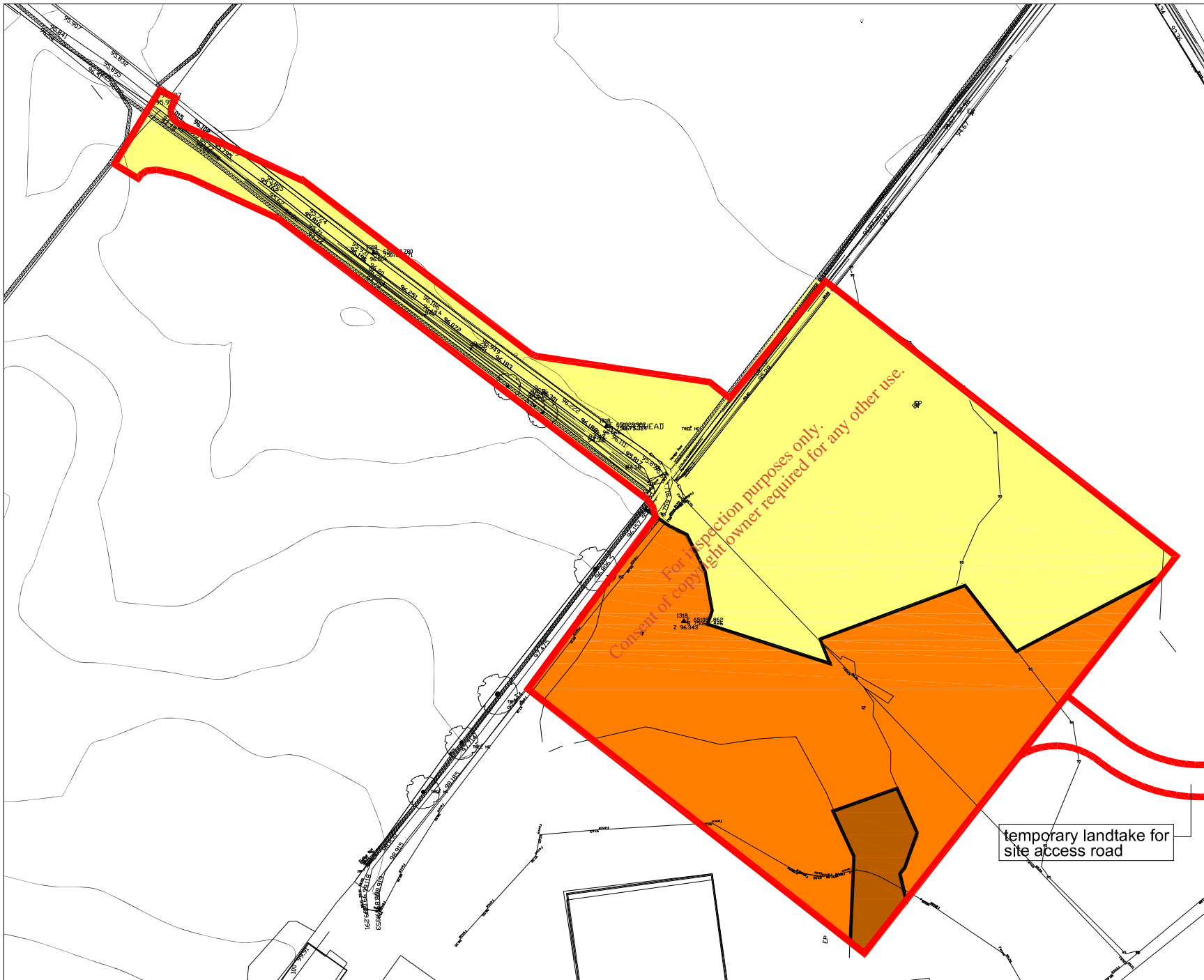




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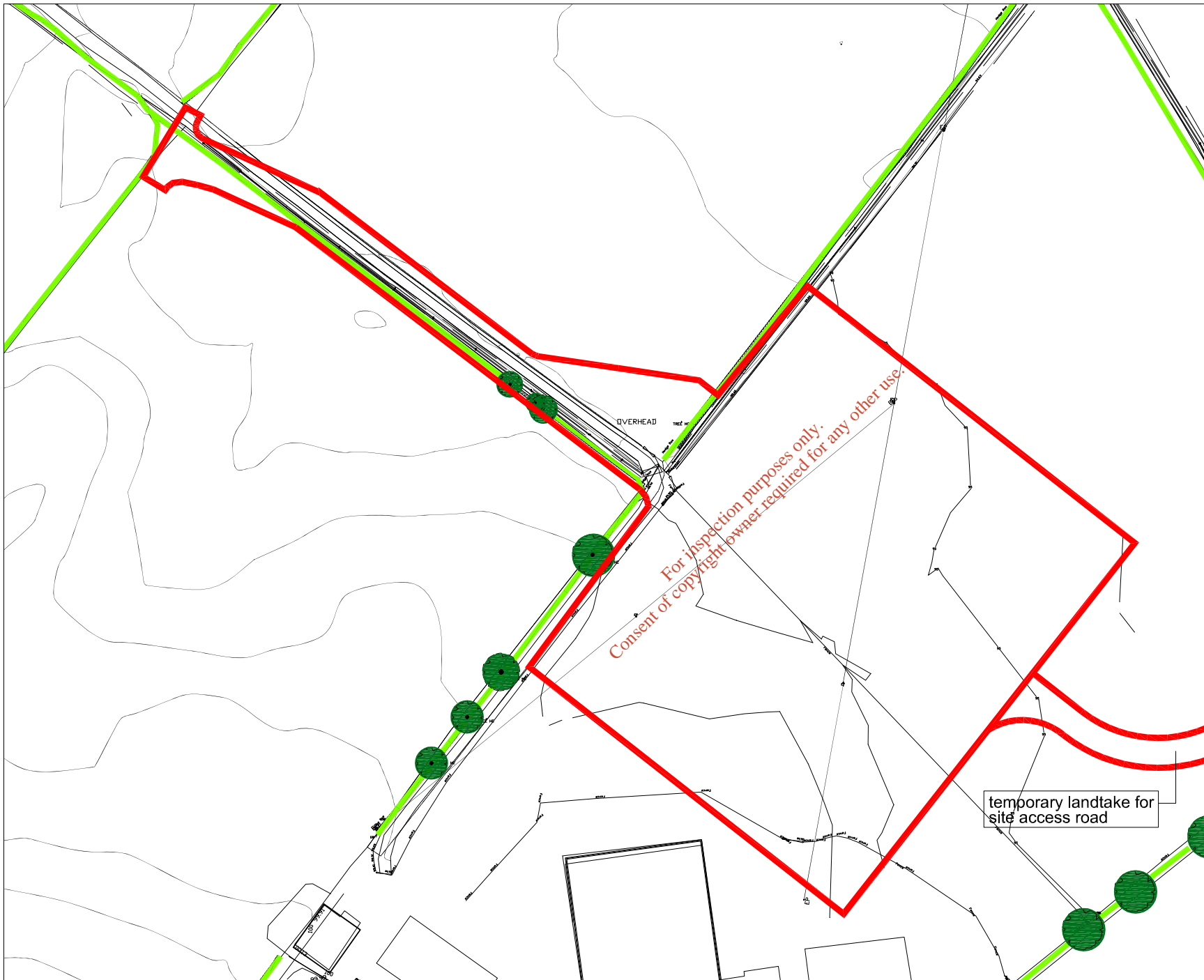
FIG. 11.1 SITE CONTEXT



