the 2019 AA Report (no adverse effects on the integrity of the Lower River Suir SAC), and this site is not considered further herein.

Screening of the Clare Glen SAC (000930): Approximately half of the authorised watercourse crossings along the R503 for authorised UWF Grid Connection are hydrologically connected to this SAC, however none of these watercourse crossings are located within the boundary or near this SAC site. The Requested Alterations at bridges B5, B6, B7, B9, B10 and B11 on the R503, are also hydrologically connected, but not within the boundary or near the SAC. Therefore it is considered that the Requested Alteration will not change the findings of the 2019 Screening Evaluation in relation to Clare Glen SAC i.e. screened in to Stage II of the AA process for potential indirect effects to the qualifying interests Old Oak Woodlands [91A0] and Killarney Fern *Trichomanes speciosum* [1421], and screened out for direct effects to these QIs.

Screening of the Slievefelim to Silvermines Mountain SPA (004165): The authorised UWF Grid Connection is located within and in close proximity to the SPA, which is designated for the protection of Hen Harrier, and as a result the SPA was screened in for direct and indirect effects in the 2019 Stage 1 Screening. The Requested Alteration will not change the findings of the 2019 Screening evaluation, as the works associated with the Requested Alteration are similar in nature to the consented works and will also occur within and in close proximity to the SPA.

Summary: Due to the location, size and design of the Requested Alteration, it is evaluated that the Requested Alteration will not change the findings of 2019 Stage I Screening for the 19 No. European Sites (16 SACs, 3 SPAs) listed above.

There are some minor changes for the Qualifying Interests of the Lower River Shannon SAC, Clare Glen SAC and SCIs of the Slievefelim to Silvermines Mountain SPA.

The potential effects of the requested alterations on the Lower River Shannon SAC; Glare Glen SAC and Slievefelim to Silvermines Mountain SPA examination at Stage 2 Natura Impact Statement is examined in the following section.

The results of the screening can be found in [Schedule 7A Appendix D - Biodiversity - Extract from Stage 1: Screening for Appropriate Assessment for UWF Grid Connection 2019](#)

[2.6.10.2 2019 Appropriate Assessment Report - Stage 2 Natura Impact Statement](#)

This section considers whether the Requested Alteration changes the findings of the Stage 2 Natura Impact Statement which was carried out in 2019 for the authorised UWF Grid Connection for three (3) sites Lower River Shannon SAC; Glare Glen SAC and Slievefelim to Silvermines Mountain SPA.

[See Figures at the end of this document](#)

- Figure 6.1: Designated Sites proximate Section 1
- Figure 6.2: Designated Sites proximate Section 1
- Figure 6.3: Designated Sites proximate to Bridges B5, B6 and B7
- Figure 6.4: Designated Sites proximate to Bridges B9 and B10
- Figure 6.5: Designated Sites proximate to Bridges B11
- Figure 6.6: Designated Sites proximate to Bridges B14 and B15

2.6.10.2.1 Lower River Shannon SAC (002165)

2.6.10.2.1.1 Summary of Stage 2 NIS for the authorised UWF Grid Connection

The Qualifying Interests screened in for evaluation at Stage 2 (2019 AA Report (NIS)) were:

- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]
- Alluvial Forests (91E0)* (priority habitat)
- Atlantic Salmon [1106]
- Sea Lamprey [1095]
- Brook Lamprey [1096]
- River Lamprey [1099]
- Otter [1355]

Site Specific Conservational objectives (SSCOs) were in place for the Lower River Shannon SAC (002165) when the AA 2019 was prepared.

The QI habitats, water courses of plain to montane levels [3260] and alluvial forests (91E0) were evaluated for indirect effects both within and ex-situ the SAC via reductions in water quality or the spread of invasive species. In addition water courses of plain to montane levels [3260] were also evaluated for direct effects to the habitat via habitat loss, fragmentation, degradation, or loss/reduction in connectivity.

The QI species, Atlantic salmon, sea lamprey, brook lamprey, river lamprey and otter, were evaluated for direct effects via mortality, and indirect effects via disturbance/displacement or via habitat loss, fragmentation, degradation or loss/reduction in connectivity, with effects within and ex-situ the SAC evaluated.

These effects were evaluated through a number of impact pathways: Decrease in in stream aquatic habitat quality; Changes to flow regime; Riparian habitat degradation; Spread of invasive aquatic species; Direct mortality of fish, aquatic species and otter; and disturbance or displacement of fish, aquatic species and otter.

In respect of the QI habitat/species specific sensitivities and Conservation Objectives, it was evaluated that with the implementation of the project design environmental protection measures, there would be:

- No effects on QI Habitat Floating River Vegetation via reductions in habitat area, distribution or size, altered hydrological regime, structure and composition, riparian habitat or connectivity are expected;
- No effects on QI Habitat Alluvial Woodland via reductions in habitat area, distribution or size, altered hydro-logical regime or structure and composition are expected;
- No effects on QI Species (Atlantic Salmon or Lamprey spp.) via reductions in abundance, distribution, or supporting habitat (juvenile and/or spawning habitat) quality are expected.

- No effects on QI Species Otter via reductions in Abundance or distribution, barrier effect, supporting habitat or supporting habitat quality (including prey item abundance) are expected.

2.6.10.2.1.2 Examination of the Requested Alteration

An examination is presented hereunder of the potential for the Requested Alteration to change the findings of the 2019 Natura Impact Statement on qualifying interests of the Lower River Shannon SAC.

See **Figures 6.1 Designated Sites proximate Section 1 and Figure 6.6 Designated Sites proximate to Bridges B14 and B15, at the end of this document** for locational context of the Lower River Shannon SAC in relation to the proposed Alterations.

Overview of the Requested Alteration in relation to the Lower River Shannon SAC

Along Section 1, the authorised works comprise trenching in 5.8km of public road, trenching in the deck of bridges B1 and B2 and directional drilling at bridges B3 and B4. The authorised works overlap the boundary of the SAC at the crossing of the Newport River at Rockvale Bridge B2, where works to raise the bridge's parapet walls are also authorised.

The Requested Alteration will reduce the extent of the authorised excavation works in the SAC catchment with a total of 4km of underground cabling along Section 1, which comprise c.1100m of trenching works in agricultural lands, 1800m of works in existing farm tracks and 1800m of works along the local road network. These works will take place outside of the SAC and will be similar to authorised works along the public road and at the Mountphilips Substation site, where works are authorised through agricultural lands.

The crossing point of the Newport River will change from the authorised location at Rockvale Bridge B2, which is within the SAC boundary, to a location in agricultural grassland W101, 1.7km further downstream of the river. It is proposed to install the UGC under the Newport River at W101 using directional drilling method, which is a crossing method already authorised for the project. The drill pits will be located outside the SAC, and no works will be carried out inside the SAC at W101. In addition, a total of 950m of new ESB access roads will be constructed over the altered grid route, these short access roads will be similar in design to the new access road authorised at Mountphilips. All new access roads will be located outside the boundary of the Lower River Shannon SAC.

The ESB access road for W101 involves establishing a new private road to the drilling pits on the north and south side of W101. This road will run down a slope towards to the Newport River.

Design and mitigation measures will be implemented to attenuate and control run-off and direct it into settlement ponds. The ESB Access track will have the following incorporated into its design.

The following measures are included in the road design,

- Settlement pond at the drilling pits. Water from these settlement pond will be pumped out and removed off site for disposal.
- The settlement ponds along the access roads. The southern settlement pond outlet weir will release water over the c.50m vegetation between the road and the river. The northern settlement pond will drain away from the river through vegetation.
- Interceptor swales on roadway directing water from the roadway into the drains and into the settlement ponds.

- All elements of the alterations at this location (W101) will be protected by double silt fencing between the works and Newport River.
- Access road will be sloped away from the Newport River

Further, 36 no. Authorised Mitigation Measures relate to protecting watercourses (See [Schedule 7A Appendix B](#) - PD15-PD50). These measures will also be implemented for the requested alterations locations.

The authorised directional drill crossing of the watercourses B3 and B4 is located outside of the SAC. The watercourse at B3 drains into the Small River c.50m downstream of the B4 crossing point. The Requested Alteration will result in the Small River being crossed 750m further downstream from the authorised B4 crossing point by directional drill in agricultural land (W102). The SAC is 1.6km downstream of W102. The watercourse at authorised crossing B3 and B4 will no longer be subject to construction works.

Along Section 2, the authorised works involve trenching in 20.3km of public road (R503), and trenching the deck of 11 No. bridges, with culvert replacement works at culverts under the road. The Requested Alteration, will change the location of the watercourse crossing points at 4 locations – B5, B9, B11 and B14 where the route of the UGC will be altered to cross under the watercourse at an off-road location adjacent to the bridge – these works will result in 4 No. more instream works locations in addition to those already authorised at other locations along the R503 (to replace culverts). 150m of new permanent access roads and 200m temporary access road will be constructed over/beside the altered cable route.

Along Section 2, the Requested Alteration also includes a change in crossing method from installing the cables in the decking of 4 No. bridge structures to directional drilling under the bridges and the watercourses (B6, B7, B10 and B15). The drill pits will be set up along the public road corridor. No instream works will be required at these bridge locations. Furthermore, the only authorised works (relevant to the Requested Alteration) which occur within the SAC boundary are the crossing works at Anglesey Bridge (B15, identified as W53 in the EIAR 2019). In addition to installing cables in the decking of the bridge, the authorised works at Anglesey Bridge also include works to build up the height of the parapet walls. The Requested Alteration will result in these works to the parapet walls being avoided, as the altered crossing method (directional drilling) will avoid works to the bridge altogether.

Potential for changes to impact pathways: The location and characteristics of the Requested Alteration were examined for potential to cause new impact pathways to the SAC. Because the Requested Alteration works comprise works of the type already consented for the UWF Grid Connection, with the Requested Alteration not resulting in any additional works inside the SAC boundary, and with instream works and watercourse crossing works on the same watercourses as the authorised (albeit further upstream or downstream at some locations), it is considered that the Requested Alteration will not result in any new impact pathways to the QI habitats or species of the Lower River Shannon SAC.

2.6.10.2.1.3 Effect on the Integrity of the SAC:

Overall, it is evaluated that due to;

- the small scale and temporary duration of trenching and drilling works;
- the short lengths of new ESB access roads at Requested Alteration locations;
- the altered works are similar in scale and nature to the authorised works;
- no permanent loss of habitat within the SAC boundary;

- the avoidance of works to the parapet walls at Rockvale Bridge B2;
- no material difference in the altered works locations along the R503;
- the avoidance of works to the parapet walls at Tooreenbrien Bridge B11 and Anglesey Bridge B15;
- instream works already authorised along the R503 to replace culverts;
- with the implementation of the authorised construction methodologies for trenching works and directional drilling works (See [Schedule 7A Appendix B](#) - GC-OCM-07, GC-OCM-16, GC-OCM-18); and
- with the implementation of the environmental protection measures (See [Schedule 7A Appendix B](#) - PD15-PD50),

the **Requested Alteration will not change the findings of the 2019 Stage 2 NIS – i.e. no adverse effects on the integrity of the Lower River Shannon SAC.**

2.6.10.2.2 [Clare Glen SAC \(000930\)](#)

The Qualifying Interests screened in for evaluation at Stage 2 (2019 AA Report (NIS)) for the Clare Glen SAC were:

- Old Oak Woodlands [91A0]
- Killarney Fern (*Trichomanes speciosum*) [1421]

Site Specific Conservation objectives were in place for the Clare Glen SAC (000930) when the AA 2019 was prepared.

The QI habitats, Old Oak Woodlands [91A0] and Killarney Fern (*Trichomanes speciosum*) [1421] were evaluated for indirect effects both within and ex-situ the SAC via decreases in instream aquatic habitat quality, changes to flow regime, riparian habitat degradation and the spread of invasive species.

In respect of the QI habitat/species specific sensitivities and Conservation Objectives, that with the implementation of the project design environmental protection measures, that there would be:

- No effects expected on QI Habitat Old Oak Woodlands [91A0] via reductions in habitat area, distribution or size, wood-land structure, or vegetation composition.
- No effects expected on QI Killarney Fern (*Trichomanes speciosum*) [1421] via reductions in or alterations to its habitat requirements (site hydrology, relative humidity, canopy cover, shading levels, etc.), or the introduction of Invasive Species, as defined in CO targets.

2.6.10.2.2.1 [Examination of the Requested Alteration](#)

An examination is presented hereunder of the potential for the Requested Alteration to change the findings of the 2019 Natura Impact Statement on Qualifying Interests of the Clare Glen SAC.

Overview of the Requested Alteration in relation to the Clare Glen SAC

The authorised works within the catchment of the Clare Glen SAC comprise trenching within 8.5km of public road (R503), and trenching in the deck of 7 No. bridges, trenching over or under culverts along the R503, including culvert replacement works and works to the parapet walls of bridges at 1 No. location (Tooreenbrien Bridge crossing over the Clare River at B11, which was identified as W36 in the 2019 EIAR). The Requested Alteration, will change the location of the watercourse crossing points at 4 locations – B5, B9, B11 and B14 where the route of the UGC will be altered to cross under the watercourse at an off-road location adjacent to the bridge – these works will result in 4 more instream

works locations in addition to the 8 No. already authorised at other locations along the R503 (to replace culverts). These instream works are at a significant distance upstream from the Clare Glen SAC boundary (B5 - 5.2km, B9 - 8.7km and B11 - 10.1km). The Requested Alteration will also result in the avoidance of the works to the parapet walls at the Tooreenbrien Bridge B11 over the Clare River, as the altered crossing method (divert around bridge) will avoid works to the bridge altogether.

Alteration works will also involve the construction of 150m of new permanent ESB access roads and 100m of temporary access road over/beside the altered cable route upstream of the Clare Glen SAC.

Along Section 2, the Requested Alteration also includes a change in crossing method from installing the cables in the decking of 4 No. bridge structures to directional drilling under these bridges and the watercourses (B6, B7, B10 and B15). The drill pits will be set up along the public road corridor. No instream works will be required at these bridge locations.

Potential for changes to impact pathways: The location and characteristics of the Requested Alteration were examined for potential to cause new impact pathways to the SAC. Because the Requested Alteration works comprise works of the type already consented for the UWF Grid Connection, with altered works locations not materially closer to the SAC boundary, and with instream works and watercourse crossing works on the same watercourses as the authorised UGC route (albeit further upstream or downstream at some locations), it is considered that the Requested Alteration will not result in any new impact pathways to the QI habitats or species of the SAC.

2.6.10.2.2.2 Effect on the Integrity of the SAC

Overall, it is evaluated that due to;

- downstream separation distance to the SAC boundary;
- the small scale and temporary duration of trenching and drilling works;
- the short lengths of new ESB access roads at Requested Alteration locations,
- with these altered works similar in scale and nature to the authorised works, and
- no permanent loss of habitat within the SAC boundary,
- no material difference in the altered works locations along the R503;
- the avoidance of works to the parapet walls at Tooreenbrien Bridge B11 crossing of the Clare River;
- instream works already authorised along the R503 to replace culverts; and
- with the implementation of the authorised construction methodologies for trenching works and directional drilling works (See [Schedule 7A Appendix B](#) - GC-OCM-07, GC-OCM-16, GC-OCM-18); and
- with the implementation of the environmental protection measures (See [Schedule 7A Appendix B](#) - PD15-PD50),

the Requested Alteration will not change the findings of the 2019 Stage II NIS – i.e. no adverse effects on the integrity of the Clare Glen SAC.

2.6.10.2.3 Slievefelim to Silvermines Mountain SPA (004165)

Hen Harrier [A082] is the Special Conservation Interest of this SPA.

In the 2019 Stage 2 NIS, the Special Conservation Interest species, Hen Harrier, was evaluated for direct and indirect effects both within and ex-situ the SPA, via disturbance or mortality, and via secondary effects on suitable habitat via habitat loss, degradation, fragmentation, loss/reduction in connectivity, and secondary effects due to a reduction in prey item species.

In respect of the specific sensitivities and Conservation Objectives for Hen Harrier, the 2019 Stage 2 NIS found that, with the implementation of the project design environmental protection measures for the protection of the Special Conservation Interest species Hen Harrier;

- The favourable Conservation condition of the species, or the Integrity of the SPA, will not be adversely affected through any reduction in habitat, range, population status or viability, through permanent or temporary loss of habitat, disturbance or displacement during either the breeding or non-breeding seasons, and any reductions in prey item density, and
- the 2019 Stage 2 evaluation concluded that the UWF Grid Connection development would not result in adverse effects on the Integrity of Slievefelim to Silvermines Mountains SPA, in circumstances where no reasonable scientific doubt remained.

2.6.10.2.3.1 Site Specific Conservation Objectives (September 2022)

In September 2022, NPWS published Site Specific Conservation Objectives for the Slievefelim to Silvermines Mountains SPA [004165] (see [Schedule 7A Appendix E - Biodiversity - Site Specific Conservation Objectives for the Slievefelim to Silvermines Mountains SPA \[004165\]](#)). The Conservation Objectives, to restore the favourable conservation condition of Hen Harrier in Slievefelim to Silvermines Mountains SPA, is defined by the following list of attributes and targets:

| Attribute | Target |
|--|---|
| Population size | Maintain numbers at or above 4–8 confirmed breeding pair |
| Productivity rate | Restore at least 1.0–1.4 fledged young per confirmed pair |
| Spatial utilisation by breeding pairs | Maintain at least 74-94% spatial utilisation of the SPA by breeding pairs |
| Extent and condition of heath and bog and associated habitats | Restore the extent and quality of this resource to support the targets relating to population size, productivity rate and spatial utilisation |
| Extent and condition of low intensity managed grasslands and associated habitats | Restore the extent and quality of this resource to support the targets relating to population size, productivity rate and spatial utilisation |
| Extent and condition of hedgerows | Maintain at least the length and quality of this resource to support the targets relating to population size, productivity rate and spatial utilisation |
| Age structure of forest estate | Achieve an even and consistent distribution of age-classes across the forest estate |
| Disturbance to breeding sites | Disturbance occurs at levels that does not significantly impact upon breeding Hen Harrier |

While the authorised UWF Grid Connection was evaluated against the generic conservation objective that was in place at the time, it is considered that the impact pathways considered in 2019 would also be applicable to the Site Specific Conservation Objectives, attribute and targets outlined in the table above. In consideration for changes to the NIS evaluation, these attributes and targets were considered for potential pathways with the Requested Alterations specifically.

2.6.10.2.3.2 Examination of the Requested Alteration

An examination is presented hereunder of the potential for the Requested Alteration to change the findings of the 2019 Natura Impact Statement on the qualifying interests of the Slievefelim to Silvermines Mountains SPA.

Overview of the Requested Alteration in relation to the Slievefelim to Silvermines Mountain SPA

While the boundary of the SPA is in close proximity to the authorised works at Rockvale Bridge (B2), the occurrence of the authorised works within the boundary of the SPA primarily relates to the UGC route along the Regional Road R503. The authorised works within the boundary of the SPA comprise trenching in a total of 8km of public road.

Ex-situ the SPA, the authorised works comprise trenching in a total of 29.2km of public road, and the construction works in agricultural lands at the Mountphilips Substation Site comprising of 400m of new access road, underground cabling, 11421m² substation compound and 2 No. lattice masts. The Substation is 1.6km from the closest point of the SPA at Rockvale Bridge.

The Requested Alteration relates to an alteration of works both within and ex-situ the SPA boundary.

Within the SPA, the Requested Alteration will result in the following changes:

- The Requested Alteration will result in the avoidance of bridge decking works and works to the parapet walls at Rockvale Bridge B2 which is immediately adjacent to the SPA boundary.
- The Requested Alteration overlaps a new part of the SPA boundary where the altered route is along a farm track in the vicinity of W103, this area is on the western periphery of the SPA and is similar in extent to the interaction of the authorised route with the SPA boundary in the vicinity of the watercourse crossing point at W10, c.400m to the south. The Requested Alteration will result in the SPA being avoided in the vicinity of W10. The duration and nature of works within the SPA boundary in the area of W103 will be similar to the authorised works in the area of W10.
- Although the lands immediately to the north of Bridge B5 are not mapped as being within the SPA, during the onsite walkover consultation meeting for the Requested Alteration, members of NPWS discussed the requirement that these lands be treated as being within the SPA as there looked to be a slight error in the delineation of the boundary at this point and that the SPA boundary should align with the public road. The altered route diverts into Conifer plantation/Immature woodland habitat (WD4/WS2) on the north side of the public road/Bridge B5, crossing the watercourse c.7m upstream of the bridge. No permanent land cover change will be required at this location. Duration of works at this watercourse crossing point will not change from that of the authorised works.
- Authorised works at Bridge B9 comprise trenching in the decking of the bridge on the regional road, these authorised works are within the SPA boundary. The Requested Alteration involves diverting into lands beside this bridge in order to avoid works in the deck of the bridge. The altered route west of the watercourse at B9 is within the SPA boundary. The alteration works at B9 are 10m longer than the authorised works along the road at this location and comprises

Wet Grassland (GS4) habitats. No permanent land cover change will be required at this location. Duration of works at this watercourse crossing point will not change from that of the authorised works.

- The altered route at B11 is ex-situ the SPA.
- Authorised works at Bridge B14 to comprise trenching in the decking of the bridge on the regional road, these authorised works are within the SPA boundary. The Requested Alteration involves diverting into lands beside this bridge in order to avoid works in the deck of the bridge. Directional drilling is not feasible at this location. The altered route through the SPA boundary at Bridge B14 is 40m longer than the authorised works along the road at this location, and comprises Scrub/Treelines (WS1/WL2) and Riparian Woodland/Scrub (WN5/WS1) habitats. No permanent land cover change will be required at this location. Duration of works at this watercourse crossing point will not change from that of the authorised works.

Ex-situ the SPA, the Requested Alteration will result in:

- the construction of 950km of new permanent ESB access roads in Improved Agricultural Grassland (GA1) and Amenity Grassland (GA2) habitats along Section 1.
- Temporary works in lands adjacent to the Regional Road R503 to change the watercourse crossing points at Bridges B9 (east side), and B11. Habitats at the Requested Alteration at B9 (east side) and B11 comprise Improved agricultural grassland/Wet grassland (GA1/GS4), and Buildings and artificial surfaces (BL3) and Improved agricultural grassland (GA1). The duration of works at this watercourse crossing point will not change from that of the authorised works.
- A change to the crossing methodology at 4 No. Bridges (B6, B7, B10 and B15) from trenching in the deck of the bridge to directional drilling under the bridge, with all works within the road corridor. The altered crossing methodology will increase the duration of works at each of these bridges by circa 1-2 days.

See [Figures 6.2 to 6.6 at the end of this document for locational context of the Slievefelim to Silvermines Mountain SPA in relation to the proposed Alterations.](#)

Proximity of Confirmed nests to the requested alteration:

The below table illustrates the separation distances from the nearest recorded Hen Harrier Nest to Requested Alteration works (Hen harrier nest surveys along the GCR have been conducted every year for the past 7 years and the results have informed the following text).

| Requested Alteration Location | Nearest recorded Hen Harrier Nest to Requested Alteration (km)* |
|-------------------------------|---|
| Section 1 | 1.05 |
| B5 | 1.2 |
| B6 | 1.5 |
| B7 | 1.5 |
| B9 | 1.8 |
| B10 | 1.9 |

| | |
|-----|-----|
| B11 | 2.0 |
| B14 | 2.6 |
| B15 | 2.8 |

* Distances displayed for the nearest nest to requested alteration can also be assumed as the distances from the Authorised works at these locations due to the proximity of the Requested Alteration works to the Authorised works

Habitat loss, degradation, fragmentation, loss/reduction in connectivity:

The authorised UWF Grid Connection will not result in the permanent loss of any suitable habitat within the SPA boundary, with a very small amount of suitable habitat loss at the Mountphilips Substation site (0.05ha of GS4 Wet Grassland) ex-situ of the SPA (1.6km). The alteration at W103 would involve trenching works along an existing farm track, while works at Bridges B6, B7, B10 and B15 would involve directional drilling works which will take place from the public road network, therefore no loss of suitable habitat will occur as a result of these works. The potential for effects to suitable habitats is examined below in relation to those parts of the alterations which relate to works in off-road lands.

Inside the boundary of the SPA, the Requested Alteration will result in the temporary loss of suitable foraging habitat for Hen Harrier at B5 (Conifer plantation/Immature woodland (WD4/WS2) habitat), B9 (west side) Wet Grassland (GS4) and B14 (Scrub/Treelines (WS1/WL2) and Riparian Woodland/Scrub (WN5/WS1) habitat). The presence of immature forestry (WS2) at B5 is also potentially suitable nesting habitat however it is within 10 metres of the road and not likely to ever be used as a nesting site. It is considered that due to the very small extent of suitable temporary habitat loss (0.08ha total B5, B9 and B14), the temporary duration of loss, with reinstatement of habitats following the completion of the works at these locations in line with authorised Project Design mitigation measures, and the proximity of these suitable habitats to a busy Regional Road, that loss, reduction, or fragmentation of suitable habitat will be negligible and will have a negligible effect on the extent or condition of suitable habitats within the SPA. Temporary habitat loss will be reversed using locally sourced heather (Irish provenance) or equivalent cover as suits each location. It is concluded that the temporary loss of suitable habitat at B5, B9 and B14 will have no adverse impacts on the integrity of the SPA, and therefore the Requested Alteration will not change the findings of the 2019 AA Report in relation to secondary effects on suitable habitat within the SPA.

Ex-situ the SPA, works for the Requested Alteration in off-road locations, relates to the altered route along Section 1, and the alteration of watercourse crossing methodologies at B9 (east side) and B11 along the R503 (Section 2).

Along Section 1, the Requested Alteration will result in the loss of 0.28ha of Improved Agricultural Grassland (GA1) as a result of the construction of 950m of new permanent ESB access roads over underground cabling through the agricultural lands. These habitats are of negligible suitability for foraging and unsuitable for nesting Hen Harrier, and consequently it is evaluated that the Requested Alteration along Section 1 will have no effect on the extent or condition of suitable habitats ex-situ the SPA, and therefore no adverse effects on the integrity of the SPA will occur.

Along Section 2, the Requested Alteration will result in the diversion of the authorised UGC route into off-road lands at B9 and B11 along the R503. The closest historical nest sites are 1.8km to B9 and

2.2km to B11. A new permanent ESB access track will be constructed over the altered cable at these locations, which will result in the permanent loss of 0.02ha of GA1/GS4 habitat and 0.03ha of GA1 habitat, ex-situ the SPA. While the GS4 habitat is considered suitable to foraging Hen Harrier, the proximity of this suitable habitat along a busy Regional Road reduces the likelihood of Hen Harrier using these locations.

Overall, it is evaluated that any loss, reduction, or fragmentation of suitable ex-situ habitat will be negligible and will have a negligible effect on the extent or condition of suitable habitats within the SPA. It is concluded that the temporary loss of suitable habitat at B9 and B11 will have no adverse impacts on the integrity of the SPA, and therefore the Requested Alteration will not change the findings of the 2019 AA Report in relation to secondary effects on suitable habitat ex-situ the SPA.

The Requested Alteration will result in the removal of 16m of hedgerow at 2 No. of locations, ex-situ of the SPA. These sections of hedgerow will be removed to facilitate the construction of the underground cable through the roadside boundary. Sixteen metres of new hedgerow (using native species only) will be planted at the removal location to offset the hedgerow loss. Due to the very small extent of hedgerow removal, none of which will occur within the SPA boundary, and the replanting of replacement hedgerow at these locations, it is evaluated that no adverse impacts on the integrity of the SPA will occur.

Reduction in Prey Item Availability: Due to the location of the Requested Alteration works either along or immediately adjacent to the public road network, or in improved agricultural grassland/amenity grassland ex-situ the SPA, due to the temporary and linear nature of the altered works, that any disturbance or displacement of prey item species will be negligible and reversible. The removal of 16m in total of hedgerow will have a negligible impact on prey species abundance due the abundance of hedgerow and passerine habitat in the immediate and wider area. Notwithstanding, all hedgerows effected will only be removed between 1 September and 28 February in accordance with the authorised mitigation measure PD58.

Overall, indirect secondary impacts to suitable habitat or to the availability of prey item species, will be negligible as a result of the Requested Alteration, either within or ex-situ the SPA.

Mortality, Disturbance/Displacement:

The Requested Alteration relates to an alteration of works both within and ex-situ the SPA boundary:

- On the western periphery of the SPA, the location of works will change from authorised W10 to proposed W103 within the SPA boundary, although there will be no change in the nature or the duration of the works.
- Works along the public road network and in agricultural lands along Section 1, are similar in nature to the authorised works at the Mountphilips Substation site, occur in unsuitable habitat and works are located outside of the SPA boundary.
- Works in suitable nesting habitat only relates to the altered works at
 - B5 - 0.045ha of Conifer plantation/Immature woodland (WD4/WS2) habitat,
- Works in suitable foraging habitat will occur at
 - B5 - 0.045ha of Conifer plantation/Immature woodland (WD4/WS2) habitat,
 - B9 (west side) - 0.005 ha of Wet Grassland (GS4) and
 - B14 - 0.005ha of (Scrub/Treelines (WS1/WL2) and 0.025ha of Riparian Woodland/Scrub (WN5/WS1) habitat.

- B9 (East side) (0.02ha of Improved agricultural grassland/Wet grassland GA1/GS4 habitat), B11 (0.03ha of Improved agricultural grassland GA1 habitat. These lands at B9 and B11 are adjacent to the Regional Road R503, ex-situ of the SPA;
- The altered crossing method (directional drilling) at 4 No. Bridges (B6, B7, B10 and B15) which are located within and in close proximity to the SPA will involve slightly longer works (increase of 1-2 days) at each location.

The authorised mitigation measure PD01 (below) will be applied to all of the Requested Alteration works, regardless of whether these works occur on the public roadway or in off-road lands. The implementation of PD01 will ensure that no mortality of breeding Hen Harrier occurs, and furthermore that breeding Hen Harrier within 1km of the Requested Alteration Works will not be disturbed.

Authorised PD01: *Construction works on the public roadway for the UGC during the Hen Harrier breeding season (March to August inclusive) will only be carried out under the direct supervision of a full time onsite Hen Harrier specialist and the Project Ecologist. The presence of this full time Hen Harrier specialist will ensure that any potential for disturbance of breeding Hen Harrier is avoided. The works will only take place following completion of confirmatory Hen Harrier breeding surveys, which will be initiated in February and continue for the entire breeding season, in order to identify any pre-breeding nuptial activity, nesting activity and active nests within 1km of the works. The survey methodology will be sufficient to ensure that a Hen Harrier breeding site is not overlooked. No construction works will be carried out during the breeding season within 1km of a pre-nesting breeding site and/or nest or within 1km of breeding sites already identified during the previous six years.*

Note: *The above quoted PD01 is the final text as altered under a previous 146B request Ref. ABP-314836-22.*

The application of PD01 to the Requested Alteration works will ensure that mortality, disturbance or displacement of breeding Hen Harrier does not occur as this Project Design (PD) mitigation measure will prevent works from taking place within 1km of a nest. The continued effectiveness of this mitigation measure will be achieved through supervision by a full time onsite Hen Harrier specialist and the Project Ecologist and through the carrying out of confirmatory Hen Harrier breeding surveys, and as a result there will be no loss of spatial utilisation by breeding pairs, (temporary or permanent); and no adverse effect to population size or productivity rate as a result of mortality, disturbance or displacement of Hen Harrier.

2.6.10.3 Conclusion to Potential to Change the Findings of the Appropriate Assessment Report 2019

The Requested Alteration will result in:

- No loss (temporary or permanent) of heath or bog habitat;
- Very small extent of temporary loss of low suitability nesting habitat (0.045ha of WD4/WS2) and temporary habitat loss will be reversed using locally sourced heather (Irish provenance) or equivalent cover as suits each location;
- Very small extent of temporary loss of suitable foraging habitat (0.045ha of WD4/WS2, 0.005ha of GS4, 0.005ha of WS1/WS2 and 0.025ha of WN5/WS1) and temporary habitat loss will be reversed using locally sourced heather (Irish provenance) or equivalent cover as suits each location;
- Permanent habitat loss will only occur ex-situ the SPA;
- Permanent habitat loss mainly relates to unsuitable habitat, loss of suitable habitat limited to 0.28ha of GA1;

- Very small extent of hedgerow removal (16m total), es-situ the SPA, with replanting of hedgerow at the two locations;
- In excess of 1km separation distance between habitat loss and the nearest nest, and in the context of the location of these habitats adjacent to the Regional Road;
- Negligible displacement of prey item species, which will be reversible with completion of works at a location;
- Small increase in the duration of works at directional drilling locations on the R503 Regional Road,

Overall, it is concluded that the alterations will not adversely affect the integrity of the **Slievefelims to Silvermines Mountains SPA** as a result of direct mortality or disturbance or as a result of indirect secondary impacts to suitable habitat or to the availability of prey item species, either within or ex-situ the SPA. Therefore, it is evaluated that the **Requested Alteration will not change the findings of the 2019 Stage 2 NIS – i.e. no adverse effects on the integrity of the Slievefelim to Silvermines Mountains SPA.**

2.7 Air

2.7.1 Baseline Air

Baseline and Alterations: The authorised UWF Grid Connection development and the Requested Alterations are located predominantly in rural areas, away from major urban areas or large centres of population. There is a high level of air quality in the development area. Regarding environmental noise, the existing noise sources are typical for such a rural/ agricultural setting. Man-made noise sources in rural areas included farm machinery when in operation, and traffic in and around Newport town and traffic on the public road network, including the R503 road which is a regional road connecting Thurles to Limerick (via Newport). Regarding environmental EMF, there are no major or industrial sources of EMF in the area.

2.7.2 Impact Pathways & Significance of Impact Evaluation from EIAR 2019

The impact pathways for effects on the sensitive aspects of Air and the significance of these effects as contained in EIAR 2019, is presented in the Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|---|--|---|
| Local Residents & Community – Increase in airborne dust; ambient noise levels; vibration; and EMF; and decrease in air quality due to construction traffic, (construction and operation). | Delivery of construction materials to works area, excavation and storage of materials, Working plant and moving machinery involved in construction and excavation activities, Operational Mountphilips Substation, 110kV UGC, Road opening, rock breaking, earthmoving, operation of machinery and movement of construction traffic along access roads | Imperceptible/Slight to Moderate |
| Transient People – Increase in airborne dust; ambient noise levels; vibration; and EMF; and decrease in air quality due to construction traffic, (construction and operation). | Mountphilips Substation, 110kV UGC, Road opening, rock breaking, earthmoving, operation of machinery and movement of construction traffic along access roads | Imperceptible to Slight |

2.7.3 Effects of the Requested Alteration on Air

The Local Community can be impacted by airbourne dust from excavations and construction traffic, noise and vibration during construction and increase in Electromagnetic Fields (EMF) during operation. The Requested Alteration will not change the impact of the authorised UWF Grid Connection development, as evaluated in EIAR 2019 because the altered UGC works proposed are small scale and temporary. There will be

- (i) Minimal changes to excavated volumes of soils or to traffic volumes due to construction or operation and therefore there will be no change to the effects of

airborne dust emissions (*Slight/Neutral for Transient People*) or to effects on air quality (*Neutral for Local Community and Transient People*);

- (ii) The Requested Alteration will not change the intensity or duration of construction works, and therefore there will be no change to Increases in Ambient Noise Levels during construction (*Moderate for Local Community and Neutral for Transient People*), and
- (iii) There is no change to the size of the UGC, therefore there will be no change to operational EMF emissions (*Imperceptible for Local Community and Imperceptible to Slight for Transient People*).

All of the Project Design Mitigation Measures, Emergency Procedures, Schedule and timing of works, Surveying and monitoring measures, Best Practice Measures and Construction Methodologies previously authorised for the protection of Air, will also be implemented for the Alterations.

2.8 Climate

2.8.1 Baseline Climate

Baseline and Alterations: The authorised UGC (incl. the requested alterations) will transport the power from Upperchurch Windfarm to Mountphilips Substation and from there the power will be transported to the National Grid at an adjacent point on the existing Kilonan to Nenagh 110kV overhead line. Upperchurch Windfarm is a substantial part of the Renewable Electricity Support Scheme RESS4, which was set up to provide support to on-shore renewable electricity projects in Ireland, contributing to the delivery of Climate Action Plan CAP2024 targets of 80% renewable electricity RE-E on the national grid by 2030.

The authorised 22-turbine windfarm - Upperchurch Windfarm, was permitted an increased turbine size to 158m overall height (136m rotor diameter) under ABP 146B ref. 318773-24 on 26th September 2024. This new scheme is predicted to generate 325 million kW hours of RE-E per annum which will avoid the emission of 113,100 tonnes of greenhouse gases per annum which would have resulted from generating the same amount of electricity by fossil fuel plant. The windfarm will generate enough electricity to supply 72,014 houses with green, emission free electricity. Upperchurch Windfarm will positively contribute to the Climate Action and Low Carbon Development (Amendment) Bill 2021 commitment to a reduction of 51% in the total amount of greenhouse gas emissions, by 2030.

2.8.2 Impact Pathways & Significance of Impact Evaluation from EIAR 2019

The impact pathways for effects on the sensitive aspects of Climate and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|--|---|--|
| Climate Change – Increase in GHG emissions during construction (direct); | Use of vehicles, machinery | Neutral Direct Impact |
| Increase in RE-E Production (indirect) | Export of Renewable Electricity from Upperchurch Windfarm | Significant (Positive) Indirect Impact |

2.8.3 Effects of the Requested Alteration on Climate and Climate Action

The Requested Alteration relates an alternative route for parts of the authorised UGC work. With the inclusion of the authorised mitigation measures to protect air quality, there will be no increase in GHG emissions from vehicles and machinery. The volume of vehicles and machinery required for the UWF Grid Connection development will not change due to the Alterations. The indirect increase in renewable electricity (RE-E) production will remain a significant (Positive) Impact.

Therefore, it is considered that the findings of the 2019 EIAR evaluation for Climate will not change as a result of the Requested Alteration.

The latest National Energy Report 2024 (SEAI, November 2024) is relevant to this application and shows that the country risks falling short of the Climate Action Plans target, by 25% because RE-E is

not being delivered quickly enough. The Requested Alterations will allow the construction of the Upperchurch Windfarm project without delay, as all the other permits and requirements for the project are now in place. Upperchurch Windfarm is a large windfarm of 84MW installed capacity and is a significant part of the Government's RESS4 scheme. RESS4 is a pivotal component of the Government of Ireland's Climate Action Plans and efforts to achieve a target of at least 80% RE-E by 2030.

2.9 Material Assets

2.9.1 Baseline Material Assets

Baseline: Along the 30km of public road, the UGC is mainly routed along Regional Road R503, the remaining roads at the eastern and western ends of the route are all Local (County) Roads. Electricity and telephone lines occur alongside public roads, with water mains located under all public roads along the route of the UGC. End users of built services are mainly in Newport Town, and to a lesser extent in Rear Cross village, and along the public road network.

Alterations: The requested alterations will avoid works in c.4km of public road around Newport Town and along the R503 at Bridge B5, B9, B11 and B14. Directional drilling will be carried out from the road corridor at 4 No. Bridges (B6, B7, B10 and B15) along the R503.

2.9.2 Impact Pathways & Significance of Impact Evaluation from EIAR 2019

The impact pathways for effects on the sensitive aspects of Material Assets and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|--|--|--|
| Built Services (Local Residents & Community) – loss/damage to built services (water, electricity, communications) during the construction process. | Public road opening excavations, Movement of large machinery | Neutral |
| Electricity Transmission System – Impacts during construction of interruption of power supply/addition of control point | Addition of new substation onto the Killonan - Nenagh 110kV OHL | Neutral /No Potential for Impact |
| Public Roads – Damage to road pavement/ bridges, culverts/road boundaries, during construction | Excavations for cable trenches and joint bays, construction/delivery traffic, Site access to Mountphilips Substation | Moderate /Neutral/Imperceptible |
| Road Users – Increased journey times during construction; | Road works, construction traffic, Traffic Management Road | Slight |
| Increased risk of road accidents; disrupted access to property during construction | | Neutral |

2.9.3 Effects of the Requested Alteration on Material Assets (Built Services and Public Roads)

Built Services can be damaged during excavations and movement of large machinery. The Requested Alteration will not change the size or design of the UGC of the construction processes and mitigation measures for the protection of built services. Therefore there will be no change to the authorised effects on built services from excavations and large machinery. Although the location of the UGC will

change to alternative Local Roads and some lands around Newport, the baseline environment will be similar and the authorised mitigation measures will be implemented. The avoidance of the Local Road L2157, which contains many water services, will be a positive impact from the Alteration. In the context that mitigation measures are in place to protect water services, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Local Residents & Community (*Neutral – loss/damage to built services*), will not change as a result of the Requested Alteration.

Electricity Transmission System can be impacted by interruption of power supply. The Requested Alterations will not include any changes to the Mountphilips Substation i.e. the point of interaction with the Electricity Transmission System, and will not include the methodology for connecting to the electricity transmission system. The purpose of the UGC remains the same i.e. to transport electricity from Upperchurch Windfarm Substation to Mountphilips Substation. Therefore the findings of the 2019 EIAR evaluation for the UWF Grid Connection on the Electricity Transmission System (*Neutral/No potential for Impact*), will not change as a result of the Requested Alteration.

Public Roads: The Requested Alteration relates to an alternative route and avoidance of UGC installation in 10 No. bridges and c.4km of public road between Mountphilips Substation and Upperchurch Windfarm Substation. There will be no change to the construction processes for the UGC, i.e. no change to construction methodologies, volumes of construction traffic, volumes of materials and number of crews working on public road and no change to the mitigation measures deployed.

Given that these changes, although positive in the context of the amount of works in the public road, are small scale in the context of the overall development, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Public Roads - *Moderate for damage to the Road Pavement/ Neutral for damage to Bridges & Culverts/ Imperceptible for damage to Road Boundaries* - will not change as a result of the Requested Alteration.

Road Users: The Requested Alteration to the route and watercrossing methods will not result in alterations to construction methodologies and will progress in a linear manner as the works are completed at any particular location, as authorised. Drilling works at 4 No. bridges will be done in parallel with other works at that particular location and as such no increase in journey times will be experienced by Road users as traffic management will already be in place. Traffic management will remain unaltered and journey times will not increase materially. Mitigation measures already authorised for traffic control and to mitigate the effects on Road Users will be implemented at the Alteration sites also.

All of the Project Design Mitigation Measures, Emergency Procedures, Schedule and timing of works, Surveying and monitoring measures, Best Practice Measures and Construction Methodologies previously authorised for the protection of Material Assets, will also be implemented for the Alterations.

Therefore, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Road Users (*Slight for increased journey times; Neutral for increased risk of accident and access to property*), will not change as a result of the Requested Alteration.

2.10 Cultural Heritage

Baseline: The Slievefelim to Silvermines Mountain uplands area, is a region with a rich and diverse history of human settlement going back to prehistoric times, which is reflected in the archaeological record. The cultural heritage assessment focuses on cultural heritage sites within the geographical study area. Within 2km of the authorised route there are 111 Cultural Heritage Sites. These include 49 No. sites listed on the Record of Monuments and Places (RMP), 7 listed on the National Inventory of Architectural Heritage Building Survey, 5 on the National Inventory of Architectural Garden Survey, and 50 sites (wells, lime kilns, houses and fords etc) shown on various editions of the historic Ordnance Survey maps. The authorised route consists of cabling in public roads and cable in two nineteenth-century road bridges - Tooreenbrien Bridge and Anglesey Bridge, which are Protected Structures with Anglesey Bridge also listed on the NIAH.

Alterations: The Requested Alterations to the UGC route, are proposed for areas on Local Roads, agricultural and forestry lands, farm tracks and in the vicinity of legacy bridges i.e. stone arch bridges, which are outside of the authorised UGC route. Therefore, a Cultural Heritage Impact Assessment (CHIA) was commissioned from Archaeological Management Solutions (AMS), in order to assess the impact of the proposed Alterations on Cultural Heritage. The assessment process was divided into two main components: (1) the collation of baseline data comprising desk and field-based surveys, which were undertaken to define the baseline receiving environment; and (2) the analysis of this data with reference to design proposals to determine any likely and potential impacts/effects and assess their magnitude and significance of effect and set out appropriate measures to mitigate any identified impacts.

The CHIA including figures, photos and mapping is attached as **Schedule 7A Appendix F - Cultural Heritage Impact Assessment (CHIA)** at the end of this document.

The below text is a summary of the process and findings of the CHIA. Refer to the complete CHIA for the assessment and recommendations.

2.10.1 Summary of Baseline Cultural Heritage

A study area extending 100m from the Requested Alterations based on a 3m-wide Constructions Works Area was applied. This 100m distance was considered by AMS a suitable radius to appropriately capture the existing character and condition of the baseline receiving environment and enable the comprehensive identification of impacts on Cultural Heritage of the Alterations.

The desktop survey comprised the identification and appraisal of all known cultural heritage receptors within the defined study area, including designated sites and undesignated sites as previously identified in the 2019 EIAR. This was undertaken through baseline studies of statutory and non-statutory heritage lists, archives, publications and other sources.

Walkover surveys examined and documented the conditions on the ground, facilitating the assessment of potential effects on known/designated cultural heritage receptors and providing additional information relating to previously unrecorded/undesignated cultural heritage, including areas of archaeological potential. They also help inform recommendations and mitigations for any identified impacts. The walkover survey was conducted over two days in October 2024.

Fifty-six (56) cultural heritage receptors were identified in the study area; nine (9) designated and forty-seven (47) undesignated receptors. The designated receptors include six recorded archaeological sites comprising a bowl-barrow; an earthwork; a ringfort; a site listed as a redundant record on the SMR; a

children's burial ground; and a mound. The remaining three sites include two nineteenth-century road bridges - Tooreenbrien Bridge (B11) and Anglesey Bridge (B15), which are Protected Structures with Anglesey Bridge also listed on the NIAH; and one former historic demesne. The forty-seven (47) undesignated cultural heritage receptors include sites largely identified from historical OS maps.

2.10.2 Impact Pathways & Significance of Impact Evaluation from EIAR 2019

The impact pathways for effects on the sensitive aspects of Cultural Heritage and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|---|--|--|
| Recorded Legally Protected Sites e.g. RMP sites; Damage or partial destruction (construction) Visual Impact (operation) | Above ground structures, features, Ground works | No Impact |
| Other Recorded sites e.g. NIAH sites – Damage or partial destruction (construction) Visual Impact (operation) | Above ground structures, features, Ground works | No potential/No likely Impact |
| Previously Unrecorded Sites e.g. townland boundaries – Damage or partial destruction (construction) Visual Impact (operation) | Above ground structures, features, Ground works | Imperceptible |
| Unknown Subsurface Sites – Damage or partial destruction (construction) Visual Impact (operation) | Above ground structures, features, Ground works | Slight |

2.10.3 Effects of the Requested Alteration on Cultural Heritage

Cultural Heritage, archaeological sites can be affected by any groundworks which would partially or wholly damage the site itself or features/objects associated with the site or which may damage any associated subsurface features or structures which are no longer visible. Some archaeological sites or monuments were most likely purposefully constructed in specific locations, on specific alignments, to take advantage of views of the surrounding landscape, celestial events and other monuments. As such the views of and from these sites are an integral part of the monuments character and could be affected by the presence of new above ground structures in the local area.

The Requested Alteration relates to the avoidance of locating the UGC in the decking of bridges along the public road route, which requires that the watercourses must be crossed by an alternative method, including directional drill and diversion off-road into agricultural and forestry lands and farm tracks to cross under watercourses by dam and overpump method. The Requested Alteration will avoid UGC works in Tooreenbrien Bridge B11 and Anglesey Bridge B15, both Protected Structures.

2.10.4 Effects of the Requested Alteration on Cultural Heritage

There is no predicted impact on twenty-three (23) of the cultural heritage receptors that have been identified within the study area, comprising four (4) designated receptors; and CH-08) and nineteen (19) undesignated receptors.

Thirty-three (33) cultural heritage receptors within the study area will potentially be affected by the Requested Alterations. The predicted effects comprise potential impacts due to ground disturbance works within the 3m-wide Construction Works Area; potential impacts due to proximity of works (e.g., as a result of accidental damage caused by machinery movements); and one (1) potential indirect visual impact. No predicted negative impacts with a Significance of Effect above **Moderate** have been identified.

2.10.5 Mitigation Measures

Requested Alteration works are located in close proximity to a number of upstanding cultural heritage receptors and cultural heritage receptors that have some surviving upstanding elements. Direct impact to these receptors, comprising three (3) designated receptors and nine (9) undesignated receptors should be avoided; and where considered necessary appropriate protective measures will be put in place (such as protective barriers) to ensure that none of these receptors are inadvertently damaged during onsite works. As an extra precaution all onsite team members will be fully appraised of the extent, nature and significance of upstanding remains in close proximity to the proposed works as part of toolbox talks. Advance archaeological works are also recommended as appropriate - such as Recording; Geophysical Survey; and Wade/Dive and Metal Detection Survey.

Three Project Design (PD) mitigation measures are set out in the 2019 EIAR for the authorised UWF Grid Connection for the protection of Cultural Heritage and these will also be applied to the Requested Alterations. Also the Emergency Procedures, Schedule and timing of works, Surveying and monitoring measures, Best Practice Measures and Construction Methodologies previously authorised for the protection of Cultural Heritage, will also be implemented for the Alterations.

All Archaeological Monitoring will be carried out by a suitably qualified archaeologist under licence to the National Monument Service (NMS), in tandem with licenced metal detection, as appropriate. The aim of the Archaeological Monitoring is to ascertain the location, nature, character, extent, date and significance of any surviving archaeological remains that may be present within the development footprint at the locations noted above with a view to informing any further mitigation that may be required (i.e. preservation in situ and/or preservation by record) in consultation with the NMS.

2.10.6 Conclusion for the likely effects on Sensitive Aspects of Cultural Heritage

No predicted negative impacts with a Significance of Effect above **Moderate** have been identified. The mitigation measures proposed will afford further protection to Cultural Heritage in the area. Following the implementation of the authorised mitigation measures, the residual impact will be Slight.

Therefore, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on Cultural Heritage (No Impact/Slight), will not change as a result of the Requested Alteration.

2.11 Landscape

2.11.1 Baseline Landscape

Baseline and Alterations: The UGC route occurs within a combination of extensively managed upland rural landscape of forestry and farmland within the Slievefelim to Silvermine Mountain upland area throughout the eastern extents and central areas, transitioning into a more rolling lowland rural landscape of fields and hedgerows at its western extent - in the vicinity of Newport.

The UGC will be located along the V12 Scenic Route (*views north and south on sections of the R503 from Newport to Ballycahill*), for 22.1km.

Visual amenity receptors include local community and residences which are located along public roads, Rear Cross village and the town of Newport. The main amenity and heritage assets within the area is the way-marked walking trails, the Slieve Felim Way and the Ormond Way cycle route.

Views from all visual receptors take in typical upland rural scenes of undulating farmland and forestry and occasional peaks of higher mountains in the Silvermines range.

See [Schedule 7A Appendix A: Site Photographs](#)

2.11.2 Impact Pathways & Significance of Impact Evaluation from EIAR 2019

The impact pathways for effects on the sensitive aspects of Landscape and the significance of these effects as contained in EIAR 2019, is presented in Table below;

| Sensitive Aspect & Impact Pathways | Sources of Impact | Predicted Significance of Impacts (as per EIAR 2019) |
|---|--|--|
| Landscape Character – Intensification of activity causing a reduction in rural tranquillity (construction stage) Intensification of built development and reduction in the integrity of rural landscape patterns (operational stage) | Excavation of soil, and vegetation removal, Construction related activities, Presence of above ground structures, permanent alterations to landform/ vegetation patterns | Slight to Imperceptible |
| Visual Amenity – Intensification of activity causing visual disharmony, clutter or complexity (construction stage) Addition of new features or loss of existing features causing visual disharmony, clutter or complexity (operation phase) | Construction related activities, Presence of above ground structures, permanent alterations to landform/ vegetation patterns | Slight to Imperceptible |

2.11.3 Effects of the Requested Alteration on the Landscape

The Requested Alteration to the UGC route will not cause any material changes during construction to the intensification of activity or intensification of the built environment beyond that already authorised. In addition during operation, because there will be no surface expression of the UGC, the

development has no potential to cause a reduction in the integrity of rural landscape patterns. Therefore, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on the Landscape (*Slight to Imperceptible*), will not change as a result of the Requested Alteration.

All of the Emergency Procedures, Schedule and timing of works, Best Practice Measures and Construction Methodologies previously authorised for the protection of Landscape, will also be implemented for the Alterations.

2.12 Cumulation with Other Projects

2.12.1 Cumulative Effects of the UGC with the Whole UWF Project

As per the findings of the 2019 EIAR, the authorised UWF Grid Connection will not cause significant adverse effects to the environment when considered cumulatively with the other elements of the whole Upperchurch Windfarm Project (i.e. Upperchurch Windfarm, UWF Related Works, UWF Replacement Forestry or UWF Other Activities). Cumulative impacts in the Upperchurch Windfarm area (where the UWF Grid Connection works occur in close proximity to both Upperchurch Windfarm works and UWF Related Works), will be controlled under PD07 which restricts works to one element at any time on the local roads L2264-50 and L6188-0, with no road works to be scheduled on peak traffic days associated with the concrete pours for the turbine bases.

In relation to Hen Harrier, UGC works will be not be carried out within 1 kilometre of a pre-breeding breeding site and/or nest or within 1km of breeding sites already identified during the previous five years during the Hen Harrier breeding season, thus avoiding any potential for sequential effects with the other elements of the whole Upperchurch Windfarm Project.

Because the Requested Alteration will not change the size or design or construction processes for the UGC, and due to the control of construction works on the local roads in the windfarm area (PD07) and the control of works within 1km of Hen Harrier breeding sites (Altered PD01), it is considered that no changes to the cumulative impact of the authorised UGC with other elements of the Whole Upperchurch Windfarm Project will occur.

2.12.2 Cumulative Effects of the Whole UWF Project and Other Projects & Activities

As per the findings of the 2019 EIAR, the authorised UWF Grid Connection will not cause significant adverse effects to the environment when considered cumulatively with Other Projects such as Milestone (built), Bunkimalta and Castlewaller (not constructed) windfarm developments and with activities such as farming and forestry in the surrounding landscape.

The Requested Alteration will not change the findings of the 2019 EIAR evaluation, as no change will occur to the size and design of the UGC, nor to duration of the UGC works at any particular location along the public road. In relation to Hen Harrier, UGC works will be not be carried out within 1 kilometre of a pre-breeding breeding site and/or nest or within 1km of breeding sites already identified during the previous five years during the Hen Harrier breeding season, thus avoiding any potential for sequential effects with Other Projects.

3 Schedule 7A Conclusion

The UGC links Mountphilips Substation to Upperchurch Windfarm Substation. With the exception of both ends of the UGC (Mountphilips Substation and Upperchurch Windfarm Substation ends), the route of the UGC is authorised for installation within the public road including the decking of bridges.

UWF Grid Connection development requires alterations to the UGC route, because the developer for the UGC works must agree construction methodologies with Tipperary County Council before a Road Opening Licence is issued. Tipperary County Council have requested that alterations be made to the route so that the UGC is not installed within the decking of stone arch bridges along the route, but that these bridges are directionally drilled below all bridge structures or constructed otherwise.

The requested alterations relate to the UGC design and crossing methodology at bridges on the public road both in the vicinity of Newport Town and along the R503 Regional Road (Thurles to Limerick road). EDL investigated alternative crossing methods for these bridges. Investigations included input from a drilling contractor, the project civils and electrical contractor, ESB Networks, the project ecology consultant with input from the National Parks and Wildlife Service and Inland Fisheries Ireland and cultural heritage consultants. All these consultees carried out field visits to inspect the alternatives.

This Schedule 7A Information relates to these alterations. See figures at the end of this document

Figure 1: Overview on Discovery Mapping

Figure 2.1: Section 1 - Overview

Figure 2.2: Section 1 - Aerial View (Map 1)

Figure 2.3: Section 1 - Aerial View (Map 2)

Figure 2.4: Section 1 - Aerial View (Map 3)

Figure 3.1: Bridges B5, B6 and B7

Figure 3.2: Bridges B5, B6 and B7 - Aerial View

Figure 4.1: Bridges B9, B10 and B11

Figure 4.2: Bridges B9, B10 and B11 - Aerial View

Figure 5.1: Bridges B14 and B15

Figure 5.2: Bridges B14 and B15 - Aerial View

3.1 Impact of the Requested Alterations on the 2019 EIAR assessment

The UWF Grid Connection 2019 EIAR was examined. Potential impacts of this Requested Alteration on all of the environmental topics were considered and an assessment was made whether the effects changed the significance of impact as assessed in the UWF Grid Connection 2019 EIAR. **In conclusion, it is considered that the findings of the 2019 EIAR evaluation for the UWF Grid Connection on all the environmental topics of Not Significant, will not change as a result of the Requested Alterations.**

In addition it should be noted that the purpose of UWF Grid Connection is to enable the export of RE-E (renewable electricity) from Upperchurch Windfarm, when constructed, to the National Grid. This

indirect effect is assessed in EIAR 2019, as a *Significant Positive Indirect Impact* on Climate Action because the export of RE-E will contribute to National emission reduction targets and to the target of 80% of electricity from renewables, set by Government in the Climate Action Plan (CAP24) for 2030.

A grant of the Requested Alterations will allow the construction of the Upperchurch Windfarm project (of which UWF Grid Connection is part) without delay, as all the other permits and requirements for the whole project are now in place. Upperchurch Windfarm is a large windfarm of 84MW installed capacity and is a significant part of the Government's RESS4 scheme. RESS4 is a pivotal component of the Government of Ireland's Climate Action Plans and efforts to achieve a target of at least 80% Renewable Electricity (RE-E) by 2030.

3.2 Conclusion to Potential to Change the Findings of the AA Report 2019

3.2.1 Stage 1 – Screening

Due to the location, size and design of the Requested Alteration, it is evaluated that alterationa will not change the findings of 2019 Stage I Screening for the 19 No. European Sites (16 SACs, 3 SPAs) examined.

3.2.2 Stage 2 – NIS

The potential effects of the requested alterations on the Lower River Shannon SAC; Glare Glen SAC and Slievefelim to Silvermines Mountain SPA were examined at Stage 2 Natura Impact Statement.

See at the end of this document

Figure 6.1: Designated Sites proximate Section 1

Figure 6.2: Designated Sites proximate Section 1

Figure 6.3: Designated Sites proximate to Bridges B5, B6 and B7

Figure 6.4: Designated Sites proximate to Bridges B9 and B10

Figure 6.5: Designated Sites proximate to Bridges B11

Figure 6.6: Designated Sites proximate to Bridges B14 and B15

3.2.2.1 Summary for the Lower River Shannon SAC

Overall, it is evaluated that due to;

- the small scale and temporary duration of trenching and drilling works;
- the short lengths of new ESB access roads at Requested Alteration locations;
- the altered works are similar in scale and nature to the authorised works;
- no permanent loss of habitat within the SAC boundary;
- the avoidance of works to the parapet walls at Rockvale Bridge B2;
- no material difference in the altered works locations along the R503;
- the avoidance of works to the parapet walls at Tooreenbrien Bridge B11 and Anglesey Bridge B15;
- instream works already authorised along the R503 to replace culverts;

- with the implementation of the authorised construction methodologies for trenching works and directional drilling works (See [Schedule 7A Appendix B](#) - GC-OCM-07, GC-OCM-16, GC-OCM-18); and
- with the implementation of the environmental protection measures (See [Schedule 7A Appendix B](#) - PD15-PD50),

the Requested Alteration will not change the findings of the 2019 Stage 2 NIS – i.e. no adverse effects on the integrity of the Lower River Shannon SAC.

3.2.2.2 [Summary for the Clare Glen SAC](#)

Overall, it is evaluated that due to;

- downstream separation distance to the SAC boundary;
- the small scale and temporary duration of trenching and drilling works;
- the short lengths of new ESB access roads at Requested Alteration locations,
- with these altered works similar in scale and nature to the authorised works, and
- no permanent loss of habitat within the SAC boundary,
- no material difference in the altered works locations along the R503;
- the avoidance of works to the parapet walls at Tooreenbrien Bridge B11 crossing of the Clare River;
- instream works already authorised along the R503 to replace culverts; and
- with the implementation of the authorised construction methodologies for trenching works and directional drilling works (See [Schedule 7A Appendix B](#) - GC-OCM-07, GC-OCM-16, GC-OCM-18); and
- with the implementation of the environmental protection measures (See [Schedule 7A Appendix B](#) - PD15-PD50),

the Requested Alteration will not change the findings of the 2019 Stage II NIS – i.e. no adverse effects on the integrity of the Clare Glen SAC.

3.2.2.3 [Summary for the Slieve Felim to Silvermines Mountains SPA](#)

The Requested Alteration will result in:

- No loss (temporary or permanent) of heath or bog habitat;
- Very small extent of temporary loss of low suitability nesting habitat (0.045ha of WD4/WS2) and temporary habitat loss will be reversed using locally sourced heather (Irish provenance) or equivalent cover as suits each location;
- Very small extent of temporary loss of suitable foraging habitat (0.045ha of WD4/WS2, 0.005ha of GS4, 0.005ha of WS1/WS2 and 0.025ha of WN5/WS1) and temporary habitat loss will be reversed using locally sourced heather (Irish provenance) or equivalent cover as suits each location;
- Permanent habitat loss will only occur ex-situ the SPA;
- Permanent habitat loss mainly relates to unsuitable habitat, loss of suitable habitat limited to 0.28ha of GA1;
- Very small extent of hedgerow removal (16m total), es-situ the SPA, with replanting of hedgerow at the two locations;

- In excess of 1km separation distance between habitat loss and the nearest nest, and in the context of the location of these habitats adjacent to the Regional Road;
- Negligible displacement of prey item species, which will be reversible with completion of works at a location;
- Small increase in the duration of works at directional drilling locations on the R503 Regional Road,

overall, it is concluded that the alterations will not adversely affect the integrity of the **Slievefelims to Silvermines Mountains SPA** as a result of direct mortality or disturbance or as a result of indirect secondary impacts to suitable habitat or to the availability of prey item species, either within or ex-situ the SPA. Therefore, it is evaluated that the **Requested Alteration will not change the findings of the 2019 Stage 2 NIS – i.e. no adverse effects on the integrity of the Slievefelim to Silvermines Mountains SPA.**

Schedule 7A Figures

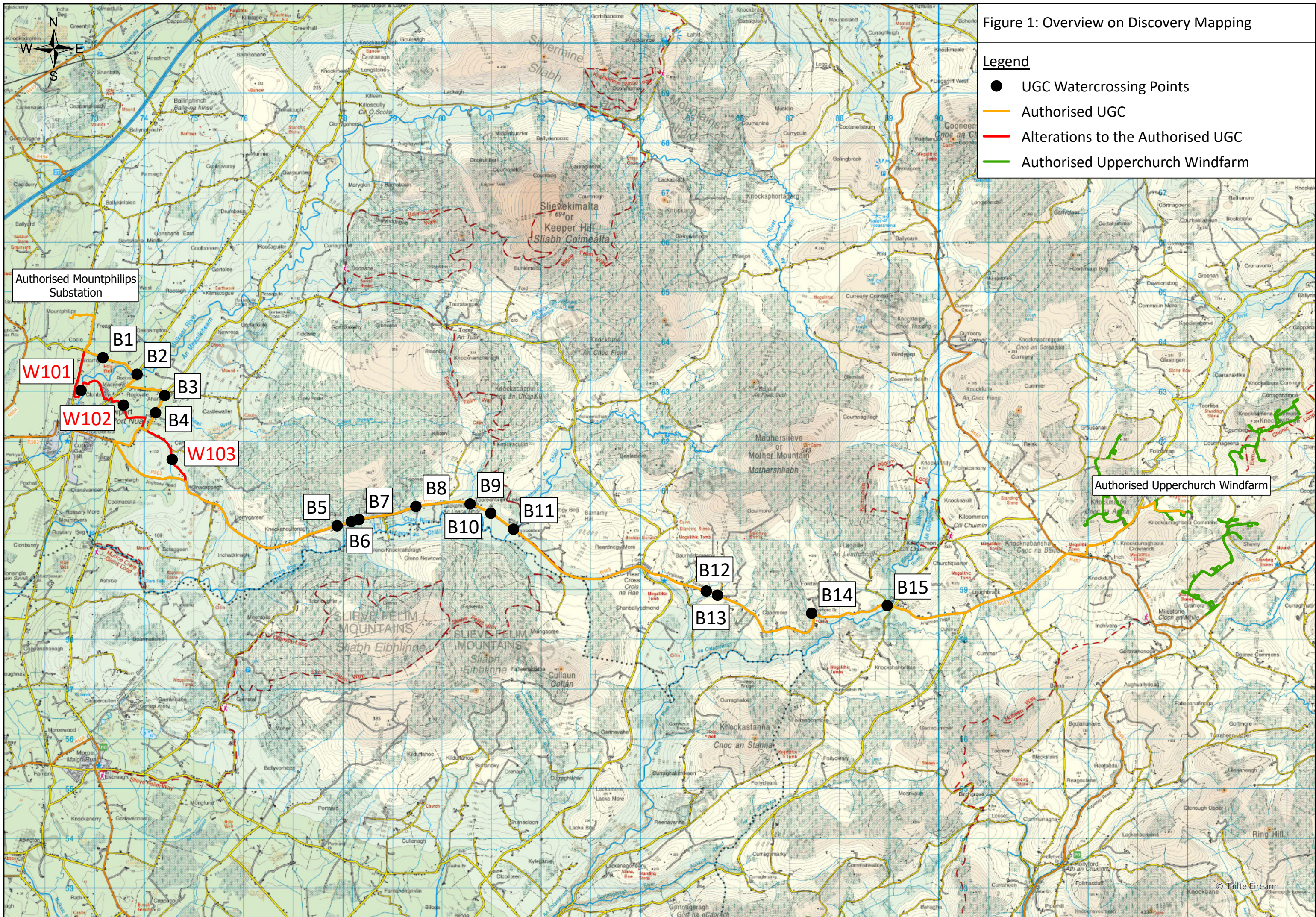
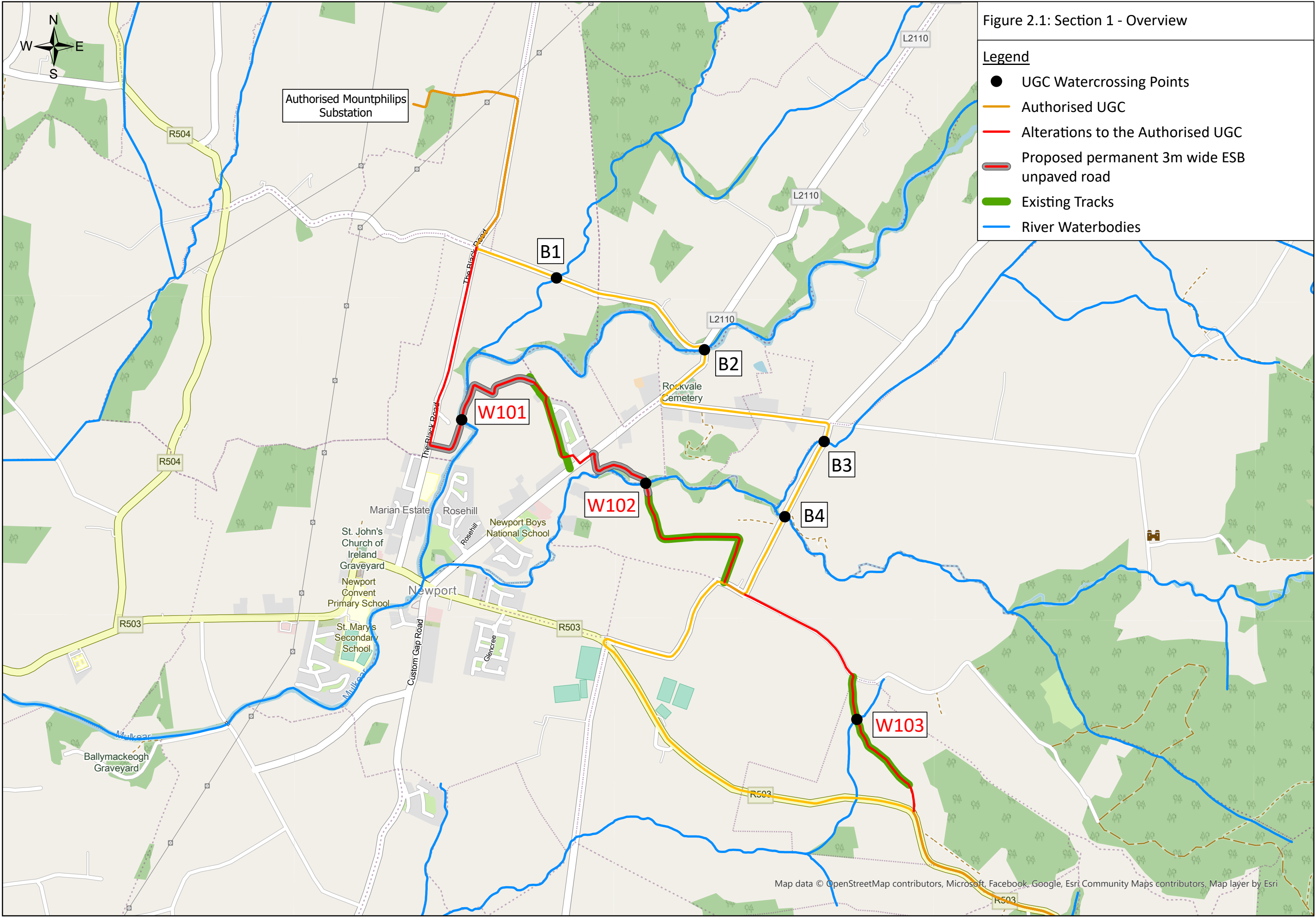
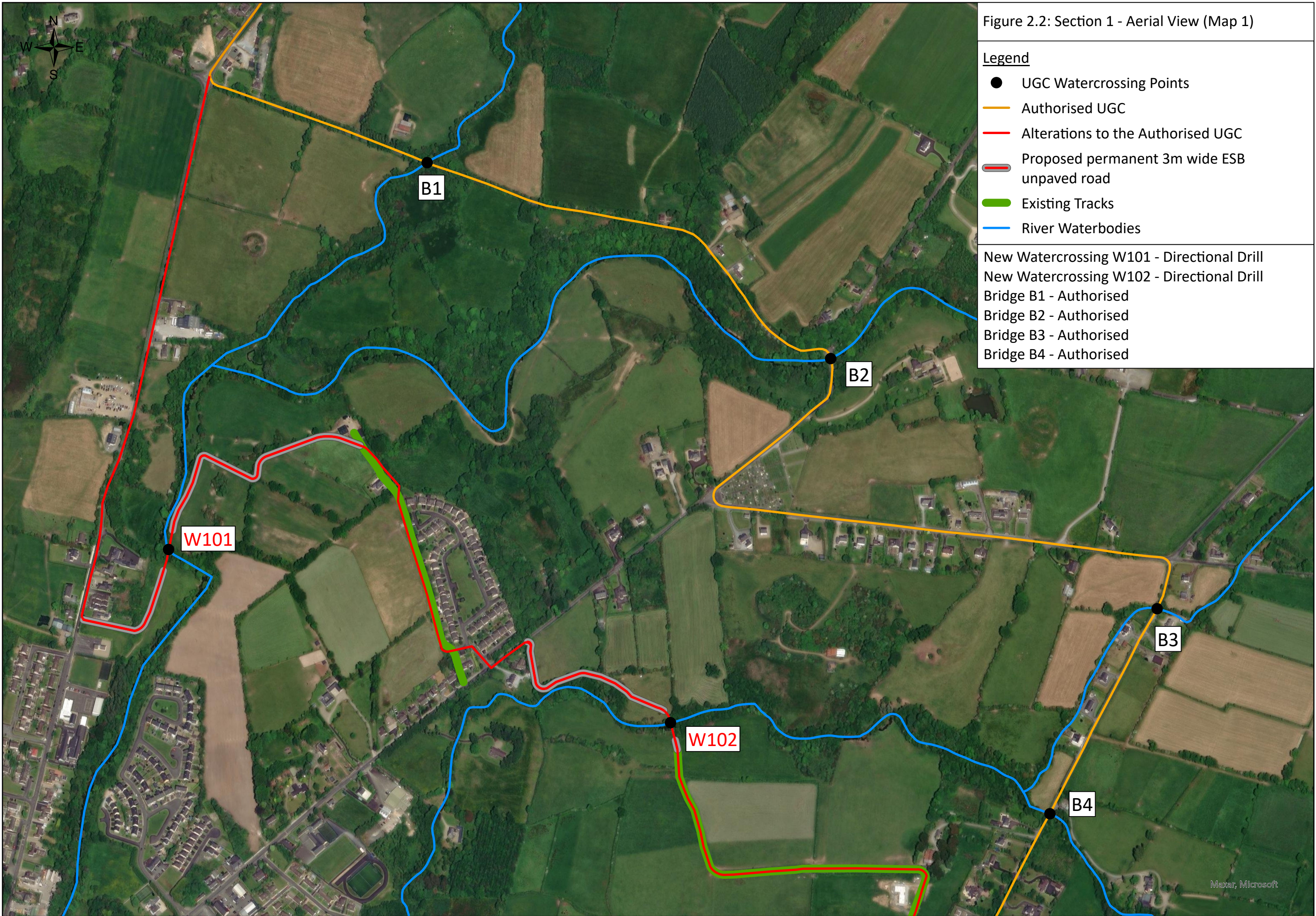
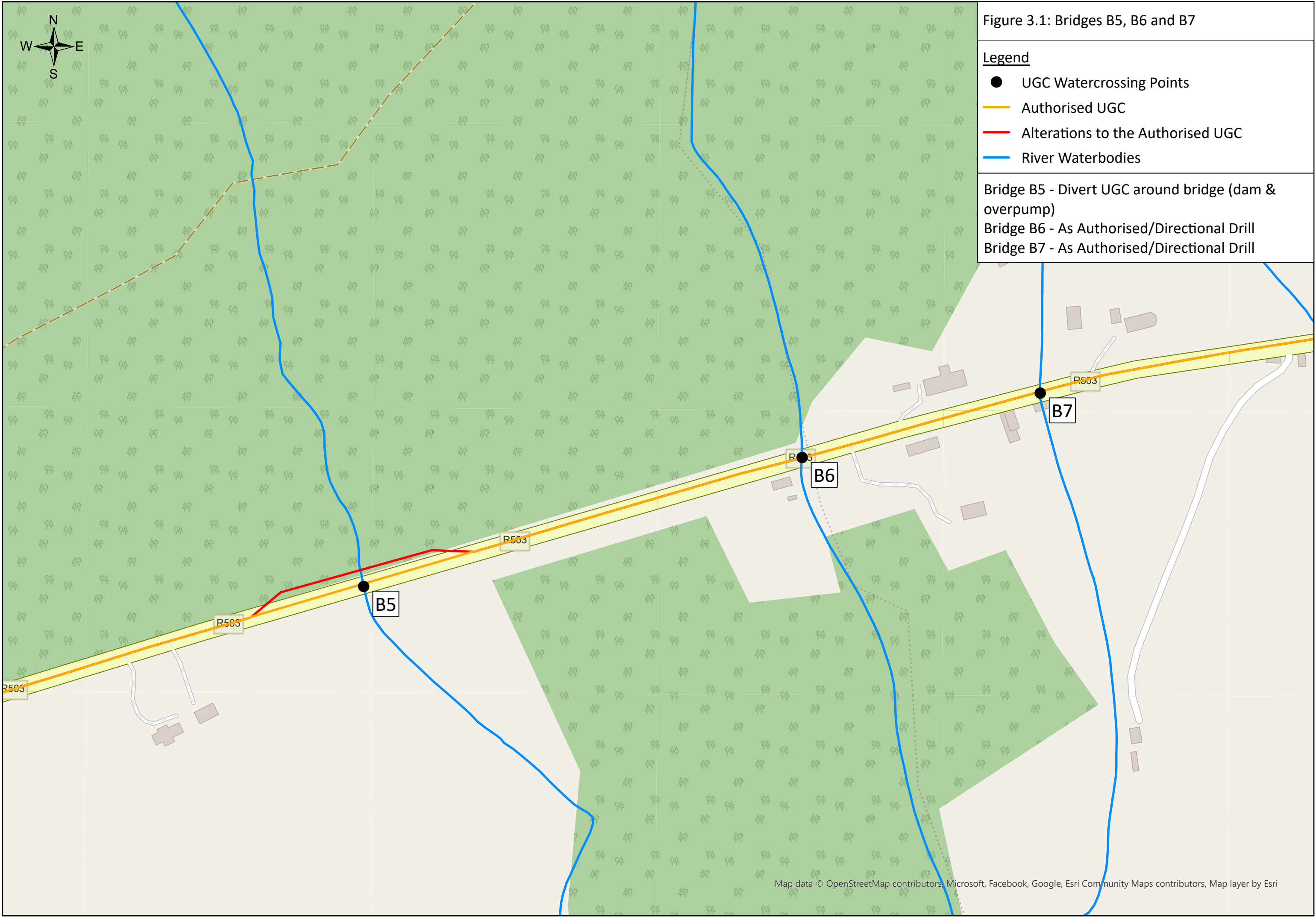


