

Tyrone - Cavan Interconnector

Volume 3 - Part 3(a) of 5

Consolidated Environmental Statement
Appendices



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**This document is Volume 3 : Appendices Part 3 of the
Tyrone – Cavan Interconnector Environmental Statement (ES).**
The whole ES consists of a number of documents printed separately and should be read
together.

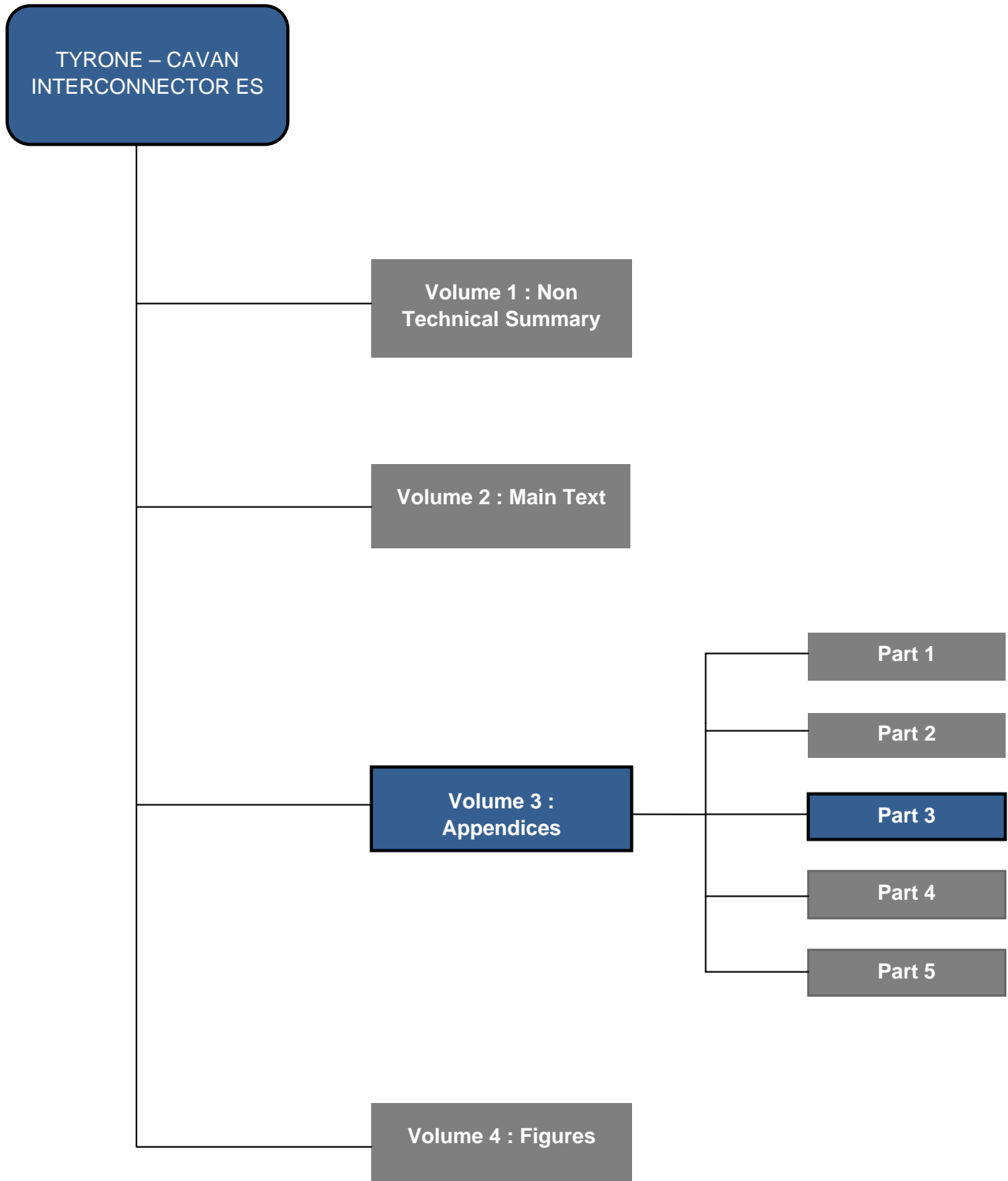


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For ease of use this document has been printed in A4 format. Should a larger format be required, an electronic version is available at www.nie.co.uk.

Alternatively a printed A3 version may be obtained by contacting NIE at:

NIE Major Projects
120 Malone Road, Belfast, BT9 5HT
Tel: 08457 643 643

Appendix 7A DECC Code of Practice

Power Lines: Demonstrating compliance with EMF public exposure guidelines

A voluntary Code of Practice

This document replaces “Power Lines: Demonstrating compliance with EMF public exposure guidelines – A voluntary Code of Practice” published by DECC in February 2011

March 2012

About this voluntary Code of Practice

This Voluntary Code of Practice concerns situations where it is necessary to demonstrate compliance with the exposure guidelines that apply to public exposure to power frequency electric and magnetic fields (EMFs) in the UK.

Current Government policy on electric and magnetic fields (EMFs)^{1, 2} is that power lines should comply with the 1998 ICNIRP Guidelines³ on exposure to EMFs in the terms of the 1999 EU Recommendation⁴, and this Code of Practice implements this policy. As and when either ICNIRP issue new Guidelines or the EU revise the Recommendation, it will be for Government to consider those changes and to decide whether to adopt them or not. If Government policy changes, this Code of Practice will also be changed accordingly, but until that happens, the present policy as reflected in this Code of Practice remains in force.

This Code of Practice has been developed following publication of the Government response to the Stakeholder Advisory Group on extremely low frequency electric and magnetic fields (ELF EMFs)(SAGE) First Interim Assessment: Power Lines and Property, Wiring in Homes and Electrical Equipment in Homes, published in June 2007⁵. This Code of Practice has been agreed by the Department of Energy and Climate Change with the Department of Health, the Energy Networks Association, the Welsh Assembly, the Scottish Executive, the Northern Ireland Executive and the Health and Safety Executive. It sets out what will be regarded as suitable evidence of compliance with these exposure guidelines as far as the electricity system is concerned.

There are further Government policies relating to EMFs from overhead power lines, specifically that as a precautionary measure they should, where reasonable, have optimum phasing. That is the subject of a companion Code of Practice “Optimum phasing of high voltage double-circuit power lines”.

This Code of Practice applies in England, Wales, Scotland and Northern Ireland.

What are the electricity industry and Government agreeing?

*The Electricity Industry*⁶ agrees that whenever evidence is required of compliance with EMF exposure limits, it will provide evidence according to this Code of Practice. *Government* agrees that such evidence will be regarded as sufficient to demonstrate compliance. Situations

¹ Letter with ten-point annex from Parliamentary Under Secretary of State for Public Health to the Chairman of the National Radiological Protection Board, 22 July 2004

² “Government response to the Stakeholder Advisory Group on extremely low frequency electric and magnetic fields (ELF EMFs) (SAGE) recommendations.”, Written Ministerial Statement 16 October 2009

³ ICNIRP (1998). Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz). Health Phys, 74(4), 494-522.

⁴ COUNCIL RECOMMENDATION of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) (1999/519/EC)

⁵ SAGE First Interim Assessment <http://www.emfs.info/NR/rdonlyres/39CDF32F-E92B-4E2E-AD30-A2B0006B8ED5/0/SAGEfirstinterimassessment.pdf>

⁶ This Code of Practice is agreed between Government and the Energy Networks Association (ENA). Formally, therefore, it binds only the member companies of ENA. However, Government and ENA hope that all network operators will follow these provisions.

where the need for evidence of compliance with exposure limits may arise include applications for development consent for overhead power lines under the Planning Act 2008 and under Section 37 of the Electricity Act 1989, for compulsory purchase under schedule 3 to that Act, for necessary wayleaves under schedule 4 to that Act, and for planning permission for electricity equipment and equivalent situations under the relevant legislation in Scotland and Northern Ireland.

Direct and Indirect Effects

The Exposure Guidelines deal with both direct effects of fields on the body, primarily the induction of currents in the body, and indirect effects, such as microshocks, contact currents, and surface charge effects, which are all a consequence of charging and discharging of objects by the electric field.

Direct effects are protected against by quantitative exposure limits known as basic restrictions. The remainder of this Code of Practice details these quantitative limits and how they are applied.

While indirect effects are more tangible due to effects such as microshocks, they have historically given rise to less concerns than direct effects. For indirect effects, while the Guidelines give a cautionary reference level of 5 kV m^{-1} for the general public as a trigger to fuller assessment of compliance with the exposure guidelines, using that as a limit is not the most appropriate way of dealing with indirect effects. Rather, there is a suite of measures that may be called upon in particular situations, including provision of information, earthing, and screening, alongside limiting the field which should be used to reduce the risk to the public of indirect effects. In some situations, there may be no reasonable way of eliminating indirect effects, for instance where erecting screening would obstruct the intended use of the land. The approach to addressing indirect effects of electric fields will be the subject of a separate voluntary Code of Practice to be developed between the industry and the Health Protection Agency.

What are the values of the public exposure limits?

The 1998 ICNIRP exposure guidelines specify a basic restriction for the public which is that the induced current density in the central nervous system should not exceed 2 mA m^{-2} . The Health Protection Agency specify⁷ that this induced current density equates to uniform unperturbed fields of $360 \text{ } \mu\text{T}$ for magnetic fields and 9.0 kV m^{-1} for electric fields. Where the field is not uniform, more detailed investigation is needed. Accordingly, these are the field levels with which overhead power lines (which produce essentially uniform fields near ground level) shall comply where necessary. For other equipment, such as underground cables, which produce non-uniform fields, the equivalent figures will never be lower but may be higher and will need establishing on a case-by-case basis in accordance with the procedures specified by HPA. Further explanation of basic restrictions, reference levels etc is given by the Health Protection Agency⁷.

Where do these limits apply?

⁷ "Application of ICNIRP Exposure Guidelines for 50 Hz Power Frequency Fields"

http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1195733805036?p=1158934607693

Government policy is that the 1998 ICNIRP guidelines apply in the terms of the 1999 EU Recommendation. This specifies that Member States should:

“II. (b) implement measures according to this framework.....when the time of exposure is significant..... “

“III (c) may take into account criteria, where appropriate, such as duration of the exposure.....”