Legend:

- 1 in 50 and less
- 1 in 20 to 1 in 50
- 1 in 20 and steeper
- site boundary

FIG. 11.3 SLOPE MAP



Legend:

-  tree planting
-  hedgerow
-  site boundary

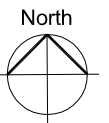
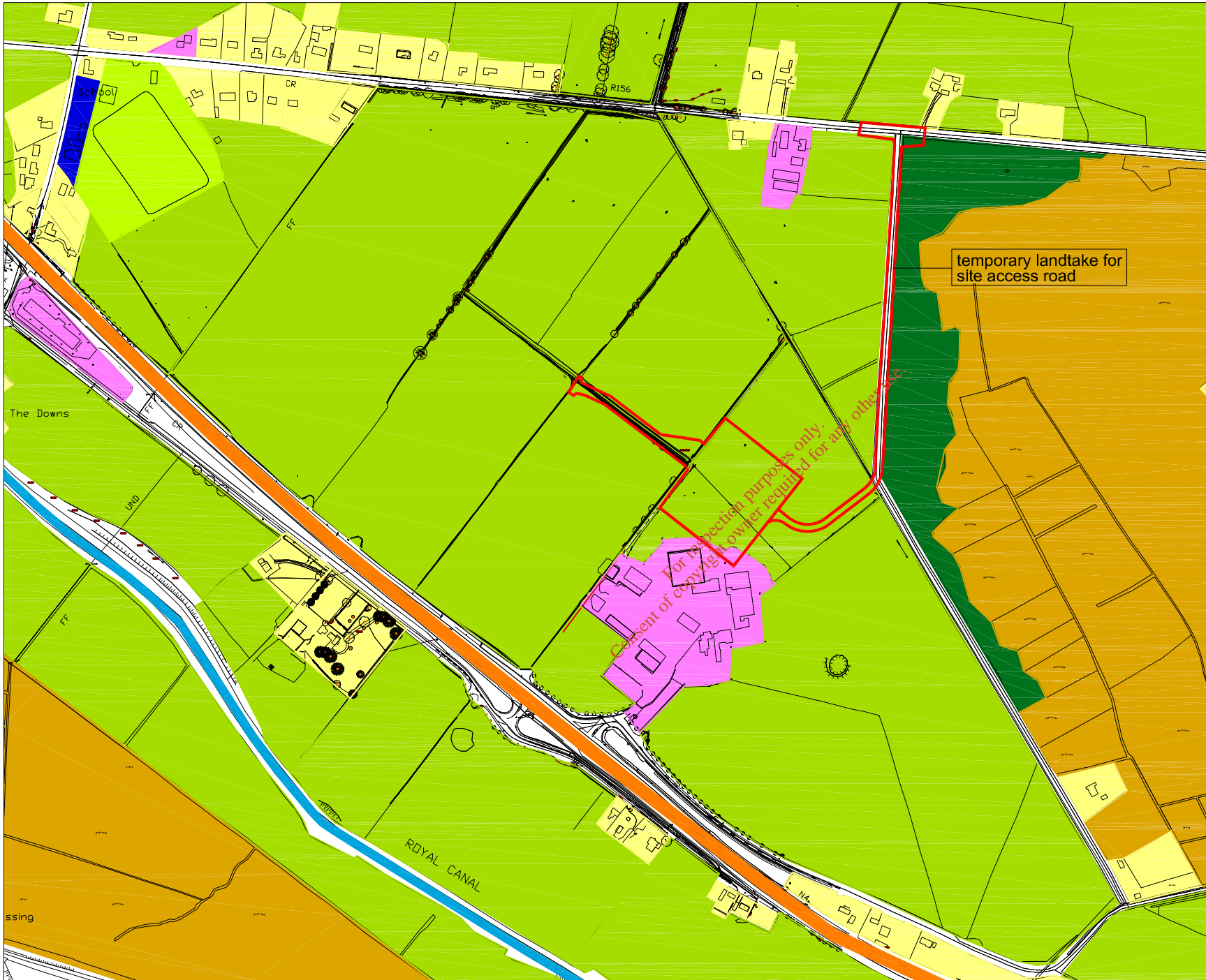


FIG. 11.4 EXISTING VEGETATION MAP



Legend:

- residential
- agriculture
- institutional
- sports related
- scrub woodland
- poor quality agriculture / marsh land
- Royal Canal
- N4 dual carriageway
- site boundary

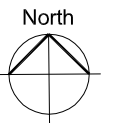
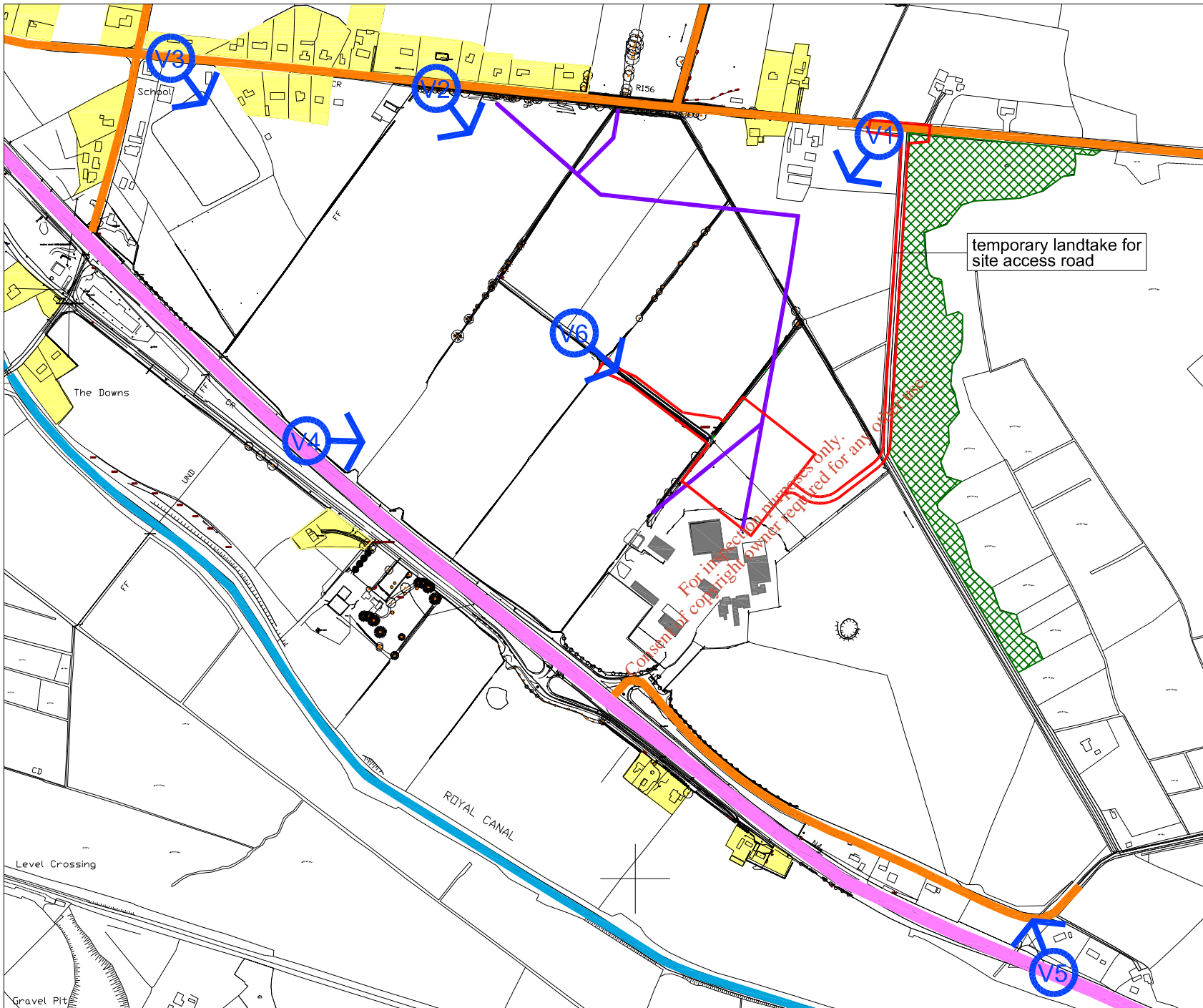











