UISCE ÉIREANN : IRISH WATER

Water Supply Project

Eastern and Midlands Region

Environmental Impact Statement - Scoping Report

November 2016

Water Supply Project, Eastern and Midlands Region

Irish Water

Environmental Impact Statement (EIS) Scoping Report

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Water Supply Project, Eastern and Midlands Region

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List of Acronyms

ACRONYM	DESCRIPTION
AA	Appropriate Assessment
ABP	An Bord Pleanála
ACA	Architectural Conservation Area
ADCPs	Acoustic Doppler Current Profilers
ASA	Alternative Sites Assessment
BOCCI	Birds of Conservation Concern in Ireland
BWI	Birdwatch Ireland
CEMP	Construction Environmental Management Plan
cSAC	Candidate Special Area of Conservation
CSTMP	Construction Stage Traffic Management Plan
CTMP	Construction Traffic Management Plan
DAHG	Department of Arts, Heritage and the Gaeltacht
DCC	Dublin City Council
DECLG	Department of the Environment, Community and Local Government
DoAHRRGA	Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ELIG	Environmental Law Implementation Group
EPA	Environmental Protection Agency
ERBD	Eastern River Basin District
ESB	Electricity Supply Board
FCC	Fingal County Council
FOAR	Final Options Appraisal Report
FRA	Flood Risk Assessment
GDA	Greater Dublin Area
GDWSSS	Great Dublin Water Supply Strategic Study
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GPA	Guidelines for Planning Authorities
GSI	Geological Survey of Ireland
HGV	Heavy Goods Vehicles
ICMSA	Irish Creamery Milk Suppliers Association
IFA	Irish Farmers Association
IFI	Inland Fisheries Ireland
IGI	Institute of Geologists of Ireland
IPPC	Integrated Pollution Prevention and Control
IWAI	Inland Waterways Association of Ireland
IWeBS	Irish Wetland Bird Survey
KCC	Kildare County Council
LCA	Landscape Character Assessment
LCC	Laois County Council
LGV	Light Goods Vehicle
LVIA	Landscape and Visual Impact Assessment
MCA	Multi Criteria Analysis
MCC	Meath County Council
MGV	Medium Goods Vehicle

MLD	Million Litres per Day
NFGWS	National Federation of Group Water Schemes
NHA	Natural Heritage Area
NIAH	National Inventory of Architectural Heritage
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
NRA	National Roads Authority
NSL	Noise Sensitive Location
OCC	Offaly County Council
OPW	Office of Public Works
OSi	Ordnance Survey Ireland
OTMP	Outline Traffic Management Plan
OWP	Options Working Paper
HMWB	Heavily Modified Water Body
pNHA	proposed Natural Heritage Area
PNR	Project Need Report
POAR	Preliminary Options Appraisal Report
RBD	River Basin District
RBMPs	River Basin Management Plans
RHM	Register of Historic Monuments
RMP	Record of Monuments and Places
RPG	Regional Planning Guidelines
RPS	Record of Protected Structures
RSA	Road Safety Authority
RSPA	River Shannon Protection Alliance
SAC	Special Area of Conservation
SDCC	South Dublin County Council
SEA	Strategic Environmental Assessment
SMR	Sites and Monuments Record
SPA	Special Protection Area
SWAN	Sustainable Water Network
TCC	Tipperary County Council
TII	Transport Infrastructure Ireland
VOCs	Volatile Organic Compounds
VRP	Viewshed Reference Point
WCC	Wicklow County Council
WFD	Water Framework Directive
WHO	World Health Organisation
WI	Waterways Ireland
WPAC	Water Policy Advisory Committee
WSP	Water Supply Project
WSSP	Water Services Strategic Plan
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant
ZTV	Zone of Theoretical Visibility

Abstract

On 1st January 2014, Irish Water assumed responsibility for managing Ireland's water and wastewater investment and maintenance programmes. On that date, Irish Water also took over the management of the Water Supply Project Eastern and Midlands Region (WSP) from Dublin City Council/Department of Environment, Community and Local Government[1]. The project is currently in the project planning stage.

Management of the planning stage of the project is currently focused on achieving a planning submission to An Bord Pleanála by late 2017 with a view to delivering an additional source of water throughout the Eastern and Midlands Region by 2024/5.

The project is currently in the fourth phase of non-statutory public consultation which commenced with the publication of the Final Options Appraisal Report and this EIS Scoping Report

Feedback from the three previous public consultation stages in conjunction with results from continuing surveys, modelling and investigations, as well as the assessment of the two remaining viable options using the constraints and assessment criteria, has led to the identification of a Preferred Scheme as set out in the Final Options Appraisal Report.

The Preferred Scheme involves the sustainable abstraction of water on the eastern shore of Parteen Basin in Co. Tipperary, with water treatment nearby at Birdhill. Treated water would then be piped to a termination point reservoir at Peamount in South County Dublin. Supplies of treated water would be made available to Midland communities along the route from Parteen Basin to Dublin.

This would provide a reliable and sustainable water supply to present and future domestic, commercial and industrial consumers along the proposed pipeline's 170 km route.

The Final Options Appraisal Report identifies a 200m wide route corridor and an indicative 50m pipeline corridor within which it would be feasible to locate the pipeline in a way which accommodates environmental, technical and geographical constraints.

This Environmental Impact Statement (EIS) Scoping Report sets out the proposed scope of work and methodologies to be applied in the development of the EIS for the Water Supply Project Eastern and Midlands Region and outlines the proposed structure of the EIS document.

The EIS Scoping Report is a key element of the EIA process as a whole and the main objectives of this report are to:

- Provide a description of the proposed project
- Identify likely significant impacts which may arise during the construction and operation of the proposed development;
- Outline proposed assessment methodologies for completing the EIS;
- Outline the likely contents of the EIS; and
- Form a basis of common reference for consultation about the scope and methodology for the EIS.

Scoping ensures that potential environmental impacts are identified at the initial stages of the process while ensuring environmental protection is a key consideration in the development of the project design. Scoping is an ongoing process which does not end following the completion of this consultation period but continues throughout the Environmental Impact Assessment (EIA) process.

[1] Now the Department of Housing, Planning, Community and Local Government

An Environmental Impact Statement (EIS) will be prepared for the Final Scheme for the Water Supply Project which will present the findings of the environmental assessments and will accompany Irish Water's Planning Application to An Bord Pleanála in late 2017. The planning application will be subject to a period of statutory consultation which will provide the public with an opportunity to have their say, following which the Board will determine whether consent should be granted.

In summary, the EIS will comprise of a number of sections including the following:

- A background to the project and the EIA process.
- An appraisal of alternatives that were considered during the design of the proposed development and during the EIA process.
- A description of the proposed development, including information on its background, history and need, design principles, risk analysis, construction methodology and programme.
- The planning context for the proposed development, including national, regional and local policy will be detailed.
- A description of the baseline conditions at the abstraction site, the water treatment facility, the final pipeline route corridor, the break pressure tank location and the termination point reservoir site will be presented for each environmental topic.
- A description of the potential impacts that will occur during the construction and operational phase of the proposed development will be provided for each environmental topic. The likelihood, extent, magnitude, duration and significance of potential impacts will be described.
- Potential for cumulative impacts to arise will be addressed.
- The mitigation measures to be put in place to mitigate the likely significant impacts will be described and the residual impacts that will persist after mitigation has been put in place will be also be detailed. Mitigation measures will be provided in the form of avoidance, reduction or remedy. The level of significance of any residual impacts will be detailed.
- A section detailing the interactions between the various environmental topics will be provided. This will be provided in the overall context, area by area assessment and a matrix summarising the interactions will be provided.
- A non-technical summary will be a condensed into an easily comprehensible version of the EIS document.

The following environmental topics will be addressed within the EIS and have been discussed in further detail within this scoping report:

- Air and Climate;
- Noise and Vibration;
- The Landscape;
- Cultural Heritage;
- Biodiversity;
- Land and Soils;
- Water;
- Traffic and Transport;
- Population and Human Health;
- Agronomy;
- Waste; and
- Material Assets.

The scoping exercise carried out at this stage of the project has highlighted the following points:

- An Environmental Impact Statement (EIS) and Appropriate Assessment will be prepared for the Final Scheme which will accompany Irish Water's Planning Application to An Bord Pleanála in late 2017.
- Consultation with the public, statutory organisations and non-statutory organisations will continue to be undertaken during the Environmental Impact Assessment process. The results of this consultation will be used to inform the EIS and will be incorporated into the project design where practical.
- Scoping will identify potential environmental impacts at the initial stages of the process while ensuring environmental protection is a key consideration in the development of the project design.

- Further assessment of all baseline studies together with consultation with statutory and non-statutory bodies will assist with identification of the main potential impacts for the scheme.

Irish Water are now inviting submissions from the public and interested groups/parties on the issues and methodologies to be considered as part of the EIS. The consultation period will run for a period of 14 weeks from the 8th of November 2016 to the 14th of February 2017 inclusive.

1. Introduction

1.1 Background

On 1st January 2014, Irish Water assumed responsibility for managing Ireland's water and wastewater investment and maintenance programmes. On that date, Irish Water also took over the management of the Water Supply Project Eastern and Midlands Region (WSP) from Dublin City Council/Department of Environment, Community and Local Government[2]. The project is currently in the project planning stage.

Management of the planning stage of the project is currently focused on achieving a planning submission to An Bord Pleanála by late 2017 with a view to delivering an additional source of water throughout the Eastern and Midlands Region by 2024/5.

When responsibility for the project was with Dublin City Council, the project was known as the 'Water Supply Project – Dublin Region' as the principal focus was planning for future water supply needs of the East / Dublin Region up to 2050. However, the transfer of water services functions to Irish Water has opened a unique opportunity to take a strategic view of providing water services at a national level and as a result the project has now been referenced to the (three) regions within which Irish Water operates (see Figure 1-1). Since the bulk of water supplies from the project will be delivered to the East and Midlands, the project is now known as the 'Water Supply Project Eastern and Midlands Region (WSP)'.

The transfer of responsibility for managing the project from Dublin City Council to Irish Water has also resulted in an increased focus on potential 'Benefiting Corridors' which will be created by the water transfer pipelines between potential new water source options and the terminal delivery point. This is because Irish Water has responsibility for ensuring secure, resilient and high quality water supplies in all locations of Ireland and not just in the East of Ireland.

1.2 History to the Project

The need for a new water supply source for the metropolitan area of Dublin and surrounding environs was first identified in the Greater Dublin Water Supply Strategic Study (GDWSSS) of 1996 and endorsed in a review of the GDWSSS in 2000. Figure 1-2 outlines the chronological development of the project from 1996 to the present day.

[2] Now the Department of Housing, Planning, Community and Local Government

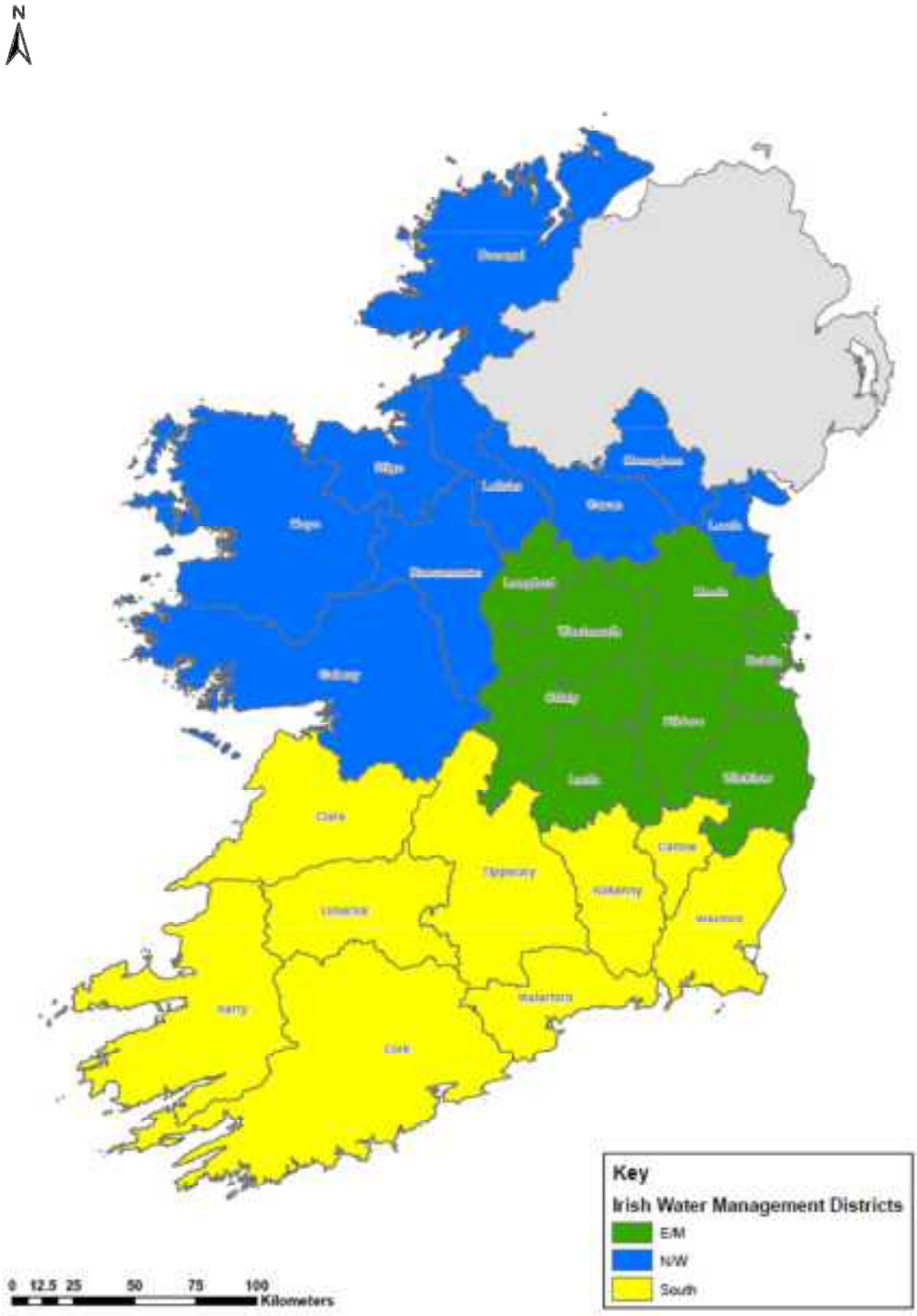


Figure 1-1 Irish Water Regions and Study Area

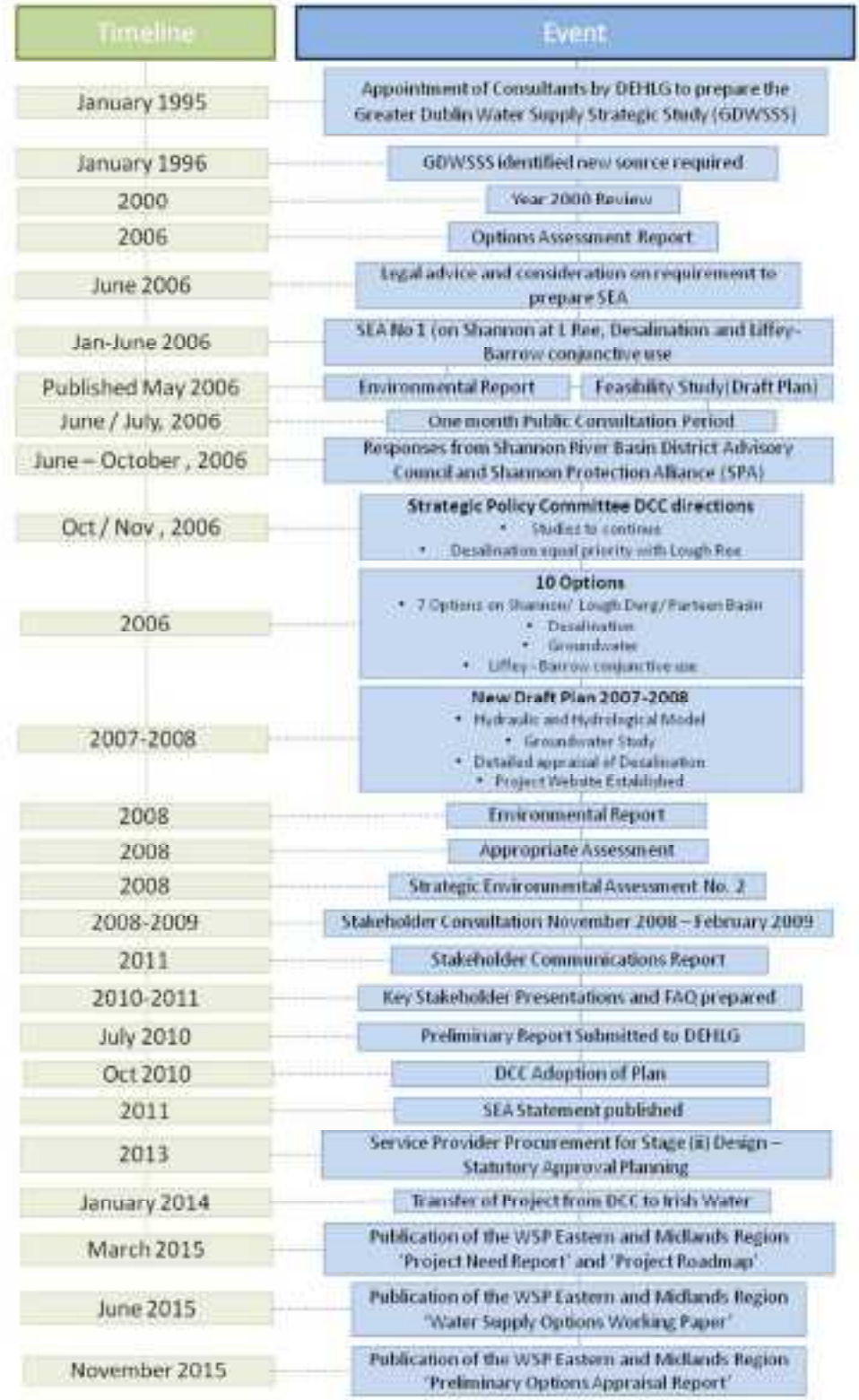


Figure 1-2 Chronological Development of the Project & Historical Datasets/Reporting

On this baseline, Dublin City Council (DCC), and their service providers, undertook two phases of Strategic Environmental Assessment (SEA) during the period 2006-2011. This identified, and considered ten potential new source options to cater for the water supply - demand deficit (see Figure 1-3).

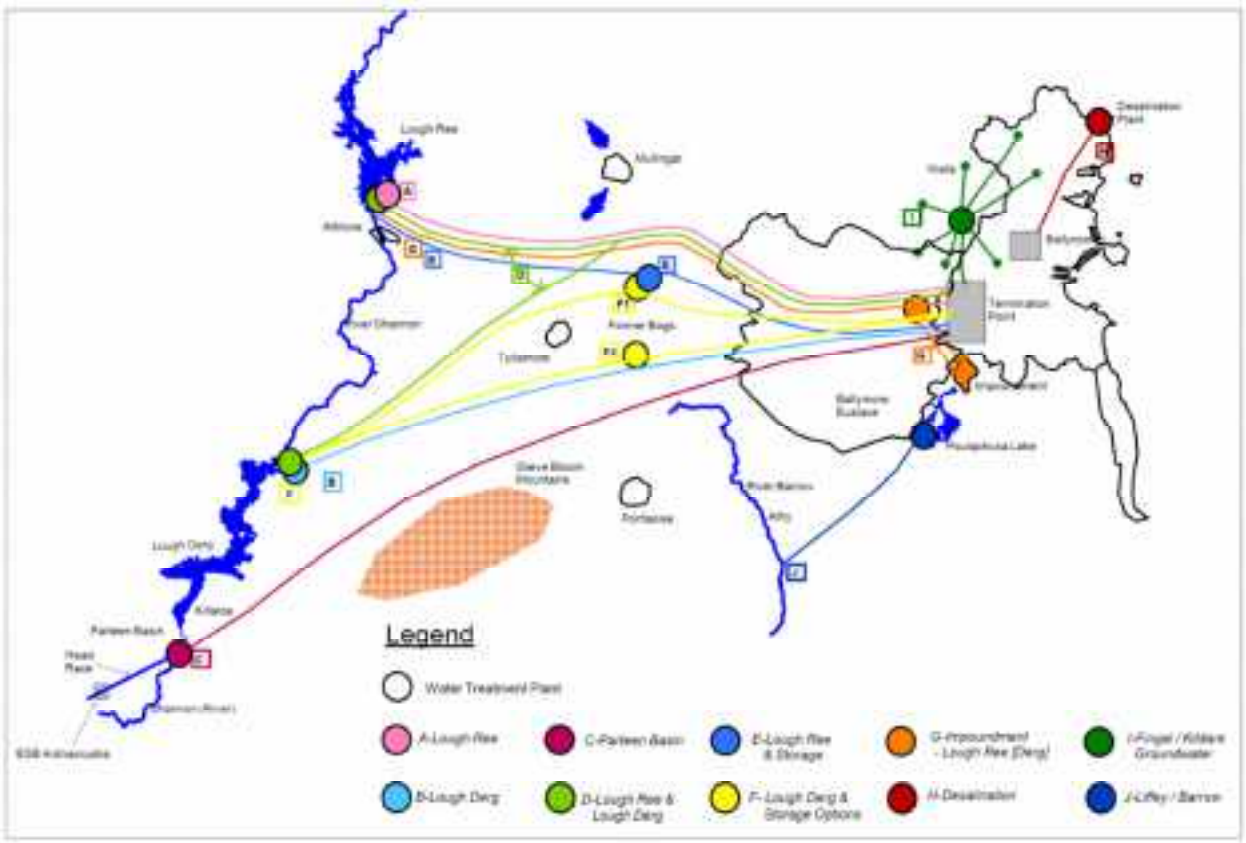


Figure 1-3 Water Supply Options Considered in the SEA

These ten options were appraised under technical, environmental, socio-economic and economic assessment criteria and assessed at a high 'desktop-study' level on data information which was available at that time.

The top ranked technically viable options (four in total) that emerged from the 2007-2011 SEA were as follows:

i. Option F2 (Abstraction at North East Lough Derg with Raw Water Storage at Garryhinch)

ii. Option B (Abstraction at North East Lough Derg with Direct treated water pipeline to Dublin)

iii. Option C (Abstraction at Parteen Basin with Direct treated water pipeline to Dublin)

iv. Option H (Desalination of Irish Sea Water)

An expressed preference at the time for Option F2 (abstraction from Lough Derg with Raw Water Storage) was communicated through the DCC Draft Plan, with the adopted Plan and associated SEA statement being published in 2010/2011 (see Figure 1-4).

Reflecting data limitations at that time, the preference was noted as provisional and was qualified with the requirement for additional investigative works to be undertaken to validate the engineering design, and assess the environmental impacts.

The transfer of water services functions to Irish Water in January 2014 provided a unique opportunity to take a strategic view of providing water services at a national level. The Water Supply Project, Eastern and Midlands Region, is a key element of Irish Water's overall nationwide remit as it will meet the domestic, commercial and

industrial needs of over 40% of Ireland's population into the medium to long-term future (to 2050). Irish Water identified four key stages of non-statutory public consultation that would be undertaken in the development of a new water supply for the Eastern and Midlands Region prior to making a planning application to An Bord Pleanála in Q3/4 2017.

As part of this process, three phases of non-statutory public consultation have already been undertaken which has allowed relevant feedback to be incorporated into the development and decision making for a new water supply for the Eastern and Midlands Region. A summary of the three previous non-statutory public consultations is outlined below.

- The **Project Need Report & Project Road Map** (March 2015). The Project Need Report examined the capacity of existing sources, and the need for the new source. It included a fundamental review of the demographic, economic and sectoral water consumption drivers in overall water demand, as well as a critical appraisal of the resilience of the existing water supplies serving the region. It emphasised the importance of both aspects in considering the question of 'need' and concluded that the existing supply sources and infrastructure for the region do not have the capacity or resilience to meet future requirements. It projected that population and industrial growth will generate a demand for an additional 330 million litres of water per day by 2050. The present infrastructure is struggling to meet current need as evidenced by a number of significant and costly outages in Dublin over the past 4 years, one of which coincided with the Web Summit in November 2013. While projected requirements already include ambitious leakage control targets and water conservation initiatives, which will provide valuable water savings, these will not provide a long term solution for our water supply requirements. The Project Road Map outlined how a preferred new supply option would be selected and the public consultation milestones involved in that process.
- The **Options Working Paper** (June 2015) presented a review of the ten Water Supply Options evaluated as part of the SEA. The identification of four technically viable options through the SEA was validated as remaining appropriate to be brought forward for further consideration in the planning process (Figure 1-4). The four technically viable options were considered to be of equal footing, with no preference made on the assessments undertaken. It also published, for consultation, the assessment criteria in options appraisal, and the proposed approach to positioning infrastructure to achieve least environmental impact, through the use of constraint mapping.

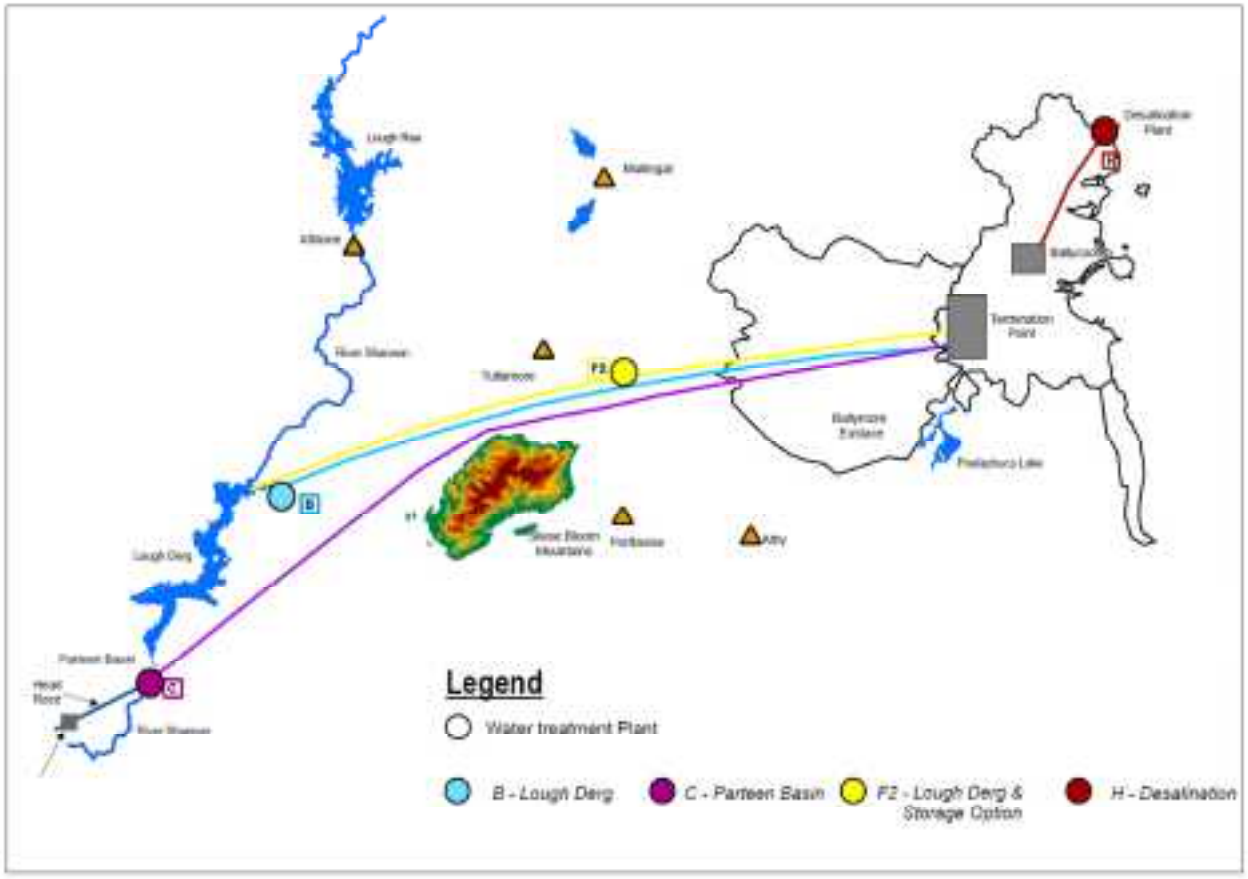


Figure 1-4 The Four Technically Viable Options

- The **Preliminary Options Appraisal Report** (November 2015) set out the detail of the assessment process for the four technically viable options. The report concluded that two of the four options located on the North East of Lough Derg are unsuitable, primarily for environmental reasons. The two which remained viable were desalination (from the Irish Sea) and the abstraction of water from the lower Shannon at Parteen Basin in County Tipperary. Of these two, the report identified abstraction from the River Shannon at Parteen Basin as the "emerging preferred option". The report identified an abstraction point at the Parteen Basin with a 2km preferred pipeline route corridor from the abstraction point to a Termination Point Reservoir in the vicinity of the existing Peamount Reservoir in South County Dublin (Figure 1.5).

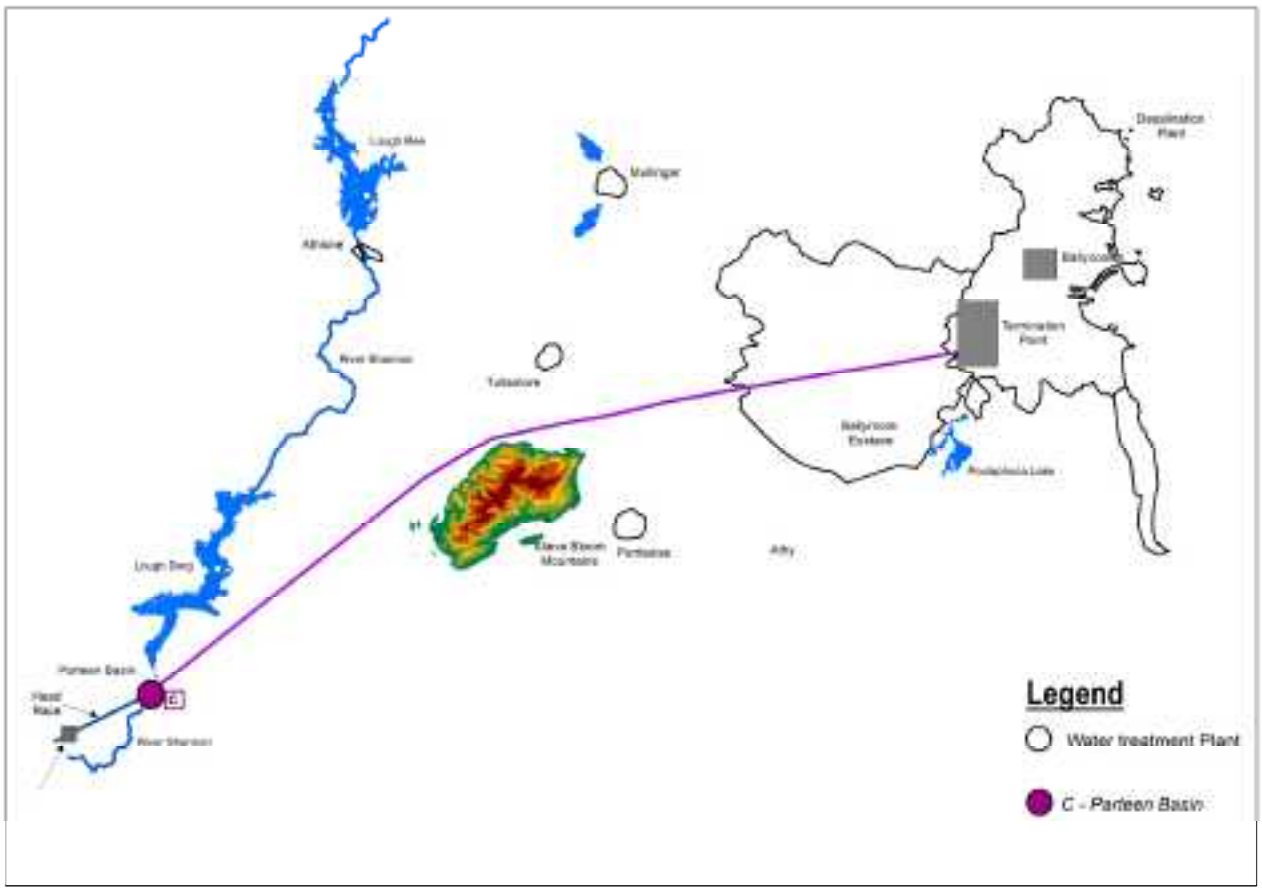


Figure 1-5 The Emerging Preferred Option

1.3 Current Project Status

The project is currently in the fourth phase of non-statutory public consultation which commenced with the publication of the Final Options Appraisal Report (FOAR) and the EIS Scoping Report (this report).

Feedback from all three public consultation stages in conjunction with results from continuing surveys, modelling and investigations, as well as the assessment of the two remaining viable options using the constraints and assessment criteria, has led to the identification of a Preferred Scheme as set out in the Final Options Appraisal Report (FOAR).

The **Final Options Appraisal Report** concluded that the abstraction of water from the Shannon at Parteen Basin (also known locally as the Lower Lake) is the option which best meets the objectives of the Water Services Strategic Plan, offers least environmental impact and provides additional benefits along an extensive benefitting pipeline corridor. Feedback from the POAR consultation phase has been taken into consideration along with and the results of additional constraints mapping and environmental surveys which has identified a preferred 200m wide pipeline corridor and an indicative 50m pipeline corridor, which again is positioned for least impact.

All of the aforementioned reports are available for download at http://www.watersupplyproject.ie/publications/

1.4 Description of the Project (Preferred Scheme)

The Preferred Scheme (see Figure 1-6) will comprise the following main elements:

- A Raw Water Abstraction Intake structure within Parteen Basin;
- A Raw Water Pumping Station of area circa 2 hectares at the abstraction site;
- A twin Raw Water Rising Main of diameter 1.5m from the abstraction site to a water treatment plant;
- A Water Treatment Plant facility of area circa 15 hectares (likely to be within 5km of the abstraction site) capable of treating 330,000m^3 per day, with supply of approximately 72,000m^3 per day to communities in the Midlands Region;
- Approximately 170km of treated water supply pipeline comprising mains of diameter in the order of 1.7m to 2.0m diameter;
- A 50m wide construction corridor along the pipeline route from abstraction point (Parteen Basin, Co. Tipperary) to a termination point reservoir (Peamount, South County Dublin);
- A Break Pressure Tank[3] of area circa 1.5 hectares at a suitable location near the Tipperary/Offaly border;
- Potential micro-tunnelling (trenchless excavation technique) under rivers including but not limited to Nenagh, Brosna, Silver, Tullamore, Figile and Liffey Rivers;
- Potential micro-tunnelling under motorways, national primary roads, canals and railways and areas of high elevation, if required;
- Isolating valve chambers for the operation and maintenance of the treated water supply pipeline. These will be required at intervals throughout the length of the pipeline. Where possible, the isolating chambers will be sited in close proximity to existing thoroughfares for ease of access;
- Air valve and washout chambers for operation and maintenance of the treated water pipeline: these will be required at frequent intervals at high points, changes of gradient and low points throughout the length of the pipeline;
- Access roads will be required from public roads to the proposed locations of the Raw Water Abstraction facility, and Raw Water Pumping Station site, the Water Treatment Plant, the Break Pressure Tank site and to the proposed Termination Point Reservoir in the vicinity existing of Peamount Reservoir;
- Temporary works to facilitate construction of the permanent works including storage yards at strategic locations along the route of the pipeline, and strengthening works to existing roadways at key access points for haulage routes for movement of plant and materials;
- Accommodation works throughout the works area; and
- Termination Point Reservoir of volume 150ML on site area circa 8 hectares (at Peamount Reservoir and environs).

[3] A covered structure to manage water pressures in the pipe; at the transition pumped and gravitational flows.

Figure 1-6 Overview of the Preferred Scheme

Land will be returned to the landowners along the route of the pipeline except for those sites which will have to be acquired to construct the Raw Water Abstraction facility, Raw Water Pumping Station, Water Treatment Plant, Break Pressure Tank and the Termination Point Reservoir in the vicinity existing of Peamount Reservoir. A permanent easement of approximately 20m will be retained around the pipeline post construction.

The project involves abstraction of 330 MLD (3.8m^3/s) from the flow currently directed to Ardnacrusha, as a daily average requirement at 2050, from the lower Shannon at Parteen Basin, with transfer of a treated water supply from the Shannon to communities in the Midlands and Eastern areas.

1.4.1 Infrastructure Siting

To define the location of the proposed infrastructure sites and pipeline route associated with the proposed development, a constraints mapping exercise was undertaken in parallel with the staged options assessment processes mentioned in Section 1.2 above (see Figure 1-7).

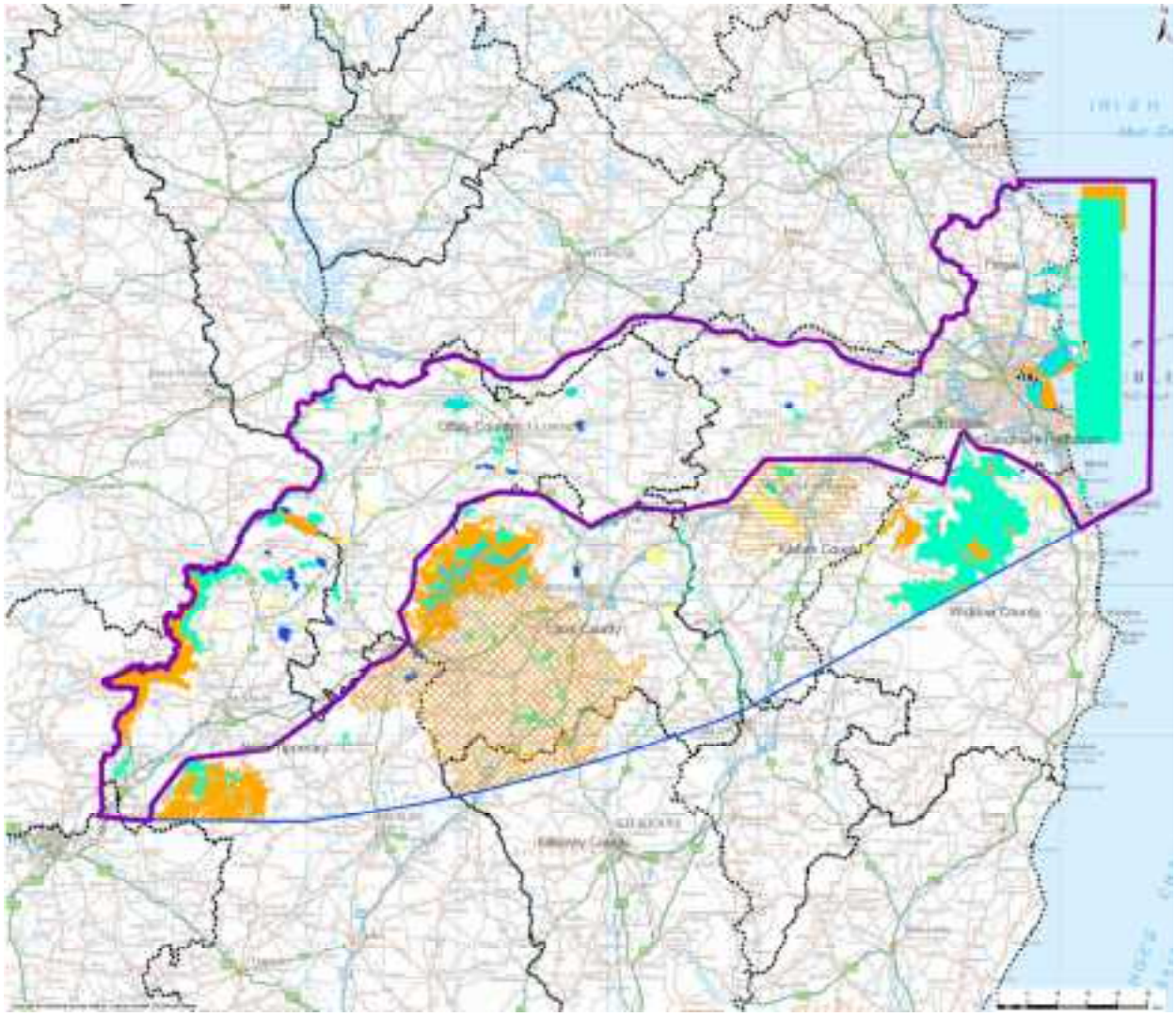


Figure 1-7 Options Working Paper – Refined Study Area following Initial Constraint Mapping

The Preliminary Options Appraisal Report refined this area, through more detailed and comprehensive constraint mapping, into a number of potential 2km corridors for the 'Emerging Preferred Option', from the abstraction site at the Parteen Basin to the Termination Point Reservoir in the vicinity of Peamount Reservoir. A least constrained 2km corridor was then identified and consultation feedback sought (Figure 1-8).

Following the completion of further environmental and technical assessments, a preferred 200m corridor (See Figure 1-9) and an indicative 50m pipeline corridor have been identified within the Final Options Appraisal Report (FOAR). It should be noted that additional environmental and technical assessments and further public consultation will be required prior to the finalisation of the scheme.

Drawings 2.1 – Drawing 2.90 in Appendix B illustrate the preferred 200m and indicative 50m pipeline corridors, including the abstraction, water treatment, break pressure tank and termination point reservoir sites.

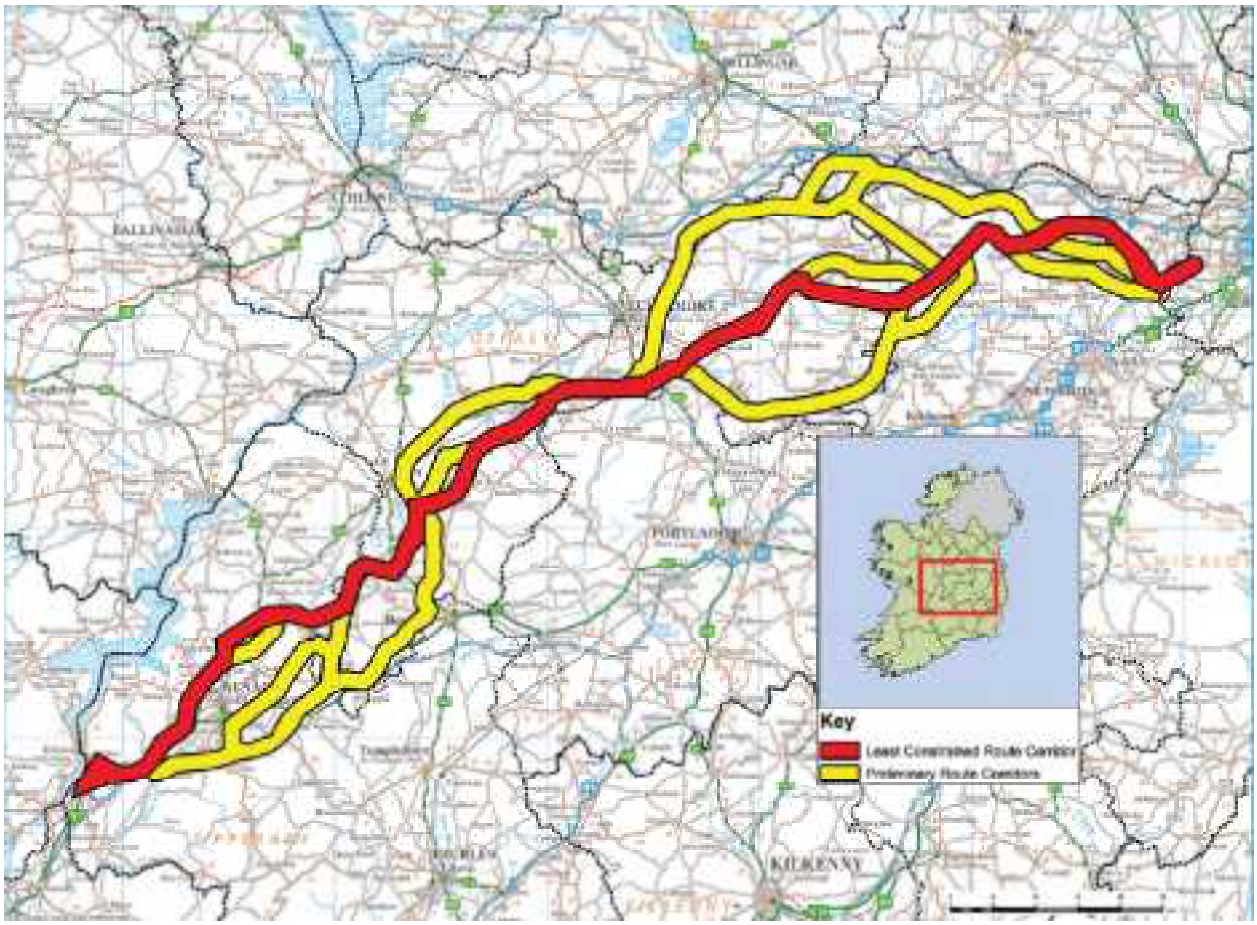


Figure 1-8 Preliminary Corridors and Least Constrained Corridor (in 'red')

Figure 1-9 Preferred 200m corridor (in 'red')

1.4.2 Proposed Abstraction Regime at the Parteen Basin

It is anticipated that the proposed abstraction regime at the Parteen Basin, downstream of Lough Derg, would be covered by an agreement with ESB (Electricity Supply Board), whereby the ESB would curtail the volume used in power generation, measure for measure with water abstracted for water supply, such that the abstraction can be managed within the existing normal operating band on Lough Derg and Parteen Basin, and with consequently no impact on the normal operating water level range. The statutory minimum flow to the River Shannon downstream of Parteen Weir, of 10 cubic metres per second, would also remain unchanged.