The preamble states:

“(9) This recommendationapplies, in particular, to relevant areas where members of the public spend significant time in relation to the effects covered by this recommendation;”

The Written Ministerial Statement of 16 October 2009 states (paragraph 42):

"... In this regard, the UK Government considers that exposure for potentially significant periods of time might reasonably be regarded as referring to residential properties, and to properties where members of the public spend an appreciable proportion of their time. "

The clear steer from these statements is that there will be certain environments in which the public exposure is potentially for a significant period of time and where compliance with the ICNIRP general public guidelines will be required. In other environments, where exposure can be deemed not to be for a significant period of time, the ICNIRP occupational guidelines, rather than the ICNIRP general public guidelines, shall be deemed to apply.

In order to provide precision for the network companies, local planning officers and the public, in terms of assessing which guidelines apply it is appropriate to look across to any readily available tools in the planning system. All regions of the UK are covered in planning by a “Use Classes” regime which extends development control to changes in use of buildings or land. It would therefore be appropriate to draw on the classification used there to provide clarity.

The thrust of concern where public guidelines should apply is to residential uses. This would embrace use classes variously described as “dwellinghouses”, “houses”, “houses in multiple occupation” and “residential institutions”. It should sensibly be taken more broadly as also embracing other residential properties which may not fall within a particular use class e.g. flats or hostels. A less clear cut case exists for extending it to schools but given the health concern is very much orientated towards childhood sickness it would seem prudent to behave in a precautionary manner and include non-residential uses such as schools, crèches and day nurseries.

In each case, for practical application of the guidelines the definition should also be taken to include the curtilage of the building concerned.

When is specific evidence of compliance required?

The Energy Networks Association will maintain a publicly-available list on its website of types of equipment where the design is such that it is not capable of exceeding the ICNIRP exposure

guidelines, with evidence as to why this is the case. Such types of equipment are likely to include:

- overhead power lines at voltages up to and including 132 kV
- underground cables at voltages up to and including 132 kV
- substations at and beyond the publicly accessible perimeter

Compliance with exposure guidelines for such equipment will be assumed unless evidence is brought to the contrary in specific cases.

For all other equipment (e.g. overhead power lines and underground cables at voltages of 275 kV and 400 kV), when evidence of compliance with exposure guidelines is needed, the following will be provided:

- A calculation or measurement of the maximum fields (ie directly under the line, or directly above the cable)

If this maximum value is less than the ICNIRP guideline levels, it may be assumed that all fields and exposures from that source will be compliant. If this maximum value exceeds the ICNIRP guideline levels, then it is also necessary to provide:

- A calculation or measurement of the field at the location of the closest property at which the public exposure guidelines apply

For overhead lines only, in addition:

- A statement as to compliance with the Code of Practice on phasing, including a justification in the terms of that Code of Practice if the line does not have optimum phasing.

What conditions is compliance assessed for?

Government policy is that the ICNIRP guidelines for the general public will be observed in areas where the land use is such that exposure might be for a significant period of time. Therefore, it is not appropriate to assess compliance for extreme, rare, or unlikely situations. Accordingly, for the purposes of compliance with Government policy, field levels will be assessed:

- For electric fields: for nominal voltage and, for overhead lines, design minimum clearance (excluding reduced clearances that occur only during exceptional ice loading);
- For magnetic fields: for the highest rating that can be applied continuously in an intact system (i.e. including ratings which apply only in cold weather, but not including short-term ratings or ratings which apply only for the duration of a fault elsewhere in the electricity system) and, for overhead lines, design minimum clearance;
- For both electric and magnetic fields: for 1 m above ground level on a plain, level surface;
- For both electric and magnetic fields: for the 50 Hz field only, ignoring harmonics.

Assessments may be offered for other conditions as well, eg abnormal operating conditions, but these are not required, and compliance with Government policy will be assessed for the above conditions.

Should compliance be demonstrated by calculations or measurements?

For sources that have a defined geometry that lends itself to calculations, such as overhead power lines and underground cables, calculations will usually be the preferred method of demonstrating compliance. For sources with a more complex geometry, measurements may be preferred.

Measurements are acceptable if they can be performed for, or scaled to, the above conditions.

Calculations are always acceptable if performed in accordance with the following specification and do not need to be supported by measurements, although measurements may be offered in addition.

Details of acceptable calculations

Calculations performed in accordance with the following will be regarded as acceptable evidence of field levels:

- for linear sources such as overhead lines and underground cables, are based on the infinite-straight-line approximation;
- are of the unperturbed field;
- take account of the correct conductor(s) number, type and size;
- ignore zero-sequence and negative-sequence currents, and voltages and currents induced in the sheath, ground or earth wire;
- for electric fields, treat the ground as a perfect conductor;

and in addition, specifically for overhead lines:

- take account of the basic tower geometry for the design of line in question, but ignore variations in conductor spacing at angle towers etc.

More detailed evidence will also be acceptable if offered but is not required, including:

- Calculations based on the actual conductor geometry rather than the infinite straight line approximation;
- Calculations taking account of perturbations to the electric field from conducting objects.

Committing to Good Practice

This is a voluntary Code of Practice, supplemented by the companion Code “Optimum phasing of high-voltage double-circuit power lines”. Industry and Government are committed in their efforts to demonstrate assessment and compliance with EMF public exposure limits.

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URN : 12D/035

Appendix 7B Email from St. Jude Medical

FROM: Lagstrom, Niklas

Tuesday, 27 December 2011, 10:12

TO: Fergal Woods

Dear Fergal,

No, it is not completely correct that the stronger the magnetic field, the higher is the risk of interference. It is completely depending on the frequency of the electro magnetic field.

It does not need 10,000,000 microteslas to raise concerns regarding electro magnetic interference problems for an ICD. What I said was that at a frequency of 10 MHz (=10 000 000 Hz), the maximum limit of the magnetic field of 0.092 microtesla. Please note that there is a **great difference between Hz (which means number of changes per second of the magnetic field) and the the number of microteslas, that is needed to interrupt with the pacemaker.**

If the frequency in the powerline is 50 Hz, the upper limit of the magnetic field is 0.1 μ T. With your given values of the typical field 25 meters to the side to be 1-2 μ T, this is still 10-20 times to high. However, the strengths of the magnetic field decreases rapidly with the distance from the source, which means that your other given number, the one that indicates that a distance of 37 meters should be kept to avoid interference, sounds reasonable.

I hope this answered your question, otherwise feel free to contact us again.

Med vänliga hälsningar/ Best regards

Niklas

Niklas Lagström

Product Specialist Technical Support
Cardiac Rhythm Management Division

St. Jude Medical AB

Tel +46 8 474 6147

Fax +46 8 783 6126

technical.support@stjude.com

From: Fergal Woods (mailto:fergal.woods@yahoo.co.uk)

Sent: den 22 december 2011 15:55.

To: Lagstrom, Niklas

Subject: Re: ICD 400KV Powerline - C1#54320

Dear Niklas,

Apologies for my ignorance and lack of knowledge when it comes to the full understandings of frequencies from transmission lines. But, my basic understanding was and that the higher the magnetic field the greater the possibly of interference to electronic devices and in this particular case an ICD. But, from your e-mail and feel free to correct me if I'm wrong. I take from it that you are in no way concerned about a 100 microtesla field which is understood, but it would take levels to exceed 10,000,000 microteslas before any concern would be raised.

This has really confused me because, on one hand I've been told that a patient with a ICD implanted standing under a 400kv powerline may experience asynchronous pacing. I assuming that this is based on 50hz frequency, thus 5,000 microtesla as per frequency of powerlines in the UK. There is a huge gap from 5,000 microteslas to the 10,000,000 that you state before any concern would be raised. Is my understanding of this correct?

I had always been led to believe that patients were advised to avoid EMF frequencies from High voltage power lines, and even taking it a step further other manufacturers of ICD have noted on websites advised that patients with ICD's fitted should not be go any closer than 37metres for fear of electrical interference. But, based on what you are stating it reads that there is absolutely nothing that a patient with a St Judes's ICD implanted device has to be concerned about in relation to EMF exposure from High voltage UK power lines, even to the extent of standing for long periods of time directly underneath a 400kv powerline. Am I correct in stating this? It's just, it goes completely against the advise as to what I've read up on in relation to EMF interaction on ICD's.

I again thank you for your assistance and if this is indeed the situation that my father has absolutely nothing to fear from walking under such power lines it will be of great reassurance to us.

Regards
Fergal Woods

From: "Lagstrom, Niklas" <NLagstrom@sjm.com>
To: Fergal Woods <fergal.woods@yahoo.co.uk>
Sent: Thursday, 22 December 2011, 11:40
Subject: RE: ICD 400KV Powerline - CI#64520

Dear Fergal,

The effect on the ICD is related to the frequencies of the magnetic field, and therefore I can not say anything about the potential effects. For example, if the frequency is below 1 Hz, 100 microtesla is no problem, but if the frequency is 10-440 Megahertz, 0.092 microtesla may be a problem.

So, what I need to know is the frequency of the magnetic field around the powerline.

Mitt vänliga hälsningar/ Best regards

Niklas

Niklas Lagström
Product Specialist Technical Support
Cardiac Rhythm Management Division

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Fax: +46 8 750 3030
technical.support@stjude.com

From: Fergal Woods [mailto:fergal.woods@ytiboo.co.uk]
Sent: den 22 december 2011 12:02
To: Lagstrom, Niklas
Subject: Re: ICD 400KV Powerline - CI#64520

Dear Niklas,

The typical Magnetic field from a UK 400KV powerline is as follows:

- Maximum field under the line 100 microteslas
- Typical field under the line 5 - 10 microteslas
- Typical field (25m to side) 1 - 2 microteslas

Based on the above figures, could you give me guidance as to possible ICD interference times on EMP strength.

Could his ICD malfunction/ become disabled under a magnetic field strength of 100 microteslas?

Could his ICD malfunction/ become disabled under a magnetic field strength of 5 - 10 microteslas?

Could his ICD malfunction/ become disabled under a magnetic field strength of 1 - 2 microteslas?

I again thank you for your assistance with this matter and I look forward to your response.

From: Lagström, Niklas [redacted]
 Sent: 23 January 2012 12:06
 To: [redacted]
 Cc: [redacted]
 Subject: Magnetic fields from 400 kV power line - CI#64320 & 64880

Dear [redacted]

I'm sorry to get back to you in order to correct the numbers I have given to you earlier.