FIG. 11.5 LAND USE MAP



- Legend:
-  views in
 -  overhead powerlines
 -  primary vehicular movement (N4 dual carriageway)
 -  secondary vehicular movement
 -  structures adjacent to site
 -  ribbon development
 -  visual buffer
 -  Royal Canal
 -  site boundary

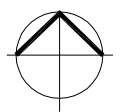
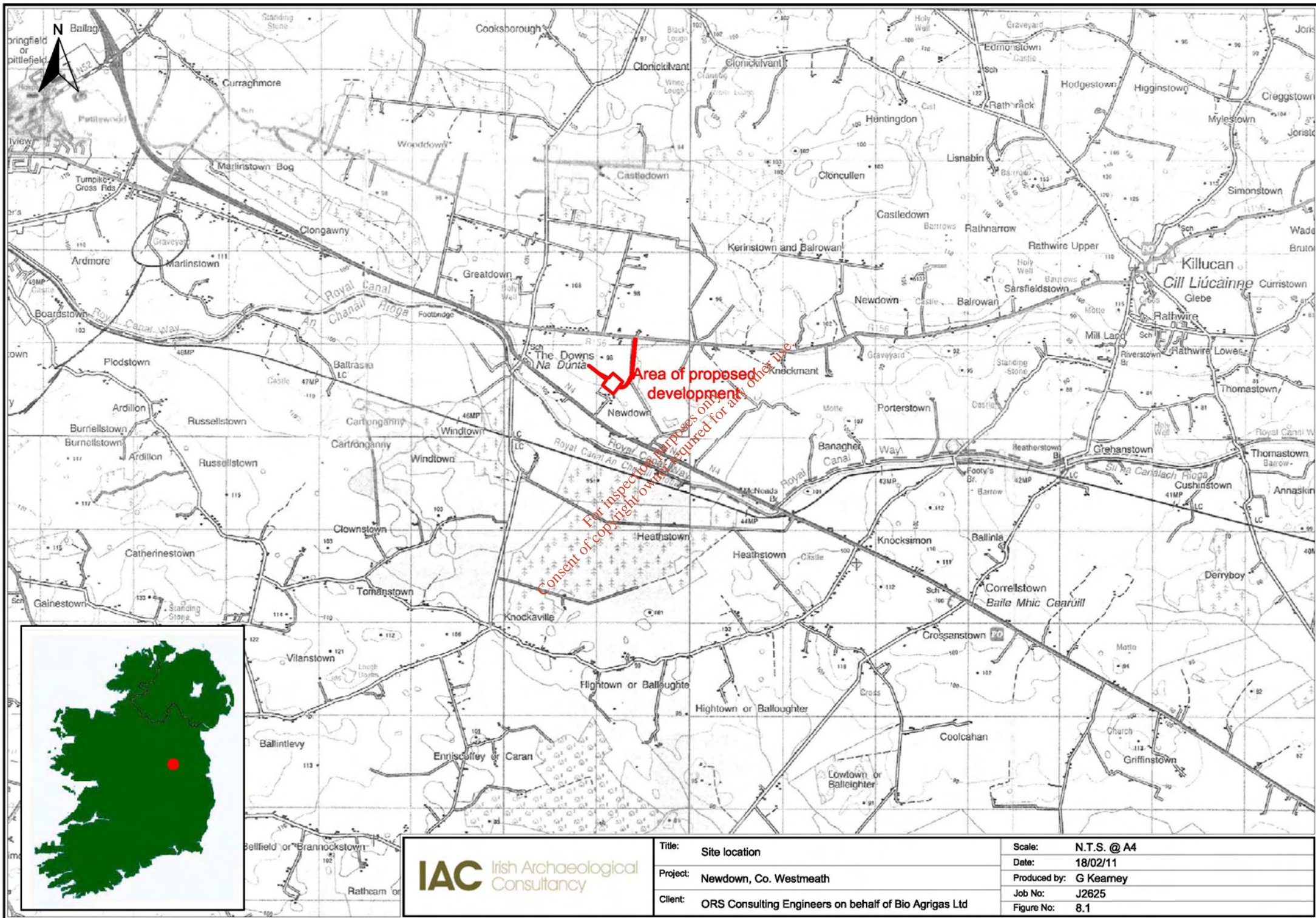