Aerial View of Parteen Basin & Weir

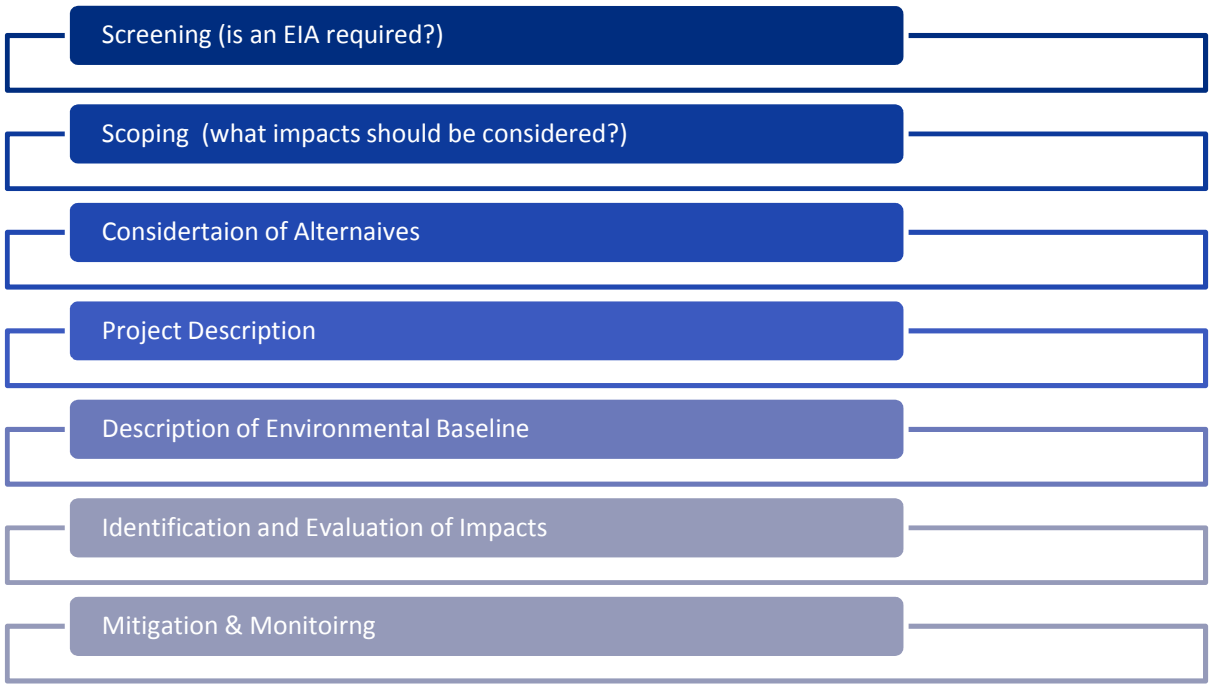
2. Environmental Impact Assessment (EIA) Process

Environmental Impact Assessment (EIA) is the process for anticipating the effects (both positive and negative) from a proposed development or project on various environmental receptors. If the anticipated effects are unacceptable, design measures or other relevant mitigation measures can be taken to reduce or avoid those effects. The Environmental Impact Statement (EIS) is the output which records the details of this assessment.

The first step in the EIA process is 'Screening' which determines if an EIA is required. If it is determined that an EIA is required the next step is to 'Scope' the content of the EIA. Scoping (see Section 2.2) identifies the key project specific issues that are likely to be impacted during the EIA and outlines possible alternative approaches where required.

Following on from scoping, the EIA process includes a baseline assessment to determine the status of the existing environment, impact prediction and evaluation, and determining appropriate mitigation measures, including monitoring and reinstatement.

The EIS, which will present the findings of the EIA process, will accompany Irish Water's planning application to An Bord Pleanála who will determine whether consent should be granted.



2.1 Screening

Screening is the first stage of the EIS process, whereby a decision is made on whether or not an EIA is required.

The relevant classes of developments that require EIA are set out in Schedule 5 of the Planning and Development Regulations 2001 as amended (the "Planning Regulations"). In accordance with Part 1, Paragraph 12(a) of Schedule 5 an EIS is required for the following:

"Works for the transfer of water resources between river basins, where this transfer aims at preventing possible shortages of water and where the amount of water transferred exceeds 100 million cubic metres per year"

As the Water Supply Project proposes to abstract approximately 330MLD or 330,000 cubic metres per day (equiv. 120,450,000 cubic metres per year), it is above the threshold of 100 million cubic metres per year for EIA.

2.2 Scoping

Following screening, 'scoping' is the process of determining the content and extent of matters that should be covered in the environmental information submitted to the competent authority. Scoping requires the consideration of the nature and likely scale of the potential environmental impacts likely to arise from a proposed development or project.

Scoping is the process of determining what information should be included in an EIS and which methods should be used to collect and assess that information.

This EIS Scoping Report sets out the proposed scope of work and methodologies to be applied in the development of the EIS for the Water Supply Project Eastern and Midlands Region and outlines the proposed structure of the EIS document.

The EIS Scoping Report is a key element of the EIA process as a whole and the main objectives of this report are to:

- Provide a description of the proposed project
- Identify likely significant impacts which may arise during the construction and operation of the proposed development;
- Outline proposed assessment methodologies for completing the EIS;
- Outline the likely contents of the EIS; and
- Form a basis of common reference for consultation about the scope and methodology for the EIS.

2.3 EIS Methodology

The assessment of environmental impacts will be conducted in accordance with the *Guidelines on the Information to be Contained in Environmental Impact Statements, 2002* and *Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements), 2003* as prepared by the EPA, will be followed in the preparation of the EIS.

It is understood that the EPA is currently revising this EIA Guidance (draft EPA Guidelines issued for consultation in 2015) and any new guidance document published in the timeframe of the EIS will be adhered to in the EIS lodged with the Board. (The original and subsequent draft EPA Guidelines and Advice Notes will

remain applicable until such date as the final revision of the Guidelines is published post transposition of Directive 2014/52/EU on the 16 May 2017).

In addition to the applicable EIA legislation and guidance, all EU Directives and national legislation relating to the specialist areas will also be considered as part of the process.

The EIS will provide the following:

1. a description of the project comprising information on the site, design, size and other relevant features including the physical characteristics of the whole project and the land-use requirements during the construction and operational phases;

2. a description of the likely significant effects of the project on the environment;

3. a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;

4. a description of the reasonable alternatives studied, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;

5. a non-technical summary of the information referred to in points 1-4 above; and

6. any additional information specified in Annex IV of Directive 2014/52/EU (as transposed to Irish Law) relevant to the specific characteristics of the project and to the environmental features likely to be affected.

2.3.1 Potential Impacts

The assessment will be structured to ensure that assessment criteria (i.e. which receptors are considered sensitive) and standards of significance, sensitivity and magnitude used as part of the assessment are identified and documented and that the level of certainty of data is recorded. An explanation will be provided for each environmental aspect on the criteria that have been applied, including reference to the appropriate published guidance for each of the environmental aspects.

The assessment will evaluate the construction and operational phases of the proposed development and the likelihood, extent, magnitude, duration and significance of potential impacts will be described. The potential for cumulative impacts to arise will also be considered.

For all environmental aspects, the significance of residual impacts, i.e. those impacts predicted once mitigation is taken into consideration, will be assessed.

2.3.2 Mitigation Measures

The EIS will address potential environmental effects associated with the proposed development and propose mitigation where significant effects are identified. All measures proposed as mitigation for the proposed development will be reported within the relevant chapter of the EIS.

The EIS will also include a final chapter that contains a Schedule of Environmental Commitments which will bring together all of the mitigation measures recommended in the various EIS sections for ease of reference.

2.3.3 EIA Directive 2014/52/EU

Directive 2014/52/EU amending the Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment came into force on the 15 May 2014 and Member States have up to three years to transpose the Directive into national law (by 16 May 2017)

The preparation of the EIS will take into consideration any national legislative amendments introduced in order to transpose Directive 2014/52/EU into National Law.

2.4 Appropriate Assessment (AA)

European Sites (Natura 2000), i.e. Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are classified under the European Union Birds Directive (2009/147EC) and Habitats Directive (92/43/EEC). The procedures that must be followed when considering developments affecting a Natura 2000 site are specified in Articles 6(3) and 6(4) of Habitats Directive.

The Appropriate Assessment (AA) process will be undertaken concurrently with the EIA, but both processes will be clearly distinguished. The AA will be documented in a Screening Statement and Natura Impact Statement (NIS) for the proposed development and these documents will be submitted to the competent authority as part of the planning application with the EIS. More details on AA relevant to the proposed development are provided in Section 9.5 of this report.

2.5 Water Framework Directive (WFD)

A Water Framework Directive (WFD) Compliance Assessment relevant to the proposed abstraction location is being prepared and on river crossings as deemed required by the assessment and in consultation with relevant Stakeholders. Impacts on water quality, ecology and hydromorphology will be assessed in accordance with the requirements of the WFD. Additional information on the WFD Compliance Assessment is provided in Section 11.4.1 of this report.

3. EIS Consultation

To assist in developing the EIS, ongoing consultation will serve the following key objectives:

- To establish a sufficiently robust environmental baseline of the proposed development and its surroundings;
- To identify, early in the process, specific concerns and issues relating to the proposed development in order that they can be discussed and appropriately accounted for in the design and assessment;
- To ensure the appropriate involvement of the public and stakeholders in the assessment and design process; and
- To comply in full with the Aarhus Convention, on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

3.1 EIS Consultation to Date

An initial Environmental Impact Statement (EIS) Scoping Letter was issued to statutory and non-statutory bodies in February 2016, requesting informal feedback on the likely environmental impact of the proposed water abstraction and the least constrained 2km pipeline route corridor from Parteen Basin to a termination point reservoir near Peamount, South County Dublin, as set out in the POAR. The scoping letter was sent to 31 stakeholders and 21 submissions were subsequently received.

Detailed assessment and analysis of all feedback received to date through consultation along with and the results of additional constraints mapping and environmental surveys, further informed the development of a Draft EIS Scoping Report which issued to 36 key stakeholders (both statutory and non-statutory organisations) between March and July 2016. The Draft EIS Scoping Report sought informal feedback on a preferred 200m corridor within the least constrained 2km corridor as set out in the Preliminary Options Appraisal Report. To date feedback has been received from the following stakeholders (see summary feedback in Appendix A-4 and this has been taken into consideration in the compilation of this EIS Scoping Report);

- Department of Agriculture, Food and the Marine
- Department of Arts, Heritage, Regional, Rural & Gealtacht Affairs
- Environmental Protection Agency (EPA)
- Failte Ireland
- Iarnrod Eireann
- Inland Fisheries Ireland (IFI)
- Kildare County Council
- Laois County Council
- National Parks and Wildlife Service
- South Dublin County Council
- Tipperary County Council
- Transport Infrastructure Ireland (TII)
- Waterways Ireland

3.2 Statutory Consultation

The requirement for statutory consultation is set out in Section 182(C)(4)(b) of the Strategic Infrastructure Act 2006 as amended which requires that when submitting an application for strategic infrastructure development, an applicant must also submit it to various Prescribed Bodies. Prescribed Bodies, as described in the Planning and Development Act, means those bodies 'prescribed' by Regulations made by the Minister and comprise both statutory and non-statutory bodies.

In accordance with the requirements of the Planning and Development Regulations, Irish Water will be consulting with a number of Prescribed Bodies on the EIS Scoping process including but not limited to the following;

Minister for Communications, Climate Action & Environment	Transport Infrastructure Ireland (formerly the National Roads Authority)
Minister for Agriculture, Food and the Marine	An Chomhairle Ealaíon
Minister for Arts, Heritage, Regional, Rural & Gealtacht Affairs	Failte Ireland
Minister for Housing, Planning, Community & Local Government	Inland Fisheries Ireland
Minister for Transport, Tourism & Sport	Córas Iompair Éireann (CIE)
Planning Authority – Tipperary County Council	Commission for Energy Regulation
Planning Authority – Offaly County Council	Commission for Railway Regulation
Planning Authority – Kildare County Council	The Heritage Council
Planning Authority – South Dublin County Council	Waterways Ireland
Planning Authority – Clare County Council	An Taisce
Planning Authority – Laois County Council	Environmental Protection Agency
Planning Authority – Fingal County Council	Health Service Executive (HSE)
Planning Authority – Dublin City Council	Eastern and Midland Regional Assembly
Planning Authority – Dun Laoghaire Rathdown County Council	Southern Regional Assembly

A number of statutory stakeholders will also be specifically consulted (not necessarily in the role of Prescribed Bodies) and invited to make a submission on whether any further issues or methodologies should be taken into account in the preparation of the EIS.

3.3 Non Statutory Consultation

Irish Water recognises that early engagement with stakeholders is an important aspect of infrastructure development. Irish Water has invited feedback from specific stakeholders, organisations and members of the public at critical points in the development of the proposed development. Three non-statutory public consultation periods have been held to date, to provide project updates and to elicit stakeholder and public feedback, suggestions and opinions on the findings in key project reports, namely the Project Need Report (PNR, March 2015), the Options Working Paper (OWP, June 2015), the Preliminary Options Appraisal Report (POAR, November 2015).

A fourth round of non-statutory public consultation is commencing with the publication of this EIS Scoping Report and Irish Water are now inviting submissions from the public and interested groups/parties on the issues and methodologies to be considered as part of the EIS The consultation period will run for a period of 14 weeks from the 8th of November 2016 to the 14th of February 2017 inclusive.

To make a submission please use the following contact details:

Email: watersupply@water.ie

Postal Address: Water Supply Project, Merrion House, Merrion Road, Dublin 4.

LoCall: 1890 252 848 (ROI) or 084 5246 5059 (NI)

Website: www.watersupplyproject.ie

Irish Water are now inviting submissions on the EIS Scoping report and would like your views on*

- Is there any additional information that should be considered in the development of the Preferred Scheme?
- Are there any additional environmental issues or alternative methodologies that should be taken into consideration in preparing the EIS?
- How would you like Irish Water to communicate with you as the project progresses towards planning approval?

All relevant submissions on the project are welcomed.

A comprehensive engagement strategy will be utilised during the consultation period to ensure the key findings of the report are clearly communicated with the public and interested parties and this will include a number of open days which will be held along the route of the Preferred Scheme (see www.watersupplyproject.ie for further updates).

The consultation period will provide the public and interested parties with the opportunity to identify to the project team those issues pertaining to the proposed development that they consider important and warranting investigation and inclusion in the EIS.

Following the completion of the consultation period, feedback received will be compiled within a consultation submissions report which will be made available on the project website (www.watersupplyproject.ie).

4. EIS Structure and Content

The EIS will be submitted to An Bord Pleanála as part of the planning application for the proposed development.

In summary, the EIS will comprise of a number of sections including the following:

- A background to the project and the EIA process.
- An appraisal of alternatives that were considered during the design of the proposed development and during the EIA process.
- A description of the proposed development, including information on its background, history and need, design principles, risk analysis, construction methodology and programme.
- The planning context for the proposed development, including national, regional and local policy will be detailed.
- A description of the baseline conditions at the abstraction site, the water treatment facility, the final route corridor, the break pressure tank location and the terminal reservoir site will be presented for each environmental topic.
- A description of the potential impacts that will occur during the construction and operational phase of the proposed development will be provided for each environmental topic. The likelihood, extent, magnitude, duration and significance of potential impacts will be described.
- Potential for cumulative impacts to arise will be addressed.
- The mitigation measures to be put in place to mitigate the likely significant impacts will be described and the residual impacts that will persist after mitigation has been put in place will be also be detailed. Mitigation measures will be provided in the form of avoidance, reduction or remedy. The level of significance of any residual impacts will be detailed.
- A section detailing the interactions between the various environmental topics will be provided. This will be provided in the overall context, area by area assessment and a matrix summarising the interactions will be provided.
- A non-technical summary will be a condensed into an easily comprehensible version of the EIS document.

4.1 Contents of the EIS

Broadly the following key sections will form the content of the EIS document:

- Introduction
- The EIS Process
- The Need for the Proposed Development
- Description of the Proposed Development
- Planning Context and Legislation
- Consideration of Alternatives
- The Consultation Process
- The following Environmental Topics will be addressed:

Air and Climate; Noise and Vibration; The Landscape; Cultural Heritage; Biodiversity; Land and Soils;	Water; Traffic and Transport; Population and Human Health; Agronomy; Waste; and Material Assets.

- Environmental Interactions;
- Schedule of Environmental Commitments;
- Summary of Residual Impacts; and
- References.

4.1.1 Structure of the EIS

For each of the environmental aspects being assessed, the EIS chapter will be structured broadly as follows;

- Introduction to the topic area;
- Methodology;
- Baseline conditions including future evolution without the proposed development;
- Appraisal Method for the Assessment of Impacts;
- Predicted Impacts (construction and operational phases);
- Mitigation Measures;
- Residual Impacts;
- Difficulties Encountered in Compiling Information; and
- Cumulative Impacts and Impact Interrelations.

It is likely that the EIS will be presented in a number of volumes such as follows:

- Volume 1: Non-Technical Summary – description in accessible and non-technical language of the main findings of the EIS.
- Volume 2: Main Body EIS – Describing in detail the development, results of the assessment, mitigation measures and conclusions regarding impacts.
- Volume 3: Figures – Plans and illustrations representing the project and its impact on the surrounding environment.
- Volume 4: Appendices – Technical annexes including detailed specialist technical reports.

5. Air and Climate

5.1 Introduction

The purpose of this section of the EIS Scoping Report is to describe the scope of work and methods to be applied in the identification and assessment of air quality impacts associated with the proposed development. A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development on air quality as part of the EIA.

5.1.1 Policy & Plan Context

In order to reduce the risk to health from poor air quality, National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set. The assessment of air quality will be conducted with consideration of the relevant legislation and guidance including:

- Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC);
- European Union Directive on air quality assessment and management (96/62/EC) and the associated "daughter Directives", which set the Limit Values;
- Air Quality Standards Regulations 2011 (S.I. 180 of 2011), which incorporate European Commission Directive 2008/50/EC which has set limit values for the pollutants SO_2, NO_2, PM_{10}, benzene and CO;
- Air Pollution Act 1987;
- 2030 Climate and Energy Policy Framework;
- IAQM Guidance on the Assessment of Dust from Demolition and Construction (2014);
- NRA Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (NRA, 2011) [Note NRA now TII]; and
- Local Authority air quality and planning guidance.

5.1.2 Study Area

This proposed development covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in Peamount Reservoir in South County Dublin. The extent of the proposed development, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country. The entirety of the study area will require sensitivity in the siting and design process due to the potential for proximity to a range of sensitive receptors.

It is expected that there may be sensitive receptors located within 500m of elements of the proposed development's infrastructure (abstraction site, water treatment plant, break pressure tank, pipeline and termination point reservoir) including both low density residential dwellings and a number of larger residential settlements.

5.2 Baseline Information

5.2.1 Desktop Study

Extensive work has been completed to date in order to identify the location of the proposed infrastructure sites and preferred pipeline corridor. This was completed as part of the options appraisal which initially supported the Preliminary Options Assessment Report (POAR) and subsequently the Final Options Appraisal Report (FOAR) and assessed proposed sites and proposed pipeline corridors against a range of environmental criteria including air quality.

A desktop review of available data regarding the baseline air quality over the study area has been undertaken and will be supplemented with additional information to support the development of the EIA. Air quality constraints such as the number of sensitive receptors, baseline air quality conditions, meteorological conditions and the presence of EPA Integrated Pollution Prevention and Control (IPPC), waste licenced facilities and quarries have been reviewed to date. Key items of note related to:

- At the Parteen Basin location, in terms of air quality, the area was considered rural/suburban with the larger residential settlements of both Killaloe and Ballina noted;
- At the Termination Point Reservoir, in the vicinity of Peamount Reservoir and environs, the area was considered predominantly rural with few residential receptors. The location of the Peamount Hospital and some EPA waste and IPPC licensed facilities in the vicinity were identified;
- There were marginal differences in terms of air quality constraints across the pipeline corridors that were considered as part of the FOAR with generally low-very low levels of air quality constraints across the length of the corridor. A summary of all constraints considered in the FOAR can be viewed in Drawings 2.1 – 2.90 in Appendix B.

The National Roads Authority document entitled *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (NRA, 2011) [Note NRA now TII] provides guidance on route selection assessment procedures, the primary aspect of which relates to existing ambient air quality and the proximity of sensitive receptors. This document, although designed for road schemes, is applicable in this instance due to the linear nature of much of the proposed development and the fact that the identification of air quality constraints is a component in supporting the selection process.

Following the identification of the Preferred Scheme, a further more detailed assessment of air quality will be carried out in order to establish a baseline and inform the impact assessment. The following data sources will be referred to during the air quality assessment:

- Environmental Protection Agency – National Ambient Air Quality Monitoring Data Archive;
- Environmental Protection Agency – Air Quality in Ireland 2014 Report;
- Dublin Regional Air Quality Management Plan 2009-2012;
- National Parks and Wildlife Service Maps;
- Environmental Protection Agency – Integrated Pollution Control Licences;
- Clare County Development Plan 2011-2017;
- Draft Clare County Development Plan 2017-2023;
- North Tipperary County Development Plan 2010-2016;
- Nenagh Town & Environs Development Plan 2013-2019;
- Offaly County Development Plan 2014-2020;
- Laois County Development Plan 2011-2017;

- Kildare County Development Plan 2011-2017;
- Draft Kildare County Development Plan 2017-2023;
- South Dublin County Development Plan 2010-2016; and
- Draft South Dublin County Development Plan 2016-2022.

5.2.2 Future Survey Needs

In order to characterise the existing air quality environments, representative air quality monitoring data from the EPA will be analysed to enable a full and proper impact assessment of the proposed development to be undertaken and to enable suitable mitigation to be designed as needed.

5.2.3 Consultation

It is considered that consultation on the air quality impact assessment will be undertaken with the following organisations:

- Environmental Protection Agency (EPA);
- National Parks and Wildlife Service (NPWS);
- The Local Authorities where infrastructure for the abstraction, water treatment plant, break pressure tank and termination point reservoir would be situated as well as the relevant Local Authorities along the proposed pipeline route.

Air quality related comments arising during the consultation phases of the project will also be reviewed and considered within the EIS as relevant.

5.3 Potential Impacts

5.3.1 Potential Construction Phase Impacts

During the construction phase there is potential for an impact on air quality from the following:

- Potential for construction dust emissions and nuisance dust. This will potentially be caused by activities such as excavation, soil movement, soil storage and backfilling, and would be exacerbated by winds and dry weather. Dust tends to be deposited within 500 metres of the generation site, and therefore sensitive receptors which fall within this distance of construction activities would be most at risk; and
- Emissions from Heavy Goods Vehicles (HGVs) and on site construction plant and equipment which may give rise to emissions including; CO particulates (PM_{10} and $PM_{2.5}$), volatile organic compounds (VOCs), nitrogen oxides (NO_x) and carbon dioxide (CO_2).

5.3.2 Potential Operational Phase Impacts

The main air quality impact is likely to come from operational traffic at the abstraction facility at Parteen Basin, water treatment plant near Parteen Basin, the break pressure tank site location in the Midlands and the termination point reservoir at Peamount Reservoir. These vehicle related air emissions may generate quantities of air pollutants common to vehicle emissions such as NO_2, VOC's and particulate matter (PM_{10}/$PM_{2.5}$). Of these the most pertinent are NO_2 and PM_{10} as these have the greatest potential to exceed the air quality standards. The NRA's [now TII] '*Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes*' states that roads should be assessed for air quality impacts where "significant traffic changes (greater than 10% Annual Average Daily Traffic)" occur. Generally, low levels of operational traffic are expected to be generated during the operational stage and it is predicted that the operation of the proposed development would have no net significant negative impact on sensitive receptors with respect to air quality or climate. However, this will be confirmed in the air quality impact assessment as part of the EIS.

5.4 Proposed Methodology & Assessment Scope

It is proposed that an assessment of air quality will be carried out in accordance with the EPA's current EIS guidance documents and the following guidance and established best practice, and will be tailored accordingly based on professional judgement and local circumstance:

- The National Roads Authority document entitled *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (NRA, 2011) [Note now TII].

In line with the above guidance, the assessment will cover potential impacts to air quality and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The air quality assessment carried out on the proposed development will include the following elements:

- Review of standards and legislation;
- Identification of air quality issues relevant to the components of the proposed development;
- Review of background ambient air quality in the vicinity of the proposed development (relevant air quality baseline data will be obtained from the EPA);
- Assessment of potential impacts of plant and equipment processes on air quality; and
- Assessment of potential impacts of traffic on ambient air quality.

The assessment will take account of sensitive receptors relevant to the proposed development. Sensitive receptors include locations where people spend significant periods of time, such as domestic properties. Ecological receptors are habitats that might be sensitive to dust. Examples of these sensitive receptors include:

- Residential dwellings;
- Industrial or commercial uses sensitive to dust;
- Recreational areas and sports grounds;
- Schools and other educational establishments;
- Buildings of religious sensitivity;
- Designated ecological area of conservation (either Irish or European designation);
- Hospitals and nursing homes; and
- Offices or Shops.

The complete list of sensitive receptors within the vicinity of the proposed development will become transparent once the final infrastructure sites and preferred treated water pipeline corridor is selected, thus informing the full study area for the EIA. A series of mitigation measures to minimise any foreseen impacts for both the construction phase and operational phase of the project will be proposed as required as part of the EIS.

6. Noise and Vibration

6.1 Introduction

The purpose of this section of the EIS Scoping Report is to describe the scope of work and methods to be applied in the identification and assessment of noise and vibration impacts associated with the proposed development. A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development on noise and vibration as part of the EIA.

6.1.1 Policy & Plan Context

The assessment of noise and vibration will be conducted under the relevant legislation and guidance including:

- World Health Organisation (WHO) Guidelines for Community Noise 1999;
- Protection of the Environment Act 2003 as amended, and associated Regulations;
- BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Noise';
- BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Vibration';
- BS 4142:2014 'Methods for rating and assessing industrial and commercial sound';
- Environmental Protection Agency Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (EPA 2016);
- NRA, Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA 2004) [now TII]; and
- Local Authority noise and vibration planning guidance.

6.1.2 Study Area

This proposed development covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the proposed development, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country. The entirety of the study area will require sensitivity in the siting and design process due to the potential for proximity to a range of sensitive receptors.

It is expected that there may be sensitive receptors located within 500m of elements of the proposed development's infrastructure (abstraction site, water treatment plant, break pressure tank, pipeline and termination point reservoir) including both low density residential dwellings and a number of larger residential settlements.

6.2 Baseline Information

6.2.1 Desktop Study

Extensive work has been completed to date in order to identify the location of the proposed infrastructure sites and preferred pipeline corridor. This was completed as part of the options appraisal which initially supported the Preliminary Options Assessment Report (POAR) and subsequently the Final Options Appraisal Report (FOAR) and assessed proposed sites and proposed pipeline corridors against a range of environmental criteria

including noise and vibration. A desktop review of available data regarding the baseline noise and vibration levels over the study area has been undertaken and will be supplemented with any additional information to support the development of the EIS.

The National Roads Authority document entitled *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (NRA, 2004) [Note NRA now TII] provides guidance on route selection assessment procedures, the primary aspect of which relates to the proximity of routes to noise sensitive locations. This document, although designed for road schemes, was applied in this instance due to the linear nature of much of the proposed development and the fact that the identification of noise and vibration constraints is a key component in driving the selection process.

Noise and vibration constraints such as the number of sensitive receptors and the presence of cultural heritage areas (which may have more stringent criteria for vibration) have been investigated in the development of the FOAR. Key items of note related to:

- At the Parteen Basin location, in terms of noise and vibration, the area was considered rural/suburban with the larger residential settlements of both Killaloe and Ballina noted. The existing ambient noise climate was considered low with noise sources generally related to traffic from the nearby regional and local roads.
- At the Termination Point Reservoir, in the vicinity of Peamount Reservoir and environs, the existing ambient noise climate in this predominantly rural area was considered low with noise sources generally traffic related or from other anthropogenic sources such as the Casement Aerodrome.
- There were marginal differences in terms of noise and vibration across the pipeline corridors that were considered as part of the FOAR with generally low - very low densities of sensitive receptors across the length of the corridors.

Following the identification of the Preferred Scheme, further more detailed assessment of noise and vibration will be carried out in order to establish a baseline and propose mitigation measures as required.

During the construction phase of the development mitigation measures are likely to consist of the selection of tools and plant items with low inherent potential for noise/vibration generation along with the implementation of good practice construction methods and monitoring of noise/vibration where necessary to ensure compliance with relevant limit values. During the operational phase of the development consideration will be given to noise generating plant items such as pumps and other building services plant items along with noise from vehicles accessing/parking on site. In all instances noise/vibration mitigation measures will be considered where impacts are predicted to be excessive.

6.2.2 Future Survey Needs

The noise criteria for the operational phase plant items will be influenced by the baseline noise levels at nearby sensitive receptors. In order to characterise the existing noise environments of the proposed development, baseline noise monitoring surveys, at identified sensitive receptors in the vicinity of the fixed aboveground infrastructure proposed for the project operational phase, will be completed. The proposed baseline surveys will enable a full and proper impact assessment of the project to be undertaken and to enable suitable mitigation to be designed as needed.

Noise and vibration predictions for the various typical construction activities that will be used in pipeline construction and the construction of the main plant areas will also be assessed.

6.2.3 Consultation

It is considered that consultation on the noise and vibration impact assessment will be undertaken with the following organisations:

- Environmental Protection Agency;
- The Local Authorities where infrastructure for the abstraction, water treatment plant, break pressure tank and termination point reservoir would be situated as well as the relevant Local Authorities along the proposed pipeline route.

Noise and Vibration related comments arising during the consultation phases of the project will also be reviewed and considered within the EIS as relevant.

6.3 Potential Impacts

6.3.1 Potential Construction Phase Impacts

As with similar developments, the highest potential for noise and vibration impact occurs during the construction phase. During this time potential noise and vibration impacts will arise from activities such as:

- Earth moving;
- Rock breaking, piling and tunnelling works;
- General civil and structural engineering works;
- Traffic noise, both near the construction sites due to HGVs and construction vehicles, and potentially remote from the sites caused by traffic diversions; and
- Vibration could impact on sensitive receptors due to piling, possible rock blasting, the use of tunnelling equipment or the use of heavy vibrating compaction machinery. The impact would be dependent on distance between the vibration source and the sensitive receptor.

In order to minimise the impact of noise and vibration during the construction phase a series of mitigation measures will be included in the EIS and will be implemented during the construction phase of the proposed development. Examples of these will be the selection of plant with a low inherent potential for noise/vibration generation, limiting hours during which noisy/vibratory activities are permitted and monitoring of noise/vibration levels at sensitive locations in order to demonstrate compliance with relevant noise/vibration limits.

6.3.2 Potential Operational Phase Impacts

The proposed development will likely include some low level noise at the abstraction site and the termination point site, as well as intermittently along the route of the pipeline. This will be caused by pumping stations and other operational equipment. There is also likely to be a very low impact caused by increased traffic flows on the existing road network.

It is considered unlikely that there will be any significant residual noise or vibration impacts as any operational plant will be required to operate in compliance with standard noise and vibration emissions criteria, the noise limits typically being 55dB(A) during the daytime, 50dB(A) during the evening and 45dB(A) during the night, although the existing ambient and background noise environment at sensitive receptors will be considered in formulating the final noise criteria for the operational phase of the development.

The EIS will outline any required mitigation measures which will need to be incorporated during the design process. Operational design criteria for the appointed contractor will incorporate noise and vibration limits and standard mitigation measures as will be outlined in the EIS.

6.4 Proposed Methodology & Assessment Scope

It is proposed that an assessment of noise and vibration will be carried out in accordance with the EPA's current EIS guidance documents and the following guidance and established best practice, and will be tailored accordingly based on professional judgement and local circumstance:

- Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA, 2004) [now TII].

In line with the above guidance, the assessment will cover potential impacts from noise and vibration and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The noise and vibration assessment to be carried out on the proposed development will include the following elements:

- Review of standards and legislation;
- Identification of noise and vibration issues relevant to the proposed development;
- Review of background noise in the vicinity of the proposed development;
- Assessment of potential noise and vibration impacts of construction activities;
- Assessment of potential impacts of operational phase plant processes on noise and vibration in and around the applicable parts of the proposed development; and
- Assessment of potential impacts of traffic on noise levels in and around the proposed development.

The assessment will take account of Noise Sensitive Locations (NSL's) relevant to the proposed development. Sensitive receptors will comprise places where it would be reasonable to expect people to be exposed to local noise and vibrations. The EPA NG4 definition of an NSL will be used in the assessment, as reproduced below:

NSL – any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels:

The complete list of noise and vibration sensitive receptors within the vicinity of the proposed development will become transparent once the final infrastructure sites and preferred treated water pipeline corridor is selected, thus informing the full study area for the EIA. A series of mitigation measures to minimise any foreseen impacts for both the construction phase and operational phase of the project will be proposed as required.

7. The Landscape

7.1 Introduction

The purpose of this section of the EIS Scoping Report is to describe the scope of work and methods to be applied in the identification and assessment of landscape and visual impacts associated with the proposed development. Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.

7.1.1 Policy & Plan Context

The European Landscape Convention promotes the protection, management and planning of European landscapes and organises European co-operation on landscape issues. The Convention was adopted on the 20th October 2000 and came into force on the 1st March 2004. The Convention was ratified by Ireland in 2002. As one of the obligations under the convention, a draft National Landscape Strategy was issued for public consultation by the Department of Arts, Heritage and the Gaeltacht in July 2014. Following consideration of submissions, The 'National Landscape Strategy for Ireland 2015 – 2025' was published in mid-2015 by the Department of Arts, Heritage and the Gaeltacht (now the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs). The aim of this Strategy is to inform and assist in the resolution of challenges that exist arising from competing interests in the landscape, such as infrastructure provision versus landscape protection or local versus national objectives. This document will be considered to ensure compliance with the European Landscape Convention and to establish principles aimed at protecting the landscape as part of the impact assessment.

One of the key objectives of the National Landscape Strategy, and a requirement of the European Landscape Convention, is to prepare a National Landscape Character Assessment (LCA). However, this is not likely to be prepared prior to the submission of an EIS for this proposed development. On this basis, available county-based Landscape Character Assessments are likely to remain the principle mechanism for administering project level landscape policy.

The most relevant landscape and visual policies with regard to the proposed development are contained within the County Development Plans for each of the counties from which the main proposed site infrastructure components may be seen.

7.1.2 Study Area

This proposed project covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the project, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country.

The main study area, from a landscape and visual perspective, is within the surrounding regions of the main above ground development infrastructure - namely at the abstraction site and the water treatment plant in the vicinity of the Parteen Basin. Additional infrastructure such as valve/kiosk arrangements, the location of the break pressure tank in the Midlands and at the termination point reservoir in the vicinity of Peamount Reservoir and environs in South County Dublin will also be included within the study area. It is anticipated that the LVIA will encompass an area up to a 5km from the location of the proposed infrastructure. The entirety of the study area will require sensitivity in the siting and design process due to the potential for proximity to a range of sensitive receptors.

7.2 Baseline Information

7.2.1 Desktop Study

Extensive work has been completed to date in order to identify the location of the proposed infrastructure sites and preferred pipeline corridor. This was completed as part of the options appraisal which initially supported the Preliminary Options Assessment Report (POAR) and subsequently the Final Options Appraisal Report (FOAR) and assessed proposed sites and proposed pipeline corridors against a range of environmental criteria including landscape and visual constraints.

A desktop review of all available data regarding the landscape and visual impacts over the study area has been undertaken and will be supplemented with any additional information to support the development of the EIS. A wide range of landscape and visual constraints such as designated views and routes, views from settlements, motorways and dwellings and national walking routes have been investigated in the development of the FOAR. Key items of note related to:

- At the Parteen Basin location, the twin settlements of Killaloe and Ballina which are important tourist and amenity areas were noted. There are a number of landscape and visual constraints/ elements in the northern part of the Parteen Basin location with comparatively fewer in the southern reaches.
- At the Termination Point Reservoir, in the vicinity of Peamount Reservoir and environs, the existing environment is generally rural in terms of landscape zoning and no distinctive landscape elements were identified other than the Grand Canal corridor, which is relatively enclosed along this section.
- There were marginal differences in terms of the landscape and visual context across the pipeline corridors that were considered as part of the FOAR, with generally low- very low levels of constraints identified.

Moving forward with the EIS, particular regard will be given to the progress with implementing the aforementioned '*National Landscape Strategy for Ireland 2015 – 2025'* as this document will present an overview of landscape and visual issues at a national and regional scale, which is of particular importance to a project of this national scale.

The desk study will involve a review of highly sensitive landscape designations and designated scenic viewpoint locations, topographical mapping, aerial photography and prominent tourism and walking route websites to inform the field work stage and identify potential viewpoints from which to undertake the visual impact assessment. Collaboration with the project heritage specialist will also be undertaken to identify a register of national monuments and historic parks and gardens, particularly those that also represent relevant landscape and visual receptors. Collaboration with project planning specialists will also ensure that tourist assets are appropriately considered in the landscape and visual impact assessment.

Using a combination of terrain data supplied by Ordnance Survey Ireland (OSi) and a detailed topographical survey of areas relevant to the proposed development, Zone of Theoretical Visibility (ZTV) maps will be produced. These will show from where in the surrounding landscape the main aboveground infrastructure will be potentially visible and is the starting point for selecting relevant viewpoints from which to undertake the visual impact assessment. A ZTV map is 'theoretical' because it is based on a 'bare-ground' visibility scenario and not one involving screening by vegetation or buildings.

Photomontages accurately represent the way in which a future development will appear within a particular view by superimposing a photo-realistic model of it into an existing photograph that represents the view in question. Photomontages are generally prepared from locations (viewpoints) that represent views experienced by sensitive receptors of above ground elements within the surrounding landscape. Such receptors are people and groups of people and might include local residents, recreationalists or passing motorists.

The location and number of these viewpoints will be confirmed following the siting of the proposed infrastructure locations as set out within the FOAR.

7.2.2 Future Survey Needs

The landscape and visual appraisal of the proposed development will require fieldwork within the surrounding landscape to undertake a detailed analysis of the salient landscape features and patterns that contribute to the landscape character of the study area. Fieldwork will also be used to confirm and refine the location of preselected viewpoints, developed from the desk study, for the visual impact assessment. 360 degree photography will be captured at each of the viewpoint locations for later use in preparation of photomontages of the proposed aboveground built elements.

Whilst viewpoint locations are generally selected within the public realm (in accordance with Guidelines for Landscape and Visual Impact Assessment (GLVIA)-2013), locations that are open to the public such as, in this instance, golf courses and stately houses, may also be used following the grant of access permission. Duplicate sets of summer and winter photomontages are likely to be necessary, as there are particular elements of the final proposal (particularly above ground structures) where it is considered prudent to screen from view. Therefore the completion of summer and winter photomontages will allow the effectiveness of folia screening to be analysed, in detail, across the seasons.

7.2.3 Consultation

It is considered that consultation on the landscape and visual impact assessment will be undertaken in the vicinity of the proposed development and is likely to include, but not limited to, the following Local Authorities:

- Clare County Council;
- Limerick City and County Council;
- Tipperary County Council;
- Offaly County Council;
- Laois County Council;
- Kildare County Council; and
- South Dublin County Council.

Landscape and visual related comments arising during consultation will be reviewed and considered within the EIA as relevant.

7.3 Potential Impacts

7.3.1 Potential Construction Phase Impacts

The following is a list of potential construction phase impacts relevant to the Landscape and Visual assessment;

- Visual impacts from the movement of traffic and machinery along site access points and haul roads at the designed abstraction point, the specified c.170km treated water supply pipeline route corridor;
- Landscape and visual impacts arising from the movement of construction materials;
- Landscape and visual impacts arising from ancillary construction requirements; for example, water drainage, power and lighting, site facilities, etc.;
- The duration of landscape and visual impacts from construction; and
- Visual impacts arising from temporary construction site lighting.

7.3.2 Potential Operational Phase Impacts

The following is a list of potential operational phase impacts relevant to the proposed development:

- Landscape and visual impact arising from permanent buildings / structures;
- Landscape and visual impacts arising from permanent way-leaves along the pipeline corridor;
- Visual impacts arising from ancillary site utilities such as lighting, signage, and car parking; and
- Landscape and visual impacts – both positive and negative – arising from the implementation of any landscaping screening proposals such at the point of abstraction and along the specified route corridor; and
- Visual impacts arising from operational stage Project activity, such as the requirements for maintenance.

7.4 Proposed Methodology & Assessment Scope

The landscape and visual impact assessment will be based on the EPA's current EIS guidance documents and the following guidelines:

- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment (GLVIA-2013).

In line with the above guidance, the assessment will cover potential impacts from a landscape and visual perspective and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The assessment will include three main elements and these are outlined below;

7.4.1 Data Collection, Research and Baseline Establishment

- Review of relevant County Development Plans, particularly in relation to the county Landscape Character Assessment (LCA) and designated scenic routes and views.
- The study area from which to examine the landscape and visual impacts of the proposed development will be determined on the extents of likely visibility of the various aspects.
- Identify sensitive visual receptors potentially affected by the proposed development.
- Develop a project specific landscape character assessment (generally at a finer scale than county based LCA).
- Review of ZTV map, which indicate areas from which the proposed development is potentially visible in relation to the terrain within the study area.
- Selection of potential Viewshed Reference Points (VRPs) from key visual receptors to be investigated during fieldwork to determine actual visibility and sensitivity.
- Preparation of an initial VRP selection map.

7.4.2 Fieldwork, Viewshed Reference Point Selection and Photo Capture

- Investigate potential VRP locations selected at the desk study stage and confirm those that are to be used for the visual impact appraisal.
- Prepare a Viewshed Reference Point (VRP) selection report, which will outline the rationale for selecting or rejecting every VRP that was investigated during fieldwork. This will be used for consultation with the planning authorities to ensure they are satisfied with the final set of VRPs to be used for the appraisal.

- Capture of high resolution, panoramic photography with grid reference coordinates for all VRP locations to be used for the preparation of photomontages.
- Record site notes in relation to the general landscape within the study area and in relation to the views afforded from each VRP.

7.4.3 Appraisal of Landscape and Visual Impacts

- Description of the geographic location and landscape context of the Project.
- General landscape description concerning essential landscape character and salient features of the study area, discussed with respect to:
  - Landform and drainage;
  - Vegetation and land use;
  - Centres of population and houses;
  - Transport routes; and
  - Tourism, heritage and amenity and facilities.
- Discussion of any design guidance as well as the planning context and relevant landscape designations.
- Appraisal of the significance of predicted landscape impacts (physical impacts on landform and land cover as well as impacts on landscape character). This will be done using professional judgement and in accordance with the 'Guidelines for Landscape and Visual Impact assessment (2013)'. Significance is determined on balance of receptor sensitivity versus the magnitude of landscape impact.
- Appraisal of predicted visual impacts using the ZTV map and the photomontages prepared from each of the selected VRP locations. Again, this will be done using professional judgement and in accordance with the 'Guidelines for Landscape and Visual Impact assessment (2013)'. Significance is determined on balance of receptor sensitivity versus the magnitude of visual impact.
- Description and discussion of proposed mitigation measures.
- Appraisal of residual landscape and visual impacts following the implementation and establishment of mitigation measures.
- Appraisal of cumulative impacts in relation to any existing or future developments within the study area that might be relevant to the Project. This will be done using professional judgement and in accordance with the 'Guidelines for Landscape and Visual Impact Assessment (2013)'. Significance is determined on balance of receptor sensitivity versus the magnitude of cumulative impact.

8. Cultural Heritage

8.1 Introduction

This section describes the scope of works and methods to be applied in the identification and assessment of archaeology, cultural heritage and architectural heritage impacts associated with the proposed development. A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development on archaeology, cultural heritage and architectural heritage as part of the EIA.

Archaeological heritage refers to sites and areas of archaeological significance. Cultural heritage is a collective term for features/structures of architectural, archaeological or local (folklore/traditional) heritage merit. Architectural heritage refers to recorded historical buildings and designed landscapes.

8.1.1 Policy & Plan Context

The assessment of the archaeological, cultural heritage and architectural heritage resource will be conducted under the relevant legislation and planning frameworks applicable to the Republic of Ireland. These include:

- National Monuments Acts (as amended), 1930-2004;
- Heritage Act, 1995;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 2000;
- Local Government (Planning and Development) Act 2000;
- The Planning and Development (Strategic Infrastructure) Bill, 2006;
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands;

8.1.2 Study Area

This proposed development covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the proposed development, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country.

The main study area, from an archaeology, cultural heritage and architectural heritage perspective, is within the surrounding regions of the main development infrastructure - namely at the abstraction site and the water treatment plant in the vicinity of the Parteen Basin, the location of the break pressure tank in the Midlands and at the termination point reservoir in the vicinity of Peamount Reservoir and environs in South County Dublin. It also includes all areas along the proposed treated water pipeline.

It is anticipated that the archaeology, cultural heritage and architectural heritage assessment will encompass an area up to 250m from all proposed infrastructure including the proposed abstraction point, pipeline and proposed reservoir. Any sites of particular significance that may exist outside of this area will also be included within the receiving environment assessment.

8.2 Baseline Information

8.2.1 Desktop Study

Extensive work has been completed to date in order to identify the location of the proposed infrastructure sites and preferred pipeline corridor. This was completed as part of the options appraisal which initially supported the Preliminary Options Assessment Report (POAR) and subsequently the Final Options Appraisal Report (FOAR) and assessed proposed sites and proposed pipeline corridors against a range of environmental criteria including archaeology, cultural heritage and architectural heritage. A desktop review of all available data regarding the archaeology, cultural heritage and architectural heritage impacts over the study area has been undertaken and will be supplemented with any additional information to support the development of the EIS.