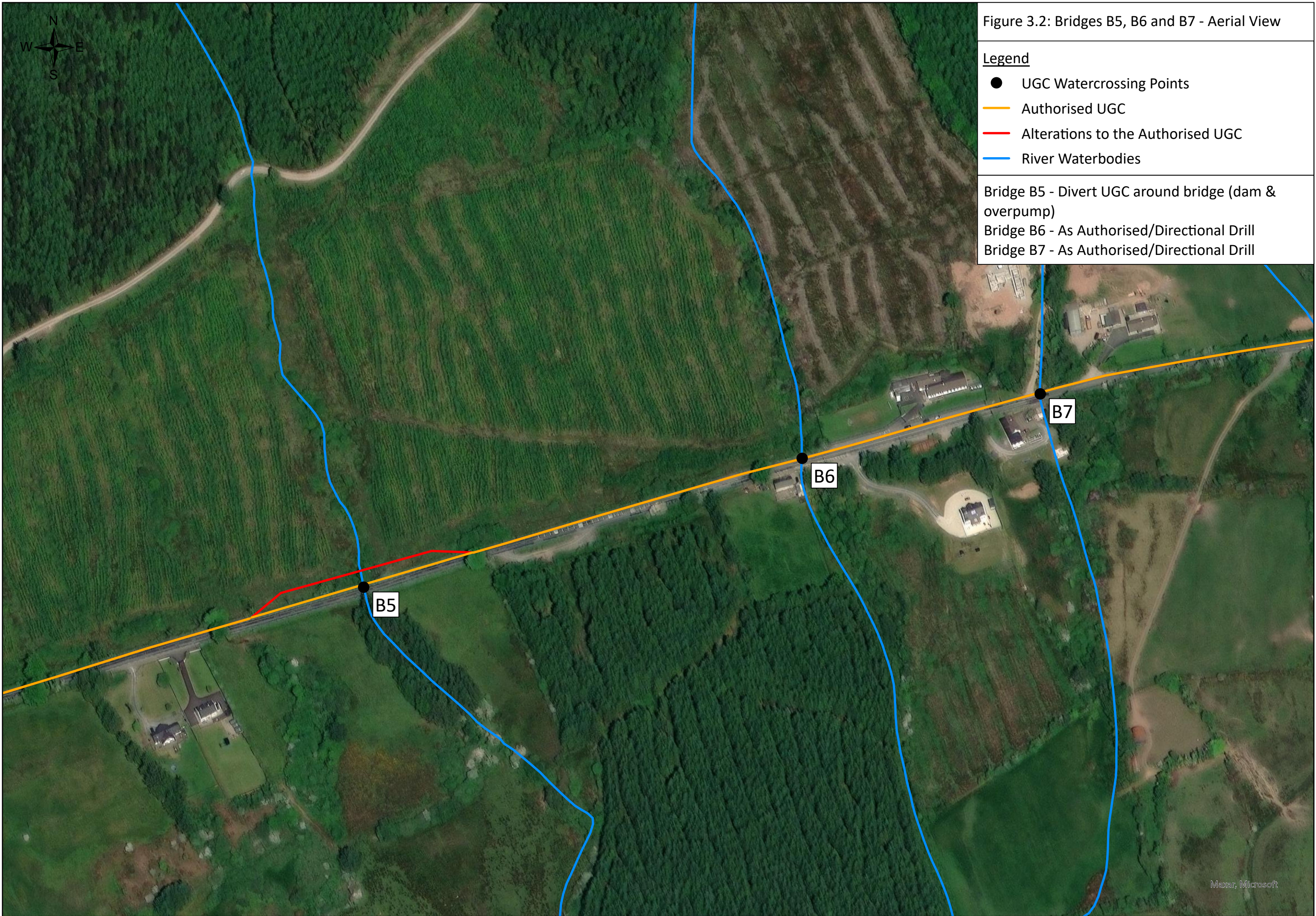
Figure 1: Overview on Discovery Mapping



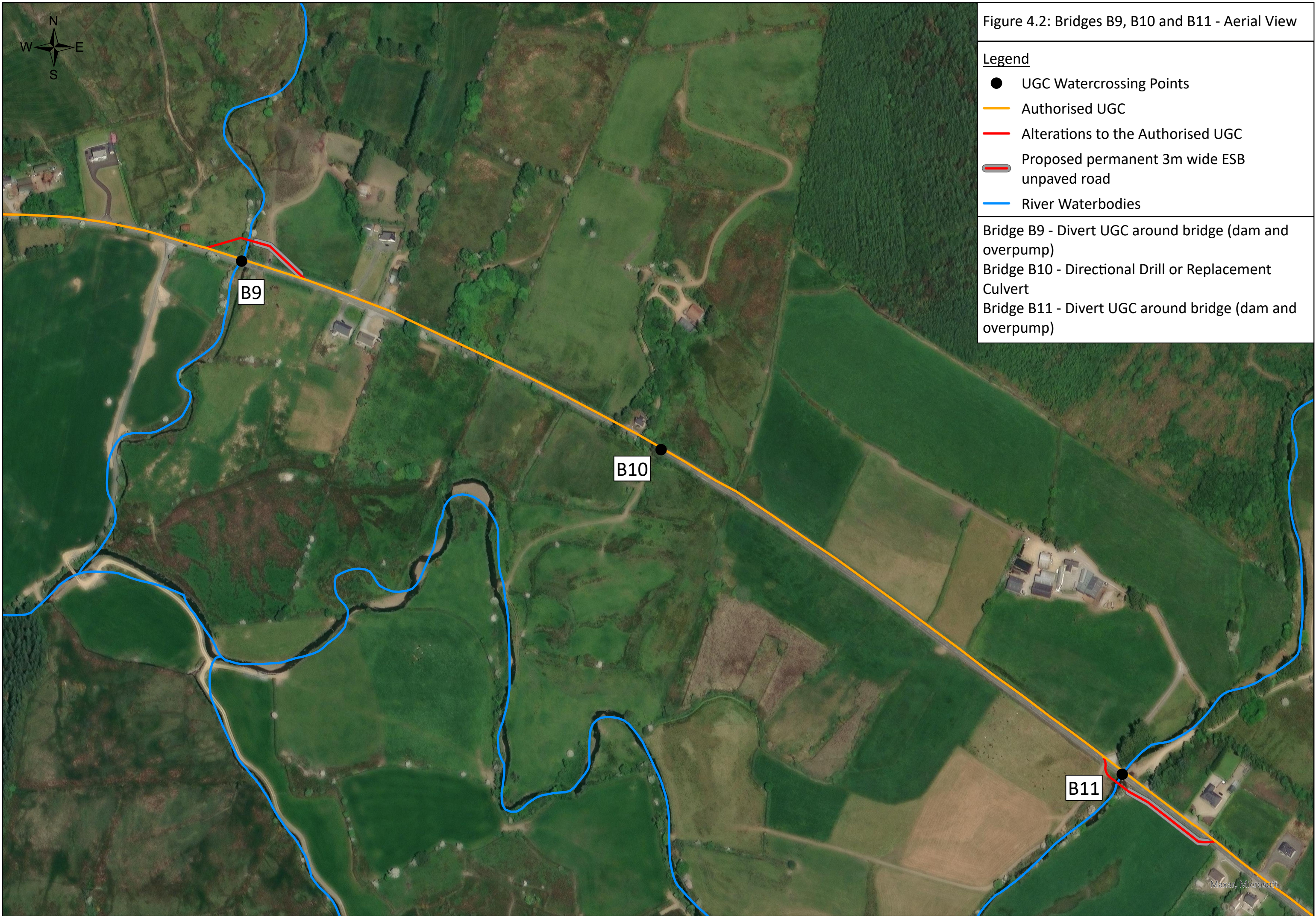


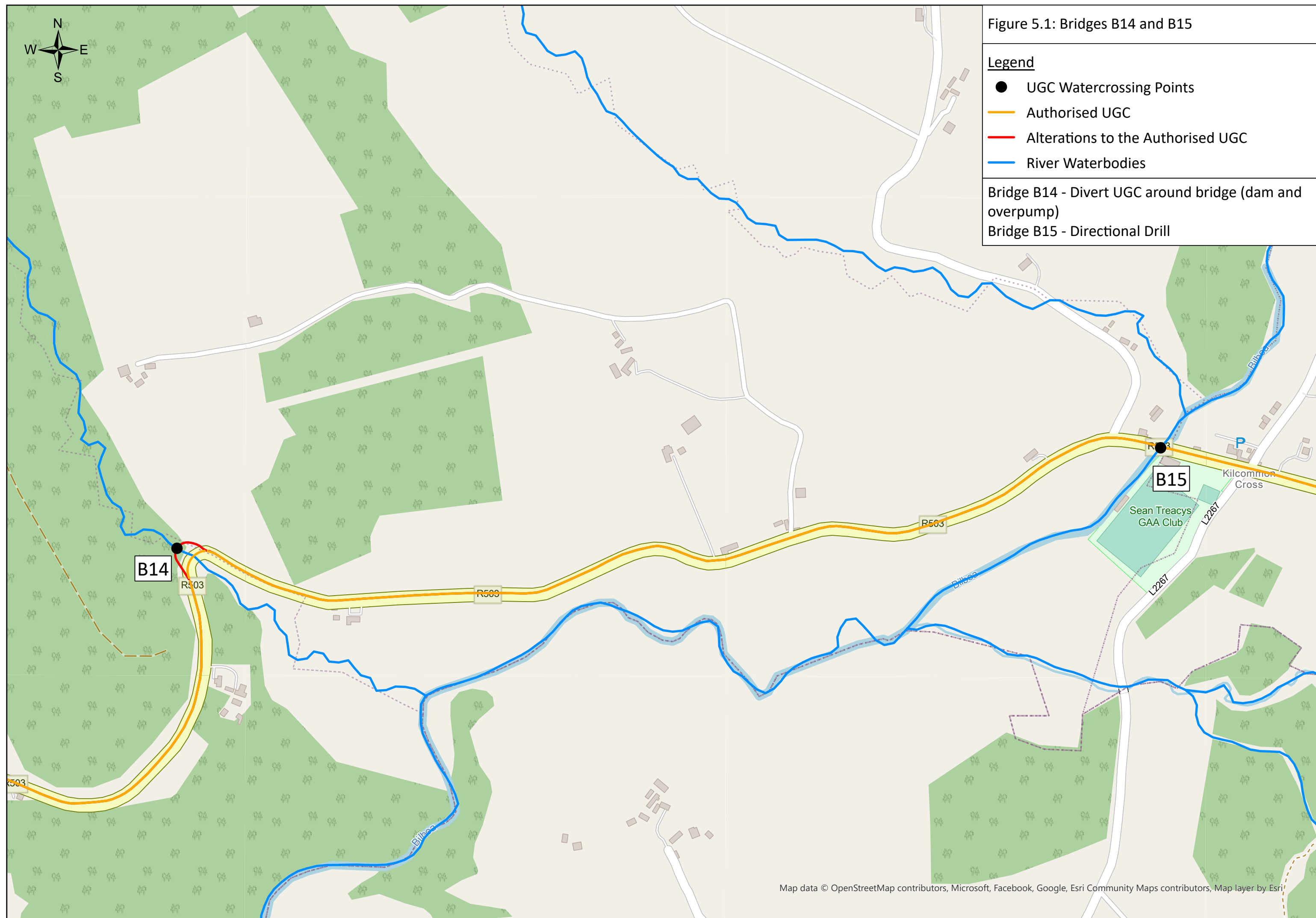


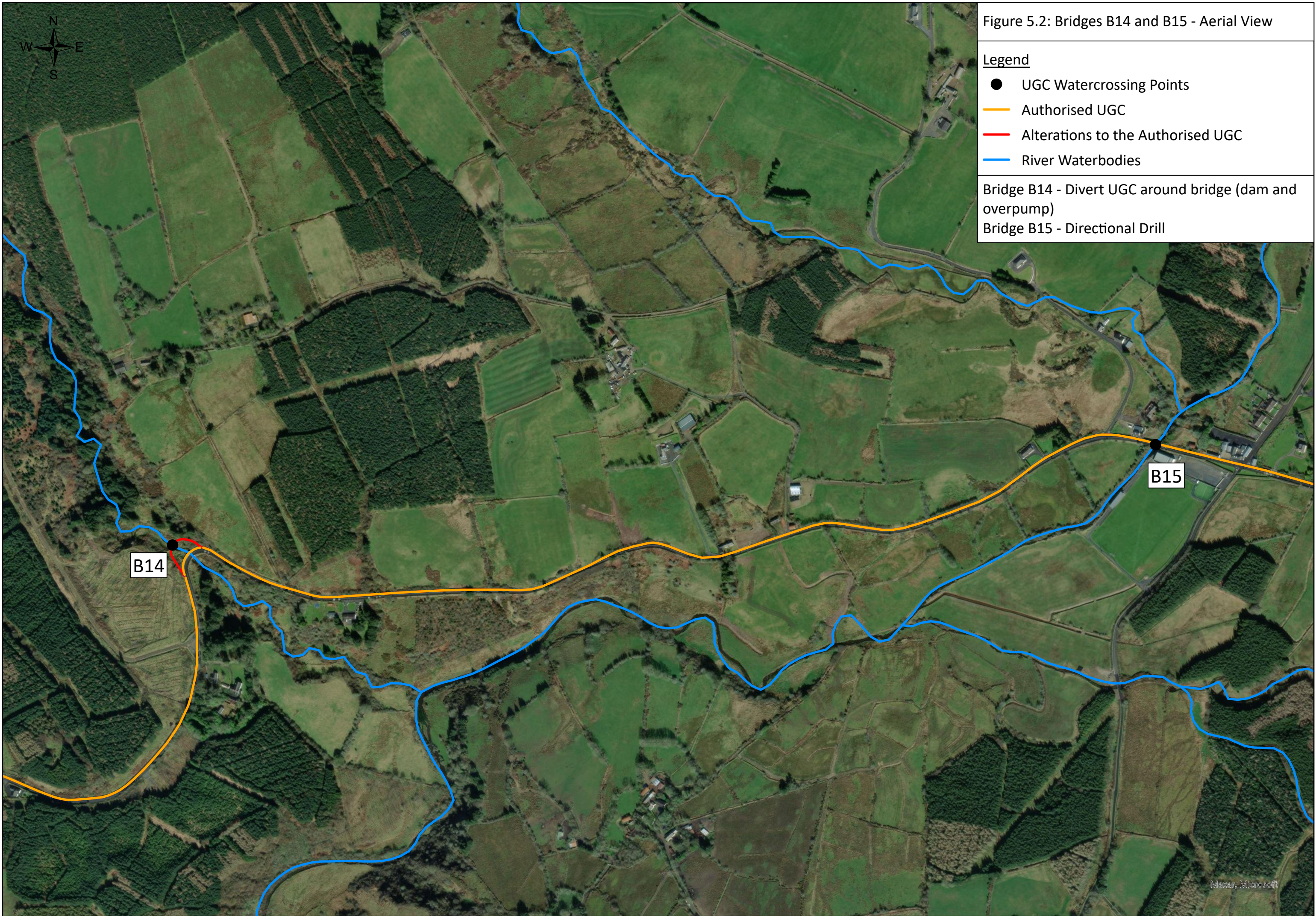












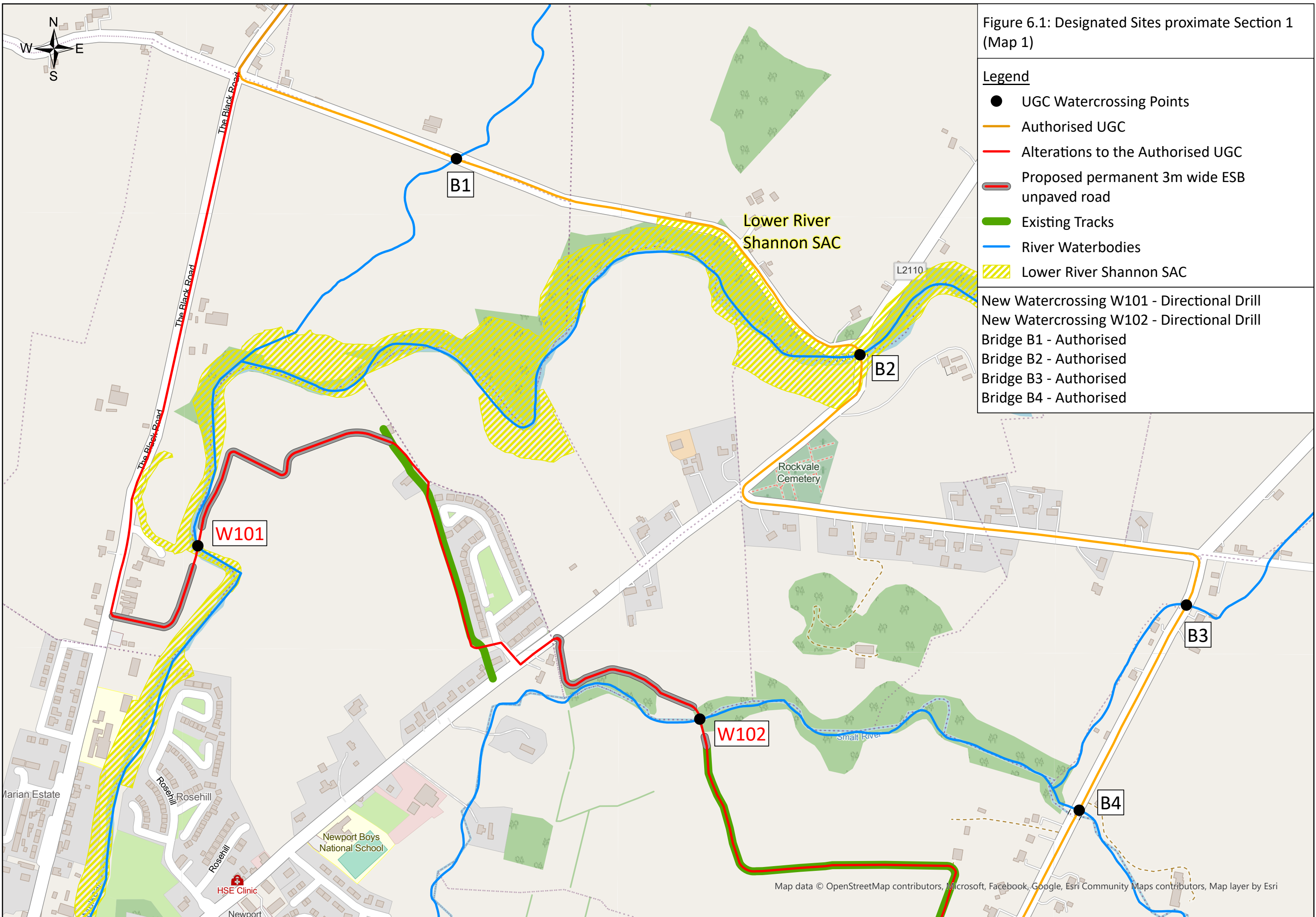
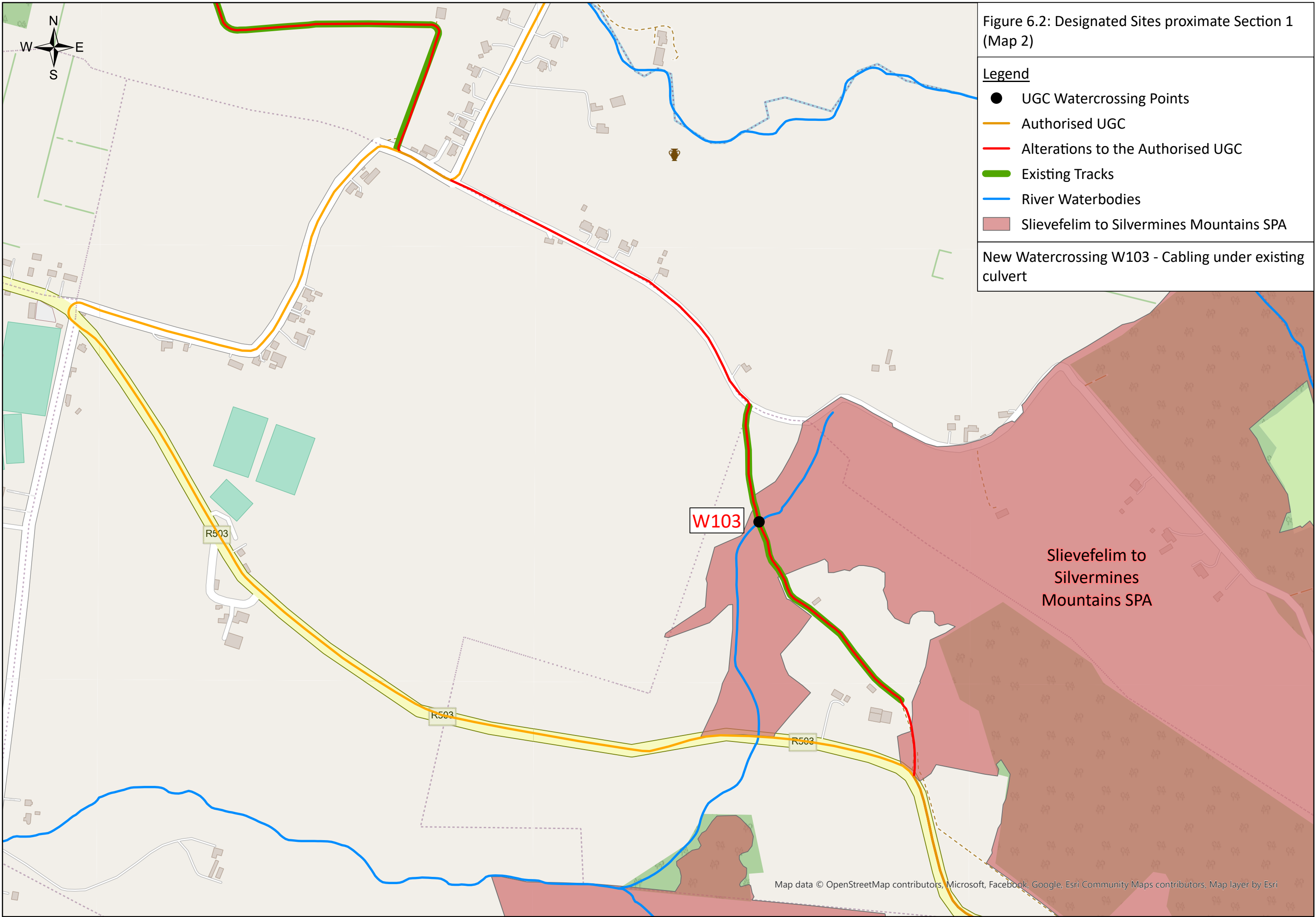


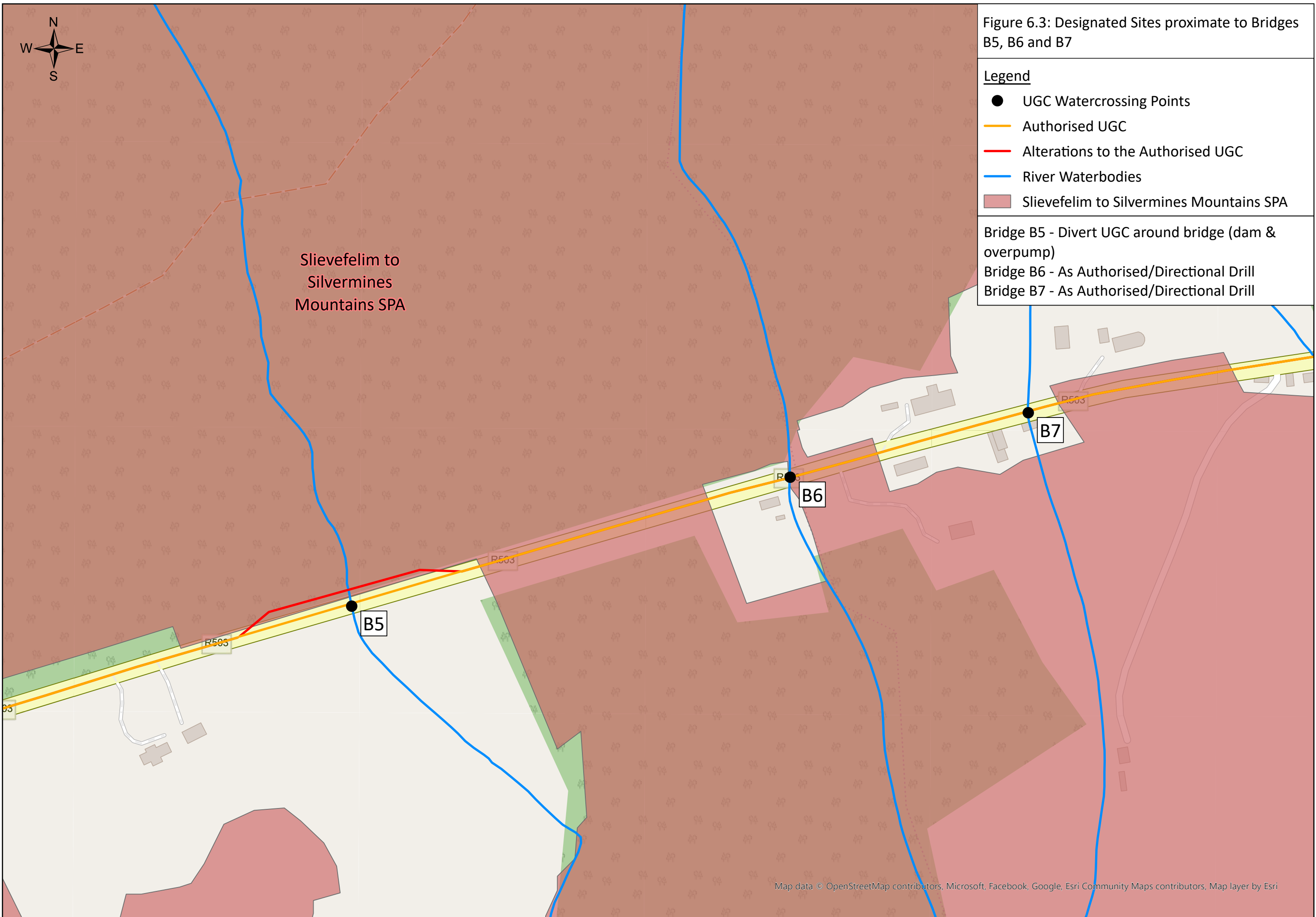
Figure 6.1: Designated Sites proximate Section 1 (Map 1)

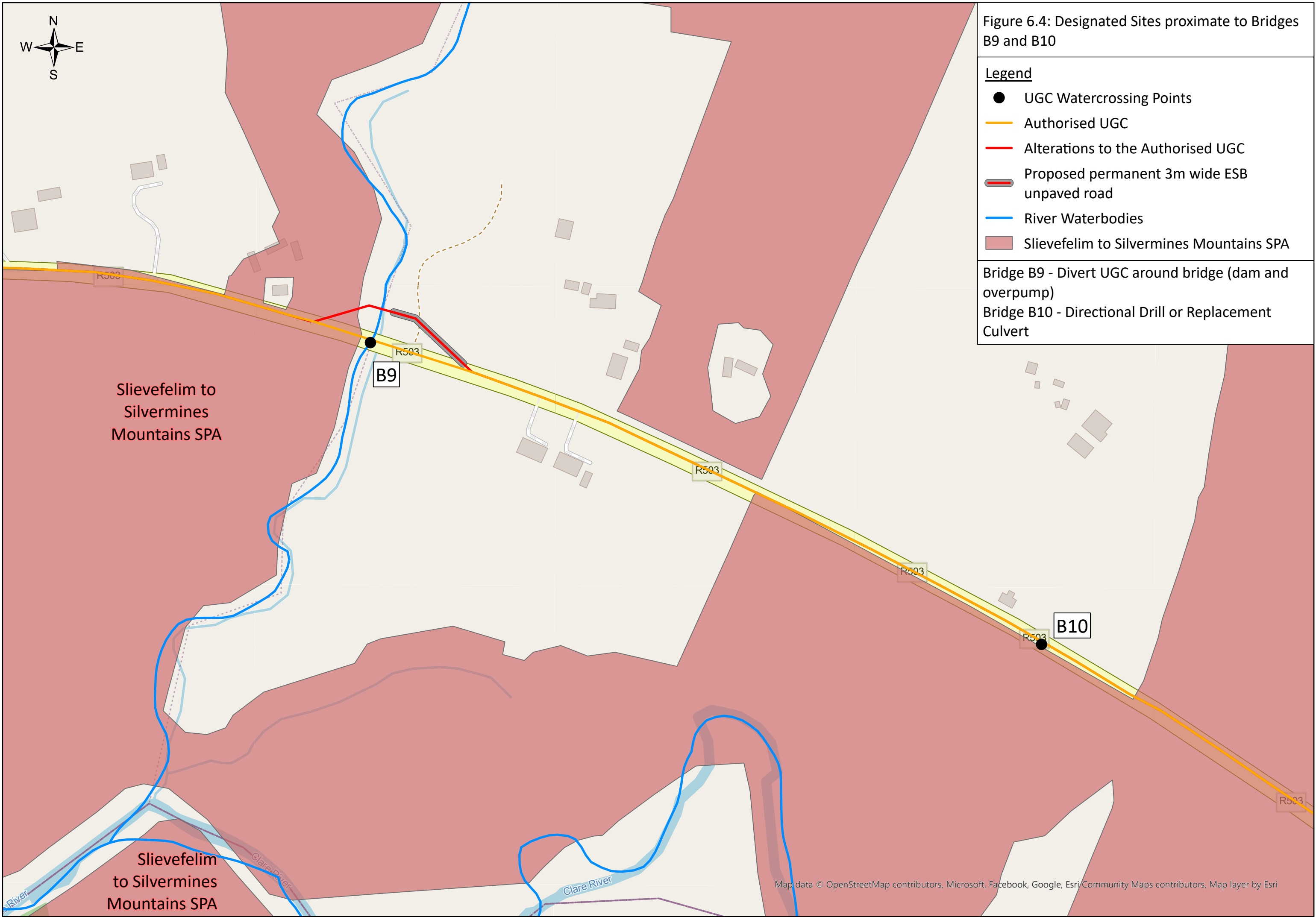
Legend

- UGC Watercrossing Points
- Authorised UGC
- Alterations to the Authorised UGC
- Proposed permanent 3m wide ESB unpaved road
- Existing Tracks
- River Waterbodies
- Lower River Shannon SAC

New Watercrossing W101 - Directional Drill
New Watercrossing W102 - Directional Drill
Bridge B1 - Authorised
Bridge B2 - Authorised
Bridge B3 - Authorised
Bridge B4 - Authorised







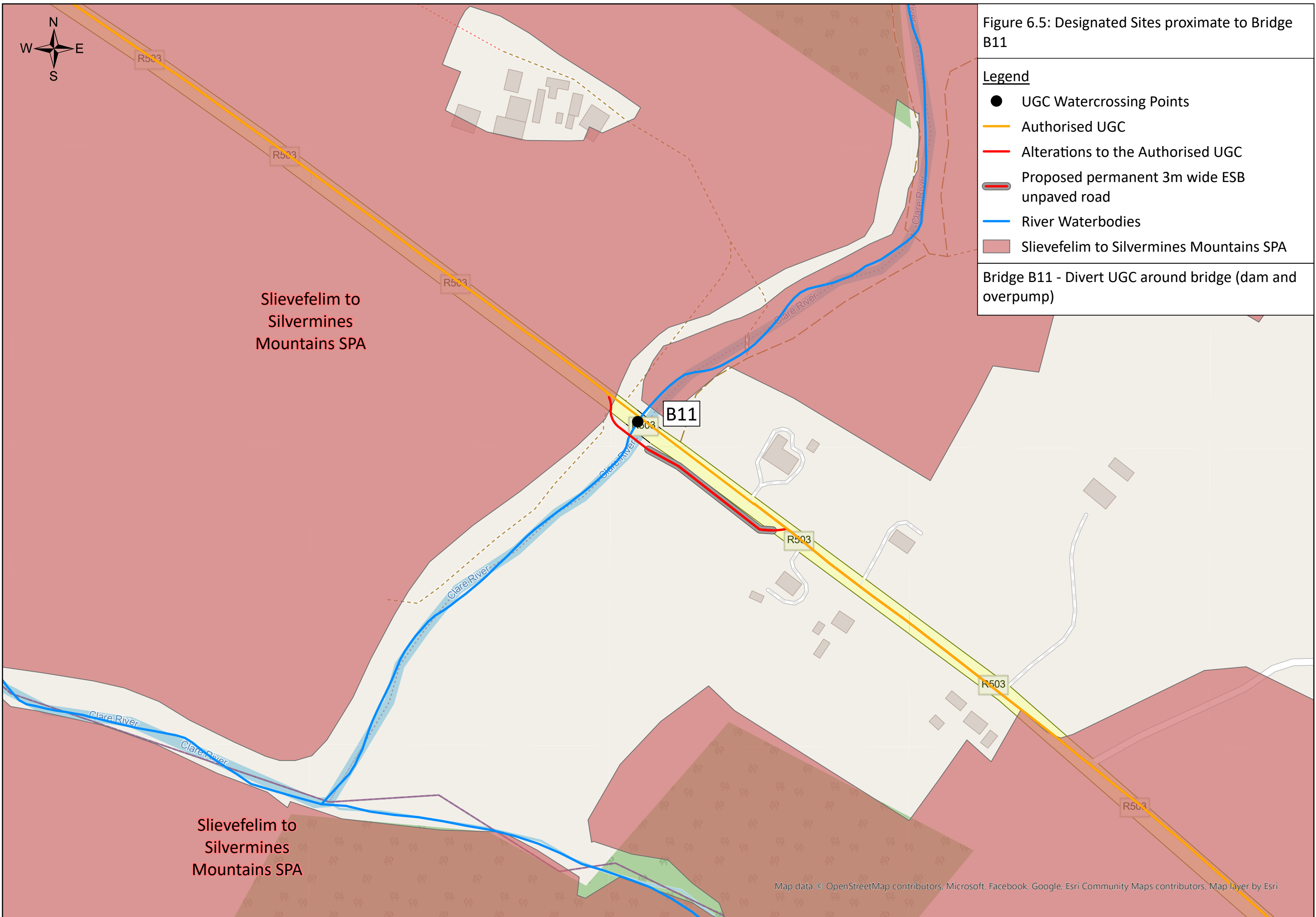
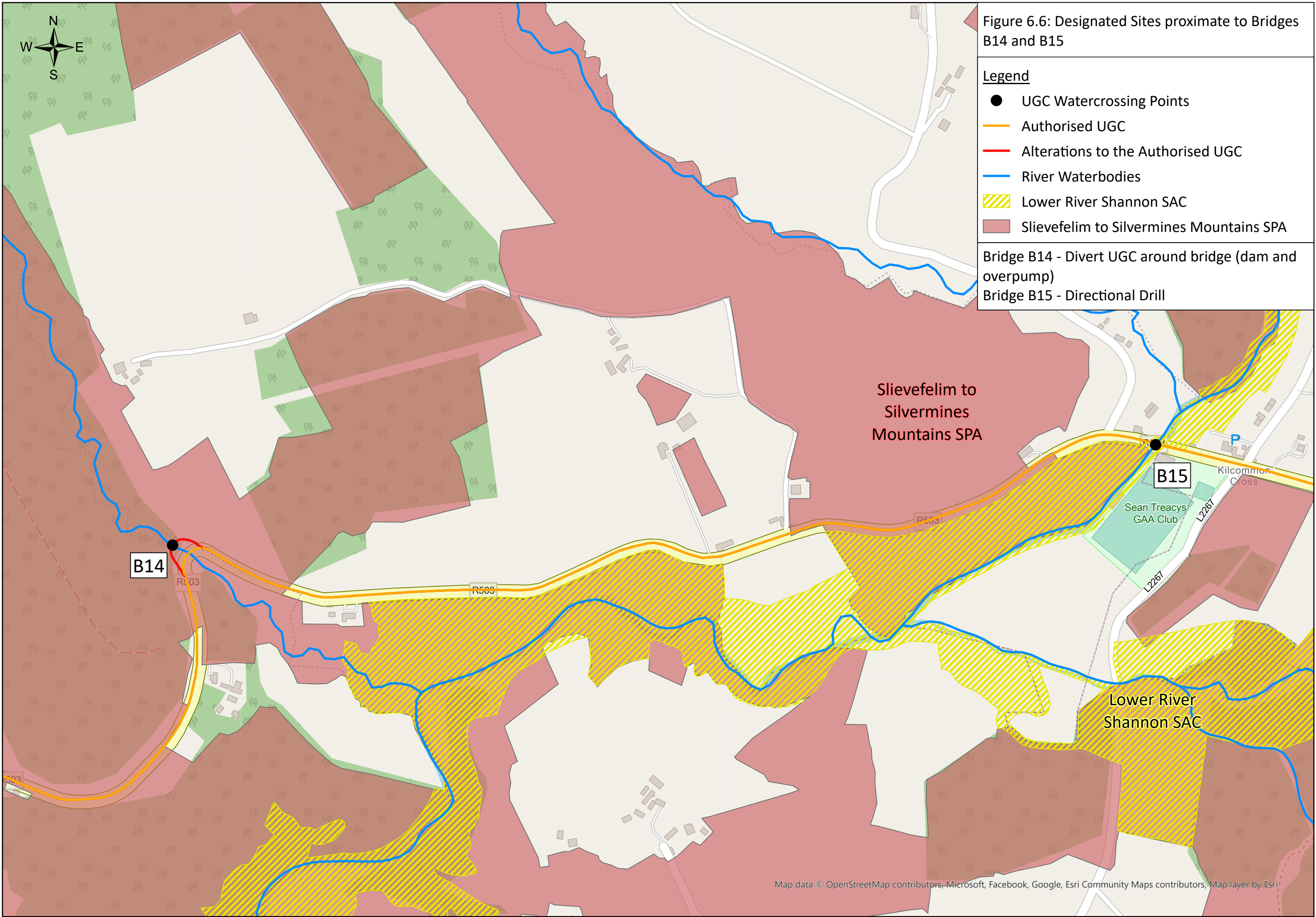


Figure 6.5: Designated Sites proximate to Bridge B11

Legend

- UGC Watercrossing Points
- Authorised UGC
- Alterations to the Authorised UGC
- Proposed permanent 3m wide ESB unpaved road
- River Waterbodies
- Slievefelim to Silvermines Mountains SPA

Bridge B11 - Divert UGC around bridge (dam and overpump)

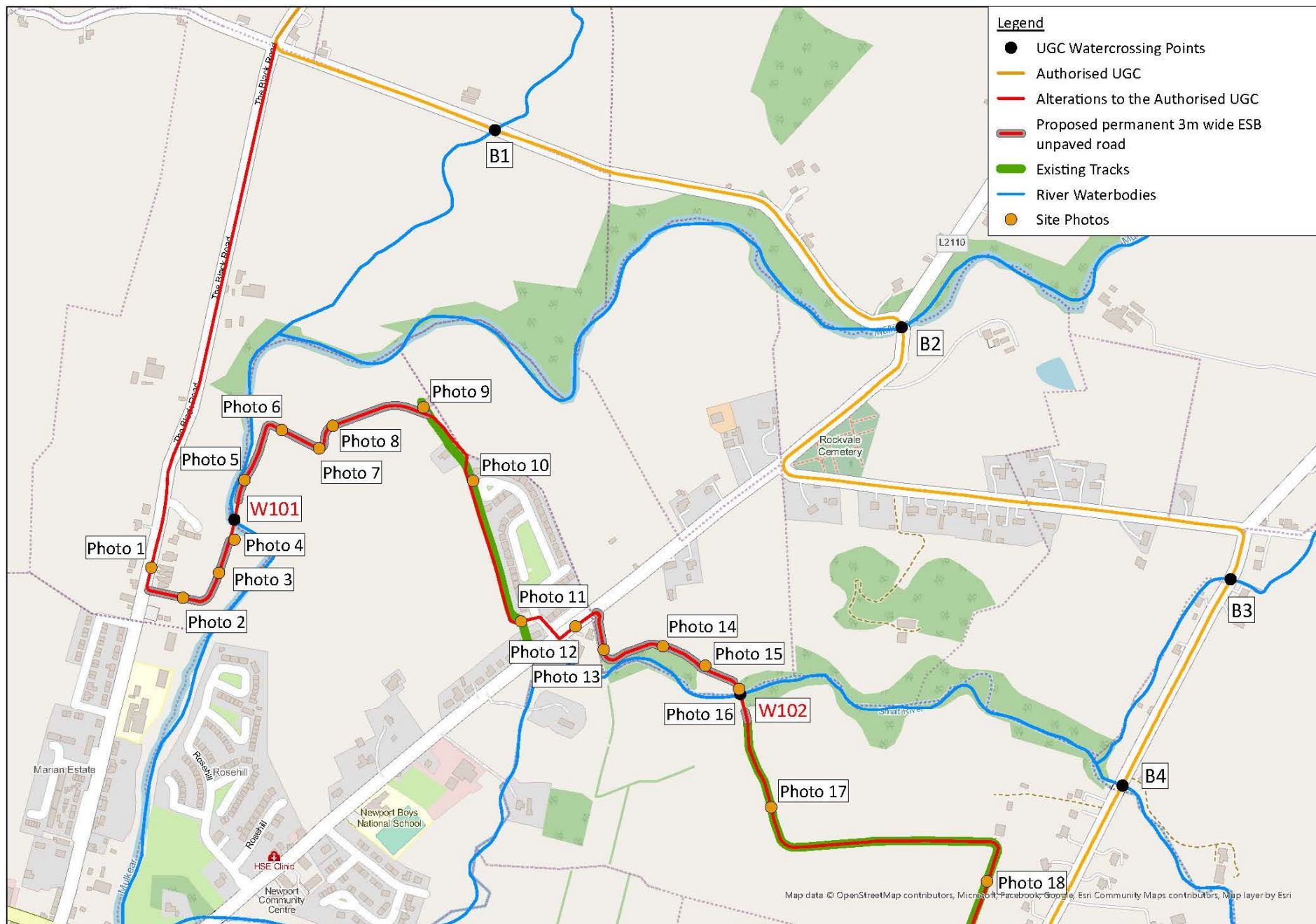


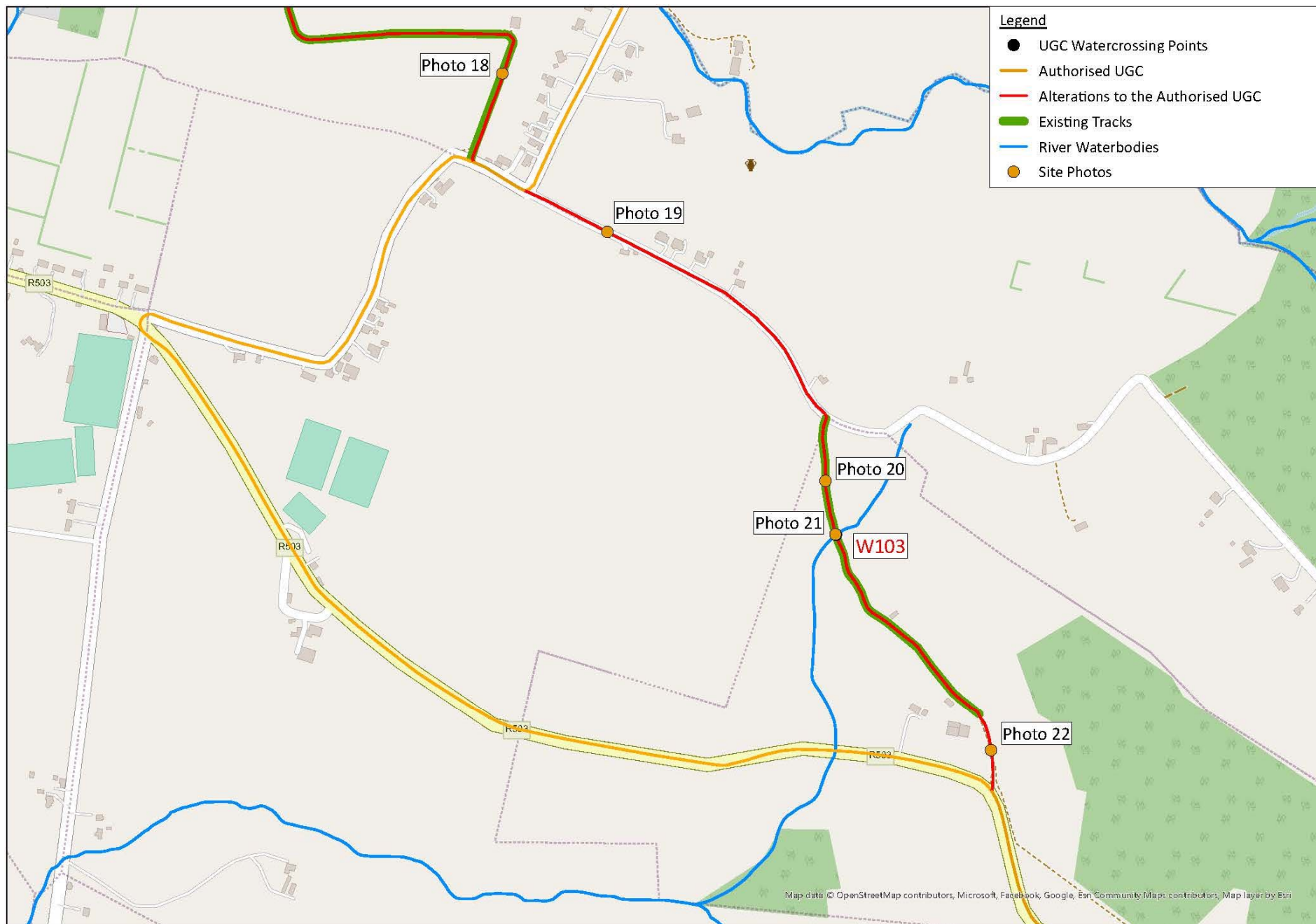
Appendices for the Schedule 7A Information/Assessment

| | |
|-------------------------------|---|
| Schedule 7A Appendix A | Site Photographs of the Alternative Grid Route |
| Schedule 7A Appendix B | <ul style="list-style-type: none"> • Chapter 19 - Mitigation Measures & Monitoring Arrangements • Environmental Emergency Response Procedures (authorised) • Environmental Surveying and Monitoring Measures (authorised) • Best Practice Measures (authorised) • Outline Construction Methodologies (authorised) |
| Schedule 7A Appendix C | Biodiversity - Ecology Baseline Report |
| Schedule 7A Appendix D | Biodiversity - Extract from Stage 1: Screening for Appropriate Assessment for UWF Grid Connection 2019 |
| Schedule 7A Appendix E | Biodiversity - Site Specific Conservation Objectives for the Slievefelim to Silvermines Mountains SPA [004165] |
| Schedule 7A Appendix F | Cultural Heritage Impact Assessment (CHIA) |

Appendix for the Schedule 7A Information/Assessment

Appendix A: Site Photographs of the Alternative Route





Site Photographs



Photo 1 - L-2166



Photo 2 - Entrance off L2166 to Watercourse W101



Photo 3 - UGC route and Access to Directional drilling point at W101



**Photo 4 - W101 Newport River -
Directional Drill, No instream works**



Photo 5 - Field North of W101



Photo 6 - Field North of W101 cont.



Photo 7 - Break in hedgerow in field north of W101. Cable and 3m access track installed through the break.



Photo 8 - Agricultural lands north of W101



Photo 9 - Existing access track between W101 and L2156



Photo 10 - Existing access track between W101 and L2156 cont.



Photo 11 - L51851



Photo 12 - L2156



Photo 13 - Agricultural field east of L2156



Photo 14 - Large break in hedgerow in field east of L2156. Cable and 3m access track installed through break.



Photo 15 - Agricultural field east of L2156 cont.



Photo 16 - W102 Small River - Directional Drill, No instream works



Photo 17 - Existing access track south of W102



Photo 18 - Existing access track joining the L6009



Photo 19 - L60091

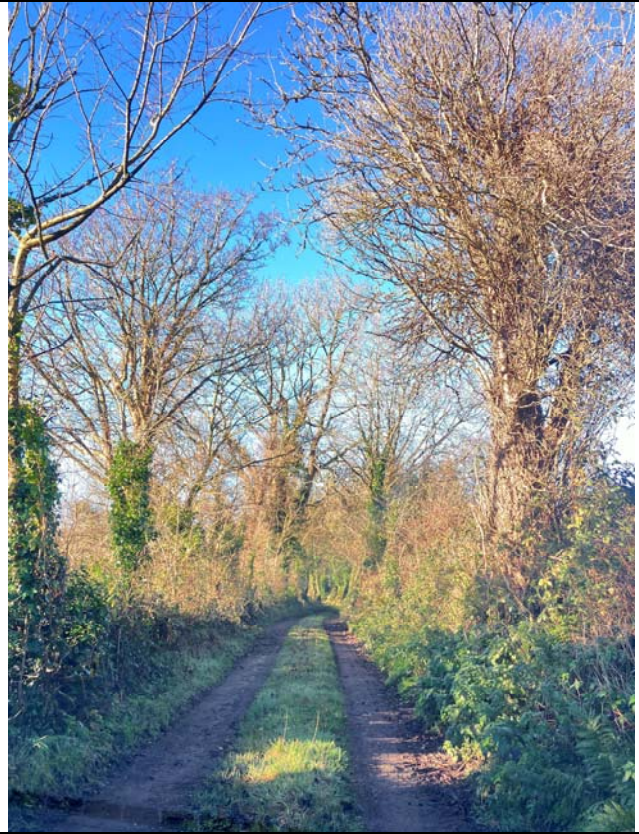


Photo 20 - Existing access track joining the L60091 to the R503.



Photo 21 - W103 - Culverted drain. UGC installed over/under culvert



Photo 22 - L95032 and R503 junction



Photo 23 - Forestry lands at Bridge B5 - No permanent access track



Photo 24 - Watercourse at Bridge B5



Photo 25 - Bridge B7 - Directional drill, no instream works



Photo 26 - Agricultural Lands at Bridge B9.



Photo 27 - Watercourse at Bridge B9



**Photo 28 - Agricultural Lands at Bridge B11
(Tooreenbrien Bridge)**



Photo 29 - Watercourse at Bridge B11 (Tooreenbrien Bridge)



Photo 30 - Watercourse at Bridge B14



Photo 31 - Bridge B14 Coonmore Bridge



Photo 32 - Bridge B15 Anglesey Bridge - Directional Drill, no instream works

Appendix for the Schedule 7A Information/Assessment

Appendix B : Extract from the authorised UWF Grid Connection Environmental Management Plan

- **Chapter 19 - Mitigation Measures & Monitoring Arrangements**
- **Environmental Emergency Response Procedures (authorised)**
- **Environmental Surveying and Monitoring Measures (authorised)**
- **Best Practice Measures (authorised)**
- **Outline Construction Methodologies (authorised)**

**UWF Grid Connection
EIA Report (2019)**

Volume C2: EIAR Main Report

**Chapter 19:
Mitigation Measures & Monitoring Arrangements**



October 2019

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List of Appendices

| <u>Appendix No.</u> | <u>Appendix Title</u> |
|---|-----------------------|
| There are no appendices associated with this topic chapter. | |

Glossary of Terms

| <u>Term</u> | <u>Definition</u> |
|----------------------------------|--|
| Environmental Commitments | The environmental protection measures including Project Design Measures, Best Practice Measures and Management Plans which were developed during the EIA process and incorporated into the Environmental Management Plan as Environmental Commitments. |
| Environmental Factors | The factors in the environment required to be identified, described and assessed during the EIA process. These are specified in Article 3 (1) of the EIA Directive as Population and Human Health; Biodiversity; Land; Soils; Water; Air; Climate; Material Assets; Cultural Heritage and Landscape. |
| Sensitive Aspect | Any sensitive receptor in the local environment which could be impacted by the project. |

List of Abbreviations

| <u>Abbreviation</u> | <u>Full Term</u> |
|---------------------|-------------------------------|
| EMP | Environmental Management Plan |
| UWF | Upperchurch Windfarm |

Executive Summary

Mitigation Measures are environmental protection measures incorporated into the design of the project to avoid, prevent or reduce significant effects on the receiving environment. The UWF Grid Connection project includes a suite of environmental protection measures – Project Design Measures (Mitigation Measures), Management Plans and Best Practice Measures. Monitoring arrangements will involve an Environmental Clerk of Works team, monitoring the implementation of these environmental protection measures.

These measures form the Environmental Commitments in the Environmental Management Plan (EMP). The Environmental Commitments will be updated post consent with any additional requirements of planning conditions or statutory bodies. The EMP comprises **Volume D of this EIA Report**.

Mitigation Measures: The design of UWF Grid Connection includes 69 No. Project Design Environmental Protection Measures which are mitigation measures incorporated into the design of the project. The project also includes an Environmental Management Plan which sets out the additional measures to be implemented through a site specific Traffic Management Plan, Surface Water Management Plan, Waste Management Plan, Invasive Species Management Plan and Best Practice Measures.

Monitoring Measures: Monitoring measures are included throughout the EIA Report and additional monitoring measures are also proposed as part of the Environmental Management Plan (EMP). A Schedule of these Monitoring Measures has been collated and is included in the EMP as Tab 9: Environmental Surveying & Monitoring.

As most potential for adverse effects to the environment arises during the construction stage of the UWF Grid Connection, monitoring arrangements concentrate on this stage of the development.

Implementation of the EMP: An Environmental Clerk of Works, who will be independent of the Construction Contractor, will be employed during the construction and early operational stages and sufficient resources will be provided (including engaging extra environmental managers and specialist environmental and engineering consultants) to monitor, audit and report on the compliance of construction works with the EMP, including all of the Environmental Commitments.

The EMP includes contingency measures for unforeseen events. The Environmental Clerk of Works will have a 'stop-works' authority to temporarily stop works over part of the site to avoid either an infringement of the Environmental Commitments or an unforeseen adverse environmental event. Works will not be allowed to re-commence until the issue is resolved.

The implementation of the Environmental Commitments in the EMP will be the responsibility of the Project Manager and a contractual obligation on the Construction Site Manager during the construction stage.

During operation, monitoring and auditing of the compliance of UWF Grid Connection with the EMP will be the responsibility of ESB Networks in relation to UWF Grid Connection, and will be the responsibility of the Project Promoter for Upperchurch Windfarm in relation to monitoring and measures for Upperchurch Windfarm maintenance and operation.

19 Mitigation Measures & Monitoring Arrangements

19.1 Introduction

Mitigation Measures are environmental protection measures incorporated into the design of the project to avoid, prevent or reduce significant effects on the receiving environment.

Monitoring measures are the procedures to keep under systematic review the adverse effects on the environment resulting from the construction and operation of a Project, and to identify unforeseen significant adverse effects, in order to be able to undertake appropriate remedial action.

Monitoring arrangements will involve an Environmental Clerk of Works team, monitoring the implementation of a suite of environmental protection measures – **Project Design Measures (Mitigation Measures), Management Plans, and Best Practice Measures** which have been developed to avoid, prevent or reduce adverse effects on the receiving environment. These measures are incorporated into the **UWF Grid Connection Environmental Management Plan (EMP)** for the development. The EMP comprises **Volume D of this EIA Report**.

19.2 Likely Significant Adverse Effects

Due to the location, nature and design of the UWF Grid Connection, and with the implementation of the suite of environmental protection measures i.e. the Project Design Measures (Mitigation Measures), Management Plans, and Best Practice Measures, the **topic experts have evaluated that UWF Grid Connection is not likely to cause significant effects to any sensitive aspect** of the Environmental Factors.

19.3 Mitigation Measures

19.3.1 Project Design Environmental Protection Measures (mitigation measures)

The design of UWF Grid Connection includes 69 No. Project Design Environmental Protection Measures which are Mitigation Measures incorporated into the design of the project to avoid, prevent or reduce significant effects on the receiving environment. These Project Design Measures (mitigation measures) are listed as a schedule in Table 19-2:

Table 19-1: Schedule of Project Design Measures (Mitigation Measures) for UWF Grid Connection

| PD ID | UWF Grid Connection Project Design Environmental Protection Measure (PD) |
|--|--|
| PD01 Altered under ABP Ref. 314836 | Construction works on the public roadway for the 110kV UGC during the Hen Harrier breeding season (March to August inclusive) will only be carried out under the direct supervision of a full time onsite Hen Harrier specialist and the Project Ecologist. The presence of this full time Hen Harrier specialist will ensure that any potential for disturbance of breeding hen harrier is avoided. The works will only take place following completion of confirmatory Hen Harrier breeding surveys, which will be initiated in February and continue for the entire breeding season, in order to identify any pre-breeding nuptial activity, nesting activity and active nests within 1km of the works. The survey methodology will be sufficient to ensure that a Hen Harrier breeding site is not overlooked. No construction works will be carried out during the breeding |

| PD ID | UWF Grid Connection Project Design Environmental Protection Measure (PD) |
|-------|--|
| | season within 1km of a pre-nesting breeding site and/or nest or within 1km of breeding sites already identified during the previous six years. |
| PD02 | If works at Mountphilips Substation site are programmed to begin in the Hen Harrier breeding season (March to August) confirmatory Hen Harrier breeding surveys will be completed, before such works initiate, such that all pre breeding nuptial activity, nesting activity and active nests are recorded within 2km of the entire construction works area boundary. These surveys will be completed prior to the start-up of all construction activities. No works will take place within 2 km of any identified active Hen Harrier nest during the hen harrier breeding season. |
| PD03 | Although no hen harrier roosts are currently known to occur within 1km of UWF Grid Connection, confirmatory surveys will be completed to record any roosting locations within 1km of UWF Grid Connection. Should a hen harrier roost occur within 1km of UWF Grid Connection works, then construction works within 1km of a roost will be limited to the period between 'one hour after sunrise' to 'one hour before sunset' during the Hen Harrier roosting season (October to February inclusive). |
| PD04 | All construction works will be carried out during daylight hours. |
| PD05 | At the Mountphilips Substation site, construction traffic will be restricted to the construction works area and tracking across adjacent ground will not be permitted. A speed limit of 25km/hr for all traffic/machinery will be implemented at the Mountphilips Substation site. Outside of Mountphilips Substation site, all construction will be restricted to the paved road surfaces or built surfaces along the 110kV UGC. A speed limit of 50km/hr for all delivery and construction traffic will be implemented on Local Roads ('L' roads). |
| PD06 | Construction works will not be carried out within 150m of Rear Cross National School or Lackamore National School, during school hours. In addition, the project Community Liaison Officer will keep each school informed of construction timetables and scheduling. |
| PD07 | 110kV UGC construction works along the local roads L2264-50 and L6188-0, will not take place at the same time as the UWF Related Works Haul Route Works on these roads. The 110kV UGC construction works will also be scheduled so that the works do not occur on the same days as concrete deliveries for Consented UWF Turbines along these local roads. |
| PD08 | Confirmatory consultations with Irish Water, Eir and ESB and review of all relevant infrastructure mapping before works, along with confirmatory ground surveys at service locations will be carried out ahead of works; 'Goal Posts' will be used to identify and highlight the height of nearby overhead lines; and a banksman will accompany each excavator to oversee all excavation works. |
| PD09 | Close contact with the local Newport Regional Supply office at Newross will be maintained by the Environmental Clerk of Works throughout the construction of the 110kV UGC. The Environmental Clerk of Works will keep the Newport Regional Water Supply office up-to-date with the location and schedule of works. To reduce risk of damaging water mains; pre-construction confirmatory surveys will be carried out, and excavations will be hand dug within 500mm of pipes. So that any damage (should it occur) can be fixed immediately, a supply of water mains repair materials will be kept at the Mountphilips Substation compound and at each works location on the public road network. |

| PD ID | UWF Grid Connection Project Design Environmental Protection Measure (PD) |
|-------|---|
| PD10 | Flag-men will be used at 110kV UGC works locations on the public roads subject to one lane closures. These flagmen will control the movement of traffic on the public road, so that road users can continue to use the public road network in a safe and efficient manner. The works will be carried out according to the Traffic Management Plan for UWF Grid Connection. The Traffic Management Plan forms part of the Environmental Management Plan. |
| PD11 | Construction works for the 110kV UGC in Knocknabansha, Knockmaroe, Knockcurraghbola Crownlands and Knockcurraghbola Commons townlands, which are within 350m of local residences, will not take place at the same time as either the UWF Related Works or Upperchurch Windfarm where those works also occur within 350m. |
| PD12 | As requested by the Roads Department of Tipperary County Council, during pre-planning consultations, the works along the public road network will be scheduled to minimise impacts on schools and local businesses. The works will be scheduled so that they do not disrupt or interfere with Tipperary County Council's road works programme on the R503 through Newport town. |
| PD13 | As requested by the Roads Department of Tipperary County Council, during pre-planning consultations, the Promoter will fund the costs of Tipperary County Council engaging a chartered Civil Engineer to oversee quality control and compliance with drawings, specifications and road opening conditions for the duration of the works |
| PD14 | All initial groundworks within 500m of an RMP or NIAH site, will be monitored by an archaeologist under license from the National Monuments Service, to archaeologically record and preserve, either in situ or by record, any structures, features or objects of archaeological significance which may be encountered during the works. |
| PD15 | Where excavations occur at culvert replacement locations along the 110kV UGC, and at the 3 No. new watercourse crossing at the Mountphilips Substation site, excavations will be monitored by an appropriately qualified archaeologist under license from the National Monuments Service, the excavated material will be examined for any evidence of archaeological material and metal detected as part of a finds retrieval strategy. |
| PD16 | No refuelling of plant or equipment will be permitted within 100m of identified water supply wells |
| PD17 | At Mountphilips Substation, water for operational stage welfare facilities will be obtained from a Rain Water Harvesting system. Waste water will be collected in tanks and removed from site by an appropriately licensed operator, for treatment in a licensed water treatment plant. These two measures will avoid the need for a new well or mains water connection and will avoid the need to treat waste water on-site. |
| PD18 | The new substation compound and the new permanent access road at the Mountphilips Substation site will have a permanent surface water drainage network in place which will include check dams. These check dams will allow the settlement of suspended solids in water runoff while also slowing down the rate of water run-off from these areas. |
| PD19 | At Mountphilips Substation location, where dewatering of trenches or excavations is required, there will be no direct discharge of untreated water into any watercourse or drain. Rather all pumped water will be treated prior to discharge using an infiltration trench or settlement pond or suitable water treatment train such as a Siltbuster, as appropriate to the volume of water |

| PD ID | UWF Grid Connection Project Design Environmental Protection Measure (PD) |
|-------|---|
| | requiring treatment (if any) to ensure there is no exceedance of the criteria listed in Schedule 5 and Schedule 6 of the EC Environmental Objectives Surface Water Regulations 2009 (as amended) and will ensure that the water quality status in downstream waterbodies are maintained in accordance with the Surface Water Regulations 2009. |
| PD20 | At Mountphilips Substation site, all excavated material will be removed for temporary or permanent storage at designated berms, which will be located more than 25m away from the watercourses on Mountphilips Substation site. All storage berms will be graded and sealed following emplacement. The berms will be covered if there is a risk of erosion. Temporary silt control methods such as silt fencing will be placed around all overburden storage areas. The existing vegetative buffer between the berms and the nearest watercourses will be maintained and no works will occur in the buffer zone. |
| PD21 | At Mountphilips Substation site, the permanent storage berms will be along the new access road and around the substation compound will be planted with local provenance native fruiting hedge species, with grasses and native flower species common to the surrounding vegetation sown along the sides of the berms. Local provenance native wildflower seed of flowering plants like clovers, vetches and knapweed will be included. Revegetation works will take place at the soonest practicable opportunity after emplacement. |
| PD22 | Outside of the Mountphilips Substation site, there will be no storage of overburden and all excavations from road trenches will be removed to licensed waste facilities in accordance with the UWF Grid Connection Waste Management Plan. Loads of excavated material will be covered during transportation to prevent spillages of excavated material. |
| PD23 | All Joint Bays for the 110kV UGC will be located at least 50m from a Class 1 or Class 2 watercourse and at least 25m from Class 3 or Class 4 watercourses. |
| PD24 | Outside of the Mountphilips Substation site, where dewatering of trenches or excavations is required for the 110kV UGC, there will be no direct discharge of treated water into any watercourse or drain. Rather all pumped water will be treated using a mobile water treatment train and then discharged via a silt bag to ensure there is no exceedance of the criteria listed in Schedule 5 and Schedule 6 of the EC Environmental Objectives Surface Water Regulations 2009 (as amended) and will ensure that the water quality status in downstream waterbodies are maintained in accordance with the Surface Water Regulations 2009. |
| PD25 | Construction works along the 110kV UGC route will cease during heavy or prolonged rainfall events, and any open trenches or excavations will be covered. Use of weathering forecasting will be undertaken in advance of works. |
| PD26 | A phased approach will be undertaken in relation to excavations, excavation dewatering and any culvert replacement works, where these works occur within 50m of a watercourse. The phased approach will only permit one of main potential sediment producing activities (i.e. excavations, excavation dewatering or culvert replacement works), to be carried out within 50m of a watercourse, at any one time. |
| PD27 | At Mountphilips Substation site, works within 50m of watercourses, additional mitigation measures include double silt fencing, temporary drain blocking, placement of straw bale arrangements along preferential surface water flowpaths and, where necessary, the use of matting to prevent ground erosion and rutting. |

| PD ID | UWF Grid Connection Project Design Environmental Protection Measure (PD) |
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| PD28 | Along the 110kV UGC on the public road, where works will take place within 50m of a watercourse, additional mitigation measures will be implemented which include silt fencing and placement of sandbag arrangements along preferential surface water flowpaths on the road pavement. Following works on any particular section, any works debris will be removed from the road before the sandbags and silt fences are removed. |
| PD29 | Cable trenching works, joint bay chamber installation and culvert replacement works on the section of 110kV UGC between W13 and W20 (inclusive) and the culvert replacement works at W32 and W34 will only be completed during dry weather in the dryer months of the year – i.e. February to September included. This will minimise/avoid the requirement for any excavation dewatering as a result of waterlogged soils or surface water runoff. None of these 110kV UGC sections are within the Lower River Shannon SAC. |
| PD30 | Lines of silt fencing and sandbags will be erected along the edge of the road so that surface water runoff from adjacent construction works areas is captured and directed to the excavated trench, where it can be pumped and treated before being released, as per PD24. |
| PD31 | Works to bridge parapet walls at watercourse crossings W7, W36, W53 will be carried out during dry weather, and debris netting will be fixed to the outside of the walls in order to prevent any debris falling into the watercourse below. |
| PD32 | At Mountphilips Substation site, instream construction works at the watercourse crossings W1, W2 and W3 will be followed by site-specific reinstatement measures to ensure the equilibrated restoration of flow character and morphology within the affected reach to achieve baseline character and avoid any deterioration in morphology as required under the Water Framework Directive (WFD). Measures will include: bank stabilisation using boulder armour or willow/brush bank protection; reinstatement of bank slope and character, creation of compound channels where necessary; reinstatement of instream flow features such as boulder substrates, pool / riffle sequences, or spawning cobbles; and planting along the riparian margins to stabilise banks, add flood protection and provide riparian buffer; and the use of deflector plates during the restoration of flow. Instream works at W1, W2 and W3 at the Mountphilips Substation site will be undertaken during dry weather within the IFI instream works window (July – September inclusive). As per PD41, instream works at W1, W2 and W3 will be supervised by a member of CIEEM and the Institute of Fisheries Management to ensure both the Project Design Measures and Best Practice are followed. Although intended for the purpose of the WFD, this measure will also indirectly contribute to downstream water quality protection in the SAC. |
| PD33 | All new permanent watercourse culverts at the Mountphilips Substation site and any replacement culverts along the public road for the 110kV UGC will be sized to cope with a minimum 100-year flood event. |
| PD34 | Only precast concrete culverts or structures will be used at the watercourse crossing locations at Mountphilips Substation site and for any culvert replacements along the 110kV UGC. Only precast concrete chambers will be used at Joint Bay locations. No batching of wet cement will take place on-site. |
| PD35 | Concrete pours will be required for the 110kV UGC cables trench. Only chutes will be washed out at the works locations into the cable trench, with the washout of the tank taking place at the concrete supplier depot. Concrete chute washouts within the SAC boundary will take place |

| PD ID | UWF Grid Connection Project Design Environmental Protection Measure (PD) |
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| | into designated bins for removal to the designated concrete wash settlement pond at the Mountphilips Substation site. |
| PD36 | The sections of 110kV UGC trenches that overlap the Lower River Shannon SAC will be lined with an impermeable geotextile material to prevent potential migration of cement from the trench base or sides into the SAC. |
| PD37 | In addition to PD22, there will be no storage of overburden within the Lower River Shannon SAC. |
| PD38 | 110kV UGC works outside of Mountphilips Substation site will be carried out entirely on paved roads and where the 110kV UGC crosses watercourses, the works will be carried out over the existing bridges and over/under existing culverts. No in-streams works are proposed at any watercourse crossing points (including the Newport River and Bilboa River crossings) within the boundary of the Lower River Shannon SAC and therefore there will be no placement of cement or other materials within the river channels or on the river banks within the SAC. |
| PD39 | In addition to PD42, there will be no refuelling of vehicles or plant, no storage of fuels and no overnight parking permitted within 100m of the boundary of the Lower River Shannon SAC. |
| PD40 | In addition to PD29, all 110kV UGC works within the boundary of the Lower River Shannon SAC will only be completed during dry weather in the dryer months of the year – i.e. February to September included. |
| PD41 | The instream works at W1, W2 and W3 at Mountphilips Substation site, and the culvert replacement works at the 13 existing culverts on the public road, and all works (including concrete placement) within the boundary of the Lower River Shannon SAC, will be supervised by a member of CIEEM and the Institute of Fisheries Management to ensure both the Project Design Measures and Best Practice Measures are followed. |
| PD42 | There will be no refuelling of vehicles or plant permitted within 100m of a watercourse. Spill response apparatus including spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment. The Environmental Emergency Response Procedure will be implemented immediately in the event of any spills. The Environmental Emergency Response Procedure is part of the UWF Grid Connection Environmental Management Plan. |
| PD43 | The main fuel stocks for, and chemical wastes arising from, construction activities will be stored in a designated location, away from main traffic activity, within the temporary compound at the Mountphilips Substation site. All fuel will be stored in bunded, locked storage containers. The designated storage location will be greater than 100m from a watercourse. Spill response apparatus including spill-kits and hydrocarbon absorbent packs will be stored at the designated location in the temporary compound and all operators will be fully trained in the use of this equipment. The Environmental Emergency Response Procedure will be implemented immediately in the event of any spills. The Environmental Emergency Response Procedure is part of the UWF Grid Connection Environmental Management Plan. |
| PD44 | Overnight parking of plant and machinery will only be permitted at the temporary compound at the Mountphilips Substation site and at a distance greater than 50m from watercourses. |
| PD45 | The horizontal directional drilling works at W8 and W9 will be carried out by an experienced Drilling Contractor and supervised and managed by a competent and experienced Mud |

| PD ID | UWF Grid Connection Project Design Environmental Protection Measure (PD) |
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| | <p>Engineer who understands the technicalities and challenges of drilling works. The Mud Engineer will advise the Construction Manager on the selection of competent drillers for the HDD works; monitor the watercourse bed during drilling works, and will supervise the drilling works including the drilling pressures and the implementation of any contingency measures. From a surface water quality protection perspective, the area around the launch/reception pit, bentonite batching, pumping and recycling plant will be bunded using appropriate terram geotextile and/or sandbags in order to contain any spillages. Drilling fluid returns will be contained within a sealed tank / sump to prevent migration from the works area. Spills of drilling fluid will be cleaned up immediately and stored in an adequately sized water tight skip before being taken off-site to a suitably licensed waste facility. In the event of a break-out occurring, the Environmental Emergency Response Procedure for Frac-Out will be implemented which includes the following contingency measures; In the event of break-out occurring in the river bed, the rig will immediately shut off the pumps and the drilling assembly will be pulled off to reduce annular pressures; In the event of break-out on the road an excavator will be available to dig a pit to contain fluid with vacuum trucks/pumps available to transfer drill fluid from the containment point back to the recycling point; and in either scenario, drilling fluid additives designed to plug the formation will be introduced to the circulation system and let set. Environmental Emergency Response Procedures are included in the UWF Grid Connection Environmental Management Plan (see Volume D).</p> |
| PD46 | <p>All construction works will be monitored on a daily basis by the Environmental Clerk of Works and by members of the Environmental Clerk of Works team (for example Site Ecologist) as required, for compliance with the Environmental Commitments, which include the Project Design Measures, as per the UWF Grid Connection Environmental Management Plan (see Volume D).</p> |
| PD47 | <p>Surface water quality monitoring of the main watercourses downstream of the works will be carried out to ensure that the downstream water quality status in the receiving water is maintained and that there is no exceedance of the criteria listed in Schedule 5 and Schedule 6 of the EC Environmental Objectives Surface Water Regulations 2009 (as amended) and will ensure that the water quality status in downstream waterbodies are maintained in accordance with the Surface Water Regulations 2009. Where non-compliance in water quality is measured or recorded, works will stop until the issue is resolved. The surface water monitoring locations and sampling programme are defined in the Surface Water Management Plan for UWF Grid Connection. The Surface Water Management Plan is part of the UWF Grid Connection Environmental Management Plan (see Volume D).</p> |
| PD48 | <p>The new permanent cross structures at the Mountphilips Substation site and the replacement culvert at W14 along the R503 will be bottomless or clear spanning.</p> |
| PD49 | <p>In-stream works at Mountphilips Substation site and culvert replacement works at W14 along the R503 Regional Road will only be undertaken during the IFI specified period (July, August and September) and will be carried out to best practice (IFI, 2016).</p> |
| PD50 | <p>Culvert replacement works along the 110kV UGC will not be undertaken without isolation of flow within the watercourse. Isolation of flow will be achieved through the use of sandbags filled with clean, washed sand. Any fish within the isolated section will be removed prior to works commencing. This will require the engagement of licensed fisheries personnel to deplete the works area using electrofishing and, following collection of biometrics, transferred</p> |

| PD ID | UWF Grid Connection Project Design Environmental Protection Measure (PD) |
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| | <p>immediately downstream of the crossing point and placed back in the water. The water will then be isolated from the works by over pumping using a flume (pipe), with deflector plates used on the downstream side of the flume to reduce the hydraulic power of the water.</p> <p>Construction works at the crossing will be followed by site-specific reinstatement measures to ensure the equilibrated restoration of flow character and morphology within the affected reach to achieve baseline character and avoid any deterioration in morphology as required under the Water Framework Directive (WFD). Measures will include: bank stabilization measures, reinstatement of bank slope and character; and reinstatement of instream flow features such as boulder substrates, pool / riffle sequences, or spawning cobbles; and the use of deflector plates during the restoration of flow. As per PD41, culvert replacement works will be supervised by a member of CIEEM and the Institute of Fisheries Management to ensure both the Project Design Measures and Best Practice are followed. These measures will ensure that the baseline character is maintained and will ensure that a deterioration in morphology is avoided, as required under the Water Framework Directive. This in turn will protect Aquatic Ecology.</p> |
| PD51 | The sections of the 110kV UGC trench within the R503, in the central part of the 110kV UGC where the adjacent lands comprise predominantly peaty soils, will be lined with a geotextile membrane which will provide support to the cables trench and the road structure. |
| PD52 | Confirmatory surveys for active Otter holts and breeding activity will be carried out 150m upstream and downstream of watercourse crossing locations including those watercourses evaluated as unsuitable for Otter in the current appraisal. |
| PD53 | All construction works within 150m of an active otter holt, will be carried out during daylight hours and outside of 2 hours after sunrise or before sunset during summer and outside of 1 hours after sunrise or before sunset during winter. |
| PD54 | If an active holt (particularly holts at which breeding females or cubs are present) is located within 150 meters of the watercourse crossing points, no works will be undertaken while breeding females or cubs are present in the holt and NPWS will be notified immediately |
| PD55 | No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding otter Holts, and light work, such as digging by hand will not take place within 15m of such holts, except under license. |
| PD56 | <p>The prohibited area associated with otter holts, should they be located in confirmatory surveys, will, where appropriate, be protected from any inadvertent disturbance from any works or personnel occurring nearby such as at a bridge and declared as 'Ecology Restriction Zone' with no mention of otters to any onsite staff.</p> <p>Appropriate awareness of the purpose of the excluded area will be conveyed through toolbox talks with site staff and sufficient signage will be placed on each possible access point. All contractors or operators on site will be made fully aware of the procedures pertaining to Ecology Restriction Zones and subject to audits and non-conformance records in the event of non-compliance, to be included in reports submitted to Local Authorities and relevant Statutory Consultees.</p> |
| PD57 | All excavation works will take place in line with protective measures required to avoid damage to trees during the construction phase of road projects, as stipulated in the NRA document 'Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub prior to, during and post construction of National Road Schemes'. This will include consultation with a qualified |

| PD ID | UWF Grid Connection Project Design Environmental Protection Measure (PD) |
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| | arborist, where appropriate to ensure works within the Root Protection Area (RPA) avoid any significant damage to tree roots. Exposed tree roots will be protected where required and excavation methods will be appropriately undertaken so as to avoid damage to RPA's. All excavation works in the RPA will be overseen by the Project Ecologist. |
| PD58 | Hedgerow removal and clearance of any other breeding bird vegetation will take place outside of the bird breeding season <i>i.e.</i> not during the period of March to August inclusive. This includes hedgerow and scrub removal in addition to hedgerow trimming. |
| PD59 | Works will not take place at any bridge during the Dipper breeding season (Feb-June inclusive) without a confirmatory survey to determine Dipper presence or absence. If Dippers are present, where possible works will not proceed until breeding has completed. All works at these and other bridges will be overseen by a project ecologist to ensure the requirements of the Wildlife Acts are being met. During culvert replacement works at W13, a Dipper nest box will be fitted to the new crossing structure. Additional nest boxes (c.10) will be provided for Dipper at suitable bridges to provide a net gain for this species. |
| PD60 | Where works will be carried out at parapet walls, no works will take place between the period April-August without confirmatory survey as to the presence or absence of breeding Grey Wagtail. If breeding Grey Wagtail is present, then works will be overseen by a suitably qualified ecologist to ensure no effects occur to Grey Wagtail present in adherence to the requirements of the Wildlife Act. Works at all bridges will be overseen by the project Ecologist. Nest boxes (c.10) will be provided for Grey Wagtail at suitable bridges to provide a net gain for this species. |
| PD61 | Works will not take place at any bridge during the Kingfisher breeding season (March to July inclusive) without a confirmatory survey to determine the presence of nesting Kingfisher within 150m upstream or downstream of the bridge. If nesting Kingfishers are present, works will not proceed until breeding has completed. |
| PD62 | All bridges/structures where works are proposed will be subject to confirmatory surveys for General breeding birds prior to works commencing. All works will be supervised by the project Ecologist. |
| PD63 | All construction works will be carried out during daylight hours. Security lighting will be used at the temporary compound at Mountphilips Substation site. All lighting will be cowled in order to prevent light spill and no lighting will be left turned on overnight. Lighting will be controlled by motion and time sensors to minimise the amount of time the lights are operational. |
| PD64 | Tree felling only pertains to the Mountphilips Substation site. Confirmatory surveys will be carried out at all trees that will require felling or other major modifications (e.g. removal of rotten branches) in order to confirm the findings of the 2016 / 2017 surveys regarding the suitability of the trees for roosting bats. These trees will be subject to a ground-level visual inspection by the Project Ecologist (or a bat specialist acting on their behalf) prior to site clearance works. |
| PD65 | While it is not expected that any trees with high suitability for roosting bats will be felled, the following measures will be implemented where a tree with moderate or high bat suitability is to be felled: a presence/absence bat surveys will be carried out; Felling of trees with bat roost suitability will be undertaken in the period late-August to late-October/early-November. Trees with low suitability for bats will be felled carefully and slowly in order to avoid impact-related injuries to any bats that may be roosting inside them. Sections of the tree with potential roost |

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| | features for bats (e.g. crevices, damaged branches) will be cut in sections, lowered carefully to the ground and left undisturbed for 48 hours before removal; and Where the felling of trees with bat suitability is carried out, robust, weather-proof bat-boxes, for example Schwegler type 1FF and 2F models, will be placed in each of the affected sections to compensate for the loss of potential tree roosts. The number of bat boxes will match the number of trees with bat suitability to be felled. Bat boxes will be placed on an exposed section of tree trunk at a minimum height of 4-5m, providing a clear space in front of the box for bats to enter and exit. Boxes will be placed in locations that will receive at least 6-7 hours of sunlight during summer months, and will be placed on the southern side of the tree. The Project Ecologist will supervise the installation of bat boxes in order to ensure that they are sited appropriately. |
| PD66 | All bridges of moderate suitability for bats will be subject to a confirmatory survey prior to the commencement of construction works. Bridges of negligible or low suitability do not need to be surveyed, but this will be reviewed by the Environmental Clerk of Works and Project Ecologist. If a bat roost is found, the Project Ecologist will review the proposed works at that bridge, and determine whether there could be a risk of impacts on the roost. If there is a risk of impact on a bat roost in a bridge, the Project Ecologist will develop a case-specific mitigation strategy and apply to the NPWS for a derogation licence. Bats will be excluded from the bridge for the duration of construction works (typically only a few days), and replacement roosting opportunities (i.e. wall-mounted bat 'tubes' or boxes) will be provided at a suitable location nearby. When construction work is complete, bats will be able to return to their former roosting site. |
| PD67 | No badger setts were recorded within 50m of the UWF Grid Connection during pre-planning surveys. Confirmatory surveys will be carried out within 50 m of either side of the construction works area boundary to determine if any new setts have been established in the intervening period following initial pre-planning surveys and the commencement of construction activity. These confirmatory badger surveys will be undertaken no more than 12 months in advance of proposed construction activities, during the period November and April when vegetation cover is reduced. Should a badger sett be confirmed, the following measures will be implemented: NWPS will be notified immediately of any new active setts which are located within 50 meters of the footprint of the development; If sett exclusion is required, this will be undertaken by an experienced ecologist under the necessary license and following best practice guidance (NRA, 2005); No construction works will be carried within 50m of an active badger sett during the main breeding season (December 1st to June 30th); and Construction activity in the environs of an active badger sett outside of the breeding period will follow NRA (2005) guidelines, i.e. no heavy machinery will be used within 30m of badger setts (unless carried out under license); lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance; light work, such as digging by hand will not take place within 10m of sett entrances. |
| PD68 | As amphibians and reptiles will use brash piles for refuge and hibernation, all logs/brash created from hedgerow/tree removal at the Mountphilips Substation site will be removed off site immediately to prevent disturbance to amphibians/reptiles which may use brash piles if left in situ. |
| PD69 | All covering of vegetative invasive knotweed infestations with high density polyethylene grass carpet terram will take place, at all identified locations prior to any works commencing on UWF Grid Connection or any other element of the Whole UWF Project. The covering of infestations |

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| | will be completed on sections seven days in advance of works occurring on those sections. The infestations will be covered so that their full extent plus 1 metre is covered entirely and no vegetation is visible. The covering of these infestations will only be carried out under the direct supervision of an ecologist with prior experience of this type of work i.e. this work cannot be carried out by any general construction staff. No posts will be used to secure the coverings i.e. there will be no ground interference during any of these operations. |

19.3.2 Environmental Commitments in the EIA Report

The environmental protection measures identified in this EIA Report (and reproduced at 19.3.1) form part of the Environmental Commitments in the **UWF Grid Connection Environmental Management Plan**. Additional measures are also included in the Traffic, Surface Water, Invasive Species, Waste Management Plans and Best Practice Measures. The current List of Environmental Commitments is presented in Table 19-3. The list of Environmental Commitments will be updated post consent with any additional requirements of planning conditions or statutory bodies.