FIG. 11.6 VISUAL ANALYSIS MAP

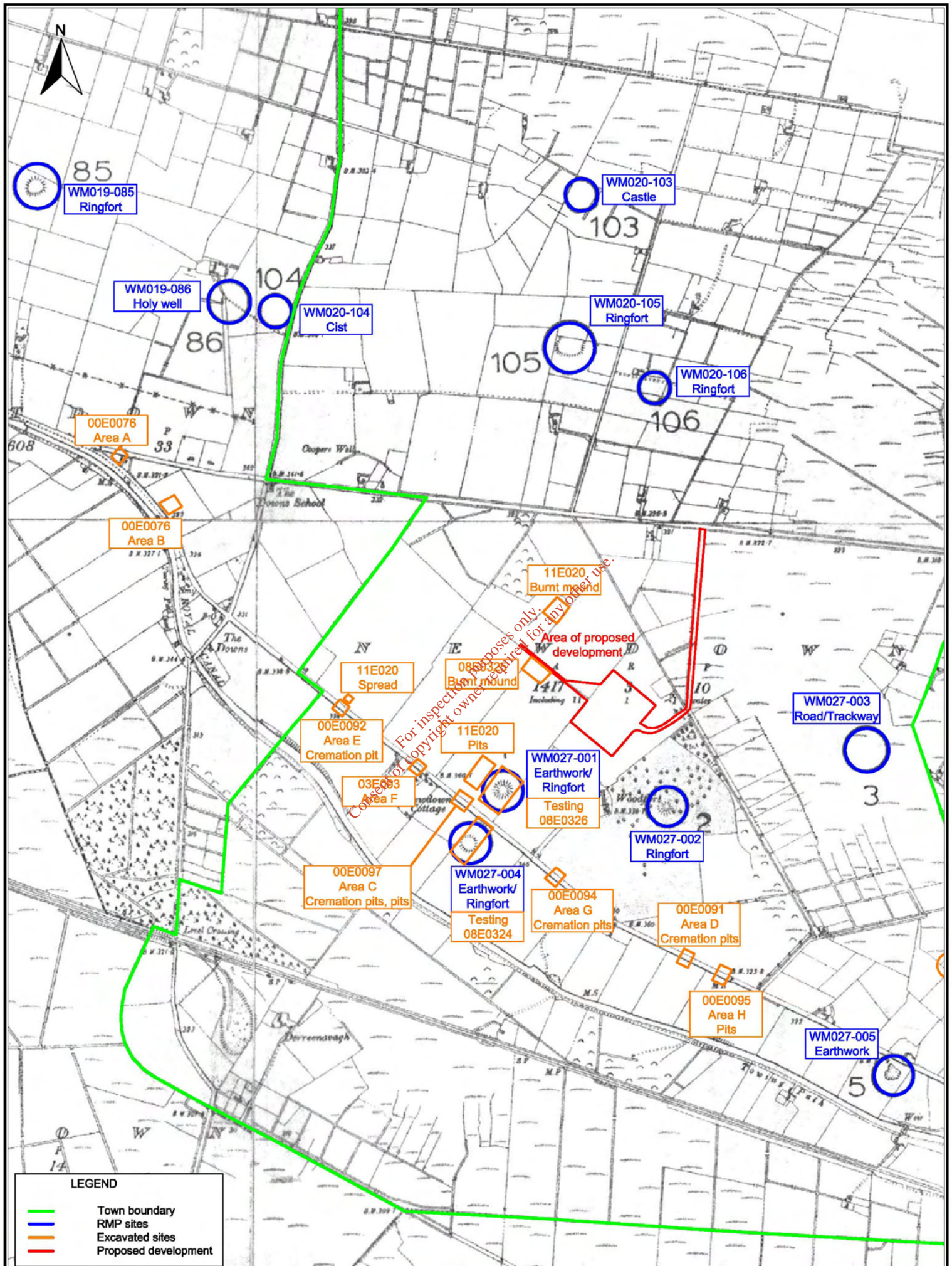


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IAC Irish Archaeological Consultancy

Title:	Site location
Project:	Newdown, Co. Westmeath
Client:	ORS Consulting Engineers on behalf of Bio Agrigas Ltd

Scale:	N.T.S. @ A4
Date:	18/02/11
Produced by:	G Kearney
Job No:	J2625
Figure No:	8.1



LEGEND	
—	Town boundary
○	RMP sites
□	Excavated sites
—	Proposed development

Title: Extract from the RMP map (based on the third edition OS map) showing the area of proposed development

Project: Newdown, Co. Westmeath

Client: ORS Consulting Engineers on behalf of Bio Agrigas Ltd

Scale: N.T.S. @ A4

Date: 18/02/11

Produced by: G Kearney

Job No: J2625

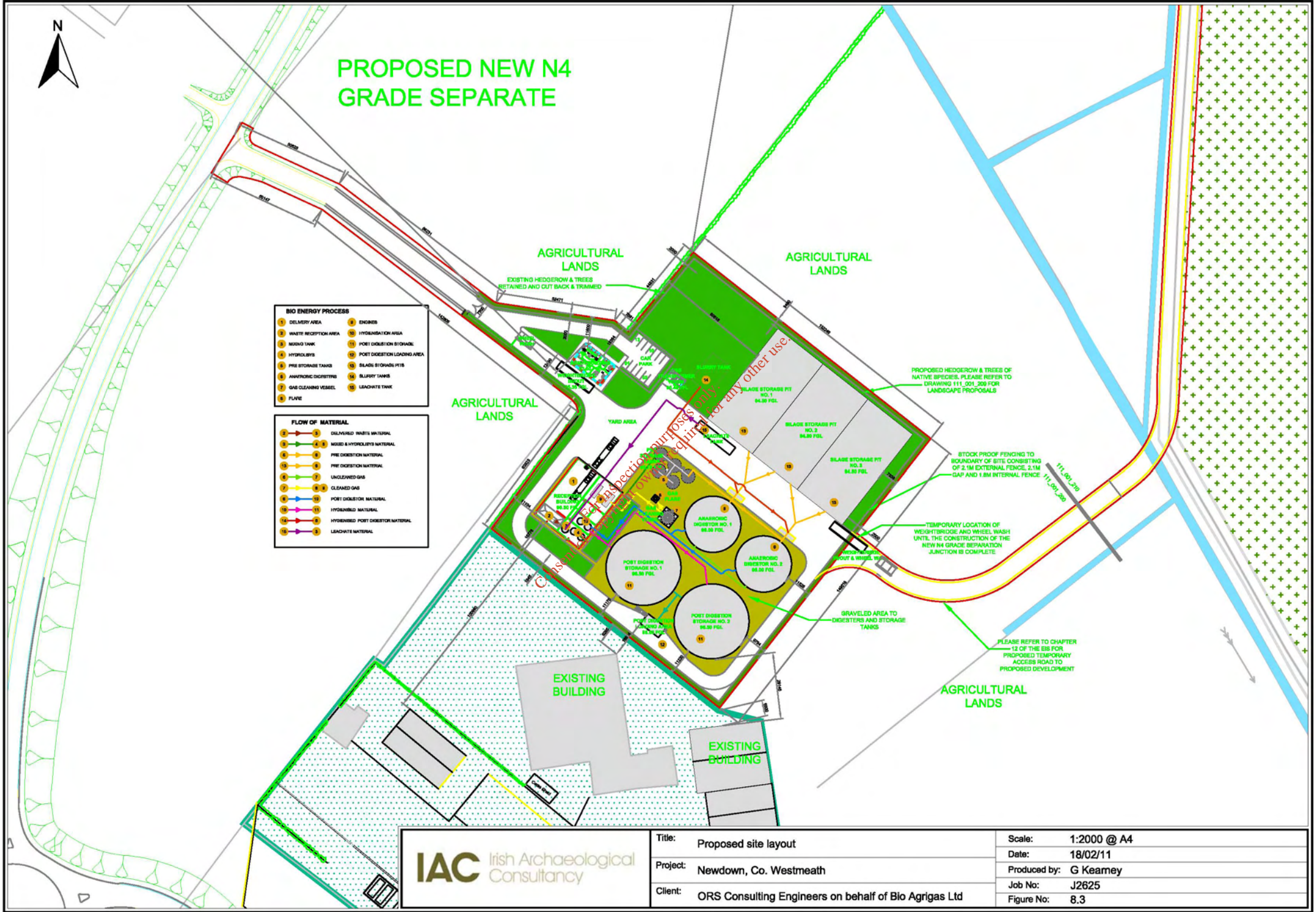
Figure No: 8.2



PROPOSED NEW N4 GRADE SEPARATE

- BIO ENERGY PROCESS**
- | | |
|------------------------|--------------------------|
| 1 DELIVERY AREA | 4 EXCHANGER |
| 2 WASTE RECEPTION AREA | 5 HYDROLYSIS AREA |
| 3 MIXING TANK | 11 PORT DIGESTOR STORAGE |
| 6 HYDROLYSIS | 12 SILAGE STORAGE PIT |
| 8 PRE DIGESTION TANKS | 13 ANAEROBIC DIGESTERS |
| 9 ANAEROBIC DIGESTERS | 14 BILLY TANKS |
| 10 GAS CLEANING VESSEL | 15 LEACHATE TANK |
| 16 FLARE | |