Work as part of the FOAR, has included identification of all national monuments, recorded monuments and protected structures, which are subject to statutory protection. In addition all National Inventory of Architectural Heritage structures were identified as there is the potential that these structures may be added to the record of protected structures in the future. Designed landscapes were also identified as areas of cultural heritage significance. The identification of cultural heritage constraints from an early stage during the design process means that due consideration has been given to avoiding impacts on the same where possible. Key items of note from the FOAR include:

- At the Parteen Basin location, a number of constraints that are afforded statutory protection were identified within this area and this was partly attributed to the historic settlements of Killaloe and Ballina. The assessment also noted that to the south of Killaloe and Ballina there is a lower potential for underwater archaeological resource, as to the south of Parteen, the watercourse has been artificially constructed;
- The Termination Point Reservoir, in the vicinity of Peamount Reservoir and environs, was considered as low potential in terms of constraints with no National Monuments and only 1 Record of Monuments and Places (RMP) located within the area. Any Record of Protected Structures (RPS) and National Inventory of Architectural Heritage (NIAH) within the area are related to structures at the Peamount Hospital;
- In terms of heritage constraints across the pipeline corridors, the landscape context of arable and pastoral farming was broadly similar across all the pipeline corridors with a preferred corridor selected based on the lowest number of heritage constraints identified from the available data sources.

On determination of the final preferred option, the desktop study will be updated using existing data sources to present baseline environmental information relevant to the specific site locations.

8.2.2 Future Survey Needs

As part of an EIA associated with the proposed development, a field inspection of the proposed development study area will take place. This will look in detail at areas of significant intrusive works, where current disturbance is minimal and inspect any important cultural heritage sites identified within the receiving environment. The field survey will confirm the accuracy of the information collected during the desktop study and it will record the condition of any know sites of cultural heritage interest. It will also assess any additional previously unrecorded sites of cultural heritage merit, which could be affected by the development.

It is possible that during the baseline assessment and consultations, that additional archaeological fieldwork, such as geophysical surveys and/or archaeological testing may be required in order to further define potential impacts within the EIA.

8.2.3 Consultation

The following bodies/organisations will be consulted as part of the EIS:

- Local Authorities where infrastructure will be sited;

- The National Monuments Services (Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DoAHRRGA)); Architectural Advisory Unit (DoAHRRGA);
- Underwater Archaeological Unit (DoAHRRGA National Museum of Ireland;
- Relevant Local Authorities;
- An Taisce; and
- The Heritage Council.

Archaeology, cultural heritage and architectural heritage related comments arising during the consultation phases of the project will be reviewed and considered within the EIA as relevant.

8.3 Potential Impacts

8.3.1 Potential Construction Phase Impacts

It is envisaged that there will be some direct or indirect negative impacts on archaeological, architectural and cultural heritage resources as a result of the construction of the proposed development.

Direct negative impacts may occur where sites of archaeological, architectural and cultural heritage significance are located within the footprint of the proposed development, which would potentially be impacted upon by ground disturbances.

Indirect negative impacts may occur where sites of archaeological, architectural and cultural heritage significance are located within the immediate vicinity of the proposed development, which are visually impacted upon during the construction of the proposed development.

8.3.2 Potential Operational Phase Impacts

There is not expected to be any direct or indirect impacts on archaeological, architectural and cultural heritage resources as a result of the operational stage of the proposed development.

8.4 Proposed Methodology & Assessment Scope

It is proposed that an assessment of archaeology, cultural heritage and architectural heritage will be carried out in accordance with the EPA's current EIS guidance documents and established best practice, and will be tailored accordingly based on professional judgement and local circumstance.

The assessment will cover potential impacts from archaeology, cultural heritage and architectural heritage and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

An assessment will consist of an evaluation of the impact of the proposed development by considering a comprehensive study of the potential direct, indirect, residual and cumulative impacts of the proposed development on the surrounding environment. This will include, where applicable, visual impacts on cultural heritage assets.

A systematic search will be undertaken of all readily available and relevant documentary sources.

These will include, but are not exclusive to the:

- RMPs for the respective counties subject to the proposed development;
  - This record provides a list of all monuments that are subject to protection under the National Monuments Act.
- Sites and Monuments Record (SMR) for the respective counties subject to the proposed development;
  - This record provides a list of monuments that may have been excavated in the past or possess no definite locational detail. These sites may not be subject to statutory protection.
- Monuments in State Care Database;
  - This record provides a list of all national monuments that are owned or cared for by the state and are subject to protection under the National Monuments Act. These sites are considered to be of national significance.
- Preservation Orders;
  - This record provides a list of all monuments that are subject to Preservation Orders under the National Monuments Act. These sites are considered to be of national significance.
- Register of Historic Monuments (RHM);
  - This record pre-dates the Record of Monuments and Places and is reviewed to ensure that all entries into the RHM are included within the RMP.
- Respective County Development Plans for the respective counties subject to the project;
  - Development Plans contain the Record of Protected Structures for each county, along with designated Architectural Conservation Areas (ACA). Both designations are subject to statutory protection under the Planning and Development Act.
- National Inventory of Architectural Heritage;
  - The NIAH building survey has been carried out nationwide by the DAHG in order to assist County Councils in the compilation of the record of protected structures. Inclusion within the record does not result in statutory protection, but the structure may be added to the RPS in the future.
- Topographical files of the National Museum of Ireland;
  - This record provides information on stray archaeological artefacts recorded by the National Museum that may have been recovered from the receiving environment of the proposed scheme and may indicate archaeological activity in any one area.
- Cartographic and written sources relating to the study area;
  - This includes all historic mapping, aerial photographic coverage and relevant documentary sources relating to the receiving environment of the proposed scheme. Analysis of these resources may result in the identification of previously unrecorded sites, areas and structures of archaeological, architectural and cultural heritage significance. This includes designed landscapes, which are clearly indicated within historic OSi mapping.
- Excavations Bulletin (1970-2015);
  - This record provides information on every licenced archaeological investigation carried out between 1970 and 2015. As such, a review of this resource can result in the identification of previously unrecorded archaeological heritage within the landscape that has yet to be added to the RMP or SMR.

The desktop assessment will be followed by a field inspection of the proposed development area. The field survey will confirm the accuracy of the information collected during the desktop study and will also assess any additional previously unrecorded sites of archaeological, cultural heritage or architectural heritage merit, which

could be significantly affected by the proposed development. A series of mitigation measures to minimise any foreseen impacts for the construction phase of the project will be proposed as required.

As the proposed development area becomes transparent once the final infrastructure sites and preferred treated water pipeline corridor are selected, it will better inform the full study area for the EIA.

9. Biodiversity

9.1 Introduction

This section describes the scope of works and methods to be applied in the identification and assessment of ecological (flora and fauna) impacts associated with the proposed development. A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development on flora and fauna as part of the EIA and AA.

Flora and fauna refer to plants and wildlife, respectively. The term is used to refer to the indigenous plant and wildlife of a geographical region. Both are collective terms, referring to groups of plants (their communities or habitats) and wildlife specific to a region or a period of time. In addition to geographical groupings, environment also helps further their classification. Examples of such classification include aquatic and terrestrial flora and fauna.

9.1.1 Policy & Plan Context

The assessment of the flora and fauna will be conducted under the relevant legislation applicable to the Republic of Ireland. These include:

- European Communities (Birds and Natural Habitats) regulations 2011 S.I. 477 of 2011 (as amended);
- The EIA Directive (2014/52/EU);
- Environmental Liabilities Directive (2004/35/EC);
- The Habitats Directive (92/43/EEC) (as amended);
- The Birds Directive (2009/147/EC) (as amended);
- The Water Framework Directive (2000/60/EC);
- The Wildlife Act 1976 as amended by the Wildlife (Amendment) Act, 2000 (as amended);
- The Flora (Protection) Order 2015 S.I. 356 of 2015;
- Relevant fisheries legislation up to and including the Inland Fisheries Acts 1959-2010, (as amended);
- Objectives relevant to ecology and biodiversity in the latest County Development Plans of the relevant Counties crossed or potentially impacted by the Project;
- Bird species of medium and high conservation concern listed in the publication *Birds of Conservation Concern in Ireland 2014 – 2019*[1]*;*
- Relevant policies in *Actions for Biodiversity 2011-2016, Ireland's 2nd National Biodiversity Plan* produced by the Department of Arts, Heritage and the Gaeltacht in 2011 (now the Department of Arts, Heritage, Regional, Rural and Gealtacht Affairs);
- Ireland's National Biodiversity Group and Biodiversity Forum are currently working on the Actions for Biodiversity 2017 – 2021, Ireland's 3rd National Biodiversity Plan. This document will be referenced should it become publically available during the EIA process for this project.

Additional guidance documents by relevant County Councils to developers on good practice relating to biodiversity and development will also be taken into consideration in the assessment of flora and fauna.

9.1.2 Study Area

This proposed development covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the proposed development, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country.

The entirety of the study area will require sensitivity in the finalisation of the design process, accounting for potential proximity to a range of ecologically sensitive receptors, including international and nationally designated conservation sites. Such sites include, but are not limited to, Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites, Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs). Wherever technically possible, the proposed development infrastructure has been sited and routed to avoid these sensitive areas in order to minimise and, in most cases, eliminate adverse effects. The project design at this current time is not yet finalised and is subject to ongoing design development and environmental impact assessment. This includes the location of the main water supply infrastructure, access ways and pipeline route, however, these elements of the proposed project will be incorporated into the EIA as the project design is developed and finalised. Environmental mitigation will also be added to the project design. The preferred route corridor currently intersects with one SAC - The Lower River Shannon SAC, one NHA - Cangort Bog and one pNHA - Grand Canal. This design stage mitigation through avoidance, where possible, of sensitive areas will reduce the potential for direct, indirect, secondary and cumulative effects and diminish the potential for significant impacts. Specifically in relation to designated Natura 2000 sites, the Natura Impact Statement prepared for the project (to inform the Appropriate Assessment process) will specify mitigation measures in order to avoid significant adverse effects on the integrity of any and all Natura 2000 sites within the zone of influence of the proposal.

9.2 Baseline Information

9.2.1 Desktop Study

Extensive work has been completed to date in order to identify the location of the proposed infrastructure sites and preferred pipeline corridor. This was completed as part of the options appraisal which initially supported the Preliminary Options Assessment Report (POAR) and subsequently the Final Options Appraisal Report (FOAR) and assessed proposed sites and proposed pipeline corridors against a range of environmental criteria including flora and fauna. A desktop review of all available data regarding the flora and fauna impacts over the study area has been undertaken and will be supplemented with additional field survey information to support the development of the EIA.

Work as part of the FOAR, has included identification of all national and international conservation sites, including the aforementioned SAC, SPA, pNHA and NHA designations. Additionally:

- At Parteen Basin proposed abstraction location, a number of ecological constraints were identified from the desk and field studies including the presence of mixed broadleaved woodland: Annex II and Annex IV species; and species protected under the Wildlife Act (1979), Amendment 2000.
- The potential ecological constraints at the proposed Termination Point Reservoir, in the vicinity of Peamount Reservoir and environs, were considered as low, with no records of designated sites, European or nationally protected species or habitats. Neither were any semi-natural habitats identified within the proximity of the site. Potential ecological constraints at the proposed Termination Point Reservoir were identified mainly from the desk study, as land access was limited.
- The pipeline was routed to avoid ecological constraints and minimise, where possible, international and national conservation sites, Annex I habitats and habitats that have high potential to support European or nationally protected species.

Following the identification of the Preferred Scheme, the desktop study and field surveys undertaken to date will be supplemented by an updated review of data sources and field study data.

The terrestrial and freshwater ecological assessment included a comprehensive review of existing data sources within and adjacent to the proposed abstraction location at Parteen Basin and along the proposed route corridor. The following datasets were inspected;

- Ordnance Survey Ireland: 6 inch historical raster mapping; Aerial Photography; 1:50,000 Discovery mapping; Vector data;
- NPWS Datasets (including review of documentation held on NPWS website): SPAs; SACs; NHAs, pNHAs; Protected species and Annex I habitat datasets;
- National Biodiversity Data Centre: Protected Species (e.g. Flora Protection Order, fauna protected under the Wildlife Act and EU Habitats Directive and species on the Red Data Lists); Bat landscape model; Invasive species records; general biodiversity records (flora and fauna);
- Relevant County Council Data: Ecological Corridors; Ecological Buffer Zones; Nature Development Areas; Habitat Data (including local biodiversity studies and County Wetland Surveys); Tree Preservation Orders;
- IWeBS data records for wintering birds within the study area;
- Bord na Móna ecological databases;
- Coillte databases;
- Inland Fisheries Ireland datasets (e.g. WFD fish studies);
- EPA Biological Water Quality Monitoring Data; and
- Water Framework Directive (WFD) Ecological Status of Catchments Data.

9.2.2 Field Surveys Underway and Completed

Ecological surveys have been undertaken, or are currently underway, for the terrestrial and freshwater sensitive ecological features within the study area which have been identified as key ecological receptors through the desk study and preliminary consultation process. The ecological surveys itemised below are necessary to characterise the baseline condition of the study area, which comprises a zone of influence extending from the development works. An accurate and comprehensive baseline description, including the provision of robust and scientific data, is necessary to establish and inform the assessment of significance with regard to ecological impacts. The timing of the ecological surveys takes account of constraints in terms of seasonality, recognised optimal survey windows and relevant licensing requirements. Surveys will be carried out during the most appropriate time of the year and during suitable conditions, following relevant guidance for target receptors. The scope of ecological surveys includes the proposed water abstraction facility and raw water rising main, water treatment works, pipeline corridor, and any ancillary infrastructure which will include all access routes and temporary work areas.

A number of ecological field surveys have been completed to date and some are still ongoing (at the time of publication of this report). A brief description of these is presented below:

Terrestrial Surveys

- Verification surveys were completed as preliminary ecological field assessments during April, 2016 to characterise and ground-truth ecologically sensitive receptors within the pipeline corridor which were identified during the desk study exercise. Follow up field survey data collection was prescribed;
- Habitat mapping surveys comprising both aerial/satellite imagery evaluations and field habitat surveys for the proposed pipeline route corridor have been completed, with minor elements ongoing. The study area has been outlined to include the entirety of the construction works area, zone of influence outside of the

works area; and survey of all ancillary works, including access routes, materials storage facilities, borrow pits etc. will be required. Focussed, specialist surveys have been undertaken at locations where Annex I habitat or habitats potentially corresponding to Annex I habitats were identified, in order to establish the status and extent of Annex I habitat within the works area. The *Interpretation Manual of European Union Habitats* will be referenced when defining habitat types. Botanical surveys will additionally identify protected flora listed on Annex II of the EU Habitats Directive (1992), the Flora Protection Order (2015), as well as species listed on the Red Data List;

- A number of surveys for protected mammal species have been completed and further surveys are ongoing These surveys are focussed on species such as badger, bat species, hare species, and otter protected under the EU Habitats Directive (1992) and the Irish Wildlife Act (Amendment 2000), where these species may occur within the zone of influence of the proposed development. Searches for evidence of protected mammal species and/or presence of suitable habitats have been undertaken by a qualified ecologist during an ecological walkover survey of the study area. Bat species are protected under the Wildlife Act (Amendment 2000) and Annexes II and IV of the EU Habitats Directive (1992). Bat surveys have been undertaken throughout the summer period of 2016 at proposed construction locations and throughout the zone of influence of the proposed development. These surveys have focussed on the potential for displacement or disturbance, arising from the loss of potential habitat and roosts. Surveys include activity surveys, daytime potential bat roost surveys, and targeted dawn and dusk emergence surveys. Transect walkovers, driven transects and use of static recording devices have been utilised within the proposed route corridor. Dedicated otter surveys (listed on Annex II of the EU Habitats Directive) will be completed along the margin of Parteen Basin, the Kilmastulla River (with regard to Lower River Shannon cSAC) and at watercourse crossing locations along the pipeline corridor route. The scope of protected mammal species surveys will be determined based on the presence of suitable habitat;
- Breeding and wintering bird surveys over a two year period to inform the EIA process are already underway. Wintering bird surveys for the 2014/2015 and the 2015/2016 winter bird period have been completed. Breeding bird surveys were undertaken for the 2015 and 2016 breeding bird season. Bird surveys will be continued into 2017 as the proposed project design is refined and finalised. Bird surveys have been focussed on species listed on Annex I of the EU Birds Directive, as well as Birds of Conservation Concern in Ireland (BOCCI) and Red Listed species occurring within the study area and the wider zone of influence of the proposed development;
- Additional protected fauna surveys will be required where suitable habitat exists for species listed on Annex II or IV of the EU Habitats Directive (1992), protected under the Wildlife Act (Amendment 2000) or on Red Data Lists. Where suitable habitat occurs detailed surveys will be required for Annex II invertebrate species including Marsh Fritillary and *Vertigo* spp. Additional broad-based studies to include a characterisation of the baseline condition for reptiles (common lizard), amphibians (common frog, smooth newt) and other invertebrates will be undertaken; and
- Survey for terrestrial invasive species focusing on those listed on the Third Schedule, Part 1, of the European Communities (Birds and Natural Habitats) Regulations 2011, S.I. No. 477/2011.

Freshwater Surveys

- Biological water quality assessments (Small Stream Risk Score and Q-value indices as relevant), including a characterisation of the macroinvertebrate community are ongoing. These surveys will focus on watercourses potentially impacted by the proposed development (i.e. at the abstraction facility and those crossed by the proposed pipeline corridor and the construction or operational phase access routes etc.) where suitable sampling conditions occur. Biological water quality data will be correlated with riparian and fish habitat data to provide an ecological status classification for each watercourse assessed;
- Protected aquatic species surveys for species listed on Annex II of the EU Habitats Directive, i.e. lamprey species and White-clawed crayfish. Habitat suitability studies and targeted surveys will be undertaken under licence from NPWS (white-clawed crayfish) at watercourses potentially impacted by the proposed development, at the abstraction facility and at watercourses crossed by the proposed pipeline route where

potential exists for these species to occur (based on historical records and the presence of suitable habitat);

- Riparian and instream habitat surveys are ongoing to include botanical surveys, riparian habitat characterisation (RHAT methodology) and characterisation of all watercourses potentially impacted by the proposed development, including at the abstraction facility and those crossed by the proposed pipeline route. The surveys will include instream and riparian habitat communities listed on Annex I of the EU Habitats Directive (1992) and aquatic flora listed on Annex II of the EU Habitats Directive and/or the Flora Protection Order (2015);
- Fisheries surveys - Fish and fish habitat surveys have been undertaken and are ongoing for watercourses of significant fisheries value that are potentially impacted by the proposed development. The evaluation of watercourses and identification of fish populations will include a review of existing IFI data and consultation with this statutory agency. These surveys will focus on species of fisheries interest, as well as of conservation concern, i.e. Atlantic salmon, Brown trout, coarse fish species;
- Benthic sampling including invertebrate community and macrophyte community identification, substrate particle size analysis, and phytoplankton sampling, identification and enumeration has been undertaken within Parteen Basin. The water quality and phytoplankton sampling study extended into Lough Derg.
- In association with IFI, a fish stock survey within Lough Derg and Parteen Basin has been completed to include Pollan, other salmonids and coarse fish communities;
- In association with Waterways Ireland, a dedicated study of non-native invasive species has been completed within Lough Derg and Parteen Basin; additional surveys for aquatic invasive species, will be undertaken as required, based on existing desk top data.

9.2.3 Consultation

As part of the EIS consultation process, the following bodies have been contacted and/or will be engaged with further in order to inform the impact assessment and Appropriate Assessment for the project:

- BirdWatch Ireland and local bird groups;
- Bord na Móna;
- Coillte;
- Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs– Development Application Unit and National Parks and Wildlife Service;
- Department of Agriculture, Food and the Marine;
- Electricity Supply Board (ESB);
- Golden Eagle Trust;
- Local Authority Heritage/Biodiversity Officers;
- Iarnród Éireann;
- Inland Fisheries Ireland;
- Irish Peatland Conservation Council;
- Irish Wildlife Trust;
- Lough Derg Science Group;
- National Biodiversity Data Centre;
- Environmental Protection Agency (EPA); and
- Waterways Ireland.

Note the above list is not exhaustive and additional bodies may be contacted as deemed appropriate.

9.3 Potential Impacts

9.3.1 Potential Construction Phase Impacts

Preliminary scoping of potential direct, indirect, cumulative impacts associated with the proposed development has highlighted the following constraints, receptors and potential adverse effects; these are detailed in the absence of mitigation. The impact assessment will account for all works associated with the project; the project will, in entirety, require assessment for impact significance. It is important to note that this is an iterative process

accounting for design avoidance and incorporation of mitigation to minimise the potential for adverse effects. Potential effects identified at scoping stage are outlined below:

- Project construction will lead to direct habitat loss, potentially affecting sites of high ecological value, for example, designated conservation sites and Annex I habitats located outside of designated sites. Loss of habitat area for undesignated sites of high local importance e.g. species rich grasslands, scrub, treelines, hedgerows and woodland which are common to the locality along the route corridor of the pipeline and along any access routes or ancillary works. Direct habitat loss may result in the destruction of protected flora. Where avoidance is not possible, a license will be sought under the Section 21 of the Wildlife Acts (Amendment 2000) and, if approved, mitigation measures will be undertaken to reduce the impact of the project. There is the potential for direct impacts, including habitat loss, within the Lower River Shannon SAC at Parteen Basin. The scale and extent of the proposed development gives rise to the potential for additional impacts, in the absence of mitigation, affecting designated Natura 2000 sites or NHA. These impacts may extend from short term, to long-term or permanent effects;
- Severance effects (i.e. fragmentation or loss of connectivity of habitat)includes indirect impacts on habitats located outside of the works area / route corridor but which are within the zone of influence of the proposed works. Potential pathways for effects are via hydrological or hydrogeological pathways; e.g. water-dependant habitats, wetlands and peatlands. This may result in the fragmentation or indirect loss of integrity of Annex I habitats, or protected flora which may occur within such habitats. These impacts may extend from short term, to long-term or permanent effects;
- Temporary effects such as increased lighting (security or night time works) which may impact on bats and other nocturnal species; direct mortality/injury of animals arising from the disturbance or removal of dwellings or habitat – such effects may potentially impact protected species listed on the EU Habitats Directive or on the Wildlife Act (Amendment 2000), including, but not limited to; badgers (through damage to setts); bats (through removal or damage to mature trees or other features used by bats); otters (through damage to holts); breeding birds (through removal of vegetation containing nests); and at watercourses / aquatic habitats which may contain lamprey, salmon and white-clawed crayfish. These impacts may extend from short term, to long-term or permanent effects;
- Physical disturbance may result in indirect impacts resulting in the displacement of rare and protected fauna from their dwellings or habitats. Examples may include impacts affecting tree roots, ground nesting birds, badger setts or aquatic habitats;
- Introduction and/or spread of non-native invasive species within the proposed development site, ancillary sites, and the wider zone of influence, including across water catchments. These impacts may extend from short term, to long-term or permanent effects;
- Direct loss or indirect disturbance to aquatic ecological receptors, including fisheries, Annex II species and their habitat and food sources. This may arise through permanent or temporary physical removal, alteration of hydrology or flow regime, or through indirect habitat alteration leading to increased sedimentation and change in geomorphological character affecting downstream reaches. Without mitigation, impacts may occur during sensitive life stages or over extended time periods;
- Direct damage to riparian margins;
- Pollution of surface water receptors through accidental spillage or discharge of polluting substances, or via elevated suspended solids and siltation through run-off to watercourses; and
- Pollution of groundwater sources, particularly in high groundwater vulnerability zones.

9.3.2 Potential Operational Phase Impacts

Potential adverse effects for the operational phase of the proposed development, in the absence of mitigation have been identified as:

- The placement and management of the pipeline may result in long-term habitat alteration, and consequent changes in land-management and potential habitat loss within the footprint of the pipeline corridor. Direct and indirect habitat fragmentation and loss of connectivity for high value ecological habitat features including, for example, woodland or water-dependant habitats may occur, which could be severed by the project. As above, such severance impacts could extend beyond the footprint of the route corridor, resulting in operational impacts along access routes, etc.;
- Long-term human disturbance at the permanent compound at the abstraction facility at Parteen Basin, at the proposed water treatment works site, the site of the proposed break pressure tank and also at the proposed termination point reservoir in the vicinity of Peamount Reservoir and environs in South County Dublin. This would have localised effects, resulting in a reduction in usable habitat area for a range of fauna occurring within this area which currently use the margins and habitats around the basin;
- Human disturbance impacts on retained and surrounding habitats along the pipeline corridor, potentially associated with trampling and noise from maintenance tasks and vehicle access along operational access routes;
- Long-term lighting impacts affecting nocturnal fauna at the abstraction facility and associated compound and at the proposed water treatment works site;
- Abstraction at the Parteen Basin will take place within the operational water level range managed by the ESB and currently defined by their hydropower operations. The project will not require any alteration to the operational water level range and the abstraction volumes will be calculated as a subtraction of existing flows used by the ESB for generation. This is defined as the flows to the Ardnacrusha power facility will be curtailed to compensate in equal volume for the water abstracted for water supply. It is important to note that the proposed abstraction, coupled with appropriate curtailment of power generation during dry weather periods, will not impact on minimum water levels in Parteen Basin or in Lough Derg upstream. Nonetheless it will be necessary to assess the operational impacts, if any, on aquatic flora and fauna which may occur within Parteen Basin as a result of the operational flow regime This assessment of operational impact will also need to assess the in-combination and cumulative effects of the existing and future operational regime managed by the ESB;
- The potential for direct impacts on the fish community (salmonids including Atlantic salmon and Brown trout; coarse fish species; Lamprey; Pollan; and Eels) and on aquatic habitats and flora within Parteen Basin will be assessed. Direct impacts may arise from a localised alteration to flow pattern in the vicinity of the intake. Water levels will be managed in line with the existing regime by the ESB post abstraction; where the project will not have additional or cumulative requirements influencing water level controls on Parteen Basin. Alterations in frequency, duration, seasonality or extent of the preceding, may potentially affect the baseline condition which supports the existing fish community, sub-littoral, littoral and riparian habitats, and the conservation objectives of the SAC within which they exist. Particular attention will need to be given to assessing any such impacts on priority Annex I Alluvial forests, Atlantic salmon, Sea Lamprey and Otter, which are Qualifying Interests of the Lower River Shannon SAC and where the conservation objectives are to ‘restore’ the favourable conservation condition of each;
- Operational impacts on aquatic receptors, including water-dependant habitats and aquatic species, may occur along the pipeline route where pipeline maintenance or repair could result in discharges of water from the Shannon catchment to watercourses of a different hydro-chemistry, or ecological status, with potential for alteration of the aquatic habitat. The introduction of aquatic invasive species through this pathway could also occur. Direct impacts at such locations may include scouring, increases in siltation/sedimentation and hydrological effects associated with increased flows. The discharge of potentially treated drinking water to freshwater habitats will be in compliance with the objectives set out within the WFD.

9.3.3 Potential Mitigation

The ecological team will advise on required mitigation measures during both the design and construction phases of the project.

Specific mitigation measures will be incorporated into the EIS based on the outcomes of the impact assessment. The principal mitigation measures incorporated into the project is the iterative avoidance of sensitive areas, flora and/or fauna during the design stage of the project, informed by completed and ongoing ecological field surveys.

9.4 Proposed Methodology & Assessment Scope

The methodology used to assess and mitigate potential impacts will be based on established best practice and the following guidance documents:

- 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009); 'Ecological Surveying Techniques for Flora and Fauna' (NRA, 2009)) and other guidelines in the NRA's Environmental Planning and Construction Guideline Series (National Roads Authority, 2005 – 2011); and
- 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal' (CIEEM, 2016)4.

In line with the above guidance, the assessment will cover potential impacts on flora and fauna and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The assessment will be informed by detailed flora and fauna surveys as detailed above in Section 9.2.2 during the course of 2016 and 2017.

9.5 Appropriate Assessment

European Sites (Natura 2000), i.e. Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are classified under the European Union Birds Directive (2009/147EC) and Habitats Directive (92/43/EEC). Articles 6(3) and 6(4) of Habitats Directive specify the procedures that must be followed when considering any proposed plan or project which may potentially affect a designated European Site.

Article 6(3) requires that: *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public".*

Article 6 (4) states: *"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory*

[4] CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester

measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted".

Appropriate Assessment (AA) is an assessment of whether a plan or project, alone or in combination with other plans or projects, could affect the integrity of any European sites, otherwise known as Natura 2000 sites (EC Habitats Directive 92/43/EEC). Appropriate Assessment screening requires the preparation of an Appropriate Assessment Screening Report which determines, whether a plan or project (which is not directly connected with or necessary to the management of a European Site), individually or in combination with other plans or projects, would be likely to have a significant effect upon any European site. A project may be "screened-in" and require AA if there is a possibility or uncertainty of significant adverse effects upon a European site. The Appropriate Assessment Screening Report informs the AA process; however, the decision-making responsibility is with the designated Competent Authority.

Where the potential for significant adverse effects has been identified and the project has been 'screened in' an AA is required. The Competent Authority must complete the AA, informed by the preparation of a Natura Impact Statement (NIS). This must determine whether the proposal will adversely affect the *integrity* of any European Sites, either alone or in combination with other projects or plans. Similar to the EIA process, where adverse impacts have been identified, mitigation is required to reduce/minimise/avoid such impacts is required.

Parteen Basin, the location of the abstraction facility, lies within the Lower River Shannon SAC. With the exception of the Lower River Shannon SAC, all other European sites have been avoided during the routing of the preferred 200m route pipeline corridor. It is important to note that the project design at this current time is not yet finalised and is subject to ongoing, iterative design development and environmental impact assessment. This includes the location of the main water supply infrastructure, access ways and pipeline route within the emerging preferred corridor. Environmental mitigation will also be added to the project design.

Qualifying Interest habitats and species for the Lower River Shannon SAC are:

- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150]
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]
- *Lutra lutra* (Otter) [1355]

In addition to the Lower River Shannon SAC, there are a number of other SAC's and SPA's potentially within the 'zone of influence' of the proposed development, where the potential for indirect and/or in combination

impacts requires evaluation within the framework of the Appropriate Assessment. These sites may include, but are not limited to:

- Lisduff Fen SAC;
- Clonaslee Eskers and Derry Bog SAC;
- Island Fen SAC;
- Lough Derg (Shannon) SPA;
- Slievefelim to Silvermines Mountains SPA;
- Slieve Bloom Mountains SPA;
- Poulaphouca Reservoir SPA;
- Wicklow Mountains SPA;
- River Boyne and River Blackwater SPA;
- Middle Shannon Callows SPA;
- All Saints Bog SPA;
- Dovegrove Callows SPA;
- River Little Brosna Callows SPA;
- Slieve Aughty Mountains SPA;
- Lough Derg, North-East Shore SAC;
- River Shannon Callows SAC;
- Kilcarren-Firville Bog SAC;
- Ballyduff/Clonfinane Bog SAC;
- Liskeenan Fen SAC;
- Sharavogue Bog SAC;
- Ridge Road, SW of Rapemills SAC;
- All Saints Bog and Esker SAC;
- Redwood Bog SAC;
- Moyclare Bog SAC;
- Ferbane Bog SAC;
- Clara Bog SAC;
- Raheenmore Bog SAC;
- Split Hills and Long Hill Esker SAC;
- Charleville Wood SAC;
- River Boyne and River Blackwater SAC;
- Mount Hevey Bog SAC;
- Rye Water Valley/Carton SAC;
- Glenasmole Valley SAC;
- Wicklow Mountain SAC;
- Red Bog, Kildare SAC;
- Pollardstown Fen SAC;
- Mouds Bog SAC;
- Ballynafagh Lake SAC;
- Ballynafagh Bog SAC;
- River Barrow and River Nore SAC;
- Mountmellick SAC;
- Slieve Bloom Mountains SAC;
- Kilduff, Devilsbit Mountain SAC,
- The Long Derries and Edenderry SAC;
- Silvermines Mountains SAC;
- Silvermines Mountains West SAC;
- Keeper Hill SAC;
- Bolingbrook Hill SAC;
- Clonmoylan Bog SAC;
- Slieve Bernagh Bog SAC; and
- Glenomra Wood SAC.

The potential for significant adverse effects on any Natura 2000 sites from the proposed development, alone or in-combination with other plans or projects, as well as an assessment of whether there will be any impact on the integrity of any Natura 2000 sites, will be determined through the Appropriate Assessment process, under the requirements of Article 6 of the EU Habitats Directive: taking account of direction and rulings from the European Court of Justice, and the following guidance documents:

- 'Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities' (DECLG, 2010);
- 'Guidance document – Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (European Commission, 2000);
- '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, 2002); and

- ‘Article 6(4) of the ‘Habitats Directive’ 92/43/EEC – Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission’ (European Commission, 2007).

10. Land and Soils

10.1 Introduction

This section describes the scope of works and methods to be applied in the identification and assessment of soils, geology and hydrogeology impacts associated with the proposed development. A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development on soils, geology and hydrogeology as part of the EIA.

10.1.1 Policy & Plan Context

The EU Water Framework Directive (2000/60/EC) established a framework for the protection of both surface and ground waters. Transposing legislation (S.I. 297 of 2009, European Communities Environmental Objective (Surface Water) Regulations 2009 as amended and SI 9 of 2010 European Communities Environmental Objective (Groundwater) Regulations) outlines the water protection and water management measures required in Ireland to maintain high status of surface and groundwater, prevent any deterioration in existing water status and achieve at least 'good' status for all waters.

The assessment of soils, geology and hydrogeology will be conducted under the relevant legislation and guidance including:

- European Communities (Water Policy) Regulations (S.I. 722 of 2003);
- European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. 9 of 2010);
- Groundwater Directives (80/68/EEC) and (2006/118/EC);
- Water Framework Directive (2000/60/EEC);
- Institute of Geologists of Ireland (IGI), Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (2013);
- NRA, Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (2009);
- EPA, Towards Setting Guideline Values For The Protection of Groundwater in Ireland (2003); and
- Local authority planning guidance as applicable.

10.1.2 Study Area

This proposed development covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the proposed development, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country. The entirety of the study area will require sensitivity in the siting and design process due to the potential for proximity to a range of sensitive receptors.

10.2 Baseline Information

10.2.1 Desktop Study

Extensive work has been completed to date as part of the route selection process in order to assess proposed site options and routes against a range of environmental criteria including soils, geology and hydrogeology. This

was completed as part of the options appraisal which initially supported the Preliminary Options Assessment Report (POAR) and subsequently the Final Options Appraisal Report (FOAR) and assessed proposed sites and proposed pipeline corridors against a range of environmental criteria including soils, geology and hydrogeology. A desktop review of available soil, bedrock and groundwater data over the proposed development area has been undertaken and there have also been windshield site visits conducted in conjunction with the desktop study.

The following fourteen Soils, Geology and Hydrogeology sub-criteria have been studied as part of the site selection process:

- Aquifer Classification – importance of the groundwater resource to a given area;
- Vulnerability Classification – potential for groundwater contamination;
- Geological Survey of Ireland (GSI) Groundwater Protection Response matrix;
- Groundwater Supplies – identification of water supply springs and bored wells based on GSI, EPA, , County Council and National Federation of Ground Water Schemes (NFGWS) records;
- Groundwater Source Protection Areas and Zones of Contribution as per available GSI and EPA data;
- Potential to impact on Geological Heritage Sites / County Geological Sites;
- Potential to interact with contaminated land;
- Potential to sterilise mineral resources;
- Potential to encounter shallow bedrock during construction (interactions with other disciplines during construction – noise, dust, etc.);
- Potential impact on karst features;
- Potential to encounter soft ground;
- Soil types;
- Subsoil types; and
- Bedrock types and Depth to rock.

The assessment of the options was completed using relevant databases sourced from the bodies including the Geological Survey of Ireland (GSI), the Environmental Protection Agency (EPA) and local authority datasets and County Development Plans. Desk based data sources have included:

- 1:100,000 Scale Bedrock Mapping (Geological Survey of Ireland) & associated memoir;
- Karst Database (Geological Survey of Ireland);
- Quaternary Maps (Geological Survey of Ireland);
- Teagasc Subsoil Mapping (2004);
- Teagasc Soils Mapping (2007);
- Corine Land Cover datasets, (European Environment Agency, 2006);

- General Soil Map of Ireland (An Foras Talúntais, 2nd Edition,1980);
- The Peatlands of Ireland (An Foras Talúntais, 1981);
- Directory of Active Quarries, Pits and Mines in Ireland (Geological Survey of Ireland, 3rd Edition, 2001);
- Planning Departments of Local Authorities (Section 261, Pits and Quarries Planning and Development Act 2000);
- State Mining and Prospecting Facilities (published twice annually by Exploration and Mining Division of DCENR);
- Historic Mine Sites – Inventory and Risk Classification (EPA & GSI);
- Proposed / Designated NHA Sites (National Parks and Wildlife Service);
- County Geological Sites (Local Authority Planning Office/Heritage Officers) – Figure 4 of the Alternative Sites Assessment (ASA) report contains this information;
- Mining Heritage Trust of Ireland (old mining sites);
- Office of Licensing and Guidance, Environmental Protection Agency (www.epa.ie);
- Local Authorities (Waste Management Section);
- Local Authorities (County Development Plans);
- Historical Maps (Ordnance Survey of Ireland / National Library of Ireland);
- National Landslide Database (Geological Survey of Ireland);
- Aerial Photographs (Geological Survey of Ireland / Ordnance Survey of Ireland);
- Atlas of Ireland (Royal Irish Academy);
- Exploration and Mining Division of the Department of Communications; and
- Energy and Natural Resources (www.mineralsireland.ie).

On confirmation of site location and pipeline route, a further desktop review of all available data regarding the soils, geology and hydrogeology impacts over the study area will be undertaken and will be supplemented with any additional information to support the development of the EIS.

10.2.2 Future Survey Needs

In order to further confirm the information ascertained through the desktop studies and site visits already completed, detailed site walkovers of the pipeline route and above ground infrastructure sites will be undertaken once the sites have been confirmed as part of the Final Options Appraisal Report (FOAR). Preliminary ground investigations will also need to be undertaken to provide additional information on the ground conditions for the proposed development including the pipeline and proposed infrastructure locations. A groundwater well survey of all wells within the vicinity of the proposed development will be undertaken in order to gather information on the location of wells, yield and types of groundwater wells.

Consultation with landowners along the pipeline will include a well inventory to assess potential impacts on private supplies. Groundwater monitoring is proposed where the pipeline is located within 200m of a public

groundwater water supply or within a source protection zone. Groundwater monitoring and assessment is proposed near sensitive wetland areas. The proposed route has avoided by design a large number of designated sites and groundwater dependant terrestrial ecosystems.

10.2.3 Consultation

It is considered that consultation on the soils, geology and hydrology impact assessment will be undertaken with the following organisations:

- Geological Survey of Ireland;
- Environmental Protection Agency;
- An Taisce;
- National Federation of Group Water Schemes including relevant group water schemes;
- Peatlands Conservation Council, and
- The Local Authorities where infrastructure for the abstraction, water treatment plant, break pressure tank and termination point reservoir would be situated as well as the relevant Local Authorities along the proposed pipeline route.

Soil, Geology and Hydrology related comments arising during the consultation phases of the project will also be reviewed and considered within the EIS as relevant.

10.3 Potential Impacts

10.3.1 Potential Construction Phase Impacts

There are a number of potential impacts during the construction phase of the proposed development. These include:

- Loss of soil cover;
- Removal and storage of spoil/overburden;
- Soil erosion and compaction;
- Risk of encountering contaminated ground heretofore in unknown locations, specifically potential environmental impacts arising from the excavation, handling, on-site processing, transport and off-site disposal or recovery;
- Risk of contamination of existing soils by the construction activities such as accidental fuel spills;
- Risk of contamination to groundwater by construction activities, such as fuel spills, particularly in areas of extreme groundwater vulnerability overlying regionally important karstified aquifers; and
- Impacts on any features of geological or geomorphological interest and importance.

As part of the EIS, a soil specialist and geologist will advise on required mitigation measures during construction. The appointed contractor will be required to adhere to these mitigation measures and to ensure that residual effects on sensitive receptors are minimised.

10.3.2 Potential Operational Phase Impacts

The proposed development will potentially impact on the underlying soils, geology and hydrogeology through changes in surface water run-off into the soils over the operational life of the project. There is also the potential for irreversible loss of agricultural soils/land drainage and the contamination of soils and groundwater through accidental spillages of fuels or chemicals once the proposed development is operational.

Mitigation measures will be proposed in the EIS in order to minimise these potential operational impacts. Compliance with these recommended mitigation measures will be required to be fulfilled by the appointed contractor in order to ensure that residual effects on sensitive receptors are minimised.

10.4 Proposed Methodology & Assessment Scope

It is proposed that an assessment of soils, geology and hydrogeology will be carried out in accordance with the EPA's current EIS guidance documents tailored accordingly based on professional judgement and local circumstance.

In line with guidance the assessment will cover potential impacts on soils, geology and hydrogeology and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The soils, geology and hydrogeology assessment to be carried out on the proposed development will include the following elements:

- Review of standards and legislation;
- Identification of soils, geology and hydrogeology issues relevant to the proposed development;
- Review of current soil, bedrock and groundwater conditions in the vicinity of the proposed development;
- Detailed review of all available, relevant site investigation data for works undertaken in the area of the proposed development;
- Assessment of potential impacts of construction activities on the soils, geology and hydrogeology in and around the proposed development;
- Assessment of potential impacts of operations on the soils, geology and hydrogeology in and around the proposed development; and
- Proposal of appropriate mitigation measures, as required.

The assessment will take account of sensitive receptors relevant to the proposed development, such as farmlands, through which the proposed development will pass, and homes and businesses which abstract groundwater. The complete list of sensitive receptors within the vicinity of the proposed development will become clear once the final site and route options are selected, thus informing the full study area for the EIS. A series of mitigation measures to minimise any foreseen impacts for both the construction phase and operational phase of the project will be proposed as required as part of the EIS.

11. Water

11.1 Introduction

This section scopes the effects of the proposed development on the hydrological environment including water quality, quantity, hydromorphological and flood risk during both the construction and operational phases. A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of the work likely to be required to undertake a detailed assessment of the impact of the proposed development on the water environment as part of the EIA.

A hydrodynamic and water quality model of Lough Derg and Parteen Basin is under construction and will be used to simulate the abstraction of water from the lake body. Model simulations will rely upon and be informed by the data attained through the monitoring work ongoing on Lough Derg and Parteen Basin.

11.1.1 Policy & Plan Context

The EU Water Framework Directive (2000/60/EC) established a framework for the protection of both surface and ground waters. Transposing legislation (S.I. 792 of 2009, European Communities Environmental Objective (Surface Water) Regulations 2009 as amended) outlines the water protection and water management measures required in Ireland to maintain high status of waters where it exists, prevent any deterioration in existing water status and achieve at least 'good' status for all waters. A number of River Basin Management Plans (RBMPs) were developed to address the requirements of the Water Framework Directive (WFD). The RBMPs of relevance to this assessment (the Shannon RBMP 2009-2015 and the Eastern RBMP 2009-2015) was adopted in 2009 and includes a programme of measures required to facilitate the achievement of the WFD objectives, see WFD objectives in Appendix A-1. This programme of measures included full implementation of existing legislation including the Water Pollution Acts, Water Services Act, Bathing Water Quality Regulations, IPPC Regulations, Urban Wastewater Treatment Regulations, the Foreshore Acts and the Birds and Habitats Directives (particularly the Appropriate Assessment process).

The second cycle of the river basin management planning is currently underway and the second consolidated RBMP[5] is currently under development and is due to be published by the end of 2017. The Draft Plan is due for consultation in Q4 2016. The proposed development will need to take account of the requirement of the next cycle of the RBMP.

Other important pieces of EU and national legislation pertaining to the hydrological environment include:

- S.I. 722 of 2003, European Communities (Water Policy) Regulations, as amended;
- S.I. 792 of 2009, European Communities Environmental Objective (Surface Water) Regulations 2009 as amended;
- S.I. 350 of 2014, European Union (Water Policy) Regulations 2014;
- The EU Floods Directive 2007/60/EC;
- S.I. 122 of 2010 European Communities (Assessment and Management of Flood Risks) Regulations; and
- S.I. 81 of 1988, European Community Environmental (Quality of Surface Water Intended for Human Consumption) Regulations 1984 as amended.

11.1.2 Study Area

This proposed project covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the

[5] The Eastern, South Eastern, South Western, Western and Shannon River Basin Districts will be merged to form one national River Basin District.

project, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country.

The study area lies within the Shannon and the Eastern River Basin Districts (RBDs). The key receptors are Lough Derg/Parteen Basin where the proposed abstraction will be located and watercourses crossed by the pipeline corridor.

The preferred abstraction point is as detailed in Section 1.4 above however it should be noted that the study of potential impacts on the surface water environment will focus on the entirety of Lough Derg/Parteen Basin including watercourses feeding Lough Derg/Parteen Basin and watercourses downstream in relation to the proposed abstraction regime.

The study area also includes watercourse crossings up to 200m from the proposed development pipeline corridor landtake boundary, including both upstream and downstream extents of surface waters receptors in the vicinity of this. This will be extended as required dependent upon professional judgement.

Table 11-1 details the WFD waterbodies that connect directly with Lough Derg/Parteen Basin, their type, WFD code and WFD status.