Table 19-2: List of Environmental Commitments for UWF Grid Connection

| Environmental Commitment (EC) | Location in the EMP | Implemented By: | Method by which the EC will be met |
|---|---------------------|--|--|
| The Project Promoter is committed to implementing the Project Design Measures as set out in Tab 1, and as per the EIA Report (2019), Main Report, Chapter 5, Section 5.2.3, and as per the Appropriate Assessment Reporting (2019). | EMP, Tab 1 | Project Team, specialist environmental and engineering experts, all site personnel | Incorporation of PD's listed in Tab 1 into Method Statements, Management Plans, Scheduling & Timing of Works and Surveying & Monitoring requirements (EMP docs). |
| The Project Promoter is committed to implementing the Traffic Management Plan. | EMP, Tab 2 | Project Team, specialist environmental and engineering experts, all site personnel | Implementation of the Traffic Management Plan during construction works (EMP T2) |
| The Project Promoter is committed to implementing the Surface Water Management Plan. | EMP, Tab 3 | Project Team, specialist environmental and engineering experts, all site personnel | Implementation of the Surface Water Management Plan during construction works (EMP T3) |
| The Project Promoter is committed to implementing the Invasive Species Management Plan. | EMP, Tab 4 | Project Team, ECoW, Invasive Species Specialist | Implementation of the Invasive Species Management Plan during construction works (EMP T4) |
| The Project Promoter is committed to implementing the Waste Management Plan. | EMP, Tab 5 | Project Team, ECoW, | Implementation of the Waste Management Plan during construction works (EMP T5) |
| The Project Promoter is committed to implementing the Environmental Emergency Response Procedures as set out in Tab 6. | EMP, Tab 6 | Project Team, specialist environmental and engineering experts, all site personnel | Implementation of the Emergency Response Procedures should an environmental emergency occur (EMP T6) |

| Environmental Commitment (EC) | Location in the EMP | Implemented By: | Method by which the EC will be met |
|---|---------------------------|---|---|
| The Project Promoter is committed to implementing the Scheduling & Timing of Works Measures as set out in Tab 7. | EMP, Tab 7 | Project Manager in liaison with the Construction Manager, ECoW and specialist environmental experts (e.g. Site Ecologist) regarding temporal restrictions | Implementation of the specific Scheduling & Timing Project Design Environmental Protection Measures (Tab 1) as set out separately in a schedule in Tab 7 of the EMP. |
| The Project Promoter is committed to implementing the Surveying & Monitoring Measures as set out in Tab 8. | EMP, Tab 7 | ECoW and specialist environmental experts (e.g. Site Ecologist) and engineering experts. | Implementation of the specific Surveying & Monitoring Project Design Environmental Protection Measures (Tab 1) as set out separately in a schedule in Tab 8 of the EMP. |
| The Project Promoter is committed to implementing Best Practice Measures as set out in Tab 9. | EMP, Tab 9 | Project Team, specialist environmental and engineering experts, all site personnel | Incorporation of BPM's listed in Tab 9 into Method Statements, Management Plans, Scheduling & Timing of Works Measures, and Surveying and Monitoring requirements (EMP docs). |
| The Project Promoter is committed to monitoring the development to check that the project is in practice, conforming to the predictions made in the EIA Report. | EMP, Section 5, and Tab 8 | ECoW, and specialist environmental and engineering experts | Carrying out of audits of compliance, through the completion of EMP Compliance Record Sheets, and carrying out Environmental Surveying. |

19.4 Schedule of Monitoring Measures

Monitoring measures are included in the 2019 EIA Report – in Chapter 5 of the EIAR Main Report and throughout the Environmental Topic Chapters 6 to 17. Additional monitoring measures are also proposed as part of the Traffic Management Plan, Surface Water Management Plan, Waste Management Plan, Invasive Species Management Plan and Best Practice Measures. These management plans and best practice are included in the **UWF Grid Connection Environmental Management Plan (EMP)**, which is appended to the EIA Report as Volume D.

A Schedule of these Monitoring Measures has been collated from the EIAR Main Report and the EMP, this schedule is included below, and reproduced in the EMP as Tab 9: Environmental Surveying & Monitoring.

Table 19-3: Schedule of Monitoring Measures

| Schedule of Monitoring Measures | | |
|--|-------------------------|--|
| Location in EIA Report | Monitoring Measure ID | Description of Monitoring Measure |
| EIAR Main Report, Chapter 5, Section 5.2.3 | PD02 Hen Harrier | <p>If works at Mountphilips Substation site are programmed to begin in the Hen Harrier breeding season (March to August) confirmatory Hen Harrier breeding surveys will be completed, before such works initiate, such that all pre breeding nuptial activity, nesting activity and active nests are recorded within 2km of the entire construction works area boundary. These surveys will be completed prior to the start-up of all construction activities. A report including nesting activity and levels of usage will be provided to the Competent Authority and NPWS following the completion of each survey season. The Project Ecologist will keep NPWS informed of the real-time status of nesting Hen Harrier as a result of the monitoring associated with this project.</p> <p>All surveys for breeding or roosting Hen Harrier, and monitoring of temporal restrictions of works in relation to nesting or roosting Hen Harrier will be undertaken by a suitably qualified Ornithologist(s) (and member of CIEEM) with experience in the survey and management of Hen Harrier.</p> |
| EIAR Main Report, Chapter 5, Section 5.2.3 | PD03 Hen Harrier | Although no hen harrier roosts are currently known to occur within 1km of UWF Grid Connection, confirmatory surveys will be completed to record any roosting locations within 1km of UWF Grid Connection. A report including roosting activity and levels of usage, will be provided to the Competent Authority and NPWS following the completion of each survey season. |
| EIAR Main Report, Chapter 5, Section 5.2.3 | PD08 Material Assets | Confirmatory consultations with Irish Water, Eir and ESB and review of all relevant infrastructure mapping before works, along with confirmatory ground surveys at service locations will be carried out ahead of works. |
| EIAR Main Report, Chapter 5, Section 5.2.3 | PD14 Archaeology | All initial groundworks within 500m of an RMP or NIAH site, will be monitored by an archaeologist under license from the National Monuments Service, to archaeologically record and preserve, either in situ or by record, any structures, features or objects of archaeological significance which may be encountered during the works.. |

| Schedule of Monitoring Measures | | |
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| Location in EIA Report | Monitoring Measure ID | Description of Monitoring Measure |
| EIAR Main Report, Chapter 5, Section 5.2.3 | PD16 Underwater archaeology | Where excavations occur at culvert replacement locations along the 110kV UGC, and at the 3 No. new watercourse crossing at the Mountphilips Substation site, excavations will be monitored by an appropriately qualified archaeologist under license from the National Monuments Service, the excavated material will be examined for any evidence of archaeological material and metal detected as part of a finds retrieval strategy. |
| EIAR Main Report, Chapter 5, Section 5.2.3 | PD32, PD41 Water quality, aquatic species | The instream works at W1, W2 and W3 at Mountphilips Substation site, and the culvert replacement works at the 13 existing culverts on the public road, and all works (including concrete placement) within the boundary of the Lower River Shannon SAC, will be supervised by a member of CIEEM and the Institute of Fisheries Management to ensure both the Project Design Measures and Best Practice Measures are followed. |
| EIAR Main Report, Chapter 5, Section 5.2.3 | PD45 Water quality | The horizontal directional drilling works at W8 and W9 will be supervised and managed by a competent and experienced Mud Engineer who understands the technicalities and challenges of drilling works. The Mud Engineer will monitor the watercourse bed during drilling works, and will supervise the drilling works including the drilling pressures and the implementation of any contingency measures. |
| EIAR Main Report, Chapter 5, Section 5.2.3 | PD46 All | All construction works will be monitored on a daily basis by the Environmental Clerk of Works and by members of the Environmental Clerk of Works team (for example Site Ecologist) as required, for compliance with the Environmental Commitments, which include the Project Design Measures, as per the Environmental Management Plan for UWF Grid Connection (see Volume D). |
| EIAR Main Report, Chapter 5, Section 5.2.3 | PD47 Water Quality | Surface water quality monitoring of the main watercourses downstream of the works will be carried out to ensure that the downstream water quality status in the receiving water is maintained. The surface water monitoring locations and sampling programme are defined in the Surface Water Management Plan for UWF Grid Connection. |
| EMP Tab 2: Traffic Management Plan (TMP) | TMP Tab 2, Section 1.3.1 Section 1.4.2 | <ul style="list-style-type: none"> Along the 110kV UGC route on the public road, confirmatory condition surveys involving pre-construction and post-construction inspections, high definition video surveys and FWD surveys will be undertaken Along the additional local road L5337-1 at Tullow, which will be used for construction materials haulage only (i.e. no trenching works), confirmatory condition surveys involving pre-construction and post-construction inspections, high definition video surveys and FWD surveys will be undertaken along the routes of concentrated construction traffic between the R503 and the works locations on the local road network. |
| EMP Tab 3 Surface Water | SWMP Tab 3, Section 4 .1 | <p><u>Drainage Inspections at Mountphilips Substation site</u></p> <p>The following periodic inspection regime at Mountphilips Substation site will be implemented, and inspections recorded:</p> <ul style="list-style-type: none"> Daily general visual inspections by Environmental Clerk of Works; Weekly (existing & new drains) inspections by site Construction Manager; |

| Schedule of Monitoring Measures | | |
|---|-------------------------|---|
| Location in EIA Report | Monitoring Measure ID | Description of Monitoring Measure |
| Management Plan (SWMP) | | <ul style="list-style-type: none"> • All inspection to include all elements of drainage systems; • Inspections required to ensure that drainage systems are operating correctly and to identify any maintenance that is required; • Any changes, such as discolouration, odour, oily sheen or litter should be noted and corrective action should be implemented immediately. • High risk locations such as settlement ponds will be inspected on a daily basis by the Construction Manager; • Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement; • Event based inspections by the Environmental Clerk of Works as follows: <ul style="list-style-type: none"> ○ >10 mm/hr (i.e. high intensity localised rainfall event); ○ >25 mm in a 24 hour period (heavy frontal rainfall lasting most of the day); or, ○ Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week). • Weekly, Fortnightly and Monthly (depending on weather conditions and the nature of on-going construction works) site inspections by the Project Hydrologist during construction phase |
| EMP Tab 3 Surface Water Management Plan (SWMP) | SWMP Tab 3, Section 4.2 | <u>Water Quality Monitoring</u> <ul style="list-style-type: none"> • Daily field monitoring of water quality parameters and collection of samples will be undertaken by the Environmental Clerk of Works. He/she will be appropriately trained on the required monitoring methods and the use, calibration and maintenance of all monitoring equipment used. • Regular (i.e. weekly or fortnightly depending on weather conditions) field monitoring will be carried out by the Project Hydrologist. • Surface water quality will be monitored during the construction phase and this monitoring will also extend into the post construction phase. Proposed monitoring locations downstream of the works areas. The locations of the surface water monitoring points will be agreed with Inland Fisheries Ireland and Tipperary County Council in advance of the construction phase. • Laboratory analysis of water samples will also be undertaken as part of the monitoring programme by an independent and appropriately certified laboratory. |
| EMP Tab 3 Surface Water Management Plan (SWMP) | SWMP Tab 3, Section 4.2 | <u>Frequency of Water Quality Monitoring</u> <ul style="list-style-type: none"> • Daily visual checks at watercourse crossing locations where works are taking place; • Weekly sampling for suspended solids and turbidity in catchments where earthworks or watercourse crossing work is on-going; • Fortnightly sampling for the full suite of parameters (Table 7) in catchments where works are on-going; • Event based sampling, e.g. after heavy rainfall; • Additional sampling in the event of trigger level exceedance, after heavy rainfall, etc; and, • Post construction sampling programme (monthly sampling) for a period of six months |

| Schedule of Monitoring Measures | | |
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| Location in EIA Report | Monitoring Measure ID | Description of Monitoring Measure |
| EMP Tab 4 Invasive Species Management Plan (ISMP) | ISMP Tab 4, Section 4.1.1 Section 4.2 Section 4.2.1 | <ul style="list-style-type: none"> • Pre-Construction confirmatory surveys will be completed by an invasive species specialist, 3 – 4 weeks before construction begins. Mapping, showing the most up to date distribution and extent of each infestation, will be distributed to the Client, Owners Engineer and the Contractor; • The covering of vegetative knotweed infestations with high density polyethylene grass carpet terram at all identified locations prior to any works commencing on that section and the monitoring of construction works at that section when it happens; • To ensure the effective implementation of the biosecurity measures, an invasive species specialist will monitor each infestation location during all critical stages of construction works; • Visual inspections will be carried out on all machinery and equipment (particularly for machinery and equipment exiting the site and which has come into contact with water or soils) for evidence of attached plant or animal material, or adherent mud or debris. |
| EMP Tab 4 Invasive Species Management Plan (ISMP) | ISMP, Section 5.3 | <ul style="list-style-type: none"> • During the operational phase: Before planned maintenance or unplanned repair works commence, an ecology or invasive species specialist will survey the works locations for invasive plant species infestations in proximity to the works location(s), ... the ecologist/invasive species specialist will supervise any works in proximity (5m) to infestations to ensure that construction machinery and operatives do not come into contact with these infestations; |
| EMP Tab 9 Best Practice Measures (BPM) | BPM 1, BPM 2, BPM 4, BPM 5, BPM 6, BPM 7 | <ul style="list-style-type: none"> • The Construction Manager will be responsible for monitoring weather conditions • All construction works will be monitored on a daily basis by the Environmental Clerk of Works and by members of the Environmental Clerk of Works team (for example Site Ecologist) as required, for compliance with the Environmental Commitments • Surface water quality monitoring of the main watercourses downstream of the works will be carried out to ensure that the downstream water quality status in the receiving water is maintained. The surface water monitoring locations and sampling programme are defined in the Surface Water Management Plan for UWF Grid Connection • Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase • All permanent overburden storages areas will be checked / monitored daily until stabilised to ensure no drainage issues of surface water quality impacts are occurring |
| EMP Tab 7 Best Practice Measures (BPM) | BPM 8 | <ul style="list-style-type: none"> • Public roads works areas will be regularly inspected for cleanliness, and swept to remove mud and aggregate materials from their surface, as necessary; • The private paved road in Knockcurraghbola Commons will also be regularly inspected for cleanliness, and swept to remove mud and aggregate materials from its surface, as necessary; |

| Schedule of Monitoring Measures | | |
|---|-----------------------|--|
| Location in EIA Report | Monitoring Measure ID | Description of Monitoring Measure |
| EMP Tab 9 Best Practice Measures (BPM) | BPM 9 | <ul style="list-style-type: none"> Monitor the recruitment and training of local employees in line with Local Employment & Local Sourcing Policy |
| EMP Tab 9 Best Practice Measures (BPM) | BPM 10 | <ul style="list-style-type: none"> A confirmatory survey of Electromagnetic Field emissions from the Mountphilips 110kV Substation and from locations along the 110kV UGC will be carried out by a competent engineer following commissioning of the UWF Grid Connection. |
| EMP Tab 9 Best Practice Measures (BPM) | BPM 11 | <ul style="list-style-type: none"> Recording and reporting of the annual renewable electricity production of the operational Upperchurch Windfarm. |

19.4.1 Duration of Monitoring

As most potential for adverse effects to the environment arises during the construction stage of the UWF Grid Connection, monitoring arrangements concentrate on this stage of the development. Monitoring during the operational stage relates to infrequent planned maintenance/unplanned repairs along the 110kV UGC and to the operational electricity production of the related project Upperchurch Windfarm.

19.4.2 Resourcing of Monitoring Arrangements

The Project Promoter will be responsible for the costs of monitoring.

An Environmental Clerk of Works will be employed during the construction and early operational stages and sufficient resources will be provided to monitor, audit and report on the compliance of construction works with the EMP including all of the environmental protection measures.

Sufficient resources will also be provided to the Environmental Clerk of works to engage a team of environmental managers to assist with monitoring and auditing, and for specialist environmental and engineering consultants as required.

19.5 Implementation of Mitigation Measures and Monitoring Arrangements

19.5.1 UWF Grid Connection Environmental Management Plan

To facilitate the implementation and monitoring of the environmental protection measures, a site specific Environment Management Plan (EMP) has been prepared for the UWF Grid Connection. The EMP is appended to the EIA Report as **Volume D: UWF Grid Connection Environmental Management Plan**.

The EMP describes the approach to environmental management during the construction of UWF Grid Connection. The objectives of the EMP are to:

- (a) identify management responsibilities and reporting requirements for environmental management;
- (b) identify the relevant Environmental Commitments;
- (c) set out the environmental protection measures to be implemented;
- (d) Outline how compliance with the EMP will be achieved; and
- (e) Promote best environmental practices for the duration of the development.

19.5.1.1 Compliance with the EMP

The UWF Grid Connection Environmental Management Plan will be used by the Environmental Clerk of Works and the Environmental Clerk's team of managers/experts, to audit compliance of the Contractors with the EMP.

19.5.1.2 Unforeseen Significant Adverse Effects

The EMP includes contingency measures for unforeseen events, such as oil/fuel spillages, frac-out or water pollution.

The Environmental Clerk of Works will have a full time presence on-site during the construction stage, and environmental experts will supervise works at environmentally sensitive locations. This will ensure that any unforeseen significant adverse effects are identified in a timely manner and appropriate remedial action taken immediately.

The Environmental Clerk of Works will have a 'stop-works' authority to temporarily stop works over part of the site to avoid either an infringement of the Environmental Commitments or an unforeseen adverse environmental event. Works will not be allowed to re-commence until the issue is resolved.

19.6 Responsibilities & Management

It will be the overall responsibility of the Project Promoter to ensure that the UWF Grid Connection is developed as consented. The implementation of the Mitigation Measures and Environmental Commitments will be the responsibility of the Project Manager and a contractual obligation on the Construction Site Manager during the construction stage.

The protection of the environment during construction works and during the operational stage will be managed through the UWF Grid Connection Environmental Management Plan (EMP).

During construction, monitoring and auditing of the compliance of UWF Grid Connection with the EMP, will be carried out by an Environmental Clerk of Works, who will be independent of the Construction Contractor. The Environmental Clerk of Works will work with a suitably qualified team. The Environmental Clerk of Works will prepare weekly EMP Compliance Reports.

During operation, monitoring and auditing of the compliance of UWF Grid Connection with the EMP will be the responsibility of ESB Networks in relation to UWF Grid Connection, and will be the responsibility of the Project Promoter for Upperchurch Windfarm in relation to monitoring and measures for Upperchurch Windfarm maintenance and operation.

UWF Grid Connection Environmental Management Plan (2019)

Tab 6 Environmental Emergency Response Procedures



October 2019

Environmental Emergency Response Procedures

EMP

| ERP No. | Environmental Emergency Response Procedures |
|-----------|--|
| GC-ERP-01 | Oil/Fuel Spillage |
| GC-ERP-02 | Significant Pollution Occurrence in Local Surface Waters |
| GC-ERP-03 | Frac-Out during Drilling Works at W8 or W9 |

| | | |
|---|---|--|
| GC-ERP-01 | Environmental Emergency Response Procedure | |
| Oil/Fuel Spillage | | |
| Work Sections/Locations | | |
| All construction works areas | | |
| Responsibility of | Role/Duty | |
| Construction Manager | <ul style="list-style-type: none">Ensuring that all personnel are trained in emergency procedure for oil/fuel spillage.Ensuring that all construction site plant, machinery and vehicles are equipped with spill kits.Alerting the Environmental Clerk of Works immediately of the oil/fuel spillage. | |
| General | | |
| <ul style="list-style-type: none">The Construction Manager will ensure that appropriately trained staff and necessary containment equipment is on site to allow immediate control of any spills.Contractors will be required to check all fuel and hydraulic lines, service, and document all machinery prior to the commencement of construction.Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and at the designated fuel storage areas in the temporary compound. All operators will be fully trained in the use of this equipment.Spill response apparatus and infrastructure will be inspected on a regular basis to ensure that the kits are fully stocked and materials are of adequate condition, and where this is not the case kits will be replenished or replaced immediately.Spill kits will be fitted with break seals and site operatives will be required to notify the construction manager if these seals are broken.Spill kits will be maintained at all fuelling and oil storage locations. All mobile fuel and oil bowsters/tankers will have full spill kits, appropriate to their capacity.All machines that utilise hydraulic systems, such as excavators, dumpers, and cranes, will have appropriately sized spill kits on board at all times.It is the Construction Manager’s responsibility to ensure spill kits/material is available as specified.All hydrocarbons will be managed appropriately to prevent their potential release to surface or ground water.All hydrocarbon containers will be stored in bunds. For above ground tanks, double skinned tanks will be used and all will be externally banded. All transfer of hydrocarbons will be undertaken in a banded area. | | |
| Procedures in the event of an oil/fuel spillage | | |
| <p>This procedure covers the accidental spill of oils that may arise from plant failures, refuelling, etc.:</p> <ul style="list-style-type: none">On arrival at spill site, assess the situation. If a volatile, flammable material is spilled, immediately warn everyone in the vicinity, control sources of ignition and ventilate the area.If possible without risk of personal injury, stop and contain the spillage using the appropriate spill kit (as per material type).Have all shores and surface water drains in the area of spillage covered or protected as quickly as possible to prevent pollution.Report all spills immediately to the Environmental Clerk of Works and Construction Manager who will mobilize specially trained site personnel to clean up and dispose of residues and clean-up materials in an appropriate manner.Spill kit waste materials will be collected from the temporary construction compound by a specialised hydrocarbon and hazardous waste service provider with a valid waste collection permit for reprocessing at an EPA waste licensed facility. | | |
| Emergency Spill Response Contact: AM Environmental, Castletroy, Limerick 061-502 095, 087- 265 4081 (24hr) | | |

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|---|--|
| GC-ERP-02 | Environmental Emergency Response Procedure |
| Significant Pollution Occurrence in Local Surface Waters | |
| Work Sections/Locations | |
| All construction works areas | |
| Responsibility of | Role/Duty |
| Construction Manager | <ul style="list-style-type: none"> Will inform the Environmental Clerk of Works immediately of any observed issues. |
| Environmental Clerk of Works | <ul style="list-style-type: none"> Will notify an appropriate person in Tipperary County Council. |
| Incidents involving oil spillage | |
| <p>In the unlikely event of a significant pollution occurrence in local surface waters relating to the works then the following protocol will be adopted:</p> <ul style="list-style-type: none"> Works will be stopped while an initial investigate takes place, to determine If the source of the pollution is from the works; Water quality monitoring will be undertaken visually, and the Construction Manager will inform the Environmental Clerk of Works of any observed issues If the source is from the works then the Environmental Clerk of Works will notify an appropriate person in Tipperary County Council. If the source is from the works, work will not continue again until the source of the pollution is identified and eliminated. | |

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| GC-ERP-03 | Environmental Emergency Response Procedure | |
| Frac-Out during Drilling Works | | |
| Work Sections/Locations | | |
| Horizontal Directional Drilling locations - Watercrossings W8 & W9 | | |
| Responsibility of | Role/Duty | |
| Construction Manager | <ul style="list-style-type: none">● Liaising with the Mud Engineer and Drilling Contractor regarding the status of drilling works and the deployment of contingency measures | |
| Mud Engineer | <ul style="list-style-type: none">● Supervising water course bed and drilling works, including drilling pressures, implementation of contingency measures | |
| Purpose of Frac-Out Contingency Measures | | |
| <ul style="list-style-type: none">● Minimize the potential for a frac out associated with horizontal directional drilling activities through the implementation of GC-OCM-16;● Provide for the timely detection of frac outs;● Protect the watercourse and the piped water supply attached to the bridge above;● Ensure an organised, timely, and “minimum impact” response in the event of a frac out and the release of drilling mud. | | |
| Contingency Measures | | |
| <ul style="list-style-type: none">● In the event of break-out occurring in the river bed, the rig will immediately shut off the pumps and the drilling assembly will be pulled off to reduce annular pressures.● In the event of break-out on the road an excavator will be available to dig a pit to contain fluid with vacuum trucks/pumps available to transfer drill fluid from the containment point back to the recycling point.● Drilling fluid additives designed to plug the formation will be introduced to the circulation system and let set. | | |

UWF Grid Connection Environmental Management Plan (2019)

Tab 8 Environmental Surveying and Monitoring Measures

| ENVIRONMENTAL PROTECTION MEASURE – Environmental Surveying and Monitoring Measures | |
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| Responsibility of | Role/Duty |
| Environmental Clerk of Works | Engaging specialist environmental and engineering experts to carry out Environmental Survey Requirements |
| Environmental Survey requirements included as Project Design Environmental Protection Measures <i>(in some instances, only those parts of a PD which are relevant to scheduling or timing is included below)</i> | |
| PD02 Hen Harrier | If works at Mountphilips Substation site are programmed to begin in the Hen Harrier breeding season (March to August) confirmatory Hen Harrier breeding surveys will be completed, before such works initiate, such that all pre breeding nuptial activity, nesting activity and active nests are recorded within 2km of the entire construction works area boundary. These surveys will be completed prior to the start-up of all construction activities. A report including nesting activity and levels of usage will be provided to the Competent Authority and NPWS following the completion of each survey season. The Project Ecologist will keep NPWS informed of the real-time status of nesting Hen Harrier as a result of the monitoring associated with this project. |
| PD03 Hen Harrier | Although no hen harrier roosts are currently known to occur within 1km of UWF Grid Connection, confirmatory surveys will be completed to record any roosting locations within 1km of UWF Grid Connection. A report including roosting activity and levels of usage, will be provided to the Competent Authority and NPWS following the completion of each survey season. |
| PD08 Material Assets | Confirmatory consultations with Irish Water, Eir and ESB and review of all relevant infrastructure mapping before works, along with confirmatory ground surveys at service locations will be carried out ahead of works. |
| PD14 Archaeology | All initial groundworks within 500m of an RMP or NIAH site, will be monitored by an archaeologist under license from the National Monuments Service, to archaeologically record and preserve, either in situ or by record, any structures, features or objects of archaeological significance which may be encountered during the works.. |
| PD16 Underwater archaeology | Where excavations occur at culvert replacement locations along the 110kV UGC, and at the 3 No. new watercourse crossing at the Mountphilips Substation site, excavations will be monitored by an appropriately qualified archaeologist under license from the National Monuments Service, the excavated material will be examined for any evidence of archaeological material and metal detected as part of a finds retrieval strategy. |
| PD32, PD41 Water quality | The instream works at W1, W2 and W3 at Mountphilips Substation site, and the culvert replacement works at the 13 existing culverts on the public road, and all works (including concrete placement) within the boundary of the Lower River Shannon SAC, will be supervised by a member of CIEEM and the Institute of Fisheries Management to ensure both the Project Design Measures and Best Practice Measures are followed. |
| PD45 Water quality | The horizontal directional drilling works at W8 and W9 will be supervised and managed by a competent and experienced Mud Engineer who understands the technicalities and challenges of drilling works. The Mud Engineer will monitor the watercourse bed during drilling works, and will supervise the drilling works including the drilling pressures and the implementation of any contingency measures. |
| PD46 | All construction works will be monitored on a daily basis by the Environmental Clerk of Works and by members of the Environmental Clerk of Works team (for example Site Ecologist) as required, for |

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| All | compliance with the Environmental Commitments, which include the Project Design Measures, as per the Environmental Management Plan for UWF Grid Connection (see Volume D). |
| PD47 Water Quality | Surface water quality monitoring of the main watercourses downstream of the works will be carried out to ensure that the downstream water quality status in the receiving water is maintained. The surface water monitoring locations and sampling programme are defined in the Surface Water Management Plan for UWF Grid Connection. |
| PD52 Otter | Confirmatory surveys for active Otter holts and breeding activity will be carried out 150m upstream and downstream of watercourse crossing locations including those watercourses evaluated as unsuitable for Otter in the current appraisal. |
| PD59 Dipper | Works will not take place at any bridge during the Dipper breeding season (Feb-June inclusive) without a confirmatory survey to determine Dipper presence or absence. |
| PD60 Grey Wagtail | Where works will be carried out at parapet walls, no works will take place between the period April-August without confirmatory survey as to the presence or absence of breeding Grey Wagtail. |
| PD61 Kingfisher | Works will not take place at any bridge during the Kingfisher breeding season (March to July inclusive) without a confirmatory survey to determine nesting/breeding Kingfisher presence or absence within 150m upstream or downstream of the bridge. |
| PD62 General birds | All bridges/structures where works are proposed will be subject to confirmatory surveys for General breeding birds prior to works commencing. |
| PD64 Bat | Tree felling only pertains to the Mountphilips Substation site. Confirmatory surveys will be carried out at all trees that will require felling or other major modifications (e.g. removal of rotten branches) in order to confirm the findings of the 2016 / 2017 surveys regarding the suitability of the trees for roosting bats. These trees will be subject to a ground-level visual inspection by the Project Ecologist (or a bat specialist acting on their behalf) prior to site clearance works. |
| PD65 Bat | While it is not expected that any trees with high suitability for roosting bats will be felled, the following measures will be implemented where a tree with moderate or high bat suitability is to be felled: a presence/absence bat surveys will be carried out; The Project Ecologist will supervise the installation of bat boxes in order to ensure that they are sited appropriately. |
| PD66 Bat | All bridges of moderate suitability for bats will be subject to a confirmatory survey prior to the commencement of construction works. Bridges of negligible or low suitability do not need to be surveyed, but this will be reviewed by the Environmental Clerk of Works and Project Ecologist. |
| PD67 Badger | No badger setts were recorded within 50m of the UWF Grid Connection during pre-planning surveys. Confirmatory surveys will be carried out within 50 m of either side of the construction works area boundary to determine if any new setts have been established in the intervening period following initial pre-planning surveys and the commencement of construction activity. These confirmatory badger surveys will be undertaken no more than 12 months in advance of proposed construction activities, during the period November and April when vegetation cover is reduced. |
| PD69 Invasive Species | All covering of vegetative invasive knotweed infestations with high density polyethylene grass carpet terram will take place, at all identified locations prior to any works commencing on UWF Grid Connection or any other element of the Whole UWF Project. The covering of these infestations will only be carried out under the direct supervision of an ecologist with prior experience of this type of work i.e. this work cannot be carried out by any general construction staff. |
| Traffic Management | Along the 110kV UGC route on the public road, confirmatory condition surveys involving pre-construction and post-construction inspections, high definition video surveys and FWD surveys will |

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| Plan | <p>be undertaken</p> <p>Along the additional local road L5337-1 at Tullow, which will be used for construction materials haulage only (i.e. no trenching works), confirmatory condition surveys involving pre-construction and post-construction inspections, high definition video surveys and FWD surveys will be undertaken along the routes of concentrated construction traffic between the R503 and the works locations on the local road network.</p> |
| Surface Water Management Plan | <p><u>Drainage Inspections at Mountphilips Substation site</u></p> <p>The following periodic inspection regime at Mountphilips Substation site will be implemented, and inspections recorded:</p> <ul style="list-style-type: none"> • Daily general visual inspections by Environmental Clerk of Works; • Weekly (existing & new drains) inspections by site Construction Manager; • All inspection to include all elements of drainage systems; • Inspections required to ensure that drainage systems are operating correctly and to identify any maintenance that is required; • Any changes, such as discolouration, odour, oily sheen or litter should be noted and corrective action should be implemented immediately. • High risk locations such as settlement ponds will be inspected on a daily basis by the Construction Manager; • Daily inspections checks will be completed on plant and equipment, and whether materials such as straw bales or oil absorbent materials need replacement; • Event based inspections by the Environmental Clerk of Works as follows: <ul style="list-style-type: none"> ○ >10 mm/hr (i.e. high intensity localised rainfall event); ○ >25 mm in a 24 hour period (heavy frontal rainfall lasting most of the day); or, ○ Rainfall depth greater than monthly average in 7 days (prolonged heavy rainfall over a week). • Weekly, Fortnightly and Monthly (depending on weather conditions and the nature of on-going construction works) site inspections by the Project Hydrologist during construction phase <p><u>Water Quality Monitoring</u></p> <ul style="list-style-type: none"> • Daily field monitoring of water quality parameters and collection of samples will be undertaken by the Environmental Clerk of Works. He/she will be appropriately trained on the required monitoring methods and the use, calibration and maintenance of all monitoring equipment used. • Regular (i.e. weekly or fortnightly depending on weather conditions) field monitoring will be carried out by the Project Hydrologist. • Surface water quality will be monitored during the construction phase and this monitoring will also extend into the post construction phase. Proposed monitoring locations downstream of the works areas. The locations of the surface water monitoring points will be agreed with Inland Fisheries Ireland and Tipperary County Council in advance of the construction phase. • Laboratory analysis of water samples will also be undertaken as part of the monitoring programme by an independent and appropriately certified laboratory. <p><u>Frequency of Water Quality Monitoring</u></p> <ul style="list-style-type: none"> • Daily visual checks at watercourse crossing locations where works are taking place; • Weekly sampling for suspended solids and turbidity in catchments where earthworks or watercourse crossing work is on-going; • Fortnightly sampling for the full suite of parameters (Table 7) in catchments where works are on-going; • Event based sampling, e.g. after heavy rainfall; • Additional sampling in the event of trigger level exceedance, after heavy rainfall, etc; and, |

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| | <ul style="list-style-type: none"> • Post construction sampling programme (monthly sampling) for a period of six months |
| Invasive Species Management Plan | <p>Pre-Construction confirmatory surveys will be completed by an invasive species specialist, 3 – 4 weeks before construction begins. Mapping, showing the most up to date distribution and extent of each infestation, will be distributed to the Client, Owners Engineer and the Contractor;</p> <p>The covering of vegetative knotweed infestations with high density polyethylene grass carpet terram at all identified locations prior to any works commencing on that section and the monitoring of construction works at that section when it happens;</p> <p>To ensure the effective implementation of the biosecurity measures, an invasive species specialist will monitor each infestation location during all critical stages of construction works;</p> <p>Visual inspections will be carried out on all machinery and equipment (particularly for machinery and equipment exiting the site and which has come into contact with water or soils) for evidence of attached plant or animal material, or adherent mud or debris.</p> |
| Best Practice Measures for Water quality | <ul style="list-style-type: none"> • The Construction Manager will be responsible for monitoring weather conditions • All construction works will be monitored on a daily basis by the Environmental Clerk of Works and by members of the Environmental Clerk of Works team (for example Site Ecologist) as required, for compliance with the Environmental Commitments • Surface water quality monitoring of the main watercourses downstream of the works will be carried out to ensure that the downstream water quality status in the receiving water is maintained. The surface water monitoring locations and sampling programme are defined in the Surface Water Management Plan for UWF Grid Connection • Daily monitoring of the compound works area, the water treatment and pumping system and the percolation area will be completed by a suitably qualified person during the construction phase <p>All permanent overburden storages areas will be checked / monitored daily until stabilised to ensure no drainage issues of surface water quality impacts are occurring</p> |
| Best Practice Measures for Dust Control | <ul style="list-style-type: none"> • Public roads works areas will be regularly inspected for cleanliness, and swept to remove mud and aggregate materials from their surface, as necessary; • The private paved road in Knockcurraghbola Commons will also be regularly inspected for cleanliness, and swept to remove mud and aggregate materials from its surface, as necessary; |
| Best Practice measures for Local employment | <ul style="list-style-type: none"> • Monitor the recruitment and training of local employees in line with Local Employment & Local Sourcing Policy |
| Best Practice Measures for operational UWF Grid Connection | <ul style="list-style-type: none"> • A confirmatory survey of Electromagnetic Field emissions from the Mountphilips 110kV Substation and from locations along the 110kV UGC will be carried out by a competent engineer following commissioning of the UWF Grid Connection. • Recording and reporting of the annual renewable electricity production of the operational Upperchurch Windfarm. |
| | |

UWF Grid Connection Environmental Management Plan (2019)

Tab 9 Best Practice Measures



October 2019

| Best Practice Measure GC-BPM-1 | |
|---|--|
| Title: | Best Practice Measures for Protection of Surface Water Quality and Watercourse Morphology during instream works at Mountphilips Substation site |
| Relevant Watercourse Crossing Points | |
| W1, W2, W3 at Mountphilips Substation site | |
| Responsibility of | Role/Duty |
| Construction Manager | Monitor weather conditions and supervise instream works. Ensure instream works are carried out in accordance with project design measures and best practice measures. |
| Surface Water Quality Protection Measures | |
| Timing | |
| <ul style="list-style-type: none"> Instream works at W1, W2 and W3, at the Mountphilips Substation site will be undertaken during dry weather within the IFI instream works window (July – September inclusive). | |
| Supervision & Monitoring Measures | |
| <ul style="list-style-type: none"> The instream works at W1, W2 and W3, at the Mountphilips Substation site will be supervised by a member of CIEEM and the Institute of Fisheries Management to ensure both the Project Design Measures and Best Practice are followed. All construction works will be monitored on a daily basis by the Environmental Clerk of Works and by members of the Environmental Clerk of Works team (for example Site Ecologist) as required, for compliance with the Environmental Commitments Surface water quality monitoring of the main watercourses downstream of the works will be carried out to ensure that the downstream water quality status in the receiving water is maintained. The surface water monitoring locations and sampling programme are defined in the Surface Water Management Plan for UWF Grid Connection | |
| General Measures to be implemented for instream works at W1, W2, W3 | |
| <ul style="list-style-type: none"> Double silt fencing will be placed along each side of the watercourse; Machinery will only work from access roads, and the operation of machinery and use of equipment within the 10m buffer will be kept to a minimum to avoid any unnecessary disturbance; Double silt fencing and berms will be placed at the crossing to prevent sediment/runoff from the access road surfaces from entering the watercourse; Disturbance of bankside soils and watercourse sediments will be kept to the minimum to avoid unnecessary impact on the watercourse morphology; Clay bunds will be placed within any adjacent upslope cables trench on both sides of the watercourses to prevent the trench acting as a drain towards the watercourse; Watercourse crossing W1 involves the installation of underground cabling (under the bed of the watercourse) and the installation of a temporary Bailey bridge crossing structure. The flume/pipe watercourse crossing method will be used at W1; A pipe/flume with sufficient capacity/size to accommodate the flow rate of the stream, will be placed on the watercourse bed without disturbance to the bed; Watercourse crossings W2 and W3 involve the installation of underground cabling for the 110kV UGC and the local electricity supply to the substation compound, in addition to the construction of new permanent crossing structures. The damming and over-pumping method will be used at W2 and W3 at Mountphilips Substation Site; Dams will be installed at both the upstream and downstream ends of the pipe/flume/pump in order to direct the water flow through the pipe/flume/pump hose, therefore allowing work to be carried out on a dry streambed; Dams will be made of sand (clean) bags, cobbles or clean well-graded coarse gravel fill. Poorly sorted material will not be used as it would be a potential source of fine sediment; | |

- A temporary sump will be constructed in the watercourse bed at the proposed dam location if a natural pool does not already exist. The sump will be lined with clean rockfill to prevent scouring and erosion during pumping at the intake;
- An energy dissipater (such as clean rock fill or splash plates) will be placed on the watercourse bed downstream of the pipe/flume/pump outfall. This will prevent scouring and erosion of the watercourse bed at the outfall;
- Once the watercourse flow is isolated from the excavation area, excavation works can commence to install the cable ducting and install the crossing structures;
- Under the supervision of an aquatic ecologist, any spawning gravels will be removed at the culvert location and will be temporarily stored in bags at a point greater than 10m from the watercourse;
- Once the lean mix concrete is in place in the trench, a layer of fine sand (5 – 10cm) will be laid over the concrete prior to final backfilling. This will prevent release of cement into the watercourse when flow is restored;
- Only precast concrete culverts or structures will be used at W2 and W3. No batching of wet cement will take place on-site. (Project Design Measure); A steel Bailey bridge will be temporarily installed at W1.

Measures to reinstate the watercourses at crossing points W1, W2 and W3 at Mountphilips Substation site

At Mountphilips Substation site, instream construction works at the watercourse crossing W1, W2 and W3 will be followed by site-specific reinstatement measures to ensure the equilibrated restoration of flow character and morphology within the affected reach to achieve baseline character and avoid any deterioration in morphology as required under the Water Framework Directive (WFD). Measures will include:

- bank stabilisation using boulder armour or willow/brush bank protection;
- reinstatement of bank slope and character, creation of compound channels where necessary;
- reinstatement of instream flow features such as boulder substrates, pool / riffle sequences, or spawning cobbles;
- planting along the riparian margins to stabilise banks, add flood protection and provide riparian buffer; and
- the use of deflector plates during the restoration of flow.

References

IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.
 NRA (2008) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.

| Best Practice Measure GC-BPM-5 | |
|--|---|
| Title: | Best Practice Measures to Protect Surface Water and Groundwater Quality during use of Cement Based Compounds |
| Environmental Commitment | |
| Prevention of surface water and groundwater quality impacts during use of Cement Based Compounds. | |
| Work Sections/Locations | |
| 110kV UGC Mountphilips Substation Site | |
| Responsibility of | Role/Duty |
| Construction Manager | Monitor weather conditions. Ensure best practice storage and use of Cement Based Compounds. |
| Measures | |
| <ul style="list-style-type: none"> Only precast concrete culverts or structures will be used at the 3 no. watercourse crossing locations at Mountphilips Substation site and for any culvert replacements along the 110kV UGC. Only precast concrete chambers will be used at Joint Bay locations. No batching of wet cement will take place on-site. (Project Design Measure) Only chutes will be washed out on site; at Mountphilips Substation site, chute washout will be into the designated concrete wash settlement pond; along the 110kV UGC, chute washout will be at the works locations into the cable trench. At works locations within the Lower River Shannon SAC boundary, the concrete chute washouts will take place into designated bins for removal to the designated concrete wash settlement pond at the Mountphilips Substation site. In all cases, the washout of the tank will take place at the concrete supplier depot. (Project Design Measure) Any spills no matter how small or material or overburden contaminated with cement mix will be moved off-site for disposal at a licensed facility; Outfalls or natural pathways (<i>i.e.</i> preferential flow paths) from excavations towards any local drain or watercourse will be prevented. Outfalls or natural pathways will be temporarily blocked using sand bags and geotextile until the cement mix has set; The pour site will be kept free of standing water and plastic covers will be ready in case of sudden rainfall event At watercourse crossing locations, a layer of fine sand (5 – 10cm) will be placed over the cement mix within the trench prior to final backfilling. This will prevent release of cement into the watercourse when flow is restored. | |
| References | |
| IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters. NRA (2008) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. CIRIA (Construction Industry Research and Information Association) 2006: Guidance on 'Control of Water Pollution from Linear Construction Projects' (CIRIA Report No. C648, 2006) CIRIA 2006: Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors. | |

| Best Practice Measure GC-BPM-6 | |
|--|---|
| Title: | Best Practice Measures to Protect Surface Water and Groundwater Quality During Storage and Handling of Fuels, Oils and Chemicals |
| Environmental Commitment | |
| Prevention of water quality impacts during storage and handling of fuels, oils and chemicals. | |
| Work Sections/Locations | |
| Construction works area boundary | |
| Responsibility of | Role/Duty |
| Construction Manager | Monitor weather conditions. Ensure best practice use and storage of fuels, oils and chemicals on-site. |
| Manage of on-site refueling | |
| <ul style="list-style-type: none"> On site re-fueling of immobile machinery will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double-axel custom-built refueling trailer will be re-filled off site, and will be towed around the site by a 4x4 jeep to where machinery is located; There will be no refuelling of vehicles or plant permitted within 100m of a watercourse; Mobile measures such as drip trays and fuel absorbent mats will be used during all refueling operations; | |
| Storing fuel properly | |
| <ul style="list-style-type: none"> There will be no storage of fuel or refueling or mobile plant permitted within 100m of a watercourse. The fuel bowser will be parked on a level area in the temporary construction compound when not in use and only designated, trained and competent operatives will be authorised to refuel plant on site; The main fuel stocks for, and chemical wastes arising from, construction activities will be stored in a designated location, away from main traffic activity, within the temporary compound at the Mountphilips Substation site. All fuel will be stored in bunded, locked storage containers. The designated storage location will be greater than 100m from a watercourse. | |
| Avoid leakage from plant and tools | |
| <ul style="list-style-type: none"> The plant, machinery and tools used during construction will be regularly inspected for leaks, fitness for use; All generators and suction pumps used at watercourse crossing locations will have a double skinned fuel tank or be placed on a drip tray. | |
| Contingency for spillages | |
| <ul style="list-style-type: none"> Spill response apparatus including spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment (Project Design Measure); Spill response apparatus including spill-kits and hydrocarbon absorbent packs will be stored at the designated storage location in the temporary compound and all operators will be fully trained in the use of this equipment. The Environmental Emergency Response Procedure will be implemented immediately in the event of any spills – see TAB 6 of the Environmental Management Plan for UWF Grid Connection; Any spills no matter how small or material or overburden contaminated with fuel/oil will be moved off-site for disposal at a licensed premise. | |
| References | |
| <p>CIRIA (Construction Industry Research and Information Association) Report No. C648, 2006: Guidance on 'Control of Water Pollution from Linear Construction Projects.</p> <p>CIRIA Report No.C532, 2006: Control of Water Pollution from Construction Sites-Guidance for Consultants & Contractors.</p> | |

**UWF Grid Connection
Environmental Management Plan (2019)**

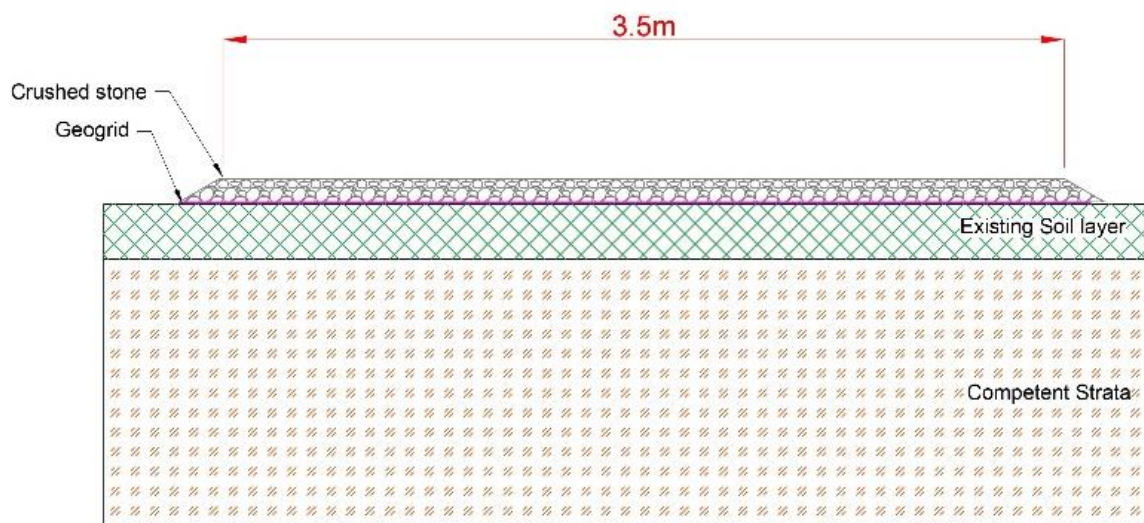
**Tab 10
Outline Construction Methodologies**

**(Further methodologies post planning consent /
pre-construction)**



October 2019

| Outline Construction Methodology | | | |
|---|-----------------------------|---|---|
| Title: | Pre-Construction Activities | Ref: | GC-OCM-01 |
| General Description | | | |
| Certain activities, will take place prior to the commencement of the main construction stage of the UWF Grid Connection, these include detailed design, management appointments and confirmatory surveys, along with the setting out of the construction works areas at Mountphilips Substation site. | | | |
| Duration | | | |
| Over a 6 month period prior to the commencement of the main construction stage | | | |
| Personnel | | Machinery & Equipment | Materials |
| <ul style="list-style-type: none">▪ Main Contractor▪ Project Manager▪ Environmental Clerk of Works▪ Specialist engineering Consultants▪ Environmental Consultants▪ Site engineer▪ 2 civil works personnel | | <ul style="list-style-type: none">▪ GPS equipment▪ Hand tools▪ Survey equipment | <ul style="list-style-type: none">▪ 4 x 4 vehicle and trailer▪ Fencing posts▪ Fencing wire▪ Tape▪ Portable electric fencer▪ Goal posts▪ Signage▪ Wooden pegs▪ Spray Paint |
| Design and Management Activities | | | |
| <ul style="list-style-type: none">▪ The Project Manager, Main Contractor, and the Environmental Clerk of Works will be appointed.▪ The Environmental Management Plan will be reviewed and updated to include the planning permission details and conditions, the identification of key project personnel and the addition of the Contractors method statements,▪ The Traffic Management Plan will be updated with details of other road works, road maintenance or traffic diversions, etc. that might be planned for the area at the same time as the construction works. This information will be obtained from the Roads Department of Tipperary County Council. The updated Traffic Management Plan will be submitted, along with road opening license applications to the Roads Department of Tipperary County Council,▪ Method statements will be prepared by the Contractor. These method statements will be based on the Outline Construction Methodologies.▪ Pre-construction monitoring and confirmatory surveys will be carried out by specialist engineering and environmental consultants, and will include public road condition monitoring surveys, water quality monitoring surveys, and ecological confirmatory surveys.▪ At Mountphilips Substation site, the construction works area boundary will be temporarily fenced off with wooden posts and wire, or with electric fences if there is livestock present; the boundaries of any hydrological, ecological or environmental buffer zones, such as buffer zones around watercourses, will be fenced off with marker tape to prevent unauthorised access by construction crews, plant and machinery; goal posts will be erected under overhead lines; and the footprint of the widened site entrance, access road, substation compound, and end mast locations will be marked out by an engineer. | | | |
| END | | | |

| Outline Construction Methodology | | | |
|---|--|--|---|
| Title: Temporary Access Road to End Masts | | Ref: | GC-OCM-04 |
| General Description | | | |
| A temporary access road will provide access to End Mast No.1 and No2 at Mountphilips. The temporary access road will be circa 3.5m in width. | | | |
| Duration | | | |
| 3 days | | | |
| Personnel | | Machinery & Equipment | Materials |
| <ul style="list-style-type: none">Site Engineer3 General Operatives1 Excavator Operator | | <ul style="list-style-type: none">4x4 vehicleTipper Truck360° excavatorVibrating roller | <ul style="list-style-type: none">Geotextile50mm crushed stone |
| Standard Method - 3.5m wide excavated and stoned temporary access road | | | |
| <ul style="list-style-type: none">A layer of geotextile material will be laid over the existing ground.A layer of 200mm deep of 50mm crushed stone will then be overlaid on the geotextile and compacted in suitable layers using a vibrating roller.Reinstatement will take place when the End Mast works are completed. The layer of stone and geogrid will be removed and either re-used at the Mountphilips Substation compound or along the new permanent access road at the Mountphilips Substation site.The area will be reinstated and reseeded as per GC_OCM_10: Reinstatement of Land at Mountphilips Substation Site. | | | |
| Relevant Drawings from Volume C3 EIAR Figures | | | |
| Extract from Figure GC 5.11: Cross Section of Temporary Access Road at Mountphilips Substation | | | |
|  | | | |
| Cross Section of Temporary Access Road | | | |
| END | | | |

| Outline Construction Methodology | | | |
|---|--|--|----------------|
| Title: | Instream Works and Temporary Bailey Bridge Crossing At W1 | | Ref: GC-OCM-05 |
| General Description | | | |
| <p>Instream works will be required at Mountphilips Substation Site in order to install the underground cables across the local stream at W1. A temporary crossing will also be constructed at this location.</p> <p>To facilitate the works, these watercourses will be dammed and the water diverted through a flume pipe. Following the completion of works at the watercourse, the dam and flume will be removed and the watercourse reinstated.</p> | | | |
| Duration | | | |
| 1-2 Days | | | |
| Personnel | Machinery & Equipment | Materials | |
| <ul style="list-style-type: none">• Site engineer• 3-4 operatives• 1 Excavator Operator | <ul style="list-style-type: none">• Tipper Truck• 360° excavator• Mobile water pumps and hoses• 4 x 4 vehicle and trailer | <ul style="list-style-type: none">• Sand Bags containing washed sand• Geotextile membrane• Straw bales• Flume pipes• Splash plate• Silt Buster• Washed round stones• Silt trap material | |
| Standard Method: Dam & Flume for Cables Trench | | | |
| <ul style="list-style-type: none">▪ The flume pipe(s) will be set out on the bed of the watercourse.▪ A dam will be constructed using sand bags so that all the flow is diverted through the flume pipe(s).▪ A splash plate will be placed at the downstream end of the flume pipe where the water re-enters the watercourse in order to prevent erosion of the stream bed.▪ Silt traps, such as geotextile membrane. will be placed downstream of the in-stream works location to minimise sedimentation▪ The works will be carried out under/around the flume pipe(s).▪ If required, a temporary sump will be established and used to collect any additional water. This water will be removed by pumping to an infiltration trench or settlement pond if the soil is not saturated, otherwise the water will be pumped to a suitably sized water treatment train, such as a Siltbuster, where any sediment will be allowed settle before the water is released.▪ A cables trench will be excavated in the dry stream bed, under the flume, and cable ducts will be laid and the trench backfilled with existing material.▪ Following the completion of works at the watercourse, the dam and flume pipes will be removed and the watercourse reinstated as per Instream Reinstatement outlined below. | | | |
| Standard Method: Temporary Crossing (Temporary Bailey Bridge) | | | |
| <ul style="list-style-type: none">▪ A temporary access road will be constructed in advance of the arrival of the Bailey bridge.▪ On each side of the watercourse, a 4m x 4m area of top soil will be removed and the area will be laid with geotextile. Clause 804 stone will then be in-filled and compacted to form a bearing pad which will support each end of the bailey bridge.▪ The bridge will be delivered to the crossing point on a low loader.▪ The bridge will be assembled using hand tools and lifted into place using the Hi-Ab mounted on the delivery truck.▪ When the End Mast works are complete, the temporary Bailey bridge will be removed. | | | |

- The bridge will be dismantled, loaded onto a low loader and removed from site.
- The stone will be removed from the bearing pads and the excavated soil reinstated and reseeded.

Standard Method: Instream Reinstatement

- Following the completion of works at W1 and the End Masts, the dam and flume will be removed – deflector plates will be used during the restoration of flow in the watercourse.
- The watercourse will be reinstated by reinstating the bank slopes and character and stabilizing the banks using boulder armour or willow/brush bank protection, and reinstating instream flow features such as boulder substrates, pool / riffle sequences, or spawning cobbles; and planting will be carried out along the riparian margins.

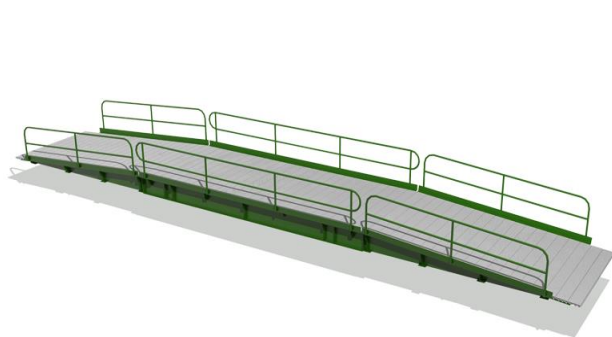
Reference Documents

Groundforce Bridge – Temporary Bridge (<https://www.vpgroundforce.com/ire/temporary-bridges/>)

Photographs



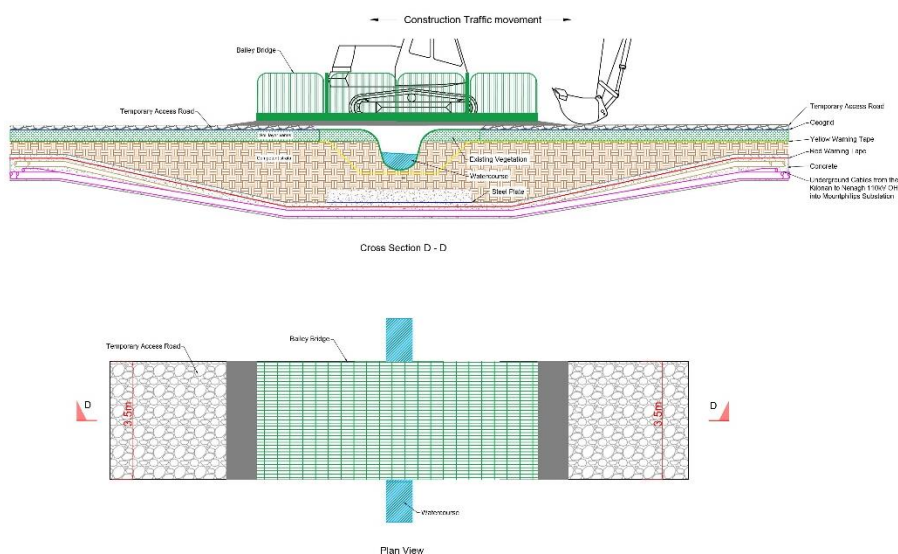
PVC Flume Pipes



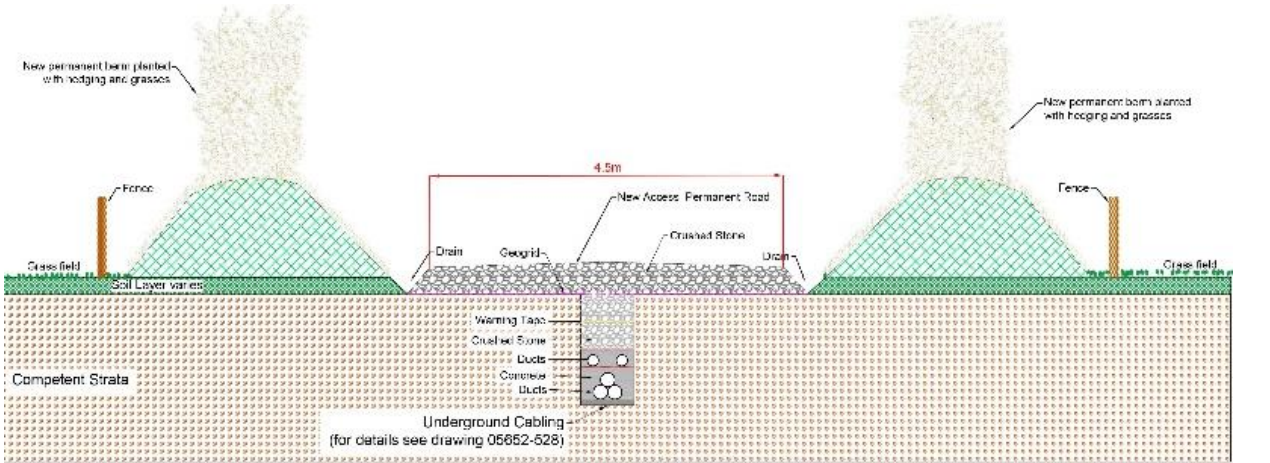
Bailey Bridge

Relevant Drawings from Volume C3 EIAR Figures

Extract from **Figure GC 5.12: Cross Sections of Temporary Bailey Bridge Crossing at Mountphilips Substation Site**



END

| Outline Construction Methodology | | |
|--|--|---|
| Title: | New Permanent Access Road at Mountphilips Substation Site | Ref: GC-OCM-06 |
| General Description | | |
| New permanent access road 4.5m in width, will be constructed to provide vehicular access to Mountphilips Substation | | |
| Duration | | |
| 5 days, c.100m/day | | |
| Personnel | Machinery & Equipment | Materials |
| <ul style="list-style-type: none">Site Engineer3 General OperativesExcavator Operator | <ul style="list-style-type: none">4x4 vehicleWheeled Tipper Trucks360° excavator.Vibrating RollerChainsaws | <ul style="list-style-type: none">Pre-cast culverts50mm crushed stoneGeotextileGranular fill as per design |
| Standard Method | | |
| <ul style="list-style-type: none">An excavator will excavate the width of the new access road which will include a roadside drainage channel. All organic material and soft subsoil will be removed to formation level. Soft spots will be excavated and filled with suitable granular material. Excess material will be stored in permanent berms alongside the new access road to Mountphilips Substation.Geotextile material will be laid where necessary (subject to site conditions).A minimum sub-base will be laid which will consist of 250mm of crushed stone and compacted in layers.A surface layer of granular fill will then be laid and compacted. A 13 ton vibrating roller will compact each layer.The surface of the new road will be finished with a 1% gradient to allow water run-off.Land will be reinstated and reseeded with grasses and flower species common to the surrounding vegetation. Local provenance native wildflower seed of flowering plants like Clovers, Vetches and Knapweed will be sown. | | |
| Relevant Drawings from Volume C3 EIAR Figures | | |
| Extract from Figure GC 5.10: Cross Sections of New Permanent Access Road at Mountphilips Substation | | |
|  <p>Cross Section of New Permanent Access Road to Mountphilips Substation</p> | | |
| END | | |

| Outline Construction Methodology | | | |
|--|---|---|----------------|
| Title: | Reinstatement of Lands at Mountphilips Substation Site | | Ref: GC-OCM-11 |
| General Description | | | |
| During construction works, vegetation, topsoil and subsoil will be removed from lands at the Mountphilips substation site to facilitate the construction of the UWF Grid Connection. Following the completion of construction works, these lands will be reinstated. | | | |
| Duration | | | |
| 1 – 4 days per location | | | |
| Personnel | Machinery & Equipment | Materials | |
| <ul style="list-style-type: none">▪ Site engineer▪ 2-3 general operatives▪ 1 Excavator Operator | <ul style="list-style-type: none">▪ 4x4 vehicle▪ Tipper Truck.▪ 360° excavator▪ Sub-soiler plough▪ Levelling harrow | <ul style="list-style-type: none">▪ Native grass and flower seeds▪ Native semi-mature trees▪ Native fruiting hedgerow species | |
| Standard Methods | | | |
| <ul style="list-style-type: none">▪ Following the completion of works, any remaining building materials and any wastes and excess material will be removed to a licensed facility.▪ The construction works area will, where required, be sub-soiled using a sub-soil plough to loosen any compacted areas.▪ Sub-soil will be spread using the excavator.▪ Topsoil will be spread evenly over the subsoil to surface level using an excavator.▪ The ground will be levelled using a levelling harrow so as to present a level surface and to ensure that the restored area will follow the contours of the surrounding undisturbed ground after restoration is completed.▪ All stones in excess of 50mm will be removed from the surface.▪ The soil will be reseeded with grasses and flower species common to the surrounding vegetation. Local provenance native wildflower seed of flowering plants like Clovers, Vetches and Knapweed will be sown.▪ Fertilizer will be spread on any sections of improved grassland.▪ The lands will remain fenced until sufficiently revegetated, at which time all fencing will be removed off-site. | | | |
| Reinstating hedgerows and trees | | | |
| <ul style="list-style-type: none">▪ New hedgerows and trees will be planted along the new permanent berms adjacent to the new access road and around the Mountphilips Substation.▪ New hedgerows and trees will be planted behind the visual splay at the Mountphilips Substation site entrance.▪ New hedgerow and trees will be fenced to protect from livestock. | | | |
| END | | | |

| Outline Construction Methodology | | | |
|---|--|---|-----------|
| Title: | 110kV Trenching & Ducting | Ref: | GC-OCM-12 |
| General Description | | | |
| A trench of c.1.25m deep, 0.6m wide will be dug in the road to accommodate 5 No. ducts necessary for the grid connection works. Three of these ducts will be used to contain the grid connection electrical cables and 2 of them will be used to house the telecommunications cables and copper cables. | | | |
| Duration | | | |
| <ul style="list-style-type: none">The civil contractor will complete 80-100 linear meters of trench per crew per day depending on the site conditions.Circa 4 crews will work at any one time. It is anticipated that multiple trenching and ducting crews will be working on the cable route simultaneously during the construction period. At times some crews will be completing joint bays and road reinstatement and will be coordinated intermittently with the trenching and ducting crews throughout the construction phase.Approximate duration 6 - 8 months for trenching & ducting, 10 – 12 months in total for 110kV UGC works outside the Mountphilips Substation site, with 110kV UGC works taking place over an 18 month period. | | | |
| Personnel | Machinery & Equipment | Materials | |
| <ul style="list-style-type: none">6 general operatives per crew2 Excavator Operators per crew1 Engineer per crew | <ul style="list-style-type: none">13 ton excavatorsSmall excavator/TeleporterTipper trucksVibrating compaction platesBrush & mandrelConsawHand toolsTraffic Cones and traffic signageCompressor and airspadesCable detector | <ul style="list-style-type: none">Blinding Concrete where necessaryBedding sandClause 804 Material150mm rock fill160mm & 125mm diameter uPVC ductingRed cable marker stripYellow marker warning tapeCGBM4 lean mix concreteDuct spacersNylon ropesRoad surface dressingSand (clean) bags | |
| Standard Methods for Trenching & Ducting | | | |
| <ul style="list-style-type: none">Along public road sections, traffic management plans will be implemented. Each work area will be secured with adequate protective barriers and traffic signs and traffic management controls to the approval of the Engineer and as outlined in "Guidance for the Control and Management of Traffic at Road Works" and "Chapter 8 - Temporary Traffic Measures and Signs for Roadworks.A surface check will be carried out for underground services with appropriate equipment. Service owners will be contacted to confirm service locations.Along public road sections, the road surface will be saw cut to the depth of existing asphalt/bitmac layers and/or concrete surfacing.The cable trench will be excavated to a distance of circa 50m ahead of the ducting works. Once the ducting is installed the trench will be backfilled using a mini digger so that only circa 100m of trench is open per crew at any one time along the cable route.All material removed from the trench will be loaded immediately and taken away to licenced landfill.The trench floor will be graded, smoothed and trimmed when the required 1250mm depth and 600mm width has been achieved.A bedding layer of lean mix concrete or bedding sand will be placed at the bottom of the trench.Three ducts, through which the electrical cables will be pulled, will be installed by hand in trefoil formation as detailed on the design drawings. Spacers will be used as appropriate to establish horizontal duct spacing.The ducts will be surrounded and covered with the lean mix concrete and concrete will then be compacted. | | | |

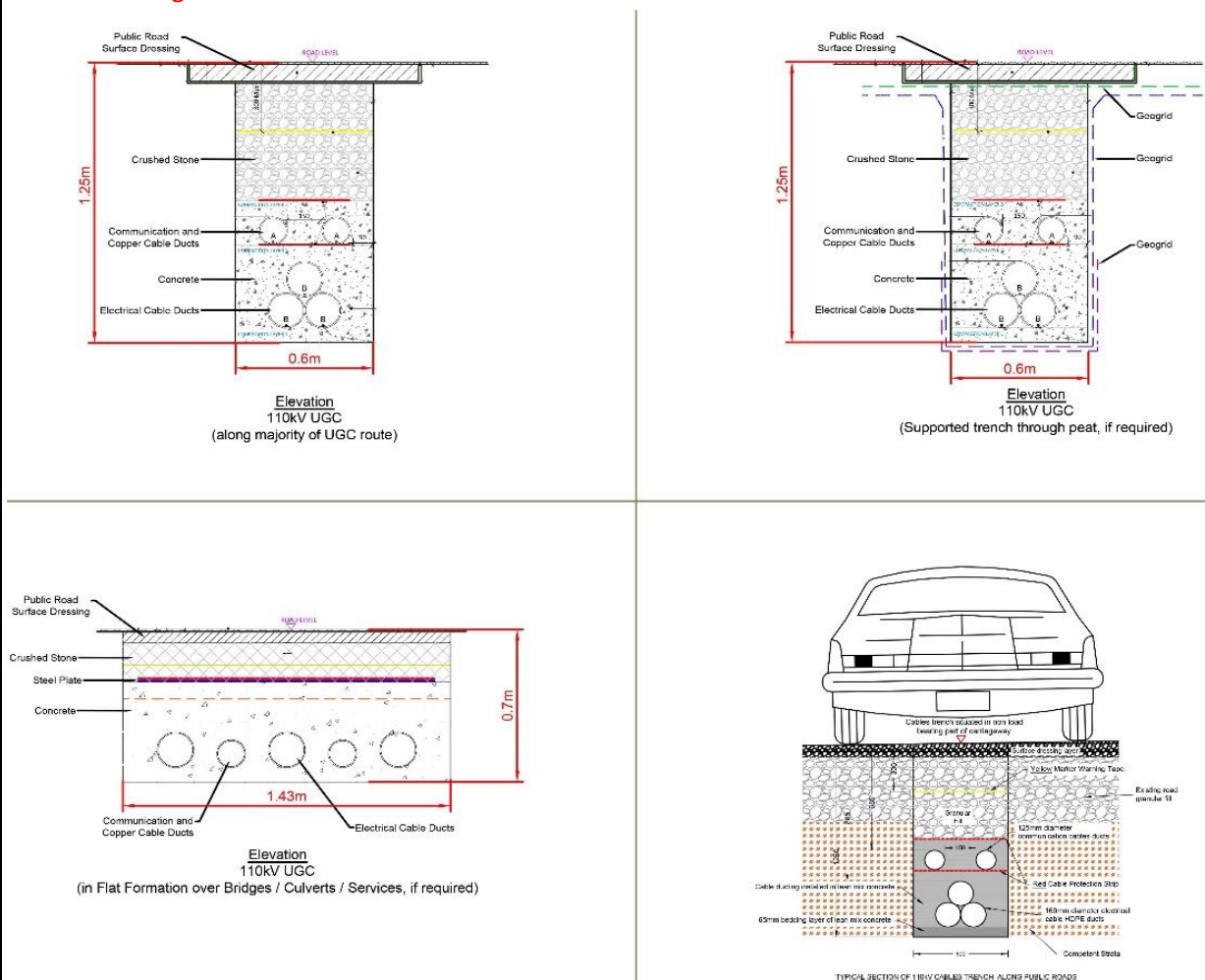
- Red cable marker warning strips will be placed on the compacted lean mix concrete directly over the three ducts which will contain the electrical cables.
- The top two ducts, which will contain the telecommunication cables and copper cables, will then be placed on top of the red cable marker.
- The top ducts will then be surrounded and covered with lean mix concrete material and compacted.
- Another layer of red cable protection strip will then be placed on top.
- A layer of Clause 804 backfill as specified will then be laid to within 300mm of ground surface and compacted.
- Yellow warning tape, will be placed over the compacted Clause 804 backfill.
- Immediate reinstatement will be carried out using road surfacing material to surface level in accordance with arrangements with Tipperary County Council Roads Section and the Road Opening Licence for the works.