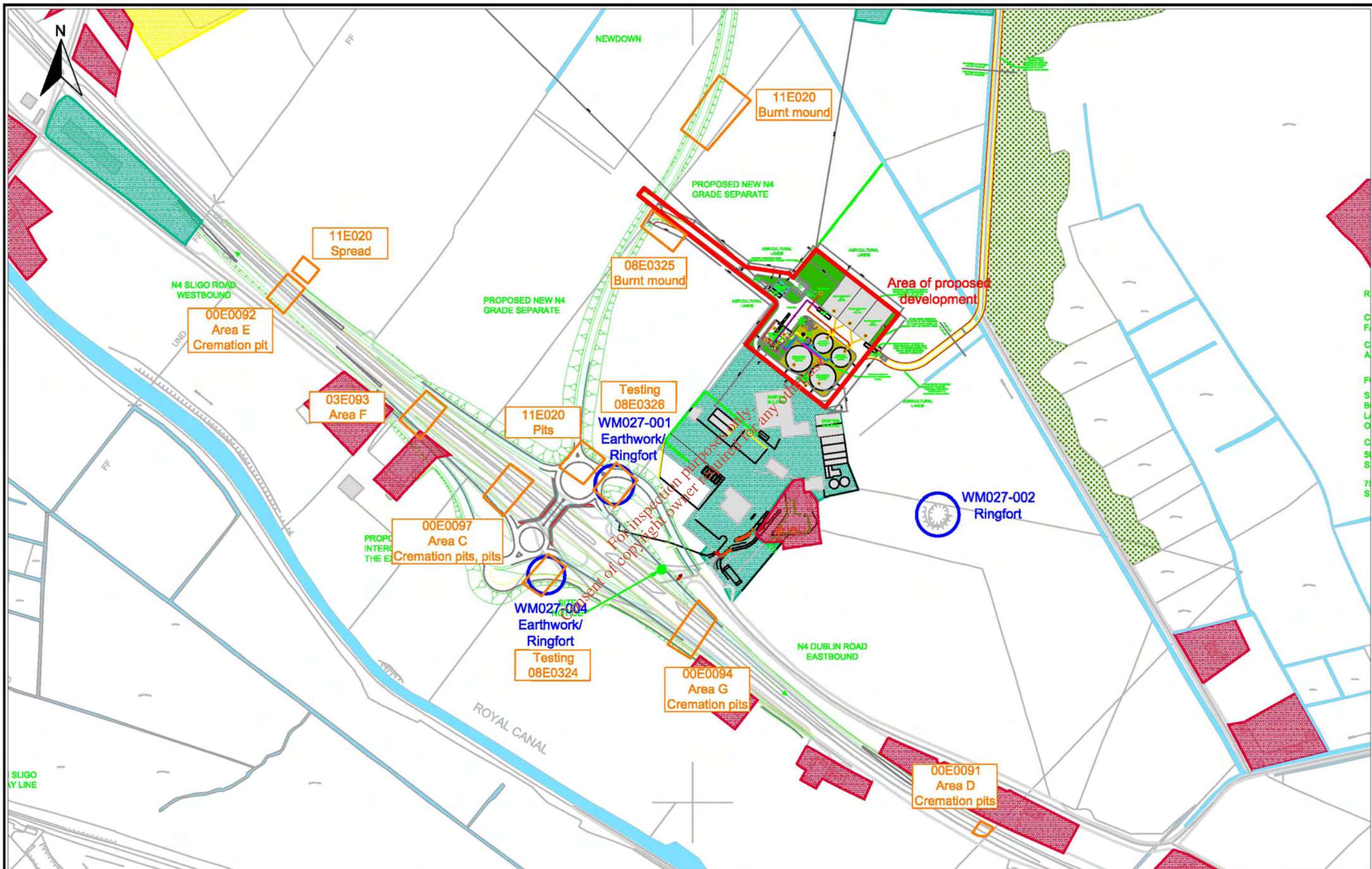
- FLOW OF MATERIAL**
- | | | |
|----|----|-----------------------------------|
| 1 | 2 | DELIVERED WASTE MATERIAL |
| 3 | 4 | MIXED & HYDROLYSIS MATERIAL |
| 5 | 6 | PRE DIGESTION MATERIAL |
| 7 | 8 | PRE DIGESTION MATERIAL |
| 9 | 10 | CLEANED GAS |
| 11 | 12 | CLEANED GAS |
| 13 | 14 | PORT DIGESTOR MATERIAL |
| 15 | 16 | HYDROLYSIS MATERIAL |
| 17 | 18 | HYDROLYSIS PORT DIGESTOR MATERIAL |
| 19 | 20 | LEACHATE MATERIAL |



IAC Irish Archaeological Consultancy

Title:	Proposed site layout
Project:	Newdown, Co. Westmeath
Client:	ORS Consulting Engineers on behalf of Bio Agrigas Ltd