Waterbody Name	Waterbody Type	EU WFD Code	WFD Status
Lough Derg	Lake	IE_SH_25_191A	Moderate
Lough Derg (HMWB)	Lake	IE_SH_25_191B	High
Shannon (Lower)_030	River /Stream	IE_SH_25S012350	Unassigned
Moannakeeba_East_010	River /Stream	IE_SH_25M290660	Unassigned
Shannon (Lower)_060	River /Stream	IE_SH_25S012600	Unassigned
Shannon (Lower)_050	River /Stream	IE_SH_25S012500	Moderate
Lower Village Trib_010	River /Stream	IE_SH_25L080081	Unassigned
Terryglass_010	River /Stream	IE_SH_25T650910	Unassigned
Shannon (Lower)_040	River /Stream	IE_SH_25A050100	Unassigned
Woodford (Galway)_030	River /Stream	IE_SH_25W010300	Good
Kilmastulla_040	River /Stream	IE_SH_25K041000	Good
Lorrha Stream_020	River /Stream	IE_SH_25L050300	Moderate
Carrigahorig Stream_010	River /Stream	IE_SH_25C160500	Moderate
Kilrateera_Upper_010	River /Stream	IE_SH_25K720870	Unassigned
Coos_010	River /Stream	IE_SH_25C080200	Good
Nenagh_070	River /Stream	IE_SH_25N010800	Moderate
Ardcloony_010	River /Stream	IE_SH_25A030100	High
Kilcrow 25_070	River /Stream	IE_SH_25K010700	Moderate
South Boleynagoagh_010	River /Stream	IE_SH_25S690670	Unassigned
Ballyfinboy_070	River /Stream	IE_SH_25B020800	Moderate
Youghal (Tipperary)_010	River /Stream	IE_SH_25Y020200	Moderate
Bow_010	River /Stream	IE_SH_25B100200	Moderate
Derrainy_010	River /Stream	IE_SH_25D100200	Moderate
Clonmakilladuff_010	River /Stream	IE_SH_25C970950	Unassigned

Waterbody Name	Waterbody Type	EU WFD Code	WFD Status
Grange (Tipperary)_010	River /Stream	IE_SH_25G100100	Unassigned
Ardgregane Stream_020	River /Stream	IE_SH_25A040400	Moderate
Newtown_010	River /Stream	IE_SH_25N030200	Good
Bridgetown (Clare)_010	River /Stream	IE_SH_25B230100	Moderate
Graney (Shannon)_050	River /Stream	IE_SH_25G040400	Poor

Table 11-1 WFD Waterbodies in the Vicinity of Parteen Basin (EPA, 2015)

As shown in Table 11-1 the WFD ecological status[6] of Parteen is "High" as reported in the EPA Water Quality in Ireland 2010-2012 data (EPA, 2015).

The Lough Derg WFD Management Unit Action Plan which was published with the Shannon RBMP in 2009 lists the pressures/risks to Lough Derg as including:

- Nutrient sources;
- Wastewater Treatment Plants (WWTP); and
- Industrial Discharges, morphology and abstraction.

There are a number of WFD related protected areas within and adjacent to Lough Derg/Parteen Basin as follows:

- The entirety of Lough Derg is classified under the WFD as a Drinking Water and a Nutrient Sensitive Area;
- There is one recreational area known as Ballycuggeran on Lough Derg;
- There are a number of Salmonid Waterbodies of interest, though none designated under the salmonid regulations; and
- Lough Derg fall within the Lough Derg (Shannon) SPA [004058] and Parteen Basin forms part of the Lower River Shannon cSAC [002165].

In addition to providing a new additional water source for the Dublin Water Supply Area, the pipeline will supply a number of towns in the Benefitting Corridor. However, the water quality assessment for this project will not account for or assess the infrastructure associated with the Benefitting Corridor. All projects associated with the benefitting corridor will be subject to the relevant planning regulations and as required EIA.

The pipeline route has yet to be finalised, however a 200m wide preferred pipeline corridor has been identified within the FOAR. Table 11-2 outlines some of the major watercourse crossings within this 200m corridor including their type, WFD code and WFD status.

[6] or potential as Parteen is a HMWB

Name	Type	EU WFD Code	WFD Status
Kilmastulla River	River	IE_SH_25_1970	Moderate
Nenagh River	River	IE_SH_25_2140	Moderate
Little Brosna River	River	IE_SH_25_633	Moderate
Silver (Kilcormac) River	River	IE_SH_25_3701	Moderate
Clodiagh (Tullamore) River	River	IE_SH_25_550	Moderate
Figile River	River	IE_SE_14_998	Moderate
Liffey River	River	IE_EA_09_1870_4	Moderate

Table 11-2 Major WFD Waterbodies Potentially Crossed by the 200m Corridor

The WFD status of all major WFD Waterbodies is "Moderate". All watercourse crossings detailed in Appendix A-4 will be assessed as part of the EIS:

- Flood risk in the area of the pipeline, this will be based on OPW flood maps and Catchment Flood Risk Assessment and Management Studies where available; and
- WFD protected areas along the pipeline route, such as:
  - Waters used for the abstraction of drinking water;
  - Areas designated to protect economically significant aquatic species;
  - Recreational Waters;
  - Nutrient Sensitive Areas; and
  - Areas designated for the protection of habitats or species.

11.2 Baseline Information

Baseline data was collated and reviewed as part of the Multi Criteria Analysis (MCA) initially undertaken to support the development of the Preliminary Options Assessment Report (POAR) and subsequently the Final Options Appraisal Report (FOAR). This information will be supplemented during the EIA using a desktop study, monitoring data, field surveys and feedback from consultation where relevant.

11.2.1 Desktop Study

A desk study will be carried out to collate the available information on the hydrology of the study area. The following data sources will be referred to during the assessment:

- Ordnance Survey of Ireland - current and historic mapping;
- Environmental Protection Agency (EPA) - water quality monitoring database and reports;
- EPA - flow and water level measurements (EPA Hydronet System);
- Water Framework Directive Ireland Database (www.wfdireland.ie);
- The Shannon RBMP 2009-2015, the South Eastern RBMP 2009-2015, and the Eastern RBMP 2009-2015 and their associated Water Management Unit Action Plans (various) and the draft 2nd Cycle National River Basin Management Plan (due Q4, 2016);
- National Parks and Wildlife Service - designated sites;
- County and Regional Development Plans for the Benefitting Counties in the study area;
- Inland Fisheries Ireland - fishery resources;
- Office of Public Works (OPW) - flood records and the Eastern and Shannon Catchment Flood Risk Assessment and Management Studies (ongoing);
- Historic flood data from the National Flood Hazard Mapping website (www.floodmaps.ie);

- County and as required Local Area Development Plans;
- RPS (2008) Strategic Environmental Assessment (SEA) Environmental Report for the Water Supply Project - Dublin Region;
- WSP Hydrodynamic and Water Quality Modelling DA2.2: First Pass Modelling Report (2015);
- WSP Hydrodynamic and Water Quality Modelling DA2.2: Final Options Appraisal Report (2016);
- Water Supply Project - Dublin Region (The Plan) and subsequent SEA Statement (2011);
- RPS/Veolia Desalination Study Report (2008); and
- Irish Water - Water Services Strategic Plan (2015).

11.2.2 Current Monitoring on Lough Derg/Parteen Basin

Monitoring on Lough Derg/Parteen Basin commenced on a staggered delivery from May 2015, with the follow monitoring currently being carried out:

- Continuous water flow and current monitoring - Vertical Acoustic Doppler Current Profilers (ADCPs) at 3 lake locations and 1 horizontal ADCP across the incoming River Shannon;
- Continuous water level monitoring - Automatic Level stations installed at 6 locations (3 lake sites and 3 river sites);
- Continuous water temperature monitoring - Temperature sensors have been installed at 20 lake station, measuring the water column at varying depths;
- Continuous water quality monitoring – Physiochemical water quality sampling buoys at 5 lake locations – sampling for water temperature, conductivity, dissolved oxygen, pH, nitrates, nitrites, ammonia and phosphates (at near-surface, mid depth and near bed of water column), with additional surface sampling of turbidity and chlorophyll-a;
- Manual water quality spot sampling – Spot sampling at 8 lake locations – sampling from the surface, mid and bottom of the lake water column at fortnightly intervals with laboratory analysis of BOD, chlorophyll a, nitrates, nitrites, ammonia , phosphates, suspended solids and alkalinity;
- Manual water quality spot sampling – Spot sampling at 6 river locations – sampling from the surface of the river column at fortnightly intervals with laboratory analysis of BOD, chlorophyll a, nitrates, nitrites, ammonia , phosphates, suspended solids and alkalinity;
- Plankton surveys at monthly and fortnightly intervals – Sampling at 11 lake sites for 12 month period; and
- Meteorological monitoring using meteorological stations.

See Appendix A-2 for the location of the permanent monitoring stations.

In addition a Bathymetric Survey of Lough Derg/Parteen Basin lake bed was carried out through summer of 2015.

The monitoring suite was developed in consultation with the EPA. These surveys and the associated data are required to aid the development of a hydrodynamic and water quality model to assess the sustainability of an abstraction regime from Lough Derg/Parteen Basin.

11.2.3 Future Data & Survey Needs

In addition to the ongoing monitoring on Lough Derg/Parteen Basin the following will be undertaken as part of the EIA;

- A site walkover will be carried out in late 2016. Visual inspections will be made 200m up and downstream of the abstraction point and major watercourse crossings of the preferred 200m pipeline corridor. Water quality monitoring is proposed for selected watercourse crossings along the preferred pipeline corridor which have the potential to be impacted during the construction phase of the proposed development. The

watercourses to be monitored will be selected based on their sensitivity and the proposed crossing technique to be utilised and will be monitored for parameters such as suspended solids and hydrocarbons. In addition, some biological water quality assessments (Small Stream Risk Score and Q-value indices as relevant), including a characterisation of the macroinvertebrate community, will be obtained from selected watercourses potentially impacted by the proposed development, see Section 9 Biodiversity.

- Consultation will be carried out with the Water Service Departments of the various Local Authorities within the study area and with Irish Water. Initial consultation has been undertaken with the National Federation of Group Water Schemes (NFGWS) in order to identify any drinking water abstraction points in the study area and further consultation will be undertaken with the NFGWS as the project progresses.

11.2.4 Hydrodynamic and Water Quality Model

A 3D hydrodynamic and water quality model of Lough Derg and Parteen Basin is under construction and will be used to simulate the abstraction of water from the lake body. Model simulations will rely upon and be informed by the data attained through the monitoring work ongoing on Lough Derg and Parteen Basin.

An initial modelling exercise has been undertaken, the objective of which was to assess the existing flushing characteristics of Lough Derg and Parteen Basin and examine abstraction options considered in the original SEA process, in order to determine if any changes in the flushing characteristics could be ascertained due to a number of potential abstraction locations and abstraction regimes.

The hydrodynamic and water quality model will continue to be developed up-to (and after) the submission of the Planning Application.

A final validated hydrodynamic and water quality modelling will:

- Determine the physical processes and hydrodynamics of Lough Derg/Parteen Basin and how flow rates impact on circulation;
- Predict water quality and how this varies with flow and circulation; and
- Establish, through hydrodynamic and water quality modelling, how the proposed abstractions will impact on the waterbodies ecosystems for a representative range of climatic conditions including climate change scenarios.

The model will be used during the EIA to determine the potential impacts on Lough Derg/Parteen Basin from the proposed abstraction regime.

11.2.5 Consultation

Consultation on the surface water impact assessment will be undertaken with the following organisations:

- Environmental Protection Agency (EPA);
- Water Policy Advisory Committee (Department of Environment, Community and Local Government);
- The National Parks and Wildlife Service (NPWS);
- The Electricity Supply Board (ESB);
- The Office of Public Works (OPW);
- Water Service Departments of the County Councils in the study area,
- Irish Water;
- National Federation of Group Water Schemes;
- Inland Fisheries Ireland (IFI); and
- Waterways Ireland.

- Local Authorities Water & Communities Office

Note: the above list is not exhaustive and additional bodies/organisations may be contacted as deemed appropriate.

11.3 Potential Impacts

11.3.1 Potential Construction Phase Impacts

During the construction phase there is the potential for pollution of surface water features due to sediment loading and associated anthropogenic polluting substances entering watercourses as a result of surface water runoff and/or spills on-site. Potential sources during the construction phase of the proposed development include:

- Construction works within and adjacent to watercourses particularly during the construction of the abstraction point on Lough Derg/Parteen Basin;
- Excavation and site clearance works;
- Pipe laying works including trenchless techniques;
- Stockpiling of materials;
- Solid waste arising's, in addition to the potential for waste slurry from any tunnelling activities;
- Accidental spillage of anthropogenic polluting substances e.g. oil or diesel in or adjacent to watercourses;
- Commissioning work such as hydrotesting this may also contain chemical additives; and
- Construction plant and vehicle washing.

There is also the potential to disrupt local drainage systems.

11.3.2 Potential Operational Phase Impacts

Potential impacts during operation are primarily related to the potential impact of the abstraction regime on Lough Derg/Parteen Basin. Abstraction pressures manifest in lakes as increased fluctuations in water level and a change in residence time and they can also result in the deterioration of the ecological health of the lake[7]. The water quality in Lough Derg is principally determined by the flushing time of water. In addition to potential change to the residence time and water levels there is a potential to alter the morphology of the lake shore as a result of the installation of the plant and pipe network. The Hydrodynamic and Water Quality Modelling study of Lough Derg will be used to inform the impact assessment from the operational phase of the proposed development. Potential impacts on watercourses feeding into Parteen Basin will also be assesses as part of the EIA.

Potential impacts to the watercourses downstream of Lough Derg/Parteen Basin will also be assessed as part of the EIA.

It is also noted that water will be leaving the current Shannon RBD and will be transferred to the Eastern RBD constituting an inter basin transfer under the WFD. It is proposed that this will be treated potable water therefore there are limited potential impacts to receiving watercourse in the Eastern RBD. An assessment of the impact on Lough Derg levels will be undertaken through the modelling exercise. Consultation on this issue will be undertaken with the EPA and Water Policy Advisory Committee (WPAC) as part of the EIA and potential impacts associated with this inter basin transfer will be assessed as part of the EIA.

As the pipeline will be buried underground, it is considered that there will be minimal impacts from the pipeline on the existing surface water receptors during the operational phase.

[7] Department of the Environment Heritage and Local Government (2010) Eastern River Basin District Programmes of Measures 2009 – 2015.

There is a potential that flood risk due to the proposed development could be exacerbated due to the development of increased hardstanding areas at infrastructure sites such as the Water Treatment Plant (WTP), the termination point reservoir etc. and in turn the proposed development elements could be at risk from flooding.

11.4 Proposed Methodology & Assessment Scope

It is proposed that an assessment of surface water quality will be carried out in accordance with the EPA's current EIS guideline documents and the following guidance and established best practice, and will be tailored accordingly based on professional judgement and local circumstance:

- NRA Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA 2009) [now TII]; and
- Office of Public Works (OPW) Guidelines for Planning Authorities (GPA): The Planning System and Flood Risk Management (OPW and Department of Environment, Heritage and Local Government 2009).

In line with the above guidance this assessment will cover potential impacts to water quality and will describe the existing geomorphological and hydromorphological environment and the likely significant potential impacts associated with the construction and operation of the proposed development on these aspects. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The assessment will also consider potential impacts to local abstractions potentially affected by the proposed development.

This chapter of the EIS will detail the required mitigation measures during the construction and operational phases. Compliance with these requirements will be one of the specifications required to ensure that residual effects on sensitive receptors are minimised.

As a minimum a flood risk assessment (FRA) Stage 1 will be carried out and appended to the EIS. The FRA will be carried out in accordance with the Office of Public Works (OPW) Guidelines for Planning Authorities (GPA) 20: The Planning System and Flood Risk Management (OPW and Department of Environment, Heritage and Local Government 2009).

Hydrology interrelates to other aspects such as Flora and Fauna and Hydrogeology. Deterioration of surface water quality in the study area as a result of the proposed development could impact on flora and fauna within the study area. In turn any deterioration or impact to groundwater quality could impact on the surface water quality. These interrelations will be assessed and included in the impact assessment for each aspect. Any hydrological effects on ecological areas will be assessed/ reported as part of the Flora and Fauna (Biodiversity) section of the EIA, as discussed in Section 9 of this report, and any hydrogeological effects will be assessed/reported as part of the Land and Soils section of the EIA, see Section 10 of this report.

Other projects within the vicinity of the proposed development could result in cumulative impacts during the construction phase if these projects were to run concurrently. An assessment of potential cumulative impacts will be included in the overall impact assessment as required.

The scope of the EIA proposed in this section would allow an adequate understanding of the potential effects in order to ensure that the mitigation proposed as part of the proposed development design adequately protects the water environment.

11.4.1 Water Framework Directive Compliance Assessment (Abstraction Location)

The impact of the proposed abstraction on Lough Derg / Parteen Basin on water quality, ecology and hydromorphology will need to be assessed in relation to compliance with the objectives set out within the WFD. This will be detailed in the WFD Compliance Assessment Report which will form part of the EIS. The WFD Compliance Assessment will be based on a combination of a desk study, reviewing existing information for the proposed development and affected water bodies, followed by a site visit to allow baseline observations and expert assessment of the potential impacts. Qualified specialists will undertake the individual assessments respectively for the biological, physico-chemical and hydromorphological elements. The following key steps will be undertaken as part of this assessment:

- Collation and review of baseline, desk-based information on the proposed development and water bodies;
- A walkover in the vicinity of the abstraction point (approximately 200m length up and downstream);
- Field surveys of biological and hydromorphological quality elements; and
- An assessment of the likely impacts of the proposed abstraction on Lough Derg/Parteen Basin from a WFD perspective.

As no formal guidance on the WFD assessment process is currently available, professional judgement, other case studies and best practice guidance will be utilised to undertake the assessment. Stakeholder consultation will be undertaken with the EPA and WPAC in relation to the WFD Compliance Assessment. Stakeholder consultation will address a number of areas relating to the assessment including the impending second cycle of the WFD River Basin Management Plans (RBMP's) which is expected in 2017. As part of the second cycle it is noted that within Ireland, there will be only one national river basin district (RBD) as opposed to the current 5 RBD's.

12. Traffic & Transport

12.1 Introduction

This section refers to the movement of vehicles and the transportation of construction materials that will be caused as a result of the construction and operation of the proposed development.

A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of the work likely to be required to undertake a detailed assessment of the impact of the proposed development on traffic and transport as part of the EIS.

12.1.1 Policy & Plan Context

The examination of policy and plan context in terms of traffic and transport will involve a combination of local and national policy documents. The following documents will be referred to:

- Relevant County Development Plans;
- Relevant Local Area Plans;
- TII (NRA) Design Manual for Roads & Bridges;
- TII (NRA) Traffic & Transportation Assessment Guidelines;
- TII (NRA) Policy Statement on Development Management and access to National Roads;
- Department of Transport Tourism and Sport – Traffic Signs Manual Chapter 8;
- Department of Transport Tourism and Sport Guidance for the Control and Management of Traffic at Road Works; and
- Any other documentation advised of by the Local Authorities, such as proposed scheme improvement works, planning documentation, mobility plans etc.

12.1.2 Study Area

This proposed development covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the proposed development, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country. In covering such a distance, it is inevitable that the pipeline will be located in close proximity to a range of receptor types, including residential and commercial developments, local amenities and services, as well as private and public transport networks. Where possible and appropriate, the pipeline will be routed away from these sensitive areas and ensure to minimise disruption and mitigate any residual impacts as a result of the project.

12.2 Baseline Information

12.2.1 Desktop Study

As part of the Preliminary Options Appraisal Report (POAR), a desktop study of the traffic and transport impacts of the proposed development was undertaken. The desktop study reviewed OSi mapping and OSi aerial photography, as well as other data sources such as road collision data from the Road Safety Authority (RSA) and online mapping services such as Google Maps, including Google Streetview.

As part of the Final Options Appraisal Report (FOAR), desktop studies similar to those undertaken for the Preliminary Options Appraisal Report were carried out. In addition, site visits to the proposed Raw Water Abstraction, Water Treatment Plant, Break Pressure Tank and Termination Point Reservoir sites were undertaken to confirm the findings of the desktop studies and to identify additional constraints.

12.2.2 Future Survey Needs

Supplementary data collection will be required to be undertaken/acquired to give a complete overview of the nature of existing traffic using the road network to facilitate access to the proposed development sites. This data will be used to assess the appropriate nature of the proposed construction access points and to assess the scheme impacts as part of the EIS for the scheme.

This supplementary data is expected to include:

- Surveys at junctions on the existing road network where operation is currently close to or above capacity;
- Windshield surveys of existing road or rail lines for consideration in relation to the proposed construction methodology and impacts on existing infrastructure;
- Identification of third party approval processes, such as Irish Rail's *Third Party Works* Procedures;
- Manual classified traffic turning counts and/or automatic traffic counts will be undertaken. Surveyed vehicles will be classified into standard categories as set out below;
    - Pedal Cycle;
    - Motor Cycle;
    - Passenger Car;
    - Light Goods Vehicle (LGV);
    - Medium Goods Vehicle (MGV);
    - Heavy Goods Vehicles (HGV); and
    - Buses & Coaches.
- Assessment of Transport Infrastructures online Automatic Traffic Counter data;
- Using knowledge and experience, traffic forecasting, for both the construction and operation phases of the development, will be undertaken. Forecasts will capture volumes of traffic for the construction of the works (materials, plant and personnel) and the operation of the development (maintenance and inspection, for the entire development (construction phase) and at the selected aboveground infrastructure sites (operational phase). These expected volumes will be converted to vehicle numbers at various construction access points and used to estimate daily trip rates for the proposed development.
- In consultation with each appropriate Local Authority, Traffic and Transportation Assessments will be undertaken utilising the TII (NRA) Traffic and Transportation Assessment Guidelines (May 2014). Such assessments will be undertaken to determine the impacts the proposed development generated traffic may have on existing junctions and on the existing road network.
- The full extent and scope of any required traffic and transport surveys will be confirmed following the determination of the site locations and pipeline route as part of the FOAR.
- Pavement Condition Surveys, where requested by the Local Authority. Such surveys will be required to be undertaken by third party sub-contractors and may include Video Pavement Condition and Roughness surveys, Visual surveys and Level 1 and 2 Falling Weight Deflectometer surveys.
- Interrogation of detailed Construction Programmes, Construction Methodology and Construction Methodology provided by the scheme designers.

- Review of all proposed access locations (Construction and Operational), haul routes and envisaged vehicle types proposed by the scheme designers.
- Independent Road Safety Audits based on the proposed scheme design and proposed access locations to determine the health and safety impacts on the surrounding road network.

Using collated information from both the desktop study and the information gathered from the surveys outlined above, proposed access points from the site(s) to the public road network will be identified and determined based on the suitability of surrounding roads. When selecting the location of these proposed access sites, the physical characteristics of the receiving road, such as carriageway width, horizontal and vertical alignment and visibility, will be considered, along with the frequency of road collisions in the area. The location of residential developments and other sensitive amenities, along the receiving road, will also be included in this process.

An Outline Traffic Management Plan (OTMP) will form part of the Construction Environmental Management Plan (CEMP) and will be based on available data. This will form the baseline requirements for the Contractor when developing the detailed Construction Stage Traffic Management Plan (CSTMP) for the proposed development.

12.2.3 Consultation

Consultation on the traffic and transport impacts will be undertaken with the following organisations:

- The Local Authorities where infrastructure for the abstraction, water treatment plant, break pressure tank, termination point reservoir and pipeline route would be situated.
- Transport Infrastructure Ireland;
- An Garda Síochána and other emergency services;
- Irish Rail;
- Bus Companies, including school bus services;
- Refuse collection services; and
- Schools.

12.3 Potential Impacts

12.3.1 Potential Construction Phase Impacts

- An increase in noise, and potentially dust, generated from construction related traffic may cause disruption to people, groups or other activities, especially to any commercial and leisure/recreational receptors located close to the proposed development.
- An increase in road traffic levels due to construction related activities supplying and accessing the site using the existing road network.
- Temporary road closures, resulting in increased travel distance and delay to existing road users may be required to facilitate crossings of the road network during the construction stage of the project.
- Road damage from HGV's during construction.

12.3.2 Potential Operational Phase Impacts

- Increase in traffic levels due to traffic accessing the water treatment plant and reservoir site locations and/or maintenance traffic accessing locations including the break pressure tank, pipeline and abstraction point. However, low levels of traffic are expected to be generated during the operational phase.
- Following construction, all temporary construction-related accesses will be closed off.

- A number of accesses will be maintained in order to be utilised as a point of access along the pipeline route corridor for maintenance and inspection purposes.

12.4 Proposed Methodology & Assessment Scope

It is proposed that an assessment of traffic and transport will be carried out in accordance with the EPA's current EIS guidance documents and the following guidance and established best practice, and will be tailored accordingly based on professional judgement and local circumstance:

- TII (NRA) Traffic and Transportation Assessment Guidelines.

In line with the above guidance, the assessment will cover potential impacts on traffic and transport and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

In particular, the traffic and transport section of the EIS will evaluate the impact of the proposed development on all road users including general traffic, HGVs, cyclists and pedestrians. It is proposed that this will be undertaken by way of the aforementioned surveys and assessments and with stakeholder liaison. The overall impact assessment on the transport network will specifically consider the following:

- An assessment of future road and public transport proposals along the development route;
- Consultation with all relevant stakeholders;
- The local and strategic traffic impacts of the proposed development;
- Potential impacts such as temporary road closures and delay on all road users;
- Changes to access and servicing of properties;
- Appropriate traffic management measures; Proposed material haulage routes and temporary access locations;
- Proposed waste disposal sites and haul routes from the construction works to these sites;
- Effects on and proposed measures for dealing with pavement damage and pre and post construction road condition surveys;
- Amenity for pedestrians and others;
- Collisions and road safety; and
- Parking and loading, particularly around construction site compounds.

The development of an OTMP will also inform the Traffic and Transport Assessment for the EIS.

The Traffic and Transport chapter of the EIS will detail the required mitigation measures during the construction and operational phases. Compliance with these requirements will be one of the specifications required to ensure that residual effects on sensitive receptors are minimised.

13. Population and Human Health

13.1 Introduction

This section describes the social and economic factors that have the potential to affect people and communities of the proposed development. These factors could include, for example, changes in employment levels and economic opportunities, changes in community demographics and demand for public services, and the amenity value of the local area.

The social and economic factors that have the potential to affect human health were also assessed. This could include nuisance odour or noise caused from construction processes or more serious potential impacts from, for example, pollution of fresh water sources.

13.1.1 Policy & Plan Context

National, Regional and Local Plans and Policies relevant to the population and human health chapter are summarised as follows:

- County and Regional Development Plans for the immediate and adjacent counties in the study area;
- Tourism plans and strategies for the region, specifically the Shannon River such as 'Discover Ireland: Shannon' and 'Ireland's Ancient East';
- Lakeland and Inland Waterways Strategic Plan 2010 – 2016; and
- Irish Water, Water Services Strategic Plan (Oct 2015).

The Water Services Strategic Plan (WSSP) was published by Irish Water in October 2015. The WSSP is Ireland's first integrated national plan for the delivery of water services and is an essential part of ensuring the availability of safe drinking water. It also outlines how the environment is protected from the impacts of wastewater discharges, and how efficient modern systems meet the need of customers, contributing to economic growth and development.

13.1.2 Study Area

This proposed development is defined by the c.170km treated water pipeline component, extending from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the proposed development, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country.

The assessment considered effects at a local level which may affect people that live in immediate proximity to the proposed development, along with larger urban centres nearby such as Limerick, Clare, Tipperary, Offaly, Laois, Kildare, and Dublin.

13.2 Baseline Information

13.2.1 Desktop Study

An initial desktop study of the emerging infrastructure development sites and preferred pipeline corridor was completed, and included available information on the socio-economic parameters within the project's study area.

A further study will be completed to assess the direct and indirect impacts that occur due to physical works, such as land-take and changes in access to properties. The study area for such impacts is typically defined as land within 500m of the land take boundary of the proposed development, however potential receptors up to 1km will be considered in order to establish a baseline that includes receptors that may be impacted by any pipeline route changes. For development-wide effects such as employment, economy and tourism, the study area comprises counties Tipperary, Offaly, Kildare, and Dublin however consideration of such development wide effects will also be given to county Laois as it is expected to benefit from the proposed development even though the preferred pipeline corridor is not located within its borders.

The broader benefits of proposed development will also be discussed within this section of the EIS and will include consideration of the following: employment, economy and tourism, land-use, community severance and accessibility, and amenity. The supply of treated water to the Region and its impact on future domestic, commercial and industrial water requirements and consequent economic growth will also be discussed.

Employment

Employment is an important socio-economic consideration as the creation and sustainment of employment opportunities can help to reduce poverty and facilitate economic and social development in communities. Construction and operational effects deemed relevant to the proposed development include direct jobs created/sustained as well as indirect and induced employment benefits. The effects will be assessed at a regional level (within the counties associated with the proposed development) as well as the national level.

Economy and Tourism

This assessment of economy and tourism will consider the potential for impacts on, and stimulation of, the local, regional and national economy. The assessment of local and regional economy will consider the towns and villages along the pipeline corridor and the assessment of the regional economy will consider the wider counties through which the proposed development influences.

Land-use

Direct changes in land-use as a result of land take, severance or changes in access will be assessed in order to capture the effects on existing residential, commercial, community, agricultural land and property. In addition, the introduction of new or large-scale infrastructure will be considered since this can affect the way that land may be used in the future, such as the potential to enhance or reduce the viability of subsequent development. These indirect effects on development land will be assessed within 1km of the proposed development.

Community Severance & Accessibility

Changes to access to community services and facilities resulting from the proposed development will be assessed, alongside any changes to non-motorised transport links (footways and cycle ways) or public transportation routes. The proximity of services and facilities such as schools, nursing homes and emergency services within the study area will be given detailed consideration. The assessment will cross reference to the traffic and transport assessment of the EIS in order to capture any potential severance effects. Changes to access to water services along the pipeline corridor during construction or operational phase will be assessed in order to measure the potential impact on these services within a local or extended context. Access to water

services can impact significantly on the quality of life of individuals whilst also limiting the level of economic development in an area.

Amenity

Amenity effects concern the ability of people to enjoy their surroundings and the general character or quality of their community. The potential combined amenity effect resulting from the proposed development such as noise and vibration, air quality and odour, and landscape and visual effects will be considered to assess how the overall public perception of the local area could be affected.

13.2.2 Future Survey Needs

As part of a wider desktop review that will inform the EIS baseline data gathering process, a comprehensive literature review of existing data sets and reports will be undertaken, including but not limited to the following:

- Relevant & most recent County Development Plans;
- Local Area Plans relevant to the study area;
- Midland Regional Planning Guidelines (RPG) 2010-2022;
- National Climate Change Strategy 2007-2012;
- National Spatial Strategy 2002-2020 (including the new National Planning Framework);
- Capital Investment Plan 2016-2021;
- Rebuilding Ireland – Action Plan for Housing and Homelessness;
- Aerial photography analysis; and
- Geospatial data analysis using GIS mapping.

A site visit of the study area will be completed to assess any potential sensitive sites and to clarify and confirm the validity of the information gathered in the course of the literature and desktop review.

13.2.3 Consultation

Consultation will be undertaken with the following organisations by way of stakeholder meetings and discussion:

- Fáilte Ireland;
- Local Chambers of commerce;
- Project EIA Specialists including hydrology, agricultural, landscape, ecology, noise, odour and traffic specialists;
- Public utility providers including Irish Water, GNI, ESB, Eir etc;
- Local employers including agricultural and fishing enterprises; and
- Local heritage and tourism officials.

13.3 Potential Impacts

13.3.1 Potential Construction Phase Impacts

The following impacts associated with the construction phase will be assessed:

Employment

- Contractors will require a sizeable workforce to complete and oversee the works. In addition to this direct employment, indirect and induced employment opportunities will be created at both local and regional level.

Economy and Tourism

- Non-labour construction expenditure will provide economic benefits at both local and regional level.
- Businesses and tourist attractions in the immediate proximity of proposed development face the possibility of some disruption during construction, potentially resulting in loss of trade. Agricultural-related economic activity could also be disputed.

Land-use

- Construction works will take place predominantly on existing agricultural land therefore the assessment will cover the temporary loss of land and disturbance to agricultural production as a result of severance/changes in access. Direct impacts on residential, commercial and community land and property will also be considered.
- Additional temporary land take may be required to facilitate access/haul routes and storage depots to facilities construction activity.

Community Severance & Accessibility

- The proposed pipeline corridor is linear in nature and will dissect land plots/farms, potentially resulting in community severance, although this is likely to be minimal since the proposed route corridor will be located away from built up /densely populated areas.
- During the construction phase of the project there is likely to be a substantial increase in the level of construction related traffic causing disruption to local inhabitants within the vicinity of the construction sites. Local schools, emergency services and public transport links will be given detailed consideration in this regard.

Amenity

- Increased levels of traffic, noise, and dust may cause disruption to people, groups or other activities, although this is likely to be minimal since the proposed route corridor will be located away from built up areas.

13.3.2 Potential Operational Phase Impacts

The following impacts associated with the operation phase will be assessed:

Employment

- Employment opportunities may result from the water treatment plant operation as well as pipeline operation and maintenance.

Economy & Tourism

- The pipeline is of paramount importance for local, regional, and national macroeconomic development as stable water services are a primary pre-condition for economic and community development.
- Local communities located along the pipeline will benefit from a more effective and efficient water service, which will facilitate future development.
- If consideration of community gain is stipulated as part of planning conditions for the proposed development, this could provide benefits in a number of areas including tourism, environment, education, training, sports and leisure.

Land-use

- Minimal permanent effects are expected once the proposed development is operational. While the land used for construction will be returned to its previous use, the section of land containing the pipeline (the

permanent wayleave) will not be available for a change in land use, potentially impacting on the surrounding land's suitability for development.

Community Severance & Accessibility

- During the operational phase, minimal impacts on community severance are anticipated since the pipeline itself will be situated underground and out of public view. There is potential for some permanent effects through the prohibiting of future development with the permanent wayleave.

Amenity

- A permanent impact on amenity during the operational phase is not expected since the proposed development will be constructed underground and away from built up areas.
- Improvement in the quality of life for existing residents of rural communities given the improved water supply.

13.3.3 Broader Benefits of the Proposed Development

The primary benefits of the proposed development relate to the provision of secure and high quality water supplies to facilitate economic growth and employment creation in the areas/communities in the immediate proximity of the pipeline corridor, thus facilitating economic growth and employment generation. This area is defined as the Benefiting Corridor.

13.4 Proposed Methodology & Assessment Scope

A comprehensive study of the potential direct and indirect socio-economic impacts of the proposed development, as set out above, will be included in the EIS.

This assessment will be informed primarily by i) an extended study of the environmental baseline, ii) a site visit, and iii) public consultation.

The final socio-economic assessment will be carried out in accordance with relevant national and EU legislation and guidance.

Consideration will also be given to:

- Fáilte Ireland guidelines on the treatment of Tourism in an Environmental Impact Assessment (2007);
- UK Government Treasury Green Book (2003); and
- Additionality Guide (English Partnerships) (2008).

In line with the above guidance, the assessment will cover potential impacts on traffic and transport and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The sensitivity of all types of socio-economic receptors impacted by the proposed development with be considered, with priority being assigned to residential dwellings and primary public services. GIS mapping will be used to capture relevant information. The sensitivity of the receptors will be assessed in conjunction with the magnitude of potential effects to draw conclusions on the overall significance of effects.

13.5 Human Health Assessment

In the development of the EIS, the human health assessment will consider individual specialist assessments, such as air quality, noise, vibration and water. Within this context, pollutant pathways and subsequent potential impacts on human health will be assessed. The main objective of the human health assessment in the context of the Population and Human Health Chapter will be to:

- Confirm that all pathways relevant to human health have been identified within the specialist assessments or other separate assessments (such as Flood Risk Assessment);
- Confirm that the EIS or other separate assessments appropriately address the potential for risk or vulnerabilities of the proposed development to accidents or natural disasters (such as flooding and sea level rise);
- Confirm that appropriate consideration of the inter relationships of human health impacts is presented in the EIS; and
- Confirm that the assessments have appropriately considered the need for key mitigation measures.

At a broad level, it is envisaged that the main elements of the human health assessment will include:

- Presenting details of feedback from the consultation phases of the project relating to human health issues;
- Gathering of the main statements relevant to human health from the EIS assessments, project description and any other separate assessments, into one coherent section so that it can be easily read and understood by the public and stakeholders; and
- Provide clear references for the EIS specialist assessments and separate assessments that fully address impacts and key mitigation measures relevant to human health.

14. Agronomy

14.1 Introduction

This section refers to the potential impacts on agricultural land both as individual land parcels and farm holdings supporting a variety of enterprises. Any infrastructural project such as the construction of a pipeline adjacent to or through agricultural land will have an impact on the individual farms affected and may have an impact at a local, regional or national level.

A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of the work likely to be required to undertake a detailed assessment of the impact of the proposed development as part of the EIS.

14.1.1 Policy & Plan Context

National, Regional and Local Plans and Policies will be considered as part of this section of the EIS, including:

- County and Regional Development Plans for the immediate and adjacent counties in the study area;
- NRA Code of Practice Guide to Process for National Road Project Planning and Acquisition of Property for National Roads;
- Soils and Subsoils digital data from Environment Protection Agency; and
- Irish Water, Water Services Strategic Plan (Oct 2015).

14.1.2 Study Area

This proposed development covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the project, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country.

The agronomy assessment will cover effects at a local level which may affect landowners who live in immediate proximity to the proposed development, along with larger urban centres nearby. There are four counties (Tipperary, Offaly, Kildare, and Dublin) that are directly impacted by the proposed development in total, which collectively encompass c.950 landowners.

14.2 Baseline Information

14.2.1 Desktop Study

An initial desktop study has been carried out on the emerging infrastructure development sites and route corridor which used professional judgement, orthophotography mapping with indicative landownership information, windshield surveys and publically available information to collate information on the agricultural environment of the project's study area.

On confirmation of the infrastructure site locations and pipeline route, a further desktop review of all available data relating to the agricultural environment will be undertaken and will be supplemented with any additional information which may exist to support the development of the EIS.

14.2.2 Future Survey Needs

Field visits and assessments will be undertaken for the landowners within the preferred 200m pipeline corridor which may be subject to revision in response to environmental surveys, consultation and design development.

The study will enable an assessment of the impact of the proposed development on the agricultural environment. The agricultural assessment will detail the likely significant impacts at construction and operational stages and propose mitigation measures as required.

The macro impact of the proposed development will be assessed with regard to the amount of agricultural land required on a temporary and a permanent basis and the impact on any farms of significance or of regional importance.

14.2.3 Consultation

Consultation on any agronomy impacts of the proposed development will be undertaken with the following organisations:

- Bord Bia;
- Department of Agriculture Food, and the Marine;
- Agricultural Consultants Association;
- Irish Farmers Association;
- Teagasc; and
- Landowners.

14.3 Potential Impacts

An agronomy assessment will be conducted to identify impacts of the proposed development on the agricultural environment. The impact will be assessed at:

- National level;
- Regional level;
- Local level; and
- Individual farm level.

National Level

Impacts that would be of national significance would have an effect on agricultural production or production within a major section of agriculture at a national scale. Such impacts would be unlikely from a single infrastructural project and would more likely occur through policy decisions for example, the imposition on control on fertiliser usage or the imposition of control on emissions in relation to greenhouse gases.

No such national impacts are predicted as a result of this development at this stage.

Regional Level

Impacts that would be of regional significance would have an effect on regional agricultural production or production within a section of agriculture at a regional scale. Impacts might be described as regionally significant where, for example, a large area of land devoted to specialist crop production was required for a development, the absence of which land would have a regional impact on production levels.

No such regional impacts are predicted as a result of this development at this stage.

Local Level

Impacts might be described as locally significant where an enterprise of local importance perhaps with employment consequences is interrupted or has to cease production.

Individual Farm Level

Individual farm impacts include loss of land; impairment of use of retained land; or disturbance during the construction phase of the project or ongoing negative effects on the enterprise.

14.3.1 Potential Construction Phase Impacts

Temporary impacts are those which might occur at individual farm level during the pre-construction phase or during the construction phase.

Each infrastructural project has the potential to give rise to a variety of impacts during the construction phase.

The construction of the proposed development, at the margins of or through agricultural land would be likely to have the following temporary construction impacts:

- Temporary loss of use of land adjacent to the construction site;
- Temporary loss of services (for example water, power, etc.);
- Nuisance caused by increased traffic volume due to construction;
- Nuisance caused by noise emanating from the construction site;
- Nuisance caused by dust emanating from the construction site;
- Impact on shelter;
- Disturbance to farm operations:
- Interruption to drainage systems; and
- Restriction on use of land for specialist crop production or animal husbandry adjacent to construction site.

14.3.2 Potential Operational Phase Impacts

The potential for operational (permanent) impacts exists and may include the following:

- Permanent loss of land with a consequent increase in fixed overheads on retained lands;
- Possible severance of land with an interruption of access to possible severed lands; and
- Injurious affection to the retained land; e.g.
    - Restriction of the use potential of retained lands this can arise where the user of the new infrastructure might suffer risk or damage from activities traditionally carried out on remote farmland, e.g. spraying or some harvesting activities.

Significance of Impacts

In rating the significance of impacts from an agricultural perspective, criteria as recommended by the EPA will be adopted. Impacts will be described as major, moderate or minor. The degree of impact will be assessed having regard to the sensitivity of the receptor and the magnitude and duration of the impact.

14.4 Proposed EIS Methodology & Assessment Scope

It is proposed that an assessment of agronomy will be carried out in accordance with the EPA's current EIS guidance documents and established best practice, and will be tailored specifically to this project based on professional judgement and local circumstance:

The assessment will cover potential impacts on agronomy and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

An assessment of the existing agricultural environment will be carried out through a desktop survey of available land plot mapping. This mapping will include a study area outline for each land parcel and orthophotography mapping with indicative landownership information.

The impact of the proposed scheme on individual farm holdings will be assessed by undertaking meetings and walkover surveys with the landowners/farmers, and discussed in terms of:

- Land take;
- The degree of severance;
- Types of farm enterprise;
- Impact on farm buildings;
- Impact on shelter;
- Disturbance during works; and
- Disturbance post work.

15. Waste

15.1 Introduction

This section refers to unusable or unwanted materials that may arise during the active construction of infrastructure and operation of the proposed development.

15.1.1 Policy & Plan Context

The examination of policy and plan context in terms of construction waste management will involve a combination of local and national policy documents. The following documents will be referred to:

- The EU Waste Framework Directive (2008/98/EC);
- Waste Management Act 1996 as amended;
- Eastern-Midlands Region Waste Management Plan 2015-2021;
- National Hazardous Waste Management Plan 2014-2020;
- Relevant County Development Plans; and
- Relevant Local Area Plans.

15.1.2 Study Area

This proposed project covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the project, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country.

15.2 Potential Impacts

In accordance with the waste hierarchy principle and best practice, the proposed development will operate in accordance with the requirement of preventing the generation of waste where possible. Measures to be implemented across the site to achieve these aims will include, but are not limited to, the following:

- Re-use of excavated materials on site where possible;
- Ordering of appropriate quantities of materials using the “just in time” philosophy;
- Appropriate storage facilities for materials will be identified and provided on site;
- Appropriate handling procedures for materials will be developed to prevent damage; and
- Co-ordination between contractors in the supply of materials and services to avoid repeated and/or redundant deliveries or excavations.

Debris and waste from the site could be a source of nuisance to neighbouring communities, it is also a negative impact on the appearance of the site. Measures that will be taken to ensure the site and surroundings are maintained to a high standard of cleanliness, include but are not limited to the following;

- A regular program of site tidying will be established to ensure a safe and orderly site;
- Debris netting to be erected to prevent materials and equipment being scattered by the wind;
- Food waste will be strictly controlled on all parts of the site; and

- In the event of any litter or debris escaping the site, it will be collected immediately and removed to storage on site, and subsequently disposed of in the normal manner.

15.2.1 Potential Construction Phase Impacts

Potential impacts during construction may include:

- Production of additional waste material, arising from excavating unsuitable material, vegetation, and contaminated soils;
- Excavation of possible contaminated lands, which would require disposal off site at a suitably licensed facility;
- Waste generation from construction may cause a number of direct and indirect impacts on other environmental topics such as air quality (dust, odours), traffic, noise, soils (contaminated land), geology, water, health, etc.; and
- Surplus materials and waste may occur where material supply exceeds material demand.

15.2.2 Potential Operational Phase Impacts

It is envisaged that, once the proposed development is operational, the only waste expected to be developed will be waste sludges from the water treatment process. This waste type will be reoccurring and managed under an appropriate Waste Management Plan. Thermal drying of sludges at the treatment plant prior to disposal at an appropriate licensed waste facility, will minimise the volumes of waste arising.

15.3 Proposed Methodology & Assessment Scope

It is proposed that an assessment of waste generation will be carried out in accordance with the EPA's current EIS guidance documents as well as the below guidelines and established best practice, and will be tailored accordingly based on professional judgement and local circumstance:

- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Waste Projects (2006).

In line with the above guidance, the assessment will cover potential impacts of waste generation and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

Waste streams arising from the construction and operational phases of the proposed development will be identified in addition to identifying required waste management measures for each waste stream.

Significant volumes of excavated material will be generated during the construction phase of the main infrastructure sites. The volumes of excavated material and construction waste material will be calculated and the potential and options for re-use of the material will be assessed, with a view to maximising re-use on site. In the event that material is not suitable for reuse, recommendations for disposal will be provided. The permitting and licensing requirements under the Waste Management Acts 1996 – 2011 will be considered and adhered to.

An appropriate Waste Management Plan will be developed and will assist in the development of waste management policies and procedures for the overall development. This will include details on the management of staff (canteen waste), waste materials generated by the proposed development, packaging waste, off cuts

etc. The plan will describe methods for the storage, segregation and reuse/recovery of waste materials where possible.