Reinstatement of New Permanent Access Road at Mountphilips

- At Mountphilips Substation site, the 110kV UGC will be backfilled with crushed stone to ground level.

Relevant Drawings from Volume C3 EIAR Figures

Extract from Figure GC 5.14: Cross Section of 110kV UGC in the Public Road



Reference Documents

ESB Specification

Standard Trench Cross Section Trefoil Formation (PE424-D7001-001-003-005)

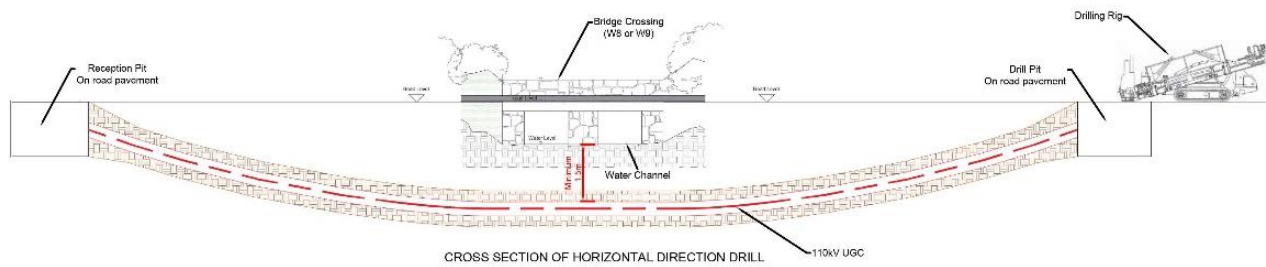
Standard Trench Cross Section Flat Formation (PE424-D7001-001-005-002)

END

| Outline Construction Methodology | | | |
|--|---|--|----------------|
| Title: | Horizontal Directional Drilling at W8 and W9 | | Ref: GC-OCM-18 |
| General Description | | | |
| Horizontal Directional Drilling (HDD) will be used to install the 110kV UGC under the 2 no. bridges at watercrossing W8 and W9. | | | |
| Duration | | | |
| 2-3 days per location | | | |
| Personnel | Materials | Machinery & Equipment | |
| <ul style="list-style-type: none">1 Mud Engineer1 Watercourse watcher2-3 Drillers1 Excavator Operator | <ul style="list-style-type: none">Fencing materials50mm crushed StoneDuctingBentoniteSilt fencingSand Bags containing washed sandStraw bales | <ul style="list-style-type: none">Horizontal Directional Drilling RigDrilling fluid recycling system360° excavator1 no. Tipper Truck or tractor and trailerTractor and vacuum tankSiltbusterPlastic or timber matsPVC bunds. | |
| Standard Methods | | | |
| <ul style="list-style-type: none">Drilling activities will be carried out at least 10m from the watercourse crossings W8 and W9 along the public road. Silt fencing and Sand Bags containing washed sand will be set up between the drilling rig and the watercourse.A launch pit and a reception pit (5m wide x 2m long x 1.5m deep) will be excavated within the public road, all excavated material will be loaded and taken away to licenced landfill.An overflow pit will be created beside the launch pit to cater for any excess drilling fluid. All runoff from the construction works area will be directed into a suitable water treatment train such as a Siltbuster and treated for sediment. This will also mean that any contaminated water can be contained and removed off-site to a licensed waste facility.The location assembly will be fitted in the drill head by the system operator, and the driller will push the drill string into the ground and will steer a bore path beneath the bed of the water course.The drill head will be fitted with a sensor to allow early detection of an obstruction across the drilling path. This will allow the drilling rods to be retracted and steered around the obstacle avoiding the potential for pressure to build up inside the borehole.The system operator will constantly monitor fluid volume, pressure, pH, weight and viscosity during the drilling works to ensure that the modelled stresses and collapse pressures are not exceeded.The cutting material will be flushed back by drilling fluid. The excess material will be collected in a container and removed off site to a licensed waste facility.While the drilling is in progress below the river bed, a mud engineer will be deployed in the watercourse to monitor the watercourse bed, in order to alert the driller at the earliest time of a developing frac out.When the pilot bore reaches the reception pit at the other side of the river, the drill head will be removed and a reamer will be fitted. The reamer will be drilled back enlarging the borehole to the desired size. The ducting is then attached to the swivel behind the reamer and pulled back to the rig through the borehole. At all times the driller engineer monitors the pulling forces and pressures down hole.The duct will then be cleaned and proven and its as-laid location recorded.On completion of the works, the drilling rig will be removed from the launch pit and all equipment will be removed from site.The pits will be backfilled and road surface reinstated, the silt fences and sand bags will then be removed. | | | |

Relevant Drawings from Volume C3 EIAR Figures

Extract from Figure GC5.18: Horizontal Directional Drilling at W8 and W9



END

Appendix for the Schedule 7A Information/Assessment

Appendix C: Biodiversity - Ecology Baseline Report

**Ecopower Proposed Alterations
to UWF Grid Connection
Underground Grid Connection
Cabling (UGC)**

Ecology Baseline Report

March 2025

This report considers the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Quality Assurance

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The findings outlined within this report and the data we have provided are to our knowledge true and express our bona fide professional opinions. This report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) good practice guidelines. Where pertinent CIEEM Guidelines used in the preparation of this report include the *Guidelines for Ecological Report Writing* (CIEEM, 2017a), *Guidelines for Preliminary Ecological Appraisals* (CIEEM, 2017b) and *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine*, (CIEEM, 2024). CIEEM Guidelines include model formats for Preliminary Ecological Appraisal and Ecological Impact Assessment. Also, where pertinent, evaluations presented herein take cognisance of recommended Guidance from the EPA such as *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2022), and in respect of European sites, *Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (European Commission, 2018).

Due cognisance has been given at all times to the provisions of the *Wildlife Acts 1976-2024*, the *European Union (Natural Habitats) Regulations*, the *European Communities (Birds and Natural Habitats) Regulations 2011-2021*, EU Regulation on Invasive Alien Species under *EU Regulation 1143/2014*, the *EU Birds Directive 2009/147/EC* and *Habitats Directive 92/43/EEC*.

No method of assessment can completely remove the possibility of obtaining partially imprecise or incomplete information. Any limitation to the methods applied or constraints however are clearly identified within the main body of this document.

Notice

This report was produced by INIS Environmental Consultants Ltd. (INIS) on behalf of Ecopower, the client, for the specific purpose of the Requested Alterations to the authorised UWF Grid Connection in Co. Tipperary, with all reasonable skill, care and due diligence within the terms of the contract with the client, incorporating our terms and conditions and taking account of the resources devoted to it by agreement with the client.

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1. INTRODUCTION

Ecopower commissioned Inis Environmental Consultants Ltd. (INIS) to complete a baseline assessment of the mammal and habitat receptor baseline(s) at the sections of the requested alterations to the authorised Upperchurch Windfarm (UWF) Grid Connection UGC (hereafter referred to as the “*Requested Alterations*”) along the following roads:

- Local Road L2166 (Newport Area);
- Local Road L2156 (Newport Area);
- Local Road L2157(Newport Area);
- Local Road L6009 (Newport Area);
- Local Road L60091 (Newport Area);
- Local Road L95032 (Newport
- Regional Road R503 (Thurles to Limerick Regional Road);

Surveys were conducted in September 2024 and January 2025. Surveys were designed to consider site variability, as they were conducted over a large geographical area and several habitat types such as agriculture land, private residential habitat, and riparian woodland.

The baseline assessment aims to provide Ecopower with high quality data on the presence of habitats and other ecological receptors (including invasive species) associated with the Requested Alterations.

This report provides the results of the baseline habitat surveys effort and provides empirical data on mammal populations and habitat assemblages, including species diversity and foraging/commuting activity patterns (where applicable). In conjunction with Best Practice methods used, the Chartered Institute of Ecology and Environmental Management’s (CIEEM) “*Code of Professional Conduct*” and Scottish Natural Heritage (SNH; now NatureScot) Guidelines were adhered to throughout the consultation, surveying, and report writing stages of this project.

1.1. Constraints and Limitations

There are several limitations inherent to field-based surveying. These particularly relate to availability of suitable weather conditions for completing surveys, with good visibility and little-to-no wind or rain being of paramount importance for recording species and provide safe access to watercourses. As such, when undertaking and completing fieldwork, careful consideration and planning is required to ensure optimal weather conditions during survey periods. The data presented here was all collected in optimal weather conditions.

1.2. Health and Safety Considerations.

The Requested Alterations are along the R503 regional road and other roads surrounding Newport (in Co. Tipperary) are composed predominantly of habitats such as Buildings and Other Artificial Surfaces, Lowland Depositing Rivers, and is adjacent to sections areas of Riparian Woodland, Scrub, and Agricultural Grassland habitats. In order to carry out the surveys efficiently and safely, the site was visited and a SHE report was produced detailing H&S issues (e.g., access to site, location of nearest medical facilities, etc.), Risk Assessment Method Statement (RAMS) including risk matrix and a Last-

Minute Risk Assessment (LMRA). All surveyors were required to read the SHE report, including RAMS, and become familiar with the site.

A full risk assessment was prepared and disseminated to all INIS ecologists prior to commencing surveys. This Health and Safety methodology was consistently followed while onsite. A Last-Minute Risk Analysis (LMRA) were also submitted by the employees to the INIS office prior to visiting the site. All employees registered with the INIS office when going on and off the site. Another safety initiative used for the site was the *StaySafe* App, whereby any workers on site were obliged to check-in via the *StaySafe* App every two hours, which was then relayed to an independent call centre operating the service.

1.3. Statements of Authority

Mr Conor Daly MSc BSc (Hons.) ACIEEM is an Ecologist with INIS and drafted this report. Conor was awarded a MSc in Biodiversity and Conservation and an Honours BSc in Zoology. He is an Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has been conducting ecological surveys for projects since 2021 for a variety of projects, including industrial estates and Windfarms (small-large scale). Conor has experience in Raptor conservation with ample expertise with bird of prey of pressures and threats to protected species. Since 2022, Conor has provided EIAR and NIS reports for small projects and large Renewable Energy projects.

Mr Daniel Connell BSc MSc MCIEEM AEnvCoW is a Principal Ecologist at Inis Environmental Consultants Ltd and reviewed this Report. He has 12 years' combined experience in Ecology and Consultancy within Ireland, and more than 10 years' experience in Environmental Journalism for both ENGOs and National Press in Ireland and the UK. He holds an honours degree in Natural Sciences, from University of Galway and studied for a Masters in Biodiversity, Wildlife and Ecosystem Health at The University of Edinburgh (DL). He has a comprehensive understanding of environmental law and an in-depth knowledge of woodland, wetlands, freshwater, coastal, and marine ecosystems, and the respective botanical, avian, invertebrate, and mammal species which inhabit them. He has worked on large infrastructural projects including renewable energy, forestry, construction, flood relief schemes, oil & gas exploration, road projects, aviation, tourism, recreational, industrial, commercial, transport, and residential developments. He has overseen various projects as Ecological Clerk of Works (ECoW) and has carried out extensive terrestrial, freshwater, and marine ecology fieldwork and assessment throughout his career.

Daniel has experience in designing, undertaking, managing, and delivering extensive ecological field survey programmes, and in assessing impacts and designing/implementing mitigation measures, for complex infrastructure projects. He has extensive experience in the preparation of Environmental Impact Assessment (EIA), Ecological Impact Assessment (EclA), Appropriate Assessment (AA) Screening, Natura Impact Statements (NIS), and Preliminary Ecological Appraisal (PEA) reports across a range of projects and plans, including development plans, industrial, transport, residential, and renewable energy developments.

Dr Alex Copland BSc PhD MEnvSc MCIEEM is Technical Director with INIS and reviewed this report. He is a full member of both the Chartered Institute of Ecology and Environmental Management (CIEEM) and the Institute of Environmental Sciences (IES) and has over 25 years of professional experience working in both statutory and private companies, in third-level research institutions, and with environmental NGOs. He is proficient in experimental design and data analysis and has managed several large-scale, multi-disciplinary ecological projects. These have included research and targeted

management work for species of conservation concern, the design and delivery of practical conservation actions with a range of stakeholders and end-users, education and interpretation on the interface between people and the environment and the development of coordinated, strategic plans for birds and biodiversity. He has written numerous scientific papers, developed and contributed to evidence-based position papers, visions and strategies on birds and habitats in Ireland. He also sits on the Editorial Panel of the scientific journal, *Irish Birds*, which publishes original ornithological research relevant to Ireland's avifauna and he is a member of the Irish Policy Group for CIEEM.

2. EXISTING ENVIRONMENT

2.1. Project Alterations Description

The authorised UWF Grid Connection UGC route covers a 30km length of works (see **Figure 2.1**).

The Requested Alterations request comprises the following elements:

- Exclusion of cabling in Local Roads L6013, some of L2156 and L2157 through the use of an alternative cable route passing through agricultural lands and existing farm track;
- Instead of cabling in the bridge deck at four bridges (B1, B2, B3 and B4), an alternative route through agricultural lands and existing farm track will be used;
- Inclusion of two new watercourse crossings (W101 and W102) for the cabling, both constructed using directional drill method;
- Inclusion of five sections of new access tracks;
- Instead of cabling in the bridge deck, bypassing four bridges (B5, B9, B11, B14) along the Regional Road R503 by diverting the cable around the bridge into either agricultural or forestry lands and crossing the watercourse using dam and over pumping construction method;
- Instead of cabling in the bridge deck, installing cables under three bridges (B6, B7, B10 and B15) along the Regional Road R503, using directionally drilling construction method;
- Bridge B10, construction methodology to change - as on further inspection, the existing masonry box culvert needs replacing. The cabling will be installed in line with methodologies outlined in the 2019 EIAR for replacing old masonry culverts; and

As a result of the Requested Alterations outlined above, the total length of the UGC route will be shorter by 1km.

2.2. Designated Areas

Special Areas of Conservation (SACs) are sites of international importance because of the presence of listed habitats or species that are of European importance. Special Protection Areas (SPAs) for birds are designated based on the presence of internationally significant populations of listed bird species. SPAs and SACs are legally protected by the EU Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC; commonly known as the 'Habitats Directive'). Under the Wildlife Amendment Act 2000, Natural Heritage Areas (NHAs) are legally protected from the date they are formally Proposed.

The Requested Alterations lie within an SAC and SPA at varying points with hydrological connectivity to these sites via streams and ground waterbodies (see **Figure 2.1** and **Figure 2.2** for designated site locations that have Source-Pathway-Receptor connectivity to the Requested Alterations). A second SAC is hydrologically downstream of one of the Requested Alterations at Watercourse Crossing B5 (**Table 2.1**). Two Proposed Natural Heritage Areas are also hydrologically connected to where the Requested Alterations are to take place.

Respective distances of the Requested Alterations to the nearest point of the Designated sites concerned is provided in **Table 2.1** and **Table 2.2** for European and National sites, respectively.

Table 2.3 and **Table 2.4** below give further details on the alterations interaction with the Slievefelim to Silvermines Mountains SPA and Lower River Shannon SAC.

Table 2.1: Distance from the proposed alterations to European Designated Sites within reasonable Zone of Influence (Zoi).

| Site code | Site name | Distance to Requested Alterations (km) |
|-----------|--|--|
| 004165 | Slievefelim to Silvermines Mountains SPA | 0km |
| 002165 | Lower River Shannon SAC | 0km |
| 000930 | Clare Glen SAC | 5.18km downstream of B5 |

Table 2.2: Distance from proposed alterations to National Designated Sites within reasonable Zone of Influence (Zoi).

| Site code | Site name | Distance to Requested Alterations (km) |
|-----------|--|--|
| 001851 | Bilboa And Gortnageragh River Valleys pNHA | 6.13km Downstream of B14 |
| 000930 | Clare Glen pNHA | 5.18km downstream of B5 |

Table 2.3: Details of alterations interaction with the Slievefelim to Silvermines Mountains SPA. Note, no permanent hardcore areas within the SPA Boundary

| Alteration Section | Description of the alteration works | Length of works within Boundary |
|---|---|---|
| Existing farm track between Local Roads L60091 and R503 | UGC installed within existing farm track. | 220m of cable trenching works only with the SPA boundary |
| Bridge B5 | UGC diverted Around the Bridge to the North into forestry lands | 110m of cable trench only within SPA |
| Bridge B6 | Directional Drill under Bridge. Works remain under road corridor. | Some Drilling works under road and bridge in SPA boundary |
| Bridge B7 | Directional Drill under Bridge. Works remain under road corridor. | Some Drilling works under road and bridge in SPA boundary |
| Bridge B9 | UGC diverted Around the Bridge to the North into agricultural lands | 30m of cable trench only within SPA |

| | | |
|-------------------|--|---|
| Bridge B14 | UGC diverted Around the Bridge to the North into forestry lands | 110m of cable trenching works only with the SPA boundary |
|-------------------|--|---|

In Summary, the Alterations consist of

- Directional Drilling at 2 no. location within the SPA Boundary,
- 220m of cable trenching works only along existing hardcored farm track within the SPA boundary
- 250m of cable trenching works only in agricultural or forestry lands, adjacent to the Regional Road R503, within the SPA boundary

Table 2.4: Details of alterations interaction with the Lower River Shannon SAC. Note, no permanent hardcore areas within the SAC Boundary

| Alteration Section | Description of the works | Length of works within Boundary |
|---------------------------|---|--|
| Watercourse W101 | Directional Drill under Watercourse | Drilling under Watercourse SAC for c.20m (See Figure 2.4 below) |
| Bridge B15 | Directional Drill under Bridge. Works remain under roadway | Drilling under road and bridge in SAC for c.70m (See Figure 2.13 below) |

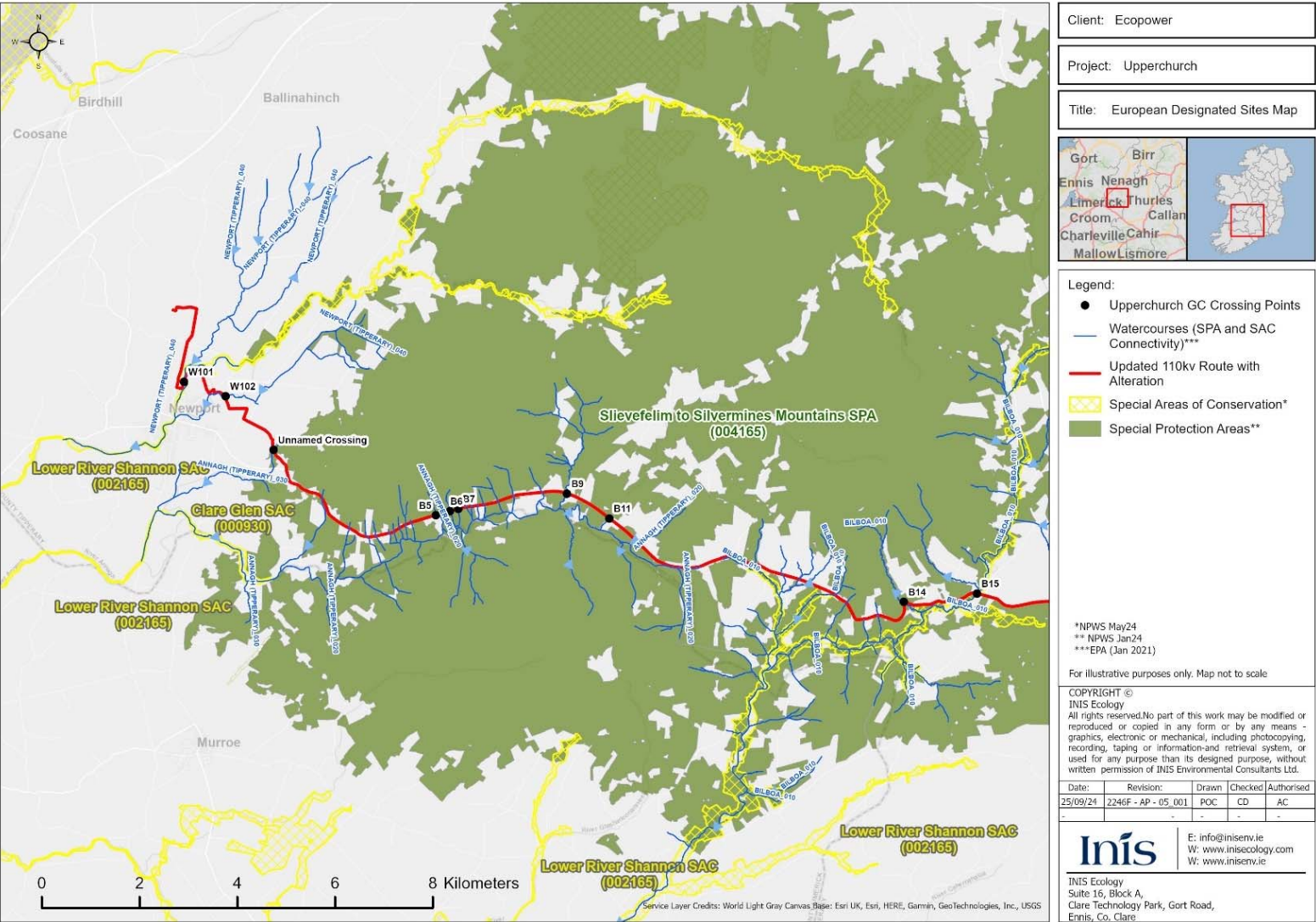


Figure 2.1: European Designated Areas (NPWS, 2024).

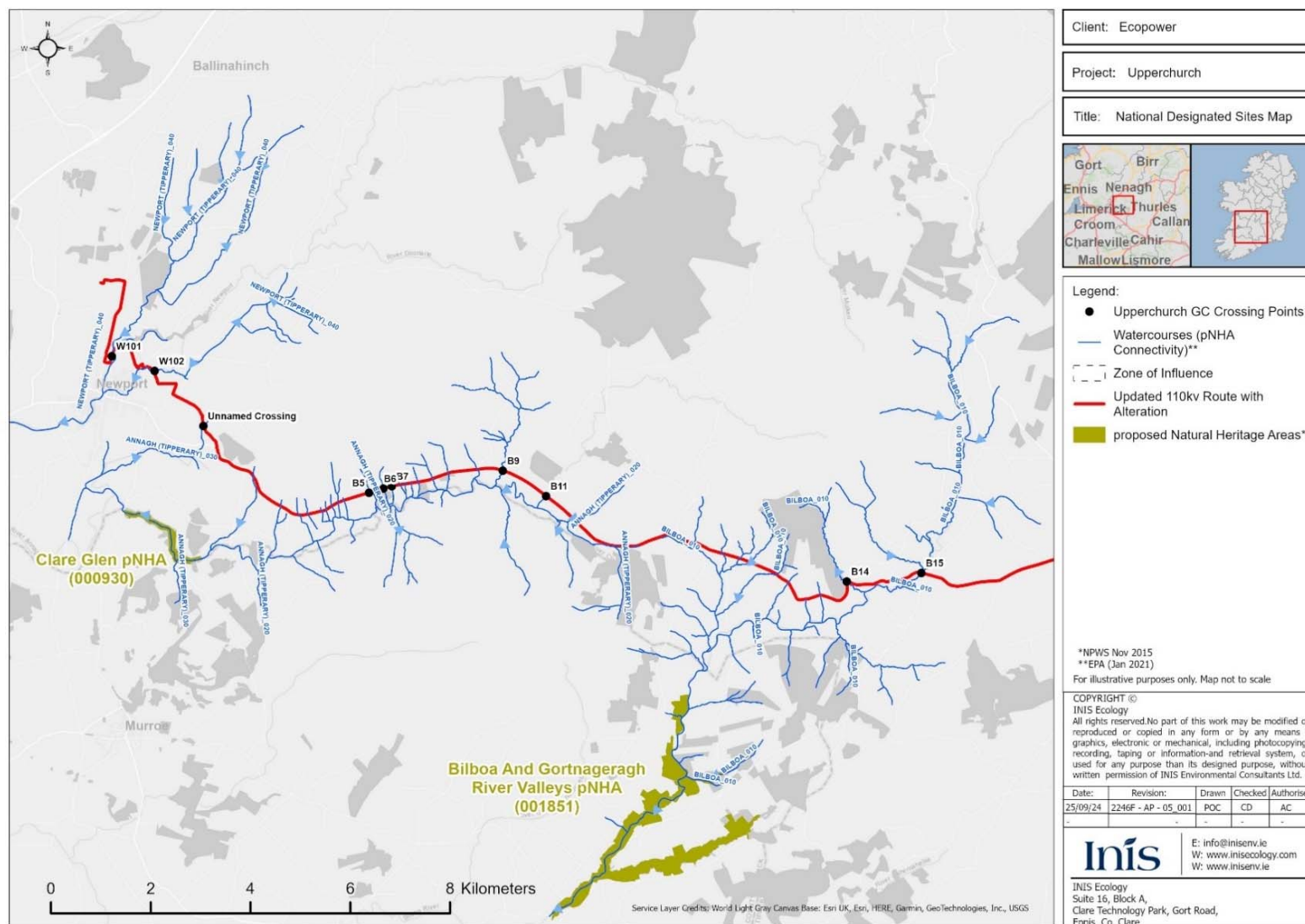


Figure 2.2: National Designated Areas (NPWS, 2024).

3. METHODOLOGIES

3.1. Desktop Review

The Requested Alterations involve Horizontal Direction Drilling (HDD) at upto six watercourse crossing points (W101, W102, B6, B7, B10 and B15).

The groundwater Subcatchments were checked via the EPA map viewer¹ to identify the ground waterbodies with interactions between the Proposed HDD works and Groundwater Dependent Habitats (GWDH). Subcatchments and connectivity with designated sites are provided in **Section 4.7**.

3.2. Field Visit

A field visit was undertaken by two ecologists along the Requested Alterations (**Figure 3.1**). The altered UGC grid route was surveyed for habitats from the L-2166 outside Newport, from where it alters from the authorised UGC route, to where it rejoins the existing authorised UGC route between the L-60091 and R503. This included the three new watercourse crossings (W101, W102 and W103).

A total of 11 watercourse crossings were visited on 9th, 10th and 18th September 2024 and January 2025 to view the site and habitats. All habitats in the vicinity of the watercourse crossing locations and along the Requested Alterations were surveyed and classified following Best Practice guidelines (Fossitt, 2000; Smith *et al.*, 2011).

Targeted Otter surveys were conducted at the 11 watercourse crossings in September 2024 and January 2025. Surveys followed the NRA Guidelines for *Treatment of Otters During Construction of National Road Schemes* (NRA, 2008), which state that, “*although there are no seasonal constraints for Otter surveys, any dense vegetation (especially in summer) can reduce success in the identification of Otter holts or couches*”.

Guidance on the extent of the study area for Otters was taken from the British Highways Agency’s *Nature Conservation Advice in Relation to Otters HA8199* (Highways Agency, 1999) which advises a linear search of 300m upstream and downstream of each watercourse crossing is undertaken.

Other ecological receptors were recorded during habitat surveys. I.e. Mammal, general birds etc

¹ Available at <https://gis.epa.ie/EPAMaps/>. Accessed September 2024.

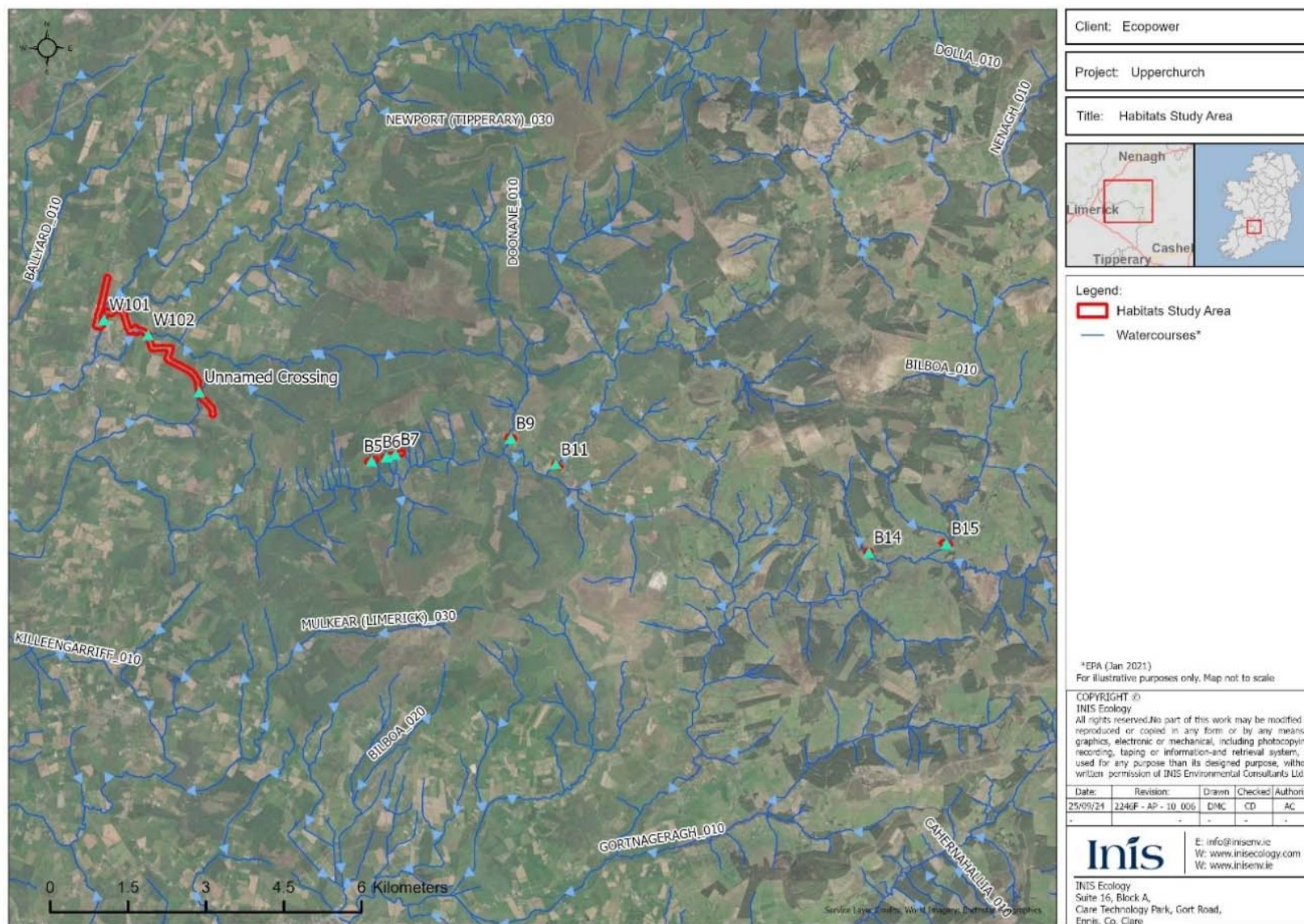


Figure 3.1: Map of Habitat Study Area for Requested Alterations to the UGC Route.

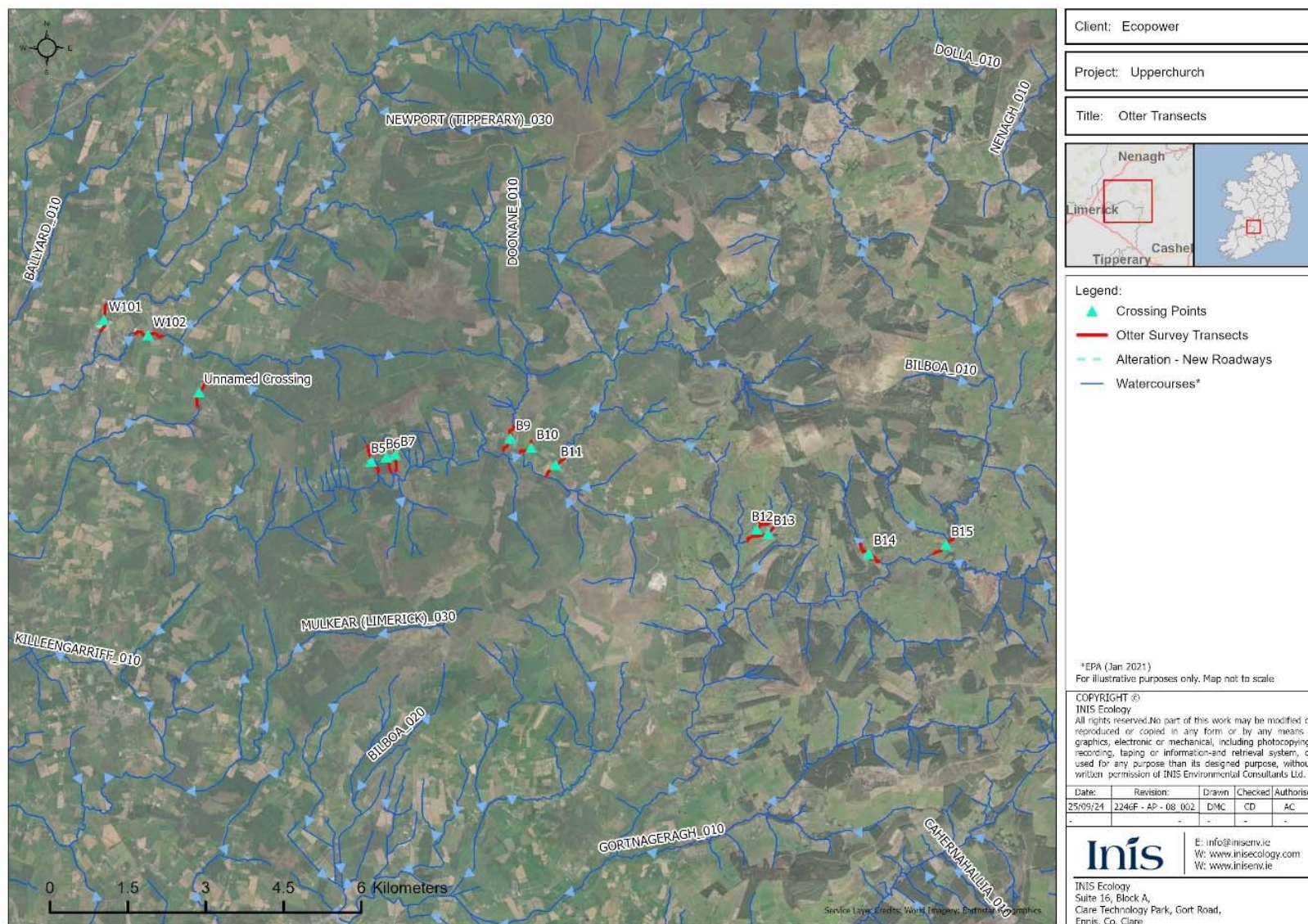


Figure 3.2: Map of Otter Transects for the watercourse crossings along the Requested Alterations to the UGC route.

3.3. Otter Transects

Surveys were conducted in 2024 and early 2025 for Otter at all crossings. Suitability was assigned to watercourse crossings due to stream condition, slope of riverbanks and any other viable criteria to inform the suitability for Otter at these watercourse crossing locations.

4. SURVEY RESULTS

4.1. Sensitive Aspect - Terrestrial Habitats and Designated Sites

4.1.1. New UGC grid route from Local Road L-2166 to Watercourse Crossing W101

This section of the altered UGC route runs south from the junction of the local road L-2166 and the authorised L-6013 UGC route direction toward Newport, looping around residential dwellings to pass north across the Newport River/Mulkear River (W101). The majority of the habitat present is Buildings and Other Artificial Surfaces (BL3), Improved Agricultural Grassland (GA1) and Amenity Grassland (GA2). The remaining areas of habitat are sections of Scrub (WS1), Buildings and Other Artificial Surfaces/Scrub (BL3/WS1), Treeline (WL2), and linear habitat mosaics, including Hedgerow/Treeline (WL1/WL2), Earth Banks/Hedgerow (BL2/WL1) and Earth Banks/Hedgerow/Treeline (BL2/WL1/WL2) (Figure 4.1; Table 4.1).

Table 4.1: Habitat Baseline from L-2166 to Watercourse Crossing W101

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 4.904 |
| BL3/WS1 | 0.214 |
| GA1 | 5.051 |
| GA2 | 0.106 |
| WL1/WL2 | 0.144 |
| WS1 | 0.471 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| BL2/WL1 | 591 |
| BL2/WL1/WL2 | 423 |
| WL1/WL2 | 16 |
| WL2 | 281 |

None of these habitats were determined to be of county importance or higher. However, part of the Lower River Shannon SAC overlaps with the 50m baseline area of this section of the proposed altered UGC route. The habitat present being mainly Scrub and Treeline habitats. No Annex I habitat was observed during habitat surveys.

4.1.2. Watercourse Crossing W101

This new watercourse crossing is located within the Newport River [Newport (Tipperary)_040 (25N02) (IE_SH_25N020330)]. This section of the river is within the Lower River Shannon SAC (002165). This baseline habitat is based on the 50m study area on either side of the watercourse crossing.

The majority of the habitat present is Improved Agricultural Grassland and Riparian Woodland (WN5). The remaining areas of habitat are sections of Scrub, Hedgerow/Treeline. For linear habitats, 205m of Lowland Depositing River overlaps with this section of the Requested Alterations (See **Figure 4.2** and **Table 4.2** for habitat extent and distribution along route).

The watercourse crossing will pass underneath the Newport River using Horizontal Directional Drilling. As such, there is overlap of the Requested Alterations and the Lower River Shannon SAC. The Proposed Alteration Works fall within the Newport [Tipperary]_SC_010 Subcatchment. This Ground waterbody Subcatchment is shared with both the Lower River Shannon SAC and Slievefelim to Silvermines Mountains SPA (**Figure 4.11**).

No Annex I habitats were observed along this section of the SAC during the habitat surveys.

Table 4.2: Habitat Baseline at Watercourse Crossing W101.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 0.192 |
| GA1 | 1.982 |
| WL1/WL2 | 0.037 |
| WN5 | 0.559 |
| WS1 | 0.021 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| FW2 | 205 |
| WL1/WL2 | 221 |

4.1.3. UGC Route Watercourse Crossing W101 to Watercourse Crossing W102

This section of the altered UGC route runs from 100m north of the W101 crossing to 50m before the W102 crossing. The majority of the habitat present along this section of the Requested Alterations is Buildings and Other Artificial Surfaces comprising primarily of the roads and dwellings adjacent to the route and Improved Agricultural Grassland. Due to the path of this alteration, it runs adjacent to the Newport River [NEWPORT (TIPPERARY)_040 (25S05) (IE_SH_25N020330)] before reaching the W102 crossing point. As such, 406m of Lowland Depositing River forms part of the ecological baseline.

The remaining areas of habitat are sections of Scrub, Amenity Grassland, Riparian Woodland and Treeline. Multiple Mosaic habitat types are scattered across this route including Hedgerow/Treeline, Drainage Ditch/Hedgerow/Treeline (FW4/WL1/WL2), Treeline/Scrub (WL2/WS1) and Buildings and Other Artificial Surfaces/Amenity Grassland (BL3/GA2). A total of 205m of Lowland Depositing River overlaps with this section of the Proposed altered UGC route (See **Figure 4.2** and **Table 4.3** for extent and distribution of habitats).

This section of the Requested Alterations is partially adjacent to the Lower River Shannon SAC. No Annex I habitats were observed along this section of the SAC during the habitat surveys. However, the Riparian Woodland and the Lowland Depositing River are of likely of Local Importance (High Value)

based on the upstream connectivity to (or presence within) the Lower River Shannon SAC site boundary.

Table 4.3: Habitat Baseline of UGC route between Watercourse Crossings W101 to W102.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 3.043 |
| BL3/GA2 | 0.306 |
| GA1 | 7.011 |
| GA2 | 0.068 |
| WL2/WS1 | 1.003 |
| WN5 | 0.342 |
| WS1 | 0.152 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| FW2 | 406 |
| FW4/WL1/WL2 | 285 |
| WL1/WL2 | 770 |
| WL2 | 88 |

4.1.4. Watercourse Crossing W102

This new watercourse crossing is located within the Newport River [Newport (Tipperary)_040 (25S05) (IE_SH_25N020330)]. This section of the river is upstream of the Lower River Shannon SAC (002165).

This watercourse crossing is comprised of two small sections of Improved Agricultural Grassland (0.478Ha) and Riparian Woodland (0.307Ha). A total of 100m of Lowland Depositing River and 40m of Hedgerow are the only linear features present within the ecological baseline of this watercourse crossing. (See **Figure 4.2** and **Table 4.4** for habitat extent and distribution at this crossing).

Table 4.4: Habitat Baseline at Watercourse Crossing W102.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| GA1 | 0.478 |
| WN5 | 0.307 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| FW2 | 100 |
| WL1 | 40 |

The Riparian Woodland and the Lowland depositing river are of Local Importance (High Value) based on the upstream connectivity to the Lower River Shannon SAC. The Requested Alterations at this watercourse crossing will pass underneath the Small [Tipperary] section of the Newport River [(25S05) (IE_SH_25N020330)] using Horizontal Directional Drilling. The Proposed Alteration Works fall within the Newport [Tipperary]_SC_010 Sub catchment. This Ground waterbody Subcatchment is shared with both the Lower River Shannon SAC and Slievefelim to Silvermines Mountains SPA (**Figure 4.11**).

4.1.5. UGC Route Watercourse Crossing W102 to W103

This section of the Requested Alterations runs between the W102 crossing, joining L-6009 road heading eastward via the L-60091 before passing through an existing farm track where it meets W103 Watercourse Crossing. The Majority of the habitat along this section of the Requested Alterations are Improved Agricultural Grassland (10.4Ha) and Buildings and Other Artificial Surfaces (4.06Ha). A number of Wet Grassland (GS4) mosaic habitats are also present, including Improved Agricultural Grassland/Wet Grassland (GA1/GS4) and Wet Grassland/Scrub (GS4/WS1). Linear features are present across this section of the Requested Alterations as well, including 732m of Hedgerow and 31m of Treeline as well as three linear habitat mosaics (Earth Banks/Hedgerow, Earth Banks/Hedgerow/Treeline, and Hedgerow/Treeline: See **Figure 4.2** and **Figure 4.3** and **Table 4.5** for habitat distribution along route).

Table 4.5: Habitat Baseline of UGC Route Between Watercourse Crossings W102 to W103.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 4.061 |
| BL3/GA2 | 0.209 |
| GA1 | 10.402 |
| GA1/GS4 | 0.499 |
| GA2 | 0.062 |
| GS4 | 0.757 |
| GS4/WS1 | 0.075 |
| WL1/WL2/WS1 | 0.109 |
| WS1 | 1.024 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| BL2/WL1 | 165 |
| BL2/WL1/WL2 | 548 |
| WL1 | 732 |
| WL1/WL2 | 1211 |
| WL2 | 31 |

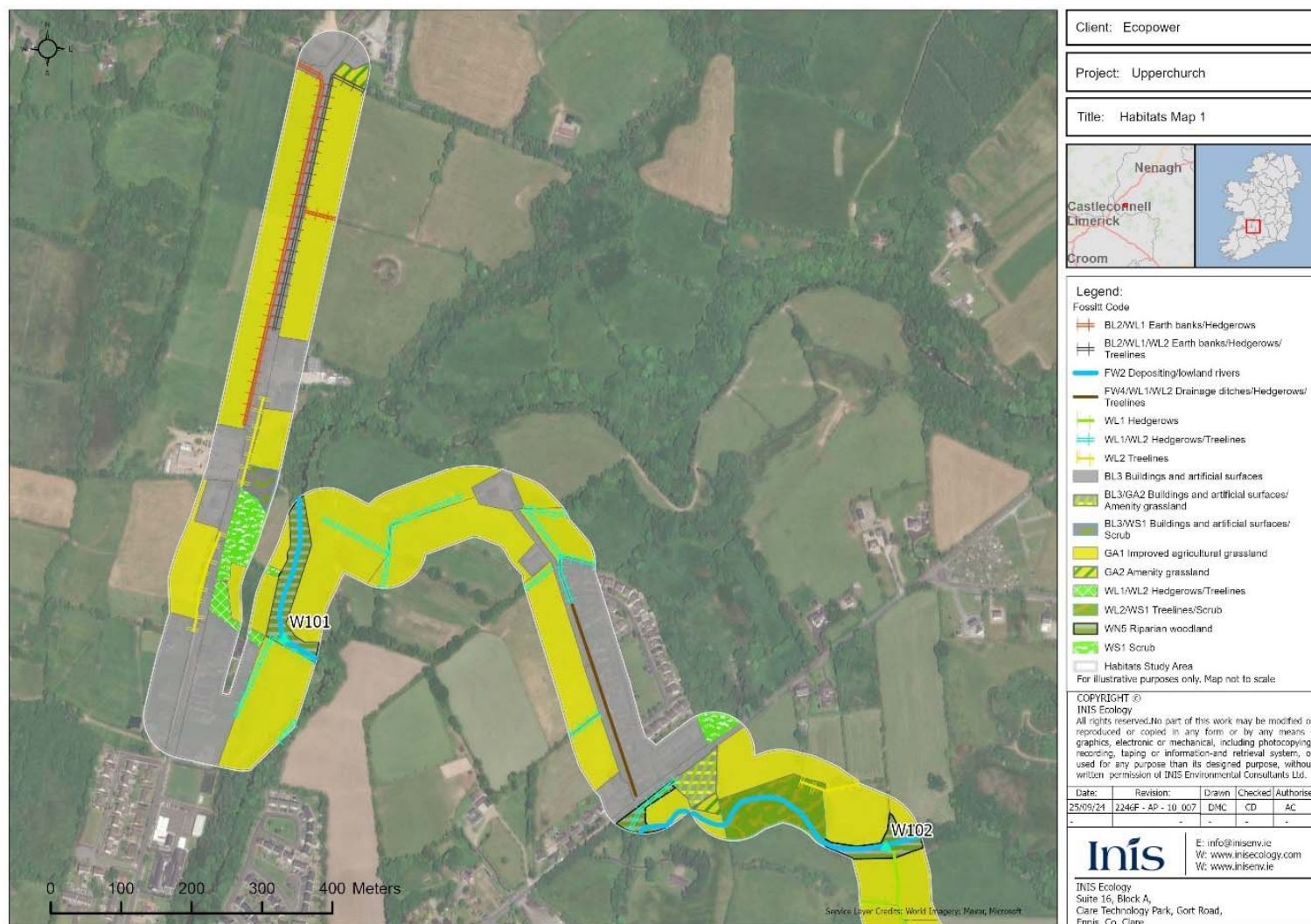


Figure 4.1: Map of Habitat Baseline for Altered UGC Route L2166 to W102.

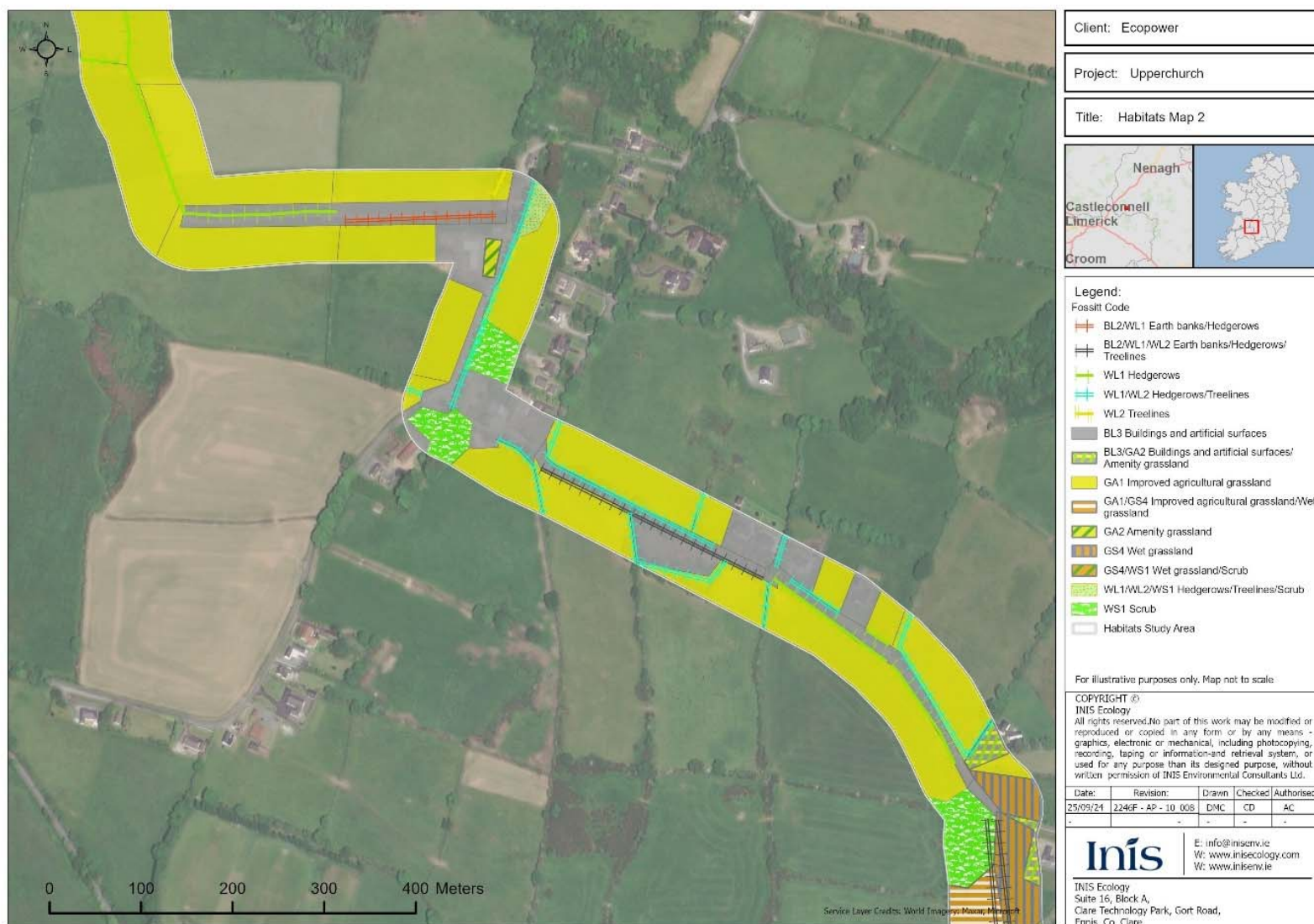


Figure 4.2: Map of Habitat Baseline for Altered UGC Route W102 to W103.

4.1.6. Watercourse W103

This new watercourse crossing is located within the Tullow_25 section of the Annagh River [Annagh (Tipperary)_030 (25T21) (IE_SH_25A020300)]. This section of the river is upstream of the Lower River Shannon SAC (002165). This watercourse is a small stream running underneath the existing farm track. Only small patches of habitat are present within the ecological baseline. The primary habitats are Wet Grassland/Scrub and Improved Agricultural Grassland/Wet Grassland with a small patch of Wet Grassland (See **Table 4.6**).

One linear feature is present within this baseline: 148m of Earth Bank/Hedgerow/Treeline mosaic habitat runs along both sides of the track running above the watercourse crossing (**Figure 4.3**). This section overlaps partially with the Slievefelim to Silvermines Mountains SPA. Figures in Section 2 provides context of Requested Alterations connectivity to the designated sites.

Table 4.6: Habitat Baseline at W103.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| GA1/GS4 | 0.274 |
| GS4 | 0.001 |
| GS4/WS1 | 0.509 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| BL2/WL1/WL2 | 148 |

The sections of Wet Grassland and its mosaics were present in patches within the Slievefelim to Silvermines Mountains SPA. Although not specifically listed as a key SCI feature of this SPA, it is possible that the habitat that may be utilised by the SCI species, Hen Harrier, as foraging habitat on occasion.

4.1.7. UGC Route W103 to junction with main road R503

The last section of the altered UGC route is between the W103 and the junction between and the R503.

Only two habitat mosaics were greater than 1ha within this sections baseline (Buildings and Other Artificial Surfaces and Wet Grassland/Scrub). The remainder were small sections of Wet Grassland/Scrub and Improved Agricultural Grassland/Wet Grassland, Spoil and bare ground (ED2), Improved Agricultural Grassland, Wet Grassland and Scrub.

Multiple linear features are present within this baseline. Treeline Habitat is present adjacent along the path and the road junction with R503. Stone walls and other Stonework/Earth Banks/Treeline (BL1/BL2/WL2), Earth Bank/Hedgerow/Treeline, Earth Bank/Hedgerow and Hedgerow/Treeline mosaic habitat runs along either side of the track running above the watercourse crossing (**Figure 4.3**; **Table 4.7**)

This section overlaps partially with the Slievefelim to Silvermines Mountains SPA. **Figure 2.1** provides context of Requested Alterations connectivity to the designated sites.

The sections that were present in patches within the Slievefelim to Silvermines Mountains SPA were primarily Improved Agricultural Grassland, Scrub, and Buildings and Other Artificial Surfaces.

Table 4.7: Habitat Baseline W103 to Junction with R503.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 1.578 |
| ED2 | 0.269 |
| GA1 | 0.780 |
| GA1/GS4 | 0.526 |
| GS4 | 0.344 |
| GS4/WS1 | 1.223 |
| WS1 | 0.608 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| BL1/BL2/WL2 | 83 |
| BL2/WL1/WL2 | 183 |
| BL2/WL2 | 411 |
| WL1/WL2 | 158 |
| WL2 | 433 |

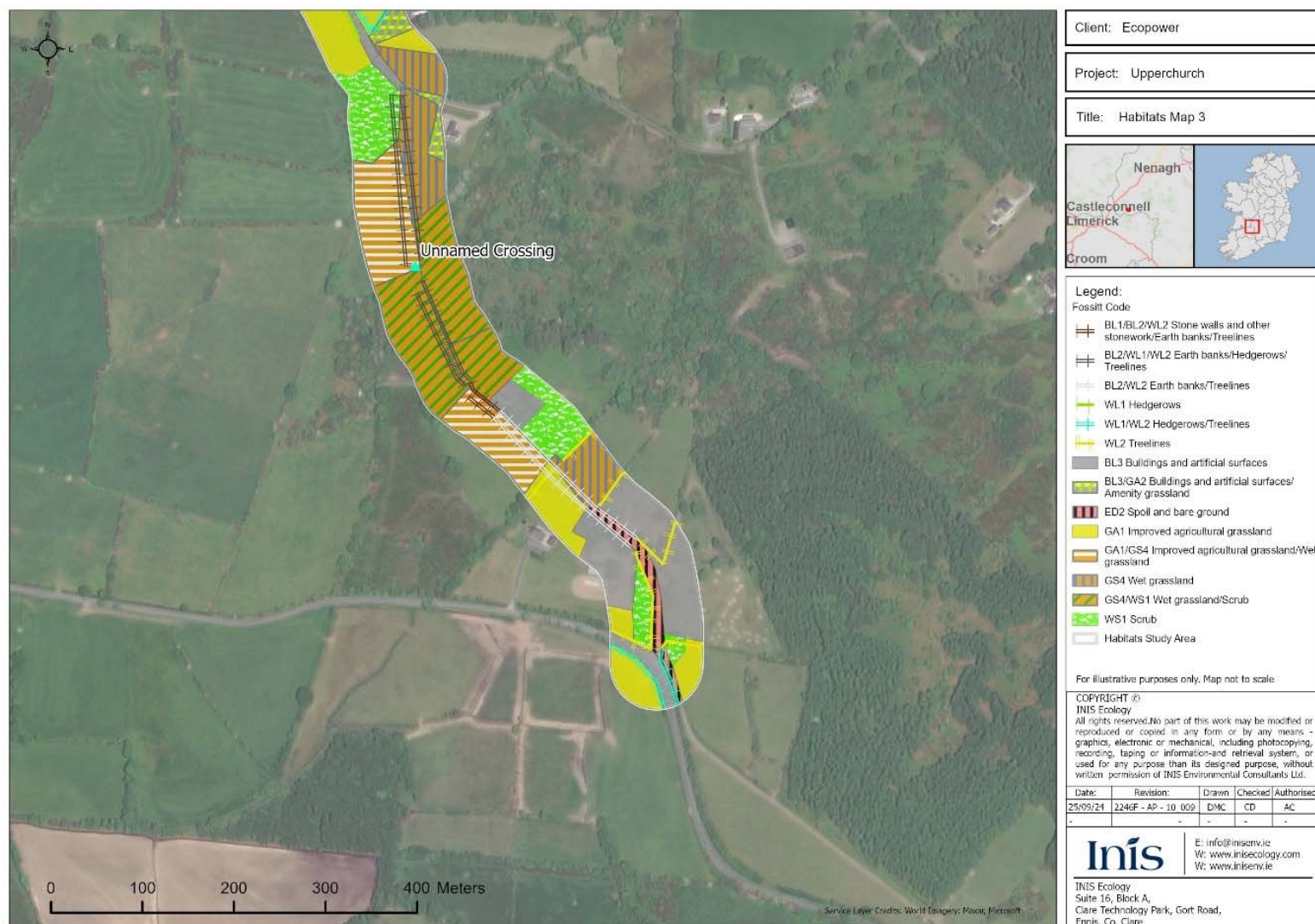


Figure 4.3: Map of Habitat Baseline for Altered UGC Route, the W103 to R503.

4.1.8. Watercourse Crossing B5

This watercourse crossing is located within the Fanit stream of the Annagh River [Annagh (Tipperary)_020 (25F07) (IE_SH_25A020200)]. This section of the river is upstream of the Lower River Shannon SAC (002165).

This watercourse crossing borders Conifer Plantation (WD4) type habitats including (Mixed) Conifer Woodland (WD3) and Conifer Plantation/Immature Woodland (WD4/WS2) habitat on both sides of the R503. The remaining habitats are small patches of Amenity Grassland, Wet Grassland, and Buildings and Other Artificial Surfaces. Hedgerow/Treeline mosaic habitat runs along both road verges for the extent for R503 baseline (**Figure 4.4; Table 4.8**).

Following site consultation with NPWS, habitat within the 50m baseline of the B5 crossing was advised to be of potential suitability for Hen Harrier as nesting and foraging habitat (WD4/WS2). This was based on the mix of ferns, scrub and low vegetation. Although of low suitability due to the proximity to the R503 road, this area of habitat is considered of importance for Hen Harrier based on advice from NPWS. This habitat is isolated to the area west of the B5 stream.

The Fanit stream flows through the Conifer Plantation North of the Road under the R503 bridge and continues through woodland south to join the Annagh Confluences further downstream.

Table 4.8: Habitat Baseline at Watercourse Crossing B5.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 0.504 |
| GA2 | 0.006 |
| GS4 | 0.441 |
| WD3 | 0.053 |
| WD4 | 0.333 |
| WD4/WS2 | 1.235 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| FW2 | 104 |
| WL1/WL2 | 489 |

This Crossing is 5.2km upstream of Lower River Shannon SAC. This stream differs from the WFD mapping of its path (**Figure 4.4**). This is likely due to the dense forestry North of the R503, influencing the stream's existing flow route.

4.1.9. Watercourse Crossing B6

This watercourse crossing is located within an unnamed section of the Annagh River [Annagh (Tipperary)_020 (IE_SH_25A020200)]. This section of the river is upstream of the Lower River Shannon

SAC (002165). This watercourse was assessed not to be suitable for Otter due to the steep banks and shallow stream.

This watercourse crossing is primarily Building and Other Artificial Surfaces, comprising the R503 and the private dwellings and buildings adjacent to the road (**Figure 4.4; Table 4.9**). Conifer Plantation is present along this length of road on both sides. This bridge contains stone walls on each side. The stream flowing under the bridge is encroached by the forestry. Patches of *Rhododendron ponticum* are present on the northern part of the stream along the western bank (**Figure 4.5**).

This crossing overlaps with the Slievefelim to Silvermines Mountains SPA and is hydrologically upstream of the Lower River Shannon SAC. **Figure 2.1** provides context of Proposed Alterations connectivity to the designated sites.

Table 4.9: Habitat Baseline at Watercourse Crossing B6.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 0.502 |
| BL3/GA2 | 0.429 |
| GA1 | 0.179 |
| WD4 | 1.264 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| FW2 | 102 |
| BL1 | 59 |

The Proposed Alterations at this watercourse crossing will involve Horizontal Directional Drilling. The Proposed Alteration Works fall within the Kileengarrif_SC_010 Subcatchment. This Ground Waterbody Subcatchment is shared with both the Lower River Shannon SAC and Slievefelim to Silvermines Mountains SPA (**Figure 4.11**).

No specific habitat of High importance was identified present within the 50m study area of this Proposed Alteration. However, there is hydrological connectivity to internationally important sites.

4.1.10. Watercourse Crossing B7

This watercourse crossing is located within an unnamed section of the Annagh River [Annagh (Tipperary)_020 (IE_SH_25A020200)]. This section of the river is upstream of the Lower River Shannon SAC (002165).

This watercourse crossing is primarily Building and Other Artificial Surfaces, comprising the R503 and the private dwellings and buildings adjacent to the road (**Table 4.10**). Conifer Plantation is present along this length of road on both sides. This bridge contains stone walls on each side. The stream flowing under the bridge is encroached by the forestry. Patches of *Rhododendron ponticum* are present on the northern part of the stream along the western bank, along the road toward the Conifer Plantation habitat and south of the Proposed HDD exit point (See **Figure 4.4** and **4.6**).

The Requested Alterations at this watercourse crossing will involve Horizontal Directional Drilling. The Proposed Alteration Works fall within the Kileengarrif_SC_010 Subcatchment. This Ground waterbody Subcatchment is shared with both the Lower River Shannon SAC and Slievefelim to Silvermines Mountains SPA (**Figure 4.11**).

Although no specific habitat of High importance was identified present within the 50m study area of this Proposed Alteration, there is hydrological connectivity to European sites.

The *Rhododendron ponticum* is present North of B7 parallel to the stream (**Figure 4.5**).

Table 4.10: Habitat Baseline at Watercourse Crossing B7.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 0.920 |
| BL3/GA2 | 0.218 |
| GA1/WS1 | 0.552 |
| WD3 | 0.175 |
| WD4 | 0.974 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| FW2 | 185 |
| WL1/WL2 | 152 |

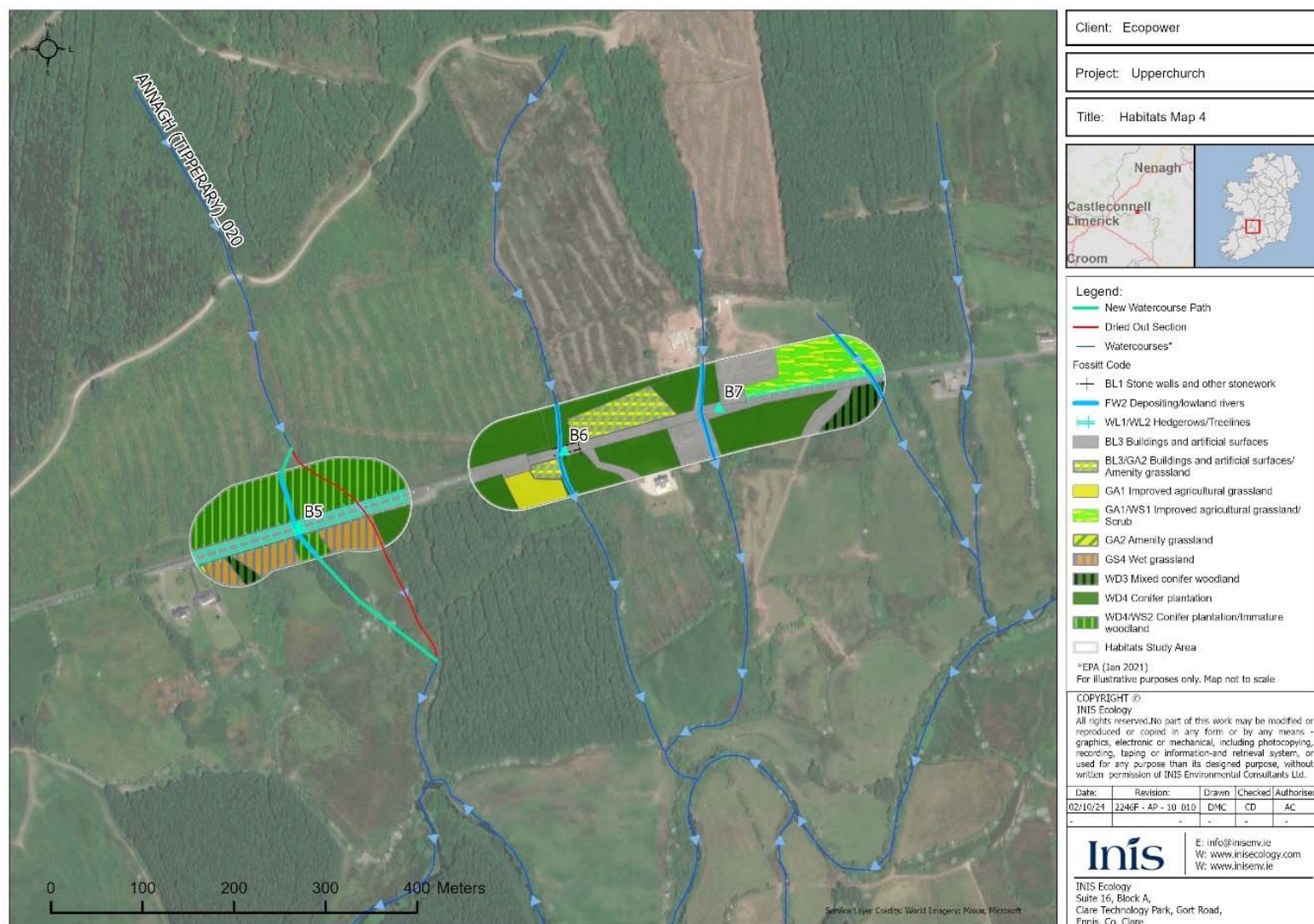


Figure 4.4: Map of Habitat Baseline for Alterations to UGC at Watercourse Crossings B5, B6 and B7.

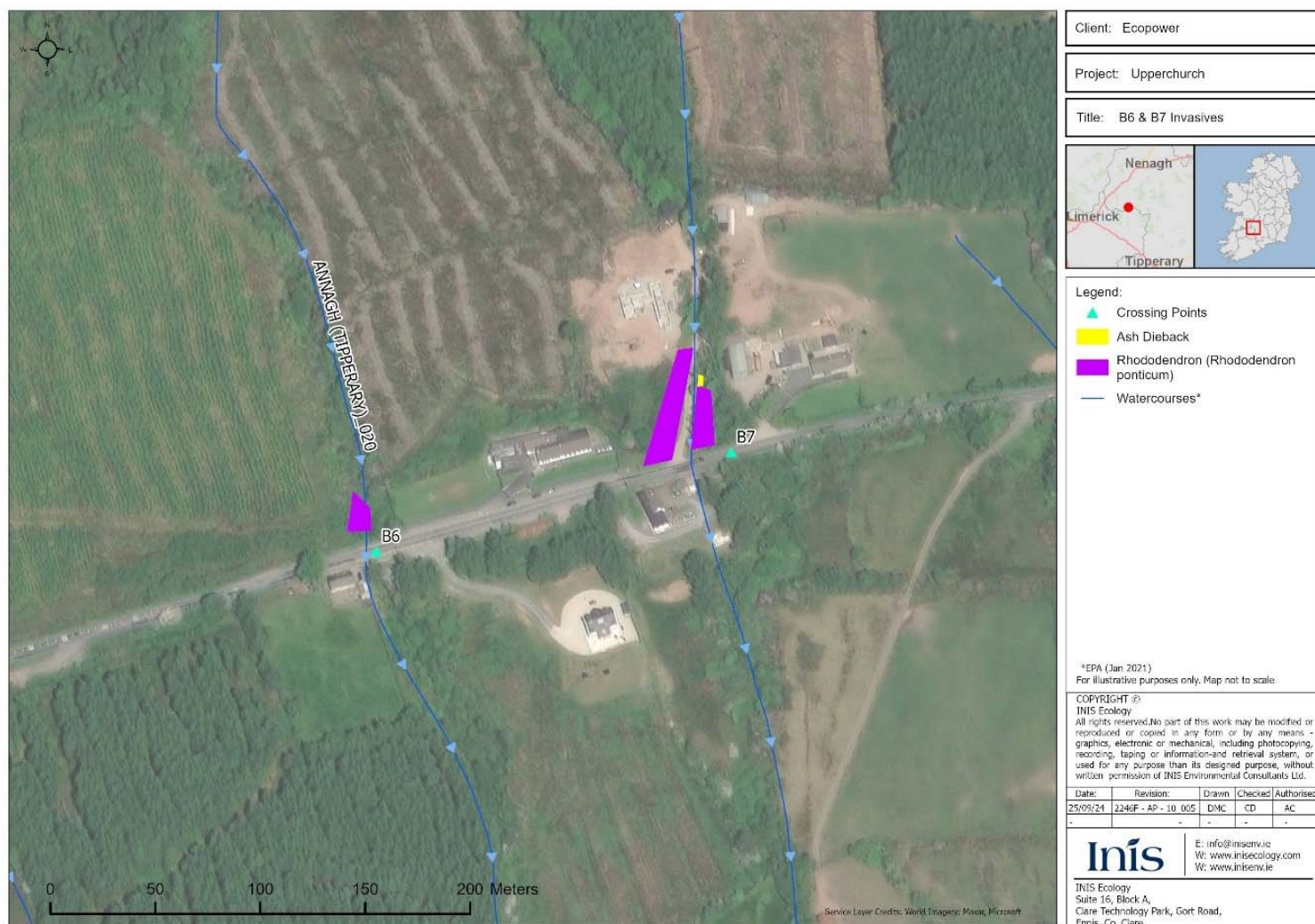


Figure 4.5: Map of Invasive Species Baseline for Alterations to UGC at Watercourse Crossing B6 and B7.

4.1.11. Watercourse Crossing B9

This watercourse crossing is located within Tooreenbrien Lower section of the Annagh River [Annagh (Tipperary)_010 (25T54) (IE_SH_25A020100)]. This section of the river is upstream of the Lower River Shannon SAC (002165).

The Habitats are primarily Improved Agricultural Grassland/Wet Grassland and Wet Grassland. The Buildings and Other Artificial Surfaces is constrained to the roads within the 50m study area. The remaining habitat was comprised of small patches of Scrub. Linear features included Stone walls and other stonework, Treeline, and Earth Banks/Treeline mosaic habitat that run along the R503. See **Table 4.11** and **Figure 4.6**.

Table 4.11: Habitat Baseline at Watercourse Crossing B9

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 0.308 |
| GA1/GS4 | 1.071 |
| GS4 | 0.453 |
| WS1 | 0.040 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| BL1 | 28 |
| BL2/WL2 | 324 |
| FW2 | 95 |
| WL2 | 124 |

The western side of the works within the SPA site comprised of Wet Grassland and treeline habitats. It is also 5.9km upstream of Lower River Shannon SAC via the Annagh River.

No Annex I habitat was observed during the surveys.

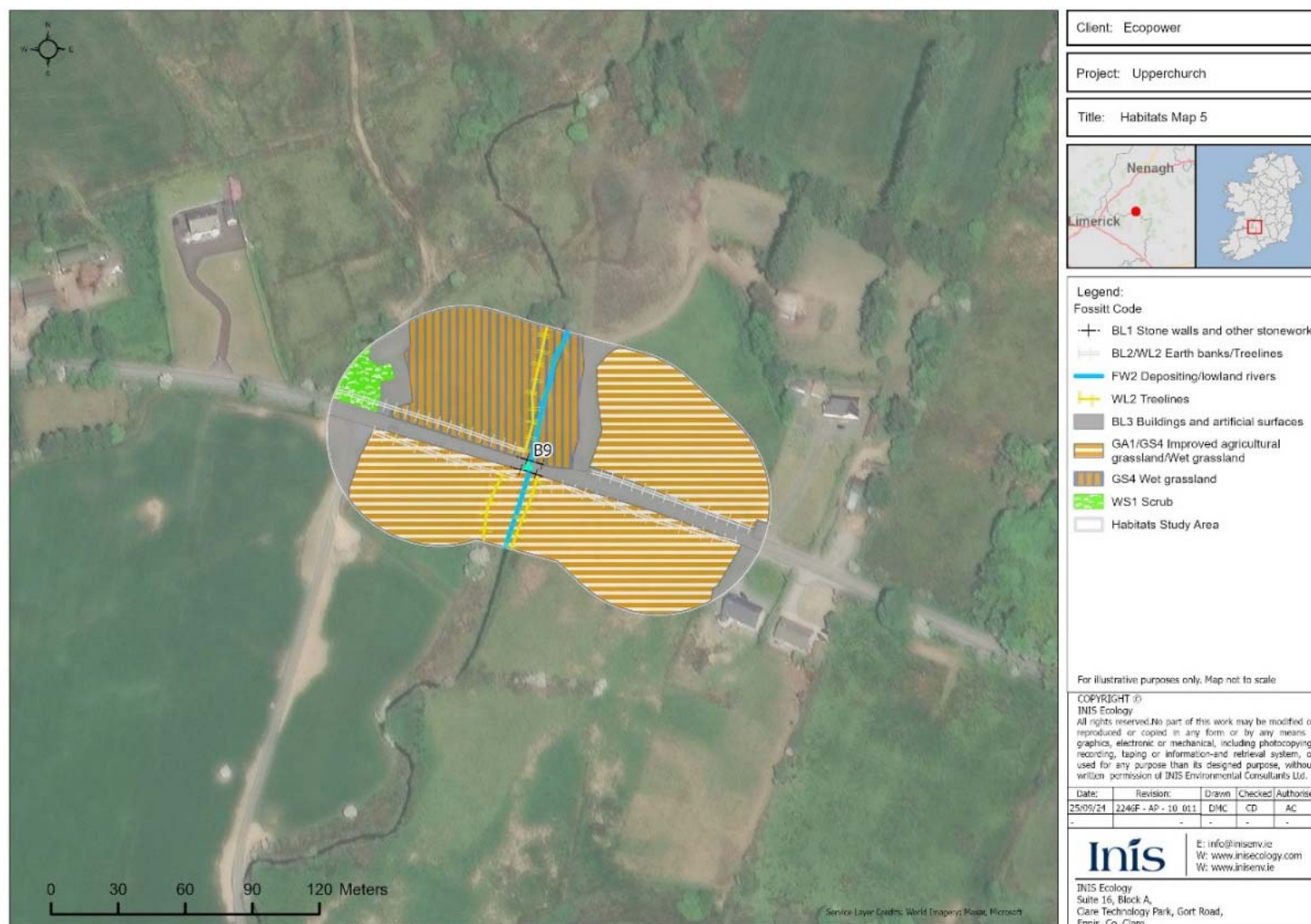


Figure 4.6: Map of Habitat Baseline for Alterations to UGC at Watercourse Crossing B9.