Unfortunately, I made a mistake in the given units used in the table 7. "Reference levels for general public exposure to time-varying electric, magnetic and electromagnetic fields" (International Commission on Non-Ionizing Radiation Protection, ICNIRP, <http://www.icnirp.de/documents/emfgdl.pdf>)

Table 7. Reference levels for general public exposure to time-varying electric and magnetic fields (unperturbed values).^a

Frequency range	E-field strength (V m ⁻¹)	H-field strength (A m ⁻¹)	B-field (μT)	Equivalent plane wave power density S _{eq} (W m ⁻²)
up to 1 Hz	—	32 × 10 ⁴	4 × 10 ⁴	—
1–8 Hz	10,000	32 × 10 ⁴ /f ²	4 × 10 ⁴ /f ²	—
8–25 Hz	10,000	4,000/f	3,000/f	—
0.025–0.8 kHz	250/f	4/f	5/f	—
0.8–3 kHz	250/f	5	6.25	—
3–150 kHz	87	5	6.25	—
0.15–1 MHz	87	0.73/f	0.92/f	—
1–10 MHz	87/f ^{1/2}	0.73/f	0.92/f	—
10–400 MHz	28	0.073	0.092	2
400–2,000 MHz	1.375/f ^{1/2}	0.0037/f ^{1/2}	0.0046/f ^{1/2}	f/200
2–300 GHz	61	0.16	0.20	10

^a Note:

1. f as indicated in the frequency range column
2. Provided that basic restrictions are met and adverse indirect effects can be excluded, field strength values can be exceeded.
3. For frequencies between 100 kHz and 10 GHz, S_{eq}, E², H² and B² are to be averaged over any 6-min period.
4. For peak values at frequencies up to 100 kHz see Table 4, note 3.
5. For peak values at frequencies exceeding 100 kHz see Figs. 1 and 2. Between 100 kHz and 10 MHz, peak values for the strengths are obtained by interpolation from the 1.5-fold peak at 100 kHz to the 32-fold peak at 10 MHz. For frequencies above 10 MHz it is suggested that the peak equivalent plane wave power density, as averaged over the pulse width, does not exceed times the S_{eq} restrictions, or that the field strength does not exceed 32 times the field strength exposure levels given in the table.
6. For frequencies exceeding 10 GHz, S_{eq}, E², H² and B² are to be averaged over any 68/f^{1/20}-min period (f in GHz).
7. No E-field value is provided for frequencies <1 Hz, which are effectively static electric fields; perception of surface electric field will not occur at field strengths less than 25 kV/m⁻¹. Spark discharges causing stress or annoyance should be avoided.

I used the formula of 5/f, and thought f should be the frequency in Hz. Obviously, it should have been in kHz, which changes the calculations dramatically. Instead of having a limit of vulnerability at 0.1 μT, it is 100 μT at the frequency of 50 Hz.

This means that the maximum magnetic field under the line is just around our limit of vulnerability, and the typical field under the line is well below our level of vulnerability. Please note, that this is based on the information you sent me earlier:

- Maximum field under the line: 100 microteslas
- Typical field under the line: 5 - 10 microteslas
- Typical field (25m to side): 1 - 2 microteslas

Sorry for the confusion this may have caused.

Best regards

Niklas

Niklas Lagström

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Appendix 8A Legislation and Planning Policy

Appendix 8A Legislation and Planning Policy

Table 8.1.1 - Description of Relevant European and National Legislation

Legislation	Description
Priority Substances Directive (2008/105/EC)	Sets out environmental quality standards for the priority substances and certain other pollutants. This is the result of the requirements set in Article 16(8) of the WFD. In addition, Annex II replaces Annex X of the WFD referring to the list of priority substances. Member States shall take actions to meet those quality standards by 2015 as part of chemical status. For this purpose a programme of measures shall be in place by 2009, and become operational by 2012.
Fish (Consolidated) Directive (2006/44/EC) (replacing 78/659/EC) This Directive will be replaced by the WFD in 2013 once it is fully implemented.	The Fish (Consolidated) Directive (2006/44/EC) was originally adopted in 1978 (Directive 78/659/EC) but consolidated in 2006. It sets out standards of water quality for the protection of coarse and game fisheries together with monitoring requirements. There are two categories for designated watercourses, 'Salmonid' (those suitable for salmon and trout), and 'Cyprinid' (those suitable for coarse fish).
Dangerous Substances Directive (2006/11/EC replacing 76/464/EC)	Regulates a large number of chemicals that have the potential to cause aquatic pollution (elimination of List 1 and reduce pollution from List 2). The Directive covered discharges to inland surface waters, territorial waters, inland coastal waters and groundwater. This Directive is due to be repealed by the implementation of WFD daughter directives and is implemented in Northern Ireland by the Surface Waters (Dangerous Substances) (Classification) Regulations (Northern Ireland).
Environmental Liability Directive (2004/35/EC)	This sets out a regime for the prevention and remedying of environmental damage including from land contamination which presents a threat to human health. Strict liability would apply in respect of damage to land, water and biodiversity from activities regulated by specified EU legislation.
Water Framework Directive (2000/60/EC)	The EC Directive 2000/60/EC, otherwise known as the 'Water Framework Directive' (WFD), has progressively been implemented in Northern Ireland since 2004. The WFD is the main legislation for the protection and enhancement of the water environment and introduces a new catchment scale approach. The primary objective of the WFD is to maintain the 'high status' of waters where it exists, prevent deterioration, and to achieve at least 'good status' in relation to all waters by 2015 (unless there are certain exceptional conditions). This Directive is implemented in Northern Ireland by the Water Environment (Water Framework Directive) Regulations (Northern Ireland).
Nitrates Directive (91/676/EC)	This Directive seeks to reduce or prevent the pollution of water caused by the application and storage (i.e. from leaks and spills etc.) of inorganic fertiliser and manure on farmland. It is intended to safeguard drinking water supplies and prevent wider ecological damage in the form of eutrophication of freshwater and marine waters generally. This Directive is implemented in Northern Ireland by the Protection of Water Against Agricultural Nitrate Pollution Regulations (Northern Ireland) and the Nitrates Action Programme Regulations (Northern Ireland).
Water Framework Directive (Priority Substances and Classification) Regulations 2011	They provide a statutory basis for classification schemes in order to support the implementation of Directive 2000/60/EC, establishing a framework for Community action in the field of water policy (the Water Framework Directive). Further, these Regulations specifically implement Directive 2008/105/EC, on environmental quality standards in the field of water policy (Priority Substances Directive), which aims to protect the water environment from the impacts of dangerous chemicals.
Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010 (as amended 2011)	Aim to reduce and prevent pollution of the aquatic environment from any inadequate above ground oil storage facilities. They codify existing good practice and set minimum design standards for new and existing above ground oil storage facilities. Provide a legal requirement for the standards to be met.
Nitrates Action Programme Regulations (Northern Ireland) 2010 (as amended)	Protects water against nitrate pollution from agricultural sources.

Environment Liability (Prevention and Remediation) Regulations (Northern Ireland) 2009 (as amended)	The Statutory Rule transposes the provisions of the EC Environmental Liability Directive (2004/35/EC) with regard to the prevention and remedying of environmental damage. The Regulations impose obligations on operators of economic activities to prevent, limit or remediate environmental damage. The Regulations apply only to the more serious cases of environmental damage and are in addition to existing environmental legislation.
Water Abstraction and Impoundment (Licensing) Regulations (Northern Ireland) 2006	Sets out a control regime for regulating the abstraction of water and for construction, altering or operating impounding works.
Protection of Water Against Agricultural Nitrate Pollution Regulations (Northern Ireland) 2004	Establishes that an Action Programme applies in Northern Ireland.
Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003 (as amended)	Implements the WFD in Northern Ireland. It sets out requirements for managing, protecting and improving the quality of water resources, particularly river basins.
Control of Pollution (Applications and Registers) Regulations (Northern Ireland) 2001 (as amended)	Sets procedures for applying or varying consents under Part 2 of the Water (Northern Ireland) Order 1999, including advertising applications and details required on the water pollution control register.
Environment (Northern Ireland) Order 2002 (including amendments up to 2004)	Covers several environmental issues, including pollution prevention control, assessment and management of air quality, and designation of areas of special scientific interest (ASSIs).
Water (Northern Ireland) Order 1999 (as amended)	The aim of the Order is to make further provisions for discharge consents and allow the Department of the Environment for Northern Ireland (DoE NI) to set water quality objectives and prevent pollution by carrying out anti-pollution works. If the DoE NI believes any poisonous, noxious or polluting matter is likely to enter, or is present in, any waterway or water contained in underground strata, they can carry out any anti-pollution works and operations they feel necessary to address the situation. In addition, works notices can be served on anyone found to be causing or permitting poisonous, noxious or polluting matter into any waterway or water contained in underground strata, which requires anti-pollution works and operations to be carried out.
Drainage (Northern Ireland) Order 1973 (as amended)	Sets out the legislative basis for carrying out watercourse maintenance work and flood defence schemes.
Fisheries Act (Northern Ireland) 1966 (as amended)	Includes provision for the protection of fisheries making it an offence to: Use or possess deleterious matter for the capture, destruction or injury of fish; Pollute a watercourse; Remove any material from the bed of a river without the consent of the Fisheries Conservancy Board; and Obstruct the passage of fish or fail to protect fish where water is abstracted.

Table 8.1.3 - Relevant Planning Policies

Regional Development Strategy 2035	
RG9: Reduce our carbon footprint and facilitate mitigation and adaptation to climate change whilst improving air quality.	As part of a package of carbon reducing measures, this policy encourages the need to protect soils as they have important functions cleansing water used for domestic supplies, and encourages grey water recycling to reduce the need for treatment.
RG11: Conserve, protect and, where possible, enhance our built heritage and our natural environment	This policy requires the protection, enhancement and encourages the restoration of inland water bodies. Rivers and lakes support habitats and species of national and international importance. The quality and the ecological status of the water environment should be improved through fulfilment of statutory obligations.
Dungannon and South Tyrone Area Plan 2010 (Planning Service, Department of the Environment)	
The Dungannon and South Tyrone Plan 2010 sets out local planning policy within the study area. This has been reviewed, and although it provides general environmental protection, there are no specific planning policies with respect to pollution prevention.	
The Armagh Area plan 2004 No. 1 : Armagh Countryside Proposals	
No relevant policies.	
The Armagh Issues Paper 2018	
No relevant information.	

Appendix 8B NIEA WMU Response

Mary Maguire
AECOM
Clarence West Building
Clarence Street West
Belfast
BT2 7GP

Your Ref: L23600/OT
Our Ref: WQU07960
Date: 20 November 2012

Dear Mary,

Re: Tyrone/Cavan Interconnector

Thank you for your email sent on 30 October 2012 relating to the above.