16. Material Assets

16.1 Introduction

Material Assets is a broad term and refers to aspects that have material value. Examples include infrastructure such as utilities and roads.

16.2 Baseline Information

The positioning of the proposed infrastructure has taken into consideration all utility infrastructure along the proposed development route. Previous and ongoing consultation, with appropriate stakeholders, will also aid in providing the final option to be published in the Final Options Appraisal Report in summer 2016.

Any utility infrastructure that will be impacted by the proposed development has previously been identified by ongoing desktop assessment. This will continue as the final options appraisal is undertaken and the report published for consultation. Necessary and further consultation with all respective utility providers will continue to ensure all respective impacts, direct or indirect are assessed and managed.

16.3 Potential Impacts

The material assets to be considered as part of the assessment include:

- Major Utilities: Utilities refer to physical infrastructure such as electricity, gas, telecommunications and other communications infrastructure, surface drainage and foul drainage network, water supply and transport infrastructure; and
- Imported Material.

16.3.1 Potential Construction Phase Impacts

Potential impacts during the construction of the proposed development may include:

- The services provided by the respective utility providers is expected to be minimal during the construction phase of the project as the site is likely to be mobile/temporary as the construction phase moves up along the specified treated water pipeline corridor route.
- Impacts associated with the transport of machinery and other materials for the purpose of the works will occur off site, but are still considered part of the impact of the proposed development.

16.3.2 Potential Operational Phase Impacts

It is considered unlikely that there will be any additional impacts during the operational phase which will not have already been considered as part of the construction phase.

16.4 Proposed Methodology & Assessment Scope

It is proposed that an assessment of material assets will be carried out in accordance with the EPA's current EIS guidance documents and established best practice, and will be tailored accordingly based on professional judgement and local circumstance.

The assessment will cover potential impacts on material assets and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the material asset sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;

- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

This section of the EIS will provide a description of the existing major utilities and required imported material in the area, and a statement of the likely significant impacts associated with both the construction and operational phases of the proposed development on these aspects. Measures to mitigate the likely significant impacts of the proposed development are proposed, and residual impacts described.

If necessary, a program for utility relocation during the construction stage will be developed in conjunction with the relevant utility providers. Engineering and/or construction solutions will be developed with the engineering design team and incorporated into the proposed development to mitigate the impacts arising from the construction works. Potential disruption to transport infrastructure will be assessed and a programme detailing any proposed disruption and measures to minimise disruption will be determined.

17. Interactions

For each topic, significant interaction and interdependencies between environmental topics will be outlined in individual environmental topic chapters. Care will be taken in the EIS to ensure that all possible interactions are taken into consideration and cross-referenced.

18. Cumulative impacts

Cumulative impact can cover all aspects of the environment. While a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or significant) in the same geographical area, and occurring at the same time, result in a cumulative impact that is collectively significant. Cumulative impacts will take consideration of existing and/or approved projects.

The cumulative impact section of the EIS will be prepared broadly in accordance with the 'Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions', prepared for the European Commission and the EPA Advice Notes on Current Practice.

19. Alternatives

Directive 2014/52/EU amending the Directive 2011/92/EU requires:

'A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.'

and further states:

'..including, as appropriate, an outline of the likely evolution of the current state of the environment without implementation of the project (baseline scenario), as a means of improving the quality of the environmental impact assessment process and of allowing environmental considerations to be integrated at an early stage in the project's design'.

Alternatives can take various forms all of which will be examined. A number of broad types of alternatives can be considered: "no action" option, alternative locations, alternative routes, alternative processes or equipment, alternative site layouts, alternative operating conditions, construction methodologies, alternative ways of dealing with potential environmental impacts.

The main alternatives to be considered as part of the proposed project will relate to alternative routes, alternative construction methodologies and timing of construction.

20. Conclusion

An Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) will be undertaken for the Water Supply Project Eastern and Midlands Region. An Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) will be prepared for the Final Scheme which will present the findings of the above assessments and will accompany Irish Water's Planning Application to An Bord Pleanála in late 2017. The planning application will be subject to a period of statutory consultation which will provide the public with an opportunity to have their say, following which the Board will determine whether consent should be granted (see project roadmap below).

Consultation with the public, statutory organisations and non-statutory organisations will be undertaken during the Environmental Impact Assessment process. The results of this consultation will be used to inform the EIS and will be incorporated into the project design where practical.

This EIS Scoping Report is intended to outline key issues to be addressed in the preparation of the EIS and the nature and likely scale of the potential environmental impacts that may arise from the proposed scheme.

Scoping ensures that potential environmental impacts are identified at the initial stages of the process while ensuring environmental protection is a key consideration in the development of the project design.

It should be noted that scoping is an ongoing process which does not end at the conclusion of this consultation period but continues throughout the Environmental Impact Assessment (EIA) Process.

Irish Water are now inviting submissions from the public and interested groups/parties on the issues and methodologies to be considered as part of the EIS. The consultation period will run for a period of 14 weeks from the 8th of November 2016 to the 14th of February 2017 inclusive.

To make a submission please use the following contact details:

Email: watersupply@water.ie

Postal Address: Water Supply Project, Merrion House, Merrion Road, Dublin 4.

LoCall: 1890 252 848 (ROI) or 084 5246 5059 (NI)

Website: www.watersupplyproject.ie

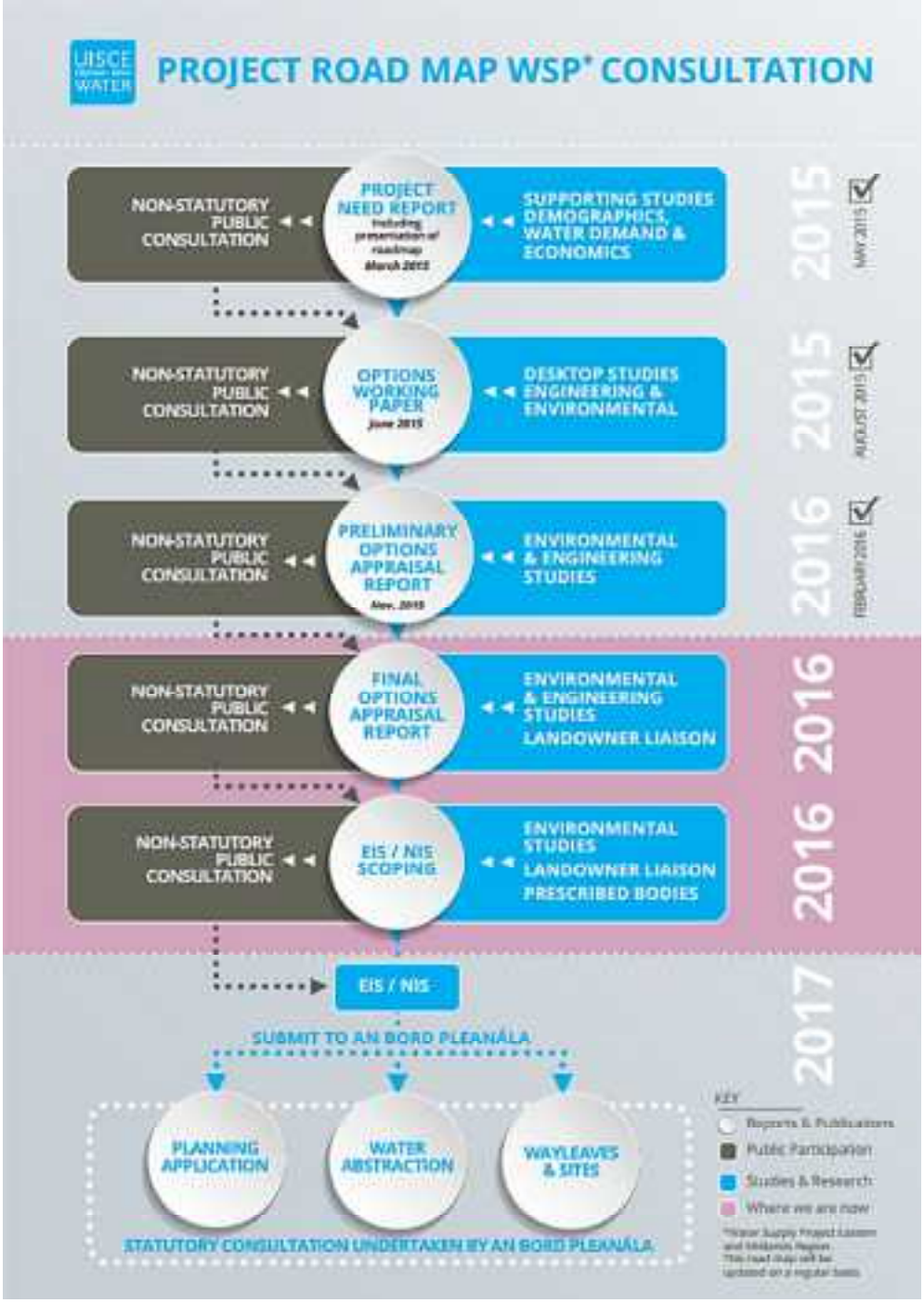
Irish Water would like your views on

- Is there any additional information that should be considered in the development of the Preferred Scheme?
- Are there any additional environmental issues or alternative methodologies that should be taken into consideration in preparing the EIS?
- How would you like Irish Water to communicate with you as the project progresses towards planning approval?

We also welcome all relevant submissions on the project.

A comprehensive engagement strategy will be utilised during the consultation period to ensure the key findings of the report are clearly communicated with the public and interested parties and this will include a number of open days which will be held along the route of the Preferred Scheme (see www.watersupplyproject.ie for further updates).

Following the completion of the consultation period, feedback received will be compiled within a consultation submissions report which will be made available on the project website (www.watersupplyproject.ie).



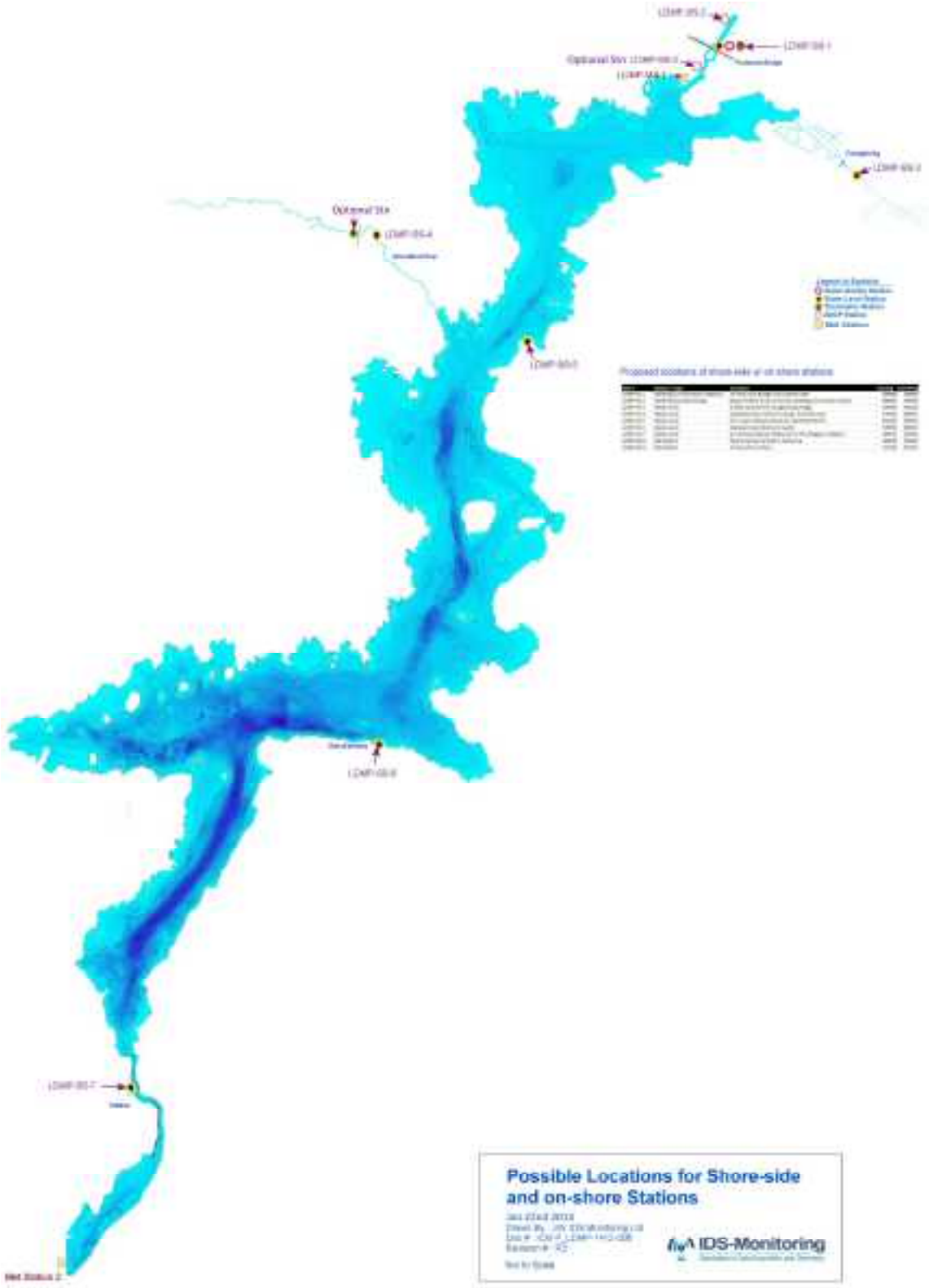
Appendix A. Additional Information

Appendix A-1. Environmental Objectives of the WFD

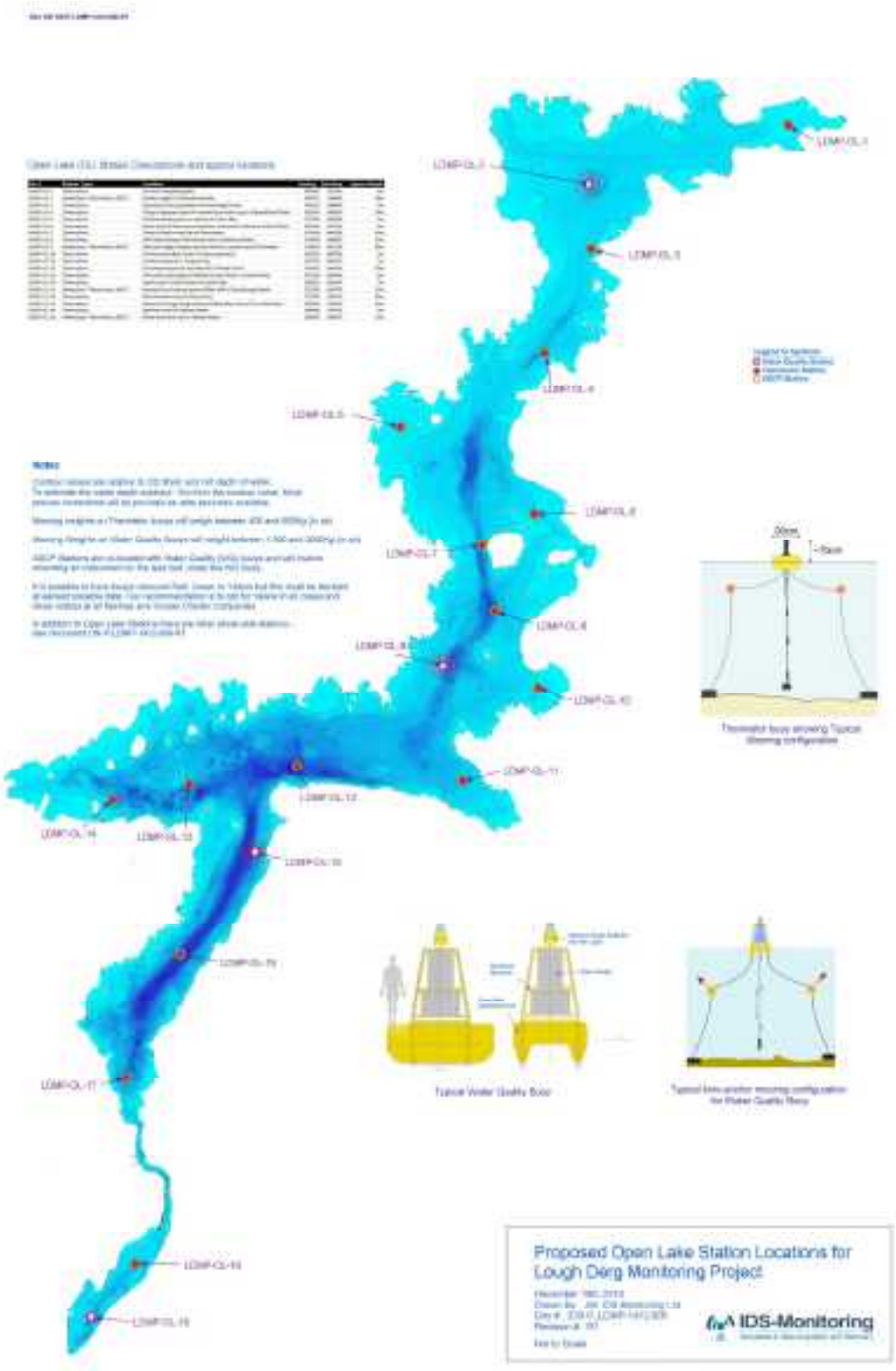
Environmental Objectives	Reference
Surface Water	
Member States shall implement the necessary measures to prevent deterioration of the status of all bodies of surface water.	Article 4.1(a)(i)
Member States shall protect, enhance and restore all bodies of surface water, subject to the application of subparagraph (iii) for artificial and heavily modified bodies of water, with the aim of achieving good surface water status by 2015.	Article 4.1(a)(ii)
Member States shall protect and enhance all artificial and heavily modified bodies of water, with the aim of achieving good ecological potential and good surface water chemical status by 2015.	Article 4.1(a)(iii)
Member States shall implement the necessary measures in accordance with Article 16(1) and (8), with the aim of progressively reducing pollution from priority substances and ceasing or phasing out emissions, discharges and losses of priority hazardous substances.	Article 4.1(a)(iv)
Member States will not be in breach of this Directive when: ▪ failure to achieve good ecological status or, where relevant, good ecological potential or to prevent deterioration in the status of a body of surface water is the result of new modifications to the physical characteristics of a surface water body, or ▪ failure to prevent deterioration from high status to good status of a body of surface water is the result of new sustainable human development activities. and the following conditions are met: ▪ All practicable steps are taken to mitigate the adverse impact on the status of the body of water. ▪ The reasons for those modifications or alterations are specifically set out and explained in the river basin management plan required under Article 13 and the objectives are reviewed every six year. ▪ The reasons for those modifications or alteration are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in paragraph 1 are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development. ▪ The beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.	Article 4.7
Other water bodies	
Member State shall ensure that the application does not permanently exclude or compromise the achievement of the objectives of this Directive in other bodies of water within the same river basin district and is consistent with the implementation of other Community environmental legislation.	Article 4.8
Other EU legislation	
Member State shall ensure that the application of the new provisions guarantees at least the same level of protection as the existing Community legislation.	Article 4.9

Source: Article 4 of the WFD (2000/60/EC) for surface waters.

Appendix A-2. Monitoring Locations – onshore and shore side



Appendix A-3. Monitoring Locations – Open Lake



Appendix A-4. Preferred 200m Pipeline Corridor Watercrossings

EU_CODE	NAME	Water Management	RBD	Hydro Area	WFD Status
IE_SH_25C020500	CAMCOR_030	IE_SH_Little Brosna	Shannon	Lower Shannon	Good
IE_SH_25S020400	SILVER (KILCORMAC)_030	IE_SH_Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25S020200	SILVER (KILCORMAC)_020	IE_SH_Brosna	Shannon	Lower Shannon	Good
IE_SH_25L020600	LITTLE BROSNA_030	IE_SH_Little Brosna	Shannon	Lower Shannon	Good
IE_SH_25N120710	Nenagh Trib 1_010	IE_SH_Nenagh	Shannon	Lower Shannon	Unassigned
IE_SH_25R020200	ROCK (BIRR)_020	IE_SH_Little Brosna	Shannon	Lower Shannon	Unassigned
IE_SH_25J270990	Kyleboher_010	IE_SH_Brosna	Shannon	Lower Shannon	Unassigned
IE_SH_25B020550	BALLYFINBOY_040	IE_SH_Nenagh	Shannon	Lower Shannon	Moderate
IE_SH_25T030100	TULLAMORE_020	IE_SH_Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25K040800	GARRYARD STREAM_010	IE_SH_Nenagh	Shannon	Lower Shannon	Moderate
IE_SH_25T030030	TULLAMORE_010	IE_SH_Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25R020050	ROCK (BIRR)_010	IE_SH_Little Brosna	Shannon	Lower Shannon	Good
IE_SH_25C060340	CLODIAGH (TULLAMORE)_030	IE_SH_Brosna	Shannon	Lower Shannon	Good
IE_SH_25K150085	KILCOMIN STREAM_030	IE_SH_Little Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25K150085	KILCOMIN STREAM_030	IE_SH_Little Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25K150085	KILCOMIN STREAM_030	IE_SH_Little Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25K150085	KILCOMIN STREAM_030	IE_SH_Little Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25K150085	KILCOMIN STREAM_030	IE_SH_Little Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25A040100	ARDGREGANE STREAM_010	IE_SH_LoughDerg	Shannon	Lower Shannon	Moderate
IE_SH_25A040100	ARDGREGANE STREAM_010	IE_SH_LoughDerg	Shannon	Lower Shannon	Moderate
IE_SH_25A040100	ARDGREGANE STREAM_010	IE_SH_LoughDerg	Shannon	Lower Shannon	Moderate
IE_SH_25C130600	CLAREEN STREAM/FUARAWN_020	IE_SH_Little Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25C130600	CLAREEN STREAM/FUARAWN_020	IE_SH_Little Brosna	Shannon	Lower Shannon	Moderate
IE_SH_25K040300	KILMASTULLA_020	IE_SH_Nenagh	Shannon	Lower Shannon	Unassigned
IE_SH_25K040300	KILMASTULLA_020	IE_SH_Nenagh	Shannon	Lower Shannon	Unassigned
IE_SH_25K040300	KILMASTULLA_020	IE_SH_Nenagh	Shannon	Lower Shannon	Unassigned
IE_SH_25K040300	KILMASTULLA_020	IE_SH_Nenagh	Shannon	Lower Shannon	Unassigned
IE_SH_25K040300	KILMASTULLA_020	IE_SH_Nenagh	Shannon	Lower Shannon	Unassigned
IE_SH_25K040300	KILMASTULLA_020	IE_SH_Nenagh	Shannon	Lower Shannon	Unassigned
IE_SH_25K040300	KILMASTULLA_020	IE_SH_Nenagh	Shannon	Lower Shannon	Unassigned
IE_SH_25K040300	KILMASTULLA_020	IE_SH_Nenagh	Shannon	Lower Shannon	Unassigned
IE_SH_25S110100	SHINRONE STREAM_010	IE_SH_Little Brosna	Shannon	Lower Shannon	Poor
IE_SH_25S110100	SHINRONE STREAM_010	IE_SH_Little Brosna	Shannon	Lower Shannon	Poor
IE_SH_25K041000	KILMASTULLA_040	IE_SH_Nenagh	Shannon	Lower Shannon	Good
IE_SH_25K041000	KILMASTULLA_040	IE_SH_Nenagh	Shannon	Lower Shannon	Good
IE_SH_25K041000	KILMASTULLA_040	IE_SH_Nenagh	Shannon	Lower Shannon	Good
IE_SH_25K041000	KILMASTULLA_040	IE_SH_Nenagh	Shannon	Lower Shannon	Good
IE_SH_25M520760	MEELAGHANS_010	IE_SH_Brosna	Shannon	Lower Shannon	Unassigned
IE_SH_25M520760	MEELAGHANS_010	IE_SH_Brosna	Shannon	Lower Shannon	Unassigned
IE_SH_25M520760	MEELAGHANS_010	IE_SH_Brosna	Shannon	Lower Shannon	Unassigned

EU_CODE	NAME	Water Management	RBD	Hydro Area	WFD Status
IE_SH_25N010800	NENAGH_070	IE_SH_Nenagh	Shannon	Lower Shannon	Moderate
IE_SH_25N010800	NENAGH_070	IE_SH_Nenagh	Shannon	Lower Shannon	Moderate
IE_SH_25K040910	KILMASTULLA_030	IE_SH_Nenagh	Shannon	Lower Shannon	Moderate
IE_SH_25K040910	KILMASTULLA_030	IE_SH_Nenagh	Shannon	Lower Shannon	Moderate
IE_SH_25K040910	KILMASTULLA_030	IE_SH_Nenagh	Shannon	Lower Shannon	Moderate
IE_SH_25K040910	KILMASTULLA_030	IE_SH_Nenagh	Shannon	Lower Shannon	Moderate
IE_SH_25C060300	CLODIAGH (TULLAMORE)_020	IE_SH_Brosna	Shannon	Lower Shannon	Good
IE_SH_25C060300	CLODIAGH (TULLAMORE)_020	IE_SH_Brosna	Shannon	Lower Shannon	Good
IE_SH_25C060300	CLODIAGH (TULLAMORE)_020	IE_SH_Brosna	Shannon	Lower Shannon	Good
IE_SH_25C060300	CLODIAGH (TULLAMORE)_020	IE_SH_Brosna	Shannon	Lower Shannon	Good
IE_SH_25C060300	CLODIAGH (TULLAMORE)_020	IE_SH_Brosna	Shannon	Lower Shannon	Good
IE_SH_25A040400	ARDGREGANE STREAM_020	IE_SH_LoughDerg	Shannon	Lower Shannon	Moderate
IE_SH_25A040400	ARDGREGANE STREAM_020	IE_SH_LoughDerg	Shannon	Lower Shannon	Moderate
IE_SH_25A040400	ARDGREGANE STREAM_020	IE_SH_LoughDerg	Shannon	Lower Shannon	Moderate
IE_SH_25A040400	ARDGREGANE STREAM_020	IE_SH_LoughDerg	Shannon	Lower Shannon	Moderate
IE_SH_25A060500	ARDCRONY STREAM_010	IE_SH_Nenagh	Shannon	Lower Shannon	Good
IE_SH_25A060500	ARDCRONY STREAM_010	IE_SH_Nenagh	Shannon	Lower Shannon	Good
IE_SH_25A060500	ARDCRONY STREAM_010	IE_SH_Nenagh	Shannon	Lower Shannon	Good
IE_SH_25A060500	ARDCRONY STREAM_010	IE_SH_Nenagh	Shannon	Lower Shannon	Good
IE_SH_25A060500	ARDCRONY STREAM_010	IE_SH_Nenagh	Shannon	Lower Shannon	Good
IE_SE_14F010100	FIGILE_020	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14A010840	Abbeylough_010	IE_SE_Figile	South Eastern	Barrow	Unassigned
IE_SE_14D060100	DAINGEAN_010	IE_SE_Figile	South Eastern	Barrow	Poor
IE_SE_14E010100	ESKER STREAM_010	IE_SE_Figile	South Eastern	Barrow	Unassigned
IE_SE_14D060400	DAINGEAN_030	IE_SE_Figile	South Eastern	Barrow	Poor
IE_SE_14D060400	DAINGEAN_030	IE_SE_Figile	South Eastern	Barrow	Poor
IE_SE_14E010200	ESKER STREAM_020	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14E010200	ESKER STREAM_020	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14E010200	ESKER STREAM_020	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14E010200	ESKER STREAM_020	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14E010200	ESKER STREAM_020	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14E010200	ESKER STREAM_020	IE_SE_Figile	South	Barrow	Moderate

EU_CODE	NAME	Water Management	RBD	Hydro Area	WFD Status
			Eastern		
IE_SE_14E010200	ESKER STREAM_020	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14F010200	FIGILE_030	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14F010200	FIGILE_030	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14F010200	FIGILE_030	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14F010200	FIGILE_030	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14F010200	FIGILE_030	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14F010200	FIGILE_030	IE_SE_Figile	South Eastern	Barrow	Moderate
IE_SE_14F010061	FIGILE_010	IE_SE_Figile	South Eastern	Barrow	Poor
IE_SE_14F010061	FIGILE_010	IE_SE_Figile	South Eastern	Barrow	Poor
IE_EA_09L011600	LIFFEY_130	IE_EA_Liffey	Eastern	Liffey and Dublin Bay	Good
IE_EA_09C030300	CLONSHANBO_010	IE_EA_Ryewater	Eastern	Liffey and Dublin Bay	Poor
IE_EA_09R140550	REEVES_010	IE_EA_Liffey	Eastern	Liffey and Dublin Bay	Unassigned
IE_EA_09C030600	CLONSHANBO_020	IE_EA_Ryewater	Eastern	Liffey and Dublin Bay	Poor
IE_EA_09L011700	LIFFEY_140	IE_EA_Liffey	Eastern	Liffey and Dublin Bay	Good
IE_EA_09L011700	LIFFEY_140	IE_EA_Liffey	Eastern	Liffey and Dublin Bay	Good
IE_EA_09L011700	LIFFEY_140	IE_EA_Liffey	Eastern	Liffey and Dublin Bay	Good
IE_EA_09L011700	LIFFEY_140	IE_EA_Liffey	Eastern	Liffey and Dublin Bay	Good
IE_EA_09L011700	LIFFEY_140	IE_EA_Liffey	Eastern	Liffey and Dublin Bay	Good
IE_EA_09L011700	LIFFEY_140	IE_EA_Liffey	Eastern	Liffey and Dublin Bay	Good
IE_EA_07B020060	BLACKWATER (LONGWOOD)_010	IE_EA_BlackwaterSouth	Eastern	Boyne	Poor
IE_EA_07B020060	BLACKWATER (LONGWOOD)_010	IE_EA_BlackwaterSouth	Eastern	Boyne	Poor
IE_EA_07B020060	BLACKWATER (LONGWOOD)_010	IE_EA_BlackwaterSouth	Eastern	Boyne	Poor
IE_EA_07B020060	BLACKWATER (LONGWOOD)_010	IE_EA_BlackwaterSouth	Eastern	Boyne	Poor
IE_EA_07B020060	BLACKWATER (LONGWOOD)_010	IE_EA_BlackwaterSouth	Eastern	Boyne	Poor
IE_EA_07B020060	BLACKWATER (LONGWOOD)_010	IE_EA_BlackwaterSouth	Eastern	Boyne	Poor
IE_EA_07B020060	BLACKWATER (LONGWOOD)_010	IE_EA_BlackwaterSouth	Eastern	Boyne	Poor

EU_CODE	NAME	Water Management	RBD	Hydro Area	WFD Status
IE_EA_07B020060	BLACKWATER (LONGWOOD)_010	IE_EA_BlackwaterSouth	Eastern	Boyne	Poor
IE_EA_07B020060	BLACKWATER (LONGWOOD)_010	IE_EA_BlackwaterSouth	Eastern	Boyne	Poor
IE_EA_09L020035	LYREEN_010	IE_EA_Ryewater	Eastern	Liffey and Dublin Bay	Poor
IE_EA_09L020035	LYREEN_010	IE_EA_Ryewater	Eastern	Liffey and Dublin Bay	Poor
IE_EA_09L020035	LYREEN_010	IE_EA_Ryewater	Eastern	Liffey and Dublin Bay	Poor
IE_EA_09L020035	LYREEN_010	IE_EA_Ryewater	Eastern	Liffey and Dublin Bay	Poor

Appendix A-4. Summary of Draft Scoping Feedback

Water Supply Project: Eastern & Midlands Region				
	Stakeholder	**Email/Letter/Meeting**	**Date Received**	**Principal Submission Topics**
1	**Department of Agriculture, Food and the Marine**	Email	31st May 2016	1. Interruption of Land Drainage systems is potentially an issue post construction, if not properly mitigated during the construction phase.
2	**EPA**	Email	26th May 2016	1. Understood that orthophosphate dosing may be part of the treatment regime and that this water would be provided to urban areas along the benefitting corridor. 2. IW would need to consider the impact of providing this water to the ecological status of the water bodies to which this water would subsequently be discharged after use. 3. Tables 10.1 and 10.2 can be updated from June2015. 4. Table 10.2 - crossing points assessments needed. 5. Section 10.2.2 - EPA may need access to information for 2nd cycle of RBMP. 6. New RBMPs consultation end of 2016 - IW may have to input into public consultation. 7. Page 70-71 well survey. 8. Sections 9.3.1 and 9.3.2 - also potential impacts to water supplies and GW flow to wetlands. 9. Section 10.1.1 - should include GW regs in Ch. 10 as well as Ch. 9
3	**Fáilte Ireland**	Email	20th May 2016	1. Tourism and the environment in Ireland - largely based around environmental factors i.e. scenery, un spoilt environment, flora and fauna. 2. Sets out how factors are considered within and EIS, and set out under EIA topic headings and how they interact with tourism. 3. Project Factors affecting Tourism/existing tourism: (a) New Developments, (b) Social Considerations, (c) Land-uses and activities. 4. Mitigating adverse impact on Tourism

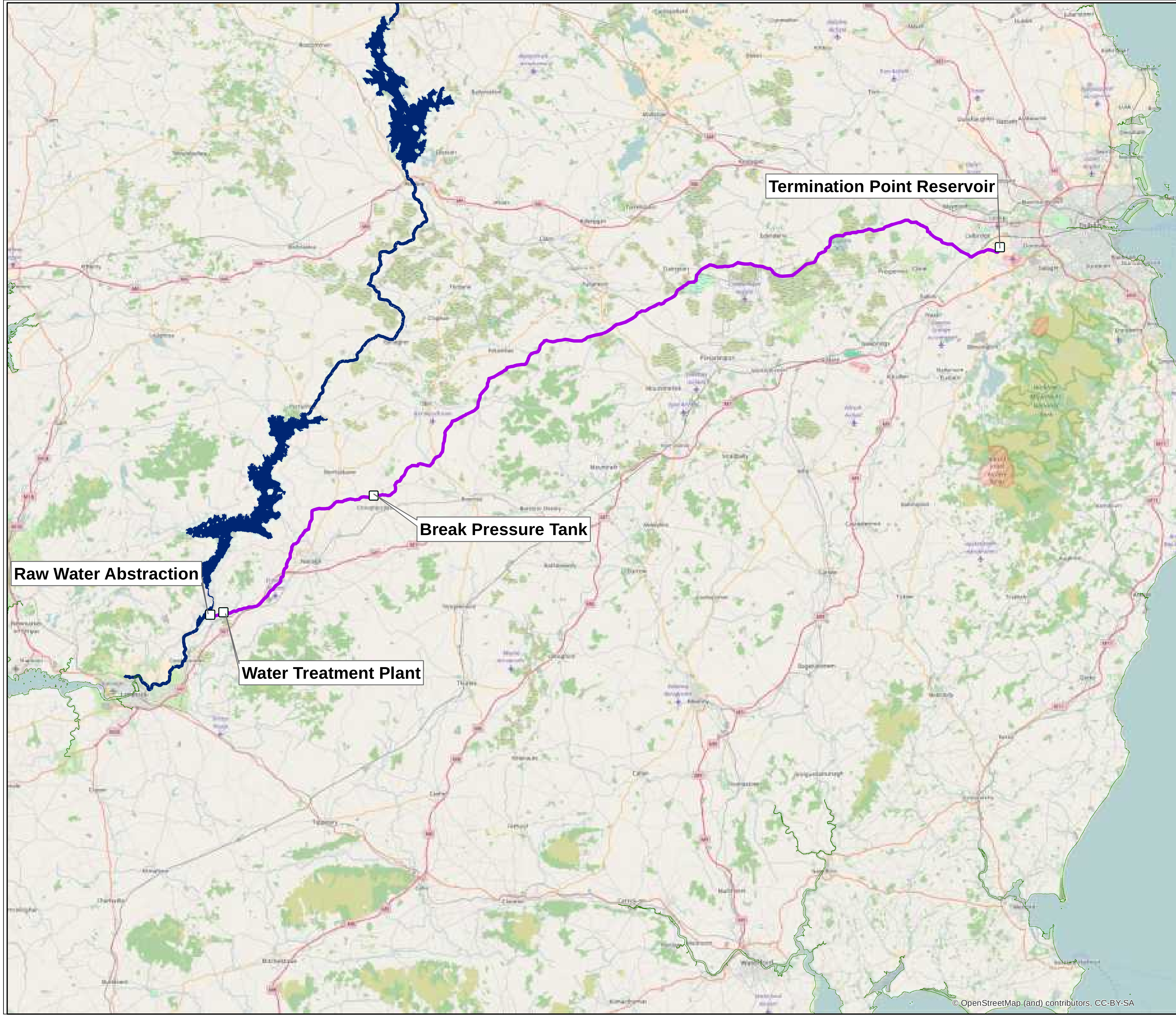
Water Supply Project: Eastern & Midlands Region				
	Stakeholder	**Email/Letter/Meeting**	**Date Received**	**Principal Submission Topics**
4	**Inland Fisheries Ireland (IFI)**	Email & Meeting	30th May 2016 & 30th September 2016	1. WFD - impacts on water quality, quantity, ecology and hydrog. 2. Impact of abstraction on assimilative capacity in the R. Shannon downstream of the Parteen should be reviewed within the EIS. 3. Noise and Vibration - fish should be regarded. The SSRS does not provide a useful and robust result as Q values. 4. Electro-fishing/fisheries/surveys should be licensed by DCCCNR. 5. Water abstraction for dust suppression is an issue. 6. Implications for biological diversity is essential. 7. Potential Operational Phase Impacts. 8. Impact of light fish at abstraction. 9. Impact to low lake levels. 10. Amenity - boating, safety 11. Level of treatment and the water treatment plant 12. potential improvement to current demands including abstraction rates on the Vartry 13. pipeline cleaning and assessment of impact of zebra mussels 14. no and location of river crossings 15. Temporary crossings to be addressed in the EIS 16. impacts of invasive species 17. Management of groundwater intrusions within open trenching 18. Soil management and waste management
5	**Tipperary County Council**	Email	31st May 2016	Issues from March Submission. No further observations. 1. Water Services Issues - Group Water Schemes in Co. Tipperary. 2. Public Water Schemes - interaction with Public Water Schemes - Newport/Ballina, Nenagh, Roscrea, Borrisokane, Cloughjordan, Castlecranna, Lorrha/Rathcabbin. 3. Group Water Schemes. 4. Road Issues - already creaking infrastructure. Construction movements/haulage placing pressure on bridges. Recommend full dilapidation survey. Impacts to tourism in Ballina/Killaloe. Will not grant any road closure on the main roads into Ballina. 5. Environmental Issues - waste, noise, pollution, disposal of material, SPA, SAC, NHA etc. 6. Community Gain - gains package.

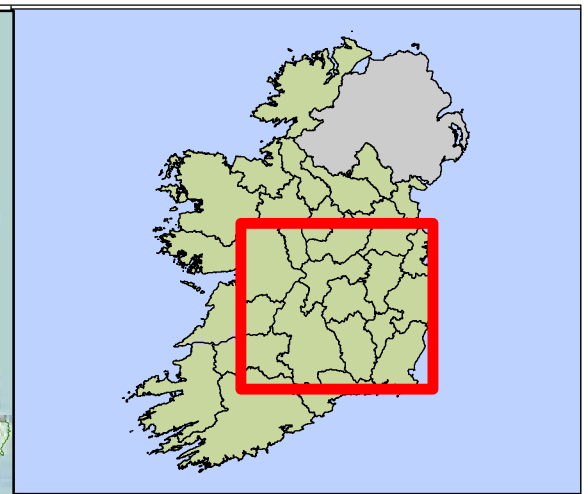
Water Supply Project: Eastern & Midlands Region				
	Stakeholder	**Email/Letter/Meeting**	**Date Received**	**Principal Submission Topics**
6	**Transport Infrastructure Ireland (TII)**	Letter	27th May 2016	1. Several potential interfaces with National Road Network. (a) M7 - drawing 2.2 (b) M7 - drawing 2.3 (C) N52 - drawing 2.4 (d) N62 - drawing 2.6 (e) N80 - drawing 2.10. 2. Potential conflict with future road network. 3. Request consult with relevant Co. Co. 4. National Roads and Policy 5. Crossings: above or below motorway subject to agreement of TII and Co. Co. 6. Traffic Management: Traffic and Transport Assessment needed. 7. Environmental Issues: dust and other material deposition. 8. TII would welcome further consultation and suggest Irish Water develop a protocol to address this and future projects.
7	**Waterways Ireland**	Email	31st May 2016	1. Pipe supply line to cross at the Grand Canal at Ticknevin Co. Kildare - BnM Factory. 2. This section is still infested with invasive aquatic plant Crassula Helmsii. 3. WI should be consulted if the pipeline is to be cut into the canal rather than drilled/bored under the canal - Bio-security issues. 4. Concerns about the proposed crossing west of Hazelhatch bridge - drawing 2.16 and west of Hamilton Bridge, Ticknevin. 5. IW should be aware of the policy adopted by WI for sch. canal crossings - namely (a) Works carried out between Nov- Feb and (b) Provide capacity to allow max flow 2.5m3 of water through works at all times.
8	**Iarnrod Eireann**	Email	26th May 2016	1. Pipeline running close to railway lines at 2 locations - Limerick and Cork line. And actual crossing point on Galway line. 2. Will pipeline works disrupt rail services - esp. the Galway line? 3. IE is looking for clarity on the above and consultation at earliest possible stage.
9	**South Dublin County Council**	Email	2nd June 2016	1. Concerned that the location of the reservoir in its proposed location and elevation, will pose operational difficulties in supplying water to lands in the immediate vicinity.
10	**Department of Arts, Heritage and**	Email	13th June 2016	1. Shipwrecks and Underwater archeology.2. Licensing requirements for underwater surveys. 3. The Underway

Water Supply Project: Eastern & Midlands Region				
	Stakeholder	**Email/Letter/Meeting**	**Date Received**	**Principal Submission Topics**
	The Gaeltacht			Archaeology Unit (UAU) - inventory of shipwrecks.
11	**Kildare County Council**	Letter	14th June 2016	1. Noted the Kildare County Development Plans 2011-2017 & Draft Kildare County Development Plan 2017-2023. 2. Air Quality - cover all potential impacts. 3. Noise and Vibration – describe existing conditions and all potential impacts. 4. Landscape and Visual – EIS should have regard to the County Landscape Character Areas. 5. Archaeology, Cultural Heritage and Architectural Heritage – direct and indirect impacts. 6. Soils, Geology and Hydrology – potential impacts during construction and operations. 7. Water – information on all watercourse crossings. 8. Agronomy – Impact to EU schemes. 9. Waste – Waste Management Act 1996. 10. Cumulative Impact – Overall development is required on a range of receptors. 11. Community Gain – Outline clear proposals in relation to the public consultation initiatives proposed and detail community involvement initiatives proposed.
12	**Laois County Council**	Email	16th June 2016	1. Sub-Option - Parteen Weir and Storage at Garryhinch. 2. Matrix of impacts of the four options under consideration in the POAR. 3. The EIS draft Scoping Report in advance of the FOAR Report. 4. EIS scope and benefitting corridors. 6. Planning and Development (Strategic Infrastructure) Act 2006 - fund. 7. Cumulative impacts assessment. 9. Air quality - Greenhouse gas emissions arising from the construction or operational phases. 10. Soil, geology and hydrogeology - Extraction activities related to the development. 10. Assessment of vulnerable groundwater bodies. 11. Potential impact on groundwater levels, well yields and groundwater quality. 12. WFD catchment characterisation. 13. Laois County Council requests that it is included in the list of Local Authorities that will be consulted in respect of traffic and transport impacts. 14. Traffic and

Water Supply Project: Eastern & Midlands Region				
	Stakeholder	**Email/Letter/Meeting**	**Date Received**	**Principal Submission Topics**
				transport should include the emissions of greenhouse gases arising from the construction phase in particular. 15. Road safety impacts on road users, and on vulnerable road users - county roads 16. Amenity in Section 12.2.1 and 12.3.1 should include an assessment of the impacts by traffic and transport, including the impact from a road safety perspective. 17. Section 13.3.1 should refer to the road safety impacts as well as the nuisance created by traffic volume during construction.
13	**National Parks and Wildlife Service**	Meeting	25th August 2016	1. Desalination Option. 2. SEA review and water re-use. 3. DAU to be the reference point for contact. 4. Consultation with Old River Shannon Research Group. 5. Formal ABP EIA Scoping Process. 6 NIS Scoping. 7. Red line boundary and inclusion of all projects elements. 8. Water demand and drought conditions. 8. Orthophosphate dosing. 9. 95th percentile to 100th percentile flow. 9. Alternative options. 10. Study Area Extent and benefiting corridor. 11. Northern abstraction options and evidence base for their non-preference. 12. Benthic Studies. 13. Mesh system for design. 14. Annex I priority types. 15. IPPC licence in Bord na Mona lands.16. Works during the bird breeding season. 17. Waste management plans.

Appendix B. Drawings





Legend

Preferred 200m Pipeline Corridor

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	26/10/2016	Draft Issue	PW	CC	CC	MG

JACOBS TOBIN

Client

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Project Overview

Drawing Status

Issued

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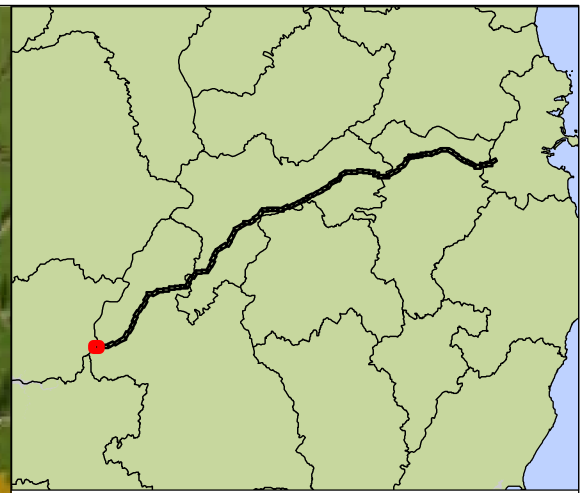
Drawing No.