4.1.12. Watercourse Crossing B11

This watercourse crossing is located within the Annagh River [Annagh (Tipperary)_010 (25A02) (IE_SH_25A020100)]. This section of the river is upstream of the Lower River Shannon SAC (002165).

The Habitats are primarily Improved Agricultural Grassland. Buildings and Other Artificial Surfaces are limited to the roads within the 50m study area. The remaining habitat was comprised of small patches of Scrub. Linear features included Stone walls and other stonework, Hedgerow, Treeline, and Treeline/Scrub mosaic habitat and run along the R503 (**Figure 4.7; Table 4.12**).

Table 4.12: Habitat Baseline at Watercourse Crossing B11.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 0.546 |
| GA1 | 0.952 |
| WL1 | 0.025 |
| WL2 | 0.203 |
| WL2/WS1 | 0.171 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| BL1 | 64 |
| FW2 | 105 |

These Requested Alterations are hydrologically connected to two designated sites. This Crossing is 622m upstream of Slievefelim to Silvermines Mountains SPA and 10.07km upstream of Lower River Shannon SAC. No Annex I habitat was observed during the surveys.

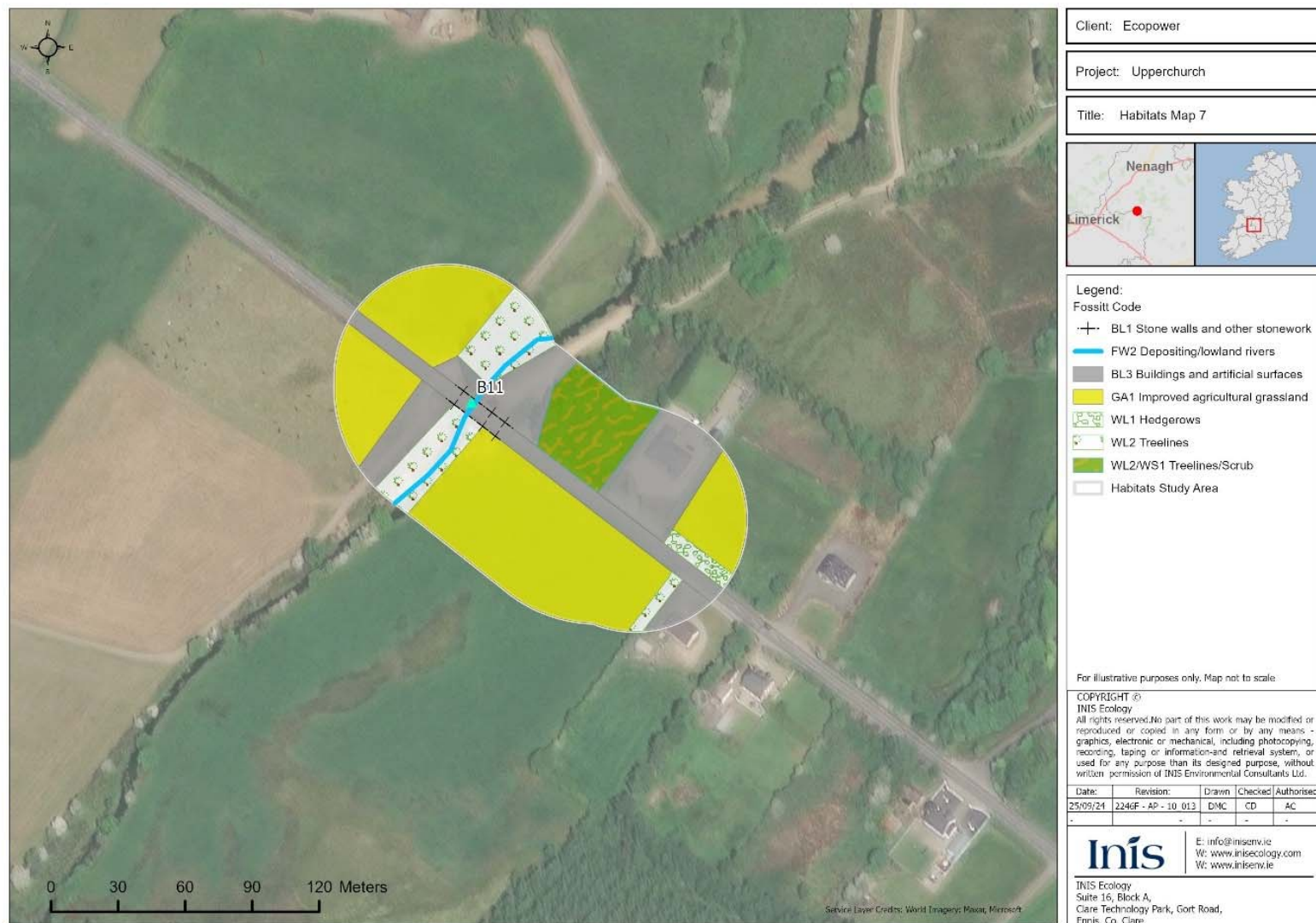


Figure 4.7: Map of Habitat Baseline for Alterations to UGC at Watercourse Crossing B11.

4.1.13. Watercourse Crossing B14

This watercourse crossing is located within the Foildarragh_25 section of the Bilboa River [Bilboa_010 (25F33) (IE_SH_25B030080)]. This section of the river is upstream of the Lower River Shannon SAC (002165).

The Habitats are primarily woodland habitats including Conifer Plantation, Riparian Woodland/Scrub with Wet Grassland/Scrub and Scrub/Treeline mosaics running along the stream path. The Buildings and Other Artificial Surfaces is limited to the roads within the 50m study area. Stone walls and other stonework is present on either side of the bridge crossing (**Figure 4.8; Table 4.13**).

Table 4.13: Habitat Baseline at Watercourse Crossing B14.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 0.128 |
| GS4/WS1 | 0.355 |
| WD4 | 0.414 |
| WN5/WS1 | 0.822 |
| WS1/WL2 | 0.041 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| BL1 | 110 |
| FW2 | 139 |

This Proposed Alteration is physically connected to an SPA site and is hydrologically connected to an SAC site. This Crossing is present within the Slievefelim to Silvermines Mountains SPA and 343m upstream of Lower River Shannon SAC.

No Annex I habitat was observed during the habitat and Otter surveys.

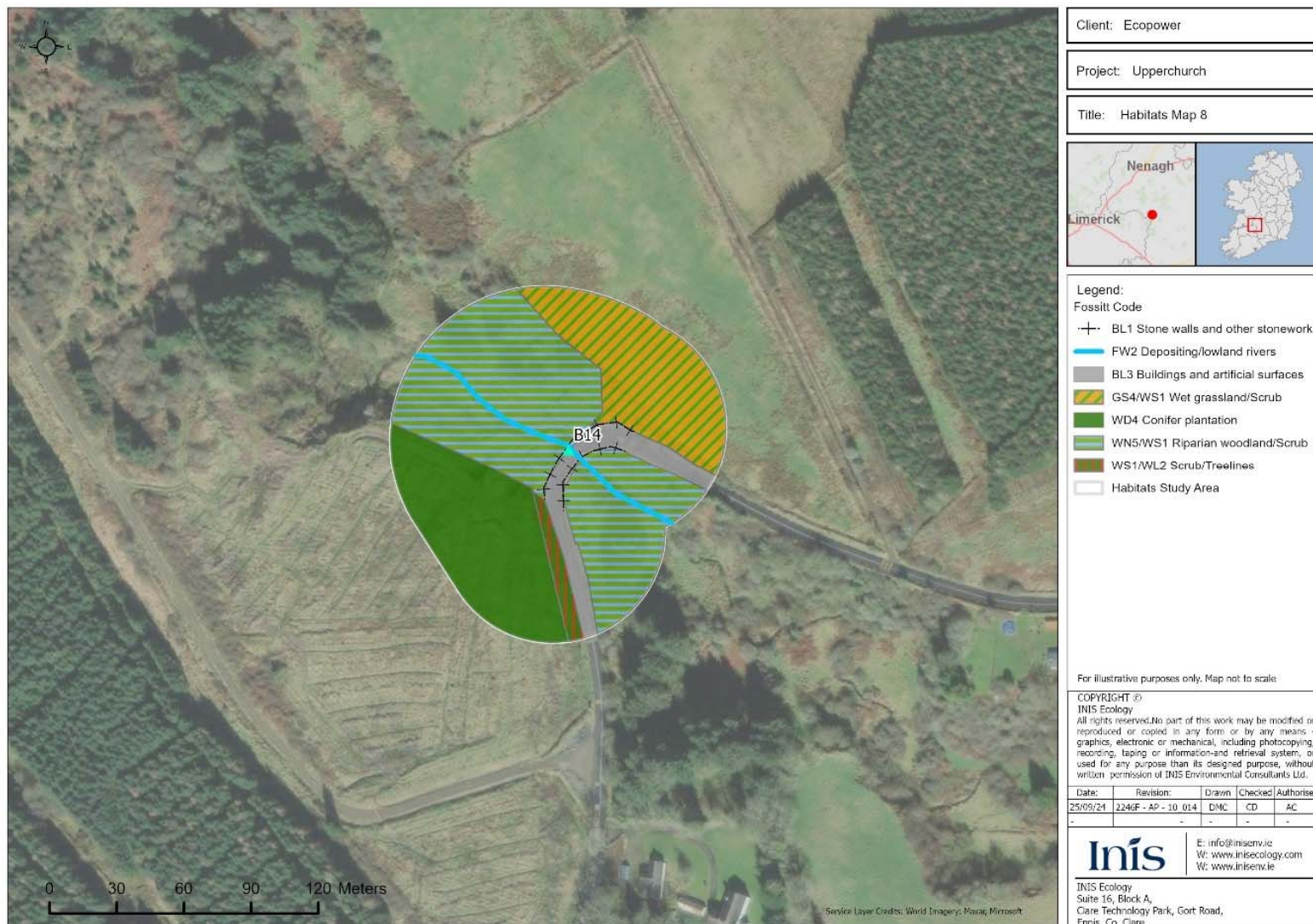


Figure 4.8: Map of Habitat Baseline for Alterations to UGC at Watercourse Crossing B14.

4.1.14. Watercourse Crossing B15

This watercourse crossing is located within the Bilboa_25 section of the Bilboa River [Bilboa_010 (25B03) (IE_SH_25B030080)]. This section of the river is upstream of the Lower River Shannon SAC (002165).

The Buildings and Other Artificial Surfaces is limited to the roads, the football field, community centre, and car park that comprise this habitat within the 50m study area. The remaining Buildings and Other Artificial Surfaces mosaics are the farmhouses and dwellings adjacent to the R503 (**Figure 4.9; Table 4.14**). A section of the hedgerow along the R503 was a mosaic habitat with Dry meadows and grassy verges (WL1/GS2).

The remaining sections of habitats are Improved Agricultural Grassland, Improved Agricultural Grassland/Wet Grassland. Parallel to the stream North of the bridge is a section of Oak-ash-hazel woodland/Scrub (WN2/WS1) and a patch of Dry-humid acid grassland/Wet Grassland (GS3/GS4).

Treeline and Hedgerow habitats were present on either side of the river and along the road. The bridge at this watercourse crossing was bordered on each side with stone walls.

Table 4.14: Habitat Baseline at Watercourse Crossing B15.

| Area Habitats | |
|-----------------|------------|
| Fossitt Code | Area (ha) |
| BL3 | 0.928 |
| BL3/GA1/WD2 | 0.337 |
| BL3/GS2 | 0.006 |
| FW2 | 0.054 |
| GA1 | 0.338 |
| GA1/GS4 | 0.155 |
| GA2 | 0.063 |
| GS3/GS4 | 0.041 |
| WL1/GS2 | 0.024 |
| WN2/WS1 | 0.043 |
| Linear Habitats | |
| Fossitt Code | Length (m) |
| BL1 | 51 |
| WL1 | 86 |
| WL2 | 47 |

Cherry Laurel *Prunus laurocerasus* is located North of the HDD entry point of this water crossing (**Figure 4.10**)

This Crossing is present within the Lower River Shannon SAC and 48m upstream of the Slievefelim to Silvermines Mountains SPA.

No Annex I habitat was observed during the surveys. However, given this watercourse's presence within the Lower River Shannon SAC, it is considered with the matching importance. As such, this watercourse is of **International Importance**.

The Requested Alterations at this watercourse crossing will involve Horizontal Directional Drilling. The Proposed Alteration Works fall within the Bilboa_SC_010 Subcatchment. This Ground waterbody Subcatchment is shared with both the Lower River Shannon SAC and Slievefelim to Silvermines Mountains SPA (**Figure 4.11**).

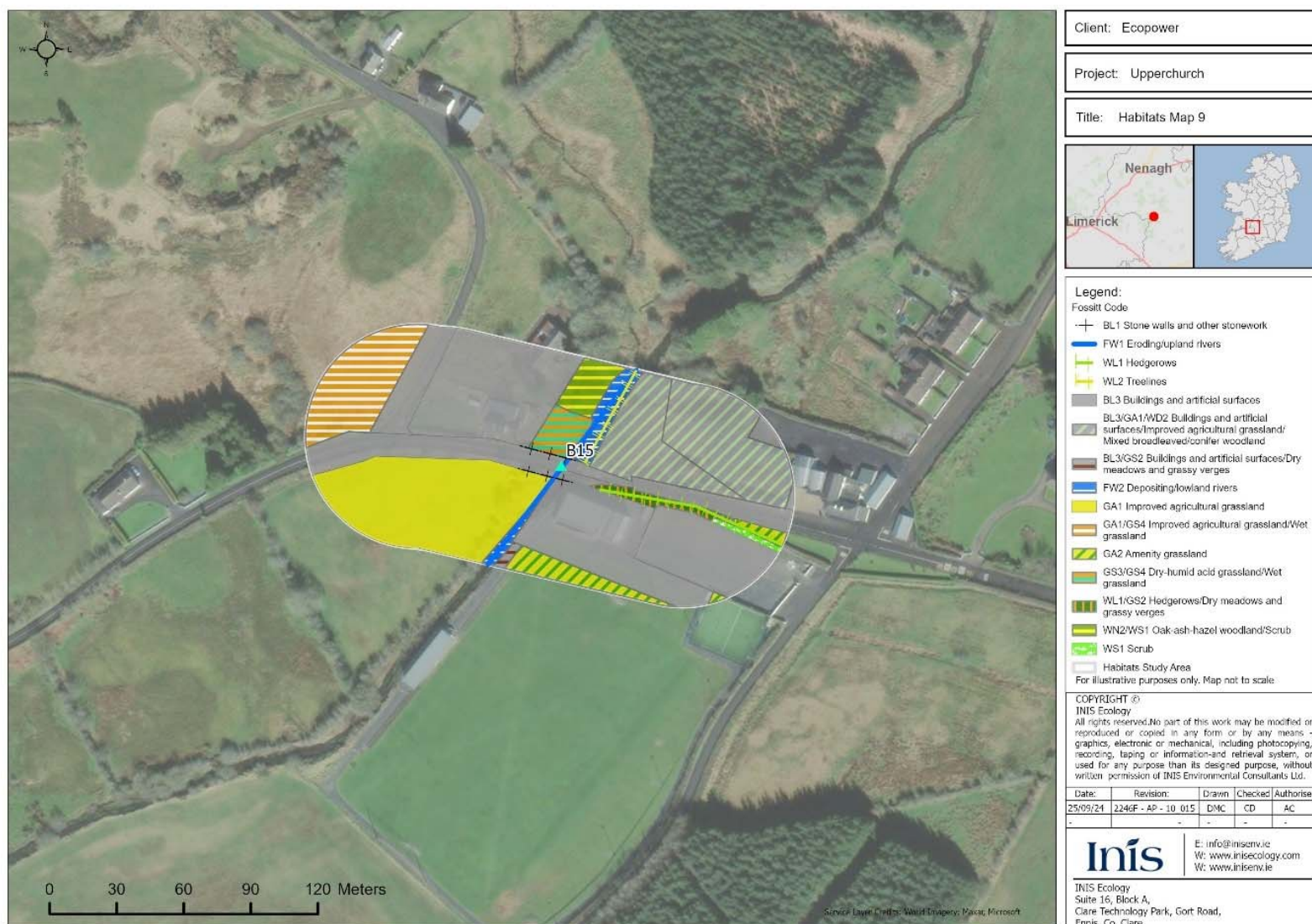


Figure 4.9: Map of Habitat Baseline for Alterations to UGC at Watercourse Crossing B15.

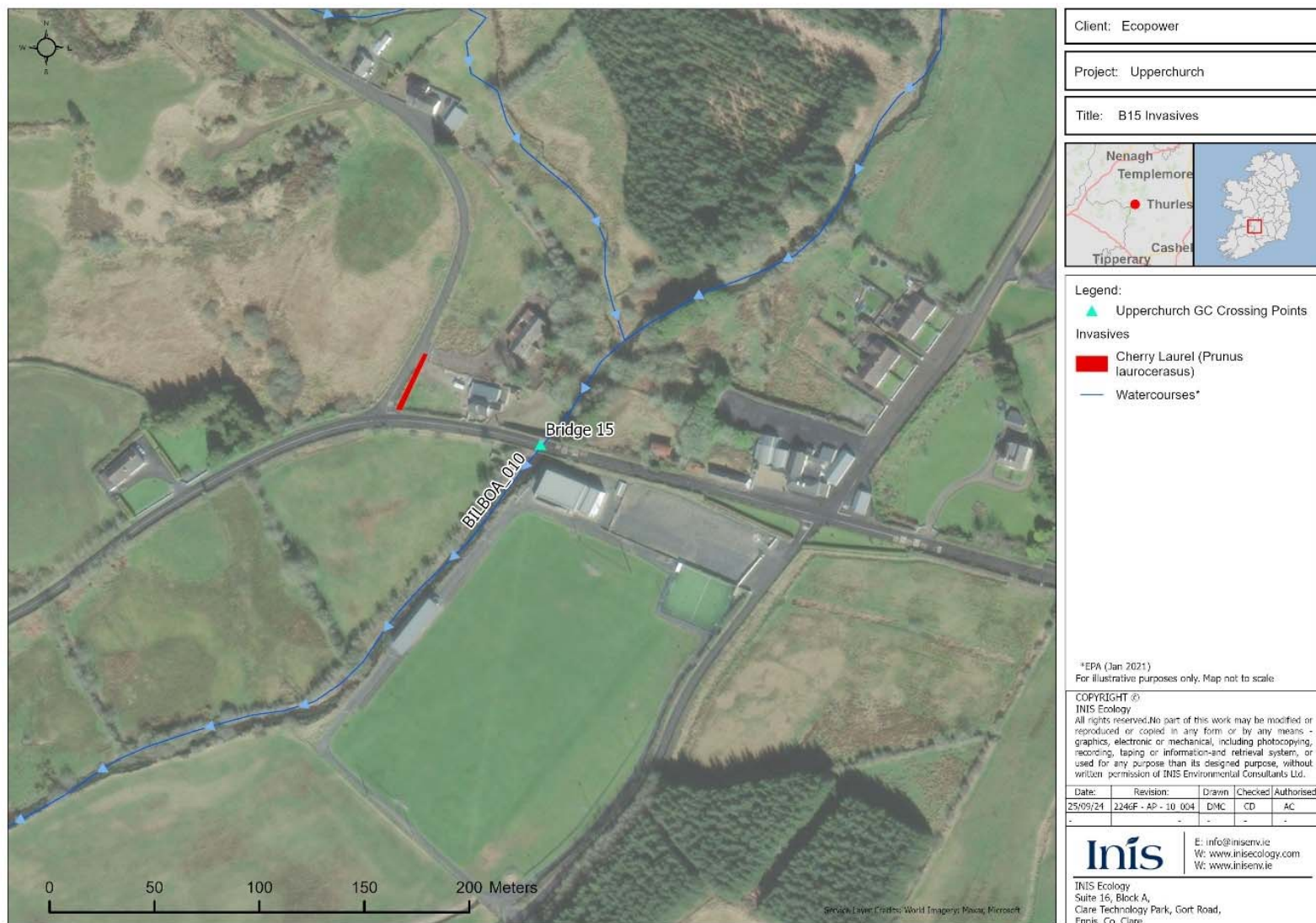


Figure 4.10: Map of Invasives Baseline for Alterations to UGC at Watercourse Crossing B15.

4.2. Sensitive Aspect - Non-Volant Mammals

Surveys were conducted in 2024 and early 2025 for Otter at all crossings and no sightings, or secondary evidence was observed. Suitability was assigned to watercourse crossings due to stream condition, slope of riverbanks and any other viable criteria to inform the suitability for Otter at these watercourse crossing locations. It was found that there is a high suitability watercourse at the B15 Bilboa River crossing and at W101 Newport River crossing and moderate suitability at the B11 and B14 crossing. All other crossings points have a low suitability for otter.

Based on the evidence from the biodiversity chapter of the UWF Grid Connection EIAR 2019 and the suitability of habitat for Otter within the ecological baseline, Otter is considered a key receptor for the Requested Alterations.

No other signs of mammals were recorded during the 2024 and early 2025 surveys.

4.3. Sensitive Aspect - Aquatic Habitats & Species

Watercourse Crossings were surveyed as part of the 2024 surveys.

Table 4.15 - Watercourse Classifications at Alteration Locations

| Survey Location | Alteration methodologies | Construction | Fisheries Classification |
|--------------------|---|--------------|--|
| W101 | Directional Drill | | Class1, Optimal Fisheries |
| W102 | Directional Drill | | Class1, Optimal Fisheries |
| W103 | Install UGC over or under culvert | | Class 3, Sub-optimal Fisheries |
| Watercourse at B5 | Divert around bridge - Dam and overpump (instream works) | | Class 3, Sub-optimal Fisheries |
| Watercourse at B6 | Directional Drill | | First/second order streams of little fisheries value |
| Watercourse at B7 | Directional Drill | | Class 3, Sub-optimal Fisheries |
| Watercourse at B9 | Divert around bridge - Dam and overpump (instream works) | | Class1, Optimal Fisheries |
| B10 | Directional Drill | | Class 4, Poor Fisheries |
| Watercourse at B11 | Divert around bridge - Dam and overpump (instream works) | | Class1, Optimal Fisheries |
| Watercourse at B14 | Divert around bridge - Dam and overpump (instream works) | | Class1, Optimal Fisheries |
| Watercourse at B15 | Directional Drill | | Class1, Optimal Fisheries |

4.4. Sensitive Aspect - Hen Harrier and General Birds

Surveys for the UWF Grid Connection over the period 2017 – 2021, recorded 15 nest sites, with 2 of these nest sites (2018) within 1km of the UGC route. All of these nests were located within the boundary of the Slievefelim to Silvermines Mountain SPA. Habitats along the UGC route are wholly unsuitable for nesting hen harrier, with 89% of habitat unsuitable within 50m and 66% of habitat unsuitable within 2km, of the UGC.

Meadow Pipit habitat is widespread along the proposed UGC route. In addition to red-listed Meadow Pipit, Snipe and Grey Wagtail, amber-listed Kingfisher and green-listed Dipper were recorded during UWF Grid Connection surveys. Four buildings with suitability for Barn Owl occur along the UGC route, however no Barn Owls were recorded during surveys. While some suitable foraging habitat occurs in the surrounding and wider area for Merlin, Red Grouse and Curlew – none were recorded during any previous surveys of the UGC route.

4.5. Sensitive Aspect - Bats

As part of the Authorised 2019 application the bridges along the entire UGC route were surveyed for their suitability to bats. Bat suitability surveys did not form part of the 2024 survey effort because it is proposed to avoid works in the fabric of these bridges.

Table 4.16: Bat Suitability of Bridge Structures at Alteration Locations as assessed in 2019

| Survey Location | Alteration Construction methodologies | Suitability of bridge structure for Bats (as assessed in 2019 EIAR) |
|-----------------|---|---|
| W101 | Directional Drill (HDD) | No bridge structure present |
| W102 | Directional Drill (HDD) | No bridge structure present |
| Watercourse B5 | Divert around bridge - Dam and overpump | Low Suitability |
| Watercourse B6 | Directional Drill (HDD) | Low Suitability |
| Watercourse B7 | Directional Drill (HDD) | Moderate Suitability |
| Watercourse B9 | Divert around bridge - Dam and overpump | Moderate Suitability |
| Watercourse B11 | Divert around bridge - Dam and overpump | Moderate Suitability |
| Watercourse B14 | Divert around bridge - Dam and overpump | Moderate Suitability |
| Watercourse B15 | Directional Drill (HDD) | Moderate Suitability |

4.6. Sensitive Aspect - Amphibians and Reptiles and Marsh Fritillary

No Amphibians and Reptiles or Marsh Fritillary suitable habitat were recorded during 2024 surveys

4.7. Ground Waterbody Baseline

The authorised UWF Grid Connection and the Requested Alterations sit within the Slieve Phelim Catchment (IE_SH_G_213). This catchment has several Subcatchments. **Table 4.17** is a brief list of the Subcatchments where watercourse crossings involving HDD are to take place as part of the Requested Alterations. Designated sites present within these Subcatchments are provided in **Table 4.17** respectively. **Figure 4.11** provides the map of the Requested Alterations with the Subcatchments and European sites.

Table 4.17: List of Groundwater Subcatchment and the connectivity with European sites and the Requested Alterations.

| Ground Waterbody | | |
|----------------------|---------------------------|---|
| Watercourse Crossing | Subcatchment | European Sites within Same Subcatchment |
| W101 & W102 | Newport[Tipperary]_SC_010 | Lower River Shannon SAC |

| | | |
|------------|----------------------------|--|
| | | Slievefelim to Silvermines Mountains SPA |
| B6 | Kileengarrif_SC_010 | Lower River Shannon SAC Slievefelim to Silvermines Mountains SPA Clare Glen SAC |
| B7 | Kileengarrif_SC_010 | Lower River Shannon SAC Slievefelim to Silvermines Mountains SPA Clare Glen SAC |
| B15 | Bilboa_SC_010 | Lower River Shannon SAC Slievefelim to Silvermines Mountains SPA |

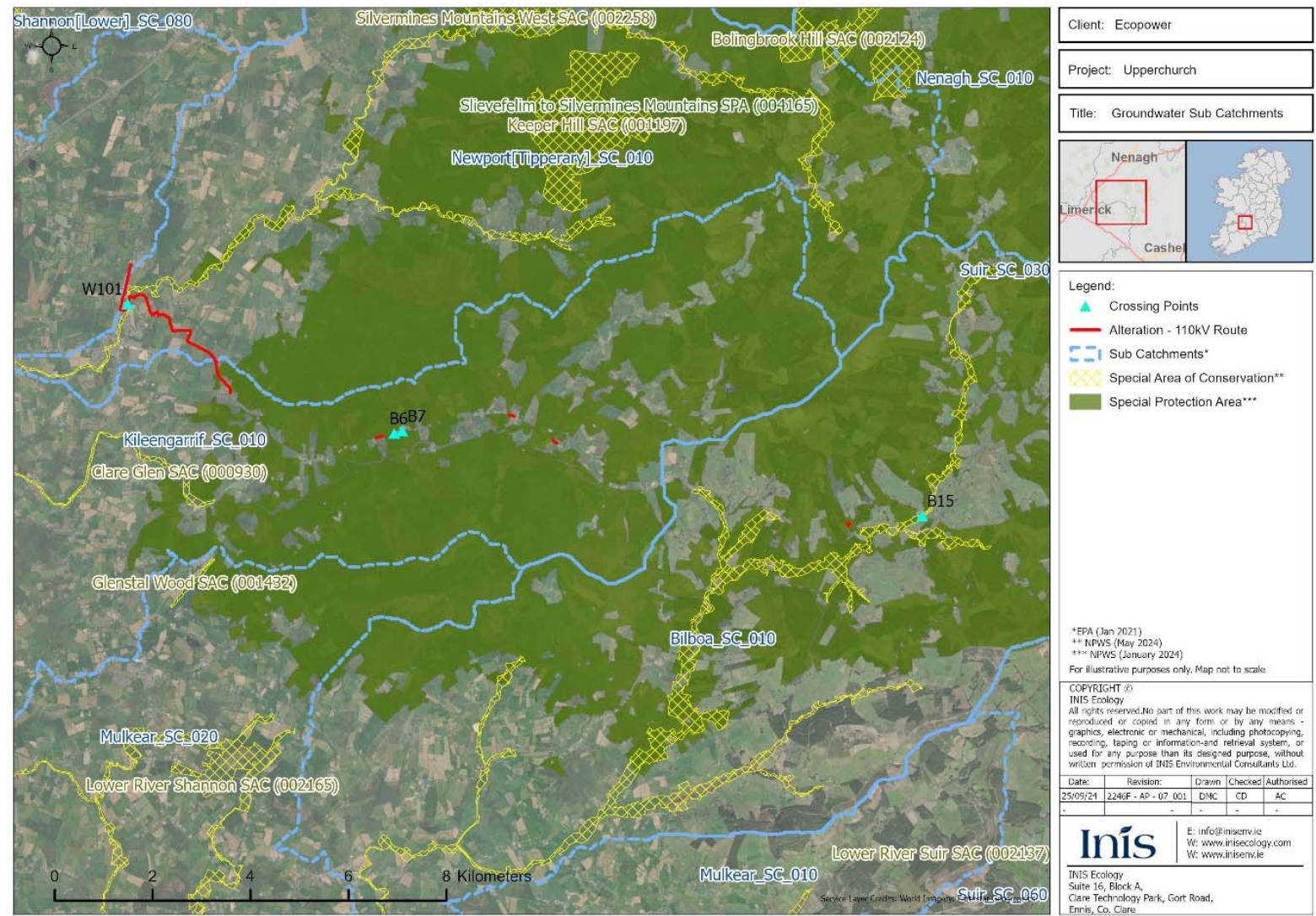


Figure 4.11: Map of Groundwater Subcatchments and European sites with the Proposed HDD Crossing Points.

5. DISCUSSION

5.1. Consultation and Review

Best practice guidance for the assessment of habitat distribution and Otter presence is to conduct surveys within two years of planning submission. Previous surveys from the authorised UWF Grid Connection in 2019 were referenced against the surveys provided in this baseline report. NPWS and IFI were consulted regarding the proposed work alterations to address any particular points of conservation concern at the Requested Alterations locations.

5.2. Important Habitats

No terrestrial habitats along the Requested Alterations to the UGC route, were higher than local importance (High value). These were limited to the riparian woodland along the watercourses and the sections of wet grassland mosaic and riverbank vegetation. All other habitats were of local importance (Low value).

The watercourses at crossings W101, and B15 are of International Importance due to their forming part of the Lower River Shannon SAC. The watercourses at B11 and B14 were of Local importance (High value) due to the depth of the stream and the medium suitability for Otter. The remainder of the watercourses crossed by the Requested Alterations were first/second order streams of little fisheries value.

5.3. Designated Sites

Due to the extent of overlap between the Requested Alterations baseline ecology and two European sites, habitats that were within the baseline and the designated sites were identified to determine any extent of Annex I habitat or habitats important to the Conservation Objectives of the designated sites.

The summary details of habitats within the 50m study area that are part of the designated sites are provided in **Table 5.1** and **5.2** below.

Table 5.1: Habitat Shared with the Lower River Shannon SAC.

| Area Habitats | |
|---------------|-----------|
| Fossitt Code | Area (ha) |
| BL3 | 0.097 |
| BL3/GA1/WD2 | 0.195 |
| BL3/GS2 | 0.001 |
| FW2 | 0.043 |
| GA1 | 0.613 |
| GS3/GS4 | 0.010 |
| WL1/WL2 | 0.080 |
| WN5 | 0.451 |
| WS1 | 0.108 |

Table 5.2: Linear Habitat Shared with the Lower River Shannon SAC.

| Linear Habitats | |
|-----------------|------------|
| Fossitt Code | Length (m) |
| BL1 | 33 |
| FW1 | 99 |
| FW2 | 256 |
| WL1/WL2 | 180 |
| WL2 | 47 |

None of the habitats recorded within the 50m study area of the Requested Alterations that were part of the Lower River Shannon SAC boundary were assessed to be Annex I habitats. Only the watercourses were assessed to be of importance.

None of the habitats recorded within the 50m study area of the Requested Alterations that overlapped with the Slievefelim to Silvermines Mountains SPA were assessed to be Annex I habitats (**Table 5.3** and **5.4**). Only the watercourses were assessed to be of importance to this site as a provider of habitat for prey items of Hen Harrier but not key aspects of the SPAs Conservation Objectives for this Species of Conservation Interest.

Table 5.3: Linear Habitat Shared with the Slievefelim to Silvermines Mountains SPA.

| Linear Habitats | |
|-----------------|------------|
| Fossitt Code | Length (m) |
| BL1 | 153 |
| BL1/BL2/WL2 | 36 |
| BL2/WL1/WL2 | 241 |
| BL2/WL2 | 123 |
| FW1 | 9 |
| FW2 | 350 |
| FW2/WN5 | 109 |
| GS2 | 25 |
| WL1 | 32 |
| WL1/WL2 | 183 |
| WL2 | 371 |

Table 5.4: Habitat Shared with the Slievefelim to Silvermines Mountains SPA.

| Area Habitats | |
|----------------------|------------------|
| Fossitt Code | Area (ha) |
| BL3 | 1.964 |
| BL3/GA1 | 0.040 |
| BL3/GA2 | 0.042 |
| ED2 | 0.118 |
| FW2 | 0.121 |
| GA1 | 0.841 |
| GA1/GS4 | 1.075 |
| GA1/WS1 | 0.096 |
| GS4 | 0.262 |
| GS4/WN5 | 0.068 |
| GS4/WS1 | 1.792 |
| WD1 | 0.122 |
| WD2 | 0.380 |
| WD2/WN5 | 0.036 |
| WD3 | 0.114 |
| WD4 | 2.852 |
| WD4/WS2 | 0.843 |
| WL2 | 0.079 |
| WN1/WN5 | 0.032 |
| WN2/WS1 | 0.266 |
| WN5/WS1 | 0.822 |
| WS1 | 0.321 |
| WS1/WL2 | 0.041 |
| WS1/WN5 | 0.104 |

5.4. Otter

No sightings or secondary evidence was observed for Otter. There is a high suitability watercourse at the B15 crossing and moderate suitability at B11 and B14 crossings. Based on the evidence from the biodiversity chapter of the authorised UWF Grid Connection EIAR 2019 (VA92.306204) and the suitability of habitat for Otter within the ecological baseline, Otter is considered a key receptor for the Requested Alterations.

6. SUMMARY

The Key Habitat Receptors are the Lowland Depositing Rivers and Riparian Woodland. Wet Grassland Mosaics are of interest where it occurs within the SPA adjacent to existing farm track between L60091 and R503.

The only Key Mammal Receptor is Otter.

No signs or sighting of other Key receptor species were identified during the September 2024 and January 2025 surveys.

The Designated sites with hydrological connectivity to the Requested Alterations (listed below) are key receptors to the same extent as was identified in the 2019 EIAR and NIS for the authorised UWF Grid Connection UGC route (VA92.306204):

- Slievefelim to Silvermines Mountains SPA;
- Lower River Shannon SAC;
- Clare Glen SAC;
- Clare Glen pNHA; and
- Bilboa And Gortnageragh River Valleys pNHA.

7. REFERENCES

- CIEEM (2017a) *Guidelines for Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management.
- CIEEM (2017b) *Guidelines for Preliminary Ecological Appraisal 2nd ed*. Chartered Institute of Ecology and Environmental Management.
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- National Roads Authority (2008) *Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes*
- Highways Agency (1999) *The Good Roads Guide: Nature Conservation Advice in Relation to Otters Design Manual for roads and Bridges (DMRB Vol 10 S. 4 Part 4 HA 81/99)*
- OPR (2021) *OPR Guidance Note: Appropriate Assessment Screening for Development Management*. Office of Planning Regulation.
- Smith, G.F, O'Donoghue, P., O'Hora, K & Delaney, E. (2011) *Best Practice Guidance for Habitat Survey and Mapping*. The Heritage Council, Kilkenny

Appendix for the Schedule 7A Information/Assessment

Appendix D: Biodiversity - Extract from Stage 1: Screening for Appropriate Assessment for UWF Grid Connection 2019

2.10 Stage One Screening Conclusion

The Screening Evaluation provided herein has examined the potential for UWF Grid Connection to cause any effects via source pathway linkages on the designated SACs and SPAs within the extended study area.

2.10.1 Results of the Screening Exercise of all 23 European Sites (17 SACs, 4 SPAs)

The results are that **there is no potential or no likelihood for UWF Grid Connection to cause any effects to the following 19 no. European Sites (16 SACs, 3 SPAs):**

- Anglesey Road SAC (002125),
- Bolingbrook Hill SAC (002124),
- Keeper Hill SAC (001197),
- Silvermine Mountain SAC (000939),
- Silvermine Mountain West SAC (002258),
- Philipston Marsh SAC (001847),
- Kilduff, Devilsbit Mountain SAC (000934),
- Glenstal Wood SAC (001432),
- Slieve Bernagh Bog SAC (002312),
- Lough Derg, North-East Shore SAC (002241),
- Glenomra Wood SAC (001013),
- Tory Hill SAC (000439),
- Ratty River Cave SAC (002316),
- Askeaton Fen Complex SAC (002279),
- Barrigone SAC (000432),
- Curraghchase Woods SAC (000174),
- Lough Derg (Shannon) SPA (004058),
- River Shannon and River Fergus Estuaries SPA (004077), and
- Stack's to Mullaghareirk Mountains, West Limerick Hills & Mount Eagle SPA (004161).

Therefore, these EU sites have been 'Screened Out' at Stage One of the Appropriate Assessment process. In accordance of the recommendations of the Guidance Document '*Assessment of Plans and Projects significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*', (European Commission 2001), a Finding of No Significant Effects (FONSE) Report has been completed in respect of these European Sites and is included as **Appendix A1: Finding of No Significant Effects (FONSE) Report**.

The results of the screening are also that UWF Grid Connection has potential, via impact pathways, to cause effects to the following 4 European Sites (3 SACs, 1 SPA);

- Lower River Shannon SAC
- Lower River Suir SAC,
- Clare Glen SAC,
- Slievefelim to Silvermines Mountain SPA

As a result, there is an obligation on the Competent Authority to carry out an Appropriate Assessment (i.e. Stage Two of the AA process) under Article 6 (3) of the Habitats Directive for this project, and in this context a Stage 2 Appropriate Assessment Report has been completed.

2.10.2 Summary Results of Screening Exercise

2.10.2.1 European Sites and their respective Qualifying Interests or Special Conservation Interests Screened out from further consideration at Stage 2

The results of this screening is that the following European Sites/Qualifying Interests can be excluded from further consideration as there is no potential or likelihood for UWF Grid Connection to cause effects to these Qualifying Interests, see Table 10.

Table 10: Qualifying Interest Screened Out due to no potential or likelihood of UWF Grid Connection causing any effects

| European Site | Qualifying Interest Screened Out due to no potential or likelihood of UWF Grid Connection causing adverse impacts |
|---|---|
| Lower River Shannon SAC | Freshwater Pearl Mussel [1029] Bottlenose Dolphin [1349] Molinia Meadows [6410] Sandbanks which are slightly covered by sea water all the time [1110] Estuaries (1130) Mudflats and Sandflats not covered by seawater all the time (1140) Coastal Lagoons (1150) (*priority habitat) Large shallow inlets and bays (1160) Reefs (1170) Salicornia and other annuals colonizing mud and sand [1310] Atlantic Salt Meadows (1330) Mediterranean Salt Meadows (1410) Perennial Vegetation of Stony Banks (1220) Vegetated Sea Cliffs (1230) |
| Lower River Suir SAC | Atlantic salt meadows [1330] Mediterranean salt meadows [1410] Twaite Shad [1103] |
| Clare Glen SAC | <i>No Qualifying Interests have been screened out</i> |
| Slievefelim to Silvermines Mountain SPA | <i>No Special Conservation Interest has been screened out</i> |

2.10.2.2 European Sites and their respective Qualifying Interests / Special Conservation Interests Screened In for further consideration at Stage 2

The result of this screening is also that the following Qualifying Interests and Special Conservation Interest has been screened in for further detailed evaluation at Stage Two of the Appropriate Assessment process. These Qualifying Interests and Special Conservation Interests are identified on Table 11.

Table 11: Qualifying Interest Screened In due to potential for UWF Grid Connection to cause effects

| European Site | Qualifying Interest Screened In due to potential or likelihood of UWF Grid Connection causing effects | Impact Screened in for further consideration at Stage 2 |
|---|--|---|
| Lower River Shannon SAC | Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Alluvial Forests (91E0)* (priority habitat) | SAC Pathway 1, 2, 3 |
| | Atlantic Salmon [1106] Sea Lamprey [1095] Brook Lamprey [1096] River Lamprey [1099] Otter [1355] | SAC Pathway 4, 5, 6, 7, 8 |
| Lower River Suir SAC | Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Alluvial Forests (91E0)* (priority habitat) Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Yew Woodlands* Taxus baccata woods of the British Isles [91J0] (priority habitat) Old sessile oak woods with Ilex and Blechnum in the British Isles | SAC Pathway 2, 3 |
| | Freshwater Pearl Mussel [1029] White-clawed Crayfish [1092] Sea Lamprey [1095] Brook Lamprey [1096] River Lamprey [1099] Atlantic Salmon [1106] Otter [1355] | SAC Pathway 5, 6, 7, 8 |
| Clare Glen SAC | Old Oak Woodlands [91A0] Killarney Fern (Trichomanes speciosum) [1421] | SAC Pathway 2, 3 |
| Slievefelim to Silvermines Mountain SPA | Hen Harrier [A082] | SPA Pathway 1, 2, 3 |

2.10.3 Screening Conclusion

Following screening to inform the requirement for Appropriate Assessment, the potential for significant effects to the Lower River Shannon SAC, Lower River Suir SAC, Clare Glen SAC and Slievefelim to Silvermines Mountain SPA cannot be excluded, as a result of the development of the UWF Grid Connection project.

Therefore, the **Lower River Shannon SAC, Lower River Suir SAC, Clare Glen SAC and Slievefelim to Silvermines Mountain SPA** have been ‘Screened In’ for further evaluation at Stage Two of the **Appropriate Assessment process**.

Appendix for the Schedule 7A Information/Assessment

Appendix E: Biodiversity - Site Specific Conservation Objectives for the Slievefelim to Silvermines Mountains SPA [004165]

National Parks and Wildlife Service

Conservation Objectives Series

Slievefelim to Silvermines Mountains SPA 004165



An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

**National Parks and Wildlife Service,
Department of Housing, Local Government and Heritage,
90 King Street North, Dublin 7, D07 N7CV, Ireland.
Web: www.npws.ie
E-mail: natureconservation@housing.gov.ie**

Citation:

**NPWS (2022) Conservation Objectives: Slievefelim to Silvermines Mountains
SPA 004165. Version 1. National Parks and Wildlife Service, Department of
Housing, Local Government and Heritage.**

**Series Editors: Rebecca Jeffrey and Colin Heaslip
ISSN 2009-4086**

Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

** indicates a priority habitat under the Habitats Directive*

| | |
|--------|--|
| 004165 | Slievefelim to Silvermines Mountains SPA |
|--------|--|

| | |
|------|-----------------------------------|
| A082 | Hen Harrier <i>Circus cyaneus</i> |
|------|-----------------------------------|

Please note that this SPA overlaps with Silvermine Mountains SAC (000939), Keeper Hill SAC (001197), Bolingbrook Hill SAC (002124), Lower River Shannon SAC (002165) and Silvermines Mountains West SAC (002258). It is also adjacent to Clare Glen SAC (000930) and Glenstal Wood SAC (001432). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping and adjacent sites as appropriate.

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

| | |
|----------|---|
| Year : | 2015 |
| Title : | Hen harrier special protection area (SPA) habitat mapping project 2014 |
| Author : | Moran, P.; Wilson-Parr, R. |
| Series : | Irish Wildlife Manual No. 83 |
| Year : | 2015 |
| Title : | Hen harrier conservation and the forestry sector in Ireland - forestry - V3.2 |
| Author : | NPWS |
| Series : | Unpublished Report |
| Year : | 2016 |
| Title : | The 2015 national survey of breeding hen harrier in Ireland |
| Author : | Ruddock, M.; Mee, A.; Lusby, J.; Nagle, A.; O'Neill, S.; O'Toole, L. |
| Series : | Irish Wildlife Manual No. 93 |
| Year : | 2022 |
| Title : | Conservation objectives supporting document: breeding hen harrier |
| Author : | NPWS |
| Series : | Conservation objectives supporting document |

Other References

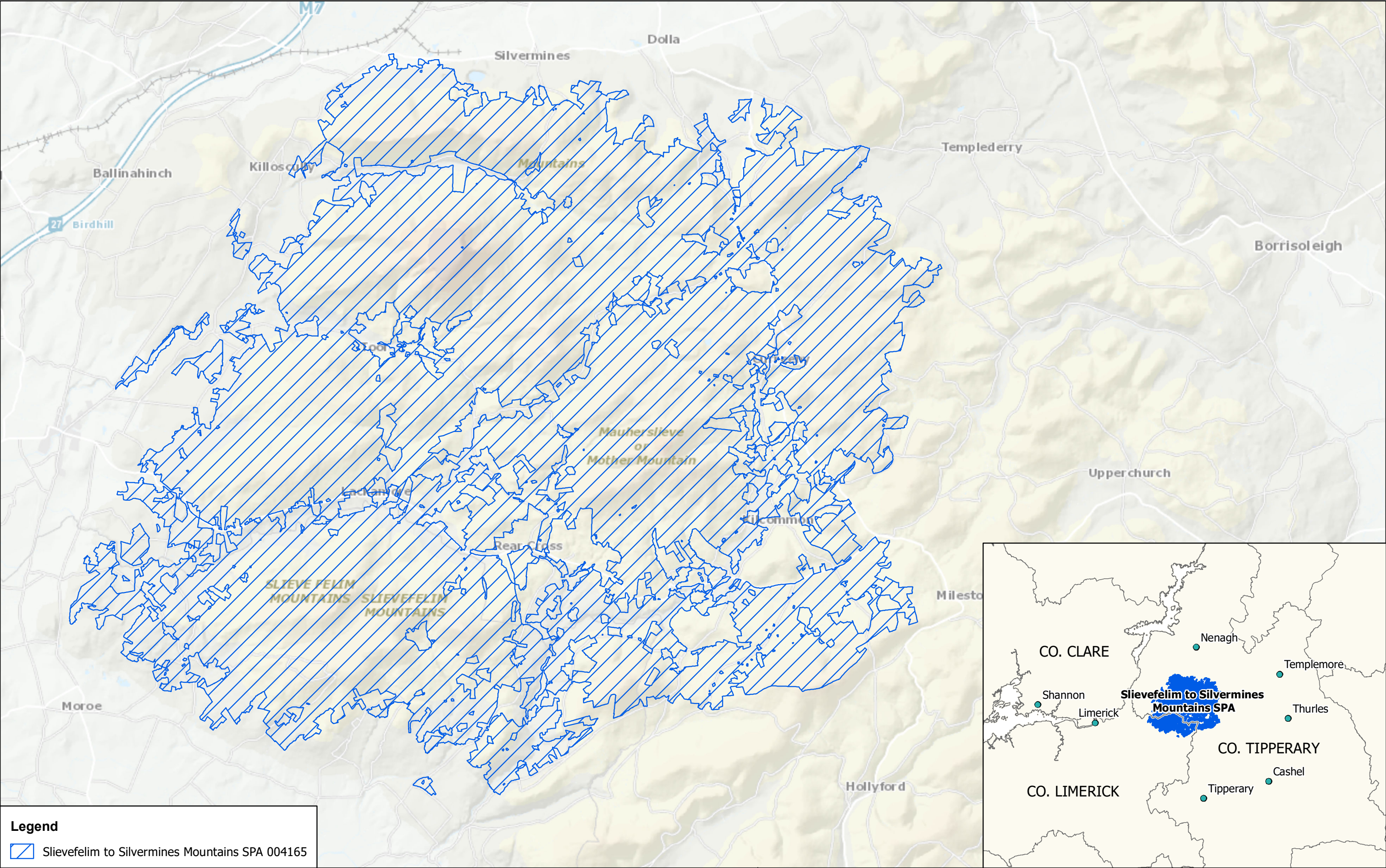
| | |
|----------|--|
| Year : | 2002 |
| Title : | A national survey of breeding hen harriers (<i>circus cyaneus</i>) in Ireland 1998-2000 |
| Author : | Norriss, D.W., Marsh, J., McMahon, D. & Oliver, G.A. |
| Series : | Irish Birds, 7, 1-10 |
| Year : | 2006 |
| Title : | The second national survey of breeding hen harriers <i>circus cyaneus</i> in Ireland |
| Author : | Barton, C., Pollock, C., Norriss, D.W., Nagle, T., Oliver, G.A. & Newton, S. |
| Series : | Irish Birds, 8, 1-20 |
| Year : | 2006 |
| Title : | The distribution of hen harriers in Ireland in relation to land use cover, particularly forest cover |
| Author : | Wilson, M.; Gittings, T.; O'Halloran, J.; Kelly, T.; Pithon, J. |
| Series : | Environment No. 6. COFORD, Dublin |
| Year : | 2012 |
| Title : | Optimum scenarios for hen harrier conservation in Ireland; final report 2012 |
| Author : | Irwin, S.; Wilson, W.; O'Donoghue, B.; O'Mahony, B.; Kelly, T.; O'Halloran, J. |
| Series : | Prepared for the Department of Agriculture, Food and the Marine by the School of Biological, Earth and Environmental Sciences, University College Cork |
| Year : | 2014 |
| Title : | Ranging behaviour of hen harriers breeding in special protection areas in Scotland |
| Author : | Arroyo, B.; Leckie, F.; Amar, A.; Cluskie, A; Redpath, S. |
| Series : | Bird Study, 61:1, 48-55 |

A082 Hen Harrier *Circus cyaneus*

To restore the favourable conservation condition of hen harrier in Slievefelim to Silvermines Mountains SPA, which is defined by the following list of attributes and targets:

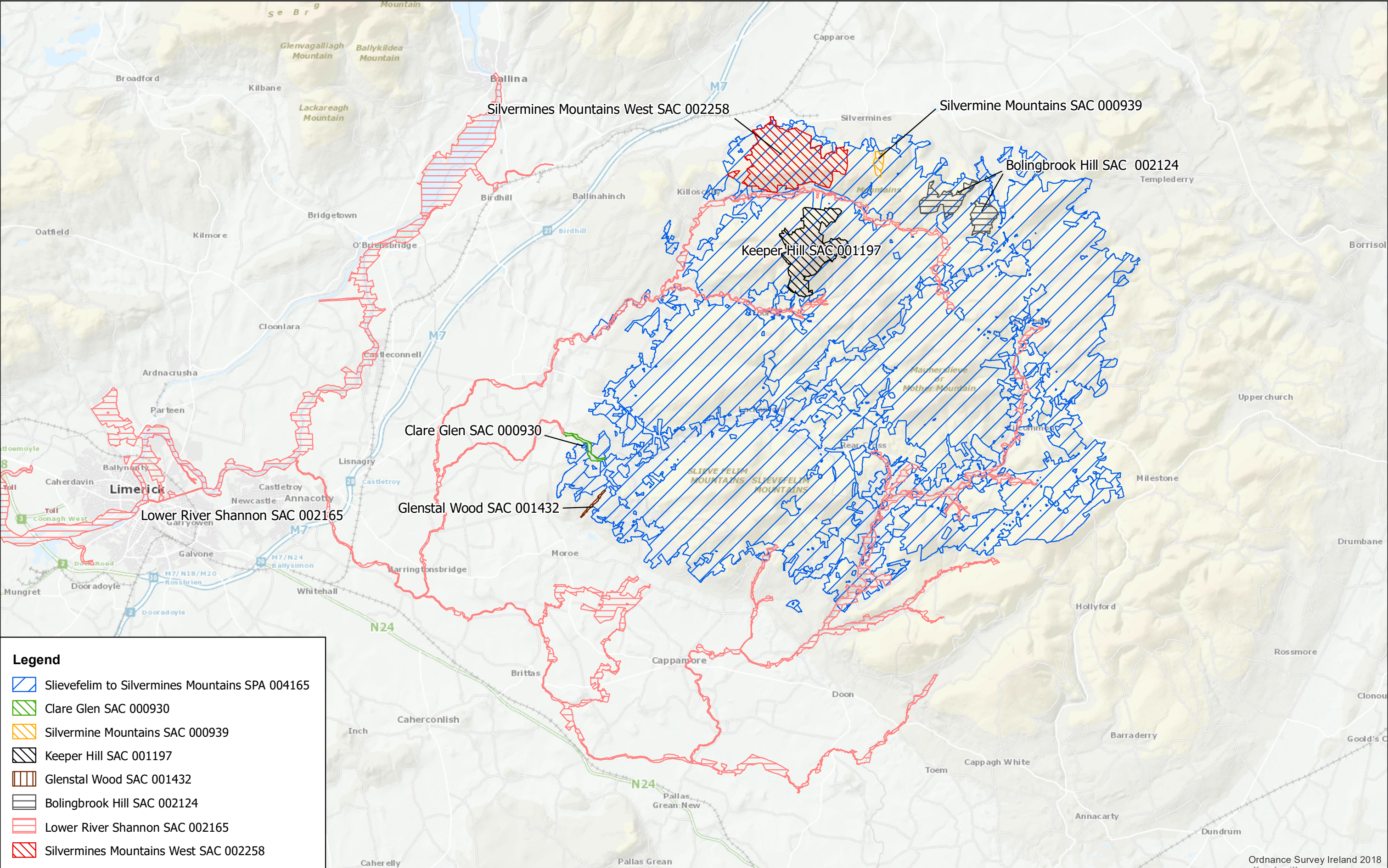
| Attribute | Measure | Target | Notes |
|--|--|---|---|
| Population size | Number of confirmed breeding pairs | Maintain numbers at or above 4–8 confirmed breeding pairs | The attribute 'confirmed breeding pairs' is based on standard survey methods (see Ruddock et al., 2016). The target for this SPA is informed by the first two national surveys of 1998–2001 (Norris et al., 2002) and 2005 (Barton et al., 2006). For further information on this and all other attributes, please refer to the conservation objectives supporting document for breeding hen harrier (NPWS, 2022) for further details |
| Productivity rate | Number of fledged young per confirmed pair | Restore at least 1.0–1.4 fledged young per confirmed pair | At the SPA level, the productivity rate can be highly variable in any given year. Generally, the setting of a minimum level of productivity to ensure a stable and/or increasing population at a given site ought to be informed by robust estimates of: post-fledging survival; adult survival; and immigration and emigration rates. Setting a single precise and robust rate is constrained by a lack of comprehensive Irish data. In order to frame this uncertainty, a threshold of 1.0–1.4 fledged young per confirmed breeding pair is set for this attribute. If population size of the SPA is not favourable, then the upper end of this productivity rate range is to be met. In order for estimates to be sufficiently representative of the SPA, they need to be of sufficient sample size and ideally over multiple years in order to account for inter-annual variability |
| Spatial utilisation by breeding pairs | Percentage | Maintain at least 74–94% spatial utilisation of the SPA by breeding pairs | Optimal resilience depends on breeding pairs utilising the SPA to the maximum extent possible. The spatial distribution of breeding pairs is expressed by the proportion of the SPA being used by them. Breeding pairs predominantly use the area within 5km of their nest site or centre of territory, though they can travel further (e.g. Irwin et al., 2012; Arroyo et al., 2014). Thus, the core area used by confirmed pairs can be broadly and generically estimated by calculating the portion that lies within 5km of all recorded nest sites. Ideally, the breeding population should be well dispersed around the SPA. The target range for this attribute for this SPA is informed by the first two national surveys of 1998–2001 and 2005 |
| Extent and condition of heath and bog and associated habitats | Hectares; condition assessment | Restore the extent and quality of this resource to support the targets relating to population size, productivity rate and spatial utilisation | Open heath and bog occur in mosaics and often with other semi-natural habitats (e.g. scrub). These habitats can provide important nesting and foraging resources for the breeding population providing they are in suitable condition. Based on the habitat mapping of Moran and Wilson-Parr (2015), the estimated total extent of these habitats in this SPA is 3,095ha. Qualitative aspects were not assessed by Moran and Wilson-Parr (2015), but some important aspects to consider are the habitats' structure, soil integrity and overall open habitat coherence |
| Extent and condition of low intensity managed grasslands and associated habitats | Hectares; condition assessment | Restore the extent and quality of this resource to support the targets relating to population size, productivity rate and spatial utilisation | Low intensity managed grasslands occur in mosaics and often with other semi-natural habitats (e.g. scrub). These habitats can provide important foraging resources for the breeding population providing they are in suitable condition. Based on the habitat mapping of Moran and Wilson-Parr (2015), the estimated total extent of these habitats in this SPA is 3,552ha. Qualitative aspects were not assessed by Moran and Wilson-Parr (2015), but some important aspects to consider are the habitats' structure and overall open habitat coherence |

| | | | |
|-----------------------------------|----------------------------------|---|---|
| Extent and condition of hedgerows | Kilometres; condition assessment | Maintain at least the length and quality of this resource to support the targets relating to population size, productivity rate and spatial utilisation | Hedgerows can be an important foraging resource for hen harrier throughout the year by providing food and refuge for prey animals i.e. small mammals and birds. Moran and Wilson-Parr (2015) quantified the hedgerow resource in this SPA with an estimated total linear extent of 641.3km, with two structural hedgerow types namely 'intact and dense' and 'boxed and moderate' accounting for 62.9km of that total. These combined types account for 10% of the total hedgerow resource of the SPA |
| Age structure of forest estate | Percentage | Achieve an even and consistent distribution of age-classes across the forest estate | This attribute aims to define optimal forest age-class composition required to reduce the forest demographic bottleneck, as set out in NPWS (2015) and Wilson et al. (2006) |
| Disturbance to breeding sites | Level of impact | Disturbance occurs at levels that does not significantly impact upon breeding hen harrier | The impact of any significant disturbance on the SPA's breeding population will ultimately be manifested in the targets which relate to population demographics (i.e. population size, productivity rate) and the spatial utilisation of the SPA by breeding pairs. Factors such as intensity, frequency, timing and duration of a potentially disturbing activity need to be taken into account to determine its significance on breeding hen harrier in the SPA |



Legend

Slievefelim to Silvermines Mountains SPA 004165



Legend

Slievefelim to Silvermines Mountains SPA 004165

Clare Glen SAC 000930

Silvermine Mountains SAC 000939

Keeper Hill SAC 001197

Glenstal Wood SAC 001432

Bolingbrook Hill SAC 002124

Lower River Shannon SAC 002165

Silvermines Mountains West SAC 002258

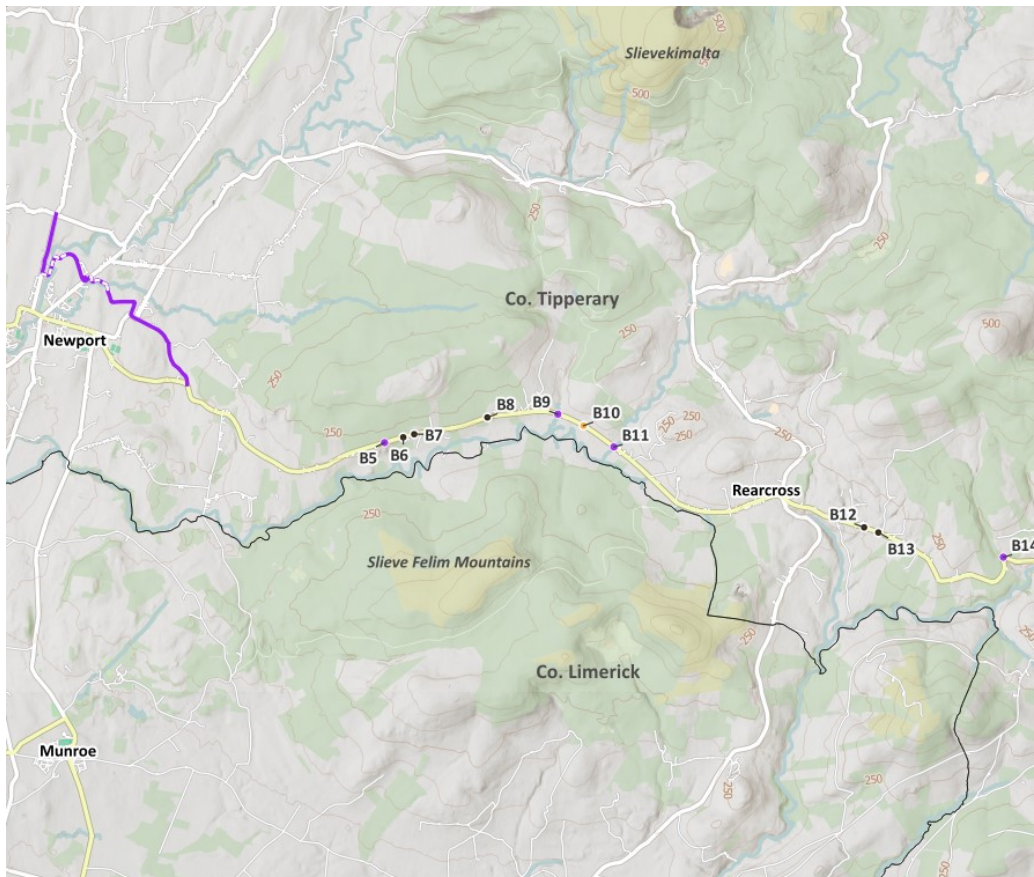
Appendix for the Schedule 7A Information/Assessment

Appendix F: Cultural Heritage Impact Assessment (CHIA)

Cultural Heritage Impact Assessment: Upperchurch Windfarm Grid Connection (UWF GC) – Proposed Alterations



Archaeological
Management Solutions



By Freya Clare Smith
For Ecopower Development Ltd

December 2024

TITLE PAGE

| | | | | | | | | | | | | | |
|-------------------------|--|----------------------|---------------------|----------------------|---------------------|----------------------|----------------------|---------------------|----------------------|----------------------|---------------------|----------------------|--|
| AMS Job No.: | J3609 | | | | | | | | | | | | |
| Project Name: | UWF GC – Proposed Alterations (2024) | | | | | | | | | | | | |
| Report Title: | Cultural Heritage Impact Assessment: Upperchurch Windfarm Grid Connection (UWF GC) – Proposed Alterations | | | | | | | | | | | | |
| Client Name: | Ecopower Development Ltd | | | | | | | | | | | | |
| Townland Names: | Baurnadomeeny; Carrowkeale; Clonbealy; Coole; Coonmore; Derryleigh; Fanit; Foildarragh; Foildarrig; Freagh; Kilcommon; Kilnacappagh; Lackamore; Mackney (Bourke); Newport; Reardnogy Beg; Tooreenbrien Lower; Tooreenbrien Upper. | | | | | | | | | | | | |
| Grid References (ITM): | <p>Approximate mid-point of proposed 110kV UGC route alteration to avoid deck works to two bridge structures (B1; B2) located north of Newport town:</p> <p>573980, 662504</p> <p>Alterations are also proposed to avoid deck works to eleven (11) other bridge/culvert structures, which are located along the R503:</p> <table><tr><td>577846, 660328 (B5)</td><td>580528, 660768 (B9)</td><td>585489, 658938 (B13)</td></tr><tr><td>578136, 660412 (B6)</td><td>580926, 660590 (B10)</td><td>587423, 658557 (B14)</td></tr><tr><td>578305, 660459 (B7)</td><td>581400, 660257 (B11)</td><td>588917, 658727 (B15)</td></tr><tr><td>579438, 660719 (B8)</td><td>585268, 659017 (B12)</td><td></td></tr></table> | 577846, 660328 (B5) | 580528, 660768 (B9) | 585489, 658938 (B13) | 578136, 660412 (B6) | 580926, 660590 (B10) | 587423, 658557 (B14) | 578305, 660459 (B7) | 581400, 660257 (B11) | 588917, 658727 (B15) | 579438, 660719 (B8) | 585268, 659017 (B12) | |
| 577846, 660328 (B5) | 580528, 660768 (B9) | 585489, 658938 (B13) | | | | | | | | | | | |
| 578136, 660412 (B6) | 580926, 660590 (B10) | 587423, 658557 (B14) | | | | | | | | | | | |
| 578305, 660459 (B7) | 581400, 660257 (B11) | 588917, 658727 (B15) | | | | | | | | | | | |
| 579438, 660719 (B8) | 585268, 659017 (B12) | | | | | | | | | | | | |
| Report Status/Revision: | Issue/v1.1 | | | | | | | | | | | | |
| Revision Date: | 19 December 2024 | | | | | | | | | | | | |
| Report Author: | Freya Clare Smith | | | | | | | | | | | | |
| Walkover Survey: | Joanne Hughes | | | | | | | | | | | | |
| Technical Reviewer: | Joanne Hughes | | | | | | | | | | | | |
| Copyeditor: | Anne-Marie Hardy | | | | | | | | | | | | |
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Executive Summary

This Cultural Heritage Impact Assessment (CHIA) was commissioned by Ecopower Development Ltd who are in the process of submitting a Section 146B Alteration application for the approved Upperchurch Windfarm Grid Connection (UWF GC) development (ABP-306204-19) sited in north Tipperary close to Newport town.

The Proposed Alterations include a 4.9km alternative grid connection route (including associated new access roads) located partly along existing public roads and farm tracks, and partly off-road in agricultural lands; four grid connection route diversions around bridges into adjacent agricultural/ forestry lands; and a change in construction methodology at seven locations to install the grid connection via directional drilling underneath six bridges and a masonry culvert. A replacement culvert may also be required at this latter site. All of these works are confined to a 3m-wide Construction Works Area.

The following CHIA has been undertaken to assess the impact of these Proposed Alterations and set out appropriate measures to mitigate any identified impacts on cultural heritage (including archaeological, built/architectural and intangible cultural heritage).

A total of fifty-six (56) cultural heritage receptors have been identified in the defined study area. These comprised nine (9) designated receptors (i.e., those included on statutory/non-statutory heritage lists) and forty-seven (47) undesignated receptors.

The designated receptors include six recorded archaeology sites comprising a bowl-barrow (**CH-01**); an earthwork (**CH-02**); a ringfort that was possibly used as a *cillín* or children's burial ground (**CH-03**); a possible enclosure/feature of non-antiquity (**CH-04**); a children's burial ground (**CH-05**); and a mound (**CH-06**). The remaining three sites include two nineteenth-century road bridges (**CH-07**; **CH-08**), which are Protected Structures; and one former historic demesne (**CH-09**).

The undesignated receptors (**CH-10** to **CH-56**) include sites largely identified from historical Ordnance Survey maps. These include the sites of buildings (**CH-10**; **CH-11**; **CH-14**; **CH-17**; **CH-18**; **CH-24**; **CH-32**; **CH-34**; **CH-38**;); a former village/settlement and associated laneway (**CH-27**); upstanding farm buildings (**CH-25**); other buildings such as a police station (**CH-37**), a creamery (**CH-55**) and a barracks (**CH-56**); sites of lime kilns (**CH-16**; **CH-29**; **CH-49**) and the upstanding remains of a lime kiln (**CH-28**); townland boundaries along watercourse (**CH-15**; **CH-22**; **CH-42**; **CH-46**; **CH-53**) and three other townland boundaries along roads/field boundaries (**CH-19.1**; **CH-19.2**; **CH-23**; **CH-26**); former school grounds (**CH-20**) associated with a charter school on the outskirts of Newport; eight bridges (**CH-30**; **CH-33**; **CH-35**; **CH-36**; **CH-40**; **CH-47**; **CH-48**; **CH-51**); a fording site (**CH-39**); a masonry culvert/watercourse (**CH-44**); the site of a benchmark (**CH-50**); and the site of a well (**CH-54**); as well as six Areas of Archaeological Potential (AAP) (**CH-13**; **CH-21**; **CH-31**; **CH-41**; **CH-45**; **CH-52**), one of which include watercourse (**CH-31**). Additionally, during the walkover survey, a section of limestone kerbing (**CH-12**) was identified along part of Black Road (L2166).

Of the fifty-six (56) cultural heritage receptors, there was no predicted impact on twenty three (23). This includes six (6) bridges previously directly affected by approved works, one (1) of which is a Protected Structure (**CH-08** - Anglesey Bridge). Thirty-three (33) cultural heritage receptors will potentially be affected by the Proposed Alterations. No predicted negative impacts with a Significance of Effect above **Moderate** have been identified. The predicted effects comprise:

- Twenty-four (24) potential direct negative permanent impacts due to ground disturbance works to three (3) designated receptors (**CH-02**; **CH-03**; **CH-04**) and twenty-one (21) undesignated receptors (**CH-13**; **CH-14**; **CH-16**; **CH-17**; **CH-18**; **CH-20**; **CH-21**; **CH-23**; **CH-26**; **CH-27**; **CH-31**; **CH-32**; **CH-41**; **CH-42**; **CH-43**; **CH-44**; **CH-45**; **CH-46**; **CH-52**; **CH-53**; **CH-54**) including predicted direct negative impacts on the river/streambeds of five (5) watercourses (**CH-31**; **CH-42**; **CH-44**; **CH-46**; **CH-53**), three (3) of which run along townland boundaries (**CH-42**; **CH-46**; and **CH-53**).
- Twelve (12) potential direct negative impacts due to proximity of works to four (4) designated receptors (**CH-02**; **CH-03**; **CH-07**; **CH-09**) and eight (8) undesignated (**CH-12**; **CH-19.1/CH-19.2**; **CH-25**; **CH-27**; **CH-30**; **CH-40**; **CH-51**; **CH-56**).
- One (1) potential indirect negative (visual) impact to **CH-02**.

A range of mitigation measures have been set out to mitigate these effects which include:

- Appropriate Protective/Preventative measures for the duration of the onsite works to reduce the risk of accidental damage due to proximity of works to vulnerable cultural heritage receptors (such as **CH-02; CH-03; CH-07; CH-09; CH-12; CH-19.1/CH-19.2; CH-25; CH-27; CH-30; CH-40; CH-51; and CH-56**).
- A programme of Advance Archaeological Works comprising:
 - Recording of cultural heritage receptors where direct impacts cannot be avoided (such as **CH-09/CH-19.1; CH-12; CH-19.2**).
 - Where feasible, a licensed Geophysical Survey within the impacted zone of the RMP constraints area of Recorded Monument TN031-073---- (**CH-02**). Should this Geophysical Survey not be feasible or where it identifies potential archaeological anomalies licensed Advance Targeted Archaeological Testing should be undertaken. Where no potential archaeological anomalies are identified, licensed Archaeological Monitoring of construction works is considered appropriate within this area.
 - Wade/Dive and Metal Detection Surveys at four watercourses (**CH-31; CH-42; CH-46; CH-53**) and potentially at **CH-15, CH-22** and **CH-44** should instream works be required.
- Archaeological Monitoring of all ground disturbance/instream works at affected sites (**CH-03; CH-04; CH-13; CH-14; CH-16; CH-17; CH-18; CH-20; CH-21; CH-23; CH-26; CH-27; CH-31; CH-32; CH-41; CH-42; CH-43; CH-44; CH-45; CH-46; CH-52; CH-53; CH-54**) and where applicable at **CH-02** (see above).
- Depending on the results of the Geophysical Survey, Archaeological Testing and Archaeological Monitoring, further mitigation (such as preservation *in situ* and/or preservation by record (archaeological excavation) may be required.
- The location of any proposed geotechnical ground/site investigation works (boreholes, trial pits, slit trenches etc) for the Proposed Alterations should be reviewed in advance by a suitably qualified archaeologist to determine whether any cultural heritage mitigation (such as Archaeological Monitoring) is required.
- Additionally, cultural heritage Project Design measures and applicable mitigation set out in the EIAR prepared for the approved UWF GC development should be followed.

It should be noted that the National Monuments Service (NMS) was consulted in 2022 with respect to the cultural heritage conditions attached to the approved UWF GC development and following the submission of an agreed method statement/licence application, an archaeological licence was issued by the NMS for archaeological monitoring (licence no. 22E0362). Further consultation will be carried out (as appropriate) with respect to the Proposed Alterations which are the subject of this CHIA. Where archaeological licences are required, adequate time will be built into the programme of works to allow for the preparation of method statements, as well as the processing and issuing of these licences by the NMS.

All recommendations set out in this CHIA are subject to the agreement of the National Monuments Service of the Department of Housing, Local Government and Heritage (DHLGH), the National Built Heritage Service of the DHLGH where applicable, the National Museum of Ireland and the local planning authority where required and should only be carried out in accordance with the necessary approvals. Please note that the statutory and local authorities may issue alternative and/or additional recommendations/conditions.

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Abbreviations and Acronyms

| Abbreviation / Acronym | Definition |
|------------------------|---|
| AAP | Area of Archaeological Potential |
| ABP | An Bord Pleanála |
| AMS | Archaeological Management Solutions |
| ASI | Archaeological Survey of Ireland |
| CAP | Common Agricultural Policy |
| CDP | County Development Plan |
| CHIA | Cultural Heritage Impact Assessment |
| DAHG | Department of Arts, Heritage and the Gaeltacht |
| DAHGI | Department of Arts, Heritage, Gaeltacht and the Islands |
| DHLGH | Department of Housing, Local Government and Heritage |
| DIER | Database of Irish Excavation Reports |
| EIAR | Environmental Impact Assessment Report |
| EDL | Ecopower Development Ltd |
| EPA | Environmental Protection Agency |
| GSI | Geological Survey Ireland |
| GSV | Google Street View |
| HEV | Historic Environment Viewer |
| ITM | Irish Transverse Mercator |
| NIAH | National Inventory of Architectural Heritage |
| NLI | National Library of Ireland |
| NLS | National Library of Scotland |
| NM | National Monument |
| NMI | National Museum of Ireland |
| NMS | National Monuments Service |
| OPR | Office of the Planning Regulator |
| OS | Ordnance Survey |
| PD | Project Design |
| PO | Preservation Order |
| RHM | Register of Historic Monuments |
| RMP | Record of Monuments and Places |
| RPS | Record of Protected Structures |
| SID | Strategic Infrastructure Development |
| SMR | Sites and Monuments Record |
| TCC | Tipperary County Council |
| TÉ | Tailte Éireann |
| TII | Transport Infrastructure Ireland |

| Abbreviation / Acronym | Definition |
|------------------------|--------------------------------------|
| TCFP | Town Centre First Plan |
| UGC | Underground Grid Connection |
| UWF GC | Upperchurch Windfarm Grid Connection |
| ZoN | Zone of Notification |

Coordinate Reference System

All grid coordinates in this report use the Irish Transverse Mercator (ITM) coordinate reference system unless otherwise stated.

1 Introduction

1.1 Project Background

Archaeological Management Solutions (AMS) has been commissioned by Ecopower Development Ltd (EDL) to prepare a Cultural Heritage Impact Assessment (CHIA) for ‘Proposed Alterations’ to the An Bord Pleanála (ABP) approved Upperchurch Windfarm Underground Grid Connection (UWF GC), a Strategic Infrastructure Development (SID), sited in north Tipperary close to the Co. Limerick border (Figure 1).