WMU hold the following information relating to water which may be of use when carrying out your assessment:-

Abstractions

Please see attached - **NIEA – WMU – WQU07960 – Abstraction – Response.xls**

Pollution Incidents

Please see attached - **NIEA – WMU – WQU07960 – Pollution Incidents – Response.xls**

Consented Industrial Discharges

Please see attached - **NIEA – WMU – WQU07960 – Industrial Consents – Response.xls**

Consented Agricultural Discharges

Please see attached – **Data request 1. jpg**

NIW Ltd. Discharges

NIWL operational assets within 1km of the supplied shape file:

NAME	Type	Asset Grid ref	Discharge Grid
Blackwatertown WwPS	ERO	284094-352376	284068-352394
Artasooly WwPS	ERO	281970-349538	281970-349531
Edenderry Artasooly WwPS	None	282035-349829	
Redford WWTW	WWTW	282982-358613	
Lisdown WWTW	WWTW	282960-346798	
Drumhillery WWTW	WWTW	279225-336189	298496-345765

Water Framework Directive – Catchment Management Officer response

Query 1:

Confirmation of the status (i.e. Main River or Ordinary Watercourse) for the watercourses within the study area:

The 2009 classification of river waterbodies positioned within the Study area.

Waterbody Name	2009 Classification
Clontibret Stream (ROI) EuropeanCode UKGBNI1NB030308202 Blackwater/ Monaghan County Council Cross Border Code: XB_03_9	Poor
Cor River Trib EuropeanCode UKGBNI1NB030307096	Moderate
River Blackwater EuropeanCode UKGBNI1NB030307095	Poor
Ballymortrim Water EuropeanCode UKGBNI1NB030307045	Poor
River Blackwater EuropeanCode UKGBNI1NB030307040	Moderate
River Blackwater Benburb EuropeanCode UKGBNI1NB030307043	Moderate
Name River Blackwater EuropeanCode UKGBNI1NB030307027	Poor
Name Ballyrath Callan EuropeanCode UKGBNI1NB030307032	Moderate
Name River Blackwater EuropeanCode UKGBNI1NB030307027	Poor
Name River Rhone EuropeanCode UKGBNI1NB030307036	Poor
Name River Blackwater EuropeanCode UKGBNI1NB030307132	Poor
Name Drumard Burn Blackwater European Code UKGBNI1NB030307050	Bad

River Blackwater Local Management Area 2009 River Status and Objectives:

http://www.doeni.gov.uk/niea/river_blackwater_historical_status.pdf

Query 5

WFD Action Plans for the River Rhone, River Blackwater, Ballymartrin Water, Tynan Water and Clontibret Stream (which are all part of the Neagh Bann International River Basin Management Plan):

Actions for each waterbody can be found in the River Blackwater Local Management Area Action Plan

http://www.doeni.gov.uk/niea/river-blackwater_lma_actionplan.pdf

Clontibret stream (8202) is a cross border waterbody, additional information may be obtained from the Blackwater WMU Action Plan or obtained from Monaghan County Council.

Query 6

Details of any other water attribute or recreational / amenity activity (e.g. commercial fishery, angling, navigation, etc.) that we should be aware of and that would have relevance to the value of the water body and the impact assessment:

For Information:

Contact the Armagh City and District Council for recreational/amenity activities.

Contact DCAL regarding fisheries and angling in the area.

Contact Inland Waterways regarding navigation.

Query 7

Any other environmental reports or studies that may be relevant (e.g. relating to the Hydrology of the study area) that we should be made aware of:

NIEA have not carried out any hydrological surveys in the study area.

If you require any further water related environmental information about this or any other site please email details of your information request to WaterInfo@doeni.gov.uk

Yours sincerely,

Information Management
Water Management Unit

Appendix 9A Details of ASSI designations

DEPARTMENT OF THE ENVIRONMENT

DECLARATION OF AREA OF SPECIAL SCIENTIFIC INTEREST AT BENBURB - MILLTOWN, COUNTIES ARMAGH AND TYRONE. ARTICLE 28 OF THE ENVIRONMENT (NORTHERN IRELAND) ORDER 2002.

The Department of the Environment (the Department), having consulted the Council for Nature Conservation and the Countryside and being satisfied that the area described and delineated on the attached map (the area) is of special scientific interest by reason of its geological features and accordingly needs to be specially protected, hereby declares the area to be an area of special scientific interest to be known as the 'Benburb – Milltown Area of Special Scientific Interest'.

Benburb – Milltown is of special scientific interest because of the exposures present allowing the areas geology to be described and understood. The River Blackwater gorge between Benburb and Milltown hosts a series of disused quarries, together with natural cliff exposures. Collectively these exposures represent over 230m of Lower Carboniferous rock strata belonging to the Tyrone Group that have been classified into four formations and a series of subdivisions known as Members. In addition, exposures within the River Blackwater provide outcrop of the younger Triassic rocks in this area comprising two named geological formations. All the formations and members mentioned in this account have their stratotypes, or reference localities, in this area.

The lowest (and hence oldest) division present is the Maydown Limestone Formation, 126m of dark grey lime-rich shales, siltstones, silty limestones and crinoidal limestones (limestones composed almost entirely of crinoid ossicles, circular skeletal plates). With the exception of the base, the entire thickness can be seen in Maydown Quarry and the nearby exposures to the west. The formation has a rich fossil fauna including corals, lamp shells (brachiopods), bivalve molluscs, moss animals (bryozoa), sea urchins (echinoids) and stone lilies or crinoids (animals related to star fish). The species gathered here, particularly the solitary corals, have restricted time ranges and so indicate an Asbian age for these rocks, around 337 million years ago. There are also remains of land plants in a series of sandstones 8 m thick within the section.

About 12 m below the top of the Maydown Limestone Formation a sequence of conglomerate and sandstone around 5.5m thick has been recognised and named the Crow Hill Conglomerate and Sandstone Member. The conglomerate is at the base of this section and contains frequent cobbles, which are actually rolled fragments of colonial coral colonies of the genera *Lithostrotion* and *Siphonodendron*, set in a variable matrix. A lens of coarse grained sandstone, containing pieces of the giant coral *Siphonophyllia* and fragments of shark teeth, occurs in the middle of the conglomerate. Passing upwards the conglomerate gives way to 2m of pale grey to white coarse-grained sandstones containing plentiful fragments of corals.

The Blackstones Limestone Formation follows the Maydown and consists of two members estimated to be about 20m thick in total. A grey mudstone with thin



limestones, the Gorestown Mudstone Member, is the lowest member and contains an abundance of fossils including bivalve molluscs, brachiopods, bryozoa, crinoids, sea urchin fragments, ostracods, solitary corals, sponge spicules and trilobites. The section on the northern, Tyrone, side of the river is slightly different with more limestones. The second member, the Rookwood Limestone Member consists of limestones with shale partings. The limestones are dark in colour and fine-grained. Fossils are infrequent and limited in variety. Large brachiopods of the genus *Gigantoproductus* are conspicuous and occur with bivalve molluscs and ostracods. There are trace fossils in the shales in the form of feeding tracks of an unknown animal. The shales have also yielded fish remains (teeth and scales), brachiopods, sea snails and solitary corals.

The Carrickaness Sandstone Formation follows, with approximately 60m of sandstones, siltstones and mudstones almost devoid of fossils. The few found are restricted to plant remains and bivalve molluscs. The outcrop is fragmentary and best seen on the wooded bank of the Ulster Canal between Milltown House and in Blackstokes Bridge Quarry. The sandstones are pale grey to white with ripple marks and cross laminations, suggesting shallow water conditions. Early descriptions mention thin coal seams in this formation. The junction of the Carrickaness Sandstone with the overlying Blackwater Limestone Formation can be seen in the north bank of the river and the south bank of the Ulster Canal.

The Blackwater Limestone Formation is around 26m thick and has been divided into 6 members, all fossiliferous. From the base these are the Tullymore Limestone Member, the Glenview Limestone Member, the Drumflugh Limestone Member, the Benburb Mudstone Member, the Island Sandstone Member and the Outlet Limestone Member. All the fossils up to the Blackwater Limestone Formation in this area indicate an Asbian age, the penultimate stage of the Lower Carboniferous but there is good reason to believe that the final stage, the Brigantian, commences somewhere in the Blackwater Formation. The boundary between the two is poorly marked by fossils. Many Brigantian fossil forms first appear in the late Asbian so are not reliable indicators. The best marker available is the primitive plant genus *Koninckopora* which becomes extinct world-wide at the end of the Asbian. It occurs in the Tullymore and Glenview Limestone members but is absent from then onwards. On this evidence and that of less precise Brigantian indicators, the base of the Brigantian is tentatively placed at the base of the Drumflugh Limestone Member.

The history of palaeontological studies in the area is also notable. It is believed that the giant solitary coral *Siphonophyllia benburbensis*, a spectacular and famous fossil, was first collected in this area in the 1930s by H P Lewis and the species was named by him after Benburb. In addition, in the 19th century Portlock, McCoy and Davis described several species of fossils, notably corals, echinoids, bryozoa and fish, based on specimens from Benburb.

The Benburb – Milltown area hosts the type localities for a series of younger rocks within the site. These outcrop along the River Blackwater upstream of the Milltown area and date from the Early Triassic period, around 245 million years ago. These rocks are known as the Milltown Conglomerate Formation and the Derrycreevy Sandstone Formation and while no fossil remains have been recovered, it is assumed, by analogy with modern environments, that the original sediments were deposited in desert conditions.

The type locality of the Milltown Conglomerate Formation forms the north bank and river bed of the Blackwater opposite the mill factory at Milltown. Here 12 m of conglomerate containing small pebbles can be seen in beds up to 50 cm thick separated by partings of coarse-grained red and purple sandstone. The dominant rock in the pebbles is white vein quartz but fragments of Carboniferous, Ordovician and Silurian rocks have also been recognised. Between the mill factory and the weir on the north bank of the Blackwater, 800 m to the north west, is the type locality of the Derryreevy Sandstone Formation. It sits on a foundation of Milltown Conglomerate that rapidly gives way to 150 m of brick-red, fine-grained sandstone which forms the base of the Derryreevy Sandstone. The top of the formation is not seen but rare examples of large scale cross bedding up to 1 m thick occur which probably originated as aeolian deposits in the form of low sand dunes.

The age of these rocks is difficult to determine with the absence of any fossils but the most recent appraisal places them in the Triassic period as part of the Sherwood Sandstone Group. This provides information on the extent of depositional basins and range of palaeo-environments within the Sherwood Group, a geological unit of importance for hydrogeology and potentially for hydrocarbon exploration.

The wider area is of considerable importance for the buildings and other structures associated with past industries. With many of the outcrops associated with these historical industries, the relationship between the areas geology, development of rock outcrop and industrial archaeology is very notable.