1

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Key

- Least Constrained Raw Water Abstraction Site
- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Special Area of Conservation
- Woodland_Habitats
- Lakes
- Forestry
- Native Woodland Survey
- Semi Natural Grasslands
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

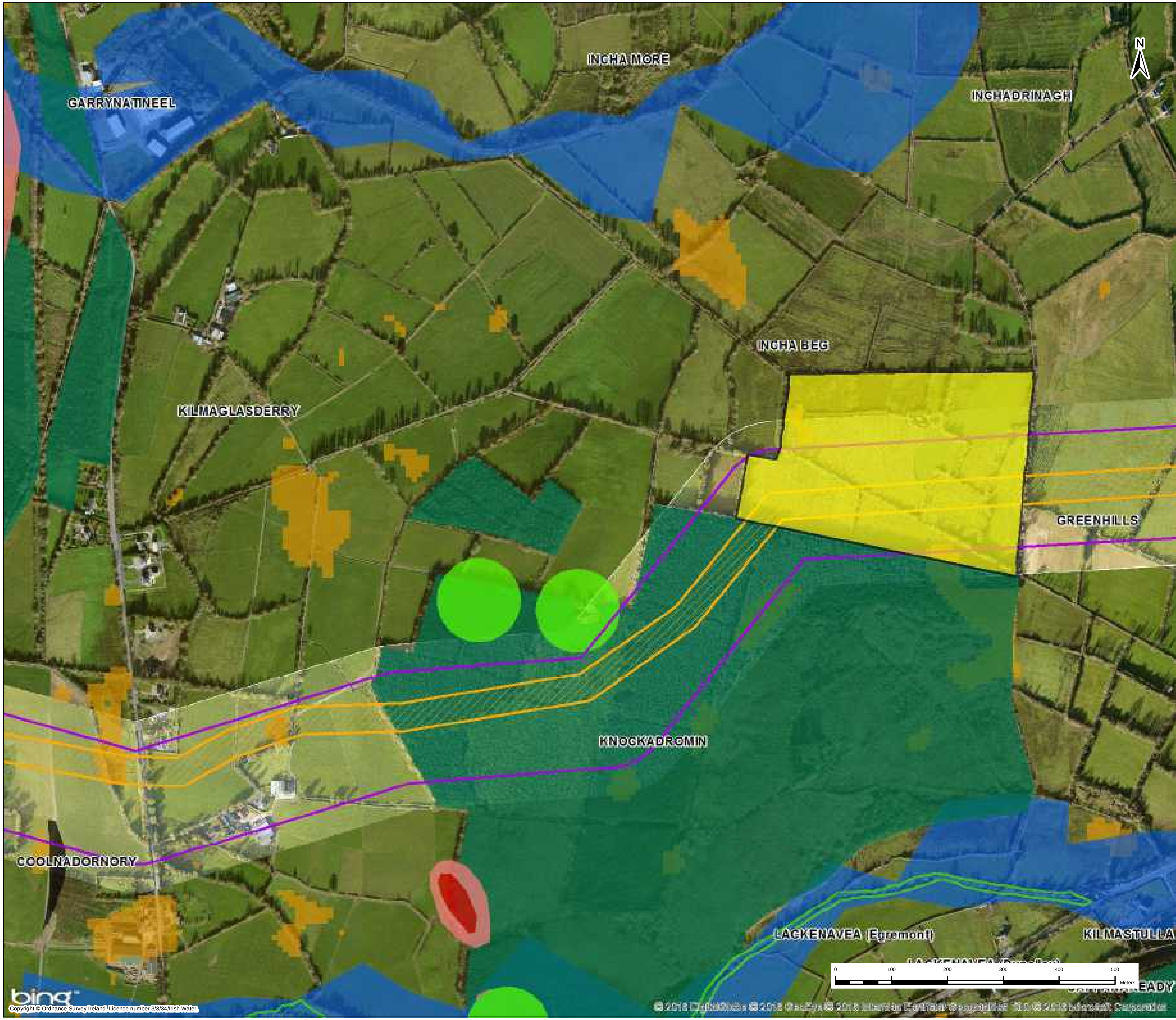
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

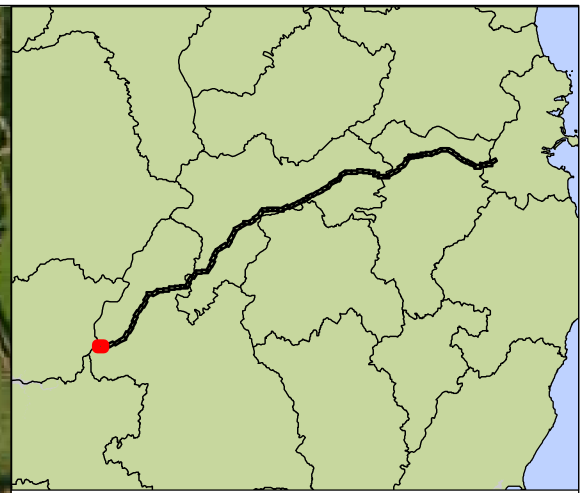
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.1		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Least Constrained Water Treatment Plant Site
- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Special Area of Conservation
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

Project

Water Supply Project - Eastern and Midlands Region

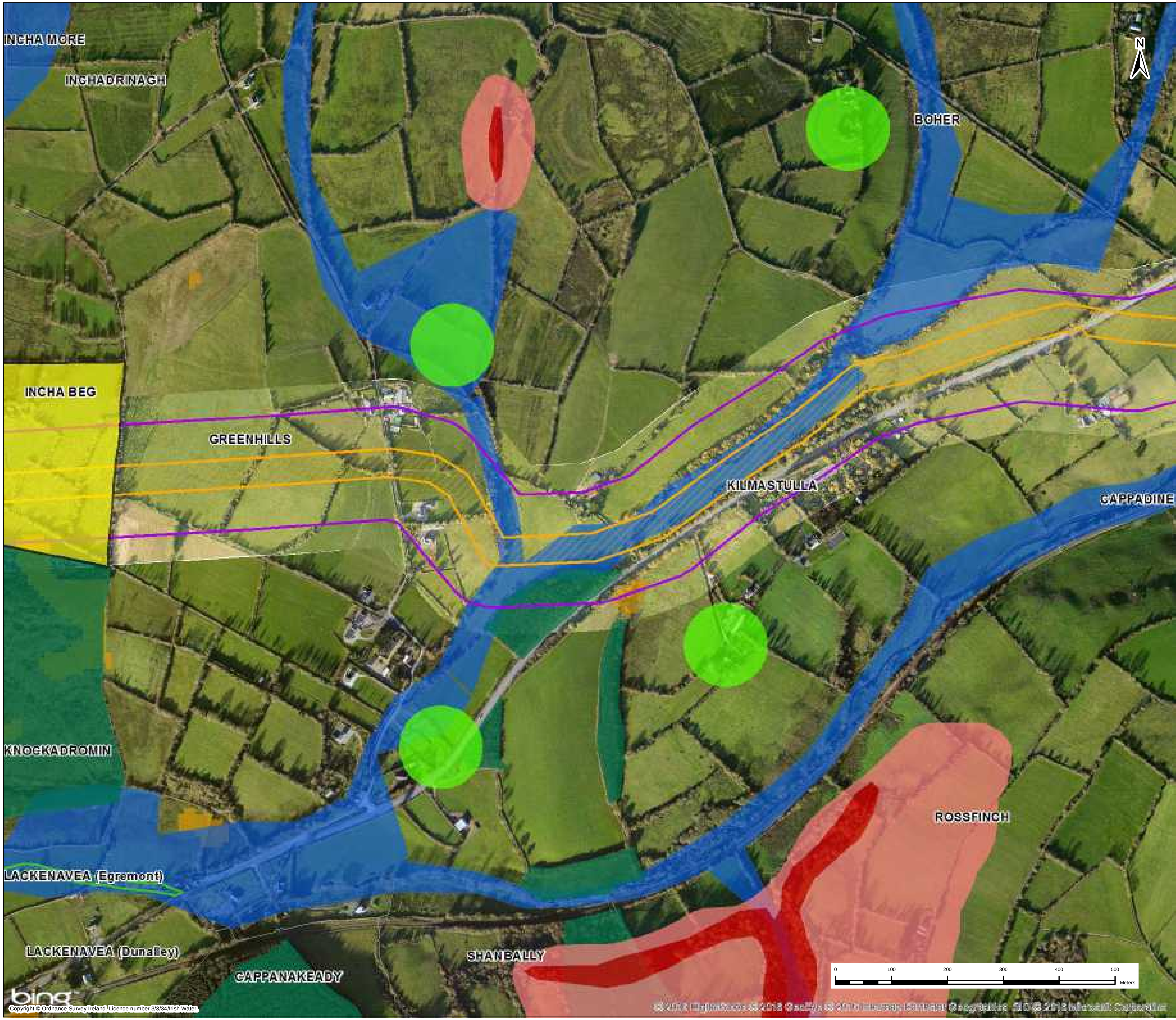
Drawing Title

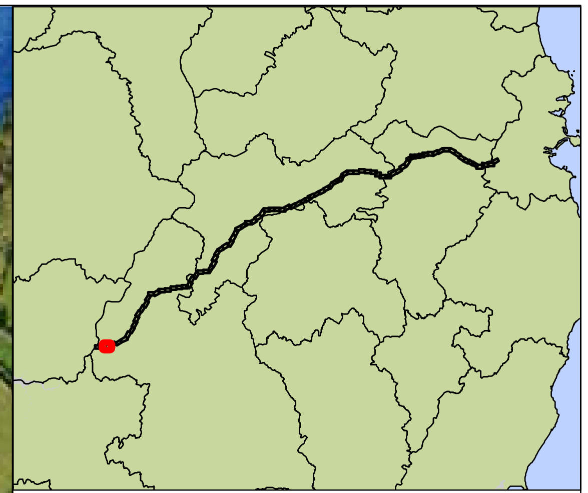
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.2		





Key

- Least Constrained Water Treatment Plant Site
- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Special Area of Conservation
- Forestry
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	App'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
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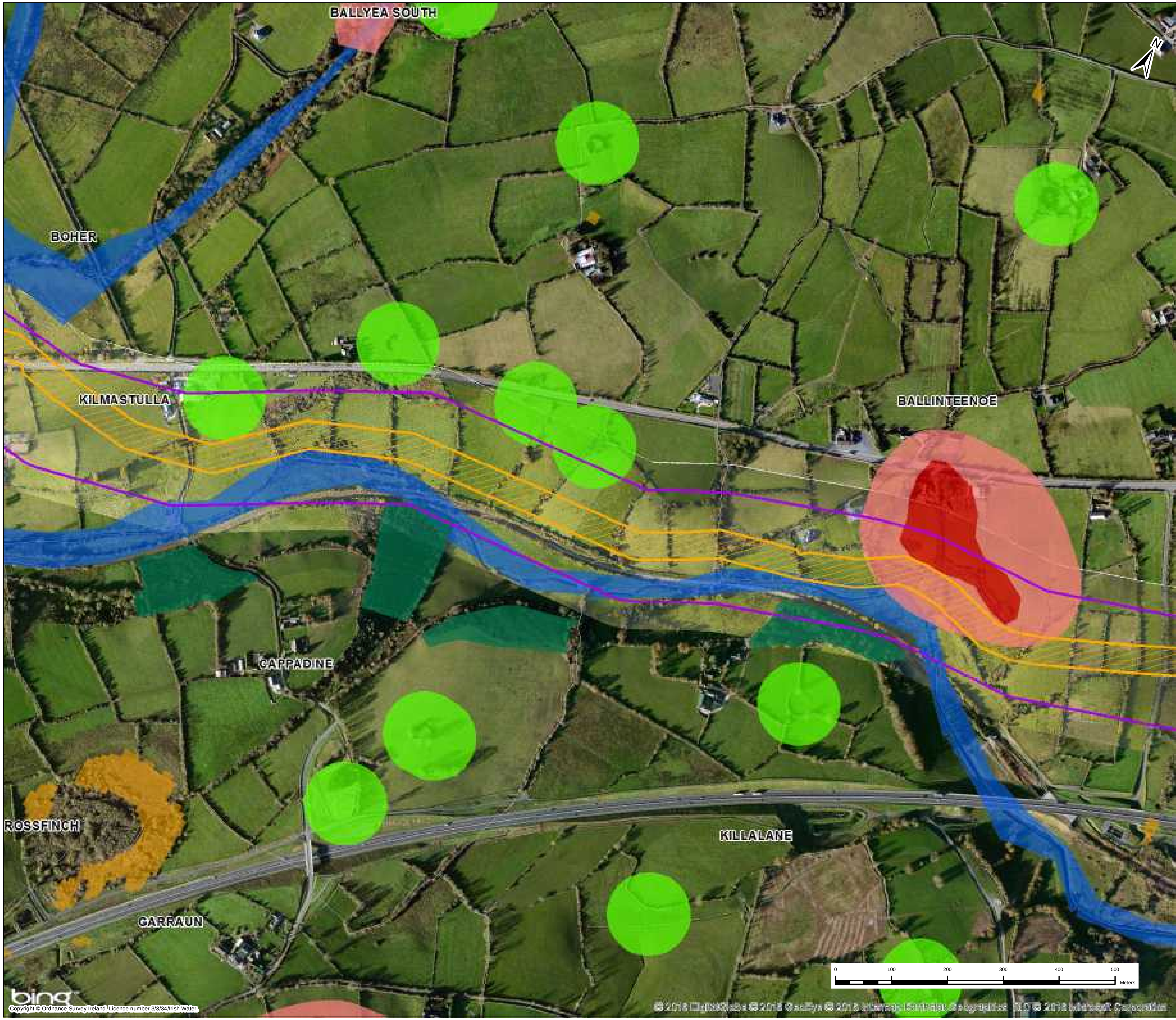
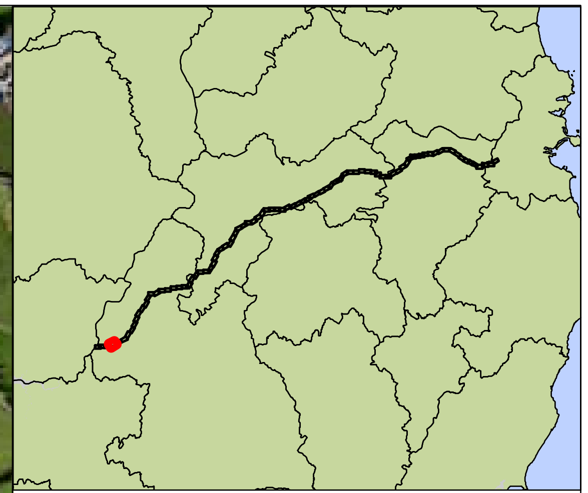
Filepath			
Drawing No.	2.3		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

Client

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

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Jacobs No.	32105801	Client No.	WSP1
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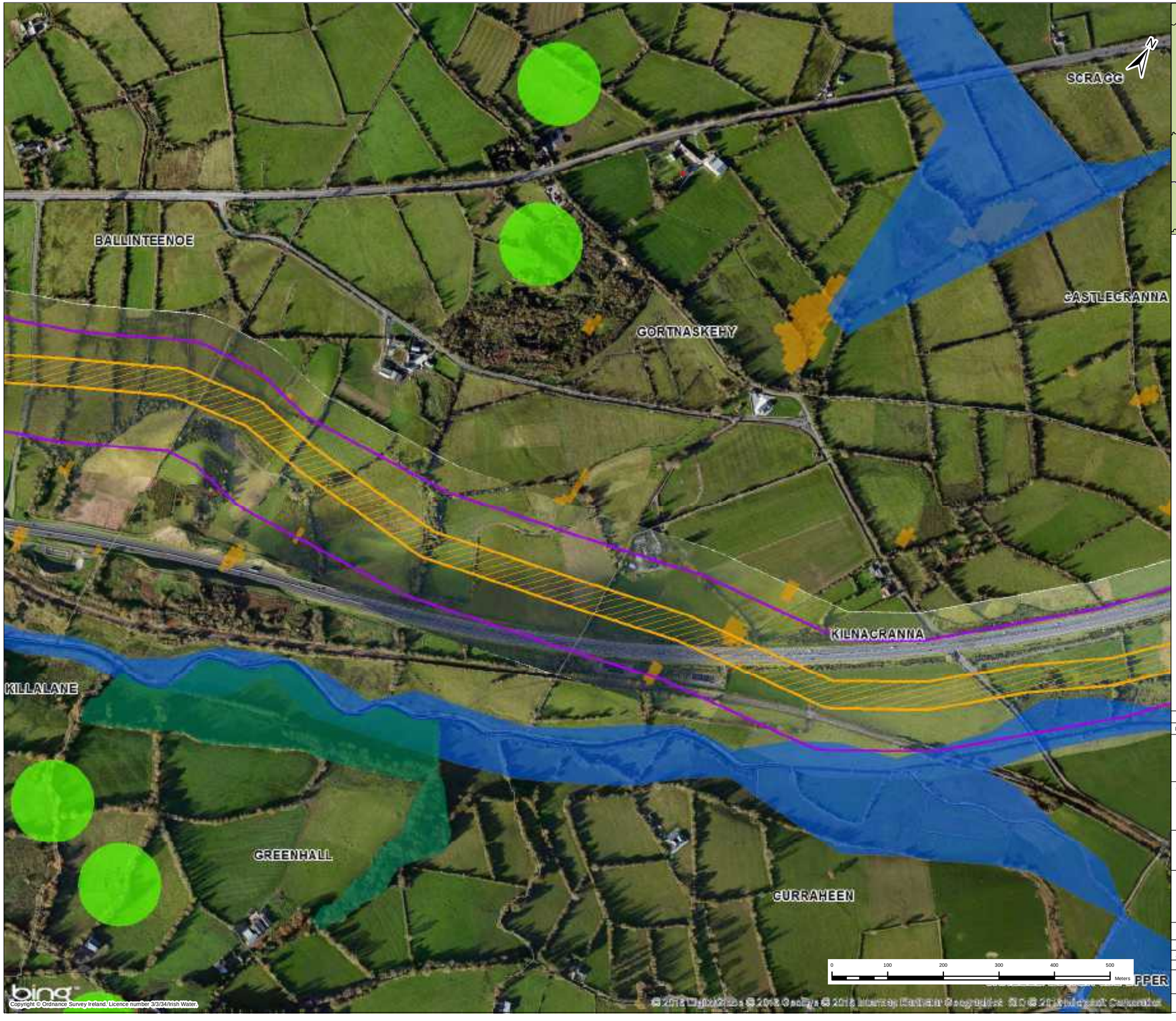
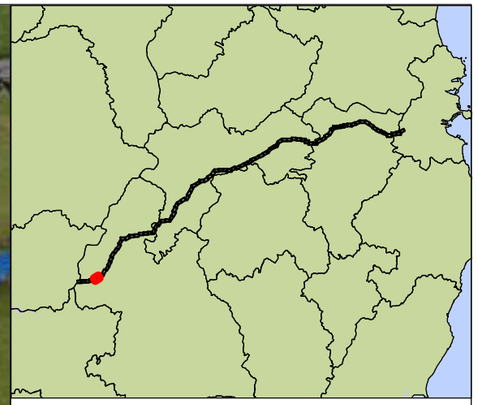
Drawing No. 2.4





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- RPS__9_Counties
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client: UISCE EIREANN WATER

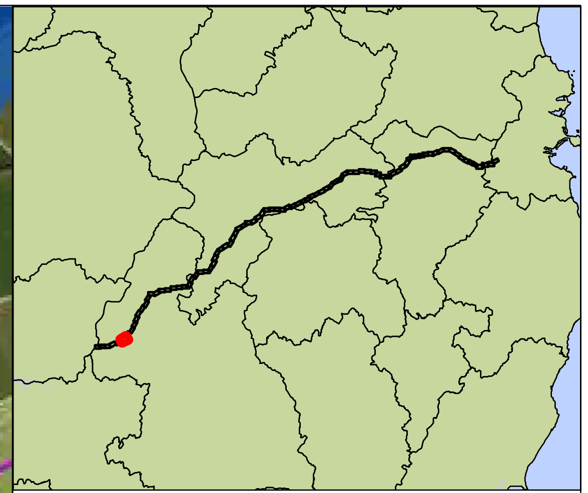
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.: 2.5



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- MINES_SiteBoundaries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
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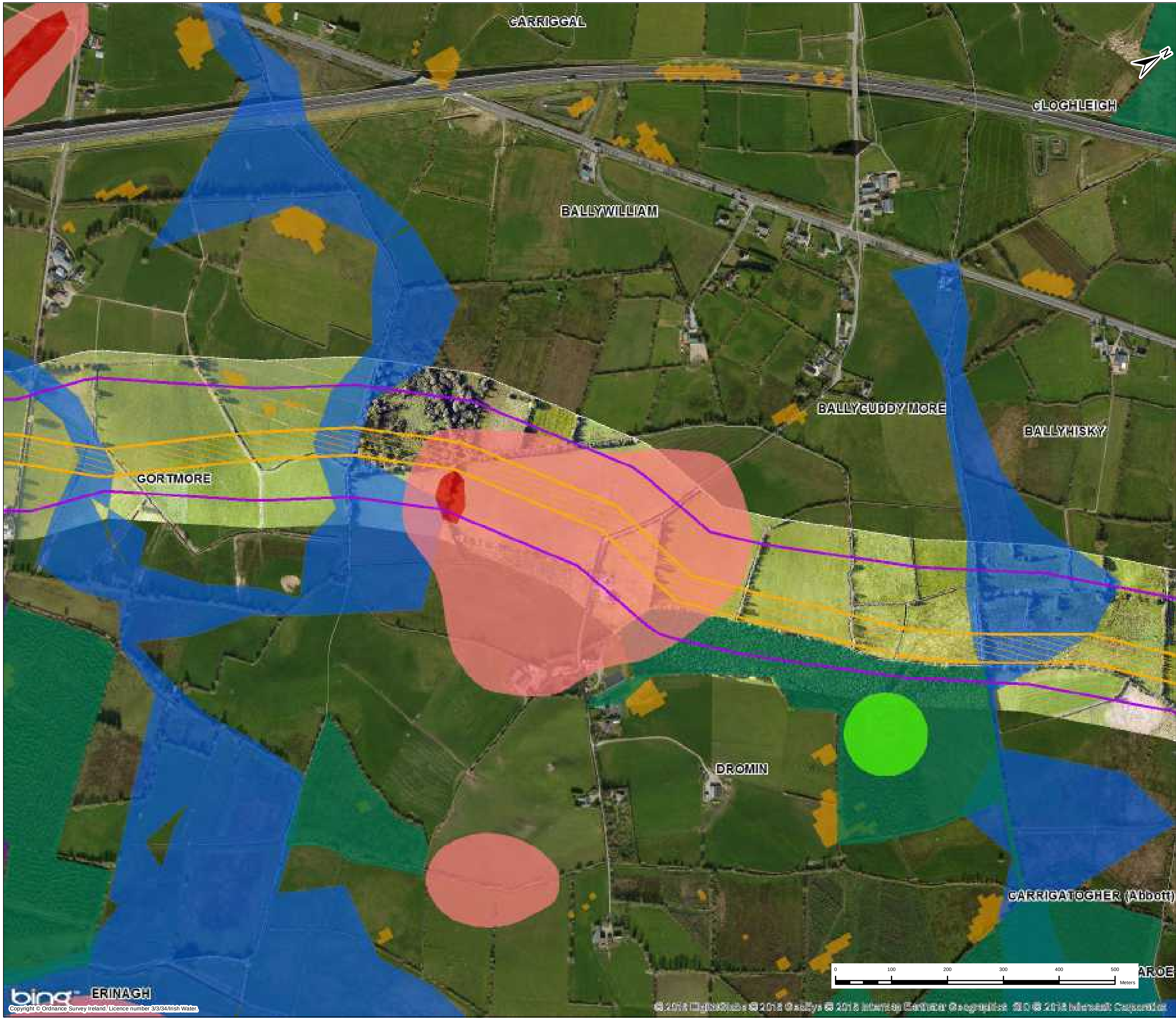

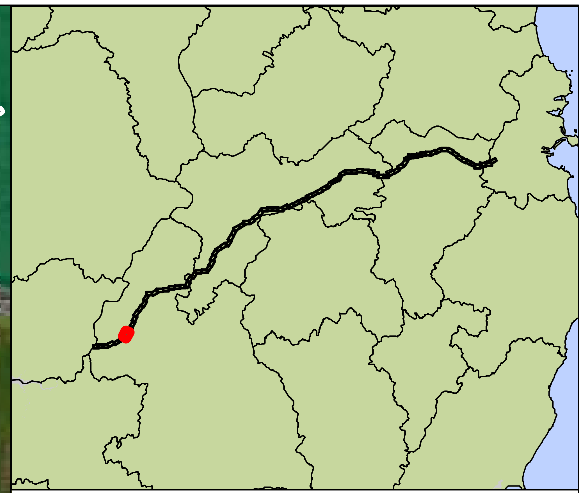

Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- MINES_SiteBoundaries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client
UISCE WATER

Project
Water Supply Project - Eastern and Midlands Region

Drawing Title
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status
For Issue

Scale @A3	1:6,500		DO NOT SCALE
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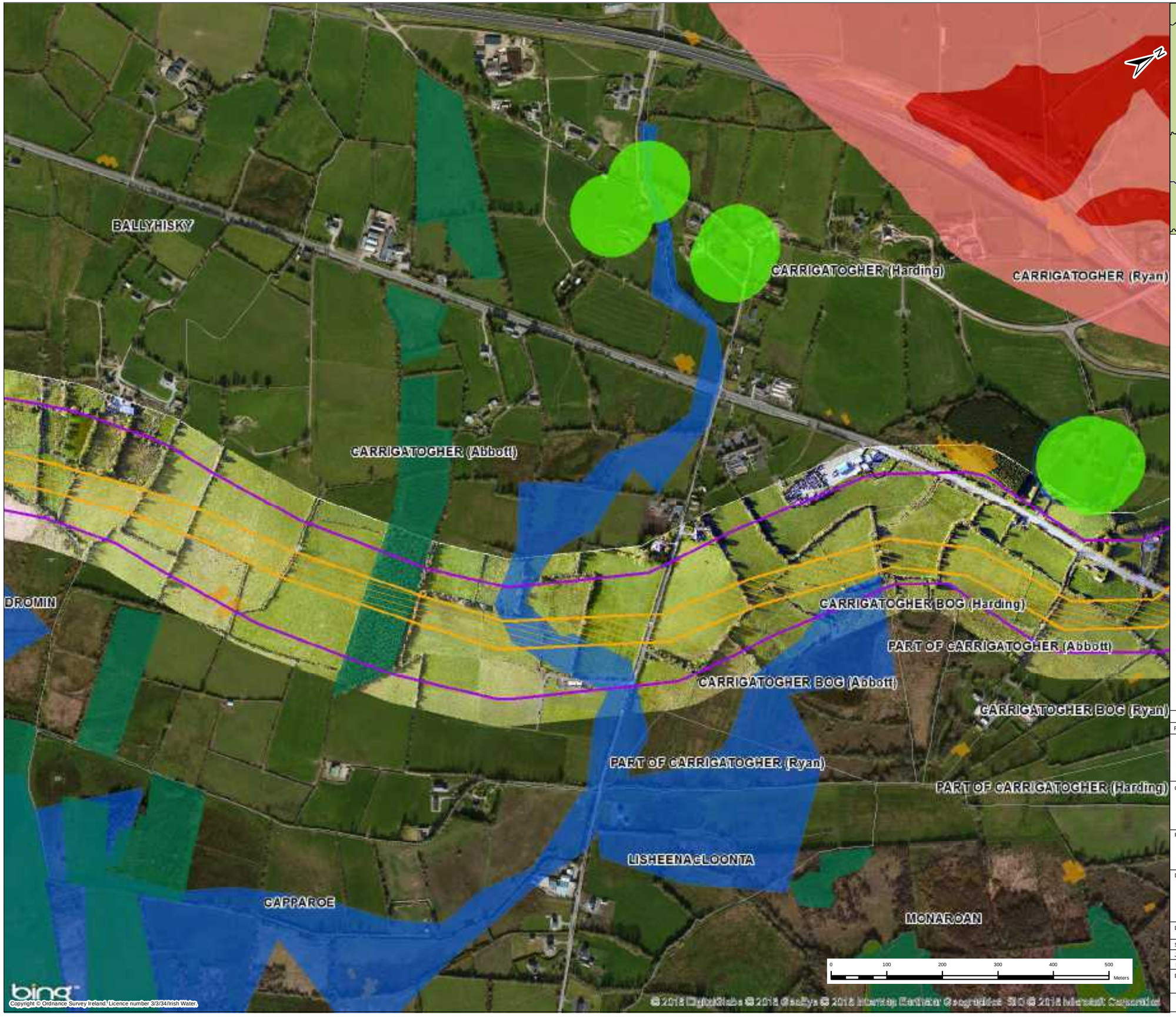
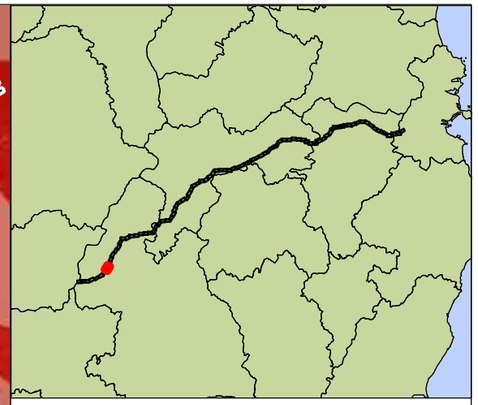
Filepath			
Drawing No.	2.7		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

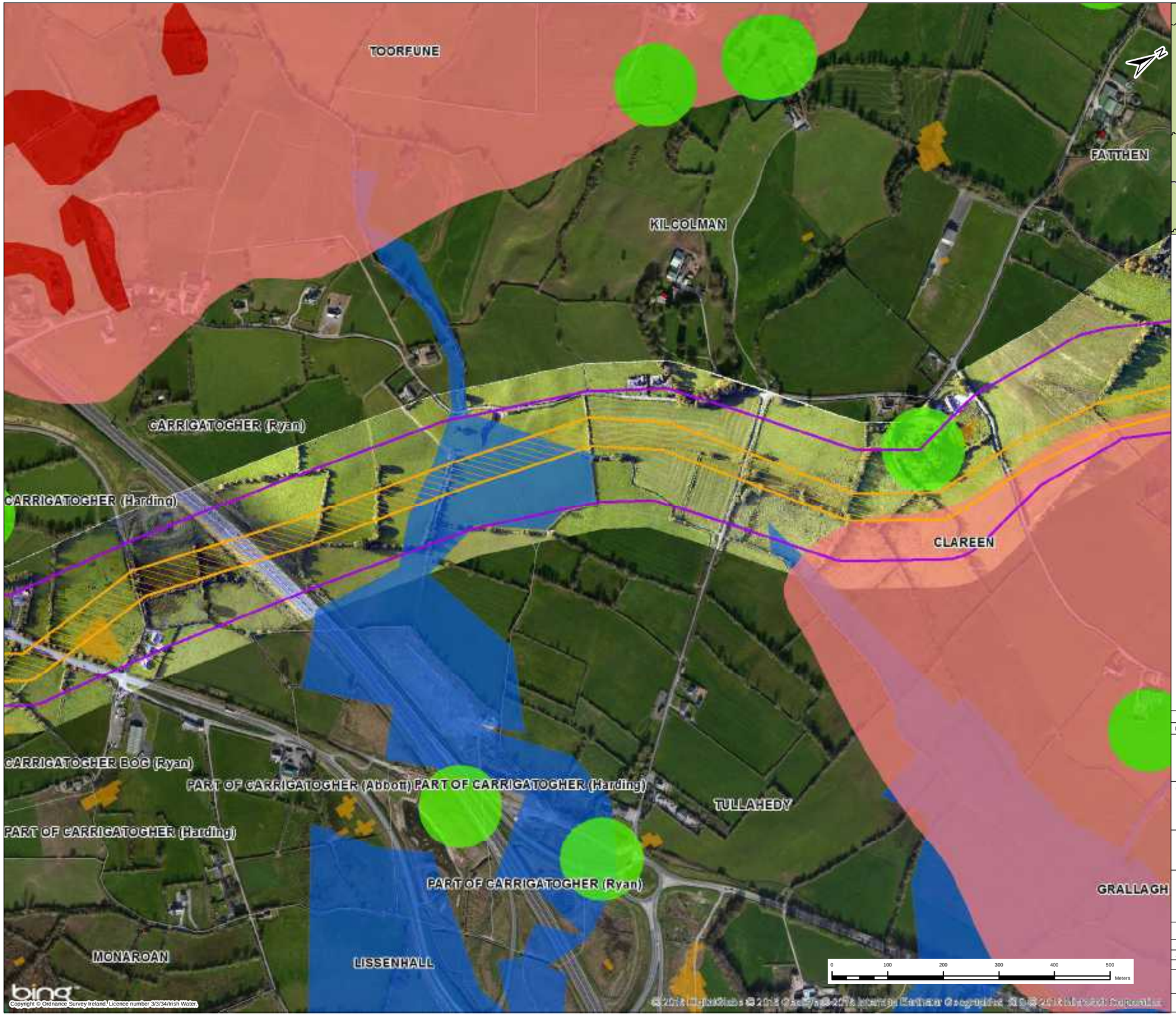
Client: UISCE EIREANN WATER

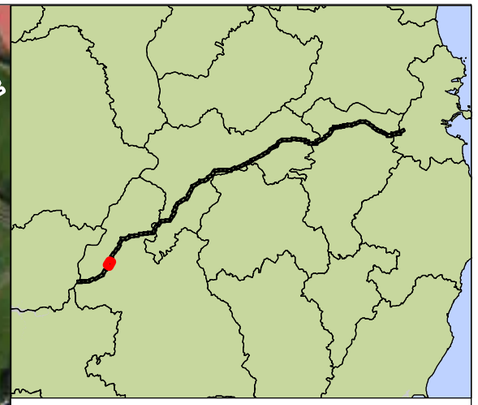
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.8		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client: UISCE EIREANN WATER

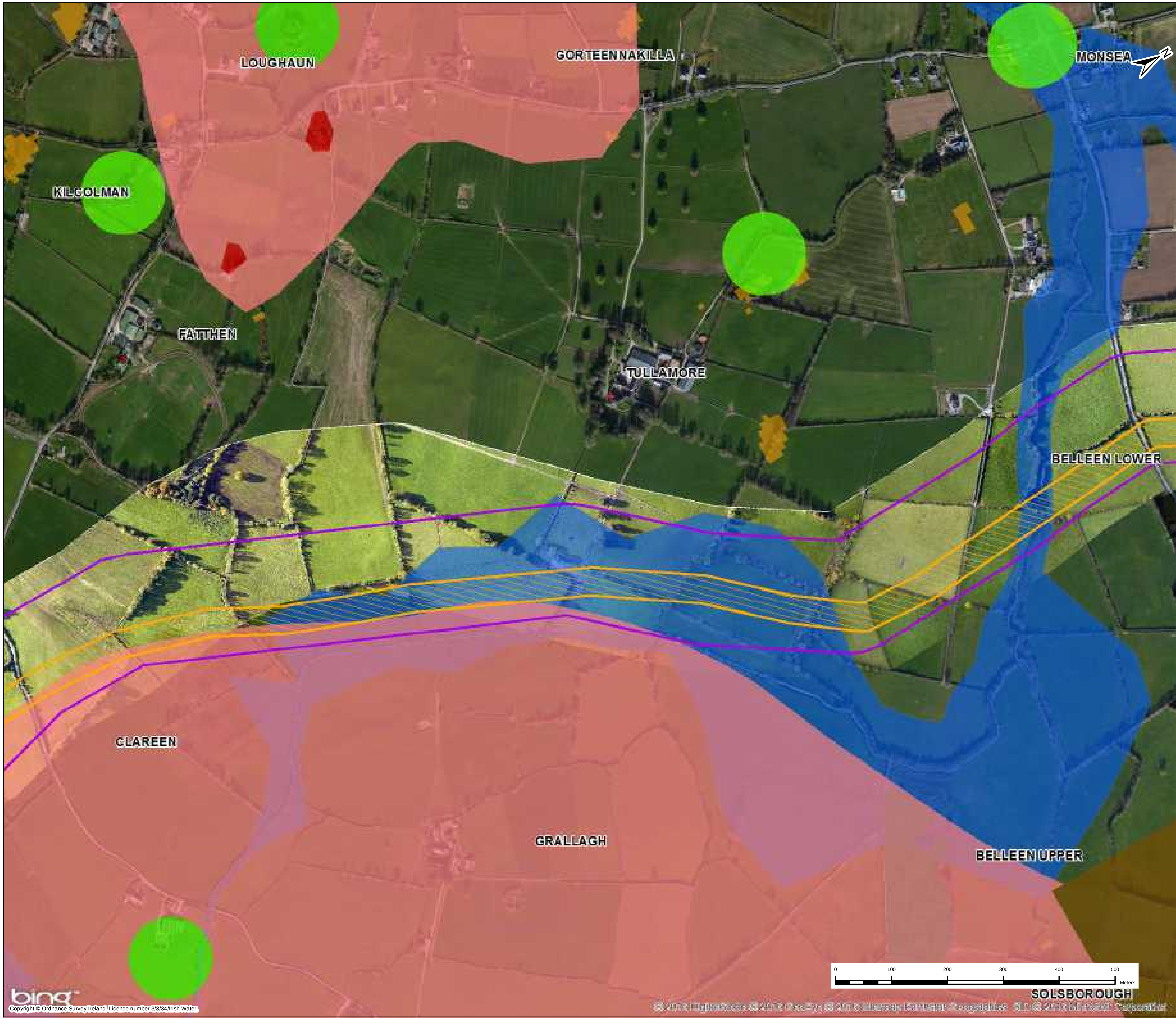
Project: Water Supply Project - Eastern and Midlands Region

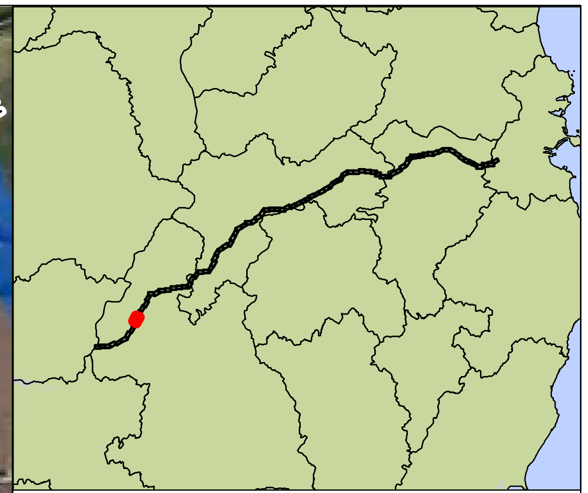
Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.: 2.9





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Building Density >100 Properties per km^2
- Settlements
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Forestry
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

1	03/11/2016	For Issue	PW	CK	ND	MG
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

JACOBS TOBIN

Client

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
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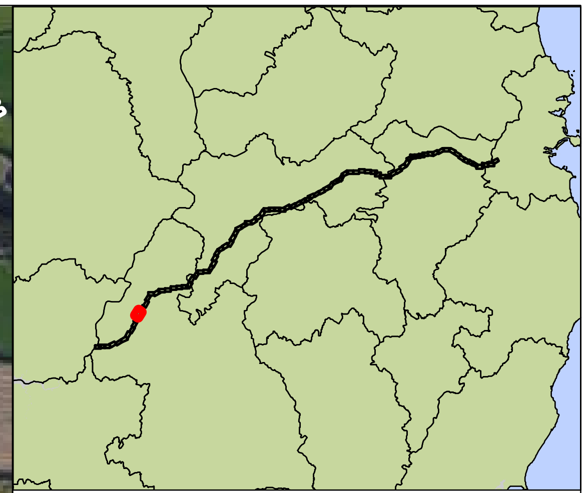
Filepath			
Drawing No.	2.10		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Building Density >100 Properties per km²
- Settlements
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Forestry
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
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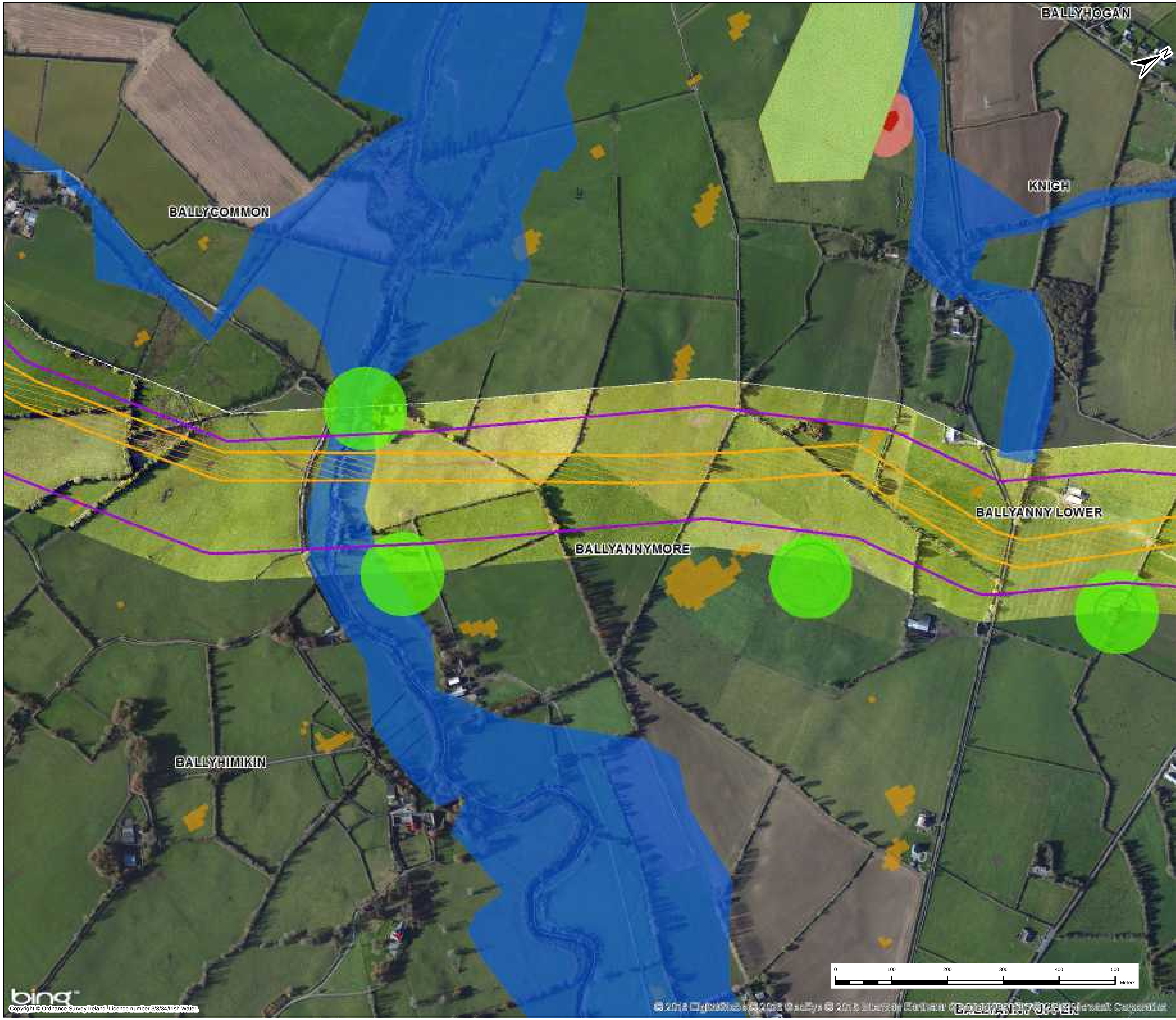
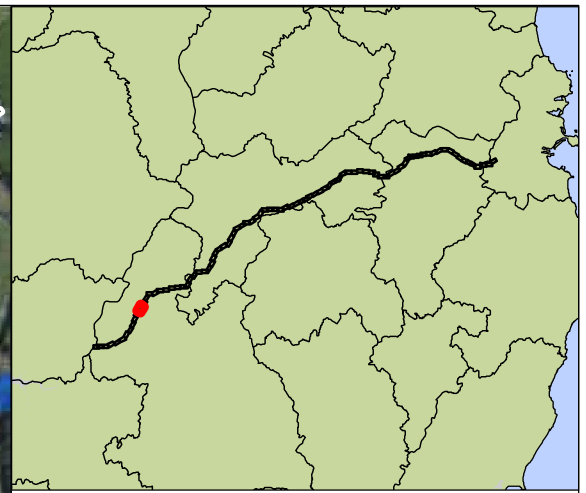
Filepath			
Drawing No.	2.11		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