An Environmental Impact Assessment Report (EIAR) was prepared for the development in 2019 with the cultural heritage components undertaken by Kilkenny Archaeology (Fitzgibbon & Ó Drisceoil 2019a; 2019b; 2019c; 2019d). A separate report on the conservation aspects of Anglesey Bridge, a Protected Structure (TRPS805/NIAH 22403905), was prepared by J. Powell (2019) and included as an appendix to the EIAR. The UWF GC was approved in 2021 (ABP-306204-19) with a number of conditions (see Section 1.3).¹ It forms part of a wider project that includes the Upperchurch Windfarm approved by Tipperary County Council (TCC) in 2014 (TCC Ref. 13/510003; ABP Case Ref. PL22.243040).

The approved UWF GC development comprises a new 110kV electrical substation in the townland of Mountphilips (north of Newport town) and underground 110kV electrical cables connecting this to the approved Upperchurch Windfarm substation located to the east-southeast in the townland of Knockcurraghbola Commons. The approved 110kV Underground Grid Connection (UGC) route is largely located within the existing public road network, which includes a total of 63 watercourse crossings (15 bridges and 48 culverts).

TCC Roads Section has requested that where feasible direct works to the decks of thirteen (13) of these crossing structures, twelve bridges (B1; B2; B5–B9; B11–B15) and one masonry culvert (B10) is avoided. Following feasibility studies, the changes proposed to the approved development by EDL to achieve this include a 4.9km alternate route (including off-road sections) to avoid two (2) bridges and smaller route diversions through adjacent lands/riverbeds to avoid four (4) bridges, as well as associated new access roads; and directional drilling to avoid seven (7) bridges, including a potential replacement culvert at one location, B10 (see Section 1.4 for further details). The proposed changes are to be submitted to ABP for consideration in a request for an alteration to the approved SID under Section 146B of the Planning and Development Act, 2000 (as amended).

The following CHIA has been undertaken to assess the impact of these Proposed Alterations and set out appropriate measures to mitigate any identified impacts on cultural heritage.

¹ See also: <https://www.pleanala.ie/en-ie/case/306204> [Accessed: September 2024].

1.2 Site Location

The UWF GC Proposed Alterations are located in the Slieve Felim to Silvermine Mountain uplands area in north Tipperary, which is a Special Protection Area. This area also has a rich and diverse history of human settlement going back to prehistoric times, as evidenced in the archaeological and historical record (see Section 3). It largely comprises a rugged rural landscape crossed by numerous watercourses located within moderate to steep sided valleys, which are covered by a combination of woodland, heath and agricultural grassland. The largest nearby settlement is Newport town, with smaller settlements located at Upperchurch, Rear Cross and Kilcommon; otherwise, the population is relatively sparse and dispersed across the rural landscape. Nearer to Newport, the topography comprises a more gently rolling pastoral landscape of fields, hedgerows and mature treelines with a number of watercourses.

The approved UWF GC development extends for c.30.5km from the townland of Mountphilips (sited in the more gently rolling pastoral lands c.2km north of Newport town) through the upland area largely along the public road network (c.29.2km). The Proposed Alterations, are confined to a smaller area situated between the northern outskirts of Newport town to the west and Kilcommon to the east (Figure 1; Figure 12; Figure 13). The proposed alternate 110kV UGC route is located partially within existing public roadways and along farm trackways, and partially within agricultural lands, and includes two watercourse crossings (Newport River [also known as the River Mulkear] and Small River). The remaining locations where alterations are proposed are located within the upland region along the R503 between Fanit and Kilcommon townlands and comprise works within the existing roadway for directional drilling launch and reception pits, and a number of off-road sections to avoid bridge structures through adjacent agricultural and forestry lands and across watercourses.

The closest and most significant cultural heritage sites to the Proposed Alterations include two Recorded Monuments, TN031-073--- (earthwork; **CH-02**) and TN037-10--- (ringfort; **CH-03**), and two Protected Structures, TRPS801 (Tooreenbrien Bridge; **CH-07**) and TRPS805 (Anglesey Bridge; **CH-08**), which is also listed on the National Inventory of Architectural Heritage (NIAH 22403905). With respect to the two bridges, direct works to these structures previously approved are now being omitted from the scheme design and the bridges are to be avoided as part of the Proposed Alterations.

The former grounds of a charter school (**CH-20**) and an historic demesne (**CH-09**) listed on the NIAH (NIAH Site ID 764) located on the outskirts of Newport are also sited close to the Proposed Alterations.² A number of other undesignated cultural heritage sites have also been identified within and close to the footprint of the Proposed Alterations (see Section 3).

² The school itself is a Protected Structure (TRPS789) and is listed on the NIAH (NIAH 22311001).

1.3 Planning Background

Alterations are sought to the approved UWF GC development (ABP-306204-19), which is part of a wider project including four other elements – the Upperchurch Windfarm (UWF); UWF Related Works, UWF Replacement Forestry, and UWF Other Activities – that are collectively referred to as the **Whole UWF Project**. The purpose of the approved UWF GC element is to connect the Upperchurch Windfarm substation to a new substation at Mountphilips (which will be connected to the existing overhead line) and thereby export electricity from Upperchurch Windfarm when constructed and operational, to the National Grid (source UWF GC EIAR).³ The UWF GC development was granted approval in 2021 with a number of conditions. Conditions 8 and 9 (reproduced below) relate to cultural heritage:⁴

Condition 8. *All works to protected structures, their curtilage and within their setting shall be supervised on an ongoing basis by a Grade I or II Conservation Architect and undertaken in accordance with the conservation principles contained in the Architectural Heritage Protection Guidelines for Planning Authorities, Oct. 2011.*

Reason: *To protect the architectural heritage on [sic] the area.*

Condition 9. *The developer shall facilitate the archaeological appraisal of the site and shall provide for the preservation, recording and protection of archaeological materials or features which may exist within the site. In this regard, the developer shall:*

- (a) notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development, and*
- (b) employ a suitably qualified archaeologist prior to the commencement of development. The archaeologist shall assess the site and monitor all site development works.*

The assessment shall address the following issues:

- the nature and location of archaeological material on the site, and*
- the impact of the proposed development on such archaeological material.*

A report, containing the results of the assessment, shall be submitted to the planning authority and, arising from this assessment, the developer shall agree in writing with the planning authority details regarding any further archaeological requirements (including, if necessary, archaeological excavation) prior to commencement of construction works. In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

Reason: *In order to conserve the archaeological heritage of the area and to secure the preservation (in-situ or by record) and protection of any archaeological remains that may exist within the site.*

The National Monuments Service (NMS) was consulted in 2022 with respect to these conditions and following the submission of an agreed method statement/licence application, an archaeological

³ Available at: <https://www.pleanala.ie/en-ie/case/306204> [Accessed: October 2024].

⁴ Inspector's Report pp.155–156, available at: <https://www.pleanala.ie/anbordpleanala/media/abp/cases/reports/306/r306204.pdf?r=566965473131>.

licence was issued by the NMS for archaeological monitoring (licence no. 22E0362). Further consultation will be carried out (as appropriate) with respect to the Proposed Alterations which are the subject of this CHIA. Where archaeological licences are required, adequate time will be built into the programme of works to allow for the preparation of method statements, as well as the processing and issuing of these licences by the NMS (see Section 5/Table 7).

1.4 Description of Proposed Alterations

The Proposed Alterations relate to changes to the approved UWF GC development in order to avoid direct works to one masonry culvert (B10) and to the decks of twelve (12) bridges, two (2) of which are located in proximity to Newport town (B1; B2), while the other ten (10) are located along regional road R503 (B5–B9; B11–B15) between the townlands of Fanit to the west and Kilcommon to the east. The Proposed Alterations associated with avoiding works to B1 and B2 will also result in avoidance of works in the vicinity of two further bridges (B3 and B4) where directional drilling was originally proposed as part of the approved UWF GC development.

Detailed descriptions of the Proposed Alterations are set out in the Section 146B application document prepared by EDL (2024) and supported by construction and design information shown in the accompanying detailed site drawings (see Figure 2 to Figure 11). The Proposed Alterations are summarised below in Table 1 and include the following groundworks, which will all be confined to a 3m-wide ‘Construction Works Area’:

- **Alternative 110kV UGC route (4.9km) incorporating seven (7) joint bay chambers** – this will involve the excavation of a trench (c.0.6m wide; and c.1.25m deep) incorporating seven (7) joint bay chambers (J02–J08; typically 6m long, 2.5m wide and 2.3m deep), along a total length of c.4.9km between the L6013 to the west and the R503 to the east. This alternative route comprises c.2km within the public road network (including the L2166 [The Black Road]; L51854; L5185; L2156; L6009; L60091; and the L95032); c.1.1km within agricultural lands in the vicinity of Newport River and Small River; and c.1.8km within existing trackways between the public road network and sections of agricultural land. It will also be necessary to cross the two watercourses (Newport River and Small River) located within the agricultural lands; the proposed methodology is directional drilling underneath the watercourses (where feasible).
- **Diversion of 110kV UGC route at four (4) locations and four (4) associated joint bay chambers** – this will involve the excavation of a trench (c.0.6m wide; and c.1.25m deep) in proximity to four bridge locations (B5; B9; B11; and B14) and four associated joint bay chambers (J15; J19; J20; J31; typically 6m long, 2.5m wide and 2.3m deep) along a combined length of c.480m within adjacent agricultural/forestry lands and through riverbeds (subsequent to upstream/downstream damming and over-pumping).
- **New access roads** – this will involve the construction of four (4) new sections of 3m-wide access roads with a total length of approximately 975m across agricultural lands above the proposed alternative GC trench route (located either side of River Mulkear and Small River); and the construction of four (4) new sections of 3m-wide access roads with a combined total length of c.207m across agricultural/forestry lands above the proposed GC trench diversions in the vicinity of B5, B9, and B11.

- **Directional drilling pits (R503)** – this will involve the excavation of a total of twelve (12) launch/reception pits (c.5m wide; c.2m long; and c.1.5m deep) along the R503 in the vicinity of six bridges (B6, B7, B8, B12, B13; B15). The proposed locations are sited 75m either side of each structures' centre point.
- **Replacement culvert** – one possible replacement culvert may be required at B10, where there is an existing masonry culvert. This is a worst-case scenario should it be found needing or where it is damaged during construction. Replacement would involve instream works with the new culvert installed c.0.3m into the watercourse streambed (following upstream/downstream damming and pumping).

Table 1: Summary of Proposed Alterations.

| Bridge No./Name | Included on RPS/NIAH | ITM | Approved Works | Proposed Alteration |
|--|-------------------------------|----------------|-------------------------------------|--|
| B1 | - | 573124, 663718 | 110kV UGC installed in bridge deck. | Alternative 4.9km 110kV UGC route avoids B1. [i.e., approved works to bridge deck omitted]. |
| B2 [Rockvale Bridge] | - | 573821, 663378 | 110kV UGC installed in bridge deck. | Alternative 4.9km 110kV UGC route avoids B2. [i.e., approved works to bridge deck omitted]. |
| B3 | - | 574377, 662955 | Directional drilling under bridge. | Alternative 4.9km 110kV UGC route avoids B3. [i.e., approved works omitted]. |
| B4 | - | 574187, 662596 | Directional drilling under bridge. | Alternative 4.9km 110kV UGC route avoids B4. [i.e., approved works omitted]. |
| B5 (CH-30) | - | 577846, 660328 | 110kV UGC installed in bridge deck. | Diversion of 110kV UGC route into adjacent lands/riverbed including associated joint bay chamber (J15); and access roads. |
| B6 (CH-33) | - | 578136, 660412 | 110kV UGC installed in bridge deck. | Directional drilling under bridge. |
| B7 (CH-35) | - | 578305, 660459 | 110kV UGC installed in bridge deck. | Directional drilling under bridge. |
| B8 (CH-36) | - | 579438, 660719 | 110kV UGC installed in bridge deck. | Directional drilling under bridge. |
| B9 (CH-40) | - | 580528, 660768 | 110kV UGC installed in bridge deck. | Diversion of 110kV UGC route into adjacent lands/riverbed including associated joint bay chamber (J19); and access roads. |
| B10 (CH-44) | - | 580926, 660590 | 110kV UGC installed in bridge deck. | Directional drilling under bridge; and possible replacement culvert. |
| B11 (CH-07) [Tooreenbrien Bridge] | Protected Structure (TRPS801) | 581400, 660257 | 110kV UGC installed in bridge deck. | Diversion of 110kV UGC route into adjacent lands/riverbed including associated joint bay chamber (J20); and access roads. [The Alteration request avoids direct works to this Protected Structure]. |

| Bridge No./Name | Included on RPS/NIAH | ITM | Approved Works | Proposed Alteration |
|--------------------------------------|---|----------------|-------------------------------------|---|
| B12 (CH-47) | - | 585268, 659017 | 110kV UGC installed in bridge deck. | Directional drilling under bridge. |
| B13 (CH-48) | - | 585489, 658938 | 110kV UGC installed in bridge deck. | Directional drilling under bridge. |
| B14 (CH-51) [Coonmore Bridge] | - | 587423, 658557 | 110kV UGC installed in bridge deck. | Diversion of 110kV UGC route into adjacent lands/riverbed including associated joint bay chamber (J31). |
| B15 (CH-08) [Anglesey Bridge] | Protected Structure (TRPS805) Listed on NIAH BS (22403905) [EIAR Ref. GR12] | 588917, 658727 | 110kV UGC installed in bridge deck. | Directional drilling under bridge. [The Alteration request avoids direct works to this Protected Structure]. |

1.5 Purpose and Scope of the Assessment

1.5.1 Purpose of Assessment

The purpose of this current assessment is to provide a desk-based cultural heritage analysis of the Proposed Alterations with a view to informing recommendations to avoid, prevent and reduce adverse effects to cultural heritage, as well as informing measures to remedy or offset (i.e. compensate for) adverse effects to cultural heritage receptors that cannot be feasibly avoided.

1.5.2 Scope of Assessment

Cultural heritage is a broad term defined as:

A group of resources inherited from the past which people identify, independently of ownership, as an expression of their constantly evolving values, beliefs, knowledge, and traditions. It includes all aspects of the environment resulting from the interaction between people and places through time. [It] is an expression of the lifeways developed by a community and passed on from generation to generation, including customs, practices, places, objects, artistic expression, and values. It includes Archaeological Heritage, Built Heritage, Portable Heritage and other Tangible and Intangible Cultural Heritage, including, but not limited to, history and folklore (TII 2024, 114).

Archaeology is the study of past societies through surviving structures, artefacts and environmental data and is concerned with known archaeological sites and monuments, areas of archaeological potential and underwater archaeology. The Government policy document *Framework and Principles for the Protection of the Archaeological Heritage* states that ‘where it is considered that a proposed development may (due to its location, size, or nature) have archaeological implications, then an archaeological assessment should be carried out’ (DAHGI 1999, 25) and defines archaeological assessment as an investigation aimed at:

- *Gaining a better understanding of a known or suspected archaeological site or monument with particular reference to considering the implications of [the] proposed development for*

such a site or monument.

- *Locating previously unidentified archaeological sites or monuments (or possible ones) prior to the commencement of development works with particular reference to considering the implications of [the] proposed development for such sites or monuments.*

Architectural heritage is an aspect of built heritage that includes structures, buildings, traditional and designed, and groups of buildings, including streetscapes and urban vistas, which are of historical, archaeological, artistic, engineering, scientific, social or technical interest, together with their setting, attendant grounds, fixtures, fittings and contents (TII 2024, 113). Architectural/built heritage and archaeology together form ‘tangible cultural heritage’. Folklore and history are aspects of ‘intangible cultural heritage’, which also includes language, musical traditions, traditional crafts and skills, townland names, poetry and so on.

These various aspects of cultural heritage can be designated or previously recorded, meaning that the site/area has either been formally protected and/or inscribed on a statutory register or recorded on a non-statutory list (TII 2024);⁵ or cultural heritage can be undesignated, meaning the site/area has not previously been identified, assessed and/or formally protected.

1.6 Legal and Regulatory Protections for Cultural Heritage

Please refer to Appendix 1 for a summary of the legal and regulatory protections for Cultural Heritage in the Republic of Ireland.

⁵ Includes World Heritage properties; National Monuments; Preservation Orders; Registered and Recorded Monuments; Sites and Monuments Record; Architectural Conservation Areas; Protected Structures; National Inventory of Architectural Heritage; Recorded Wrecks; National Inventory of Intangible Cultural Heritage.

2 Methodology

The methodology used in the preparation of this CHIA is consistent with best practice as set out in the following guidance documents:

- *Architectural Heritage Protection: Guidelines for Planning Authorities*. Department of Arts, Heritage and the Gaeltacht (DAHG) 2011.
- *Guidelines on the Information to be contained in Environmental Impact Assessment Reports*, Environmental Protection Agency (EPA) 2022; and *Advice Notes on Current Practice*, EPA 2003.
- *Guidelines for Cultural Heritage Impact Assessment of TII National Road and Greenway Projects*, PE-ARC-02009. Transport Infrastructure Ireland (TII) 2024a; and *FINAL DRAFT (0.2) Cultural Heritage Impact Assessment of TII Projects – Standard*, PE-ARC-02010, TII 2024b.

The assessment process was divided into two main components: (1) the collation of baseline data comprising desk and field-based surveys (outlined further in Section 2.3 and Section 2.4 below), which were undertaken to define the baseline receiving environment; and (2) the analysis of this data with reference to design proposals to determine any likely and potential impacts/effects and assess their magnitude and significance of effect.

2.1 Impacts/Effects – Type, Quality, Duration

Cultural heritage is a finite, non-renewable resource, the value of which is recognised and protected in international treaties, and national legislation and policies. Its value lies in its contribution to cultural identity, diversity and a sense of place and meaning, and it is increasingly recognised as a vital aspect of life (TII 2024a, 15). As such, any potential change to the cultural heritage environment (including to a receptor's setting which is defined below), as a result of a proposed development (e.g., physical impacts due to ground excavation works or visual intrusions), needs to be categorised and assessed so that an appropriate mitigation strategy can be developed (where feasible) to avoid, prevent, reduce, remedy and/or offset any potential negative effects.

A cultural heritage receptor also includes its 'setting' described in the Burra Charter (2013, Article 1.12) as 'the immediate and extended environment of a place that is part of or contributes to its cultural significance and distinctive character'.⁶ The accompanying explanatory note further outlines that:-

*Setting may include – structures, spaces, land, water and sky; the visual setting including views to and from the place, and along a cultural route; and other sensory aspects of the setting such as smells and sounds. Setting may also include historical and contemporary relationships, such as use and activities, social and spiritual practices, and relationships with other places, both tangible and intangible.*⁷

⁶ Burra Charter 2013, p.3: <https://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf> [Accessed: September 2024].

⁷ *Ibid.*

Setting therefore contributes significantly to our understanding and experience of cultural heritage sites and as such, negative effects on setting can affect their overall archaeological and historical value. Conversely positive effects can contribute to enhancing their value and how they are experienced.

2.1.1 Type and Quality of Effects

The type and quality of likely and potential effects of the proposed development on the cultural heritage environment were categorised in accordance with EPA and TII guidance (EPA 2022, Table 3.4; TII 2024a, 66–68), as follows:

- **Direct:** effects that are directly attributable to the proposed development, where a cultural heritage receptor or its setting is physically located within the development footprint, which would entail its removal in whole or in part.
- **Indirect:** effects that result indirectly from the development, which may occur away from the development such as changes to views to and/or from a cultural heritage receptor.
- **Positive:** changes that enhance or improve the quality of a cultural heritage receptor, including enhancement of setting or amenity.
- **Negative/Adverse:** changes that reduce the quality of a cultural heritage receptor, including total or partial loss of a site and/or monument, visual intrusion, severance, degradation of setting and/or amenity.

2.1.2 Duration of Effects

In accordance with EPA guidance (2022, Table 3.4), the duration of effects was categorised as follows:

- **Temporary:** effects lasting less than a year.
- **Short-term:** effects lasting one to seven years.
- **Medium-term:** effects lasting seven to fifteen years.
- **Long-term:** effects lasting fifteen to sixty years.
- **Permanent:** effects lasting over sixty years.
- **Irreversible:** effects that cannot be undone where the character of a cultural heritage receptor, or part thereof, is permanently lost.

2.2 Study Area

In order to appropriately assess effects on cultural heritage, a study area extending 100m from the Proposed Alterations (3m-wide Constructions Works Area) was applied (see Figure 12 and Figure 13).⁸ This 100m distance was considered a suitable radius to appropriately capture the existing character and condition of the baseline receiving environment and enable the comprehensive identification of impacts on cultural heritage. The study area is located almost wholly within the barony of Owney and Arra with a small section at the eastern end running into the barony of Kilnamanagh Upper; it extends across four (4) civil parishes (Abington; Kilvellane; Kilnarath Templebeg) and includes eighteen (18) townlands or parts thereof (see Appendix 2). The wider cultural heritage contextual setting and

⁸ i.e. a 200m-wide study area.

landscape was also examined in order to give a clearer understanding of the significance of elements within the baseline receiving environment. An overview of this is set out in the ‘Archaeological and Historical Background’ (Section 3.1). This wider contextual review also facilitated an evaluation of the potential for any visual effects to arise on upstanding cultural heritage receptors located beyond the 200m-wide study area; no such potential effects were identified.

2.3 Desktop Survey

The desktop survey comprised the identification and appraisal of all known cultural heritage receptors within the defined study area, including designated sites and undesignated sites previously identified in the 2019 EIAR (Fitzgibbon & Ó Drisceoil 2019b; 2019c; 2019d).⁹ This was undertaken through baseline studies of statutory and non-statutory heritage lists, archives, publications and other sources. A survey of previously unidentified/undesignated cultural heritage was also undertaken with respect to the Proposed Alterations; however, the detailed evaluation of these was confined to a smaller zone within the wider study area (see below). Table 2 lists the main sources that were consulted for the assessment. This was supported by a walkover survey carried out over two days in October 2024 (see Section 2.4), as well as a review of previous assessments carried out for the approved UWF GC.

The cultural heritage receptors identified were mapped using open-source GIS software (QGIS, version 3.28) and were each given a unique ID prefixed with ‘CH’ (Cultural Heritage). With respect to newly identified undesignated cultural heritage sites, it should be noted that while the entire study area was screened, given the scope of this current assessment only those located within or directly adjacent to the footprint of the Proposed Alterations (i.e. those considered potentially susceptible to impact) were assigned a unique ID and included in the subsequent detailed impact assessment.

Table 2: Sources consulted for the desk-based study.

| Type/Category | Source/Digital Archive |
|---|---|
| Designated Cultural Heritage Receptors | <ul style="list-style-type: none"> Record of Monuments and Places (RMP): Statutory list of protected places and monuments, with accompanying constraints maps, published for County Tipperary (North Riding) in 1998.¹⁰ Historic Environment Viewer (HEV): Database of information on sites and monuments based on the RMP and the Sites and Monuments Record (SMR).¹¹ The HEV provides information not only on those archaeological monuments included in the statutory RMP, but also in regard to those that have been identified since the RMP was published (DHLGH & OPR 2021). |

⁹ See Section 1.5 for a description of the difference between designated and undesignated receptors.

¹⁰ <https://www.archaeology.ie/publications-forms-legislation/record-of-monuments-and-places> [Accessed: October 2024].

¹¹ Available at: <https://maps.archaeology.ie/HistoricEnvironment/> [Accessed: September 2024].

| Type/Category | Source/Digital Archive |
|-----------------------------------|---|
| | <ul style="list-style-type: none"> National Monuments Service (NMS) Archive Unit, Archaeological Survey of Ireland (ASI) record files for site and monuments recorded on the RMP and SMR. List of National Monuments in State care: Ownership and Guardianship for Tipperary North (published in 2009).¹² List of Preservation Orders (PO) held by the NMS, published in 2019.¹³ Register of Historic Monuments (RHM). County Tipperary Record of Protected Structures (RPS).¹⁴ National Inventory of Architectural Heritage (NIAH) Building Survey and Survey of Historic Gardens and Designed Landscapes.¹⁵ |
| Background/Supporting Information | <ul style="list-style-type: none"> TCC <i>ePlan</i>; and ABP map viewer.¹⁶ <i>Tipperary County Development Plan [CDP] 2022–2028</i>.¹⁷ <i>Draft Newport Town Centre First Plan [TCFP]</i>.¹⁸ <i>Tipperary Heritage Plan 2017–2021</i>.¹⁹ Placenames Database of Ireland: <i>Logainm.ie</i>.²⁰ <i>A Topographical Dictionary of Ireland</i> (Lewis 1837). Previous Archaeological Investigations: Database of Irish Excavation Reports (DIER) and TII Digital Heritage Collections.²¹ The NMS Virtual Reading Room was also consulted. Archaeological objects: National Museum of Ireland (NMI) Topographical Files and Finds Database available for consultation by appointment in the Antiquities Division, Kildare Street, Dublin 2. The NMI Finds Database (2010) hosted online was also consulted.²² Aerial/satellite/orthophotography and street view imagery via Google Earth Pro and Tailte Éireann's (TÉ) <i>GeoHive Map Viewer</i>.²³ |

¹² Available at: <https://www.archaeology.ie/national-monuments/search-by-county> [Accessed: September 2024].

¹³ <https://www.archaeology.ie/sites/default/files/media/publications/po19v1-all-counties.pdf> [Accessed: September 2024].

¹⁴ Available at: <https://www.tipperarycoco.ie/sites/default/files/2024-08/Volume%204%20Built%20Heritage%20%28updated%20August%202024%29.pdf> [Accessed: September 2024].

¹⁵ Available at: <https://www.buildingsofireland.ie/buildings-search/> [Accessed: September 2024].

¹⁶ <https://www.eplanning.ie/TipperaryCC/searchtypes>; <https://www.pleanala.ie/en-ie/Map-Search> [Accessed: Sept 2024].

¹⁷ Available at: <https://www.tipperarycoco.ie/planning-and-building/development-plan-consultation/tipperary-county-development-plan-2022-2028> [Accessed: September 2024].

¹⁸ Draft v.5 (2024) available at: <https://www.tipperarycoco.ie/sites/default/files/2024-03/Newport-TCFP-5.pdf> [Accessed: September 2024].

¹⁹ Available at: <https://www.tipperarycoco.ie/sites/default/files/2022-07/Tipperary%20Heritage%20Plan.pdf>. A pre-draft consultation survey is currently in progress to inform the development of a new Heritage Plan: <https://www.tipperarycoco.ie/heritage-and-conservation/heritage-plan-consultation> [Accessed: September 2024].

²⁰ Available at: <https://www.logainm.ie/en/> [Accessed: September 2024].

²¹ Available at: <https://excavations.ie/>; <https://repository.dri.ie/catalog/v6936m966> [Accessed: September 2024].

²² Available at: <https://heritagemaps.ie/WebApps/HeritageMaps/> [Accessed: September 2024].

²³ <https://www.arcgis.com/apps/webappviewer/index.html?id=3ae19cc156bf4706a929304bf8fcc4f6> [Accessed: Oct 2024].

| Type/Category | Source/Digital Archive |
|---------------|---|
| | <ul style="list-style-type: none"> Historical maps: TCD Down Survey Project and L Brown Map Collection (Down Survey maps);²⁴ Virtual Record Treasury of Ireland (Taylor and Skinner's Road Maps surveyed in 1777);²⁵ the National Library of Ireland (NLI); and Ordnance Survey (OS) maps (first and second edition six-inch; and first edition 25-inch) via the <i>Irish Townland and Historical Map Viewer</i>, the National Library of Scotland's (NLS) online map viewer, and TÉ <i>GeoHive Map Viewer</i>.²⁶ |

2.4 Walkover Survey

Walkover surveys examine and document the conditions on the ground, facilitating the assessment of potential effects on known/designated cultural heritage receptors and providing additional information relating to previously unrecorded/undesigned cultural heritage, including areas of archaeological potential. They also help inform recommendations and mitigations for any identified impacts. The walkover survey was conducted over two days in October 2024 by Joanne Hughes of AMS. Not all areas were accessible or observable due to constraints such as dense vegetation and safety considerations related to speed of traffic on existing roadways where no footpaths were present.

2.5 Rating and Assessment Criteria

2.5.1 Importance Rating

The importance rating for identified cultural heritage receptors used the five-level system of Very High, High, Medium, Low or Negligible and was based on evidence from the baseline desktop studies, field inspections, professional judgement, and with reference to the guidance factors set out in the TII Guidelines (2024a, 65, Table 5.6).²⁷ These factors include cultural heritage status (the designation and level of statutory protection afforded to a cultural heritage receptor), the condition/preservation, special interest, group value, rarity, visibility in the landscape, fragility/ vulnerability, amenity value and local significance (*ibid.*, 66; DAHG 2011, 24–30).

2.5.2 Magnitude of Impact

The predicted magnitude of impact was rated using the five-level system detailed below in Table 3 (after TII 2024a, 69: Table 5.7). This evaluation system is based on a consideration of the impact type and quality, extent and context, probability, duration and frequency (EPA 2022, 50–52).

²⁴ Available at: <https://downsurvey.tchpc.tcd.ie/down-survey-maps.php>; <https://www.lbrowncollection.com/> [Accessed: September 2024].

²⁵ Available at: <https://virtualtreasury.ie/> [Accessed: September 2024].

²⁶ Available at: <https://osi.maps.arcgis.com/apps/webappviewer/index.html?id=bc56a1cf08844a2aa2609aa92e89497e>; <https://maps.nls.uk/>; <https://www.arcgis.com/apps/webappviewer/index.html?id=3ae19cc156bf4706a929304bf8fcc4f6> [Accessed: Sept 2024].

²⁷ See TII 2024a, Table 5.6 (p.65): <https://www.tiipublications.ie/library/PE-ARC-02009-01.pdf> [Accessed: September 2024].

Table 3: Magnitude of impact on cultural heritage.

| Magnitude of Impact | Criteria/Description |
|----------------------------|---|
| Very High | Major alteration to, or complete loss of a cultural heritage receptor. Effects likely to be experienced at a very large scale; considered permanent and irreversible. |
| High | Notable or long-term change to a cultural heritage receptor. |
| Medium | Moderate or long-term change over a restricted area or a moderate change to a cultural heritage receptor. |
| Low | Minor, short- or medium-term change over a restricted area or a minor change to a cultural heritage receptor. |
| Negligible | Imperceptible change to a cultural heritage receptor. |

2.5.3 Significance of Effect

The predicted significance of effect was evaluated by comparing the predicted magnitude of impact (Section 2.5.2) with the suggested importance of the cultural heritage receptor (Section 2.5.1) using the schedule and definitions of significance set out below in Table 4 (after TII 2024a, 70), which are based on EPA guidance (2022, 50: Table 3.4).

Table 4: Significance of effect on cultural heritage.

| Significance of Effect | Definition |
|-------------------------------|--|
| Profound | An effect which obliterates a cultural heritage receptor of high or very high importance. |
| Very Significant | An effect which, by its character, magnitude, duration or intensity, significantly alters most of an important aspect of the cultural heritage receptor. |
| Significant | An effect which, by its character, magnitude, duration or intensity alters an important aspect of the cultural heritage receptor. |
| Moderate | An effect that alters the character of the cultural heritage receptor in a manner that is consistent with existing and emerging baseline trends. |
| Slight | An effect which causes noticeable changes in the character of the cultural heritage receptor without affecting its importance. |
| Not Significant | An effect which causes noticeable changes in the character of the cultural heritage environment but without significant consequences. |
| Imperceptible | An effect capable of measurement but without significant consequences. |

3 Receiving Environment

The following section provides an outline of the baseline cultural heritage receiving environment (Section 3.1 to Section 3.4) and presents a list of cultural heritage receptors identified within the study for further assessment (Section 3.5).

3.1 Archaeological and Historical Background

Subsections 3.1.1 to 3.1.3, which present a chronological overview of the wider cultural heritage receiving environment are reproduced from Chapter 16 of the approved scheme's EIAR (Fitzgibbon & Ó Drisceoil 2019b, 4–10). Where considered relevant some further details have been inserted and distances have also been indicated with respect to the Proposed Alterations.

3.1.1 Introduction

The monuments of Tipperary were surveyed in the early 1980s by the Archaeological Survey of Ireland. A review of prehistoric archaeology in Tipperary undertaken by Richard Raleigh (1985) highlighted the prehistoric richness of this North Tipperary region, while between 1992 and 1995 the North Munster Project of the Discovery Programme sought to understand settlement patterns over a vast 7000km² area that centred on the lower Shannon catchment (Grogan 1996). An Archaeological Inventory for County Tipperary was published in 2002 (see Farrelly and O'Brien 2002). In 1959, Michael O'Kelly from the Department of Archaeology, University College Cork, excavated one of the most visually impressive monuments in the region, the prehistoric wedge tomb of Baurnadomeeny (RMP TN038-009---), which is located [c.1.2km northwest of the Proposed Alterations] on [a small spur off] the lower southwestern slopes of Mauherslieve (O'Kelly 1959; 1960).

3.1.2 Prehistoric Period (c.8000 BC–AD 400)

While there are no sites within the [UWF GC] study area which can be directly attributed to this period, some 20km to the south, in the townland of Rathjordan, a small group of Early Mesolithic microliths were identified among the finds from an excavation of a ring barrow carried out in the 1940s (Woodman 1986, 10). A precise date for this material is impossible to ascertain other than it was most likely earlier than 6000 BC (Woodman 1986, 10). This might indicate that the wider region, in particular the lower slopes of the western Silvermine Mountains, may have been a location for some of the earliest human settlement in the country.

The Neolithic period sees the first concrete evidence of human settlement in the [UWF GC] study area. While people in the Neolithic were predominantly farmers and lived in rectangular or circular/oval shaped wooden houses, it is their megalithic tombs and cairns which have left a lasting visual impression in the landscape. A court tomb at Shanballydesmond (RMP TN038-013---), [c.750m southwest of the Proposed Alterations], is the oldest known Neolithic monument in Tipperary (Raleigh 1985). Excavations by O'Kelly inside the tomb yielded [human remains representing six individuals and implements including flint arrowheads and some poorly preserved pottery (O'Kelly 1958)]. The tomb itself sits at a high point in the landscape overlooking the Bilboa River. Several other megalithic tombs have been identified within the [UWF GC] study area; however, not enough remains survive to accurately attribute these to a specific period. While they are most likely wedge tombs from the Bronze Age (see below), the possibility remains that they could date to the Neolithic.

Another probable Neolithic monument class is a cairn, and one such monument is c.1.1km north of the [UWF GC] study area [and 1.5km to the northwest of the Proposed Alterations]. This cairn, located at

Baurnadomeeny, (TN038-007001-), is situated on the southwest slope of Mauherslieve and contains a cist burial (TN038-007002).

The Bronze Age period is represented in the area by several main site types: wedge tombs, barrows, standing stones, stone circles/rows and fulachtaí fia. At the beginning of this period in the Early Bronze Age, the tradition of megalithic tomb construction in the region continued with the construction of a number of wedge tombs. These tombs date to between 2300 and 2000 BC and are often associated with Beaker pottery (Halpin & Newman 2006, 9). There are four wedge tombs located in the area (TN039-009---; TN039-008---; TN039-017---; and TN039-016---). There are also three additional megalithic tombs (TN039-050---; TN039-045---; and TN039-037---) which have not been classified in the RMP, but most likely fall within this category. The most prominent and complete wedge tomb [TN039-009----] is located at Knockcurraghbola Commons and sits on the southern slopes of a small knoll. It is situated within the [UWF GC] study area, 380m to the northwest of the eastern end of the grid connection [and 6km to the northwest of the Proposed Alterations]. The tomb is 7m long and decreases in height and width from southwest to northeast.

Elsewhere, excavations by O’Kelly at the Baurnadomeeny wedge tomb [TN038-009---, located c.1.2km northwest of the Proposed Alterations, yielded cremated remains representing 21 individuals (O’Kelly 1960; Raleigh 1985), as well as sherds of prehistoric pottery and a range of stone implements – see Section 3.4]. A distribution analysis of the tombs within the [UWF GC] study area and the immediate surroundings of the Silvermine Mountains revealed that these types of burial monuments were not on the summits of hills as in the Neolithic period but were more generally found on lower lying, sloping land. The wedge tombs are associated with a series of rivers and streams that ultimately flow into the River Shannon.

The Middle Bronze Age period is represented in the [UWF GC] study area by standing stones, stone rows and stone circles. There are at least three examples of standing stones (TN039-004002-; TN039-043---; and TN039-044---), a stone circle (TN039-004001-), and a stone row (TN039-052---) from the area. [The latter is located approximately 100m to the southwest of wedge tomb TN039-009---- noted above]. Distribution and viewshed analyses (carried out in 2012 by the author) of the standing stones within and adjacent to the [UWF GC] study area show a striking pattern: they are overwhelmingly placed at positions which overlook the numerous rivers and streams.

A single fulacht fia, a type of Bronze Age site where water was heated for both domestic and ritual use, was identified within the [UWF GC] study area (TN039-051---) in Knockcurraghbola Commons townland. This was located [c.110m] to the southwest of stone row [TN039-052---] in an area now completely covered by dense mature forestry.

Later burial monuments come in the form of barrows. There are three examples of this monument type in the [UWF GC] study area (TN031-071---; TN037-044---; and TN039-035---). These burial mounds are generally dated to the Late Bronze Age and Early Iron Age but may be earlier. No work has been carried out on any of the examples from within the [UWF GC] study area to more accurately date these monuments. As with the earlier megalithic examples there is a high concentration of these monuments evident in the wider landscape surrounding the development area. One example, a well preserved bowl-barrow [TN031-071----] is located [c.135m to the east of the Proposed Alterations].

3.1.3 Historic Period (c.AD 400–Present)

Occupation continued during the Early Medieval period (c.400–1100 AD) with a large concentration of ringforts to be found on the slopes of the Silvermine Mountains. Ringforts, which are enclosed single farmsteads, are by far the most common medieval archaeological monument surviving in Ireland with over 47,000 examples having been identified across the island (Aalen et al. 2011). This monument type is more commonly found on flat ground and the lower slopes of river valleys. [Within the western extents of the UWF GC] study area there are a total of [eight] ringforts, [one of which (TN037-010---), is sited within the footprint of the Proposed Alterations].

The Early Medieval period also saw the spread of Christianity across Ireland and many churches and monastic centres emerged during this period; however, it is unclear whether any of the four medieval churches located in the [UWF GC] study area have their origins in this period. The significance of holy wells and other sites of ritual significance, such as bullaun stones, can also be traced back to this period. Within the environs of the proposed development there are [two] holy wells ([TN031-047---] and TN031-072---) and [one] bullaun stone (TN037-032002-).

The next significant archaeological period for the region followed the Anglo-Norman conquest in the late-12th century. During this period the western portion of the [UWF GC] study area was part of the kingdom of Limerick (Empey 1985, 76). It was conquered by AD 1206 and the previous Gaelic order was replaced by a new feudal regime that was organised on entirely different principles (Empey 1985, 76). The Anglo-Norman conquest had a massive impact on the landscape of Ireland. With the conquest came a new architecture of power in the form of great stone castles, cathedrals and churches. These great buildings were designed and located to assert the new-found dominance of the Anglo-Normans over the landscape, the people and their traditions. Within the broader landscape of the proposed development area there are a wide array of examples of Anglo-Norman buildings, from early motte and baileys through to the subsequent masonry castles and churches.

Two churches within the [UWF GC] study area [TN031-010001-; TN031-070001-],²⁸ possibly dating from the medieval period, provide evidence for the Anglo-Norman encroachment into the locality. Within the broader region of the Silvermine Mountains there is greater evidence of this conquest, specifically the military aspect. The castles are situated at the foothills of the mountains overlooking the Clodiagh and Owenbeg rivers but not in the upland regions, which would have remained out of Norman influence. These frontier castles (for example, tower house [TN031-048001-, located c.2km to the northwest of the Proposed Alterations]) appear to defend a key routeway into the mountainous regions of North Tipperary.

In the [seventeenth to eighteenth] centuries, country estates known as demesnes emerged across the country. These had their origins in the "Age of Improvement". Demesnes consisted of designed landscapes which were usually enclosed by stone walls and were often entered through elaborate gate lodges and gateways. They often contained an area of managed woodland known as a wilderness; this included pathways for the gentry to stroll through. Trees were planted along the roads in the estate to create shelter belts and avenues along the approaches to the 'Big House'. The houses formed the centrepiece of every demesne and were generally constructed in the Palladian style which drew on aspects of Classical Roman and Greek architecture. Within the [UWF GC] study area, a total of five designed landscapes are shown on the first-edition Ordnance Survey maps. The Mountphilips 110kV Substation is located within the footprint of Mount Philips Demesne [(NIAH Site ID 763)]. Within the immediate vicinity of the substation site are two additional demesnes, Barna Demesne, [NIAH Site ID 763], and Rockvale Demesne, NIAH Site ID 768; while the proposed 110kV UGC route alteration skirts part of the western perimeter of the Fort Emil Demesne, NIAH Site ID 764].

[Nineteenth and twentieth century] agricultural farming and land improvement is evident across the majority of the study area. This was characterised by large scale land enclosure in upland areas and the presence of a significant number of smithies, lime kilns, gravel pits and quarries within the [UWF GC] study area.

In 1973, Ireland's accession to the E.E.C. (E.U.) and the subsequent effects of the Common Agricultural Policy (CAP) had far-reaching consequences for the landscape. CAP promoted intensification and industrial-scale farming which was mainly responsible for the destruction of many of the field-boundaries marked on the first edition [OS] map of the [UWF GC] study area. The land in the area is now a mix of improved agricultural grassland and wet grassland employed for pasture, though coniferous forest also makes up a sizeable proportion (c.30%).

²⁸ The latter (TN031-070001-), is located approximately 180m to the east of the Proposed Alterations.

3.1.4 Newport Town

The western section of the Proposed Alterations is partially situated on the northern outskirts of Newport town roughly 500m to the north of the historic centre, which is located on Newport River (also known as the River Mulkear). The development of the town and surrounding area are closely linked. The draft Newport TCFP notes:²⁹

The settlement developed at a strategic crossing point of the river [likely in the vicinity of bridge TN037-001----] and in close proximity to Castle Waller [TN037-013----].³⁰ [The town] essentially comprises a linear development [...] extending along an east-west road (the present day R503), with some later expansion to the north and south. The more recent development of the town can be traced back to the nineteenth century, when Robert Jocelyn gave land for the first public buildings in Newport, including the old Catholic Church and first Gaol and Courthouse. By 1822 a garrison was located in the town and the Barracks was constructed c.1830. [By the early twentieth century] Newport had become a busy service centre for the rural hinterland, with many shops and businesses [...]. Newport today has retained much of this original character, and the Main Street and Town Square is designated an Architectural Conservation Area. During the early 2000s, residential estates were developed to the north and south of the historic centre, resulting in a more dispersed settlement pattern.

While the nineteenth-century character of the town survives and is well documented, there is scant evidence or surviving remains relating to the period prior to this. The bridge crossing located within the historic centre marks the convergence of three townlands: Tullow (*Tulach*), Newport (*Port Nua*) and Clonbealy (*Cluain Béala*), the former of which (*Tulach*, meaning hill or hillock) is recorded as the old name for the village.³¹ The town's current name appears to partly owe its origins to 'Portanenkasky' or 'Portanekasky' recorded in the area on the seventeenth-century Down Survey barony and parish maps, respectively.³² The seventeenth-century Civil Survey of Tipperary records a ruined watermill in the lands of Tullagh and Portanenkasky and notes that 'a river runs through the lands on which there is a bridge' but 'the land is at present wast' (Simington 1934, 189), hinting back to a time when the area held greater significance. Following this period of neglect, an entry in the Landed Estates Database records a large house in Newport that was noted as the seat of Sir Robert Waller in a late eighteenth-century guidebook, indicating a time of settlement growth following the ruinous conditions recorded in the mid-seventeenth century. And although no longer extant, the Landed Estates Database record notes that this house could equate to the 'site of Newport Ho' and attendant grounds depicted on the 1843 six-inch OS map to the west of the historic town centre.³³

²⁹ Available at: <https://www.tipperarycoco.ie/sites/default/files/2024-03/Newport-TCFP-5.pdf> [Accessed: September 2024].

³⁰ Located c.3.3km east of Newport's historic centre and c.1.4km northeast of the Proposed Alterations study area; the Waller family played a key role in the early development of the town and surrounding area.

³¹ See: <https://www.logainm.ie/en/1416786> [Accessed: September 2024].

³² Available at: <https://www.lbrowncollection.com/owny-arra-parishes/> [Accessed: September 2024].

³³ See: <https://landedestates.ie/property/4914> [Accessed: October 2024].

3.1.5 Historic Bridges

Two of the ten bridge structures along the R503 where alterations to the approved UWF GC development are proposed are Protected Structures. These include Tooreenbrien Bridge (TRPS801; B11; **CH-07**) spanning the Clare River, which runs along the townland boundary between Tooreenbrien Lower and Reardnogy Beg; and Anglesey Bridge (TRPS805; B15; EIAR Ref. GR12; **CH-08**) spanning the Bilboa River, which runs along the townland boundary between Foildarragh and Kilcommon. The latter (Anglesey Bridge) is also listed on the NIAH (22403905). Tooreenbrien Bridge (TRPS801; B11), a triple-arched road bridge of limestone construct, was built c.1860, while Anglesey Bridge (TRPS805; B15), a double-arched road bridge of sandstone construct, was built at the turn of the nineteenth century. Images and further details about both bridges can be found in Appendix 3 (**CH-07**; **CH-08**). Additionally, a separate report on the conservation aspects of Anglesey Bridge (TRPS805/NIAH 22403905) was prepared as part of the 2019 EIA process by J. Powell (2019). In response to the alterations request by TCC it is now being proposed to omit the approved direct works to these two (2) Protected Structures. The Proposed Alterations include diversion of the 110kV UGC around B11 (**CH-07**) and use of the directional drilling methodology for installation of the 110kV UGC underneath B15 (**CH-08**).

Bridges are also depicted on historical OS mapping at the remaining eight locations where alterations to the approved UWF GC development are proposed: B5–B9; B12–B14 (Figure 14 to Figure 21). An examination of Google Street View (GSV), supported by the inspection during the walkover survey, indicates visible upstanding fabric of potential built heritage significance/interest at six of these locations (B5–B8; B12; B14). Not all aspects were observable due to vegetation and other constraints, and as such there could be further extant fabric of built heritage significance/interest associated with the bridge superstructures; there is also potential for surviving subsurface foundations. Watercourses at three of the bridge locations (B6; B9; B14) run along townland boundaries and the historical OS mapping also depicts benchmarks located on four bridges (B5; B7; B9; B14). There is no bridge depicted on historical OS mapping at the location of the remaining watercourse crossing (B10) where alterations to the approved UWF GC development are proposed. There is a masonry culvert currently sited at this location which could date to the nineteenth century or earlier.

Further details about these bridges and the masonry culvert can be found in Appendix 4 (**CH-30** [B5]; **CH-33** [B6]; **CH-35** [B7]; **CH-36** [B8]; **CH-40** [B9]; **CH-44** [B10]; **CH-47** [B12]; **CH-48** [B13]; **CH-51** [B14]).

3.2 Cartographic Sources

While part of the study area is shown on two of Taylor and Skinner's late eighteenth-century road maps of Ireland (Nos. 99 & 210),³⁴ and another map in the NLI Longfield Collection dating to between

³⁴ *Taylor and Skinner's Maps of the Roads of Ireland Surveyed 1777* (published 1778). Nos. 99 and 210 available at:

1770 and 1840,³⁵ there is very little detail of the general area shown on these, except with respect to Newport town and the layout of the road network. The former maps published in 1778 show a number of the bigger houses located around Newport together with their respective owners (with the Waller family figuring prominently). And all three maps show a number of landmark buildings such the charter school (TRPS789/NIAH 22311001) located 250m to the west of the Proposed Alterations, its associated grounds (which are located within the study area/site footprint) and Derryleigh Castle (TN037-009---) located roughly 580m to the south of the Proposed Alterations.

It is not until the OS first edition six-inch map (published in 1843) that the study area as a whole is mapped in any great detail (see Figure 14 to Figure 17). These first edition OS map sheets and the later second edition six-inch OS map sheets, which were published in 1904 and 1905 (see Figure 18 to Figure 21), provide invaluable mid-nineteenth and early-twentieth-century ‘snapshots’ of the area, recording elements such as administrative boundaries; the agricultural landscape (including land divisions and settlement patterns); other activities such as quarrying and associated structures (e.g., limekilns); infrastructural elements, such as the road network and watercourse crossings;³⁶ land improvement such as drainage channels; as well as buildings and monuments of antiquity (e.g., standing stones, cromlechs, ringforts, holy wells) and/or vestiges of the past (e.g., ruined castles, churches and houses).

These maps were reviewed in detail as part of this assessment to provide further information about known/previously recorded cultural heritage sites (Appendix 3) and to identify undesignated or previously unrecorded cultural heritage sites (Appendix 4).

3.3 Previous Archaeological Investigations

There is only one previous archaeological investigation recorded in the DIER which is located within the study area. This comprised pre-development testing at the site of a proposed private residential dwelling carried out by D. Sweetman (Licence 16E0450). The site was located in Carrowkeale townland directly north of Recorded Monument TN037-010----, classed as a ringfort (see Appendix 3: **CH-03**). Nothing of archaeological interest was discovered during the excavation of eight trenches across the site (Sweetman 2016).³⁷

A number of archaeological surveys and excavations have been carried out in the wider area which have uncovered evidence from the prehistoric period (see Section 3.1.1 to Section 3.1.3 above; and

<https://virtualtreasury.ie/item/LBC-mid-258>; <https://virtualtreasury.ie/item/LBC-mid-313> [Accessed: September 2024].

³⁵ Available at: <https://catalogue.nli.ie/Record/vtls000302568> [Accessed: September 2024].

³⁶ See Section 3.1.5 (Historic Bridges) for further details about watercourse crossings within the study area.

³⁷ See also: <https://excavations.ie/report/2018/Tipperary/0026219/> [Accessed: September 2024].

Fitzgibbon & Ó Drisceoil 2019b). The DIER also records further previous investigations in the wider surrounding area including numerous pre-development investigations undertaken within the footprint of the M7 that uncovered extensive archaeological remains; the closest point of which is located c.3.5km to the southwest of the study area (Figure 12 and Figure 13).³⁸

3.4 NMI Topographical Files

The NMI Topographical Files and Finds Database were consulted by appointment in October 2024. Records in this archive relate primarily to the discovery and acquisition of archaeological objects by the NMI; however, they also include references to archaeological monuments and excavations. There were no finds recorded from within the study area; however, a range of finds were recorded from Bournadomeeny townland, which is intersected by the study area. These finds were all uncovered during archaeological excavations carried out by O’Kelly at wedge tomb TN038-009--- noted above in Section 3.1.2, which is located approximately c.1.2km to northwest of the Proposed Alterations. They include a large quantity of cremated human bone, prehistoric pottery sherds, flint and chert tools, flint debitage and other stone objects (NMI Ref E734.1 to E734.33; E734.51 to E734.58).

3.5 Cultural Heritage Receptors

Fifty-six (56) cultural heritage receptors have been identified in the study area; nine (9) designated and forty-seven (47) undesignated receptors (see Figure 22 to Figure 25; Plate 1 to Plate 8; and Table 5).³⁹ Entries highlighted green in Table 5 indicate receptors where there is a potential impact predicted (see Section 4).

The designated receptors include six recorded archaeological sites comprising a bowl-barrow (**CH-01**); an earthwork (**CH-02**); a ringfort that was possibly used as a *cillín* or children’s burial ground (**CH-03**); a site listed as a redundant record on the SMR and described as a possible enclosure or feature of non-antiquity in the NMS ASI record file (**CH-04**); a children’s burial ground (**CH-05**); and a mound (**CH-06**). The remaining three sites include two nineteenth-century road bridges (**CH-07**; **CH-08**), which are Protected Structures (one of which (**CH-08**) is also listed on the NIAH); and one former historic demesne (**CH-09**).

The undesignated cultural heritage receptors (**CH-10** to **CH-56**) include sites largely identified from historical OS maps including a former village/settlement and associated laneway, dispersed dwellings and farm buildings, and other buildings such as a barracks, a police station, school, and a creamery (some of which still have extant remains); lime kilns; townland boundaries; bridges; benchmarks; a

³⁸ For example, see DIER map search: <https://excavations.ie/mapsnew/> [Accessed: September 2024].

³⁹ See Section 1.5 for a description of the difference between designated and undesignated receptors.

well; former school grounds associated with a charter school on the outskirts of Newport; and a fording site; as well as a number of areas of archaeological potential (AAP).⁴⁰ Additionally, during the walkover survey a section of limestone kerbing along part of Black Road (L2166) was identified.

More detailed inventories of all designated and undesignated cultural heritage receptors are provided in Appendix 3 and Appendix 4, respectively.

Table 5: Cultural Heritage receptors identified within the study area.⁴¹

| Receptor No. | Category | Site Type | Status | Reference(s)/ Name | Townland | ITM |
|--------------|-------------------------|---|---|---|---|-------------------|
| CH-01 | Archaeological Heritage | Barrow - bowl-barrow | Recorded Monument/ Listed on SMR | TN031-071---- [EIAR Ref. GL13] | Foildarrig | 572831, 663577 |
| CH-02 | Archaeological Heritage | Earthwork | Recorded Monument Listed on SMR | TN031-073---- [EIAR Ref. GL14] | Clonbealy | 572776, 663172 |
| CH-03 | Archaeological Heritage | Ringfort - rath | Recorded Monument Listed on SMR | TN037-010---- | Carrowkeale; Derryleigh; Kilnacappagh | 574503, 661856 |
| CH-04 | Archaeological Heritage | Possible enclosure/ feature of non- antiquity (NMS ASI record file) Redundant record (SMR) | Constraints area marked on RMP map, but site not listed in RMP manual. Listed on SMR | TN037-037---- [EIAR Ref. GL22] | Kilnacappagh | 574753, 661420 |
| CH-05 | Archaeological Heritage | Children's burial ground | Recorded Monument Listed on SMR | TN039-012---- [EIAR Ref. GL38] | Coonmore | 587489, 658441 |
| CH-06 | Archaeological Heritage | Mound | Listed on SMR | TN039-012001- [EIAR Ref. GL39] | Coonmore | 587493, 658456 |
| CH-07 | Built/Cultural Heritage | Road bridge | Protected Structure | TRPS801 Tooreenbrien Bridge [B11] | Tooreenbrien Lower; Reardnogy Beg | 581400, 660257 |
| CH-08 | Built/Cultural Heritage | Road bridge over watercourse along townland boundary | Protected Structure Listed on NIAH BS | TRPS805 NIAH 22403905 Anglesey Bridge [B15; EIAR Ref. GR12] | Foildarragh | 588917, 658727 |
| CH-09 | Built Heritage | Historic demesne | Listed on NIAH GS | Site ID 764 Fort Emil [EIAR Ref. GR7/ GU16] ⁴² | Mackney (Bourke) | 573356, 662942 |

⁴⁰ Extracts from the historical OS maps are shown in Figure 14 to Figure 21.

⁴¹ Entries highlighted in green indicate receptors where there is a potential impact predicted (see Section 4).

⁴² GR7 is identified as Rockvale Demesne in the EIAR; and GU16 is identified as Fort Emil House in the EIAR.

| Receptor No. | Category | Site Type | Status | Reference(s)/ Name | Townland | ITM |
|--------------|-----------------------------------|--|--|--|-------------------------------|----------------------------------|
| CH-10 | Archaeological Heritage | Two roadside buildings (site of) | Undesignated | - | Foildarrig | 572761, 663835 |
| CH-11 | Archaeological Heritage | Four roadside buildings (site of) | Undesignated | - | Foildarrig | 572666, 663413 |
| CH-12 | Cultural Heritage | Roadside kerbing | Undesignated | - | Foildarrig | 572634, 663307 to 572626, 663274 |
| CH-13 | Archaeological Heritage | Area of archaeological potential (AAP) | Undesignated | - | Foildarrig; Clonbealy | 572547, 662936 to 573083, 663160 |
| CH-14 | Archaeological Heritage | Building (site of) | Undesignated | - | Foildarrig | 572653, 662950 |
| CH-15 | Archaeological/ Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Foildarrig/ Clonbealy | 572690, 663044 |
| CH-16 | Archaeological Heritage | Lime kiln (site of) | Undesignated | - | Clonbealy | 572736, 663110 |
| CH-17 | Archaeological Heritage | Building (site of) | Undesignated | - | Clonbealy | 572849, 663172 |
| CH-18 | Archaeological Heritage | Two buildings and lime kiln (site of) | Undesignated | - | Clonbealy | 572834, 663230 |
| CH-19.1 | Archaeological/ Cultural Heritage | Townland boundary | Undesignated | - | Clonbealy/ Mackney (Bourke) | 573068, 663185 |
| CH-19.2 | Archaeological/ Cultural Heritage | Townland boundary | Undesignated | - | Clonbealy/ Mackney (Bourke) | 573310, 662850 |
| CH-20 | Archaeological/ Cultural Heritage | Former school grounds | Undesignated | Associated TRPS789/ NIAH 22311001 (outside the study area) | Clonbealy | 573083, 663141 to 573173, 662870 |
| CH-21 | Archaeological Heritage | AAP | Undesignated | - | Mackney (Bourke); Carrowkeale | 573305, 662893 to 573914, 662300 |
| CH-22 | Archaeological/ Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Mackney (Bourke)/ Carrowkeale | 573549, 662756 |
| CH-23 | Archaeological/ Cultural Heritage | Townland boundary along road | Undesignated (partially within ZoN of TN037-010) | - | Carrowkeale/ Derryleigh | 574241, 662124 |
| CH-24 | Archaeological Heritage | Three buildings (site of) | Undesignated | - | Derryleigh | 573991, 662231 |
| CH-25 | Built Heritage | Remains of three buildings shown on historical OS maps | Undesignated | - | Derryleigh | 574186, 662132 |
| CH-26 | Archaeological/ Cultural Heritage | Townland boundary | Undesignated (within ZoN of TN037-010) | - | Derryleigh/ Kilnacappagh | 574502, 661839 |

| Receptor No. | Category | Site Type | Status | Reference(s)/ Name | Townland | ITM |
|--------------|---|---|--------------|--------------------|--|----------------------------------|
| CH-27 | Archaeological Heritage | Village/small settlement (with some extant upstanding remains) | Undesignated | - | Kilnacappagh | 574637, 661492 |
| CH-28 | Archaeological Heritage | Lime kiln | Undesignated | [EIAR Ref. GU28] | Kilnacappagh | 574816, 661249 |
| CH-29 | Archaeological Heritage | Lime kiln (site of) | Undesignated | - | Fanit | 577782, 660304 |
| CH-30 | Archaeological/ Built Heritage | Road bridge over watercourse; with benchmark (site of) | Undesignated | [B5] | Fanit | 577846, 660328 |
| CH-31 | Archaeological Heritage | AAP | Undesignated | - | Fanit | 577778, 660313 to 577918, 660352 |
| CH-32 | Archaeological Heritage | Lime kiln and three buildings (site of) | Undesignated | - | Fanit | 577874, 660366 |
| CH-33 | Archaeological/ Cultural/Built Heritage | Road bridge over watercourse along townland boundary | Undesignated | [B6] | Fanit/ Lackamore | 578136, 660412 |
| CH-34 | Archaeological Heritage | Lackamore School (site of) | Undesignated | - | Lackamore | 578158, 660438 |
| CH-35 | Archaeological/ Built Heritage | Road bridge over watercourse; with benchmark (site of) | Undesignated | [B7] | Lackamore | 578305, 660459 |
| CH-36 | Archaeological/ Built Heritage | Road bridge over watercourse | Undesignated | [B8] | Tooreenbrien Upper | 579438, 660719 |
| CH-37 | Built Heritage | Police station/lodge (Lackamore Lodge); and associated structures | Undesignated | [EIAR Ref. GU35] | Tooreenbrien Upper | 579488, 660650 |
| CH-38 | Archaeological Heritage | Two roadside buildings (site of) | Undesignated | - | Tooreenbrien Upper | 579508, 660733 |
| CH-39 | Archaeological Heritage | Ford | Undesignated | [EIAR Ref. GU37] | Tooreenbrien Upper/ Tooreenbrien Lower | 580525, 660762 |
| CH-40 | Archaeological/ Cultural/Built Heritage | Road bridge (site of); with benchmark (site of) | Undesignated | [B9] | Tooreenbrien Upper/ Tooreenbrien Lower | 580528, 660768 |
| CH-41 | Archaeological Heritage | AAP | Undesignated | - | Tooreenbrien Upper; Tooreenbrien Lower | 580489, 660782 to 580586, 660752 |
| CH-42 | Archaeological/ Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Tooreenbrien Upper/ Tooreenbrien Lower | 580531, 660780 |
| CH-43 | Archaeological Heritage | Lime kiln (site of) | Undesignated | - | Tooreenbrien Lower | 580553, 660783 |

| Receptor No. | Category | Site Type | Status | Reference(s)/ Name | Townland | ITM |
|--------------|--|---|--------------|-------------------------------------|--------------------------------------|----------------------------------|
| CH-44 | Archaeological/ Built Heritage | Watercourse running through masonry culvert under roadway | Undesignated | [B10] | Tooreenbrien Lower | 580926, 660590 |
| CH-45 | Archaeological Heritage | AAP | Undesignated | - | Tooreenbrien Upper; Reardnogy Beg | 581385, 660274 to 581469, 660210 |
| CH-46 | Archaeological/ Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Tooreenbrien Upper/ Reardnogy Beg | 581392, 660255 |
| CH-47 | Archaeological/ Built Heritage | Road bridge over watercourse | Undesignated | [B12] | Baurnadomeeny | 585268, 659017 |
| CH-48 | Archaeological/ Built Heritage | Road bridge (site of) over watercourse | Undesignated | [B13] | Baurnadomeeny | 585489, 658938 |
| CH-49 | Archaeological Heritage | Lime kiln (site of) | Undesignated | - | Baurnadomeeny | 585508, 658915 |
| CH-50 | Built Heritage | Benchmark (site of) | Undesignated | - | Baurnadomeeny | 585601, 658890 |
| CH-51 | Archaeological/ Cultural/Built Heritage | Road bridge; with benchmark (site of) | Undesignated | Coonmore Bridge [B14] | Coonmore/ Foildarragh | 587423, 658557 |
| CH-52 | Archaeological Heritage | AAP | Undesignated | - | Coonmore; Foildarragh | 587416, 658521 to 587443, 658567 |
| CH-53 | Archaeological/ Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Coonmore/ Foildarragh | 587395, 658569 |
| CH-54 | Archaeological Heritage | Well (site of) | Undesignated | - | Coonmore | 587396, 658581 |
| CH-55 | Built Heritage | Creamery | Undesignated | Kilcommon Creamery [EIAR Ref. GU48] | Foildarragh | 588911, 658778 |
| CH-56 | Built Heritage | Constabulary barracks | Undesignated | [EIAR Ref. GU49] | Kilcommon | 589037, 658716 |

4 Impact Assessment

This section of the CHIA considers the potential for significant environmental impacts to affect the baseline cultural heritage environment as a direct and/or indirect result of the Proposed Alterations. The baseline conditions are defined as the existing state of the environment and how it may develop in the future in the absence of the development.

The impact assessment is based on the premise that all Proposed Alteration works are confined to a 3m-wide Construction Works Area along the alternative 110kV UGC route, diverted UGC routes at B5, B9, B11 and B14 (including associated joint bay chambers), and at directional drilling pit locations and that directional drilling sections are confined to those described in Section 1.4 above. No works are currently proposed outside this 3m-wide Construction Works Area.

There is no predicted impact on twenty-three (23) cultural heritage receptors that have been identified within the study area including **CH-01; CH-05; CH-06; CH-08; CH-10; CH-11; CH-15; CH-22; CH-24; CH-28; CH-29; CH-33 to CH-39; CH-47 to CH-50; and CH-55** – see Table 5/Appendix 3 for further details about these sites. Six of these receptors (**CH-08; CH-33; CH-35; CH-36; CH-47; CH-48**) comprise bridges where approved direct works are now being omitted (see Table 1 above). The exclusion of these works (i.e., change from approved bridge deck works) removes direct impacts to these structures and reduces the overall impact to upstanding bridge structures along the length of the scheme.

4.1 Likely Impacts

Thirty-three (33) cultural heritage receptors within the study area will potentially be affected by the Proposed Alterations. The impacts, which include direct and indirect negative effects are summarised below and set out in Table 6. The predicted effects comprise twenty-four (24) potential direct negative permanent impacts due to ground disturbance works within the 3m-wide Construction Works Area; twelve (12) potential direct negative impacts due to proximity of works (e.g., as a result of accidental damage caused by machinery movements); and one (1) potential indirect negative (visual) impact. No predicted negative impacts with a Significance of Effect above **Moderate** have been identified.

Potential direct negative permanent impacts due to ground disturbance works are predicted for three (3) designated receptors (**CH-02; CH-03; and CH-04**) and twenty-one (21) undesignated receptors (**CH-13; CH-14; CH-16; CH-17; CH-18; CH-20; CH-21; CH-23; CH-26; CH-27; CH-31; CH-32; CH-41–CH-46; CH-52; CH-53; and CH-54**), including predicted direct negative impacts on the river/streambeds of five (5) watercourses (**CH-31; CH-42; CH-44; CH-46; and CH-53**), three (3) of which run along townland boundaries (**CH-42; CH-46; and CH-53**). Potential direct negative impacts due to proximity of works are predicted for four (4) designated receptors (**CH-02; CH-03; CH-07; and CH-09**) and eight (8) undesignated (**CH-12; CH-19.1/ CH-19.2; CH-25; CH-27; CH-30; CH-40; CH-51; and CH-56**). One (1) potential indirect negative (visual) impact is predicted for designated receptor **CH-02**.

Table 6: Summary of predicted impacts on the receiving baseline environment and proposed mitigation measures.

| Receptor No. | Reference/ Name | Site Type | Approx. Distance | Importance | Type, Quality & Duration of Effect | Magnitude of Effect | Significance of Effect | Proposed Mitigation Type ⁴³ |
|--------------|-----------------------------------|-----------------|---|------------|---|--------------------------------|-------------------------------------|---|
| CH-02 | TN031-073---- [EIAR Ref. GL14] | Earthwork | 0m (within RMP constraints area/SMR ZoN) 10m from upstanding remains. | High | Potential direct negative permanent effect on any extant subsurface remains within RMP constraints area/SMR ZoN. | Potential negligible to medium | Potential imperceptible to moderate | Advance Archaeological Works (see Table 7: nos. 2a and 2d). Archaeological Monitoring (see Table 7: no. 3). Depending on results of Advance Archaeological Works/ Monitoring further mitigation may be required (see Table 7: nos. 4, 5 and 7). |
| | | | | | Potential direct negative effect to upstanding remains due to proximity of proposed works. | Potential negligible to medium | Potential imperceptible to moderate | Protective/preventative measures (see Table 7: no. 1). |
| | | | | | Indirect negative (visual) effect on visible upstanding remains as a result of the new roadway. | Low | Slight | Appropriate mitigation to be agreed in consultation with NMS. |
| CH-03 | TN037-010---- | Ringfort - rath | 0m (within RMP constraints area/SMR ZoN) 0.5–1m from upstanding remains. | High | Potential direct negative permanent effect on any extant subsurface remains within RMP constraints area/SMR ZoN (includes potential to uncover human remains; as well as some very limited potential with respect to townland boundaries CH-23 and CH-26, which both cut through the site). | Potential negligible to medium | Potential imperceptible to moderate | Directional drilling to be avoided within RMP area (Table 7: no. 7). Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |

⁴³ See Table 7 (Section 5) for a full description of proposed recommendations/mitigation measures.

| Receptor No. | Reference/ Name | Site Type | Approx. Distance | Importance | Type, Quality & Duration of Effect | Magnitude of Effect | Significance of Effect | Proposed Mitigation Type ⁴³ |
|------------------------|---|---|-----------------------------------|---|--|---|--|---|
| CH-03 (contin.) | | | | | Potential direct negative effect to upstanding remains due to proximity of proposed works. | Potential negligible to low | Potential imperceptible to slight | Protective/Preventative Measures (see Table 7: no. 1). |
| CH-04 | TN037-037---- [EIAR Ref. GL22] | Possible enclosure/ non-antiquity (ASI file) Redundant record (SMR) | 0m (within RMP constraints area). | Medium | Potential direct negative permanent effect on any extant subsurface remains within RMP constraints area. | Potential negligible to low | Potential imperceptible to slight | Archaeological Monitoring (see Table 7: no. 3); depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |
| CH-07 | TRPS801 Tooreenbrien Bridge [B11] | Road bridge | 1–2m | High | Potential direct negative effect to bridge due to proximity of proposed works. | Potential negligible to medium | Potential imperceptible to moderate | Protective/Preventative Measures (see Table 7: no. 1). |
| CH-09 | NIAH Site ID 764 Fort Emil [EIAR Ref. GR7/GU16] ⁴⁴ | Historic demesne | 1–2m | Medium | Potential direct negative effect on any extant upstanding boundary elements due to proximity of proposed works. | Potential negligible to low | Potential imperceptible to slight | Protective/Preventative Measures (see Table 7: no. 1). Recording, if applicable (see Table 7: no. 2a). |
| CH-12 | - | Roadside kerbing | 1–1.5m | Low | Potential direct negative effect to kerbing due to proximity of proposed works. | Potential negligible to low | Potential imperceptible to slight | Protective/Preventative Measures and Reinstatement if applicable (See Table 7: no. 1). Recording, if applicable (see Table 7: no. 2a). |
| CH-13 | - | Area of archaeological potential (AAP) | 0m | Low to Moderate [excluding overlapping area with CH-02 RMP constraints] | Potential direct negative permanent effect on any extant subsurface remains including subsurface remains associated with CH-16 to CH-18 . [Also potential for subsurface remains associated with CH-02 ; | Potential negligible to low [Excluding overlapping area with CH-02 RMP constraints area/SMR ZoN – | Potential imperceptible to slight [Excluding overlapping area with CH-02 RMP constraints area/ | Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |

⁴⁴ GR7 is identified as Rockvale Demesne in the EIAR; and GU16 is identified as Fort Emil House in the EIAR.

| Receptor No. | Reference/ Name | Site Type | Approx. Distance | Importance | Type, Quality & Duration of Effect | Magnitude of Effect | Significance of Effect | Proposed Mitigation Type ⁴³ |
|--------------|-----------------|---------------------|---------------------|---|--|---|---|--|
| | | | | area/ SMR ZoN – see CH-02 entry for details about this overlapping area] | however, this is considered separately above in the entry for CH-02] | see CH-02 entry for details about this overlapping area] | SMR ZoN – see CH-02 entry for details about this overlapping area] | |
| CH-14 | - | Building (site of) | 0–3m | Low | Potential direct negative permanent effect on any extant subsurface remains. | Potential negligible to low | Potential negligible to slight | Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |
| CH-16 | - | Lime kiln (site of) | 0–25m ⁴⁵ | Low | Potential direct negative permanent effect on any extant subsurface remains. | Potential negligible to low | Potential negligible to slight | Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |
| CH-17 | - | Building (site of) | 0–5m ⁴⁶ | Low | Potential direct negative permanent effect on any extant subsurface remains. | Potential negligible to low | Potential negligible to slight | Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |

⁴⁵ The NLS georeferenced first edition six-inch OS map appears to have a 10–20m inaccuracy in this area and as such it should be noted that the ITM location for this receptor is not accurate, and the distance has been given as a wide range to reflect this.

⁴⁶ As per previous footnote, wide range given for distance due to historical OS map inaccuracy in this area.

| Receptor No. | Reference/ Name | Site Type | Approx. Distance | Importance | Type, Quality & Duration of Effect | Magnitude of Effect | Significance of Effect | Proposed Mitigation Type ⁴³ |
|--------------|-----------------|---------------------------------------|---------------------|-----------------|---|-----------------------------|-----------------------------------|--|
| CH-18 | - | Two buildings and lime kiln (site of) | 0–15m ⁴⁷ | Low | Potential direct negative permanent effect on any extant subsurface remains. | Potential negligible to low | Potential negligible to slight | Archaeological Monitoring (see Table 7: no. 3); depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |
| CH-19.1 | - | Townland boundary | 1m | Low | Potential direct negative effect on any extant upstanding boundary elements due to proximity of proposed works. | Potential negligible to low | Potential negligible to slight | Protective/Preventative Measures (See Table 7: no. 1). Recording, if applicable (see Table 7: no. 2a). |
| CH-19.2 | - | Townland boundary | 1m | Low | Potential direct negative effect on any extant upstanding boundary elements due to proximity of proposed works. | Potential negligible to low | Potential imperceptible to slight | Protective/Preventative Measures (See Table 7: no. 1). Recording, if applicable (see Table 7: no. 2a). |
| CH-20 | - | Former school grounds | 0m | Low | Potential direct negative permanent effect on any extant subsurface remains. | Potential negligible to low | Potential imperceptible to slight | Intermittent Archaeological Monitoring (see Table 7: no. 3); depending on results further mitigation may be required. |
| CH-21 | - | AAP | 0m | Low to Moderate | Potential direct negative permanent effect on any extant subsurface remains. | Potential negligible to low | Potential imperceptible to slight | Archaeological Monitoring (see Table 7: no. 3); depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |

⁴⁷ As per previous footnote, wide range given for distance due to historical OS map inaccuracy in this area.

| Receptor No. | Reference/ Name | Site Type | Approx. Distance | Importance | Type, Quality & Duration of Effect | Magnitude of Effect | Significance of Effect | Proposed Mitigation Type ⁴³ |
|--------------|-----------------|--|---|--|---|--|--|---|
| CH-23 | - | Townland boundary along road | 0m | Low | See entry for CH-03 above | - | - | See entry for CH-03 above |
| CH-25 | - | Remains of three buildings | 0.5–1m | Low | Potential direct negative effect on upstanding boundary elements due to proximity of proposed works. | Potential negligible to low | Potential imperceptible to slight | Protective/Preventative Measures (see Table 7: no. 1). |
| CH-26 | - | Townland boundary | 0m | Low | See entry for CH-03 | - | - | See entry for CH-03 above |
| CH-27 | - | Village/small settlement (with some extant upstanding remains) | 0m (laneway) 0.5–1m (extant remains) | Low [excluding overlapping area with CH-04 RMP constraints area – see CH-04 entry for details about overlapping area] | Potential direct negative permanent effect on any extant subsurface remains, including possible hollow way. Potential direct negative effect on extant upstanding elements along laneway (a possible hollow way) due to proximity of proposed works. | Potential negligible to low [Excluding overlapping area with CH-04 RMP constraints area – see CH-04 entry for details about this overlapping area] Potential negligible to low | Potential imperceptible to slight [Excluding overlapping area with CH-04 RMP constraints area – see CH-04 entry for details about this overlapping area] Potential imperceptible to slight | Intermittent Archaeological Monitoring (see Table 7: no. 3); depending on results further mitigation may be required. Protective/Preventative Measures (see Table 7: no. 1). |
| CH-30 | [B5] | Road bridge; benchmark (site of) | 2–3m | Low | Potential direct negative effect to bridge due to proximity of proposed works. | Potential negligible to medium | Potential imperceptible to moderate | Protective/Preventative Measures (see Table 7: no. 1). |
| CH-31 | - | AAP | 0m | Low | Potential direct negative permanent effect on any extant subsurface remains within lands either side of the watercourse including subsurface remains associated with CH-32 , and on any extant remains/objects within the watercourse. | Potential negligible to low | Potential imperceptible to slight | Advance Archaeological Works (see Table 7: nos. 2c). Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required. |

| Receptor No. | Reference/ Name | Site Type | Approx. Distance | Importance | Type, Quality & Duration of Effect | Magnitude of Effect | Significance of Effect | Proposed Mitigation Type ⁴³ |
|--------------|-----------------|--|------------------|-----------------|--|--------------------------------|-------------------------------------|---|
| CH-32 | - | Site of lime kiln and three buildings | 0–3m | Low | Potential direct negative permanent effect on any extant subsurface remains. | Potential negligible to low | Potential imperceptible to slight | Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required. |
| CH-40 | [B9] | Road bridge (site of); benchmark (site of) | 3–4m | Low | Potential direct negative effect to bridge due to proximity of proposed works. | Potential negligible to medium | Potential imperceptible to moderate | Protective/Preventative Measures (see Table 7: no. 1). |
| CH-41 | - | AAP | 0m | Low | Potential direct negative permanent effect on any extant subsurface remains within lands either side of the watercourse/townland boundary CH-42 including subsurface remains associated with CH-43 . | Potential negligible to low | Potential imperceptible to slight | Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |
| CH-42 | - | Townland boundary along watercourse | 0m | Low to Moderate | Potential direct negative permanent effect on any extant remains/objects within the watercourse. | Potential negligible to low | Potential imperceptible to slight | Advance Archaeological Works (see Table 7: nos. 2c). Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required. |
| CH-43 | - | Lime kiln (site of) | 0–3m | Low | Potential direct negative permanent effect on any extant subsurface remains. | Potential negligible to low | Potential imperceptible to slight | Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |

| Receptor No. | Reference/ Name | Site Type | Approx. Distance | Importance | Type, Quality & Duration of Effect | Magnitude of Effect | Significance of Effect | Proposed Mitigation Type ⁴³ |
|--------------|-----------------------|---|--|-----------------|--|--------------------------------|-------------------------------------|---|
| CH-44 | [B10] | Watercourse running through masonry culvert under roadway | 0m (from possible replacement culvert) | Low | Potential direct negative permanent effect on the culvert and any extant remains/objects within the watercourse either side of the culvert. | Potential negligible to low | Potential imperceptible to slight | Advance Archaeological Works (see Table 7: nos. 2c). Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required. |
| CH-45 | - | AAP | 0m | Low to Moderate | Potential direct negative permanent effect on any extant subsurface remains within lands either side of the watercourse/townland boundary CH-46 . | Potential negligible to low | Potential imperceptible to slight | Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required (see Table 7: nos. 4 and 5). |
| CH-46 | - | Townland boundary along watercourse | 0m | Low | Potential direct negative permanent effect on any extant remains/objects within the watercourse. | Potential negligible to low | Potential imperceptible to slight | Advance Archaeological Works (see Table 7: nos. 2c). Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required. |
| CH-51 | Coonmore Bridge [B14] | Road bridge; with benchmark (site of) | 2–3m | Low | Potential direct negative effect to bridge due to proximity of proposed works. | Potential negligible to medium | Potential imperceptible to moderate | Protective/Preventative Measures (see Table 7: no. 1). |
| CH-52 | - | AAP | 0m | Low to Moderate | Potential direct negative permanent effect on any extant subsurface remains within lands either side of the watercourse/townland boundary CH-53 including subsurface remains associated with CH-54 . | Potential negligible to low | Potential imperceptible to slight | Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may |

| Receptor No. | Reference/ Name | Site Type | Approx. Distance | Importance | Type, Quality & Duration of Effect | Magnitude of Effect | Significance of Effect | Proposed Mitigation Type ⁴³ |
|--------------|------------------|-------------------------------------|--|------------|--|--------------------------------|-------------------------------------|---|
| | | | | | | | | be required (see Table 7: nos. 4 and 5). |
| CH-53 | - | Townland boundary along watercourse | 0m | Low | Potential direct negative permanent effect on any extant remains/objects within the watercourse. | Potential negligible to low | Potential imperceptible to slight | Advance Archaeological Works (see Table 7: nos. 2c). Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required. |
| CH-54 | - | Well (site of) | 0–3m | Low | Potential direct negative effect to site of well. | Potential negligible to low | Potential imperceptible to slight | Protective/Preventative Measures (see Table 7: no. 1). Archaeological Monitoring (see Table 7: no. 3). Depending on results further mitigation may be required. |
| CH-56 | [EIAR Ref. GU49] | Constabulary barracks | 1–2m from proposed directional drilling pit. | Low | Potential direct negative effect to structures along R503 due to proximity of proposed works. | Potential negligible to medium | Potential imperceptible to moderate | Protective/Preventative Measures (see Table 7: no. 1). |

5 Conclusions and Proposed Recommendations/Mitigation

This CHIA evaluated the probability of effects on fifty-six (56) cultural heritage receptors identified in the study area. Of the fifty-six (56) receptors, there was no predicted impact on twenty three (23). This included six (6) bridges previously directly affected by approved works, one (1) of which is a Protected Structure (**CH-08** - Anglesey Bridge). Thirty-three (33) cultural heritage receptors will potentially be affected by the Proposed Alterations. No predicted negative impacts with a Significance of Effect above **Moderate** have been identified (see Table 6).