SCHEDULE

The following operations and activities appear to the Department to be likely to damage the geological interest of the area:

1. Any activity or operation which involves the damage or disturbance by any means of the surface and subsurface of the land.
2. Extraction of minerals, including rock, sand and gravel.
3. The storage or dumping, spreading or discharge of any material.
4. Changes in tree or woodland management, including afforestation or planting.
5. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.
6. Alteration of natural or man-made features, the clearance of boulders or stones and grading of rock faces.
7. Operations or activities, which would affect wetlands (include marsh, fen, bog, rivers, streams and open water), e.g.
 - i. change in the methods or frequency of routine drainage maintenance;

- ii. modification of the structure of any watercourse;
 - iii. lowering of the water table, permanently or temporarily;
 - iv. change in the management of bank-side vegetation.
8. The following activities undertaken in a manner likely to damage the interest of the area:
- i. educational activities;
 - ii. research activities;
 - iii. recreational activities.
9. Sampling of rocks, minerals, fossils or any other material forming a part of the site, undertaken in a manner likely to damage the scientific interest.
10. Use of vehicles or craft likely to damage the interest of the area.

FOOTNOTES

(a) Please note that consent by the Department to any of the operations or activities listed in the Schedule does not constitute planning permission. Where required, planning permission must be applied for in the usual manner to the Department under Part IV of the Planning (Northern Ireland) Order 1991. Operations or activities covered by planning permission are not normally covered in the list of Notifiable Operations.

(b) Also note that many of the operations and activities listed in the Schedule are capable of being carried out either on a large scale or in a very small way. While it is impossible to define exactly what is "large" and what is "small", the Department would intend to approach each case in a common sense and practical way. It is very unlikely that small scale operations would give rise for concern and if this was the case the Department would normally give consent, particularly if there is a long history of the operation being undertaken in that precise location.

BENBURB - MILLTOWN ASSI

Views About Management The Environment (Northern Ireland) Order 2002 Article 28(2)

A statement of the Departments views about the management of Benburb - Milltown Area of Special Scientific Interest (“the ASSI”)

This statement represents the views of the Department about the management of the ASSI for nature conservation. This statement sets out, in principle, our views on how the area’s special conservation interest can be conserved and enhanced. Northern Ireland Environment Agency has a duty to notify the owners and occupiers of the ASSI of its views about the management of the land.

Not all of the management principles will be equally appropriate to all parts of the ASSI and there may be other management activities, additional to our current views, which can be beneficial to the conservation and enhancement of the features of interest. It is also very important to recognise that management may need to change with time.

The management views set out below do not constitute consent for any operation or activity. The written consent of the Department is still required before carrying out any operation or activity likely to damage the features of special interest (see the Schedule on pages 3 and 4 for a list of these operations and activities). Northern Ireland Environment Agency welcomes consultation with owners, occupiers and users of the ASSI to ensure that the management of this area maintains and enhances the features of interest, and to ensure that all necessary prior consents are obtained.

MANAGEMENT PRINCIPLES

The earth science interest at Benburb - Milltown occurs as natural outcrop of rock exposures and loose block material. Northern Ireland Environment Agency would encourage the maintenance of the ASSI and its earth science interest.

The geological series

Provided no damaging activities, as set out in the Schedule, are undertaken without consent, the needs of owners, occupiers and the Department can be met. Earth science features such as those at Benburb - Milltown may require occasional management intervention in order to maintain access to, and exposure of, the geology. This could include selective removal of vegetation.

Specific objectives include:

Maintain the geological series in an undamaged state.

Maintain access to the geological series.

The Official Seal of the
Department of the Environment
hereunto affixed is authenticated
by

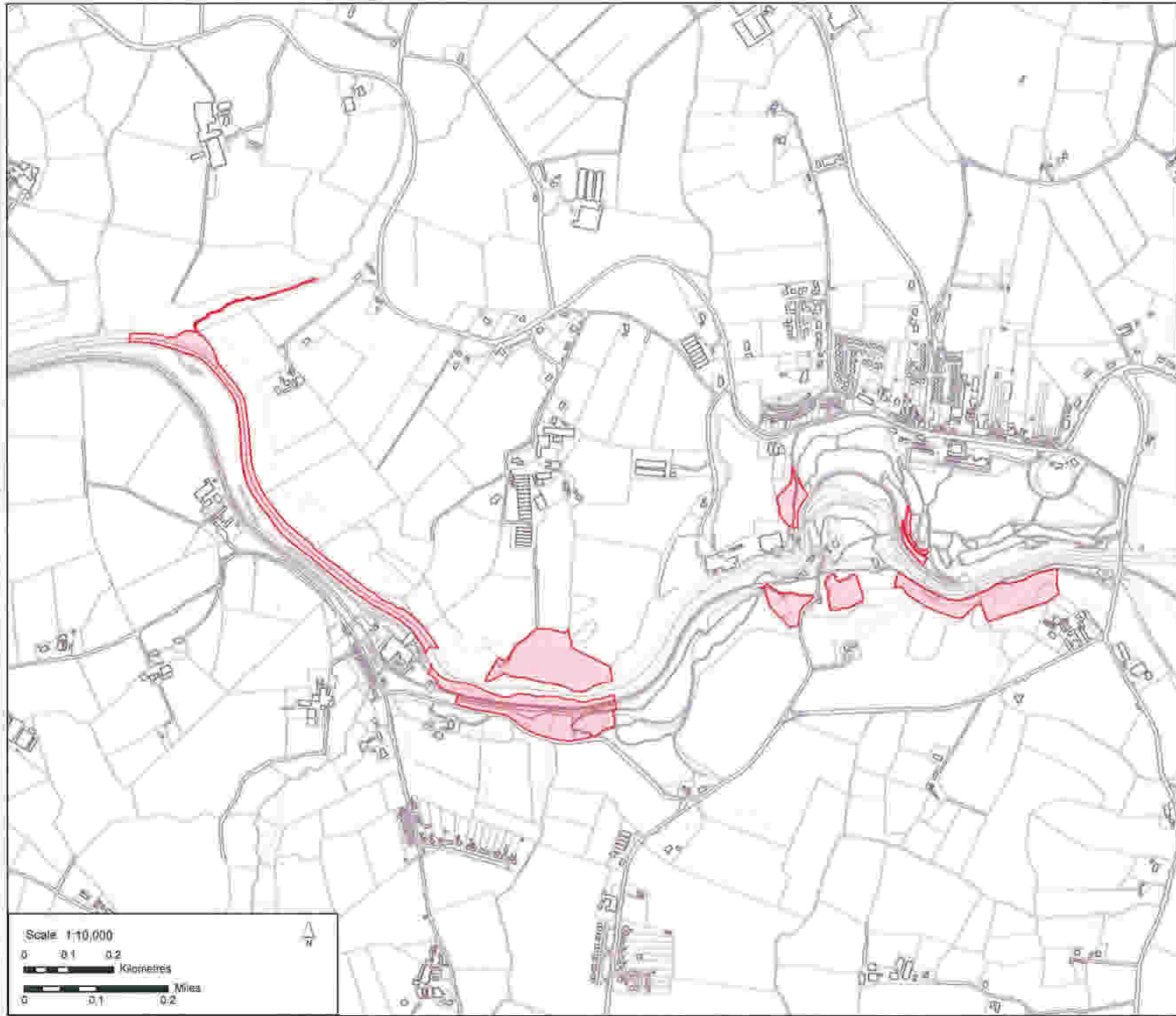
G. R. Seymour.

G R SEYMOUR

Senior Officer of the
Department of the Environment

Dated the 8th of FEBRUARY 2012

BENBURB - MILLTOWN ASSI



BENBURB - MILLTOWN AREA OF SPECIAL SCIENTIFIC INTEREST

Map referred to in the Declaration dated: 8th FEBRUARY 2012

SITE BOUNDARY: The Area of Special Scientific Interest (ASSI) includes all the lands highlighted within the solid coloured lines.

AREA OF SITE: 11.05 hectares

OS MAPS 1:50,000 Sheet Nos. 19
1:10,000 Sheet No. 188

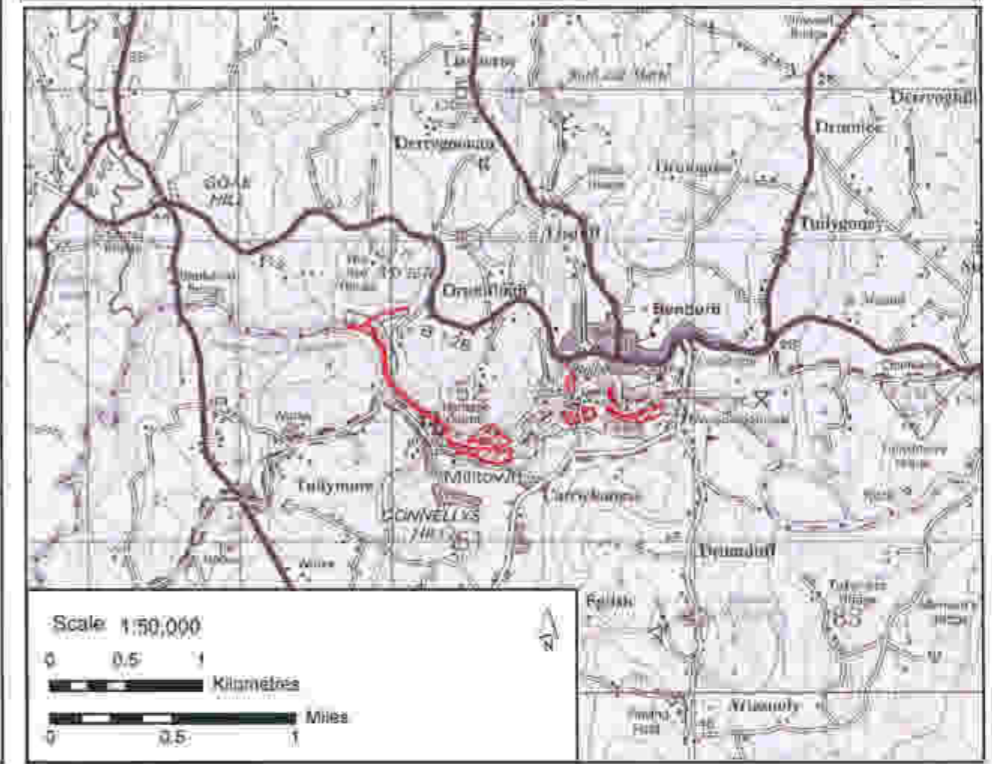
IRISH GRID REFERENCE: H816 518, H814 519, H813 518,
H811 518, H811 520, H806 517, H806 515 & H800 520