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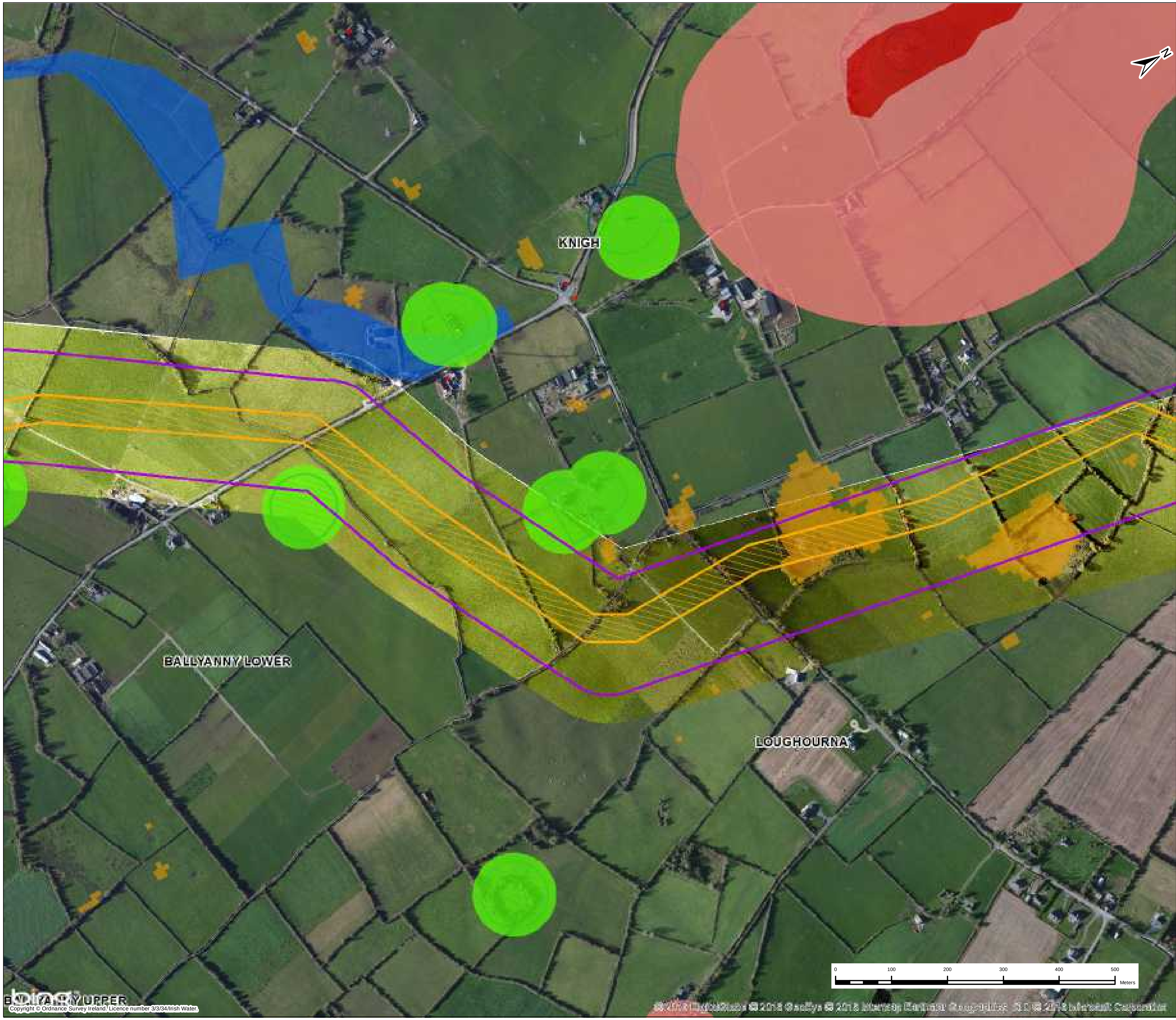
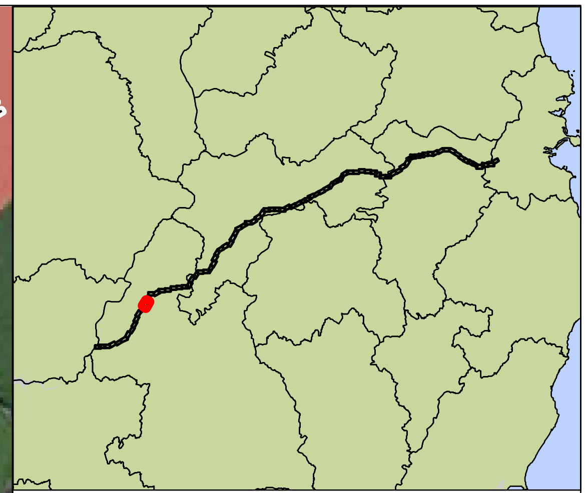
Filepath			
Drawing No.	2.12		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	App'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

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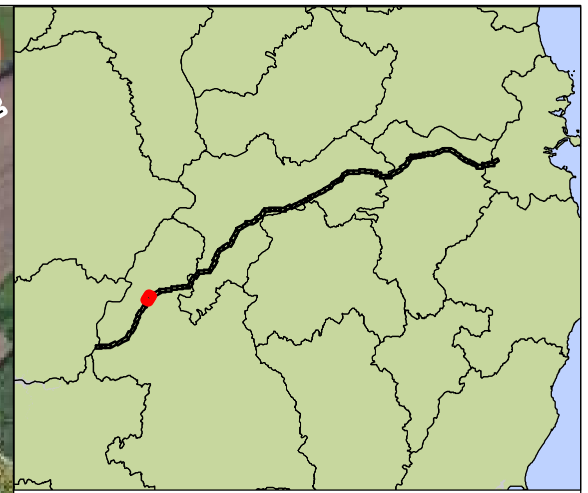


Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Lakes
- Forestry
- SMR Zone
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

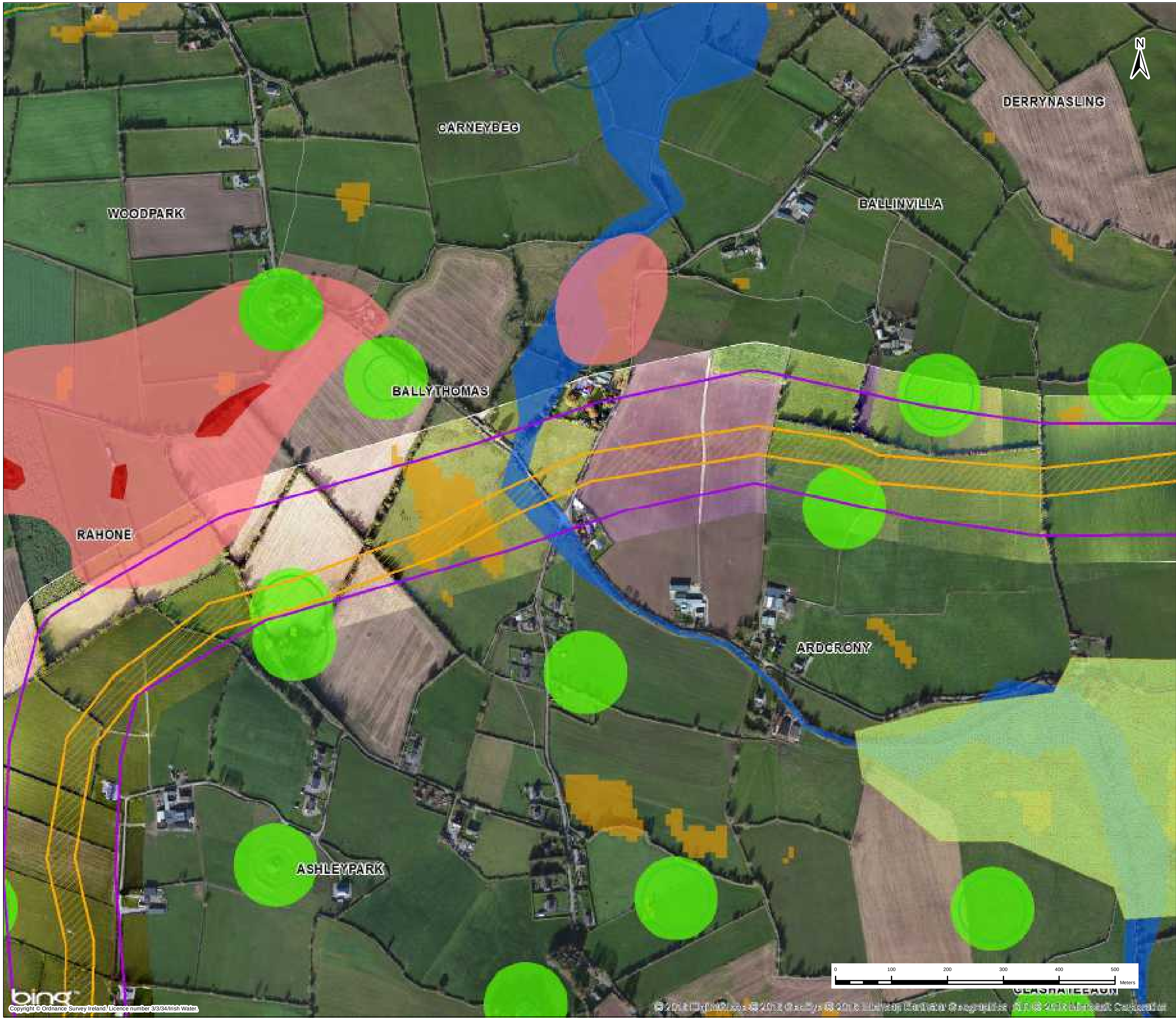
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

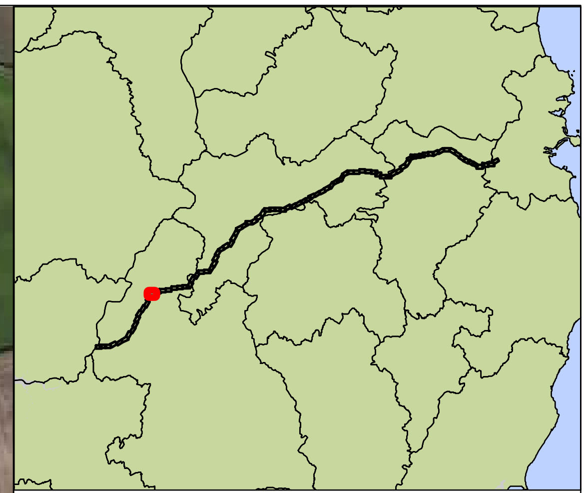
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.14		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Proposed Natural Heritage Area
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

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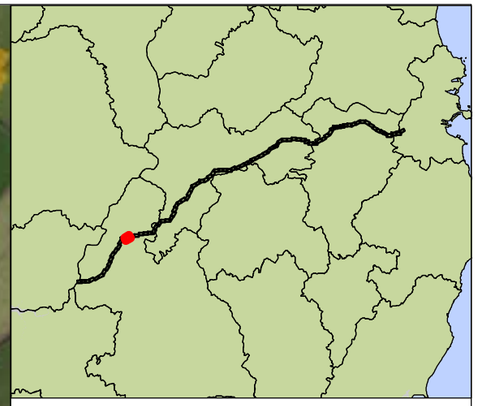
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.15		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- SMR Zone
- Mineral Locations
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE EIREANN WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

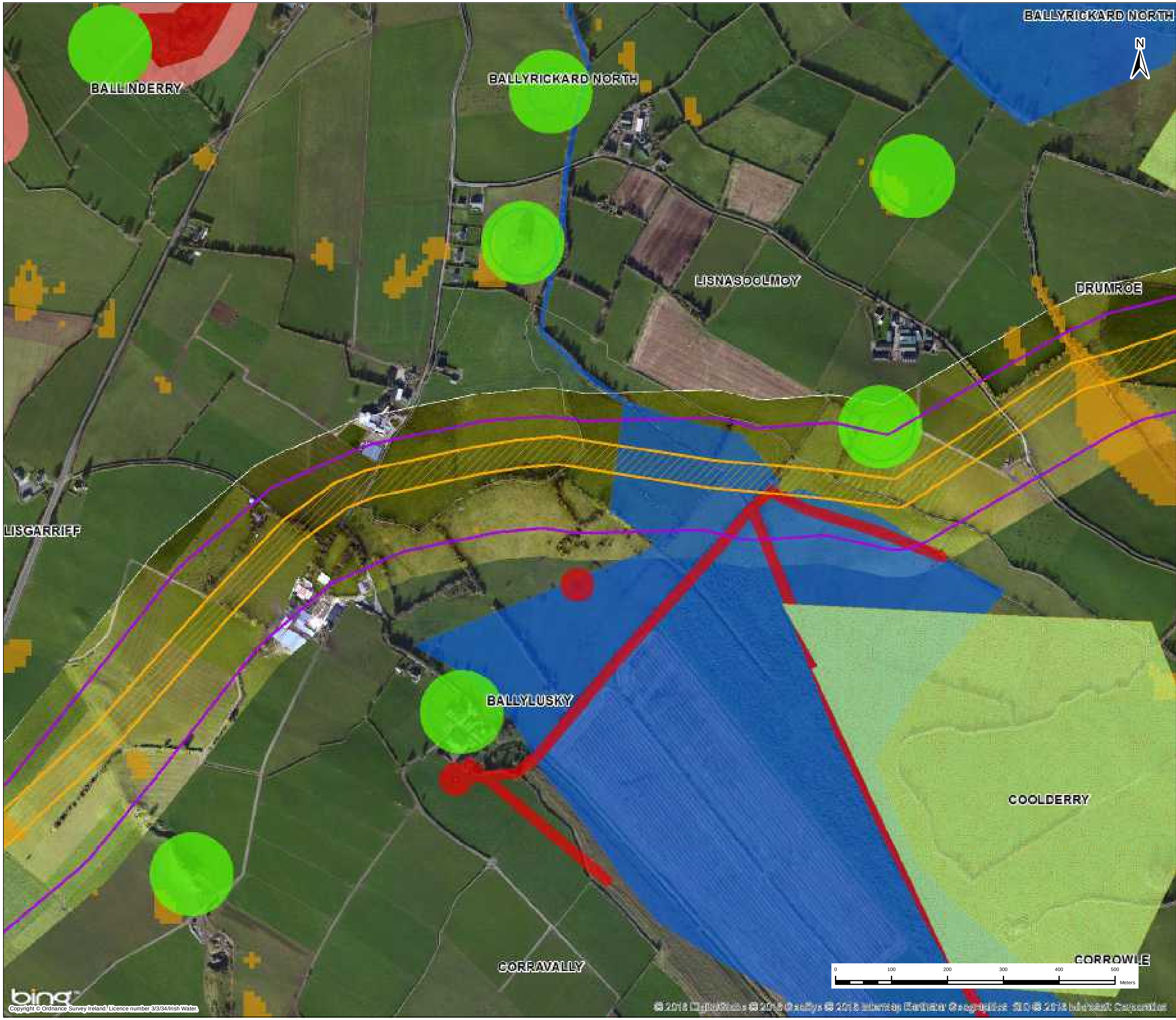
Drawing Status

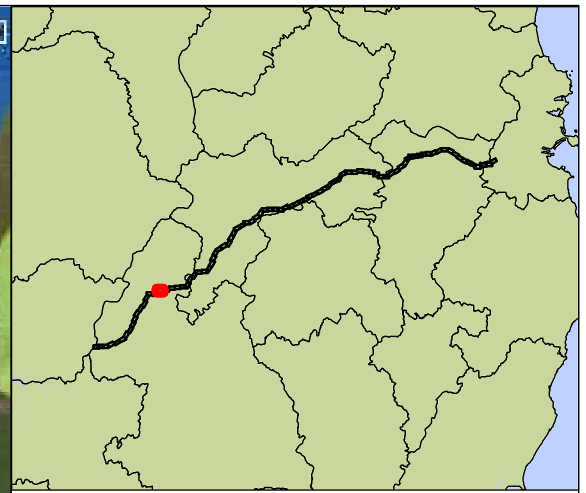
For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.

2.16





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- SMR Zone
- KarstFeatures
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

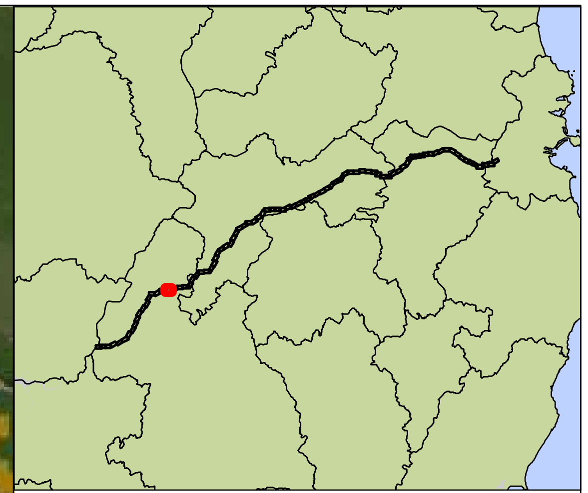
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.17		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

Project

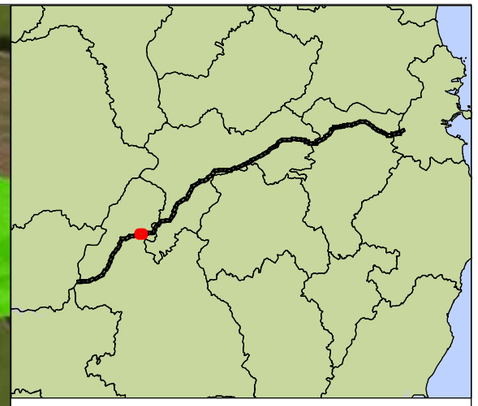
Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status: For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.18		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Forestry
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client: UISCE EIREANN WATER

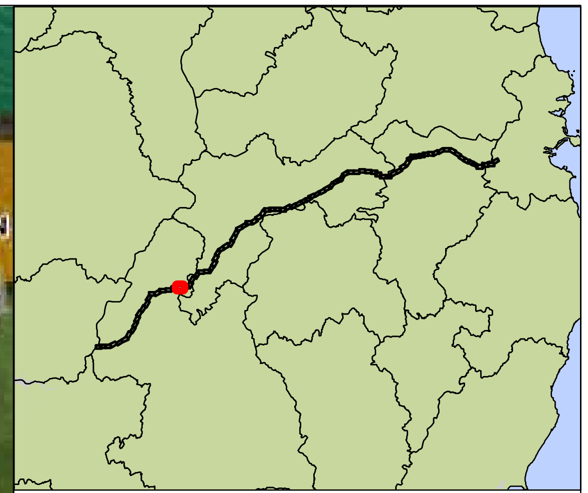
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.: 2.19



Key

- Least Constrained Break Pressure Tank Site
- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Settlements
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Landfills
- Natural Heritage Area
- Forestry
- SMR Zone
- Mineral Locations
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

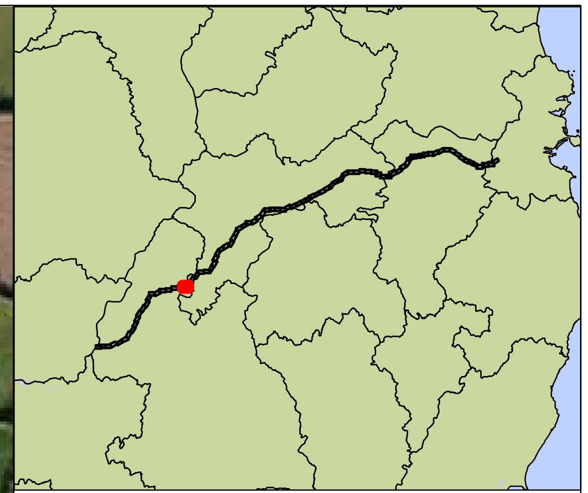
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.

2.20



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Forestry
- SMR Zone
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

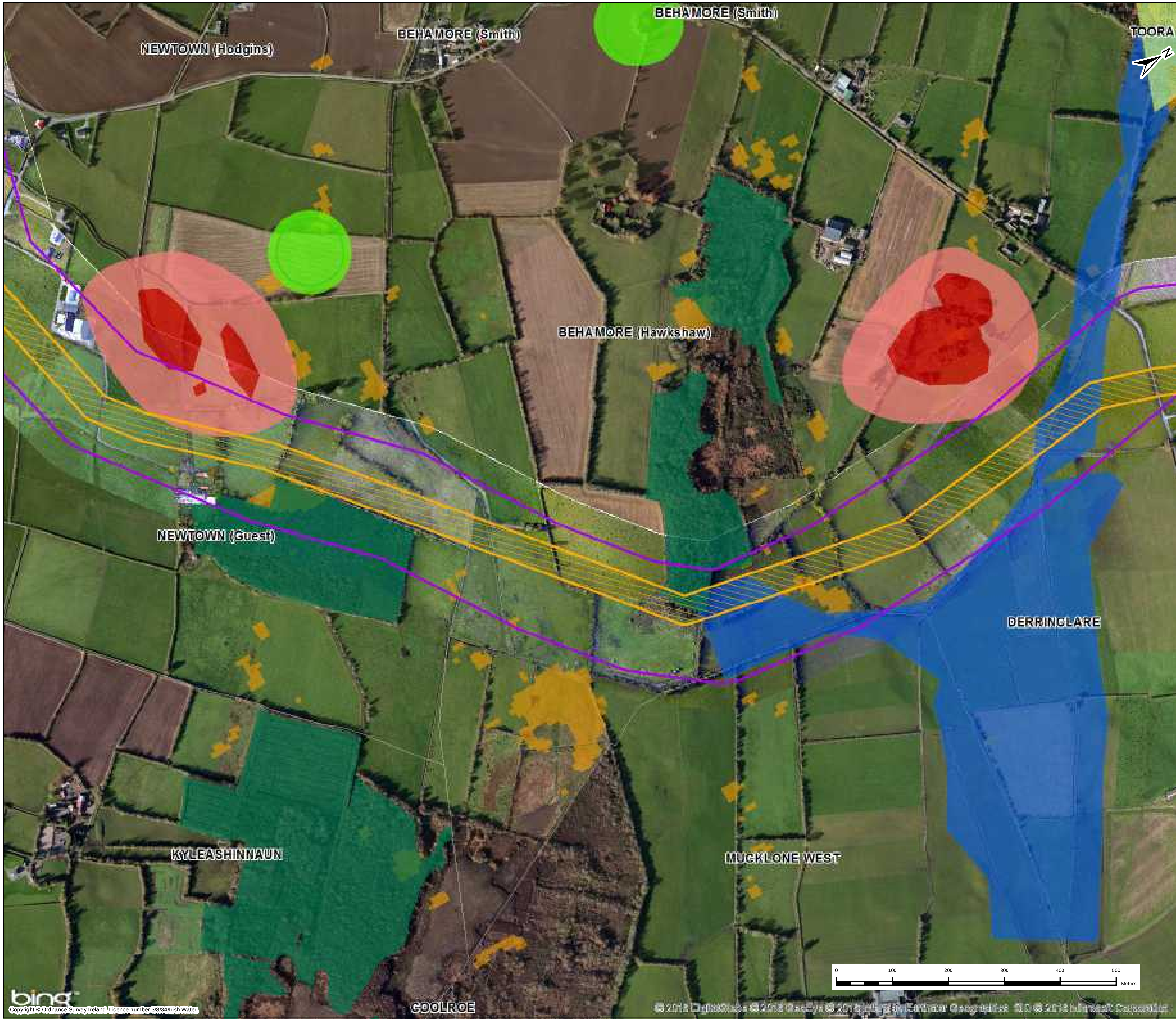
Client: UISCE ÉIREANN IRISH WATER

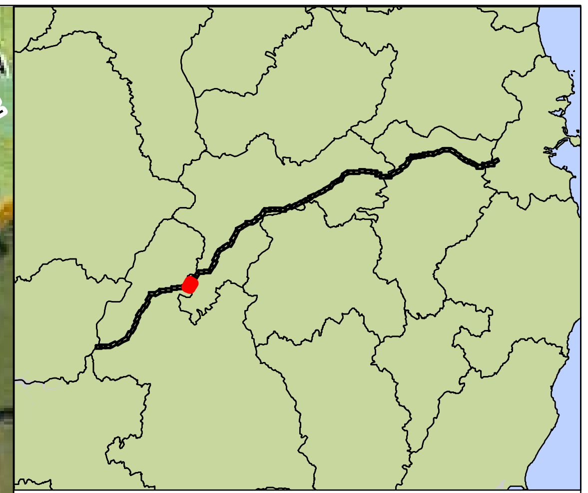
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.21		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Forestry
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

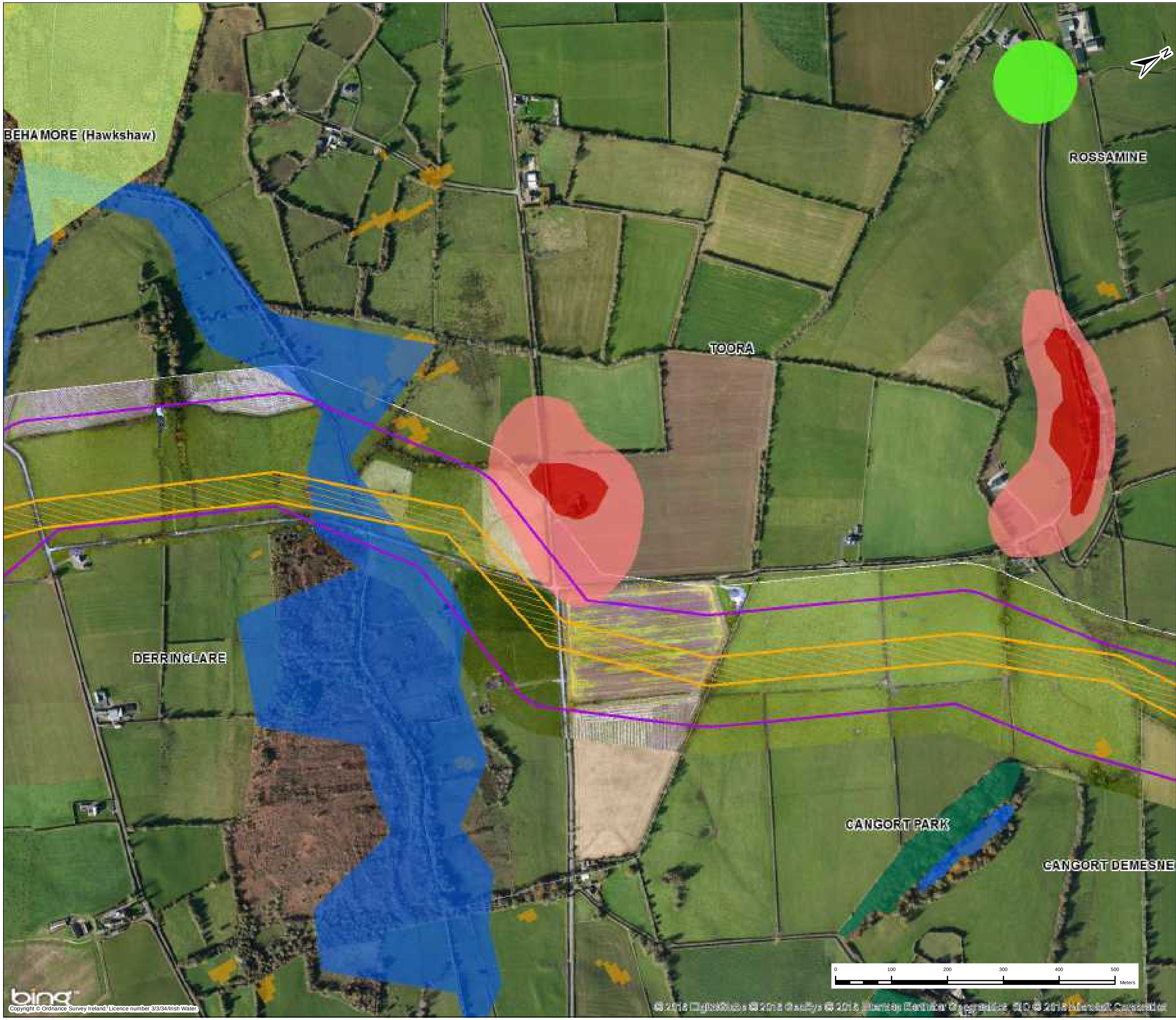
Drawing Status

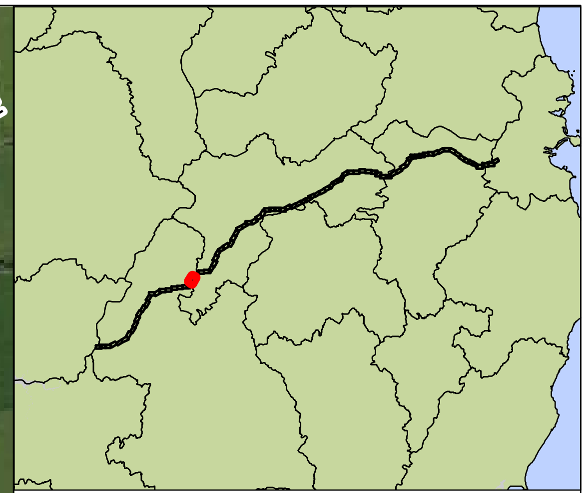
For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.

2.22





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Lakes
- Forestry
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

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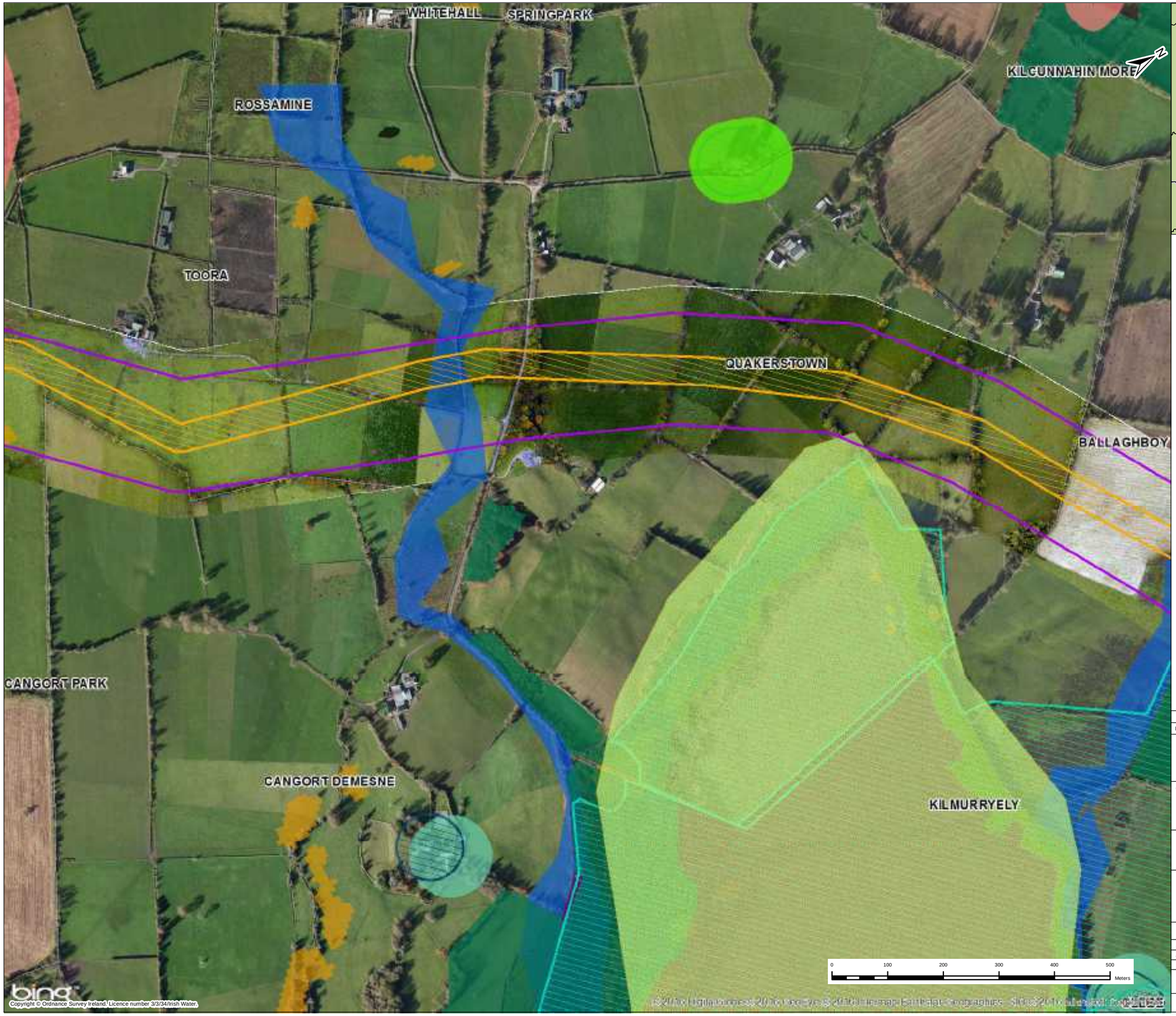
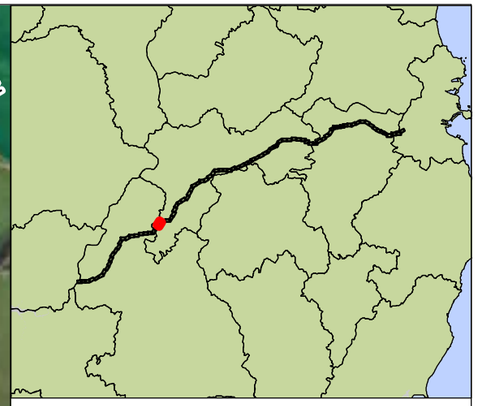
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.23		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Natural Heritage Area
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- SMR Zone
- Landscape Classification Areas Offaly High Sensitivity
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client: UISCE EIREANN WATER

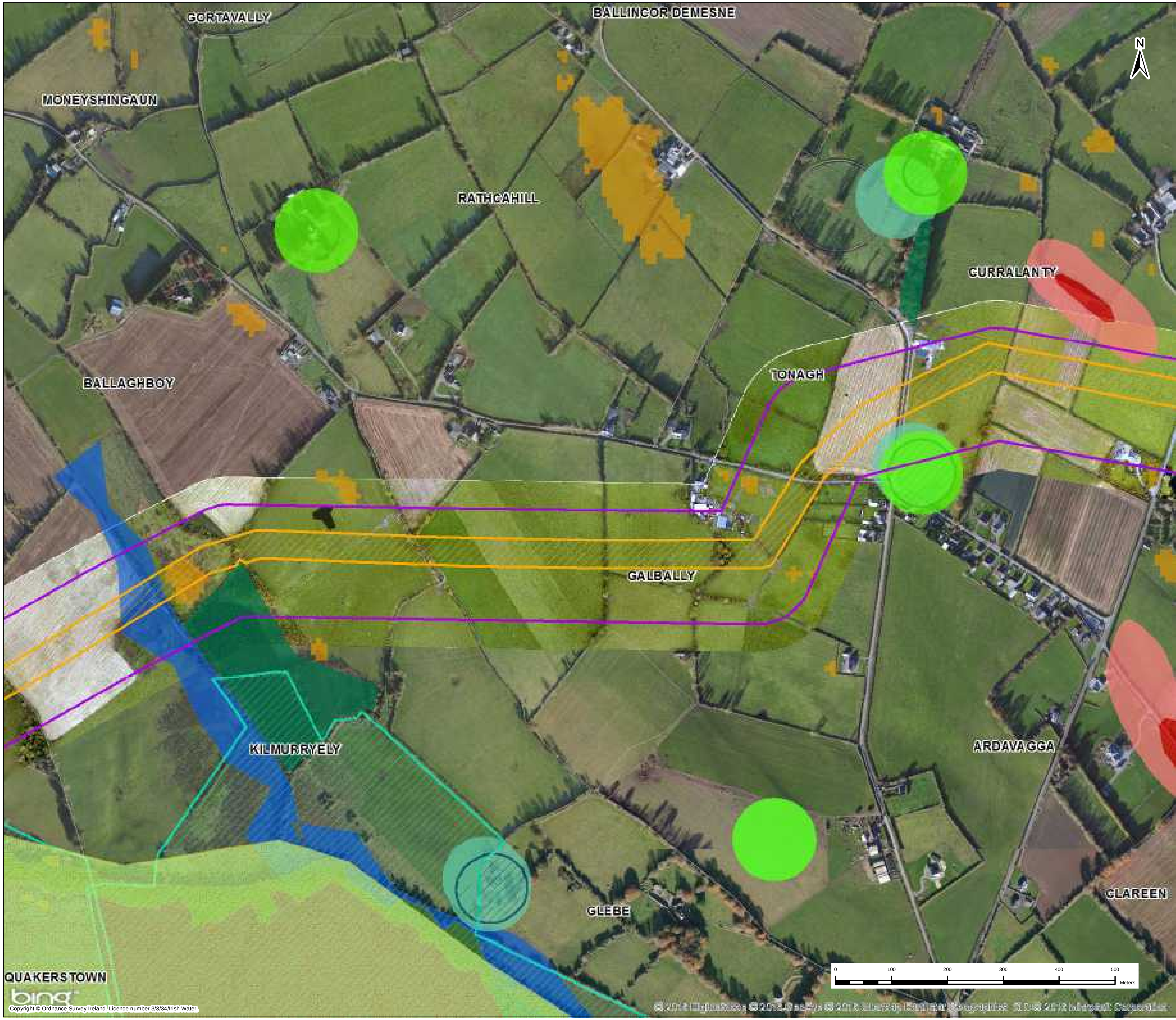
Project: Water Supply Project - Eastern and Midlands Region

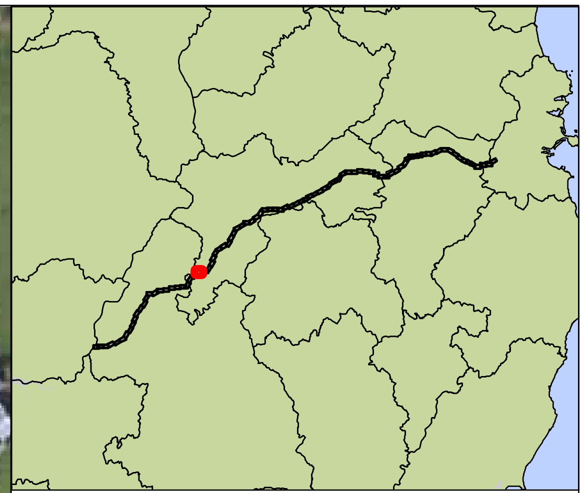
Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No. 2.24





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerability Rock at or Near Surface or Karst feature
- Natural Heritage Area
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- SMR Zone
- Landscape Classification Areas Offaly High Sensitivity
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

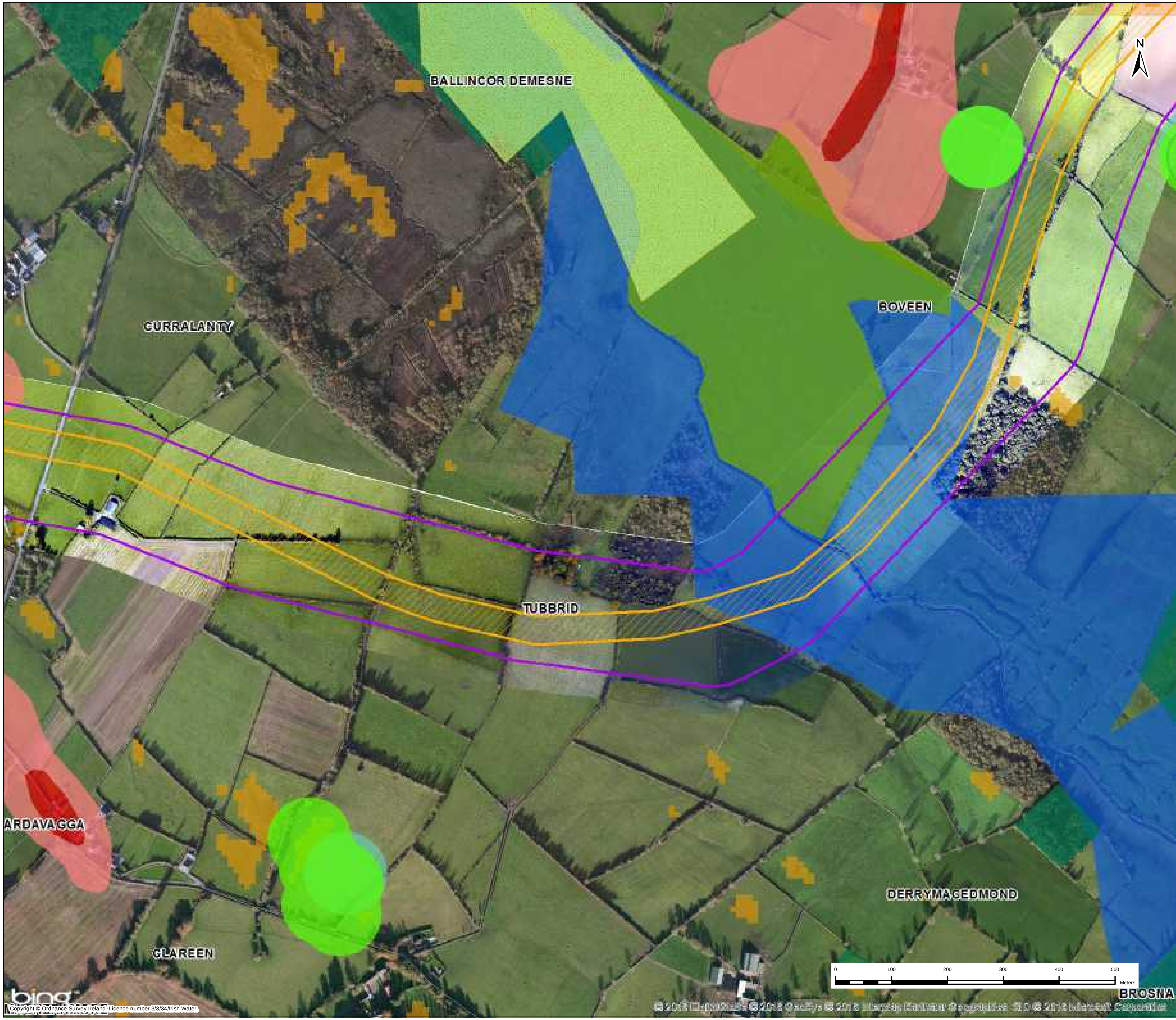
Drawing Title

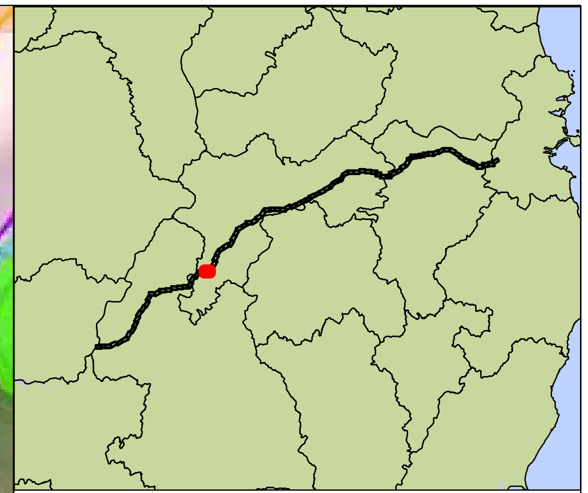
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.25		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- SMR Zone
- Semi Natural Grasslands
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

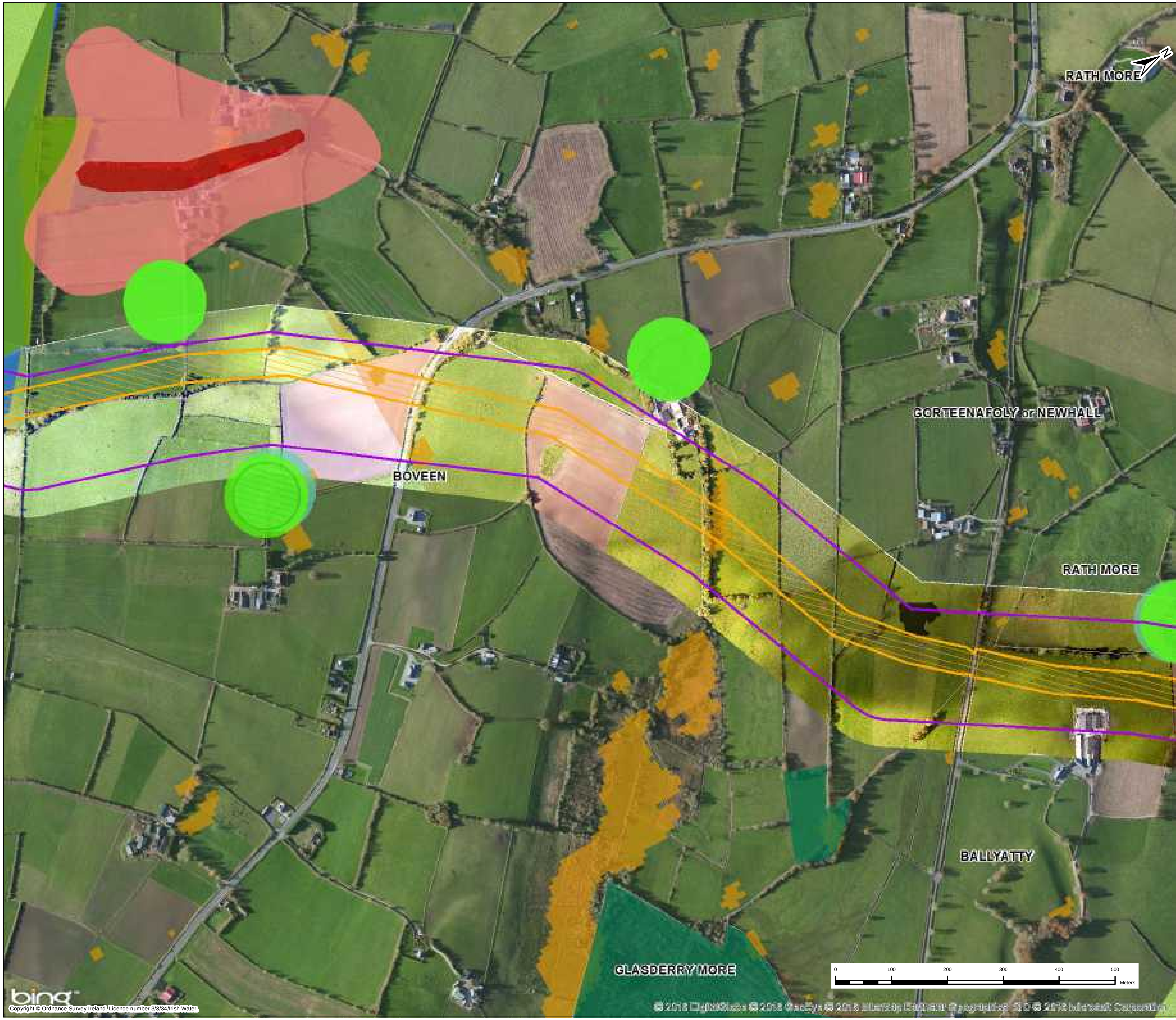
Drawing Status

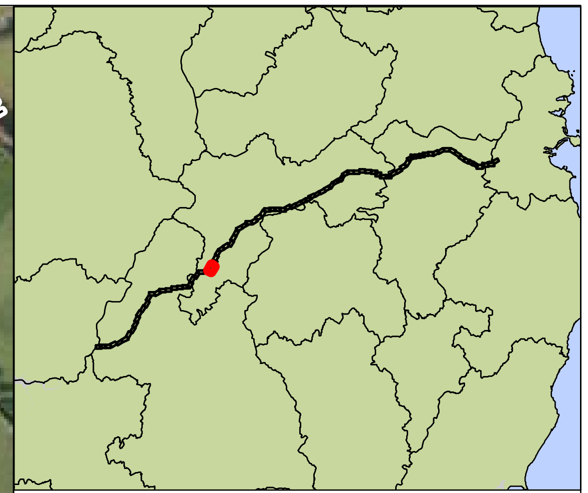
For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.