This section of the CHIA sets out proposed mitigation measures to avoid, prevent, reduce and/or offset adverse effects on the baseline cultural heritage environment as a result of the Proposed Alterations detailed above in Section 4. A range of mitigation measures have been set out to mitigate these impacts which includes protective measures during onsite works to reduce the risk of accidental damage due to proximity of works, Advance Archaeological Works (including recording; licensed Geophysical, Wade/Dive and Metal Detection Surveys; and Archaeological Testing, where applicable), as well as licenced Archaeological Monitoring.⁴⁸ Additionally, cultural heritage Project Design measures and applicable mitigation set out in the EIAR prepared for the approved UWF GC development should be followed.

As previously outlined, the original UWF GC development was granted approval in 2021 with two conditions (nos. 8 and 9) specifically relating to cultural heritage (see Section 1.3 above). The NMS was consulted in 2022 with respect to these conditions and following the submission of an agreed method statement/licence application, an archaeological licence was issued by the NMS for archaeological monitoring (licence no. 22E0362). Further consultation will be carried out (as appropriate) with respect to the Proposed Alterations which are the subject of this CHIA. Where archaeological licences are required, adequate time will be built into the programme of works to allow for the preparation of method statements, as well as the processing and issuing of these licences by the NMS.

The proposed recommendations/mitigation that should be undertaken are detailed in Table 7 below.

Table 7: Proposed recommendations/mitigation measures.

| No./Reference | Recommendation/Mitigation Details |
|---|---|
| (1) Preventative/ Protective Measures/ Reinstatement | <ul style="list-style-type: none"> Appropriate protective measures should be provided for the duration of the proposed works in order to minimise the risk of damage to vulnerable cultural heritage receptors in close proximity to proposed works including but limited to: <ul style="list-style-type: none"> (a) Temporary protective surfaces/barriers. (b) Vibration monitoring. Vulnerable cultural heritage receptors include four (4) designated receptors (CH-02; CH-03; CH-07; CH-09) and nine (9) undesignated receptors (CH-12; CH-19.1/CH-19.2; CH-25; CH 27; CH-30; CH-40; CH-51; CH-54; CH-56). |

⁴⁸ Depending on the results of Advance Archaeological Works/Monitoring further mitigation may be required (i.e., further assessment, preservation *in situ* and/or preservation by record [archaeological excavation]).

| No./Reference | Recommendation/Mitigation Details |
|--|--|
| | <ul style="list-style-type: none"> As an extra precaution all onsite team members should be fully appraised of the extent, nature and significance of vulnerable cultural heritage receptors in close proximity to the proposed works as part of toolbox talks. This measure is to be included in the Construction Environmental Management Plan (CEMP) for the proposed development. With respect to CH-12 (roadside kerbing), it is anticipated that the works will not directly impact the kerbing; however, should it prove not feasible to retain this kerbing <i>in situ</i>, reinstatement of the kerbing at an alternative location should be considered/undertaken in consultation with TCC, and subsequent to recording (see No. 2a below). |
| <p>(2) Programme of Advance Archaeological Works:</p> <p>(a) Recording,</p> <p>(b) Geophysical Survey,</p> <p>(c) Wade/Dive and Metal Detection Survey,</p> <p>(d) Archaeological Testing</p> | <p>A programme of Advance Archaeological Works should be undertaken in order to record upstanding cultural heritage receptors that will be affected and inform where further archaeological mitigation may be required. The programme of Advance Archaeological Works should include:</p> <ul style="list-style-type: none"> 2a) Recording <ul style="list-style-type: none"> A measured, written and photographic record (accompanied by scaled drawings, where considered appropriate) should be undertaken by a suitably qualified heritage specialist in advance of any onsite works for upstanding/extant remains of CH-09/CH-19.1 (demesne/townland boundary), CH-12 (roadside kerbing), and CH-19.2 (townland boundary) where it is not feasible to avoid impacting upstanding/ extant remains. 2b) Geophysical Survey <ul style="list-style-type: none"> Where feasible, a Geophysical Survey should be undertaken in advance of any onsite works within the impacted zone of the RMP constraints area of Recorded Monument TN031-073----- (CH-02), a site classed as an earthwork. This survey should be carried out by a suitably qualified archaeologist under licence to the NMS. The aim of the survey is to ascertain whether any potential anomalies that could be archaeological in nature are present within the impacted zone of the RMP constraints area and the potential extent, nature, and significance of these anomalies with respect to the upstanding remains of CH-02. The results of the survey should be used to inform an appropriate mitigation strategy for the area and/or determine in consultation with the NMS whether any further advance archaeological works (such as Archaeological Testing in advance of onsite works) should be undertaken. Following the completion of works, a report detailing the outcome of the Geophysical Survey should be forwarded to the NMS and other statutory authorities, as per the conditions of the licence. Where no potential archaeological anomalies are identified, licensed Archaeological Monitoring of construction works is considered appropriate within this area (see No. 3 below). 2c) Wade/Dive and Metal Detection Survey <ul style="list-style-type: none"> A Wade/Dive and Metal Detection Survey is recommended in advance of any onsite works at four (4) locations: the watercourse within AAP CH-31; and watercourse/townland boundaries CH-42, CH-46, CH-53. |

| No./Reference | Recommendation/Mitigation Details |
|--------------------------------------|--|
| | <ul style="list-style-type: none"> - Additionally, should instream works be required at CH-15 or CH-22, or in the vicinity of CH-44 (B10) a Wade/Dive and Metal Detection Survey should be carried out at these locations in advance of onsite works. - All required Wade/Dive and Metal Detection Surveys should be carried out by a suitably qualified archaeologist under licence to the NMS. - The aim of the surveys is to ascertain the location, nature, character, extent, date and significance of any surviving remains/objects that may be present within the watercourses with a view to informing any further mitigation that may be required, such as fully measured, written, photographic and drawn records and/or licensed (Section 26) Archaeological Monitoring (see No. 3 below). - Following the completion of works, a report detailing the outcome of the survey should be forwarded to the NMS and other statutory authorities, as per the conditions of the licence. <ul style="list-style-type: none"> • 2d) Archaeological Testing <ul style="list-style-type: none"> - In the event that potential archaeological anomalies are identified during the course of the Geophysical Survey at CH-02 (see No. 2b above) a programme of Advance Targeted Archaeological Testing should be undertaken to determine the nature, character, extent, date and significance of any surviving subsurface archaeological remains present within the site boundary. - Should archaeological features be identified further mitigation will be required which should be agreed in consultation with the NMS (i.e., preservation <i>in situ</i> or preservation by record/archaeological excavation). - All required Archaeological Testing should be carried out by a suitably qualified archaeologist under licence to the NMS. - A Metal Detection Survey should be conducted in tandem with the programme of Archaeological Testing, as appropriate, and carried out by a suitably qualified archaeologist under licence to the NMS. - Following the completion of works, a report detailing the outcome of the Archaeological Testing/Survey should be forwarded to the NMS and other statutory authorities, as per the conditions of the licences. |
| (3) Archaeological Monitoring | <ul style="list-style-type: none"> • Continuous Archaeological Monitoring of all ground disturbance works should be carried out as follows: <ul style="list-style-type: none"> - Within the impacted zone of the RMP constraints area/SMR ZoN of Recorded Monument TN037-010---, a ringfort which may have been used as a cillín (CH-03). The impacted zone is anticipated to be entirely within the public road and a farm track in this area, which have cut through part of the upstanding remains of this monument. The impacted zone also coincides with parts of townland boundaries CH-23 and CH-26. - As a precaution, within the impacted zone of the RMP constraints area of Recorded Monument TN037-037---, a possible enclosure classed as redundant record on the SMR (CH-04); the impacted zone partially overlaps with the laneway (or possible hollow way) element of CH-27 (a former village/settlement shown on historical OS maps). - Within the vicinity of undesignated cultural heritage receptors CH-14; CH-16; CH-17; CH-18; CH-32; CH-43; and CH-44. |

| No./Reference | Recommendation/Mitigation Details |
|---|---|
| | <ul style="list-style-type: none"> - Within AAPs CH-13; CH-21; CH-31; CH-41; CH-45; and CH-52 (including in the vicinity of CH-54). - For all instream works in the watercourse within AAP CH-31; and within watercourses CH-42; CH-44; CH-46; and CH-53 (subsequent to Wade/Dive and Metal Detection Surveys in advance of any onsite works – see No. 2c above). • Archaeological Monitoring will also potentially be required within the RMP constraints area/SMR ZoN of Recorded Monument TN031-073---- (CH-02) – see No. 2b above. • Intermittent Archaeological Monitoring of ground disturbance works should be carried out, as deemed appropriate by the monitoring archaeologist, as follows: <ul style="list-style-type: none"> - Within the impacted area/vicinity of undesignated receptor CH-20 and along the laneway component of CH-27 (a potential hollow way) outside the area overlapping with the RMP constraints area of Recorded Monument TN037-037---- (CH-04). • All Archaeological Monitoring should be carried out by a suitably qualified archaeologist under licence to the NMS, in tandem with licenced metal detection, as appropriate. • The aim of the Archaeological Monitoring is to ascertain the location, nature, character, extent, date and significance of any surviving archaeological remains that may be present within the development footprint at the locations noted above with a view to informing any further mitigation that may be required in consultation with the NMS (i.e. preservation <i>in situ</i> and/or preservation by record). • Following the completion of works, a report detailing the outcome of the Archaeological Monitoring should be forwarded to the NMS and other statutory authorities, as per the conditions of the licences. |
| (4) Preservation <i>in situ</i> | <ul style="list-style-type: none"> • Where feasible, surviving archaeological strata/remains should be preserved <i>in situ</i>. • Proposals for preservation <i>in situ</i> should be reviewed and approved by the NMS in advance. |
| (5) Preservation by Record | <ul style="list-style-type: none"> • Where archaeological remains cannot feasibly be preserved <i>in situ</i>, preservation by record (i.e. full archaeological excavation) will be required. • All required Archaeological Excavation should be carried out by a suitably qualified archaeologist under licence to the NMS. • Following the completion of works, a report detailing the outcome of the Archaeological Excavation/(s) should be forwarded to the NMS and other statutory authorities, as per the conditions of the licence/(s). |
| (6) Geotechnical Ground/Site Investigation | <ul style="list-style-type: none"> • The location of any proposed geotechnical ground/site investigation works (boreholes, trial pits, slit trenches etc) for the Proposed Alterations should be reviewed in advance by a suitably qualified archaeologist to determine whether any cultural heritage mitigation is required. • An appropriate archaeological/cultural heritage strategy should be developed and implemented for proposed geotechnical ground/site investigation works in advance of site works and any necessary archaeological licences put in place. |

| No./Reference | Recommendation/Mitigation Details |
|--|--|
| (7) Mitigation through design | <ul style="list-style-type: none"> Previously approved works to the decks of thirteen bridge structures (see Table 1) are now to be omitted reducing the overall impact to upstanding bridge structures along the length of the scheme. Given the sensitivity of CH-03 (Recorded Monument TN037-010----) and the potential for the presence of human remains, the directional drilling methodology for cable installation will not be carried out within its RMP constraints area/SMR ZoN. The Directional drilling methodology is also to be avoided within the impacted zone of the RMP constraints area/SMR ZoN of Record Monument TN031-073---- (CH-02). |
| (8) 2019 EIAR Project Design Measures | <ul style="list-style-type: none"> Three Project Design (PD) measures are set out in the 2019 EIAR for the approved UWG GC that are relevant to cultural heritage and as such should also be applied to the Proposed Alterations. These are detailed in EIAR Chapter 16 (Fitzgibbon & Ó Drisceoil 2019b) and the EIAR Environmental Management Plan. They include: <ul style="list-style-type: none"> PD05 – <i>restriction of all construction traffic to the construction works area; tracking across any adjacent grounds will not be permitted.</i> PD14 – <i>all initial groundworks within 500m of an RMP or NIAH site, will be monitored by an archaeologist under license from the NMS, to archaeologically record and preserve, either in situ or by record, any structures, features or objects of archaeological significance which may be encountered during the works.</i> PD15 – <i>where excavations occur at culvert replacement locations along the 110kV UGC, excavations will be monitored by an appropriately qualified archaeologist under license from the NMS, the excavated material will be examined for any evidence of archaeological material and metal detected as part of a finds' retrieval strategy.</i> |
| (9) Review | <ul style="list-style-type: none"> Any further proposed design changes and/or changes to the site boundary or 3m-wide Construction Works Area or construction methodology (i.e., directional drilling/open cut trenching) or location of directional drilling/joint bay chamber pits should be reviewed by a suitably qualified archaeologist/heritage specialist to assess cultural heritage impacts as a result of the changes and to set out appropriate mitigation measures for any identified impacts. |

All above recommendations are subject to the agreement of the National Monuments Service of the Department of Housing, Local Government and Heritage (DHLGH), the National Built Heritage Service of the DHLGH where applicable, the National Museum of Ireland and the local planning authority where required and should only be carried out in accordance with the necessary approvals. Please note that the statutory and local authorities may issue alternative and/or additional recommendations/conditions.

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Figures

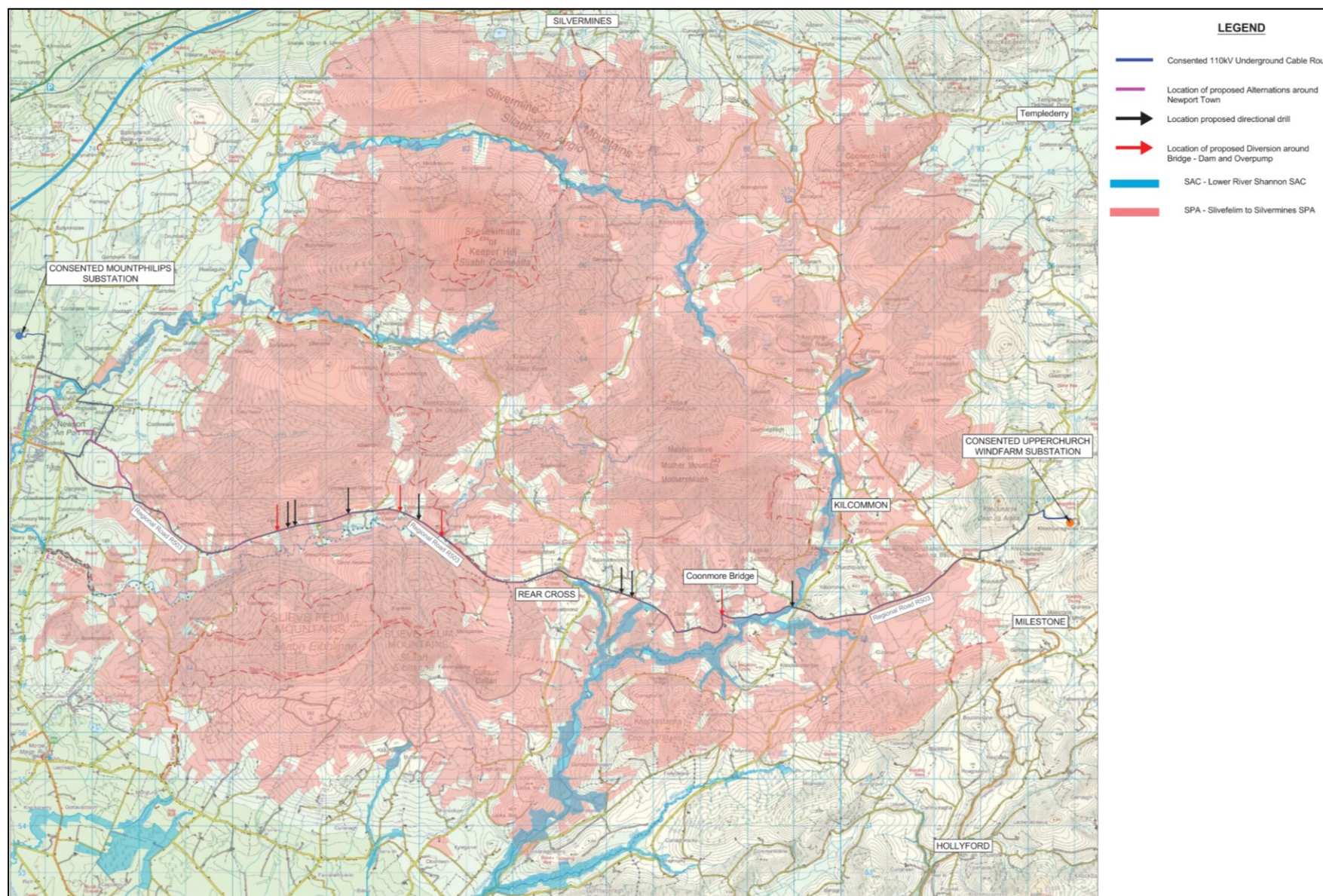


Figure 1: Location of proposed alterations with respect to approved UWF GC development (EDL).

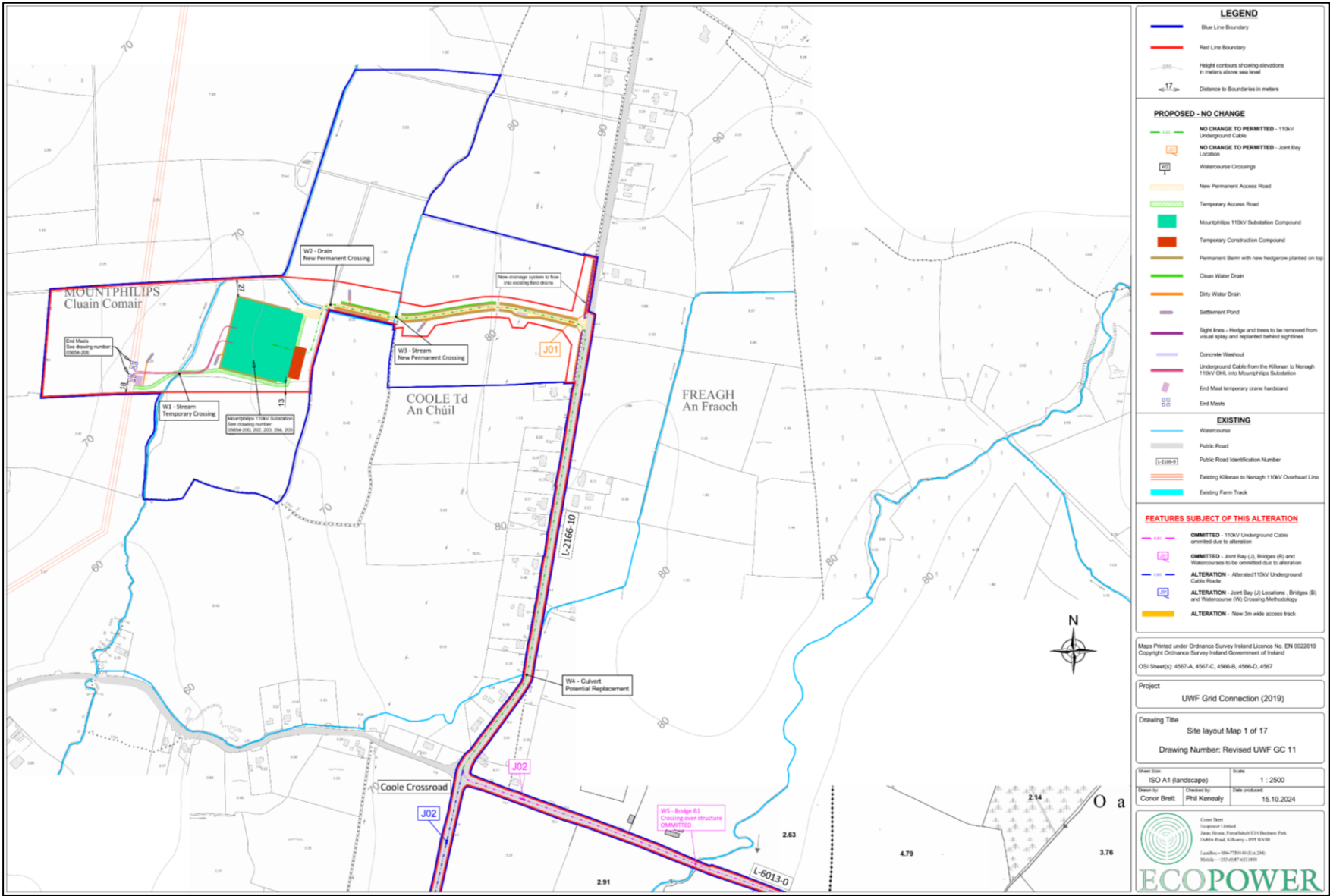


Figure 2: Proposed Alterations (alternate 110kV UGC route and JC02) – site layout, 1 of 10 (EDL).

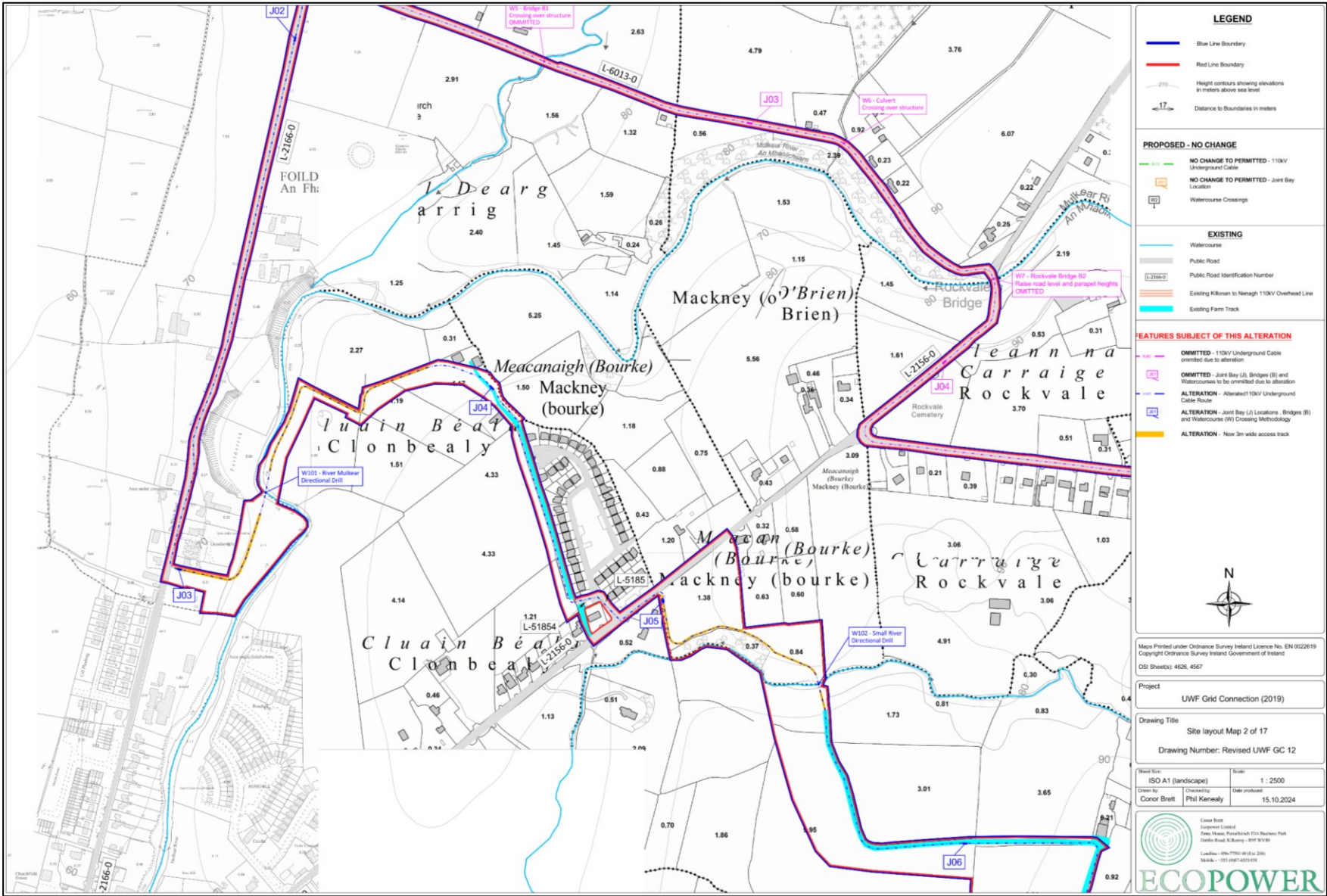


Figure 3: Proposed Alterations (alternate 110kV UGC route and JC02 to JC06) – site layout, 2 of 10 (EDL).



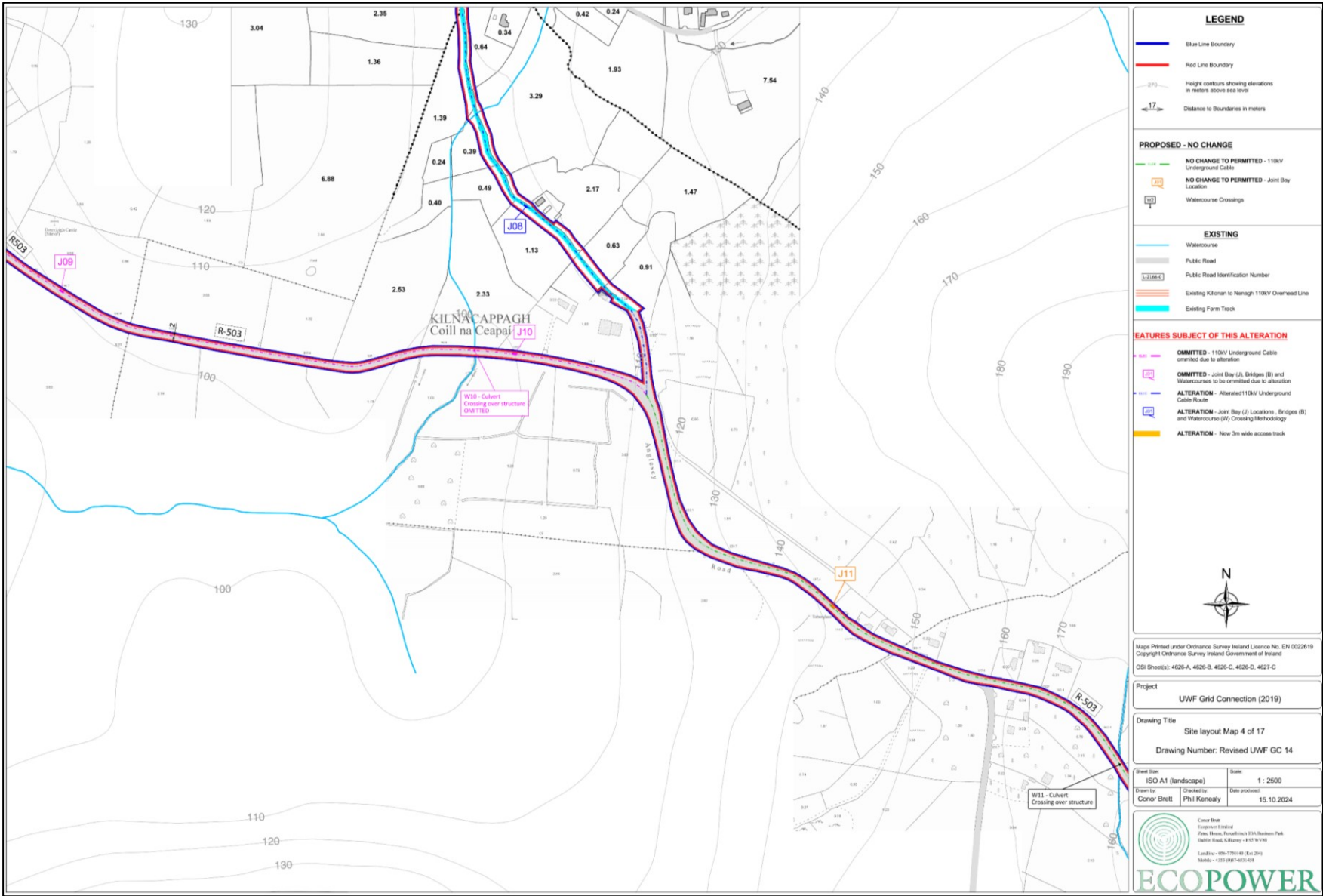


Figure 5: Proposed Alterations (alternate 110kV UGC route and JC08) – site layout, 4 of 10 (EDL).



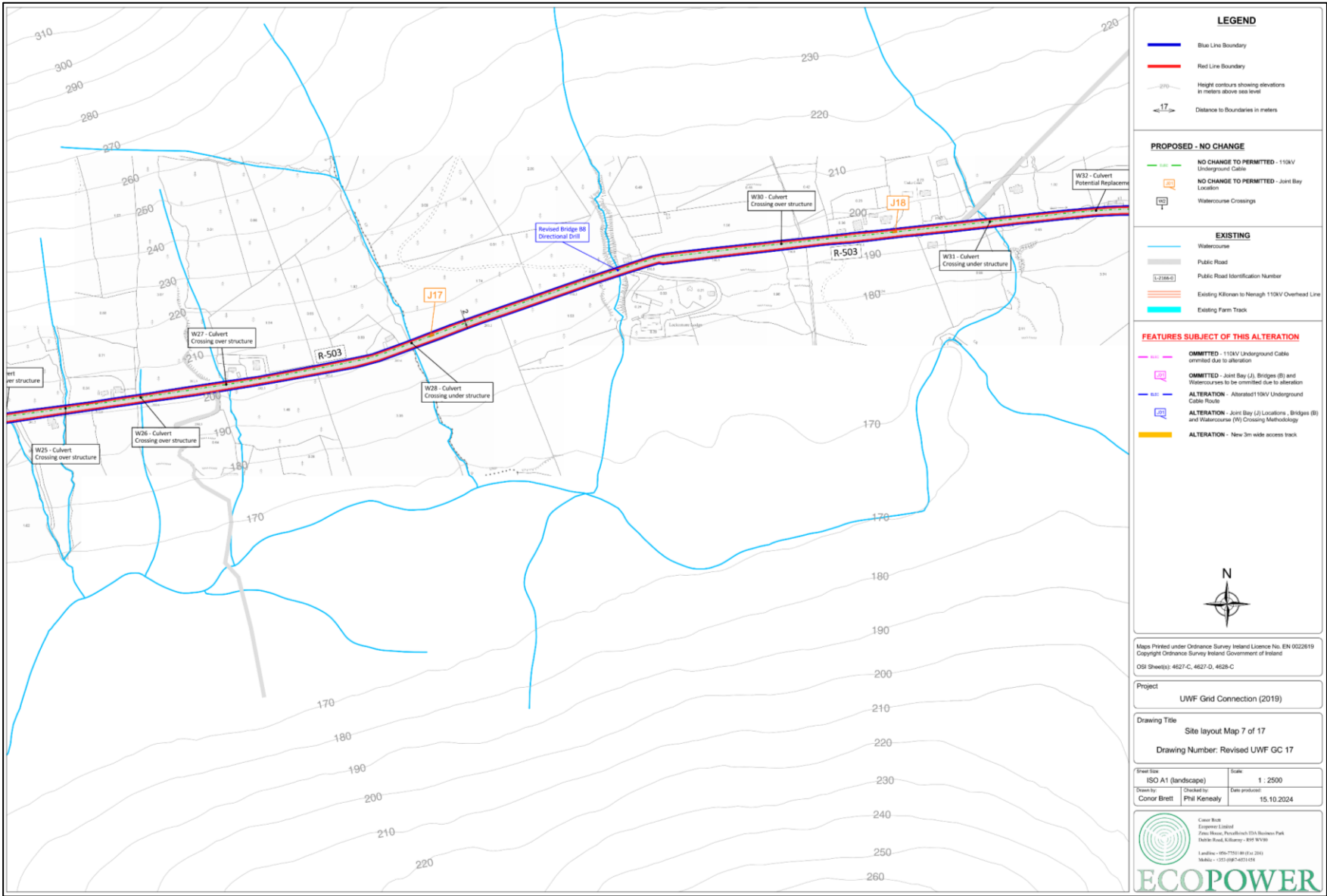


Figure 7: Proposed Alterations (B8) – site layout, 6 of 10 (EDL).

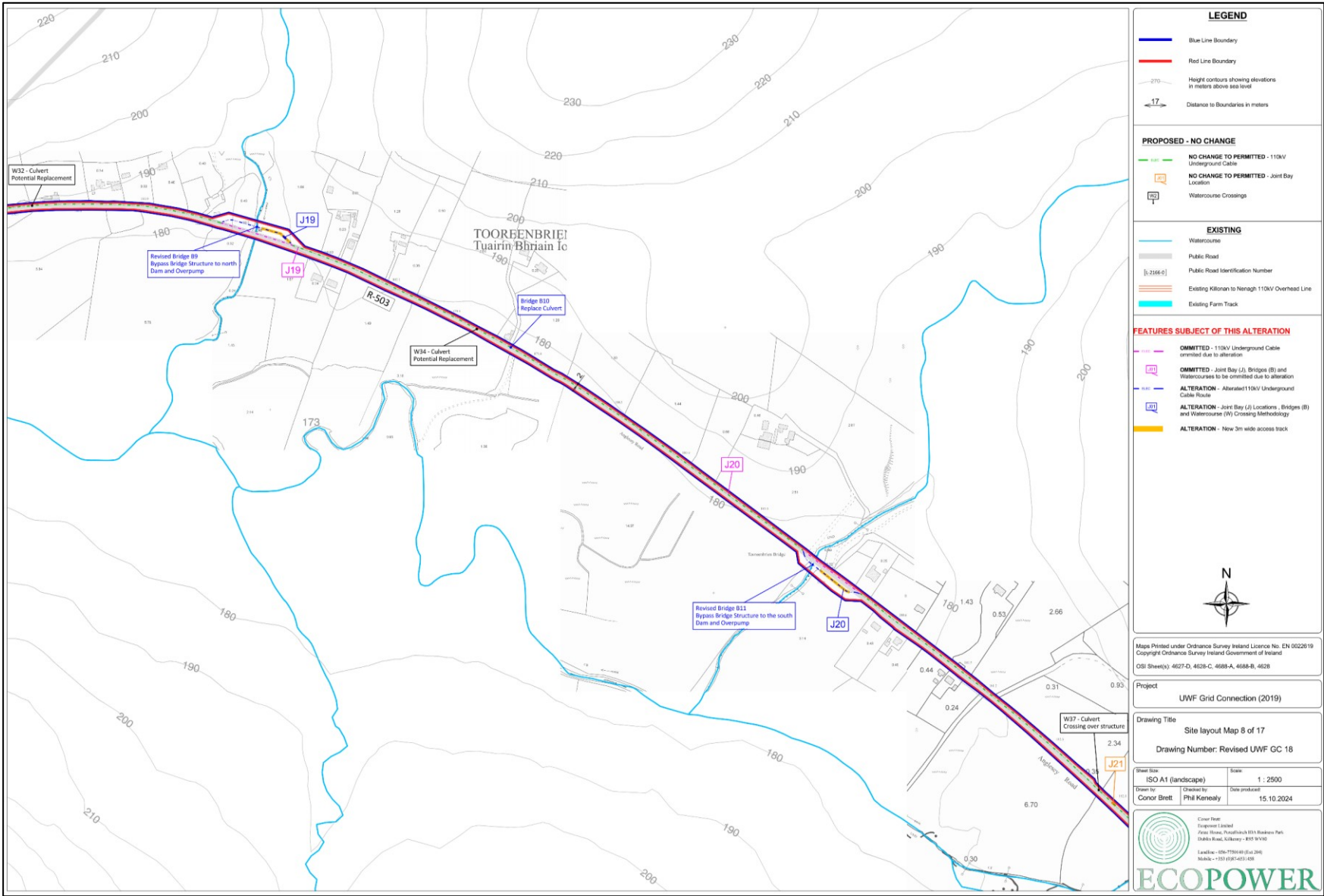


Figure 8: Proposed Alterations (B9 and J19; B10; B11 and JC20) – site layout, 7 of 10 (EDL).

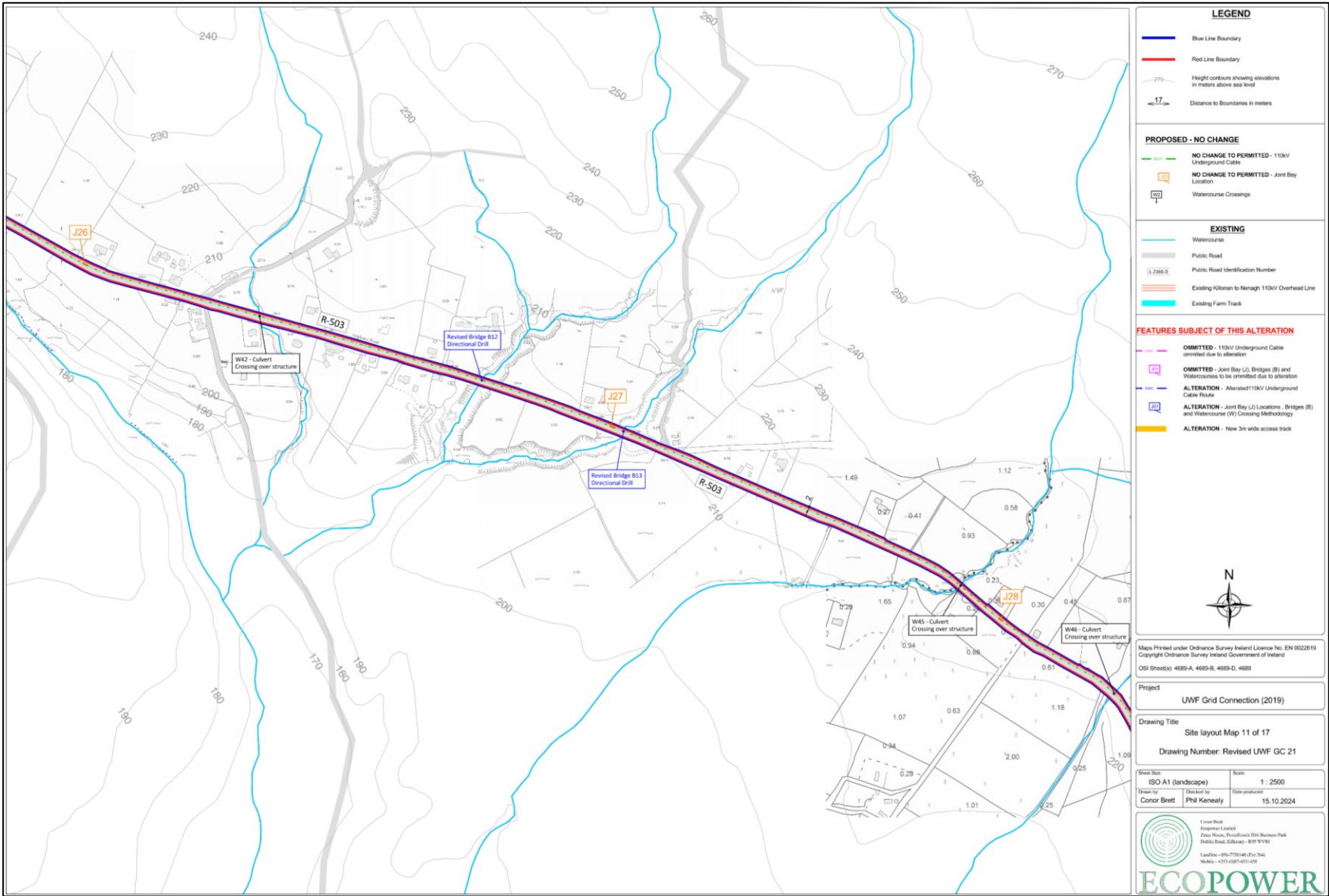


Figure 9: Proposed Alterations (B12; B13) – site layout, 8 of 10 (EDL).

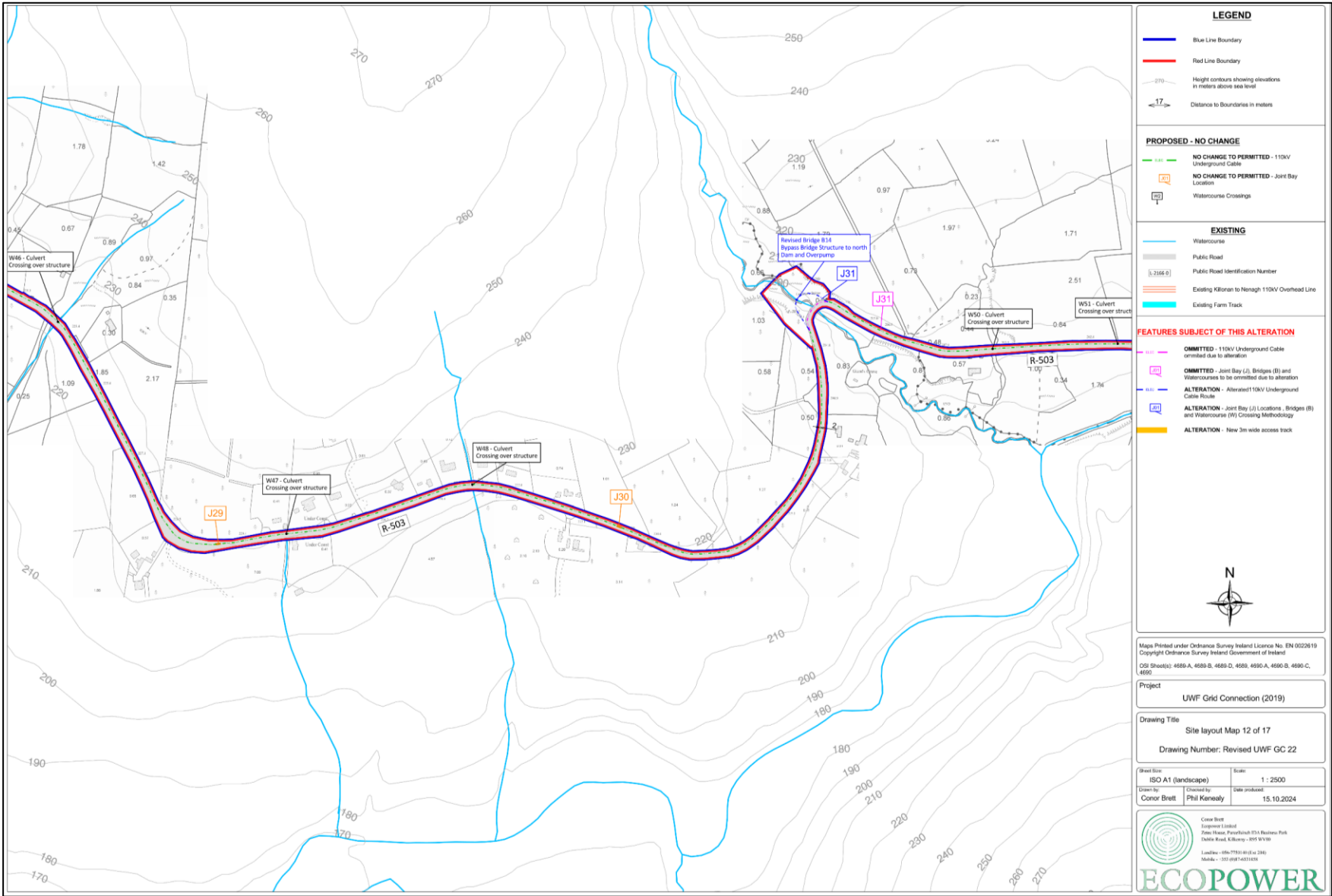


Figure 10: Proposed Alterations (B14 and JC31) – site layout, 9 of 10 (EDL).

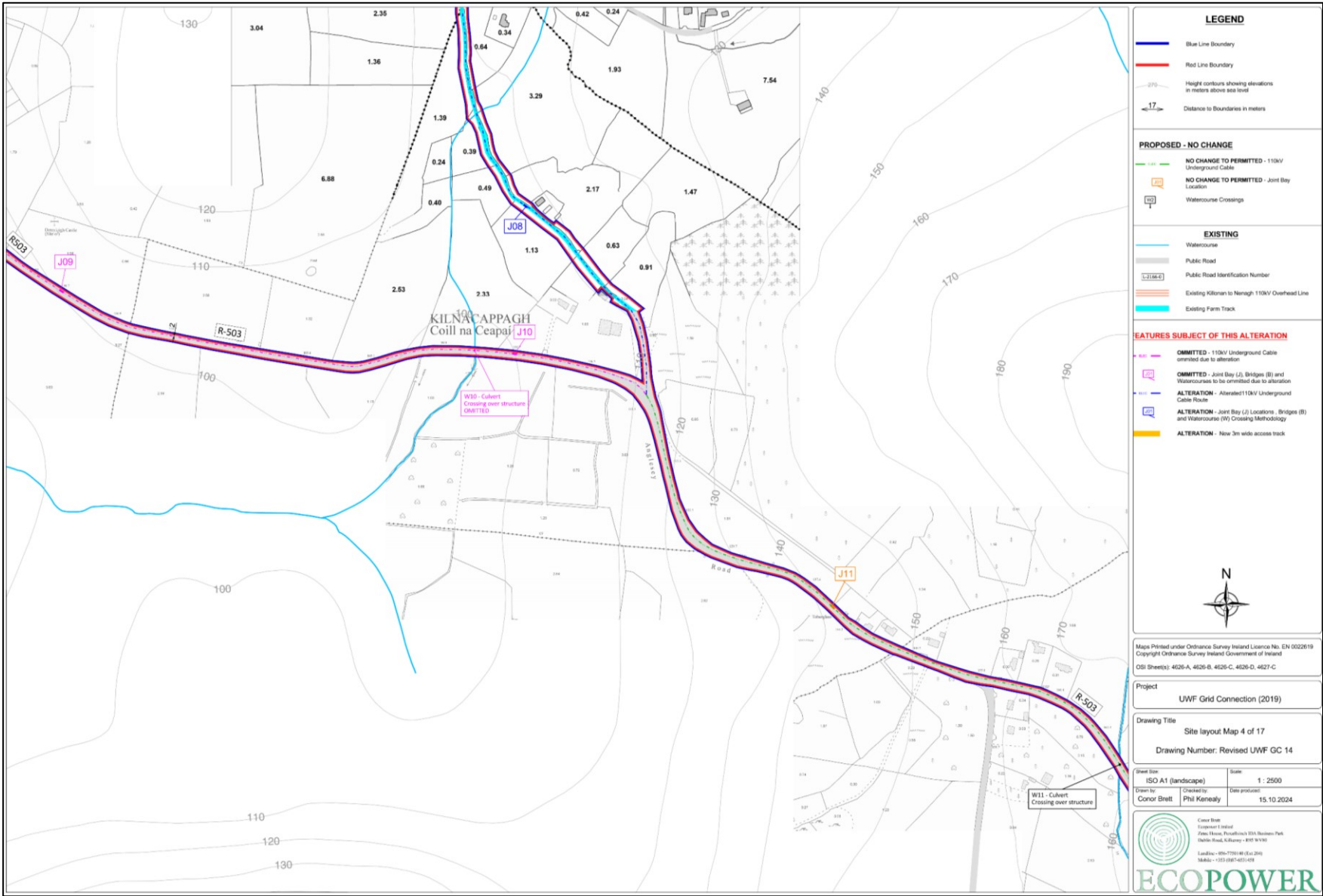


Figure 11: Proposed Alterations (B15) – site layout, 10 of 10 (EDL).

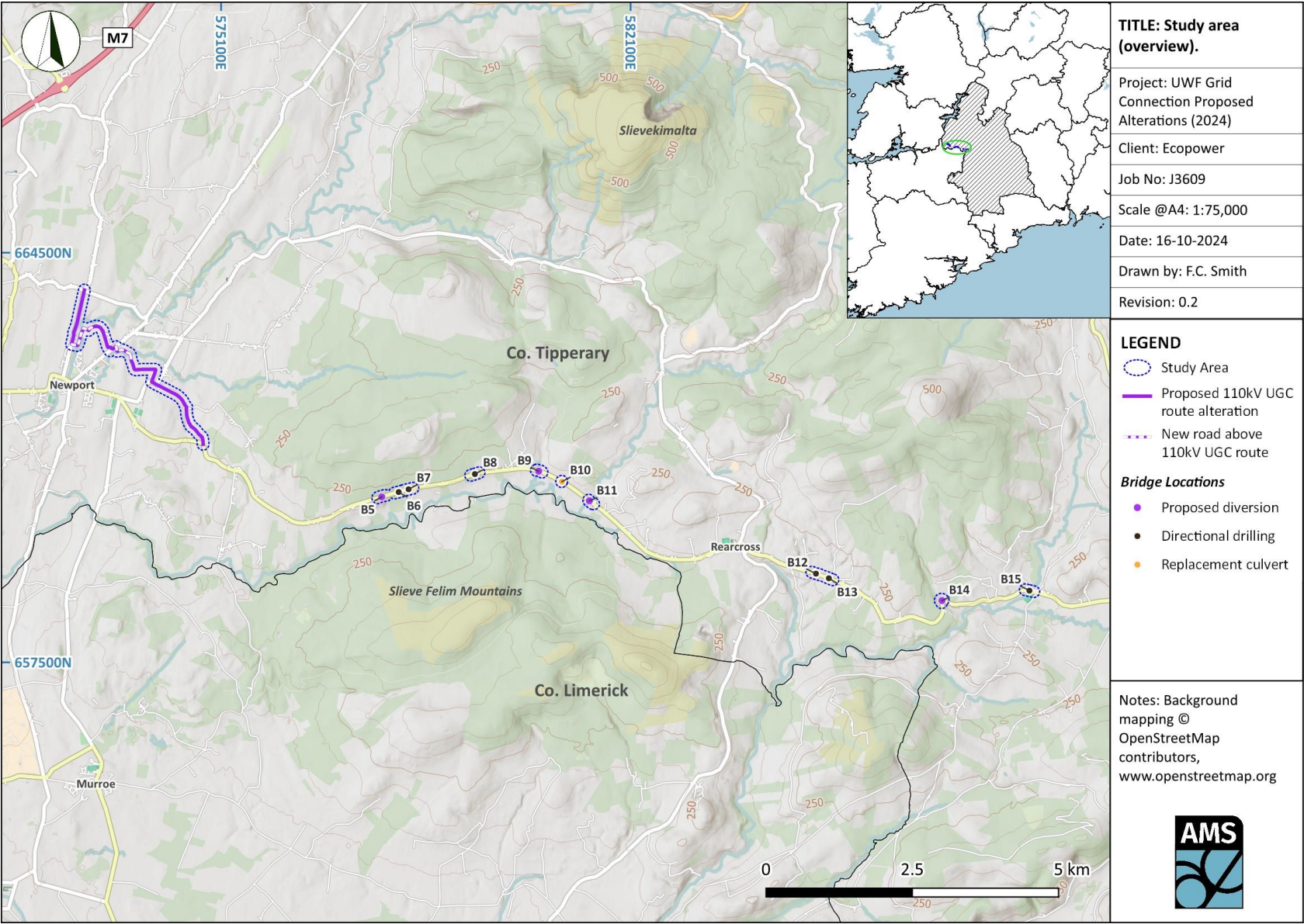


Figure 12: Study area (overview).



Figure 13: Study area (overview) shown on aerial imagery.

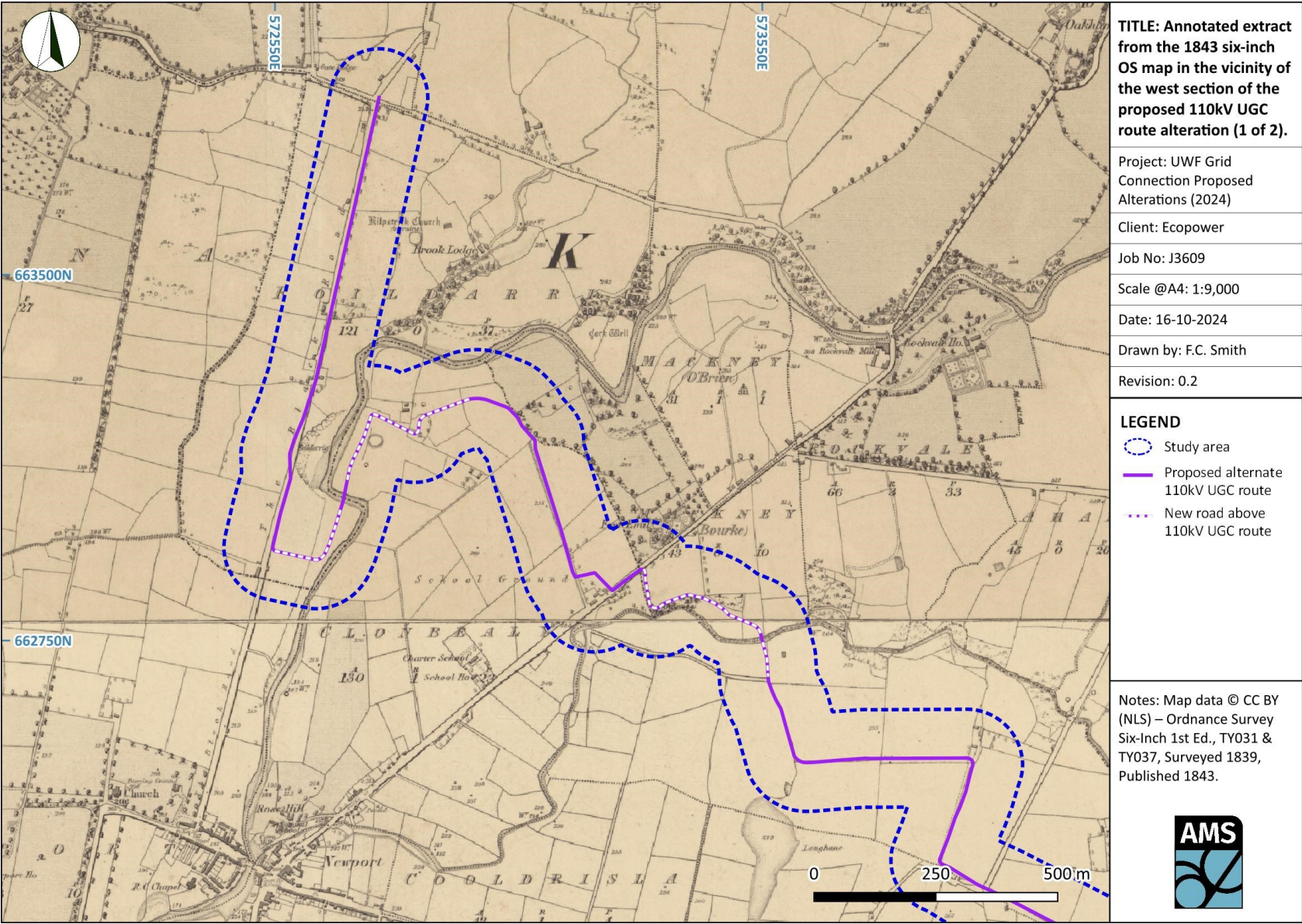


Figure 14: Annotated extract from the 1843 six-inch OS map in the vicinity of the west section of the proposed 110kV UGC route alteration (1 of 2).

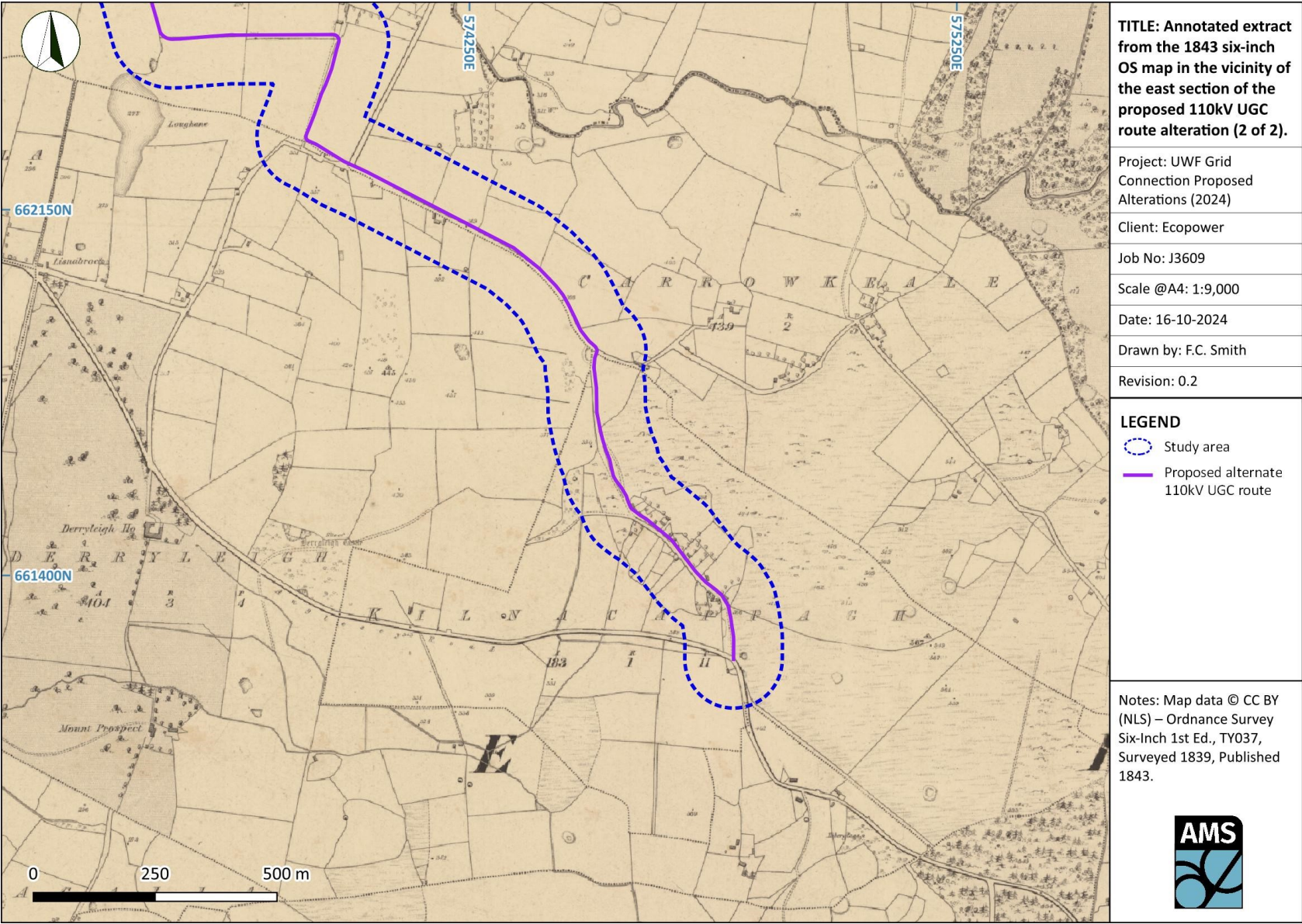


Figure 15: Annotated extract from the 1843 six-inch OS map in the vicinity of the east section of the proposed 110kV UGC route alteration (2 of 2).

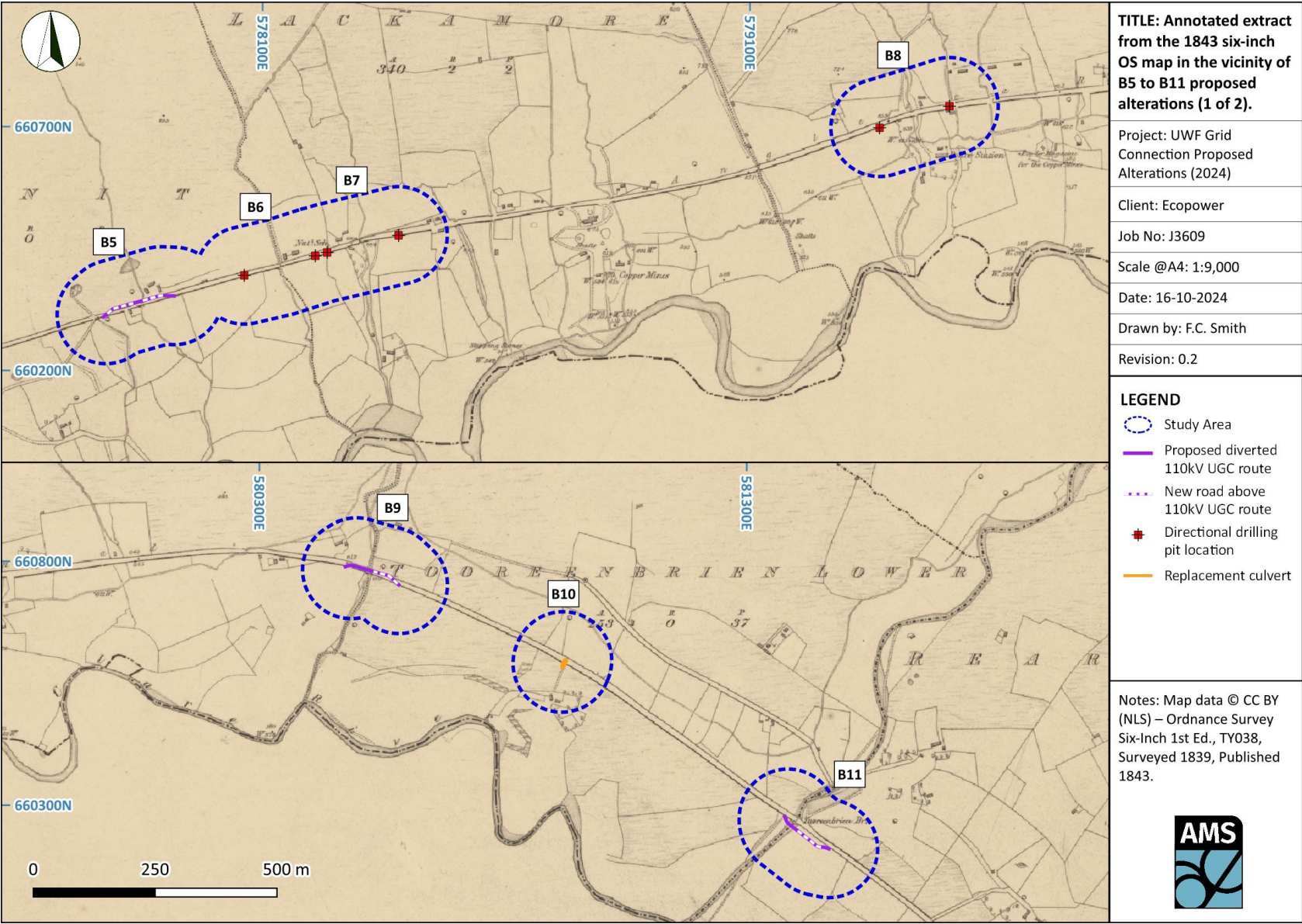


Figure 16: Annotated extract from the 1843 six-inch OS map in the vicinity of B5 to B11 proposed alterations (1 of 2).

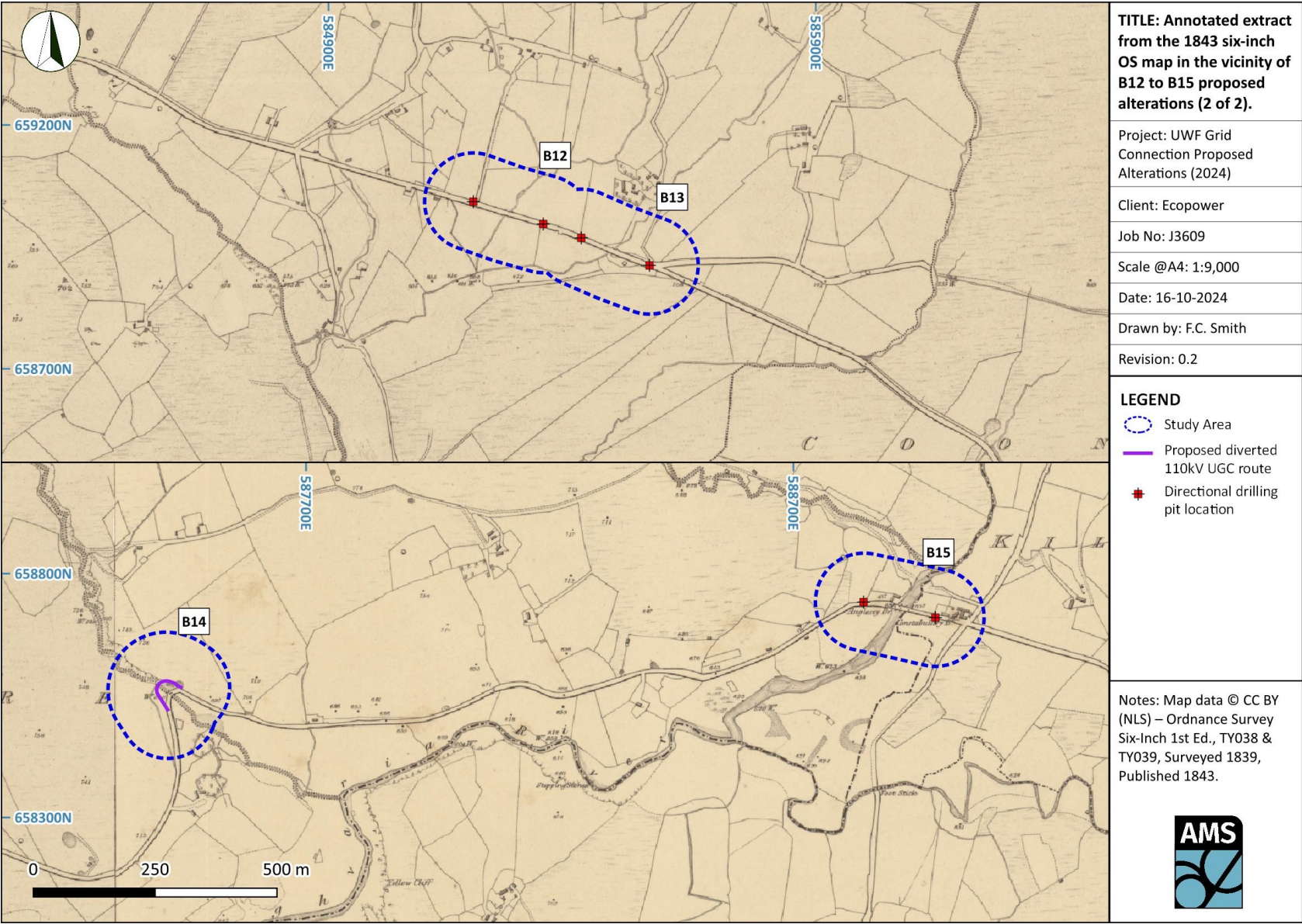


Figure 17: Annotated extract from the 1843 six-inch OS map in the vicinity of B12 to B15 proposed alterations (2 of 2).

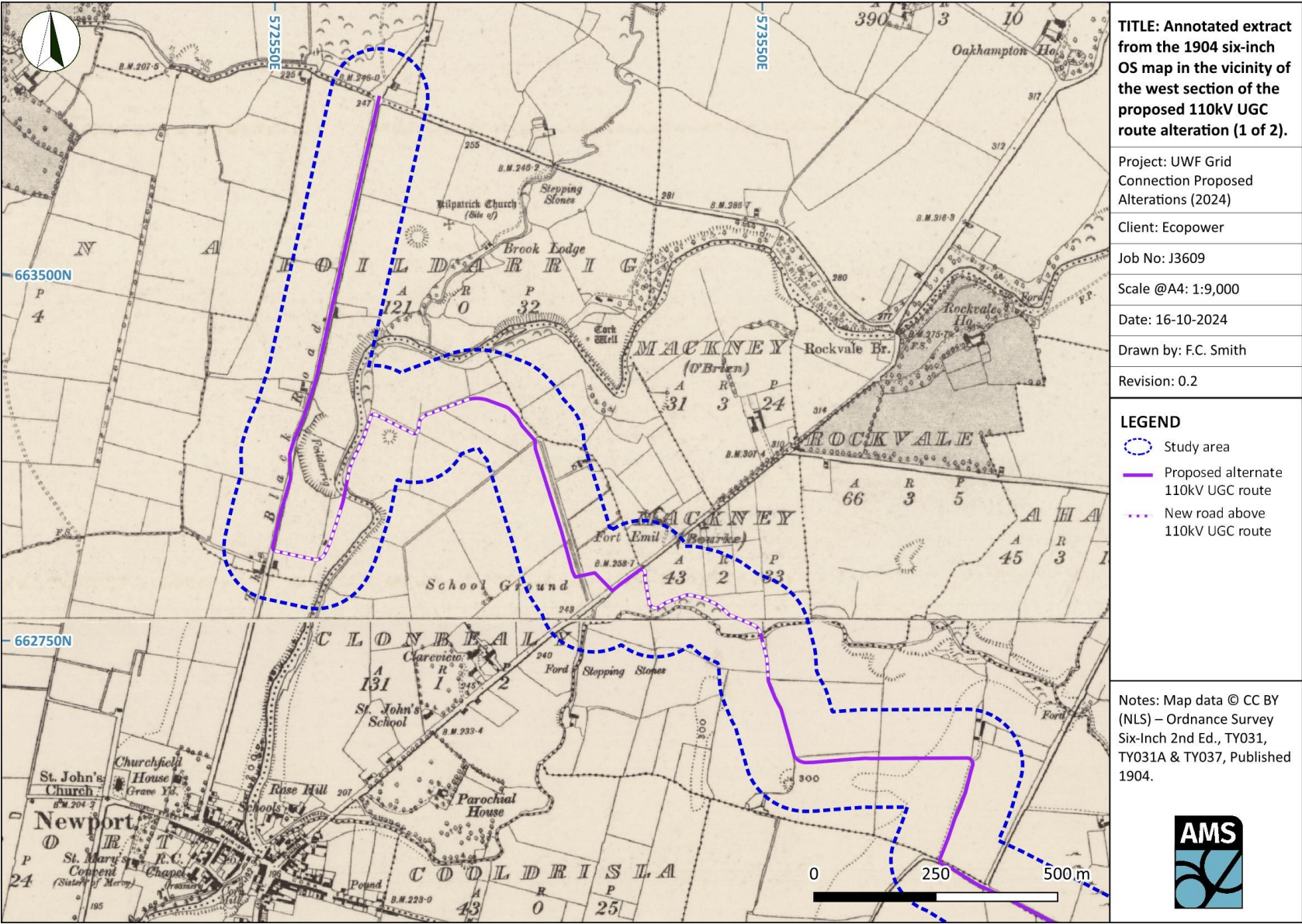


Figure 18: Annotated extract from the 1904 six-inch OS map in the vicinity of the west section of the proposed 110kV UGC route alteration (1 of 2).