COUNCIL AREA: ARMAGH CITY AND DISTRICT COUNCIL, DUNGANNON
AND SOUTH TYRONE BOROUGH COUNCIL

COUNTY: ARMAGH AND TYRONE

G.R. Seymour

G R SEYMOUR
SENIOR OFFICER OF THE
DEPARTMENT OF THE ENVIRONMENT





Benburb ASSI

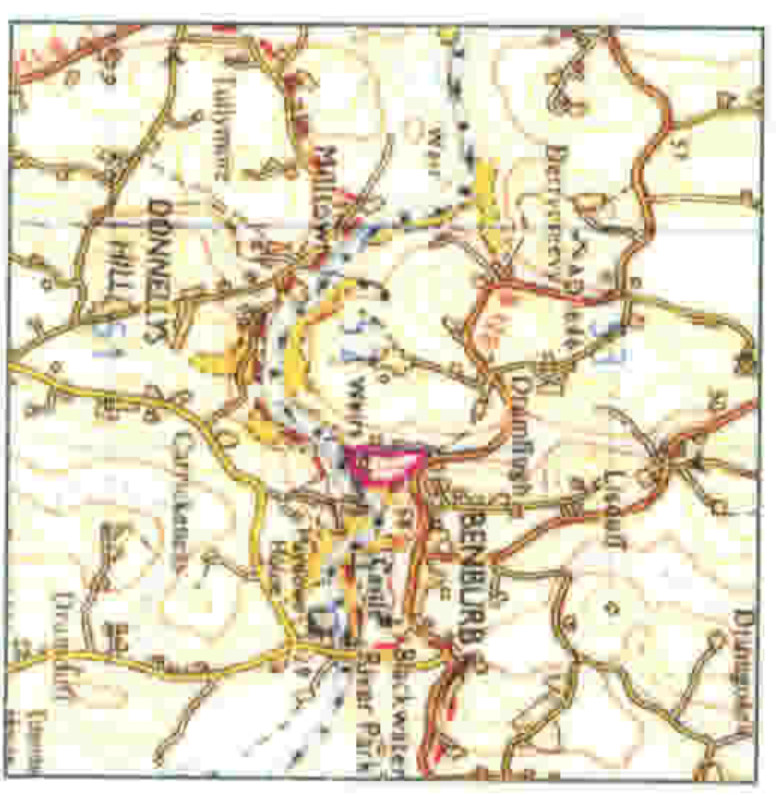
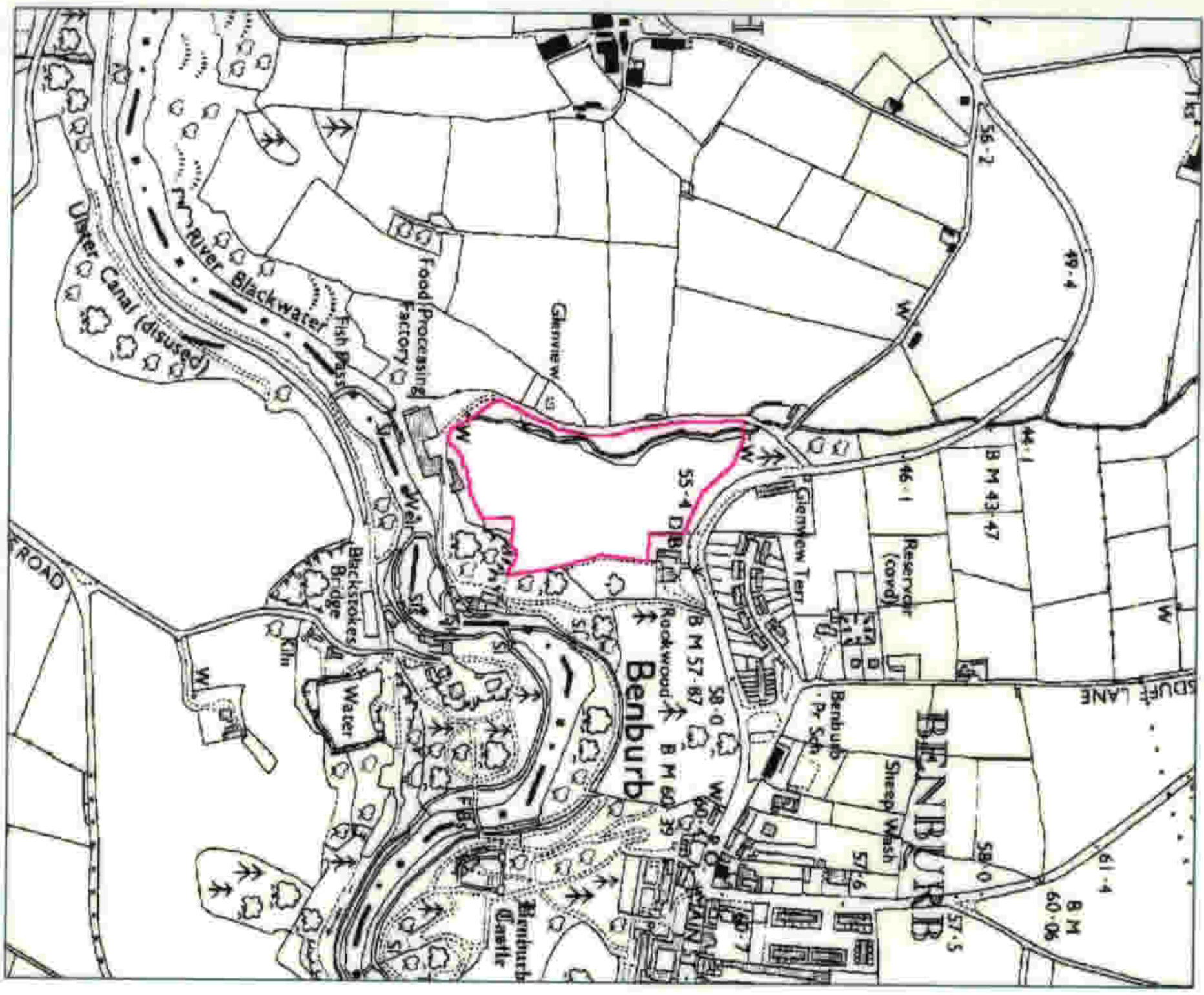
DEPARTMENT OF THE ENVIRONMENT FOR NORTHERN IRELAND
BENBURB AREA OF SPECIAL SCIENTIFIC INTEREST

MAP REFERRED TO IN THE
DECLARATION DATED 1 August 1995

SITE BOUNDARY: The Area of Special Scientific Interest
(ASSI) includes all the lands within the
solid colored line.

AREA OF SITE 30 ha
SCALE 1 : 5 000
SHEET NO. 99B
FISH GRID REFERENCE: H 80520
DISTRICT COUNCIL AREA: DUNKANNON
COUNTY: TIRONE

John Crowther
J. Crowther
Assistant Secretary



DEPARTMENT OF THE ENVIRONMENT FOR NORTHERN IRELAND

DECLARATION OF AREA OF SPECIAL SCIENTIFIC INTEREST AT BENBURB, COUNTY TYRONE.
ARTICLE 24 OF THE NATURE CONSERVATION AND AMENITY LANDS (NORTHERN IRELAND) ORDER
1985.

The Department of the Environment for Northern Ireland (the Department), having consulted the Council for Nature Conservation and the Countryside and being satisfied that the area delineated and described on the attached map (the area) is of special scientific interest by reason of its geological features and accordingly needs to be specially protected, hereby declares the area to be an area of special scientific interest to be known as the 'Benburb area of special scientific interest'.

The interglacial peat deposit at Benburb is sealed by glacial till. It is the only interglacial peat deposit presently known in Northern Ireland. The peaty sequence at Benburb is sealed by a drumlin forming till and therefore predates the last cold stage. Floristically its pollen content is similar to about ten other interglacial sites in Ireland which are thought to belong to the Gortian temperate stage. The Gortian interglacial dates from some 300-420,000 years before present (B.P.) and is generally assumed to predate the penultimate, Munsterian, glaciation.

The original exposure of the interglacial peat was discovered in the bank of a small tributary of the River Blackwater. Most of the peat is sealed beneath a few metres of glacial till and is only partly exposed along the banks of the tributary stream. The peat is compressed and the lack of firm stratigraphic control and poor exposures does not rule out the possibility that the peat is not *in situ*. The lack of clear bedding planes and the fairly uniform nature of the peat suggests that nonconformities are absent. The apparent setting is of organic materials accumulating in a lake.

The four major pollen assemblage zones contain the colonising, early and late temperate stages of this interglacial cycle, though the final phase has been truncated or is a non-sequence. Floristic studies of the sequence highlight many of the problems involved in the correlations between interglacial sequences in Ireland and those in England. Differences between Benburb and other Gortian sites may well reflect geographic variability in floristic composition within the same interglacial.

Macrofossils from the basal 'pollen assemblage zone' (the pollen-free PAZ 0) series show that Slender Naiad Najas flexilis was the most abundant species. The majority of seeds recovered from this level are from submerged or floating aquatics.

PAZ 1 has Pine Pinus spp. (>80%) and Birch Betula spp. (<10%) as the greatest contributors. Non-arboreal pollen includes Grasses Gramineae (<50%), Sedges Cyperaceae (<10%), aquatics and members of a rich herbaceous flora. The presence of land plants around the pond is indicated by the fruits of Alder Alnus glutinosa, Downy Birch Betula pubescens and Silver Birch Betula pendula.

PAZ 2 comprises only three spectra, Pine Pinus spp. and Yew Taxus spp. pollen are strongly represented. Alder Alnus spp. levels rise to 36% and Grasses Gramineae fall to 10%. Levels of Coryloid pollen rise to a peak of 10% and Birch Betula spp. falls to below 5%.

Above this (PAZ 3), Pine Pinus spp. pollen falls from 25% to around 15% and the wetland vegetation is supplemented by mixed deciduous forest comprising Oak Quercus spp., Ash Fraxinus spp. and Elm Ulmus spp.. The presence of Holly Ilex spp. and Ivy Hedera spp., indicates that this zone represents the warmest part of the interglacial cycle.

Finally, in PAZ 4A, Fir Abies spp. pollen is present for the first time and suggests that the vegetation surrounding the area was predominantly forest comprising this species. Rhododendron Rhododendron spp. and species X also are distinctive fossils at this level. Leaves of European Silver-Fir Abies alba are typically present.

Within the uppermost portion of this level (PAZ 4B) Fir Abies spp. declines, as does Alder Alnus spp. and Coryloid pollen, leaving Yew Taxus spp. as the dominant arboreal species. Spruce Picea spp., which is present throughout the diagram in small quantities, rises to a maximum in this zone.