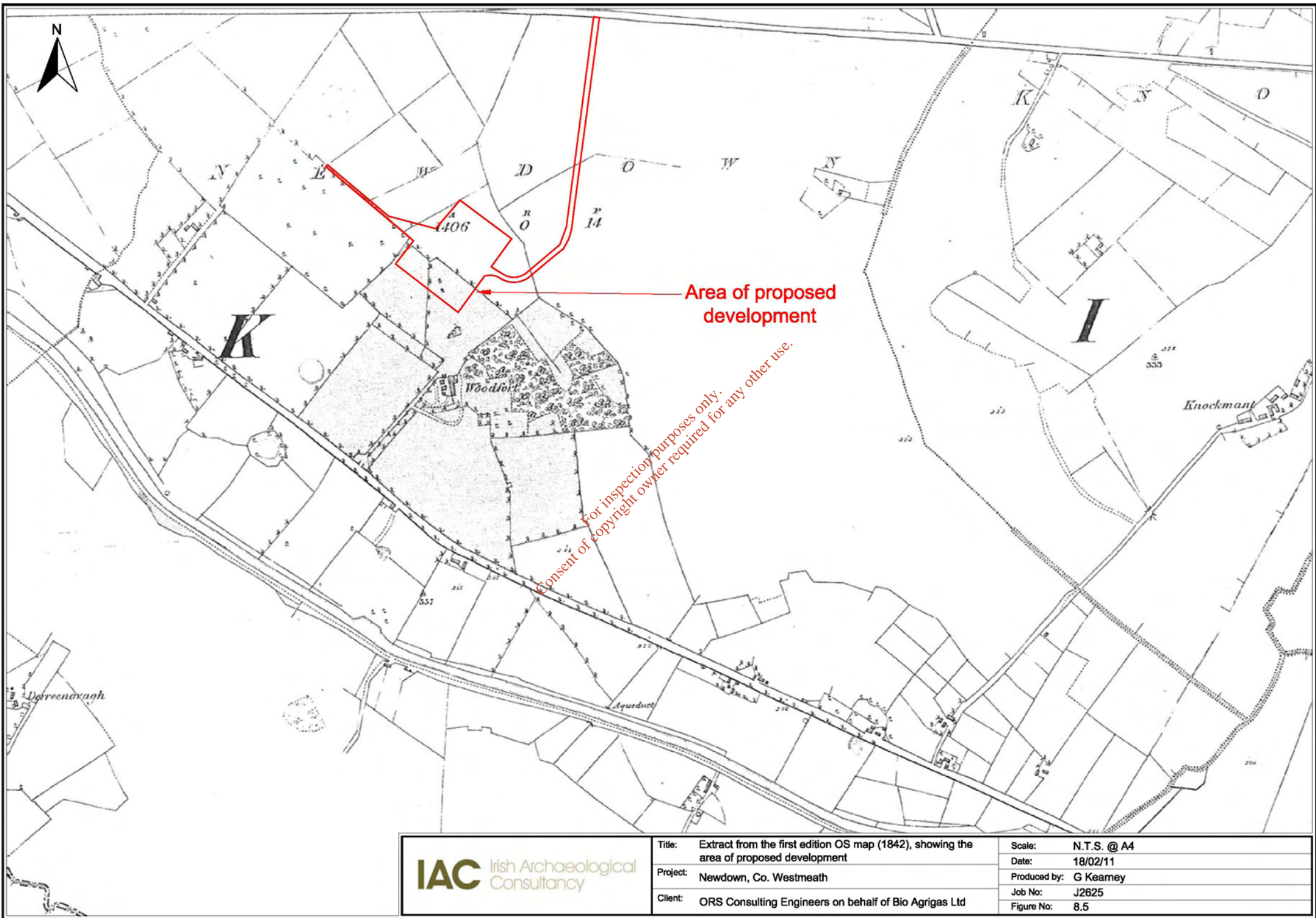
Scale:	1:2000 @ A4
Date:	18/02/11
Produced by:	G Kearney
Job No:	J2625
Figure No:	8.3



IAC Irish Archaeological Consultancy

Title:	Area of proposed development showing nearby archaeological sites
Project:	Newdown, Co. Westmeath
Client:	ORS Consulting Engineers on behalf of Bio Agrigas Ltd

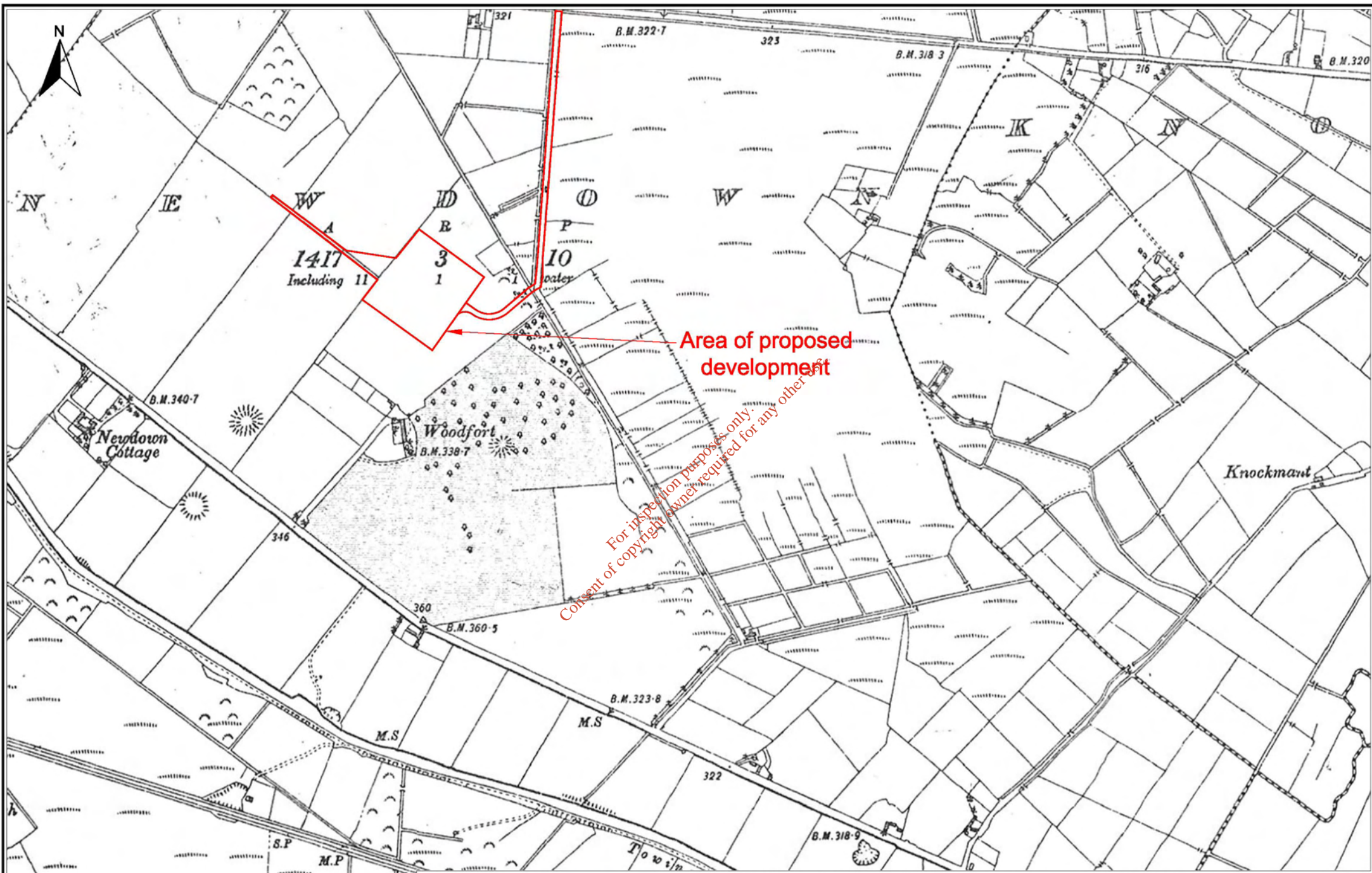
Scale:	1:6000 @ A4
Date:	18/02/11
Produced by:	G Kearney
Job No:	J2625
Figure No:	8.4



IAC Irish Archaeological Consultancy

Title: Extract from the first edition OS map (1842), showing the area of proposed development
 Project: Newdown, Co. Westmeath
 Client: ORS Consulting Engineers on behalf of Bio Agrigas Ltd

Scale: N.T.S. @ A4
 Date: 18/02/11
 Produced by: G Kearney
 Job No: J2625
 Figure No: 8.5



Area of proposed development

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IAC Irish Archaeological Consultancy

Title: Extract from the third edition OS map (1914), showing the area of proposed development
 Project: Newdown, Co. Westmeath
 Client: ORS Consulting Engineers on behalf of Bio Agrigas Ltd

Scale: N.T.S. @ A4
 Date: 18/02/11
 Produced by: G Kearney
 Job No: J2625
 Figure No: 8.6

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Appendix A

Westmeath County Development Plan 2008 – 2014
Renewable Energy

The main tourism products in the county are the unspoilt landscape, the natural heritage - including the eskers, peatlands and other Natural Heritage Areas, the built heritage and cultural heritage, the lakes, rivers and Royal Canal for various forms of recreation including fishing, and the quality of our towns. The Council wishes to emphasise the role that other policies and development management objectives outlined in this Plan, particularly those related to the protection of the Areas of High Amenity and the restriction of development in rural areas, play in conserving the natural amenities of the County and therefore, in the development of the tourist industry.