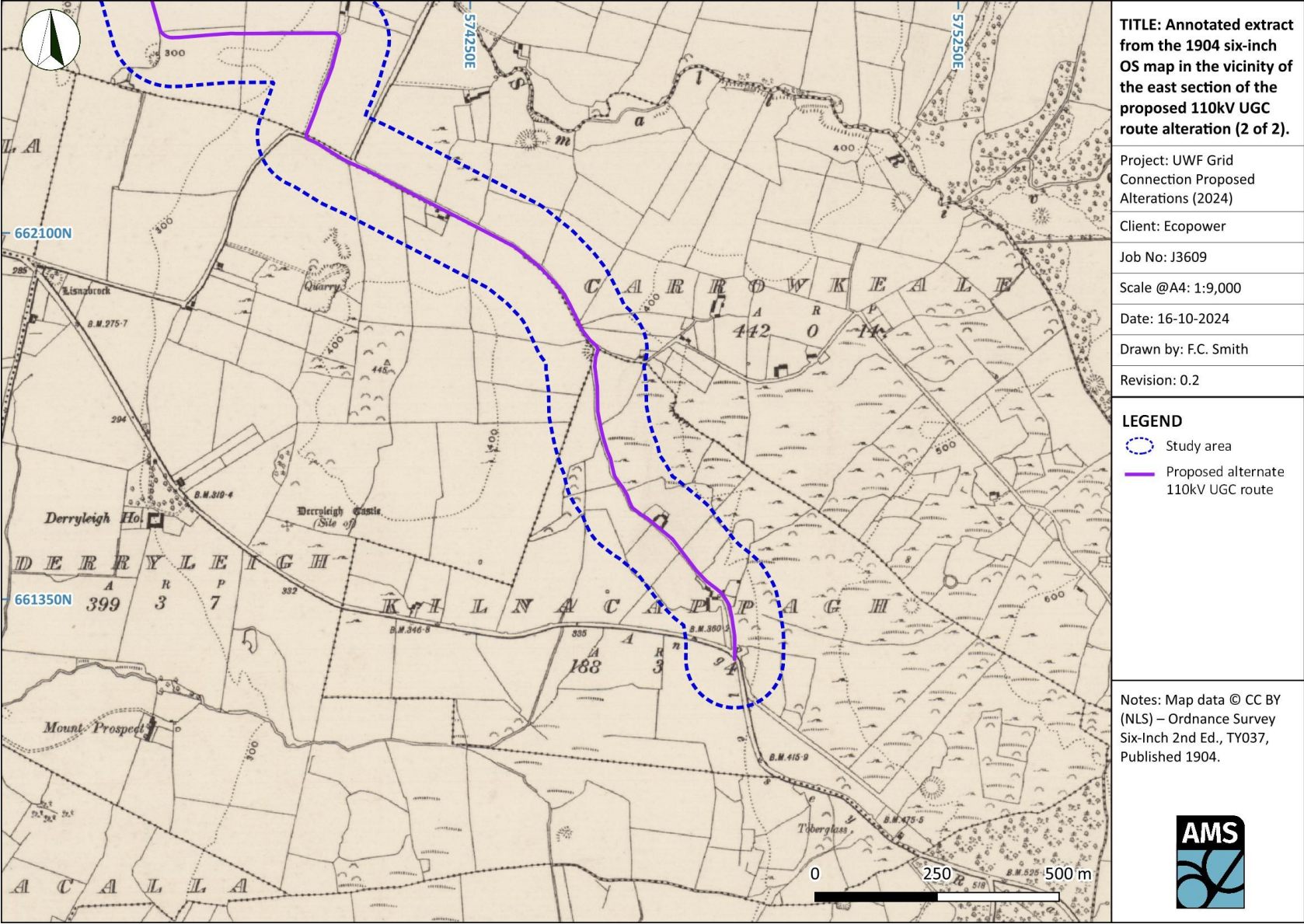


Figure 19: Annotated extract from the 1904 six-inch OS map in the vicinity of the east section of the proposed 110kV UGC route alteration (2 of 2).

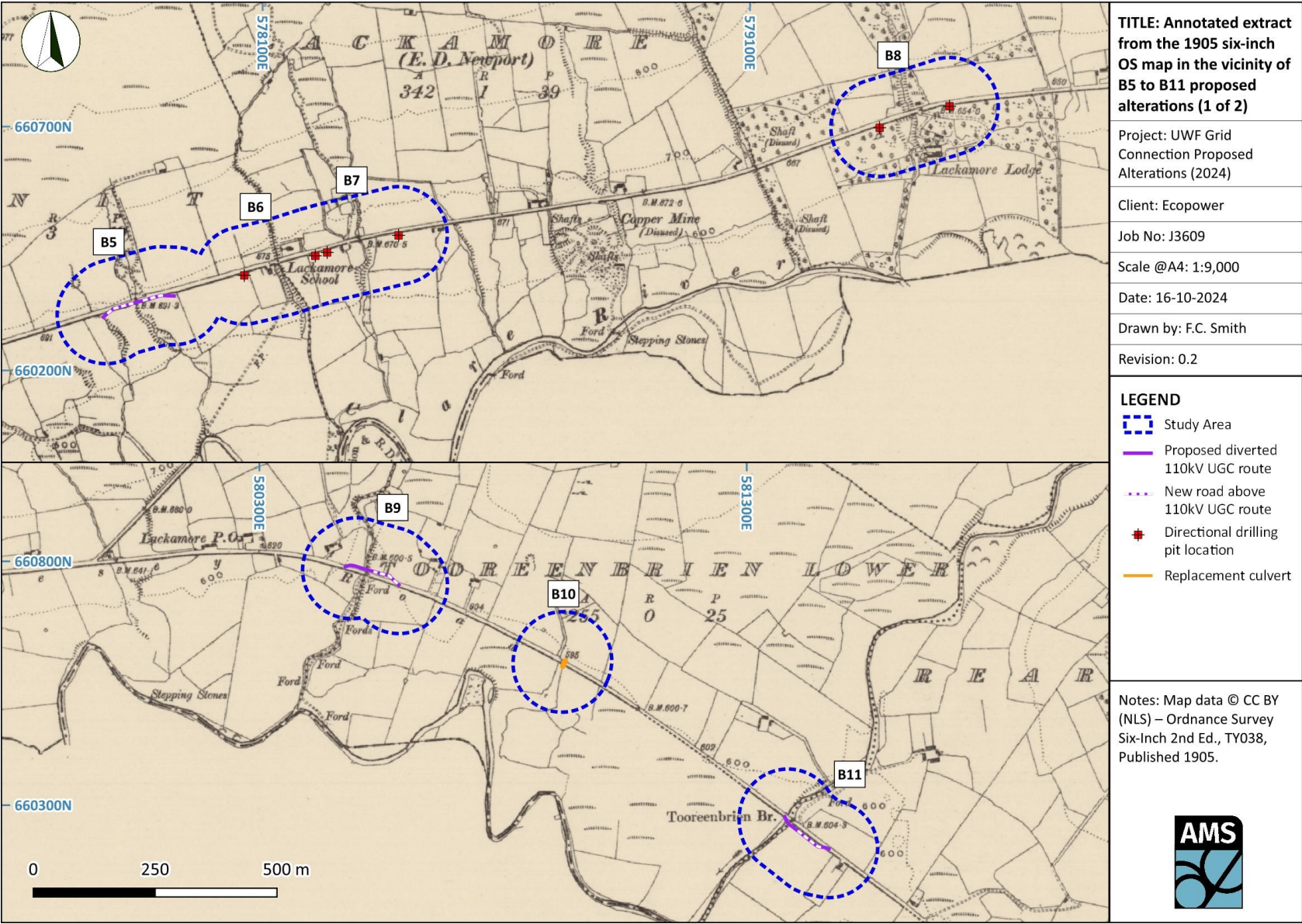


Figure 20: Annotated extract from the 1905 six-inch OS map in the vicinity of B5 to B11 proposed alterations (1 of 2).



Figure 21: Annotated extract from the 1905 six-inch OS map in the vicinity of B12 to B15 proposed alterations (2 of 2).

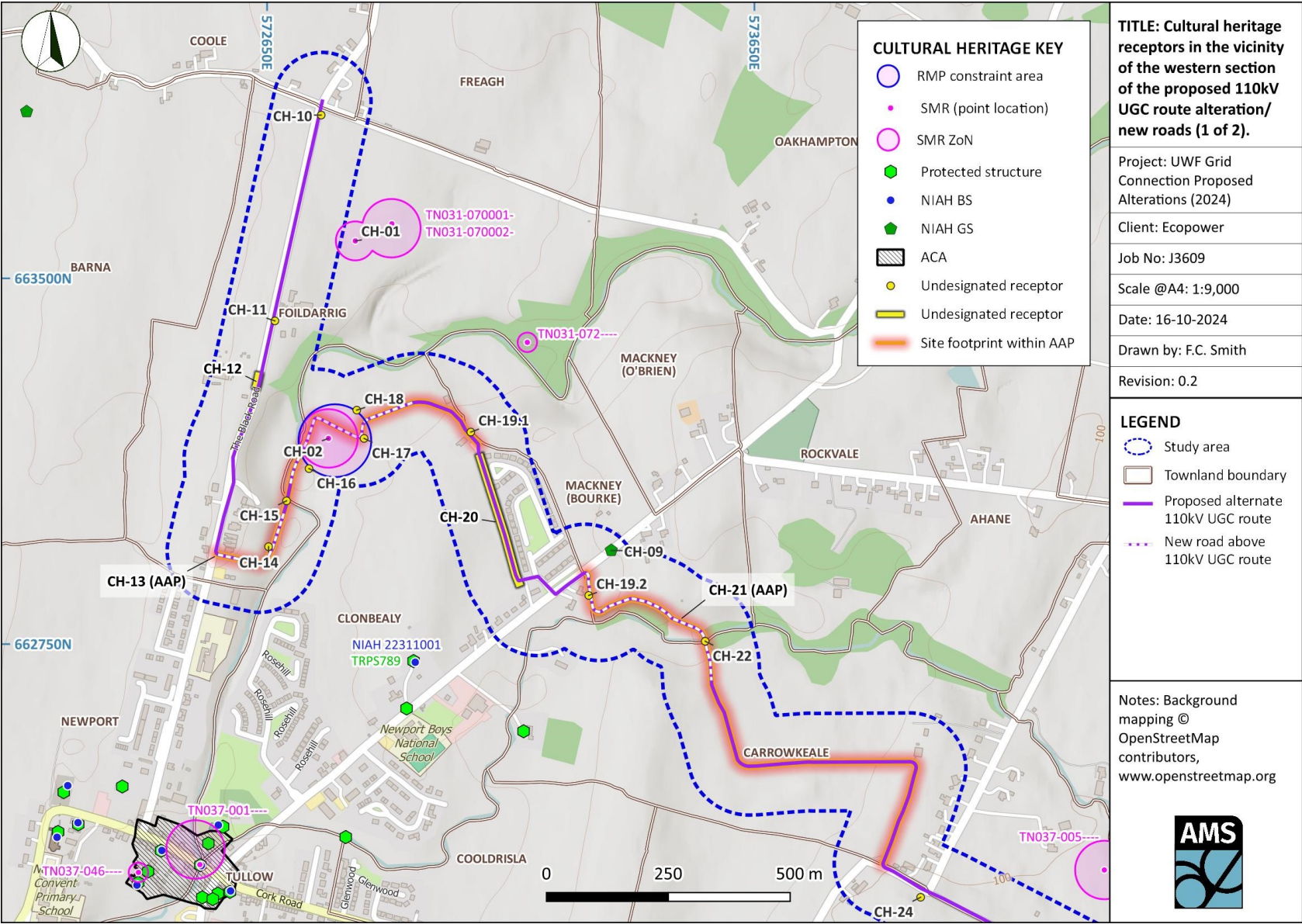


Figure 22: Cultural heritage receptors in the vicinity of the western section of the proposed 110kV UGC route alteration/new roads (1 of 2).

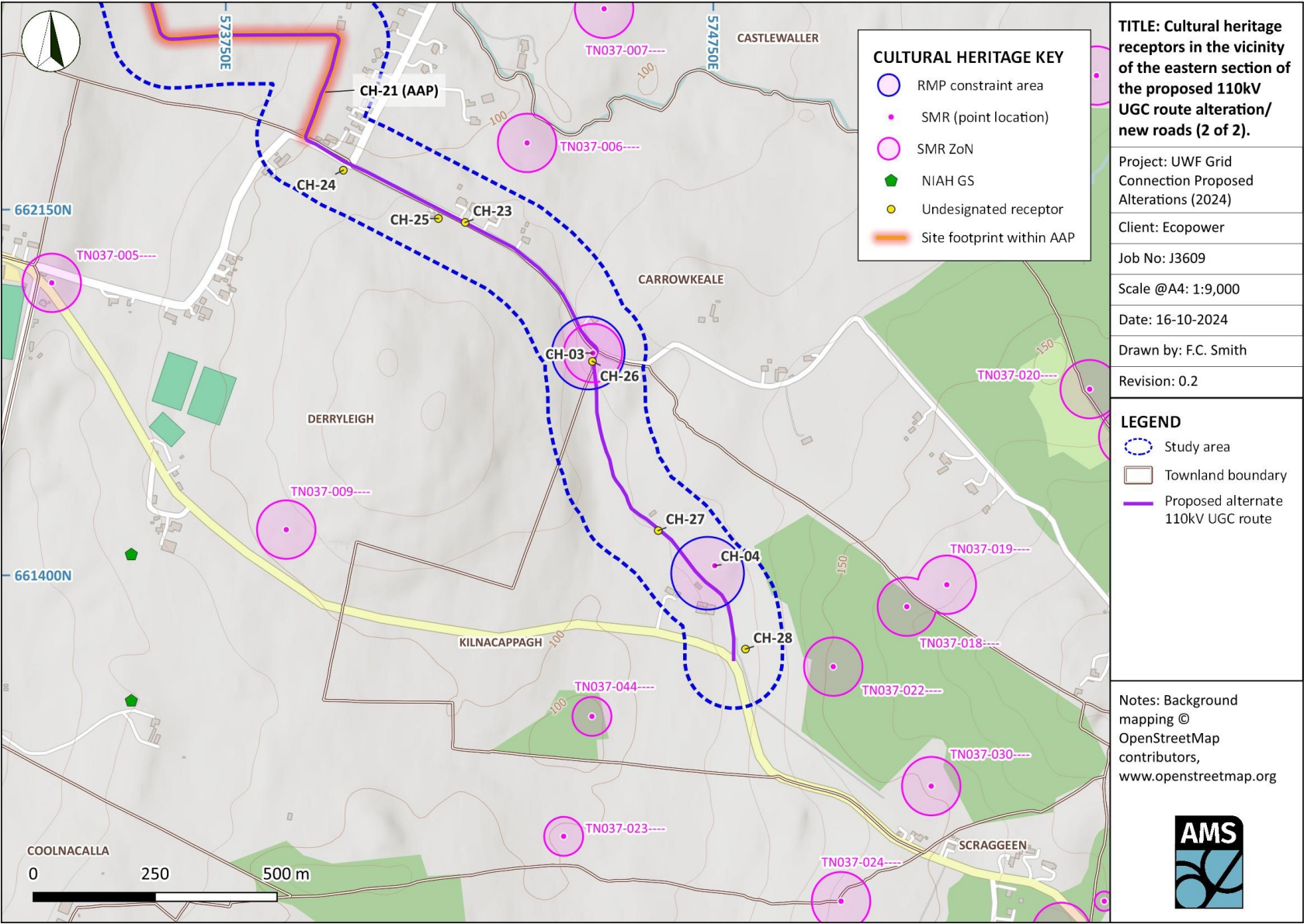


Figure 23: Cultural heritage receptors in the vicinity of the eastern section of the proposed 110kV UGC route alteration/new roadways (2 of 2).

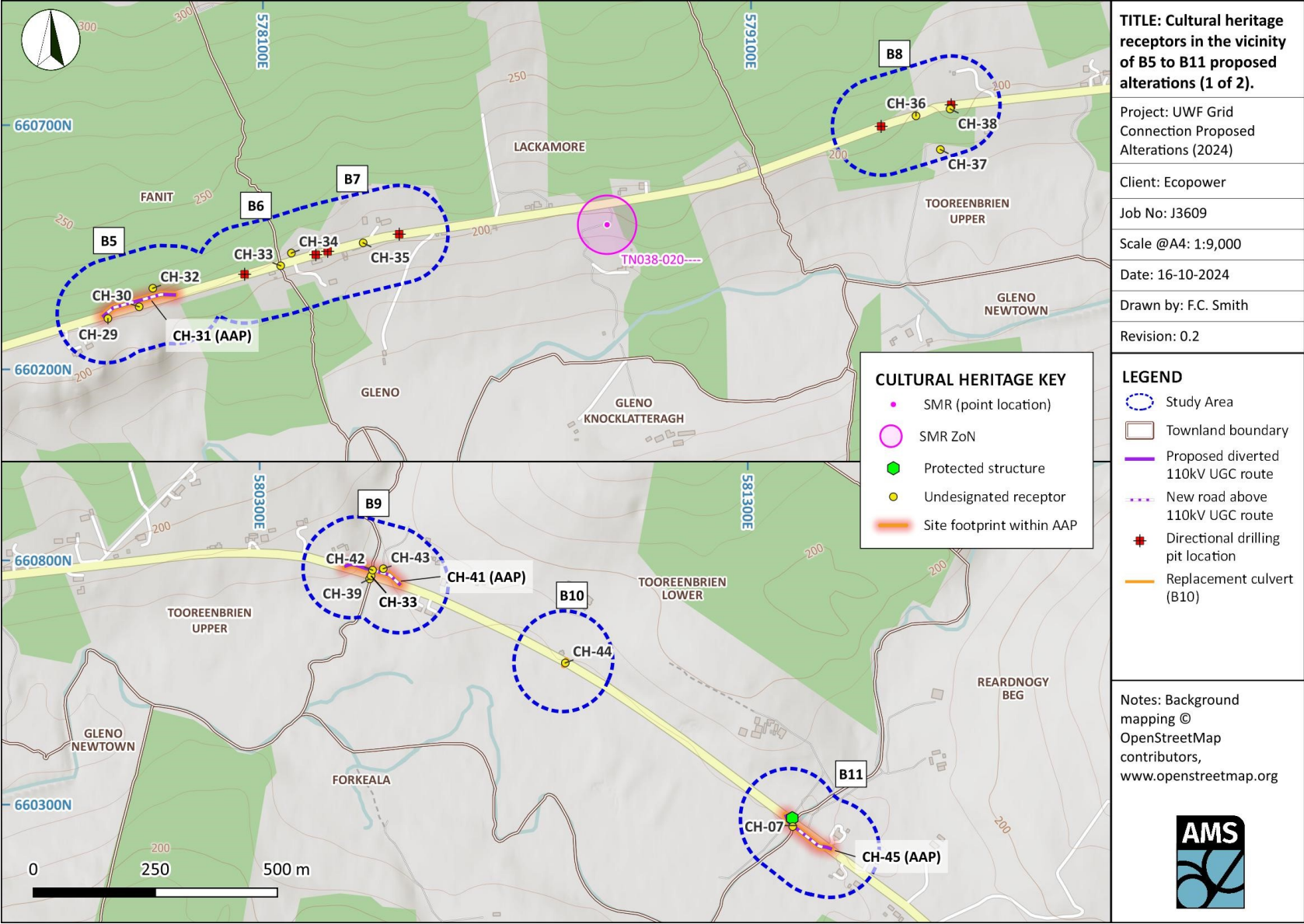


Figure 24: Cultural heritage receptors in the vicinity of B5 to B11 proposed alterations (1 of 2).

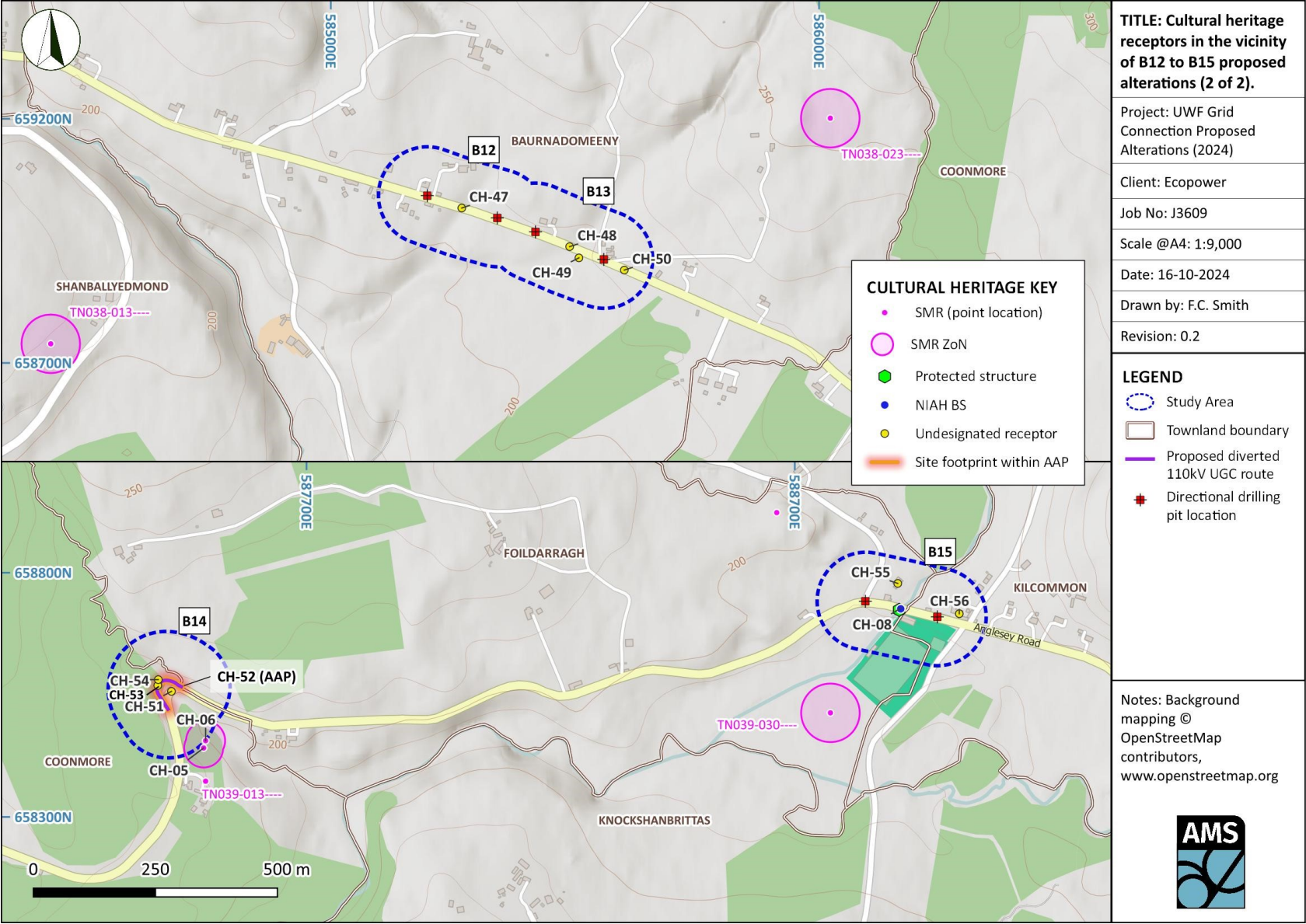


Figure 25: Cultural heritage receptors in the vicinity of B12 to B15 proposed alterations (2 of 2).

Plates



Plate 1: View of CH-25 extant remains from GSV (© Google 2024).

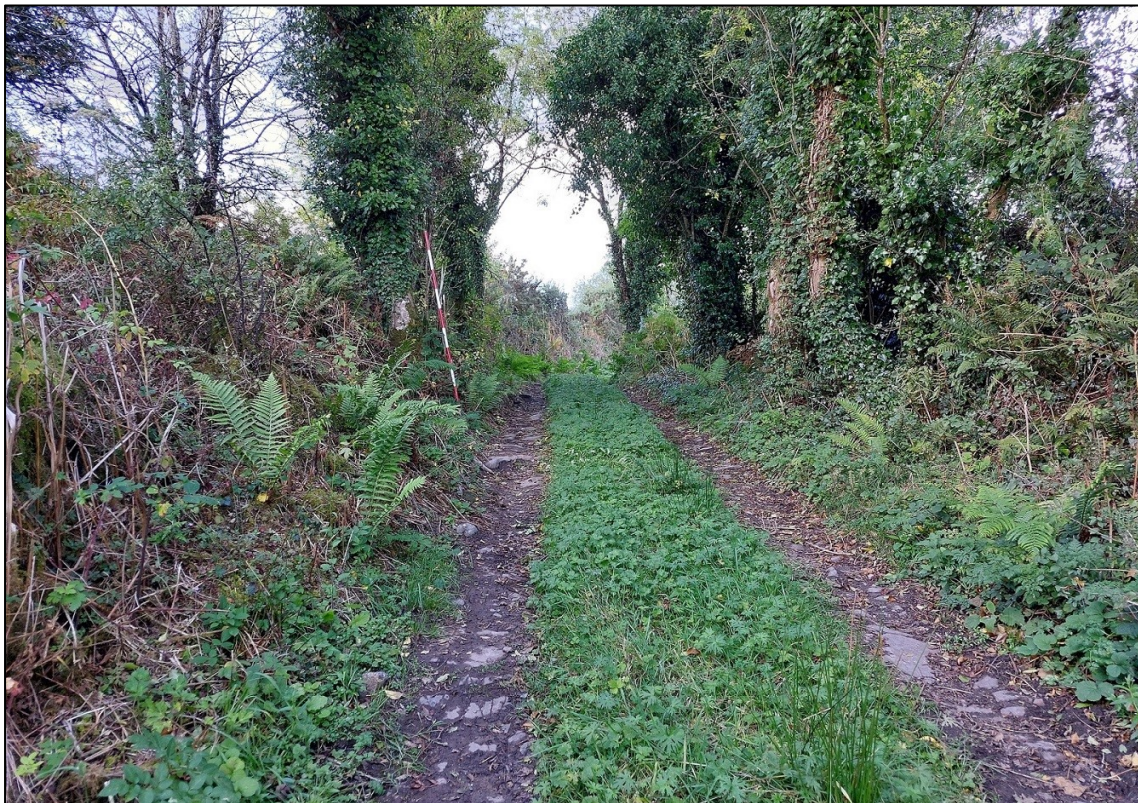


Plate 2: View of CH-26, townland boundary along laneway to east of CH-03 (J. Hughes, AMS).



Plate 3: View of CH-27 extant entranceway on eastern side of laneway (J. Hughes, AMS).



Plate 4: View of CH-27 extant remains on eastern side of laneway (J. Hughes, AMS).



Plate 5: View looking south along CH-27 laneway from extant remains (J. Hughes, AMS).



Plate 6: View of CH-27 extant remains (gate pier) on western side of laneway (J. Hughes, AMS).



Plate 7: Afforestation in the vicinity of B5 and CH-30–CH-32, looking east along R503 (J. Hughes, AMS).



Plate 8: GSV image looking east along R503 towards site of CH-38 to south of road (© Google 2024).

Appendix 1: Summary of ROI Cultural Heritage Protection

The documents *Framework and Principles for the Protection of Archaeological Heritage*⁴⁹ and *Policy and Guidelines for Archaeological Excavations*⁵⁰ summarise the legal and regulatory protections for archaeological heritage in the Republic of Ireland.

Archaeological heritage includes known archaeological sites, monuments and objects, areas of archaeological potential, and underwater archaeology. In the Republic of Ireland, archaeological sites and monuments are currently protected under the terms of the *National Monuments Acts 1930 to 2014* through inclusion on the Record of Monuments and Places (RMP) as Recorded Monuments, inclusion on the Register of Historic Monuments (RHM) as Registered Monuments, by being declared a National Monument (NM) and/or through a Preservation Order (PO).^{51, 52} The National Monuments Service (NMS) maintains lists and maps of the RMP for each county, a list of NMs in State care and a list of monuments subject to POs, which are available for consultation online,⁵³ as well as a list of monuments and archaeological areas included on the RHM, which is available via direct consultation with the NMS.

The Archaeological Survey of Ireland, a unit of the NMS, also maintains an inventory of all known archaeological sites and monuments together with an associated paper archive and database which collectively forms the Sites and Monuments Record (SMR). The SMR database is updated on a regular basis and is available online through the Historic Environment Viewer (HEV).⁵⁴ It includes sites that have been identified since the statutory RMP was published, many of which are scheduled to be included in the next revision of the RMP (DHLGH & OPR 2021)⁵⁵ or the equivalent of, when the new heritage act comes in operation.

Under Section 12 (3) of the *National Monuments (Amendment) Act 1994* and Section 5 (8) of the *National Monuments (Amendment) Act 1987* when the owner or occupier of a property, or any other person proposes to carry out, or to cause, or to permit the carrying out of any work at or in relation to a Recorded Monument or a Registered Monument they are required to give notice in writing to the Minister two months prior to commencing that work.⁵⁶ This is to allow the NMS time to consider the proposed works and how best to proceed to further the protection of the site or monument.

The SMR database includes a Zone of Notification (ZoN) for sites and monuments, while the published statutory RMP maps demarcate areas by circles or polygons. These do not define the exact extent of the sites and monuments, but rather are intended to give an indication that archaeological considerations may be an important aspect in the consideration of any development proposed within

⁴⁹ Available at: <http://www.archaeology.ie/sites/default/files/media/publications/framework-and-principles-for-protection-of-archaeological-heritage.pdf> [Accessed: September 2024].

⁵⁰ Available at: <http://www.archaeology.ie/sites/default/files/media/publications/excavation-policy-and-guidelines.pdf> [Accessed: September 2024].

⁵¹ It should be noted that on 13 October 2023 a new bill was signed into law (the Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023), which when fully commenced will repeal and replace the existing *National Monuments Acts 1930 to 2014* and related legislation. See: <https://www.oireachtas.ie/en/bills/bill/2023/2/> [Accessed: Sept 2024].

⁵² Commencement orders have been made for certain provisions of the new Act; see: <https://www.gov.ie/en/press-release/ab826-new-powers-to-protect-irelands-valuable-historic-and-archaeological-heritage/> [Accessed: December 2024].

⁵³ See Table 2 (Section 2.3).

⁵⁴ See: <https://www.archaeology.ie/archaeological-survey-ireland/historic-environment-viewer-application> [Accessed: September 2024].

⁵⁵ Available at: <https://www.archaeology.ie/sites/default/files/media/publications/archaeology-planning-process-pl13.pdf> [Accessed: September 2024].

⁵⁶ See: <https://www.irishstatutebook.ie/eli/1994/act/17/section/12/enacted/en/html#sec12> and <https://www.irishstatutebook.ie/eli/1987/act/17/section/5/enacted/en/html#sec5> [Accessed: September 2024].

the SMR ZoN or RMP area (DHLGH & OPR 2021), as well as to identify them for the purposes of notification under Section 12 (3) of the *National Monuments (Amendment) Act 1994*.

All archaeological objects (with no known owner at the time of finding) are the property of the State as per Section 2 of the *National Monuments (Amendment) Act 1994*⁵⁷ and must not be altered other than under a licence issued by the National Museum of Ireland (NMI). The *National Monuments Act 1930* (as amended) and the *National Cultural Institutions Act 1997* sets out the framework within which the NMI operates.⁵⁸ The museum is the statutory authority with responsibility for the care of archaeological objects and is the State's repository for all archaeological objects from excavations and other sources (O'Connor 2003; NMI 2022). The records for these objects are maintained by the NMI Irish Antiquities Division in the Collections Database and include a large collection of unique paper archives known as the Topographical Files, which are housed in the Antiquities Division at Kildare Street, Dublin.

Wrecks over 100 years old and archaeological objects under water, irrespective of their age or location, are protected under Section 3 of the *National Monuments (Amendment) Act 1987*.⁵⁹ Wrecks that are less than 100 years old and the potential location of wrecks or archaeological objects may also be protected under Section 3 of the *National Monuments (Amendment) Act 1987* by the placement of an underwater heritage order if the wreck, area or object is considered to be of sufficient historical, archaeological or artistic importance to merit such protection.

Under Section 51 of the *Planning and Development Act 2000*,⁶⁰ planning authorities are required to maintain a Record of Protected Structures (RPS) which includes all structures or parts of structures in their functional areas which, in their opinion, are of special architectural, historical, archaeological, artistic, cultural, scientific, social, or technical interest. No work can be carried out affecting those features of a Protected Structure which contribute to the aforementioned aspects without approval from the planning authority. Similarly, Section 81 of the *Planning and Development Act 2000* makes provision for the creation of Architectural Conservation Areas (ACA) to preserve the character of a place, area, group of structures or townscape, taking account of building lines and heights, that is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or contributes to the appreciation of Protected Structures.⁶¹ The RPS and lists of ACA are maintained and updated by each individual Local Authority as part of their County Development Plan. At this point, no national database of Protected Structures or ACA is maintained. Some county datasets are available to download, but in most instances the dataset must be requested from the Local Authority. The *National Monuments Acts 1930–2014* can also protect elements of the built heritage or offer dual/parallel protection.

The National Inventory of Architectural Heritage (NIAH) is an initiative under the administration of the DHLGH established on a statutory basis under the provisions of the *Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999*. The purpose of the NIAH is to identify, record, and evaluate the post-1700 architectural heritage of the Republic of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for Housing, Local Government and Heritage to the planning authorities for the inclusion of particular structures in their RPS. The surveys,

⁵⁷ <http://www.irishstatutebook.ie/eli/1994/act/17/section/2/enacted/en/html#sec2> [Accessed: September 2024].

⁵⁸ <https://www.irishstatutebook.ie/eli/1997/act/11/enacted/en/index.html> [Accessed: September 2024].

⁵⁹ <https://www.irishstatutebook.ie/eli/1987/act/17/section/3/enacted/en/html#sec3> [Accessed: September 2024].

⁶⁰ <http://www.irishstatutebook.ie/eli/2000/act/30/section/51/enacted/en/html#sec51> [Accessed: September 2024].

⁶¹ <http://www.irishstatutebook.ie/eli/2000/act/30/section/81/enacted/en/html#sec81> [Accessed: September 2024].

which include Building Surveys and Garden Surveys (comprising historic gardens and designed landscapes) are published online.⁶²

It should be noted that different designations may be used to describe the same Cultural Heritage receptor, for instance the same monument may be listed on the SMR, RMP, RHM and National Monument lists. Similarly, a building may be recorded in both the NIAH and the RPS, as well as on designated archaeological heritage lists (SMR, RMP, RHM and National Monuments).

References

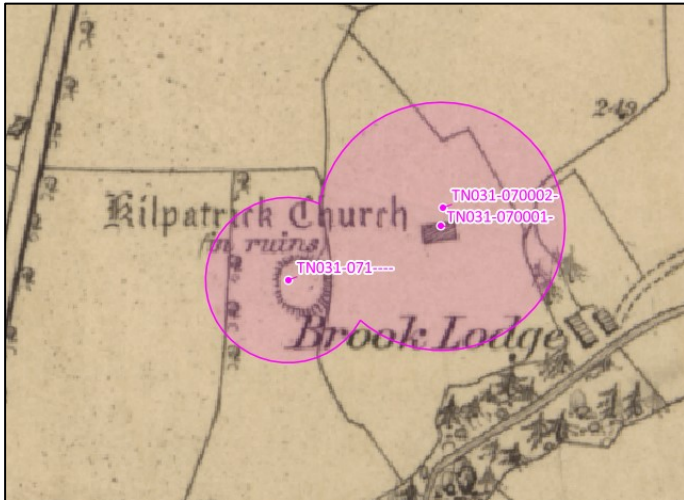
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⁶² <https://www.buildingsofireland.ie/> [Accessed: September 2024]. The NIAH Buildings Survey is also available via the HEV: <https://maps.archaeology.ie/HistoricEnvironment/>.


Appendix 2: List of Townlands within/intersected by the Study Area

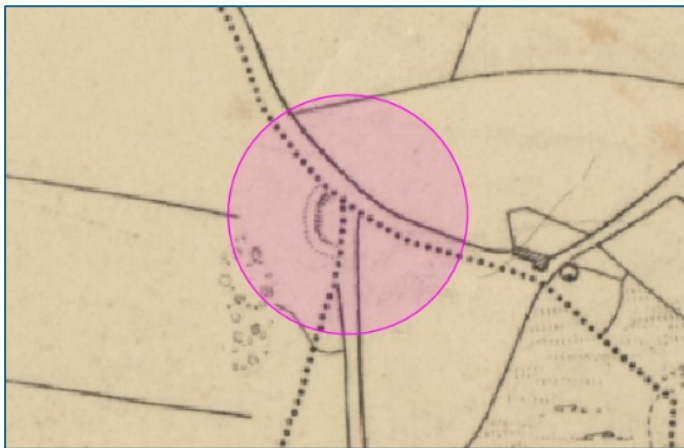
| English Name | Irish Name | Civil Parish | Barony | Source/Permalink [Accessed: September 2024] |
|----------------------|---------------------------------------|--------------|----------------------|---|
| Baurnadomeeny | <i>Barr na dTuaimíní</i> | Abington | Owney and Arra | https://www.logainm.ie/en/46122 |
| Carrowkeale | <i>An Cheathrú Chaol</i> | Kilvellane | Owney and Arra | https://www.logainm.ie/en/46662 |
| Clonbealy | <i>Cluain Béala</i> | Kilvellane | Owney and Arra | https://www.logainm.ie/en/46663 |
| Coole | <i>An Chúil</i> | Kilnarath | Owney and Arra | https://www.logainm.ie/en/46341 |
| Coonmore | <i>An Cuan Mór</i> | Abington | Owney and Arra | https://www.logainm.ie/en/46124 |
| Derryleigh | <i>Doire Liath</i> | Kilvellane | Owney and Arra | https://www.logainm.ie/en/46670 |
| Fanit | <i>Feánait</i> | Kilvellane | Owney and Arra | https://www.logainm.ie/en/46671 |
| Foildarragh | <i>Faill na Darach</i> | Abington | Owney and Arra | https://www.logainm.ie/en/46125 |
| Foildarrig | <i>An Fhaill Dearg</i> | Kilnarath | Owney and Arra | https://www.logainm.ie/en/46429 |
| Freagh | <i>An Fraoch</i> | Kilnarath | Owney and Arra | https://www.logainm.ie/en/46430 |
| Kilcommon | <i>Cill Chuimín</i> | Templebeg | Kilnamanagh Upper | https://www.logainm.ie/en/47007 |
| Kilnacappagh | <i>Coill na Ceapaí</i> | Kilvellane | Owney and Arra | https://www.logainm.ie/en/46675 |
| Lackamore | <i>An Leaca Mhór</i> | Kilvellane | Owney and Arra | https://www.logainm.ie/en/46354 |
| Mackney (Bourke) | <i>Meacanaigh (Bourke)</i> | Kilnarath | Owney and Arra | https://www.logainm.ie/en/46547 |
| Newport | <i>An Port Nua</i> | Kilvellane | Owney and Arra | https://www.logainm.ie/en/1166582 |
| Reardnogy Beg | <i>Ré Fhearnóige Bheag</i> | Abington | Owney and Arra | https://www.logainm.ie/en/46130 |
| Toorenbrien Lower | <i>Tuairín Bhriain Íochtarach</i> | Kilvellane | Owney and Arra | https://www.logainm.ie/en/46134 |
| Toorenbrien Upper | <i>Tuairín Bhriain Uachtarach</i> | Kilvellane | Owney and Arra | https://www.logainm.ie/en/46135 |

Appendix 3: Inventory of Designated Cultural Heritage Receptors


| | |
|------------------------------|---|
| Receptor No.: | CH-01 |
| Category: | Archaeological Heritage |
| Site Type: | Barrow - bowl-barrow |
| Status: | Recorded Monument; listed on SMR |
| References: | TN031-071---- [Fitzgibbon & Ó Drisceoil 2019, EIAR Ref GL13] |
| Image: |  <p>Extract from 1843 six-inch OS map (CC-BY NLS).</p> |
| Townland: | Foildarrig |
| Coordinates (ITM): | 572831, 663577 |
| Approximate Distance: | 85m (from edge of SMR ZoN) |
| Description: | Situated on flat, poorly drained land in an upland area with church site (TN031-070001) to NE. A poorly preserved round-topped mound (diam. 23m N-S; H 1.2m) enclosed by a wide, flat-bottomed fosse (Wth 7.5m; ext. D 0.4m) which was waterlogged at time of visit. |
| Sources: | HEV (see link below, accessed September 2024); historical OS maps; aerial imagery. https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=0c9eb9575b544081b0d296436d8f60f8&query=18a4b61b268-layer-9%2CSMRS%2CTN031-071---- |

| | |
|------------------------------|---|
| Receptor No.: | CH-02 |
| Category: | Archaeological Heritage |
| Site Type: | Earthwork |
| Status: | Recorded Monument; listed on SMR |
| References: | TN031-073---- [Fitzgibbon & Ó Drisceoil 2019, EIAR Ref GL14] |
| Townland: | Clonbealy |
| Coordinates (ITM): | 572776, 663172 |
| Approximate Distance: | 0m (within RMP constraints area/SMR ZoN); 10m from upstanding remains. |
| Description: | NMS ASI record file: situated on the W face of a low N-S ridge overlooking the Mulkear River to the W. Present remains consist of a roughly circular area covered in dense overgrowth with no evidence of an enclosing element. Rock outcrop protrudes from the surface of the interior. Possible site of no antiquity, however dense cover of vegetation makes detailed examination impossible (29-11-1995). |

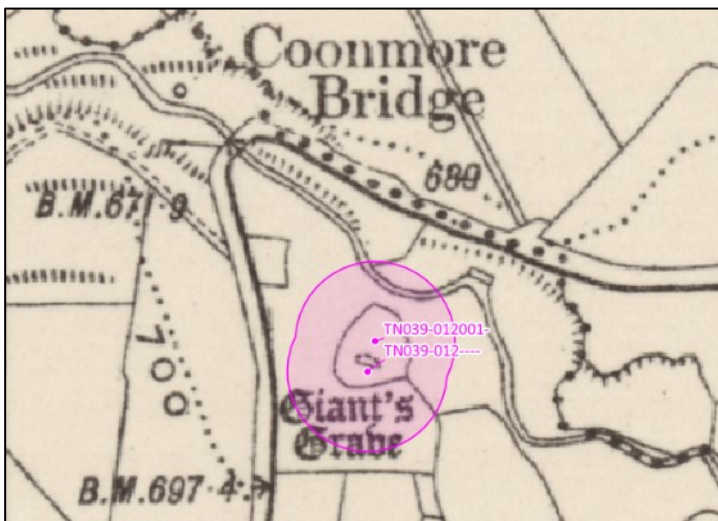
| Receptor No.: | CH-02 |
|---------------|--|
| Image: |  <p>Extract from 1843 six-inch OS map (CC-BY NLS).</p> |
| Sources: | <p>NMS Archive Unit ASI record file; HEV (see link below, accessed September 2024); historical OS maps; aerial imagery.</p> <p>https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=0c9eb9575b544081b0d296436d8f60f8&query=18a4b61b268-layer-9%2CSMRS%2CTN031-073----</p> |

| Receptor No.: | CH-03 |
|-----------------------|---|
| Category: | Archaeological Heritage |
| Site Type: | Ringfort - rath |
| Status: | Recorded Monument; listed on SMR |
| References: | TN037-010---- |
| Image: |  <p>Extract from 1843 six-inch OS map (CC-BY NLS).</p> |
| Townland: | Carrowkeale, Derryleigh, and Kilnacappagh |
| Coordinates (ITM): | 574503, 661856 |
| Approximate Distance: | 0m (within RMP constraints area/SMR ZoN); 0.5–1m from upstanding remains. |
| Description: | <p>Situated on a W-facing slope of rising ground in an upland area with a nearby ringfort (TN037-006---) to the N. A raised semicircular area (diam. 22m N-S) enclosed by two earth and stone banks with intervening fosse (Wth 1.5m; D 0.75m). Only the W half of the site survives because it is intersected by a modern road at E on a N-S axis. The inner bank (Wth 1.5m; int. H 0.3m; ext. H 0.2-0.5m) is best preserved at S with traces of the outer bank also visible at S. No entrance features visible.</p> |

| Receptor No.: | CH-03 |
|---------------|--|
| | During the walkover survey in October 2024, a landowner noted that the ringfort is thought to have been used as a cillín (children's burial ground); and also, that the field immediately to the east is known locally as 'The Priest's Field'. |
| Sources: | HEV (see link below, accessed September 2024); historical OS maps; aerial imagery; walkover survey. https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=0c9eb9575b544081b0d296436d8f60f8&query=18a4b61b268-layer-9%2CSMRS%2CTN037-010---- |

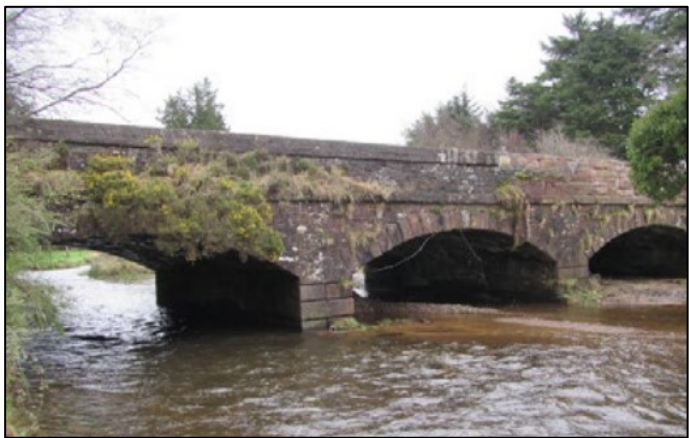
| Receptor No.: | CH-04 |
|-----------------------|---|
| Category: | Archaeological Heritage |
| Site Type: | Possible enclosure/feature of non-antiquity (NMS ASI record file); redundant record (SMR). |
| Status: | Listed on SMR; constraints area marked on RMP map, but the site is not listed in the RMP manual. |
| References: | TN037-037---- [Fitzgibbon & Ó Drisceoil 2019, EIAR Ref GL22] |
| Image: |  <p>GSI aerial photograph R. 285/6 (NMS ASI record file).</p> |
| Townland: | Kilnacappagh |
| Coordinates (ITM): | 574753, 661420 |
| Approximate Distance: | 0m (within RMP constraints area). |
| Description: | Site identified from GSI aerial photograph (R. 285/6) taken in 1974. No surface remains of any site of archaeological significance in area marked on OS 6-inch map. |
| Sources: | HEV (see link below, accessed September 2024); NMS Archive Unit ASI record file. https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=0c9eb9575b544081b0d296436d8f60f8&query=18a4b61b268-layer-9%2CSMRS%2CTN037-037---- |


| Receptor No.: | CH-05 |
|---------------|--|
| Category: | Archaeological Heritage |
| Site Type: | Children's burial ground |
| Status: | Recorded Monument; listed on SMR |
| References: | TN039-012---- [Fitzgibbon & Ó Drisceoil 2019, EIAR Ref GL38] |
| Townland: | Coonmore |

| | |
|------------------------------|--|
| Receptor No.: | CH-05 |
| Coordinates (ITM): | 587489, 658441 |
| Approximate Distance: | 65m (from edge of SMR ZoN) |
| Image: |  <p>Extract from 1905 six-inch OS map, sheet 39 (CC-BY NLS).</p> |
| Description: | <p>Situated on level ground at the base of a high natural scarp, overlooking a river valley to the NE. The Clasher River runs c.2m NE of the site. An irregular, roughly circular enclosure (34.6 N-S; 34m E-W) in a level area between the river and the cliff-edge. The enclosure is defined by a denuded, moss-covered wall of earth and stone construction (Wth 1.3-2.1m; int. H 0.25-1m; ext. H 0.75-1m). There is a heavy growth of scrub in the NW quadrant. The site was described as 'disused keel' or children's burial ground in 1910 (Crawford 1910, 51), however, no grave-markers were apparent. A low linear mound (TN039-012001) in the SW quadrant, running NW-SE (L 6.1m x W 1.3m; H 0.4m), is constructed of earth and stone. It appears to be a section of a low field boundary and is not a megalithic structure.</p> |
| Sources: | <p>HEV (see link below, accessed September 2024); historical OS maps; aerial imagery. https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=0c9eb9575b544081b0d296436d8f60f8&query=18a4b61b268-layer-9%2CSMRS%2CTN039-012-----</p> |

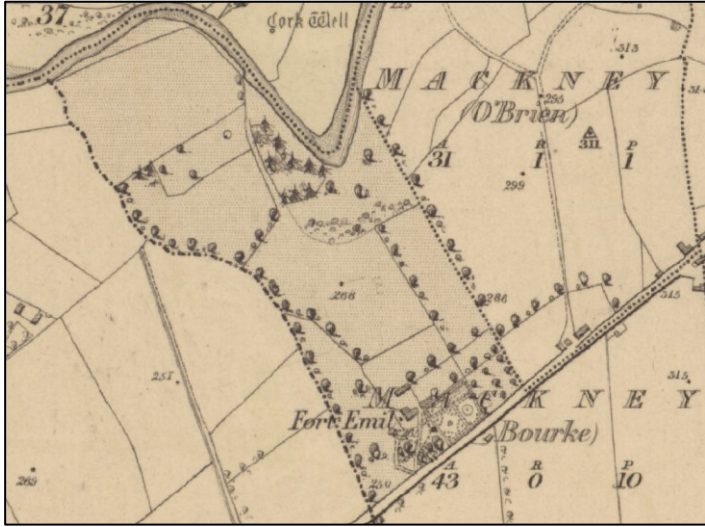
| | |
|------------------------------|--|
| Receptor No.: | CH-06 |
| Category: | Archaeological Heritage |
| Site Type: | Mound |
| Status: | Recorded Monument; listed on SMR |
| References: | TN039-012001- [Fitzgibbon & Ó Drisceoil 2019, EIAR Ref GL39] |
| Townland: | Coonmore |
| Image: | See previous entry (CH05) |
| Coordinates (ITM): | 587493, 658456 |
| Approximate Distance: | 65m (from edge of SMR ZoN) |

| Receptor No.: | CH-06 |
|---------------------|---|
| Description: | Situated on level ground at the base of a high natural scarp, overlooking a river valley to the NE. The Clasher River runs c.2m NE of the site. An irregular, roughly circular enclosure (TN039-012) in a level area between the river and the cliff-edge. The enclosure is defined by a denuded, moss-covered wall of earth and stone construction. There is a heavy growth of scrub in the NW quadrant. The site was described as 'disused keel' or children's burial ground in 1910 (Crawford 1910, 51), however, no grave-markers were apparent. A low linear mound in the SW quadrant, running NW-SE (L 6.1m x W 1.3m; H 0.4m), is constructed of earth and stone. It appears to be a section of a low field boundary and is not a megalithic structure. |
| Sources: | HEV (see link below, accessed September 2024); historical OS maps; aerial imagery. https://heritagedata.maps.arcgis.com/apps/webappviewer/index.html?id=0c9eb9575b544081b0d296436d8f60f8&query=18a4b61b268-layer-9%2CSMRS%2CTN039-012001- |

| Receptor No.: | CH-07 |
|------------------------------|---|
| Category: | Built Heritage |
| Site Type: | Road bridge |
| Status: | Protected Structure |
| Name: | Toorenbrien Bridge |
| References: | TRPS801 [B11] |
| Townland: | Toorenbrien Lower/ Reardnogy Beg |
| Coordinates (ITM): | 581400, 660257 |
| Approximate Distance: | 1–2m |
| Image: |  <p>Source: RPS (CDP Vol. 4)</p> |
| Description: | <p>Triple-arch road bridge over Clare River, built c. 1860. Cut limestone walls having voussoirs to segmental arches, string courses, coursed limestone rubble parapets and U-cutwaters to west, downstream, elevation.</p> <p>Clare River runs along the townland boundary between Toorenbrien Lower and Reardnogy Beg (CH-46: Appendix 4).</p> |
| Sources: | TCC Planning Register (see link below, accessed September 2024); historical OS maps; aerial imagery; GSV; RPS. https://tipp.maps.arcgis.com/apps/webappviewer/index.html?id=460724c4b3de413cbb853111df588a |

| | |
|------------------------------|--|
| Receptor No.: | CH-08 |
| Category: | Built Heritage |
| Site Type: | Road bridge over watercourse along townland boundary |
| Status: | Protected Structure; listed on NIAH |
| Name: | Anglesey Bridge |
| References: | TRPS805; NIAH 22403905 [B15; Fitzgibbon & Ó Drisceoil 2019, EIAR Ref GR12] |
| Townland: | Foildarragh/Kilcommon |
| Coordinates (ITM): | 588917, 658727 |
| Image: |  <p>NIAH Survey 2004.</p> |
| Approximate Distance: | 50m from directional drilling launch and reception pits. |
| Description: | <p>Double-arch sandstone road bridge built c.1800, over Bilboa River, with U-plan cut-waters to south elevation. Dressed stone voussoirs to arches and snecked rubble walls, dressed below springing point, with rubble stone above brought to courses and separated from snecked stone parapet by dressed stone string course dressed stone capping.</p> <p>This stone bridge is a notable example of skilled craftsmanship, with well-executed stonework to the voussoirs and the projecting cut-waters.</p> <p>Bilboa River runs along the townland boundary between Foildarragh and Kilcommon.</p> |
| Sources: | <p>NIAH and TCC Planning Register (see respective links below, accessed September 2024); historical OS maps; aerial imagery; GSV; RPS.</p> <p>https://www.buildingsofireland.ie/buildings-search/building/22403905/anglesey-bridge-foildarragh-co-tipperary-north</p> <p>https://tipp.maps.arcgis.com/apps/webappviewer/index.html?id=460724c4b3de413cbb853111df588a</p> |

| | |
|----------------------|-------------------|
| Receptor No.: | CH-09 |
| Category: | Built Heritage |
| Site Type: | Historic demesne |
| Name: | Fort Emil |
| Status: | Listed on NIAH GS |
| Name: | Fort Emil |

| | |
|------------------------------|--|
| Receptor No.: | CH-09 |
| References: | NIAH Site ID 764 [Fitzgibbon & Ó Drisceoil 2019, EIAR Ref GR7/GU16] ⁶³ |
| Townland: | Mackney (Bourke) |
| Coordinates (ITM): | 573356, 662942 |
| Approximate Distance: | 1–2m |
| Description: | Historic demesne shown on first edition (1843) six-inch OS map (sheet 31) and second edition (1904) six-inch OS map (sheet 31 & 31A) comprising a main house accessed from the present day L2110, associated structures, a landscaped garden and attendant grounds to the north extending as far as Newport River (also known as the River Mulkear); see map extract below. The gate piers at the entranceway on L2110 are visible in GSV. |
| Image: |  <p>Extract from 1843 six-inch OS map, demesne area is shaded (CC-BY NLS).</p> |
| Sources: | NIAH (see link below, accessed September 2024); historical OS maps; aerial imagery; GSV. https://www.buildingsofireland.ie/buildings-search/site/764/fort-emil-kilnarath-tipperrary-north# |

⁶³ GR7 is identified as Rockvale Demesne in the EIAR; and GU16 is identified as Fort Emil House in the EIAR, which is situated just outside the study area for the Proposed Alterations.

Appendix 4: Inventory of Undesignated Cultural Heritage Receptors

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|-------------------------|--|--------------|-----------------|-----------------------|----------------------------------|------------------|--|---|
| CH-10 | Archaeological Heritage | Two roadside buildings (site of) | Undesignated | - | Foildarrig | 572761, 663835 | 0.5–1m | Two buildings shown on first edition six-inch OS map (1843). No visible remains – area partially within modern roadway; however, considered low potential for any surviving subsurface remains. | First edition six-inch OS map (1843); aerial imagery; GSV |
| CH-11 | Archaeological Heritage | Four roadside buildings (site of) | Undesignated | - | Foildarrig | 572666, 663413 | 0.5–1m | Four buildings shown on 1843 six-inch OS map, three to west of road and one to east. Buildings to west not extant on second edition six-inch/25-inch OS maps (1904). No visible remains – some elements of former buildings extended partially into modern roadway; however, considered low potential for any surviving subsurface remains. | Historical OS maps; aerial imagery; GSV |
| CH-12 | Cultural Heritage | Roadside kerbing | Undesignated | - | Foildarrig | 572634, 663307 to 572626, 663274 | 1–1.5m | Limestone kerbing along western side of roadway (L2166/Black Road). | Walkover Survey |
| CH-13 | Archaeological Heritage | Area of archaeological potential (AAP) | Undesignated | - | Foildarrig; Clonbealy | 572547, 662936 to 573083, 663160 | 0m | AAP within agricultural lands in the vicinity of Newport River (also known as the River Mulkear). The section of the Proposed Alterations footprint that crosses this AAP is highlighted in Figure 22 (it should be noted that the AAP extends beyond the site footprint). Within the site footprint, the AAP partly overlaps/crosses CH-02 , CH-14 , CH-15 , CH-17 and CH-18 ; it also runs adjacent to part of CH-09/CH-19.1 (at its eastern end). The most westerly placed field (directly off the L2166/Black Road) shows evidence of disturbance (i.e. a lower archaeological potential). | Aerial imagery |

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|----------------------------------|---------------------------------------|--------------|-----------------|-----------------------------|----------------|--|---|--|
| CH-14 | Archaeological Heritage | Building (site of) | Undesignated | - | Foildarrig | 572653, 662950 | 0–3m | Small building shown adjacent to field boundary on 1904 six-inch and 25-inch OS maps. No visible remains. | 1904 six-inch and 25-inch OS maps. |
| CH-15 | Archaeological/Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Foildarrig/ Clonbealy | 572690, 663044 | Within Construction Works Area) 20m (from new access road) | Townland boundary between Foildarrig and Clonbealy which runs along the Newport River (also known as the River Mulkear) within the study area. Aerial imagery indicates that the river is tree-lined within the study area. | Historical OS mapping; aerial imagery |
| CH-16 | Archaeological Heritage | Lime kiln (site of) | Undesignated | - | Clonbealy | 572736, 663110 | 0–25m ⁶⁴ | Lime kiln depicted on first edition six-inch OS map (1843). Site within field currently in pasture – no visible remains. Located to the south of Recorded Monument TN031-073---- (CH-02: Earthwork). | First edition six-inch OS map (1843); aerial imagery |
| CH-17 | Archaeological Heritage | Building (site of) | Undesignated | - | Clonbealy | 572849, 663172 | 0–5m ⁶⁵ | Small structure shown on first edition six-inch OS map (1843). No visible remains. | First edition six-inch OS map (1843); aerial imagery |
| CH-18 | Archaeological Heritage | Two buildings and lime kiln (site of) | Undesignated | - | Clonbealy | 572834, 663230 | 0–15m ⁶⁶ | Two buildings and a lime kiln depicted on first edition six-inch OS map (1843). Site within field currently in pasture – no visible remains. | First edition six-inch OS map (1843); aerial imagery |
| CH-19.1 | Archaeological/Cultural Heritage | Townland boundary | Undesignated | - | Clonbealy/ Mackney (Bourke) | 573068, 663185 | 1m | Townland boundary between Clonbealy and Mackney (Bourke). Aerial imagery indicates the boundary is tree-lined at this location. | Historical OS maps; aerial imagery |

⁶⁴ The NLS georeferenced first edition six-inch OS map appears to have a 10–20m inaccuracy in this area and as such it should be noted that the ITM location for this receptor is not accurate, and the distance has been given as a wide range to reflect this.

⁶⁵ As per previous footnote, wide range given for distance due to historical OS map inaccuracy in this area.

⁶⁶ As per previous footnote, wide range given for distance due to historical OS map inaccuracy in this area.

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|----------------|----------------------------------|--|---|-----------------|-------------------------------|----------------------------------|--|--|------------------------------------|
| CH-19.2 | Archaeological/Cultural Heritage | Townland boundary | Undesignated | - | Clonbealy/Mackney (Bourke) | 573310, 662850 | 1m | Townland boundary between Clonbealy and Mackney (Bourke). Aerial imagery indicates the boundary is tree-lined. | Historical OS maps; aerial imagery |
| CH-20 | Archaeological/Cultural Heritage | Former school grounds | Associated with TRPS789/NIAH 22311001 (charter school located outside the study area) | - | Clonbealy | 573083, 663141 to 573173, 662870 | 0m | Area marked as 'School Grounds' associated with a charter school (TRPS789/NIAH 22311001) shown on an historical map dating to between 1770 and 1840 in the NLI Longfield Collection, ⁶⁷ as well as on historical OS maps. Area currently comprises agricultural fields. The section of the Proposed Alterations footprint within the grounds highlighted in Figure 22 (the receptor extends outside the site footprint to the west). | Historical maps; aerial imagery |
| CH-21 | Archaeological Heritage | Area of archaeological potential (AAP) | Undesignated | - | Mackney (Bourke); Carrowkeale | 573305, 662893 to 573914, 662300 | 0m | AAP within agricultural lands in the vicinity of Small River. The section of the Proposed Alterations footprint that crosses this AAP is highlighted in Figure 22 (it should be noted that the AAP extends beyond the site footprint). Within the site footprint, the AAP crosses CH-22 ; it also runs adjacent to part of CH-19.2). Part of the area to the south of Small River runs along existing farm trackways; these sections have a lower archaeological potential than undisturbed greenfield lands. | Aerial imagery |
| CH-22 | Archaeological/Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Mackney (Bourke)/Carrowkeale | 573549, 662756 | Within Construction Works Area 5m (from access road) | Townland boundary between Mackney (Bourke) and Carrowkeale which runs along the River Small within the study area. Aerial imagery indicates river is tree-lined within the study area. | Historical OS maps; aerial imagery |

⁶⁷ Available at: <https://catalogue.nli.ie/Record/vtls000302568> [Accessed: September 2024].

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|----------------------------------|--|---|-----------------|-------------------------|----------------|------------------------|---|---|
| CH-23 | Archaeological/Cultural Heritage | Townland boundary along road | Undesignated (partially within ZoN of TN037-010---) | - | Carrowkeale/Derryleigh | 574241, 662124 | 0m | Townland boundary between Carrowkeale and Derryleigh. The boundary runs along a modern roadway; historical OS maps also depict a roadway at this location. At its eastern end, the boundary cuts through the northern side of Recorded Monument TN037 010---- (CH-03 : ringfort, possibly used as a cillín or children's burial ground). | Historical OS maps; aerial imagery; GSV |
| CH-24 | Archaeological Heritage | Three buildings (site of) | Undesignated | - | Derryleigh | 573991, 662231 | 1–2m | Three buildings shown on first edition six-inch OS map (1843) within Derryleigh townland directly adjacent to the boundary with Carrowkeale (situated to the north). No visible remains. | Historical OS maps; aerial imagery |
| CH-25 | Built Heritage | Remains of three buildings shown on historical OS maps | Undesignated | - | Derryleigh | 574186, 662132 | 0.5–1m | Group of three buildings shown on historical OS maps within Derryleigh townland directly adjacent to the boundary with Carrowkeale (situated to the north); remains still extant. | Historical OS maps; aerial imagery; GSV |
| CH-26 | Archaeological/Cultural Heritage | Townland boundary | Undesignated (within ZoN of TN037-010) | - | Derryleigh/Kilnacappagh | 574502, 661839 | 0m (northern end only) | Townland boundary between Derryleigh and Kilnacappagh. The boundary runs along a laneway at its northern end for c.50m and then branches off along field boundaries; historical OS maps also depict a laneway at this location. The section of boundary along the laneway cuts through the eastern side of Recorded Monument TN037-010---- (CH-03 : ringfort, possibly used as a cillín or children's burial ground). | Historical OS maps; aerial imagery; GSV |

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|--------------------------------|--|--------------|------------------|--------------|----------------|---------------------------------------|---|---|
| CH-27 | Archaeological Heritage | Village/small settlement (with some extant upstanding remains) | Undesignated | - | Kilnacappagh | 574637, 661492 | 0m (laneway); 0.5–1m (extant remains) | Village/small settlement depicted on first edition six-inch OS map (1843) consisting of roughly twenty buildings mainly located on the eastern side of a laneway. The settlement is largely gone by the time of the 1904 six-inch/25-inch OS maps. There is also a potential oval-shaped enclosing element around the settlement visible in aerial imagery (e.g. GSI R. 285/6 dating to 1974 included in Appendix 3: CH-04 record). Extracts from the historical OS maps are shown in Figure 14 and Figure 15 where the extent of the village and laneway can be seen. Some of the buildings depicted on the historical OS maps and associated gate piers along the laneway are still extant. It is likely that the laneway itself is of some antiquity; it leads northwards to CH-03 (a ringfort, possibly used as a cillín or children's burial ground) and southwards to the R503. | Historical OS maps; aerial imagery. |
| CH-28 | Archaeological Heritage | Lime kiln | Undesignated | [EIAR Ref. GU28] | Kilnacappagh | 574816, 661249 | 20m | Lime kiln depicted on 25-inch OS map (1904). Walkover survey confirmed that remains of lime kiln still upstanding. Surrounding area currently wooded. | 25-inch OS map (1904); walkover survey |
| CH-29 | Archaeological Heritage | Lime kiln (site of) | Undesignated | - | Fanit | 577782, 660304 | 2–3m | Lime kiln depicted directly adjacent to roadway on first edition six-inch OS map (1843). No visible remains; however, limited visibility due to trees and vegetation. | First edition six-inch OS map (1843); aerial imagery; GSV walkover survey |
| CH-30 | Archaeological/ Built Heritage | Road bridge over river; with benchmark (site of) | Undesignated | [B5] | Fanit | 577846, 660328 | 2–3m | Bridge indicated at this location on historical OS maps; benchmark also marked at bridge location on 25-inch OS map (1904) and second edition six-inch OS map (1905). Low parapet wall visible | Historical OS maps; GSV; walkover survey |

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|--|--|--------------|-----------------|-----------------|----------------------------------|--|---|--|
| | | | | | | | | on northern side which potentially contains fabric of built heritage interest/ significance. Not all aspects visible; therefore, could be further historic bridge fabric still <i>in situ</i> . | |
| CH-31 | Archaeological Heritage | Area of archaeological potential (AAP) | Undesignated | - | Fanit | 577778, 660313 to 577918, 660352 | 0m | AAP which includes a watercourse running under B5 (CH-30). The area has been recently planted with trees and as such it has a lower archaeological potential to undisturbed greenfield lands. However, historical OS maps indicate previous structures in the area including a limekiln (CH-32). The section of the Proposed Alterations footprint that crosses this AAP is highlighted in Figure 24 (it should be noted that the AAP extends beyond the site footprint). | Aerial imagery; walkover survey |
| CH-32 | Archaeological Heritage | Lime kiln and three buildings (site of) | Undesignated | - | Fanit | 577874, 660366 | 0–3m | Lime kiln and three buildings depicted to north of roadway on first edition six-inch OS map (1843). No visible remains – walkover survey indicates area is now afforested, but some potential for surviving subsurface features remains. | First edition six-inch OS map (1843); GSV; walkover survey |
| CH-33 | Archaeological/Cultural/Built Heritage | Road bridge over watercourse along townland boundary | Undesignated | [B6] | Fanit/Lackamore | 578136, 660412 | 60–65m from proposed directional drilling pit. | Bridge indicated at this location on historical OS maps. Low stone-built parapet wall visible on northern side which potentially contains fabric of built heritage interest. Recent repairs are evident. Modern wall on the southern side. Not all aspects visible; therefore, could be further historic bridge fabric still <i>in situ</i> . | Historical OS maps; GSV |

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|--------------------------------|---|--------------|------------------|--------------------|----------------|--|--|--|
| CH-34 | Archaeological Heritage | Lackamore School (site of) | Undesignated | - | Lackamore | 578158, 660438 | 20m from proposed directional drilling pit. | School adjacent to roadway depicted on historical OS maps consisting of two buildings. Shown within rectangular property plot on 25-inch OS map (1904) and second edition six-inch OS map (1905). No visible remains. Site is now a landscaped area within the grounds of a new school. | Historical OS maps; aerial imagery; GSV |
| CH-35 | Archaeological/ Built Heritage | Road bridge over watercourse; with benchmark (site of) | Undesignated | [B7] | Lackamore | 578305, 660459 | 60–65m from proposed directional drilling pit. | Bridge indicated at this location on historical OS maps; benchmark also marked at bridge location on 25-inch OS map (1904)/second edition six-inch OS map (1905). Low stone-built parapet wall visible on southern side in bad condition which potentially contains fabric of built heritage interest/significance. Not all aspects visible; therefore, could be further historic bridge fabric still <i>in situ</i> . | Historical OS maps; GSV; walkover survey |
| CH-36 | Archaeological/ Built Heritage | Road bridge over watercourse | Undesignated | [B8] | Tooreenbrien Upper | 579438, 660719 | 60–65m from proposed directional drilling pit. | Bridge indicated at this location on first edition six-inch OS map. Low parapet wall largely masked by vegetation visible on southern side, which potentially contains fabric of built heritage interest/significance. Not all aspects visible; therefore, could be further historic bridge fabric still <i>in situ</i> . | First edition six-inch OS map (1843); GSV; walkover survey |
| CH-37 | Built Heritage | Police station/lodge (Lackamore Lodge); and associated structures | Undesignated | [EIAR Ref. GU35] | Tooreenbrien Upper | 579488, 660650 | 65m from proposed directional drilling pit. | Two buildings labelled as 'Police Station' depicted on first edition six inch OS map (1843). Labelled as 'Lackamore Lodge' on 25-inch OS map (1904) and second edition six-inch OS map (1905). There are also two further buildings shown on the later editions. Aerial imagery indicates some extant remains, however, visibility obscured by trees. | Historical OS maps; aerial imagery; current OS map |

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|--------------------------------------|---|--------------|------------------|---|----------------------------------|--|--|---|
| CH-38 | Archaeological Heritage | Two roadside buildings (site of) | Undesignated | - | Tooreenbrien Upper | 579508, 660733 | 1–2m from proposed directional drilling pit. | Two roadside buildings depicted on first edition six-inch OS map (1843). No visible remains; however, limited visibility due to trees/vegetation. Area now bounded by low stone-built wall. | First edition six-inch OS map (1843); aerial imagery; GSV |
| CH-39 | Archaeological Heritage | Ford | Undesignated | [EIAR Ref. GU37] | Tooreenbrien Upper/ Tooreenbrien Lower | 580525, 660762 | 10m | 'Ford' labelled on 25-inch OS map (1904) and second edition six-inch OS map (1905) to south of B9 (CH-40). | 25-inch (1904) and second edition six-inch (1905) OS maps |
| CH-40 | Archaeological/ Built Heritage | Road bridge (site of); with benchmark (site of) | Undesignated | [B9] | Tooreenbrien Upper/ Tooreenbrien Lower | 580528, 660768 | 3–4m | Bridge indicated at this location on historical OS maps; benchmark also marked at bridge location on 25-inch OS map (1904) and second edition six-inch OS map (1905). Concrete block parapet walls visible on either side of roadway. Not all aspects of the bridge visible; therefore, could be historic bridge fabric still <i>in situ</i> . Bridge crosses river along townland boundary (CH-42). | Historical OS maps; GSV; walkover survey |
| CH-41 | Archaeological Heritage | Area of archaeological potential (AAP) | Undesignated | - | Tooreenbrien Upper; Tooreenbrien Lower | 580489, 660782 to 580586, 660752 | 0m | AAP within agricultural lands either side of a watercourse that runs along a townland boundary (CH-42) in the vicinity of B9 (CH-40). The first edition six-inch OS map (1843) depicts a limekiln (CH-43) within the area to the east of the watercourse. The section of the Proposed Alterations footprint that crosses this AAP is highlighted in Figure 24 (it should be noted that the AAP extends beyond the site footprint). | Aerial imagery; GSV |
| CH-42 | Archaeological/ Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Tooreenbrien Upper/ Tooreenbrien Lower | 580531, 660780 | 0m | Townland boundary between Tooreenbrien Upper and Tooreenbrien Lower along watercourse running under B9 (CH-40). | Historical OS maps; aerial imagery; GSV |

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|-----------------------------------|---|--------------|-----------------|-----------------------------------|----------------------------------|--|---|--|
| CH-43 | Archaeological Heritage | Lime kiln (site of) | Undesignated | - | Tooreenbrien Lower | 580553, 660783 | 2–3m | Lime kiln depicted to north of roadway on first edition six-inch OS map (1843). No visible remains. | First edition six-inch OS map (1843); aerial imagery |
| CH-44 | Archaeological/ Built Heritage | Watercourse running through masonry culvert under roadway | Undesignated | [B10] | Tooreenbrien Lower | 580926, 660590 | 0m (from possible replacement culvert) | No bridge indicated on historical OS maps. Masonry culvert visible on northern side, which could date to the nineteenth century or earlier. | Historical OS maps; GSV; walkover survey |
| CH-45 | Archaeological Heritage | Area of archaeological potential (AAP) | Undesignated | - | Tooreenbrien Upper; Reardnogy Beg | 581385, 660274 to 581469, 660210 | 0m | AAP within agricultural lands either side of a watercourse that runs along a townland boundary (CH-46) in the vicinity of B11 (CH-07). The section of the Proposed Alterations footprint that crosses this AAP is highlighted in Figure 24 (it should be noted that the AAP extends beyond the site footprint). | Aerial imagery; GSV; walkover survey |
| CH-46 | Archaeological/ Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Tooreenbrien Upper/ Reardnogy Beg | 581392, 660255 | 0m | Townland boundary between Tooreenbrien Upper and Reardnogy Beg along watercourse (Clare River) running under B11 (CH-07). | Historical OS maps; aerial imagery; GSV |
| CH-47 | Archaeological/ Built Heritage | Road bridge over watercourse | Undesignated | [B12] | Baurnadomeeny | 585268, 659017 | 60–65m from proposed directional drilling pit. | Bridge indicated on 1843 six-inch OS map. Low parapet wall largely masked by vegetation visible on southern side, which potentially contains fabric of built heritage interest. Not all aspects visible; therefore, could be further historic bridge fabric still <i>in situ</i> . | First edition six-inch OS map (1843); GSV; walkover survey |
| CH-48 | Archaeological/ Built Heritage | Road bridge (site of) over watercourse | Undesignated | [B13] | Baurnadomeeny | 585489, 658938 | 60–65m from proposed directional drilling pit. | Bridge indicated at this location on historical OS maps. Nothing visible; however, not all aspects observable, therefore, there could be historic bridge fabric still <i>in situ</i> . | First edition six-inch OS map (1843); GSV; walkover survey |

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|--|--|--------------|-----------------------|-----------------------|----------------------------------|---|--|--|
| CH-49 | Archaeological Heritage | Lime kiln (site of) | Undesignated | - | Baurnadomeeny | 585508, 658915 | 50m from proposed directional drilling pit. | Lime kiln depicted to south of roadway on first edition six-inch OS map (1843). No visible remains; however, limited visibility due to trees and vegetation. | First edition six-inch OS map (1843); aerial imagery; GSV; walkover survey |
| CH-50 | Built Heritage | Benchmark (site of) | Undesignated | - | Baurnadomeeny | 585601, 658890 | 45m from proposed directional drilling pit. | Benchmark depicted on 25-inch OS map (1904) and second edition six-inch OS map (1905). | 25-inch (1904) and second edition six-inch (1905) OS maps |
| CH-51 | Archaeological/Cultural/Built Heritage | Road bridge; with benchmark (site of) | Undesignated | Coonmore Bridge [B14] | Coonmore/Foildarragh | 587423, 658557 | 2–3m | Bridge indicated at this location on historical OS maps; benchmark also marked at bridge location on 25-inch OS map (1904) and second edition six-inch OS map (1905). Stone-built structure visible from watercourse of built heritage significance; stone-built parapet walls visible on either side of roadway, which are largely recently constructed but some older stonework visible which could potentially be of built heritage significance/interest. | Historical OS maps; GSV; walkover survey |
| CH-52 | Archaeological Heritage | Area of archaeological potential (AAP) | Undesignated | - | Coonmore; Foildarragh | 587416, 658521 to 587443, 658567 | 0m | AAP in steeply sloped forested/scrub lands either side of a watercourse that runs along a townland boundary (CH-53) in the vicinity of B14 (CH-51). A well (CH-54) is shown on the 1904 25-inch and 1905 six-inch OS maps in the area to the east of the watercourse. The wooded area is considered to have lower potential than undisturbed greenfield lands. The section of the Proposed Alterations footprint that crosses this AAP is highlighted in Figure 25 (it should be noted that the AAP extends beyond the site footprint). | Aerial imagery; GSV |

| Receptor No. | Category | Site Type | Status | Reference/ Name | Townland | ITM | Approx. Distance | Description | Sources |
|--------------|----------------------------------|-------------------------------------|--------------|-------------------------------------|----------------------|----------------|--|---|--|
| CH-53 | Archaeological/Cultural Heritage | Townland boundary along watercourse | Undesignated | - | Coonmore/Foildarragh | 587395, 658569 | 0m | Townland boundary between Coonmore and Foildarragh along watercourse running under B14 (CH-51). | Historical OS maps; aerial imagery; GSV |
| CH-54 | Archaeological Heritage | Well (site of) | Undesignated | - | Coonmore | 587396, 658581 | 0–3m | A well depicted to north of watercourse on 25-inch OS map (1904) and second edition six-inch OS map (1905). No visible remains. | 25-inch (1904) and second edition six-inch (1905) OS maps |
| CH-55 | Built Heritage | Creamery | Undesignated | Kilcommon Creamery [EIAR Ref. GU48] | Foildarragh | 588911, 658778 | 65m from proposed directional drilling pit. | Creamery depicted to north of roadway on 25-inch OS map (1904) and second edition six-inch OS map (1905). Still upstanding. | 25-inch (1904) and second edition six-inch (1905) OS maps; aerial imagery; GSV; current OS |
| CH-56 | Built Heritage | Constabulary barracks | Undesignated | [EIAR Ref. GU49] | Kilcommon | 589037, 658716 | 1–2m from proposed directional drilling pit. | Constabulary barracks depicted on historical OS maps. The 25-inch OS map (1904) and second edition six-inch OS map (1905) show the complex extending towards the west. Some structures still extant including roadside buildings. | Historical OS maps |