Independent pollen zonation confirms that the Benburb sequence is the first fossiliferous interglacial series to be recorded in the north of Ireland. The basic pollen assemblages are similar to those of Gortian sites elsewhere in Ireland and include the association of Fir Abies spp., Yew Taxus spp., species X and Rhododendron Rhododendron spp. in the late temperate stage. However, certain differences exist between the assemblages at Benburb and other Gortian sites in Ireland. These may be interpreted in several ways. Differences in their floristic composition may reflect a geographic variation within the same interglacial. Alternatively it could be argued, that the presence of only one till above the interglacial peats suggests a last interglacial age (a pre-Midlandian age). However, the critical stratigraphic marker of Hornbeam Carpinus spp. pollen is not present.

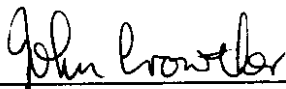
SCHEDULE

The following operations and activities appear to the Department to be likely to damage the geological interest of the area:-

1. Any activity or operation which involves the damage or disturbance by any means of the surface and subsurface of the land, including reclamation and extraction of minerals including sand, gravel and peat.
2. The storage or dumping, spreading or discharge of any material.
3. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.
4. Alteration of natural or man-made features, the clearance of boulders or stones and grading of outcrop.
5. The following activities undertaken in a manner likely to damage the interest of the area:
 - (i) Educational activities;
 - (ii) Research activities;
 - (iii) Recreational activities.


6. Excessive sampling of rocks, minerals, fossils or any other material forming a part of the site.
7. Changes in tree or woodland management, including afforestation, planting, clearing, selective felling and coppicing.
8. Operations or activities which would affect wetlands (including rivers and streams), eg:-
 - (i) change in the methods or frequency of routine drainage maintenance;
 - (ii) modification to the structure of any watercourse;
 - (iii) lowering of the water-table, permanently or temporarily;
 - (iv) change in the management of bank-side vegetation;
 - (v) changes in field drainage or boundary field drainage.
9. Use of vehicles or craft likely to damage the interest of the area.
10. Burning.

Sealed with the Official Seal of the
Department of the Environment for
Northern Ireland on 1 August 1995



J CROWTHER
Assistant Secretary

FOOTNOTES


CIVIL SERVANT
BOTH CLARENCE COURT
BELFAST

- (a) Please note that consent by the Department to any of the above operations or activities does not constitute planning permission. Where required, planning permission must be applied for in the usual manner to the Department under Part IV of the Planning (NI) Order 1991. Operations or activities covered by planning permission are not normally covered in the list of Notifiable Operations.
- (b) Also note that many of the operations and activities listed above are capable of being carried out either on a large scale or in a very small way. While it is impossible to define exactly what is "large" and what is "small", the Department would intend to approach each case in a common sense and practical way. It is very unlikely that small scale operations would give rise for concern and if this was the case the Department would give consent, particularly if there is a long history of the operation being undertaken in that precise location.