- O-RDE1** Encourage and support increased coordination, cohesion and linkages between agencies such as Westmeath Tourism Council and Fáilte Ireland (East and Midlands Region) and Waterways Ireland,
- O-RDE2** Support the implementation of the County Tourism Marketing Plan, with the aim of increasing visitor numbers, spend per visitor; and reducing issues of seasonality,
- O-RDE3** Retain existing and strive for new Blue Flag designations for the lakes of Westmeath,
- O-RDE4** The creation of a Conservation Plan for Fore,
- O-RDE5** Capitalise on the natural resources of the area through the promotion of County Westmeath as a centre of excellence for angling,
- O-RDE6** Facilitate infrastructure for marine related activities such as boating, angling, and canal cruising.
- O-RDE7** To investigate, with Coillte, the potential to provide forest and countryside walks on lands in state ownership in County Westmeath.

Tourism-related development will be required to have a high standard of design, with consideration given to a proposals potential impact on its surroundings in terms of scale and intensity in accordance with the County's design principles and minimise associated visitor management problems. All ancillary landscaping should seek to blend in, and any signage should also be appropriately designed. Special care must be taken with adaptations to Recorded Protected Structures in tourism projects.

The Council is committed to minimising emissions to the air of greenhouse gases in order to contribute to a reduction and avoidance of human induced climate change in accordance with the Kyoto agreement. In this regard, the Council will support any initiatives taken to provide for more sustainable forms of rural transport.

- O-RDE8** To explore options to increase provision for public transport in rural areas and to support developments of the rural bus initiative and any other sustainable transport initiatives.

2.6.2 Energy as a rural diversification opportunity

At present, most of Ireland and the world's, energy needs are met by fossil fuels; oil, coal and natural gas. Reserves of these fuels are finite, and the present trend of increasing fossil fuel consumption is unsustainable. In the meantime, combustion of fossil fuels contributes to problems such as air pollution and acid rain, with consequent damage to the environment and human health. The emission of greenhouse gases caused by fossil fuel combustion contributes to climate change. The development of renewable energy resources, replacing the need for conventional power plants, can help to conserve limited fossil fuel reserves, reduce environmental damage and slow the rate of climate change.

An objective of the National Climate Change Strategy (October 2000) is to meet the national Kyoto Protocol target on Green House Gas emissions over the commitment period 2008 -2012. The strategy encourages the expansion of the use of renewable energies and calls for a review of Building Regulations to reduce energy use in new housing by up to 20%.

The Council strongly supports all national and international incentives for limiting emissions of greenhouse gases and encourages the development of renewable energy resources. The development plan seeks to achieve a reasonable balance between responding to overall Government Policy on renewable energy and enabling the wind energy resources of County Westmeath to be harnessed in a manner that is consistent with proper planning and sustainable development.

Renewable energy production provides for sustainable diversification from more conventional forms of agriculture.

P-RDE7 It is the policy of the Planning Authority to promote renewable forms of energy production where it is consistent with the proper planning and development of an area. Furthermore it is the policy of the Planning Authority to assess any proposals for such development in relation to a specific evaluation of each site, including an evaluation of the potential impact of the development on the landscape and the amenities of the residents in the locality. Environmental Impact Assessments shall be carried out for wind energy proposals where appropriate, the statement shall be submitted as part of the project's planning application.

Wind Farms

The Council will be guided by The Wind Energy Development Guidelines 2006 published by the Department of the Environment, Heritage and Local Government in relation to the location of large wind turbines and the information required as part of a planning application. The Guidelines advise that development Plans should include an indication of the factors which would determine whether or not wind farm development would be open for consideration in a particular area.

The Landscape Character Assessment is one of the main policy areas which will inform the issue of suitability. The County has been divided into 11 distinct landscape areas, these areas have been further assessed with regards to ability to contain wind turbines on the basis of topography, sensitivity of each area, location of grid connections, and special designations. As a result, the 11 character areas have been given a capacity rating (high/medium/low and none) to contain wind turbines. In addition, areas have been identified around the County that are regarded as potentially suitable areas for wind turbines upon meeting relevant Development Management standards. These potentially suitable areas refer mainly to bog land. As identified in the NSS "Many worked out bogs in the midlands are highly suited to wind energy development at a significant enough scale to support ancillary manufacturing, servicing and development activities helping to position Ireland as an innovator in wind farm technology". Furthermore, the Regional Planning Guidelines, 2004, recognise the potential in the midland region for wind generated energy needs to be assessed. The potential use of cutaway bog land is specifically recognised as providing opportunities for the development of alternative and renewable energies.

In assessing applications for wind turbines/wind farms the Council shall have regard to all relevant plans and guidelines including the National Spatial Strategy 2002-2020, Wind Energy Guidelines for Planning Authorities, 2006, the Convention on Biological Diversity, the National Biodiversity Plan (2002), Habitats & Birds Directives and relevant examples of best practice.

Any proposals for the development of wind power will need to be supported by both a technical and an environmental statement prepared to an acceptable standard. In this regard applicant's applying for wind energy developments are advised to consult with the Planning Authority before detailed proposals are drawn up. Consultations should also be held with the appropriate bodies, such as; The Department of Transport, The Department of Communications, Energy and Natural Resources, The Irish Energy Centre and the ESB.

In addition, potential applicants are advised to consult with the Department of Arts, Culture and the Gaeltacht, The Forestry Service, The Irish Aviation Authority and other appropriate statutory and non-statutory bodies in areas which may require special protection. In general the Council will encourage wind energy in so far as such developments would not have an adverse affect on residential amenities, views or prospects, Special Areas of Conservation, Protected Structures, aircraft flight paths or by reason of noise or visual impact. Applications for such developments will not be encouraged in Areas of High Amenity.

Bio-energy

There are many bio energy fuel sources, and several conversion alternatives (i.e indirect sources that can be converted into bio fuel). All dry resources; wood and wood residues (forest or sawmill residues) and dry agricultural residues such as straw, can be combusted to produce heat, electricity or both, and can also be co-fired in existing solid fuel systems. Energy crops, principally short rotation coppice, can also produce dry fuels for combustion. Wet resources can be processed through anaerobic digestion, producing a methane-rich gas for combustion. Such resources include agricultural slurries, sewage sludge, food and catering wastes and the bio-degradable fraction of municipal solid waste. An additional particular bio-energy resource is landfill gas, which can be collected at landfill sites and then combusted to extract its energy value. There are significant opportunities for the use of these by-products as bio-fuels. This would convert a cost to the agricultural sector into a gain and also benefit the environment because of low emissions levels of CO₂.