Appendix 9B Historical Ordnance Survey Plans

282500

283000

283500

358500

358500

358000

358000

357500

357500

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282500

283000

283500

Site Number 10

Extract from Tyrone County Series 6" map 1833



IRISH GRID CO-ORDINATES



Land & Property Services



ORDNANCE SURVEY
of Great Britain

Scale 1:5000

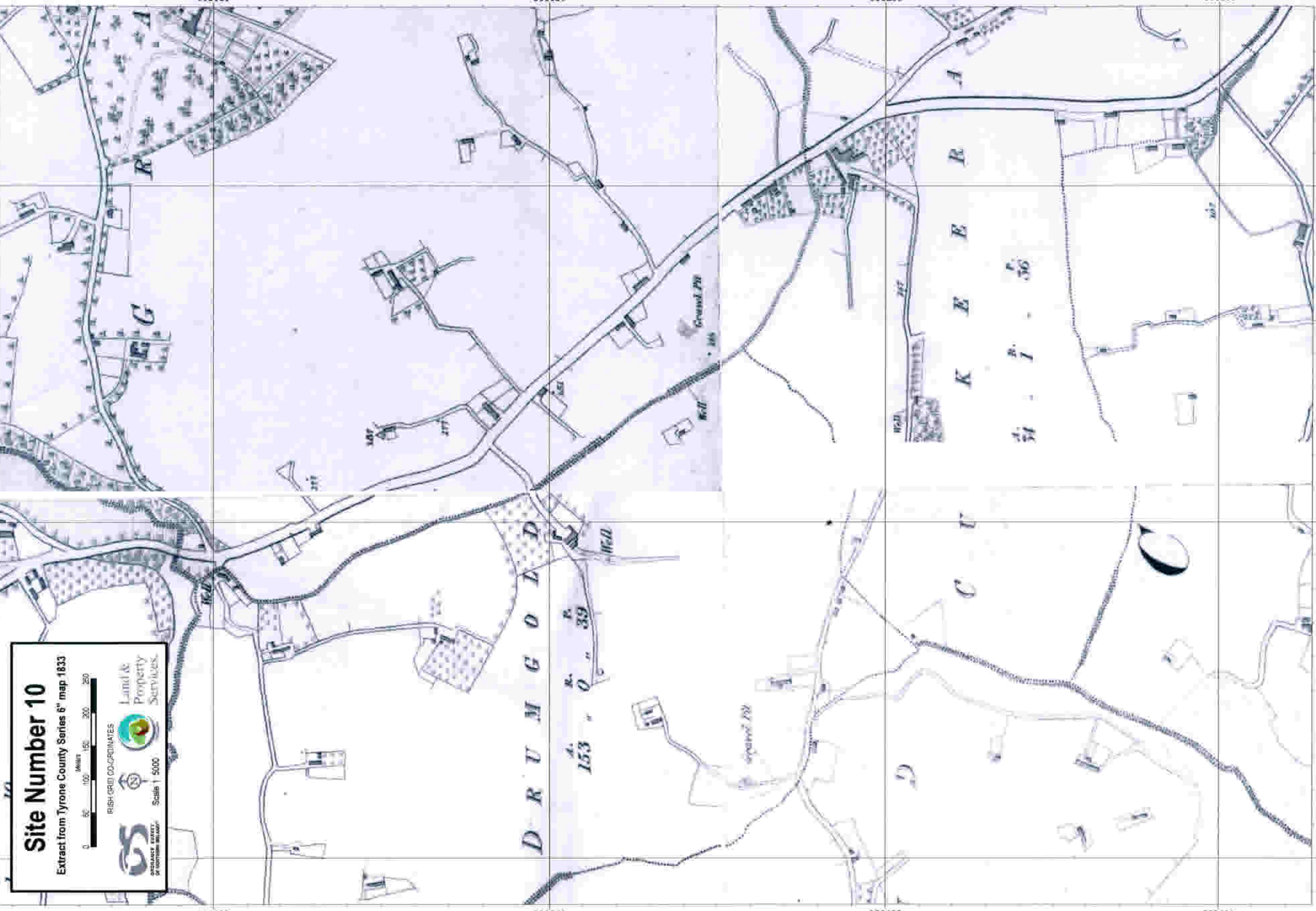
D R U M G O L D

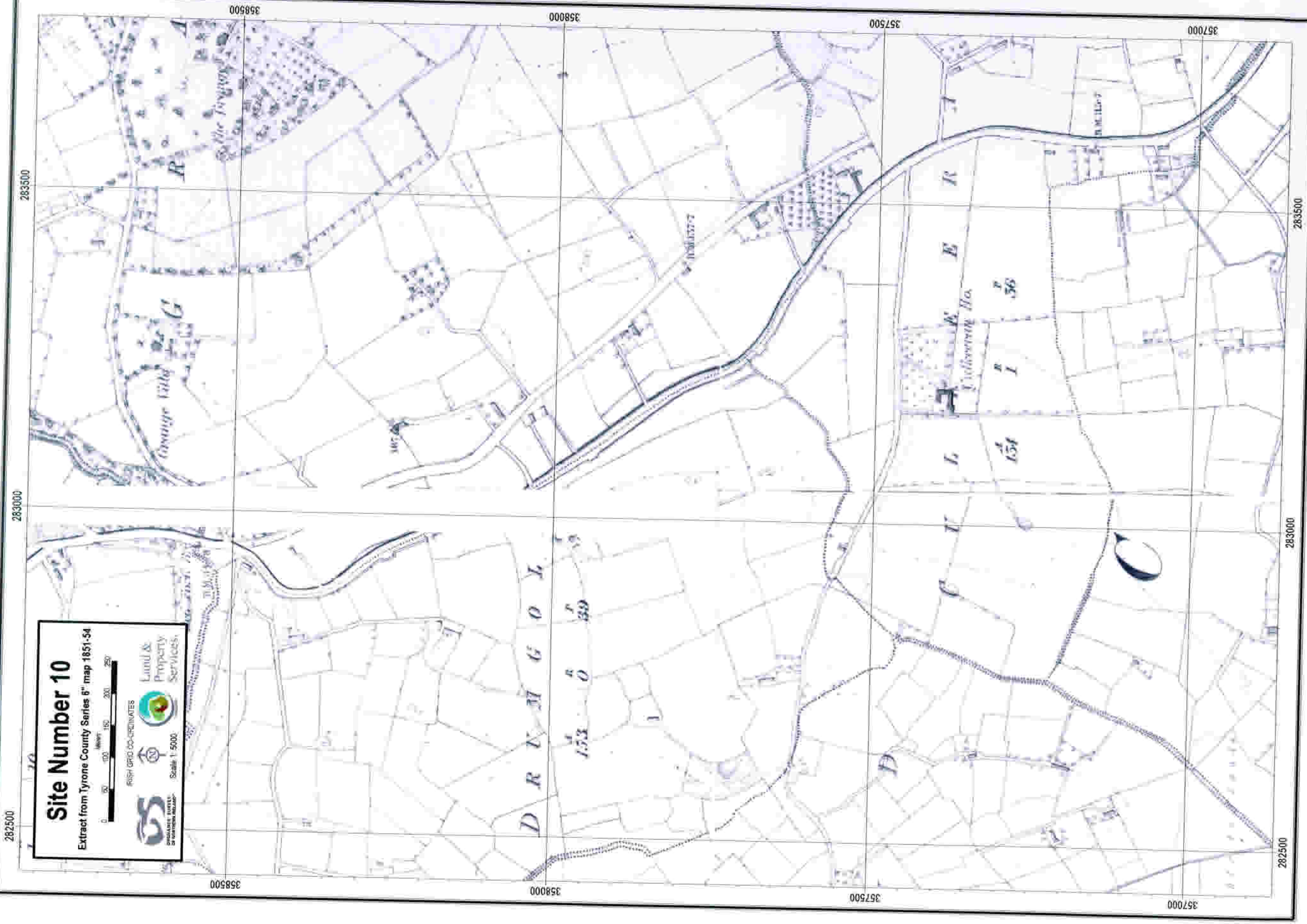
A. R. O. 39

K E E R

A. P. 36

C T





Site Number 10

Extract from Tyrone County Series 6" map 1851-54



IRISH GRID CO-ORDINATES



Land & Property Services

Scale 1:5000

358500 358000 357500 357000
282500 283000 283500

MINISTRY OF FINANCE
ORDNANCE SURVEY
17 AUG 1934

OFFICE INCHQUARTER

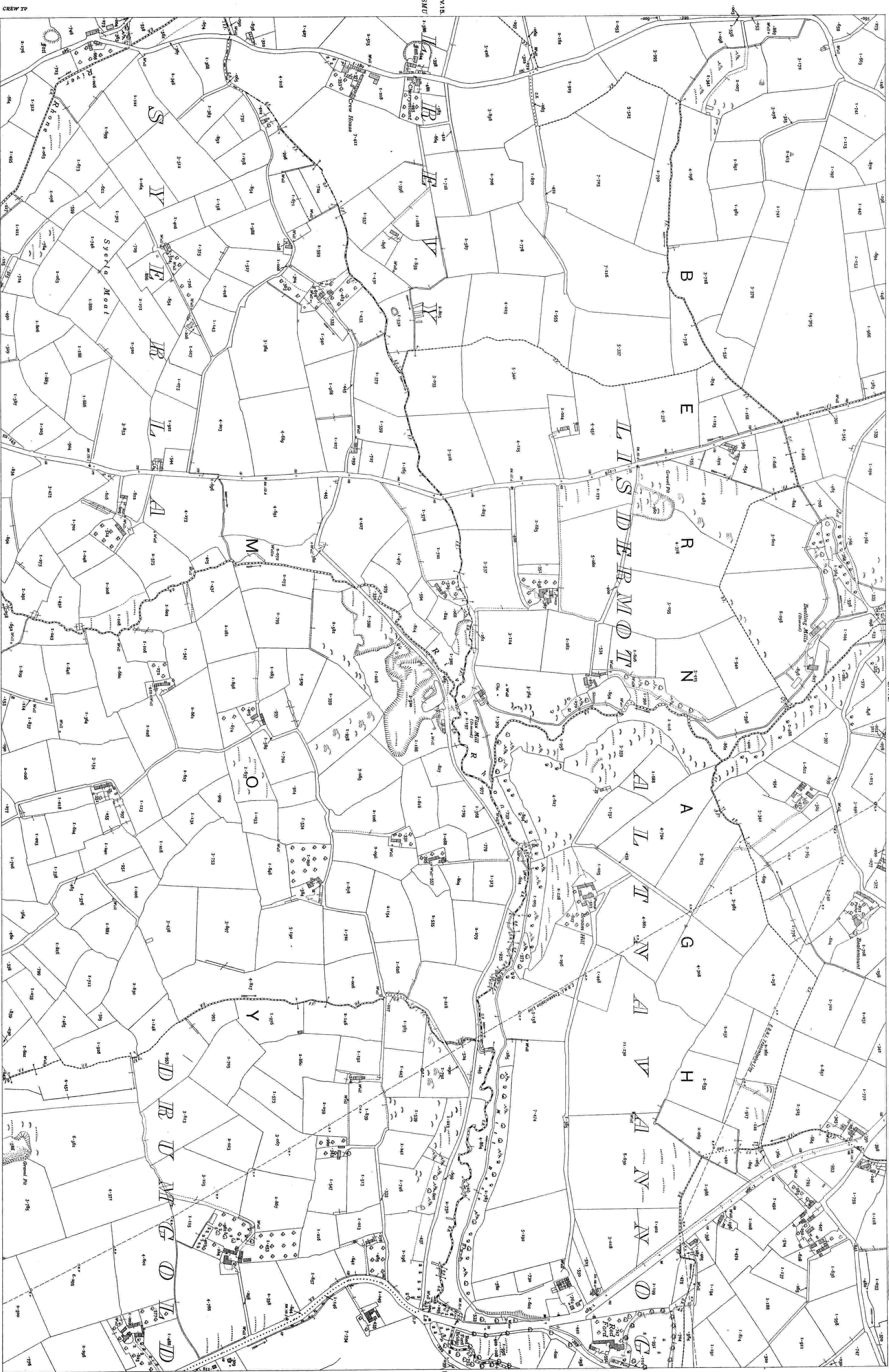


Scale - one inch being 25 3/4 inches to a Statute Mile or 300 5/8 feet to one furlong.

Published by the Director General of the Ordnance Survey Office, Phoenix Park, Dublin 1934.

Copyright reserved.

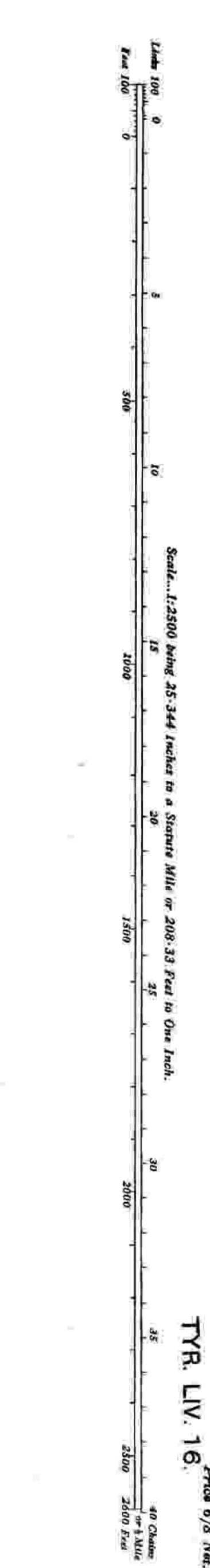
Printed and Published by the Ordnance Survey Office, Phoenix Park, Dublin 1934.

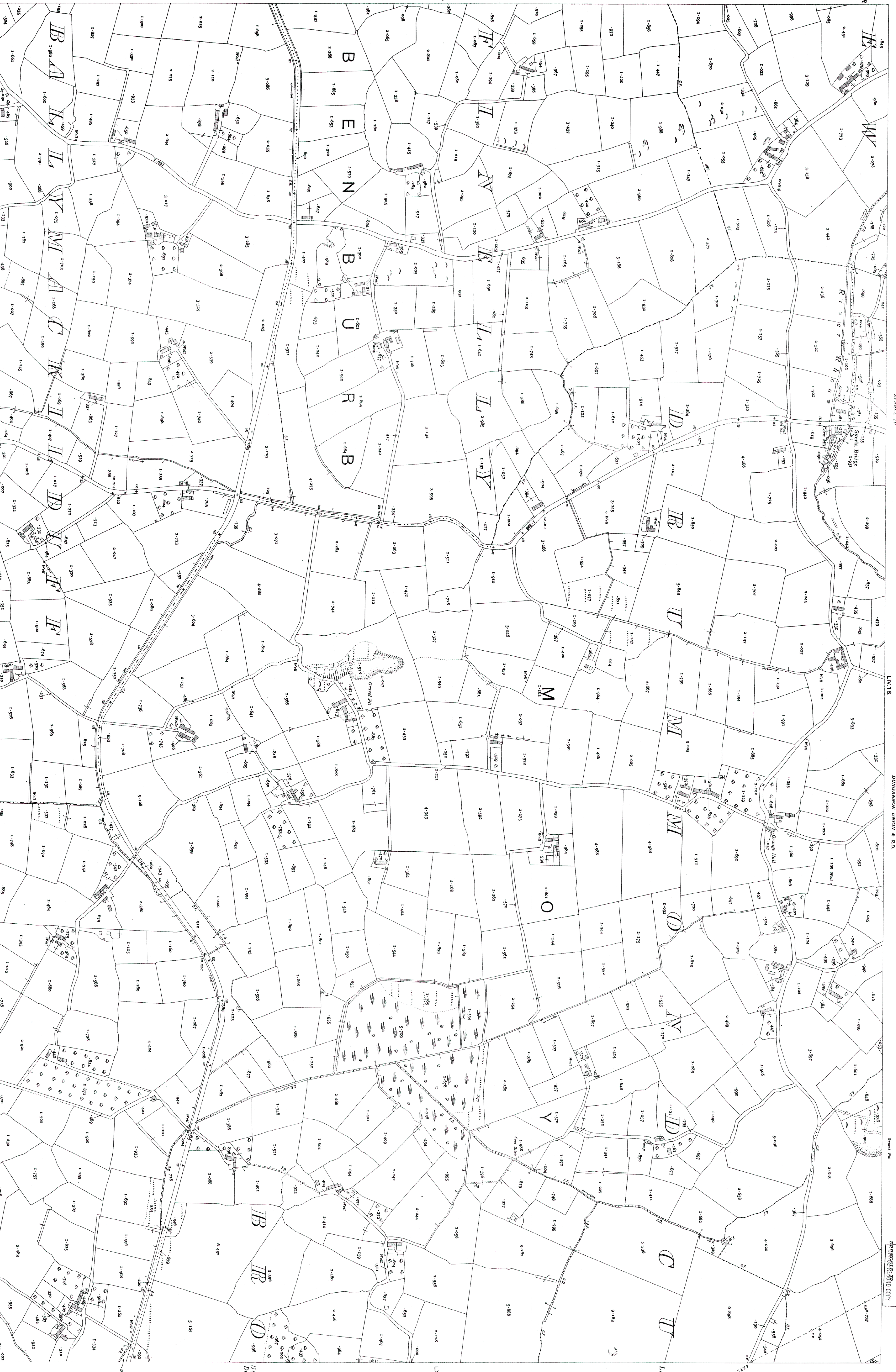


CHARACTERISTICS AND SYMBOLS FOR BOUNDARIES, ETC.

	Boundary line
	Fence line
	Road line
	Stream line
	Building footprint
	Well location
	Tree location
	Boundary change
	Survey point
	Area to plan edge only

Published by the Ordnance Survey of Northern Ireland, at a scale of 1 inch to 1 mile, in 1935.
The boundaries are shown as they were in 1935. The Ordnance Survey of Northern Ireland, at a scale of 1 inch to 1 mile, in 1935.
The Ordnance Survey of Northern Ireland, at a scale of 1 inch to 1 mile, in 1935.





CHARACTERISTICS AND SYMBOLS FOR BOUNDARIES, ETC.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)	(Symbol)

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The High Water Mark shown on this map is the High Water Mark at Mean High Tide.
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LXII. 1. UGHL-DOWEY

LXII. 4. TYR LXI. 4.

Scale: 1:25,000 (1 inch = 254 feet)