Attention is needed now to ensure the development of the energy crops sector, which will be the centre of bio-energy and bio-materials into the future.

P-RDE8 It is the policy of the Council to support the development of the bio-energy industry.

2.6.3 Quarries / Extractive Industries Environmental Protection

The geology and geomorphology of Westmeath are characterised by limestone bedrock and extensive eskers and moraines particularly in the south of the county. Eskers cover approximately 0.91% of the land cover of the county and they provide the county with an extremely rich and valuable heritage.

There are 46 esker systems in the county and esker density is greatest in the south of the county where they cover approximately 926 ha. Part of the 'Split Hills/Long Hill' esker, which is of international scientific importance is publicly owned and thus allows for the development of public access. As well as being of importance for geo-diversity and biodiversity, the eskers define the local landscape. The landscape importance of eskers and their obvious potential for tourism, education and scientific interests has resulted in proposals for the establishment of a Geo-park in the Irish Midlands to utilise these unique resources, for tourism, education and research.

Eskers also contain significant reserves of water and are classified as important aquifers by the Geological Survey of Ireland. Where they connect with other sand and gravel areas they may host enough water to be able to supply regional water supply schemes and many households obtain their water supplies from such aquifers. However, as well as being important sources of fresh water, they are classified as 'extremely to highly vulnerable' to groundwater pollution because their constituent sands and gravels are very porous.

Eskers contain significant reserves of sand and gravel but while harvesting these reserves as a source of aggregate to the building industry may offer a solution for major building projects in the short term, the long term implications of the exploitation of this non-renewable resource can result in loss of landscape character, and irreversible impacts to the biodiversity and scientific value of the geological systems involved. Loss of aquifers and pollution of groundwater resources is also a risk with such development.

The Council have undertaken an Esker Survey of the County, which has identified;

An efficient telecommunications system is important in the development of the economy. The de-regulation of the industry has brought choice and competition but has given rise to duplication and overprovision of certain facilities, for example the desire of providers to have their own telephone booths in town centres puts demands on valuable and limited public realm; and the control by individual operators of wireless transmission services can lead to an excessive amount of telecommunications masts.

The Planning Authority will have regard to the guidelines issued by the Department of the Environment, Heritage & Local Government, 'Planning Guidelines for Telecommunications Antennae and Support Structures' (1996). The assessment of individual proposals will be governed by the guidelines and the controls scheduled in section 7 of this Plan.

P-IF15 It is the policy of the Council to support telecommunications service provision subject to avoiding adverse visual impacts, overprovision and subject to the controls set out in Part 7.

2.3.7 Renewable Energy

At present, most of Ireland and the world's, energy needs are met by fossil fuels; oil, coal and natural gas. Reserves of these fuels are finite, and the present trend of increasing fossil fuel consumption is unsustainable. Combustion of fossil fuels contributes to problems such as air pollution and acid rain, with consequent damage to the environment and human health. The emission of greenhouse gases caused by fossil fuel combustion contributes to climate change. The development of wind energy resources, replacing the need for conventional power plants, can help to conserve limited fossil fuel reserves, reduce environmental damage and slow the rate of climate change.

An objective of the National Climate Change Strategy (October 2000) is to meet the national Kyoto Protocol target on Green House Gas emissions over the commitment period 2008 -2012. The strategy encourages the expansion of the renewable energies and calls for a review of Building Regulations to reduce energy use in new housing by up to 20%. Lowering the energy needs of houses is dealt with in the Section 2.8.5 Building Sustainability. The Government has set a target for 30% of our total demand for electricity to come from renewable sources by 2020.

The Council strongly supports all national and international incentives for limiting emissions of greenhouse gases and encourages the development of renewable energy resources.

P-IF16 It is the policy of the Planning Authority to promote renewable forms of energy where it is consistent with the proper planning and sustainable development of an area.

P-IF17 It is the policy of the Council to favour the use of renewable energy as a contribution to the energy demand of all new buildings.

The Council will encourage householders to install small renewable energy systems for their own use. Following on from the consultation document 'Micro-Renewables Consultation Paper' November 2006 from the Department of the Environment, Heritage and Local Government, the Planning & Development Regulations 2007 set out planning exemptions for micro-renewable energy technologies for domestic houses.

Micro renewables include Micro-Wind Energy, Solar, Heat Pumps, Small Scale Biomass, and Small Scale Hydroelectricity. The consultation document acknowledges that hydroelectricity is more complex than the others; and there is less opportunity for its use. Opportunities for the other forms are widely available.

Wind Energy Development

The Development Plan seeks to achieve a reasonable balance between an overall positive attitude to renewable energy and enabling the wind energy resources of County Westmeath to be harnessed in a manner that is consistent with proper planning and sustainable development, including considerations of landscape protection and visual amenity.

The Council will have regard to the Wind Energy Development Guidelines for Planning Authorities, 2006 published by the Department of the Environment, Heritage and Local Government in relation to the location of large wind turbines and the information required as part of a planning application. The Council as part of this Plan has identified locations within the county where large wind turbines could be located and this is dealt with under the Rural Development/Economy Section 2.6.

Micro-Renewable Energies and Small Scale Wind Energy Development

The Council encourages the development of smaller scale wind energy development and single turbines in urban and rural areas, including residential areas, and industrial parks, provided that they do not negatively impact upon the environmental quality or residential amenity of the area. The Wind Energy Development Guidelines recommend the investigation of the potential for relatively small-scale wind energy developments within urban and industrial areas, and for small community-based proposals outside the key areas that are identified as being appropriate for wind energy development. Community ownership of wind energy projects enables local communities to benefit directly from local wind energy resources being developed in their local areas, ensuring long-term income for rural communities. The Council will encourage communities to co-operate in the development of wind energy projects, be they in rural or urban locations.

The Council will encourage home owners in appropriate locations to install micro wind energy units and in relation to such small scale domestic turbines, planning exemptions are scheduled in the Planning & Development Regulations 2007.

P-IF18 It is the policy of the Council to encourage the development of small-scale wind energy development and single turbines in urban and rural areas, including residential areas, and industrial parks, provided they do not negatively impact upon the environmental quality or residential amenity of the area.

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Appendix B

Air Dispersion Modelling Contour Plots

- Site layout drawing and location of proposed facility and nearby residences

Dispersion modelling contour plots for Scenarios 1 to 12 – Worst case meteorological year Clones 2004

- Scenario 1 - Carbon monoxide
- Scenario 2 and 3 - Oxides of nitrogen
- Scenario 4, 5 and 6 - Sulphur dioxide
- Scenario 7, 8, 9 and 10 - Total particulates
- Scenario 11 – TNMVOC as Benzene
- Scenario 12 – Odour

Meteorological data used within the Dispersion modelling study.

Checklist for EPA requirements for air dispersion modelling reporting