2.26





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- SMR Zone
- Semi Natural Grasslands
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	App'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

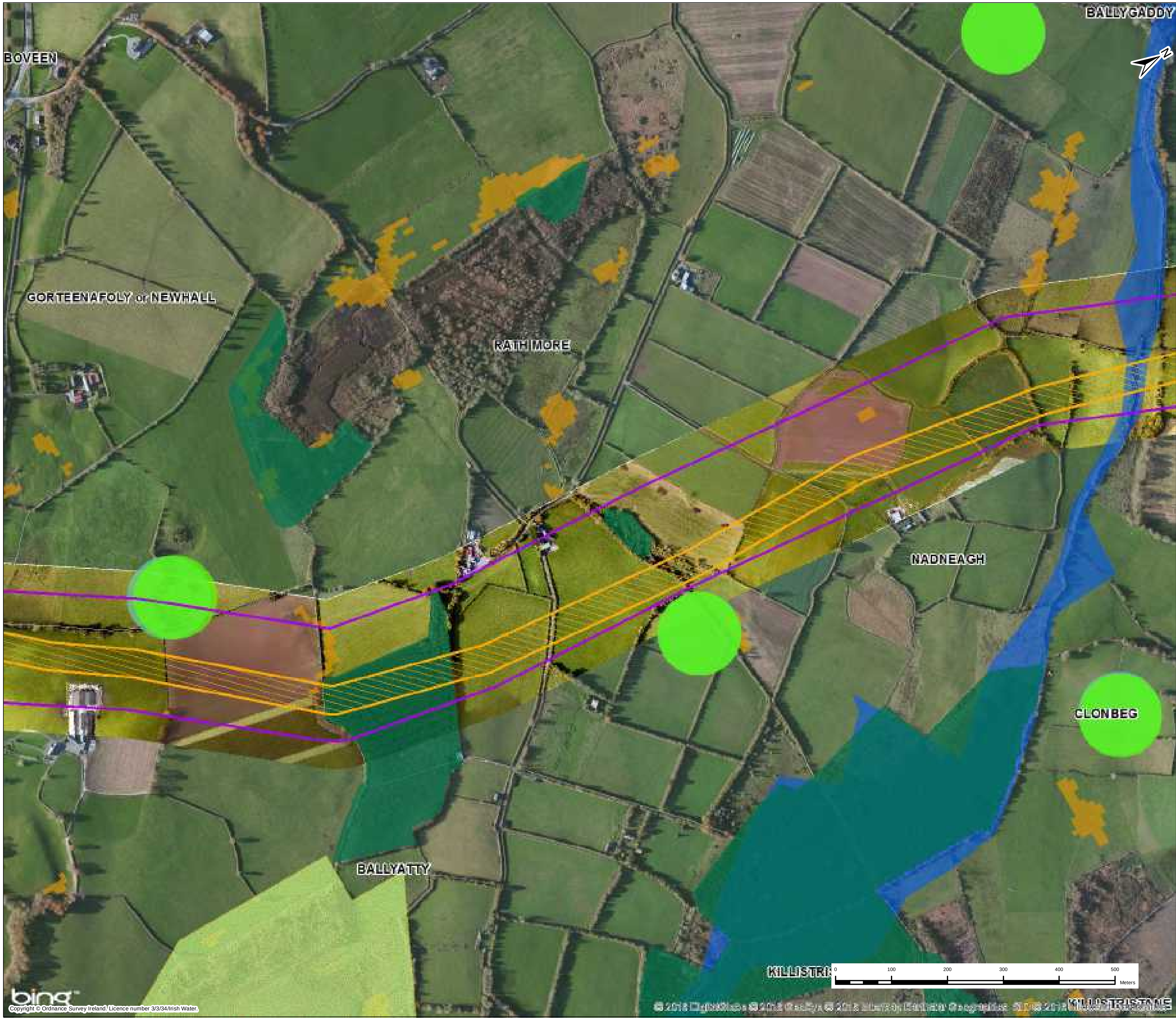
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

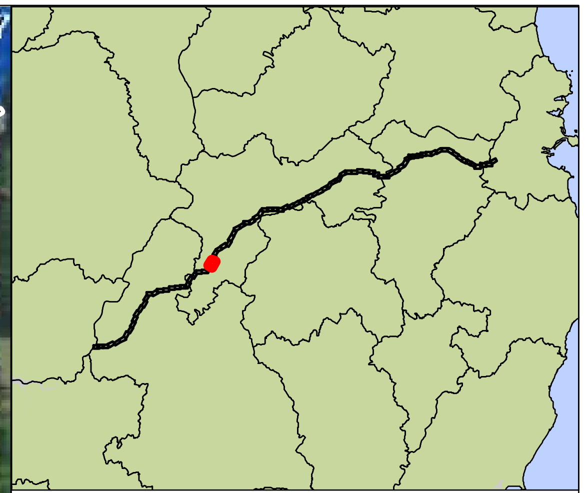
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.27		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Forestry
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

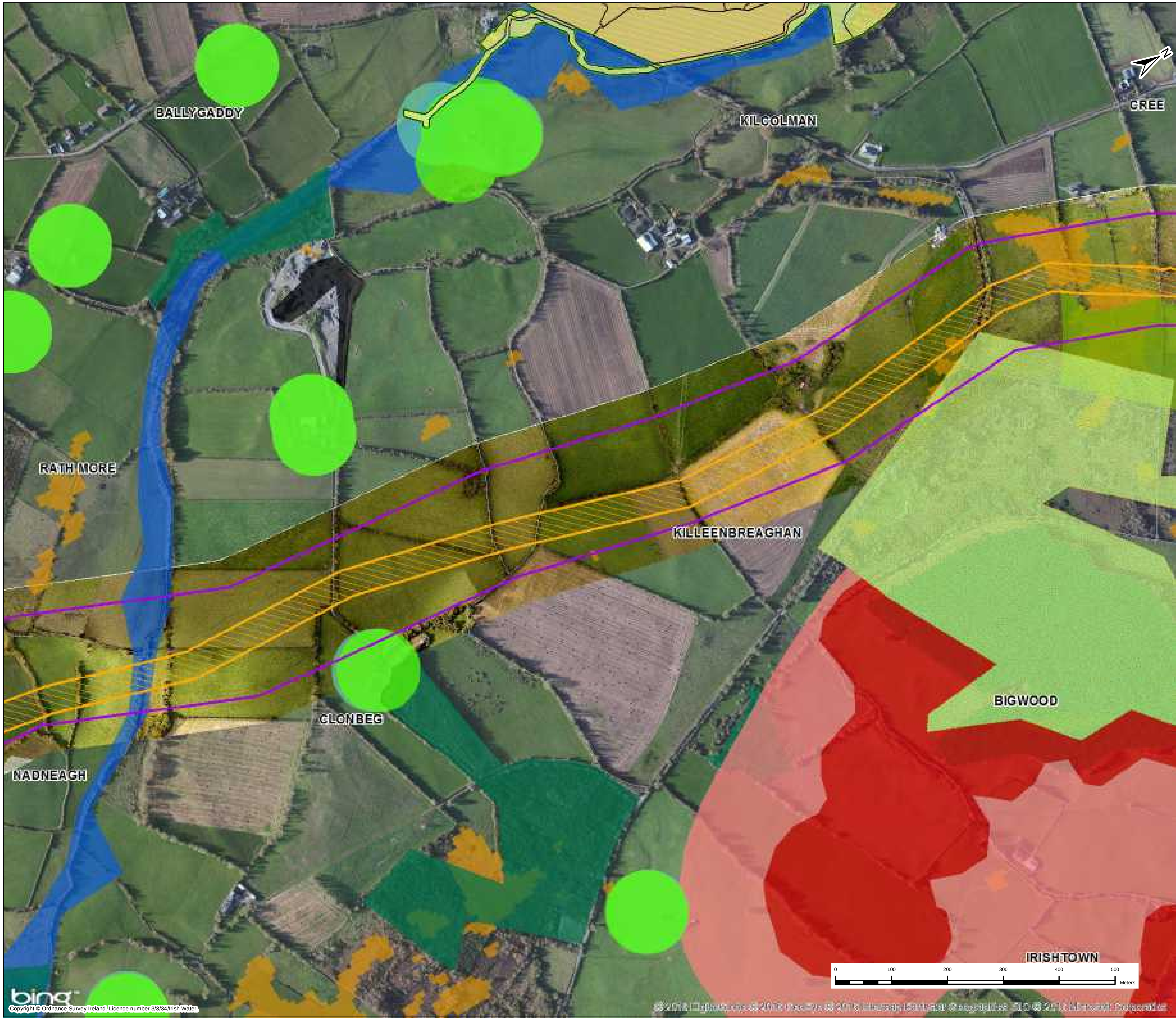
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

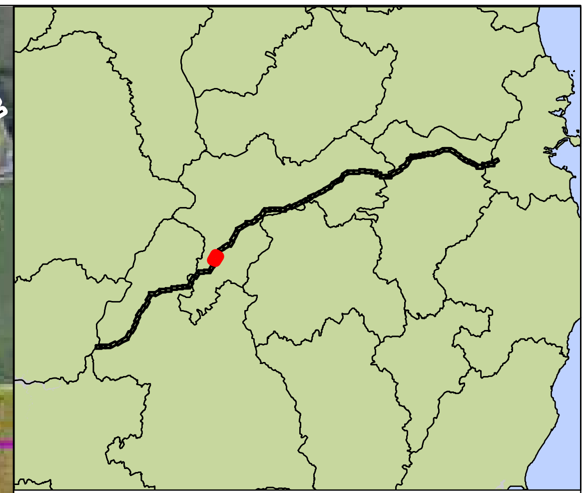
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.28		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- NPWS Additional
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Special Area of Conservation
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- Semi Natural Grasslands
- Landscape Classification Areas Offaly High Sensitivity
- Architectural Conservation Areas Offaly
- Mineral Locations
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

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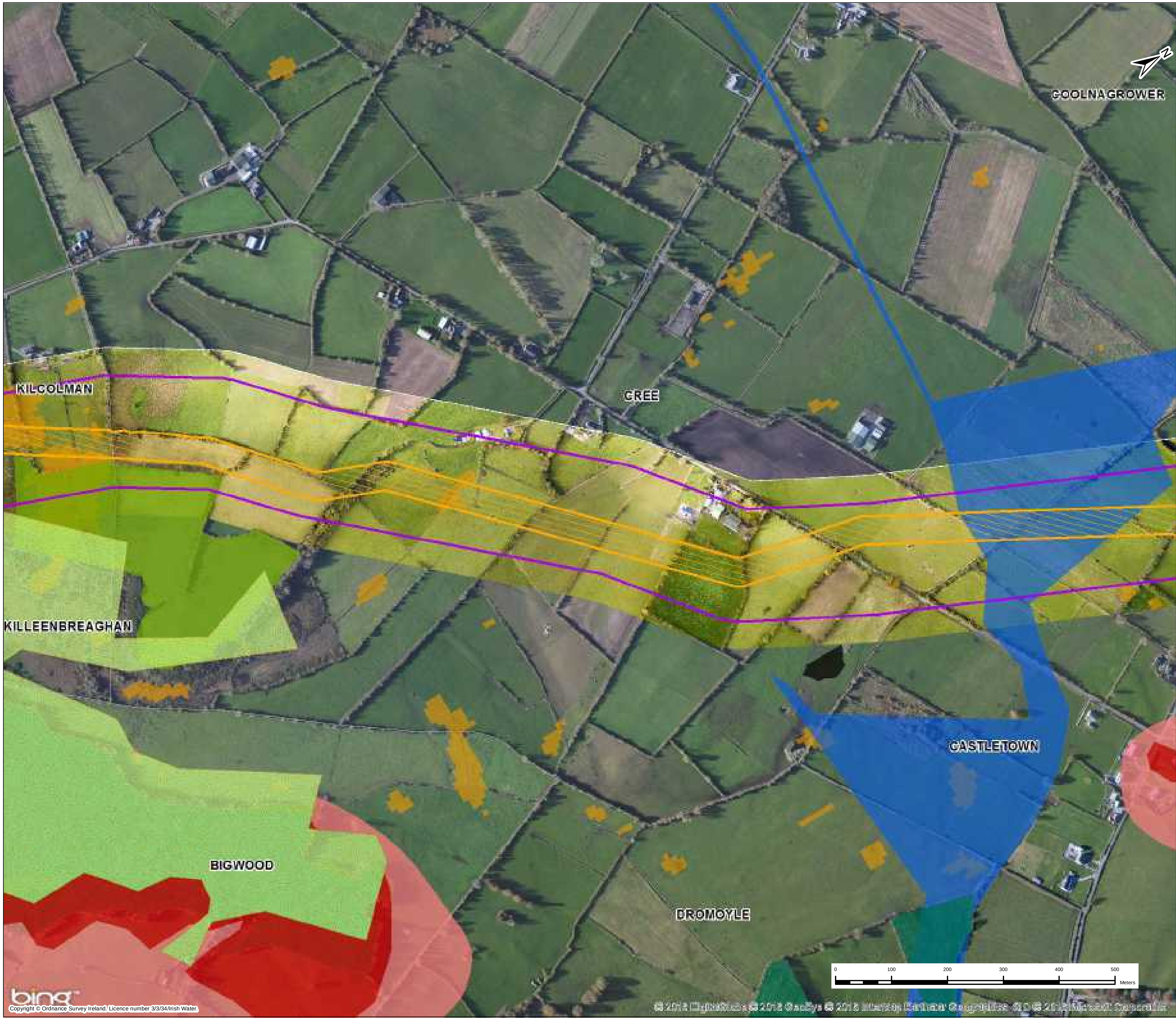
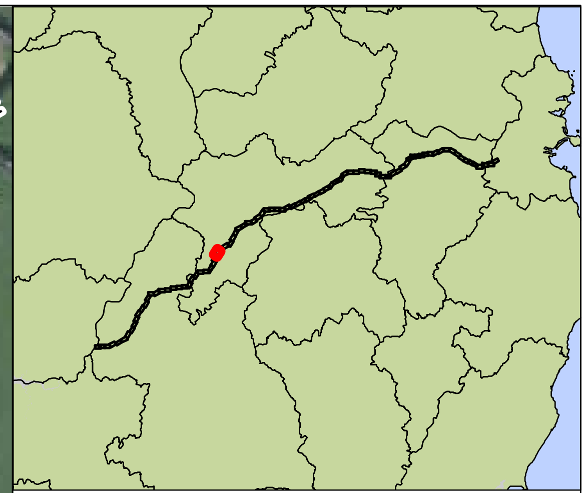
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.29		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Pits And Quarries
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- Semi Natural Grasslands
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client: Uisce Éireann Irish Water

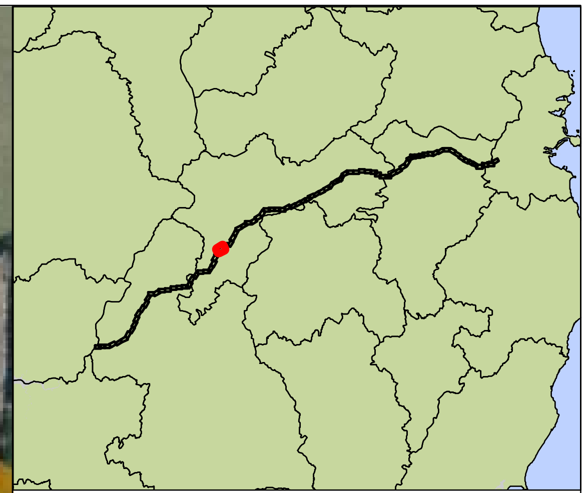
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1

Drawing No. 2.30



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

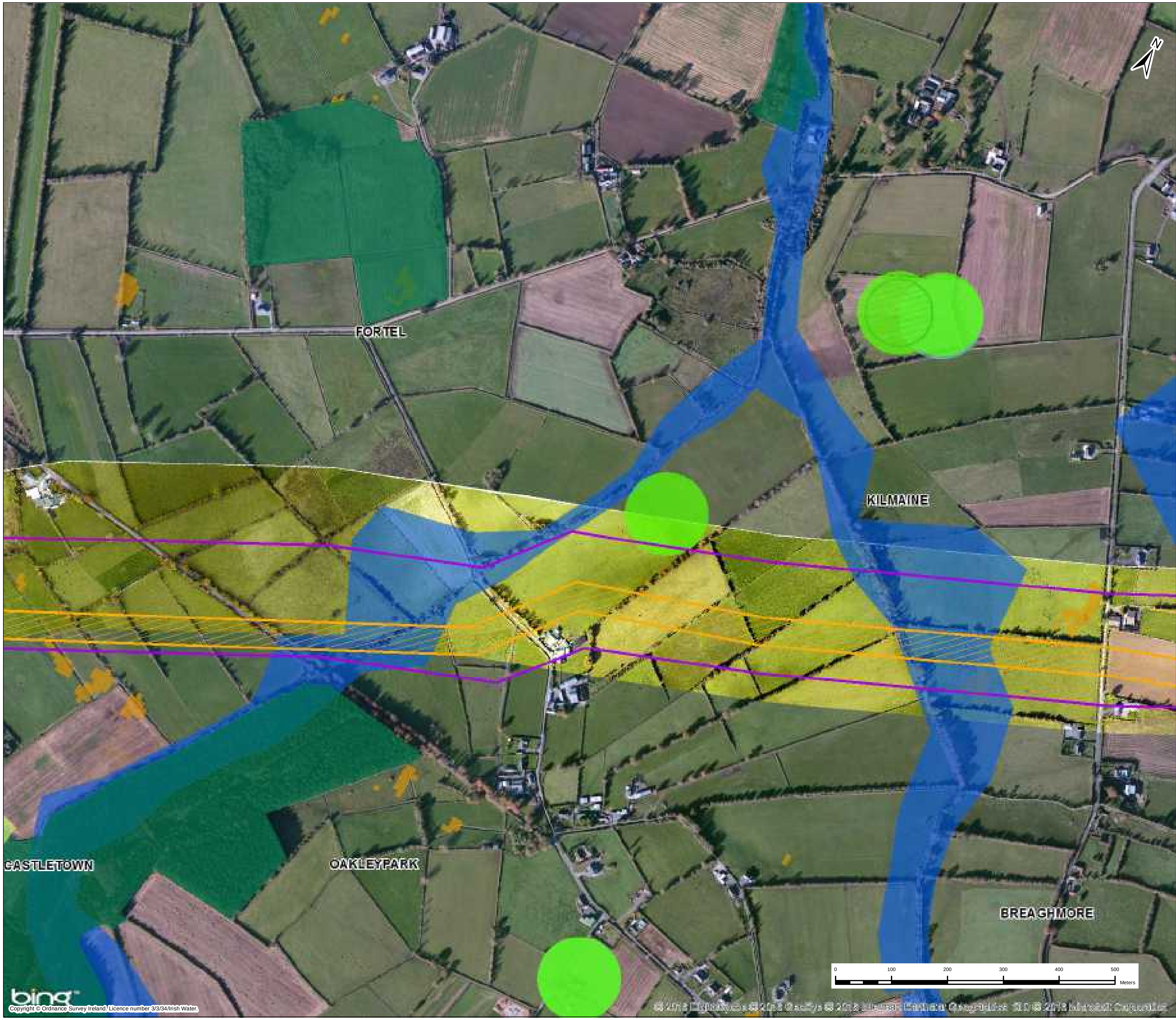
Drawing Title

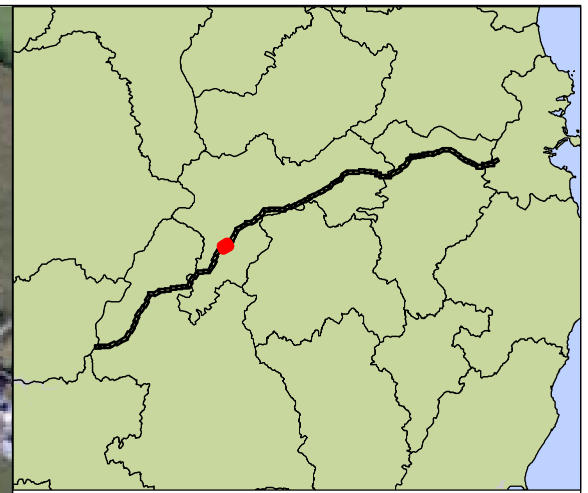
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.31		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Forestry
- SMR Zone
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS

TOBIN

Client

UISCE ÉIREANN : IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

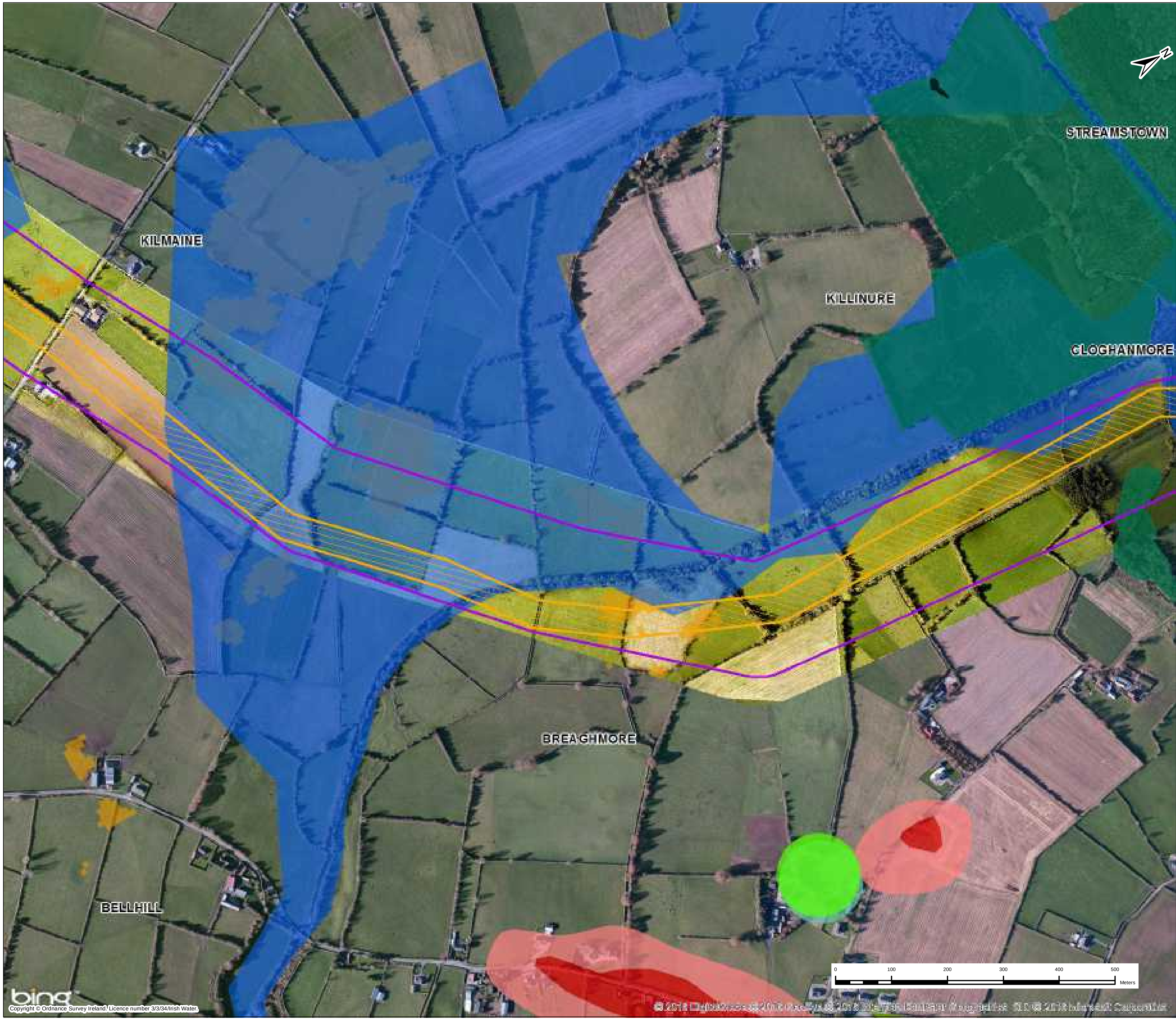
Drawing Title

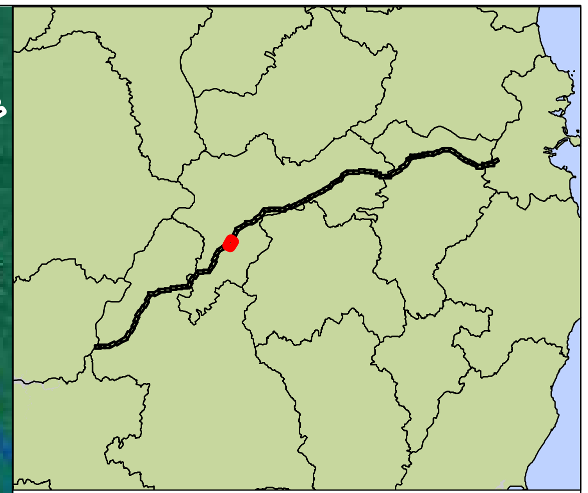
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.32		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Semi Natural Grasslands
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

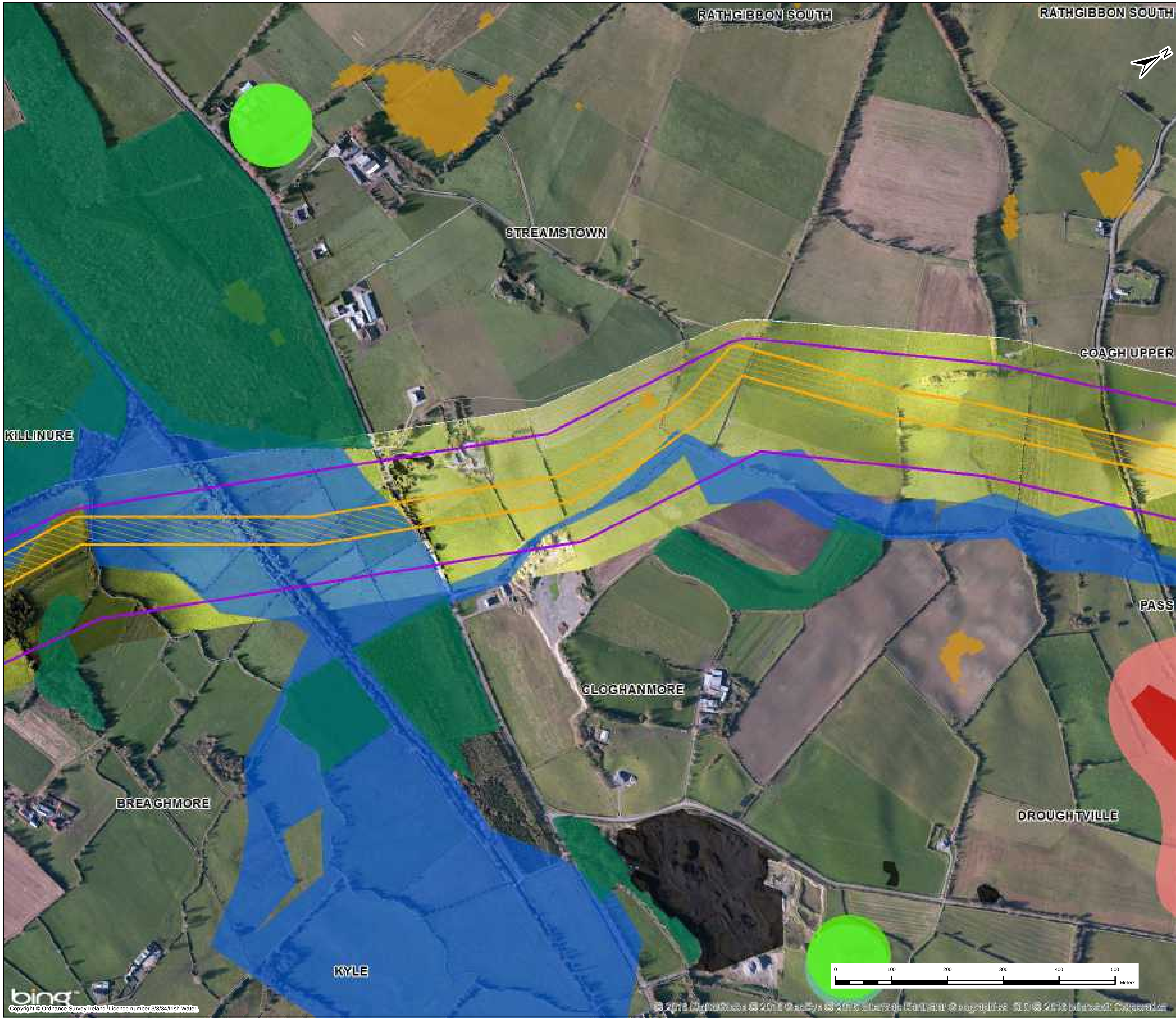
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

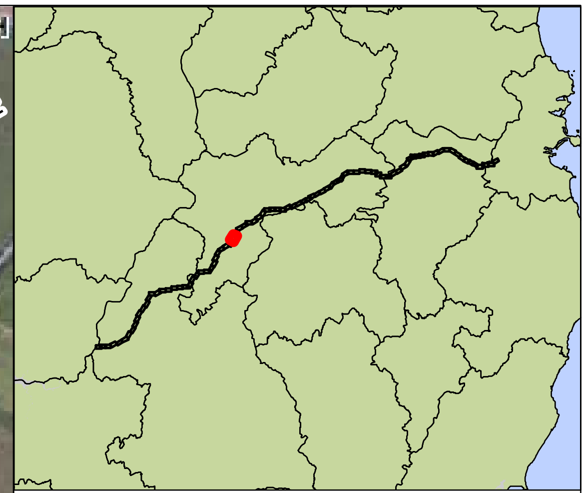
Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath	G:\JI\GIS\32105801 - WSP-DR\GIS Tasks\5_Mxds\Report Maps\FOAR\EIS\EIS Constraints Map.mxd		

Drawing No. 2.33

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

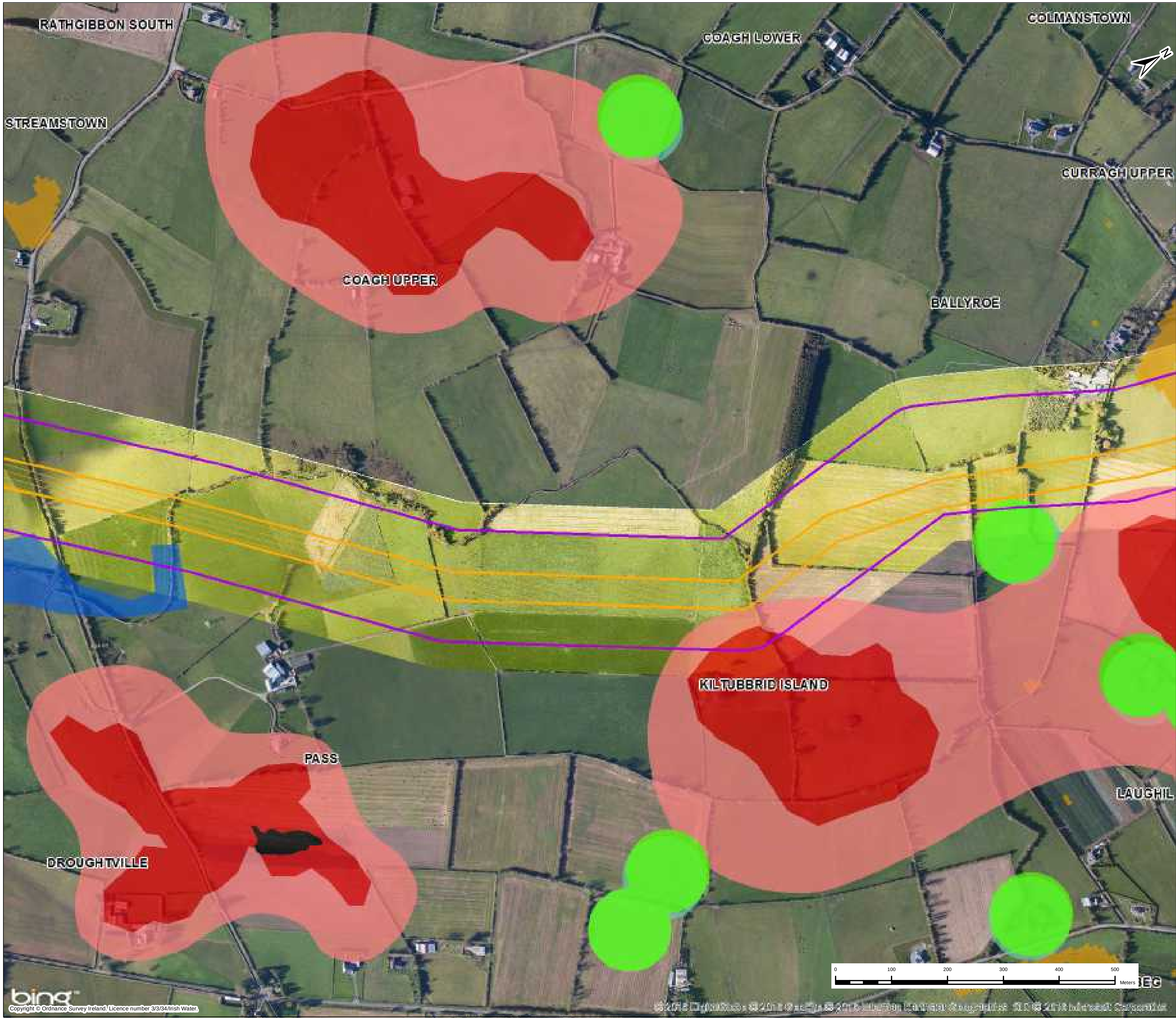
Drawing Title

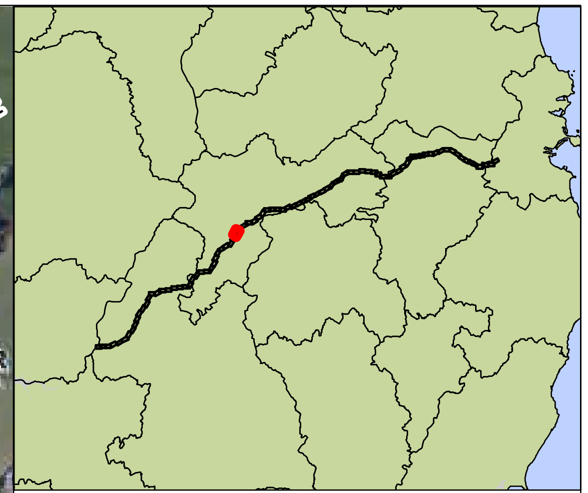
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.34		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

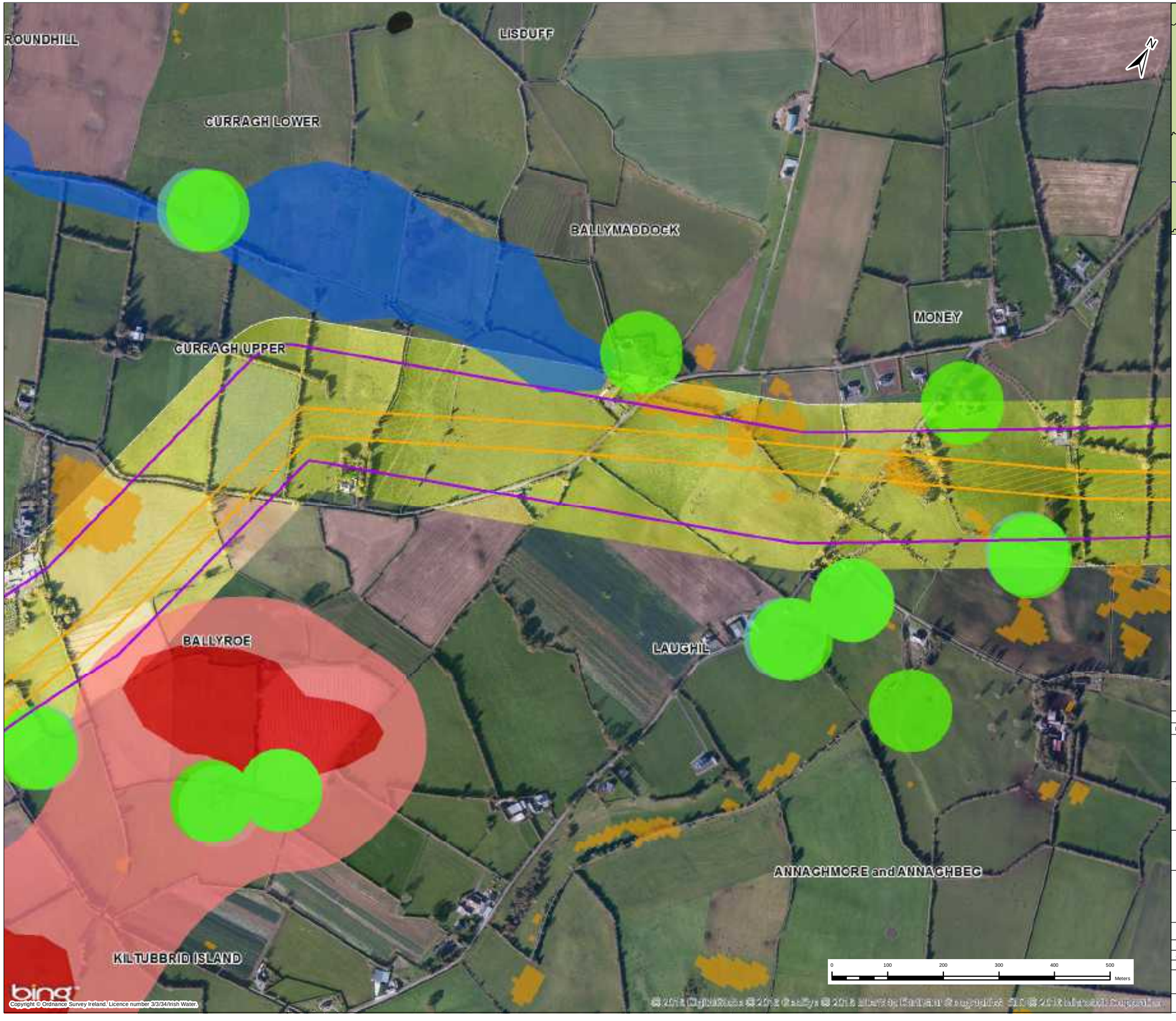
Drawing Title

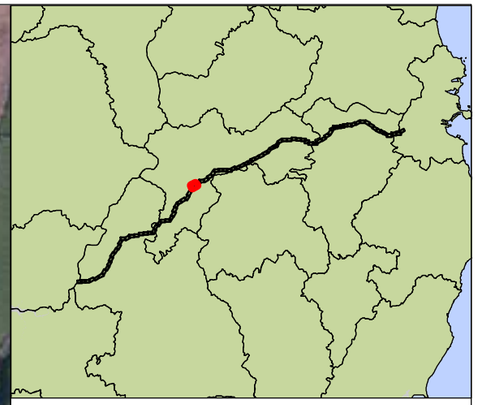
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.35		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

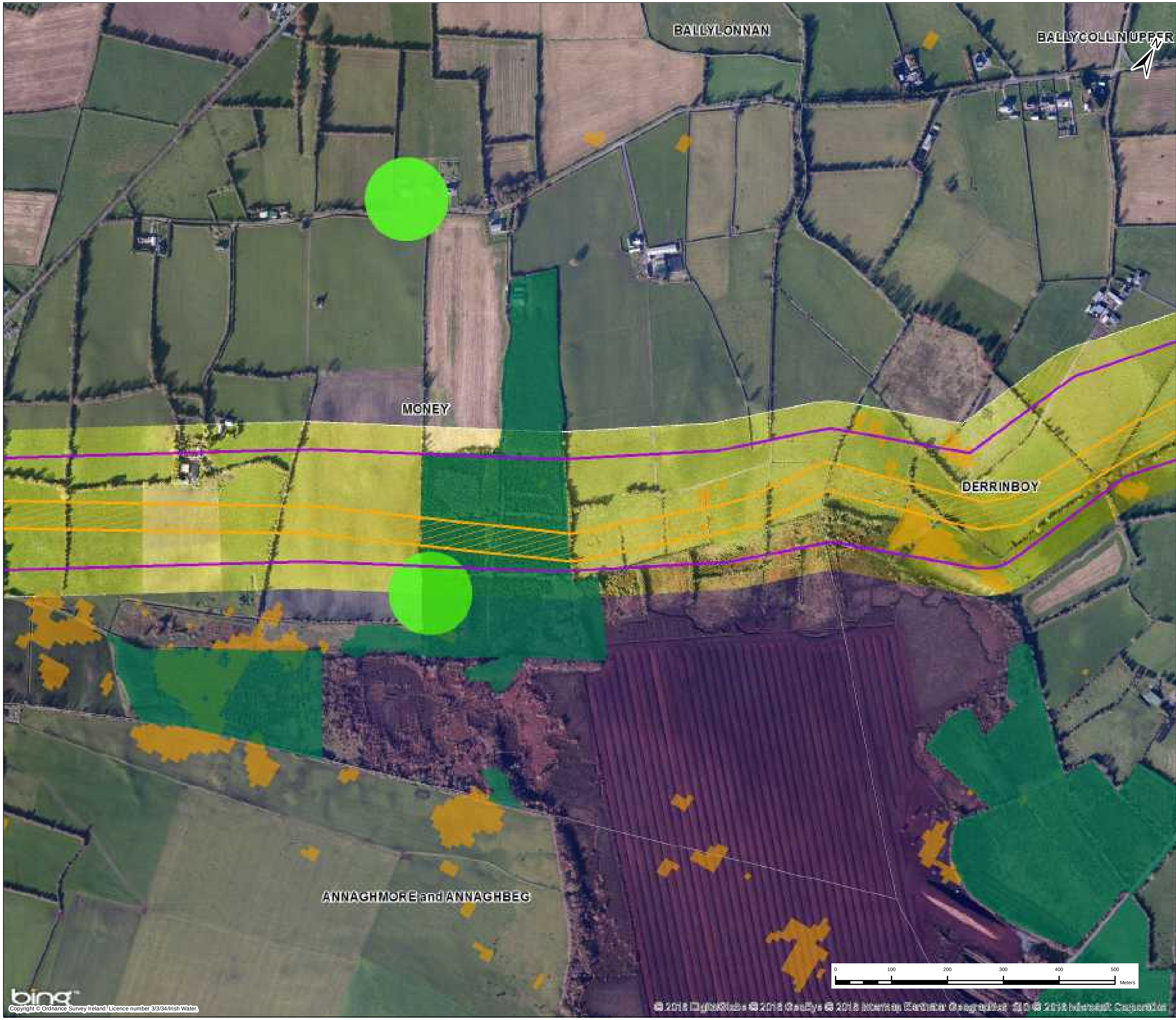
Client: IRISH WATER

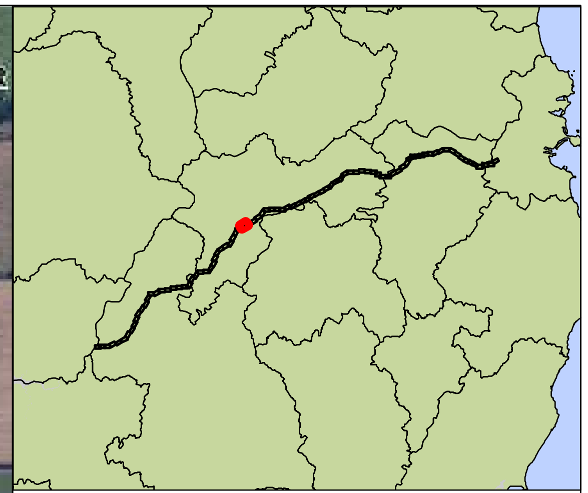
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.36		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Forestry
- Architectural Conservation Areas Offaly
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	App'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client: UISCE ÉIREANN WATER

Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

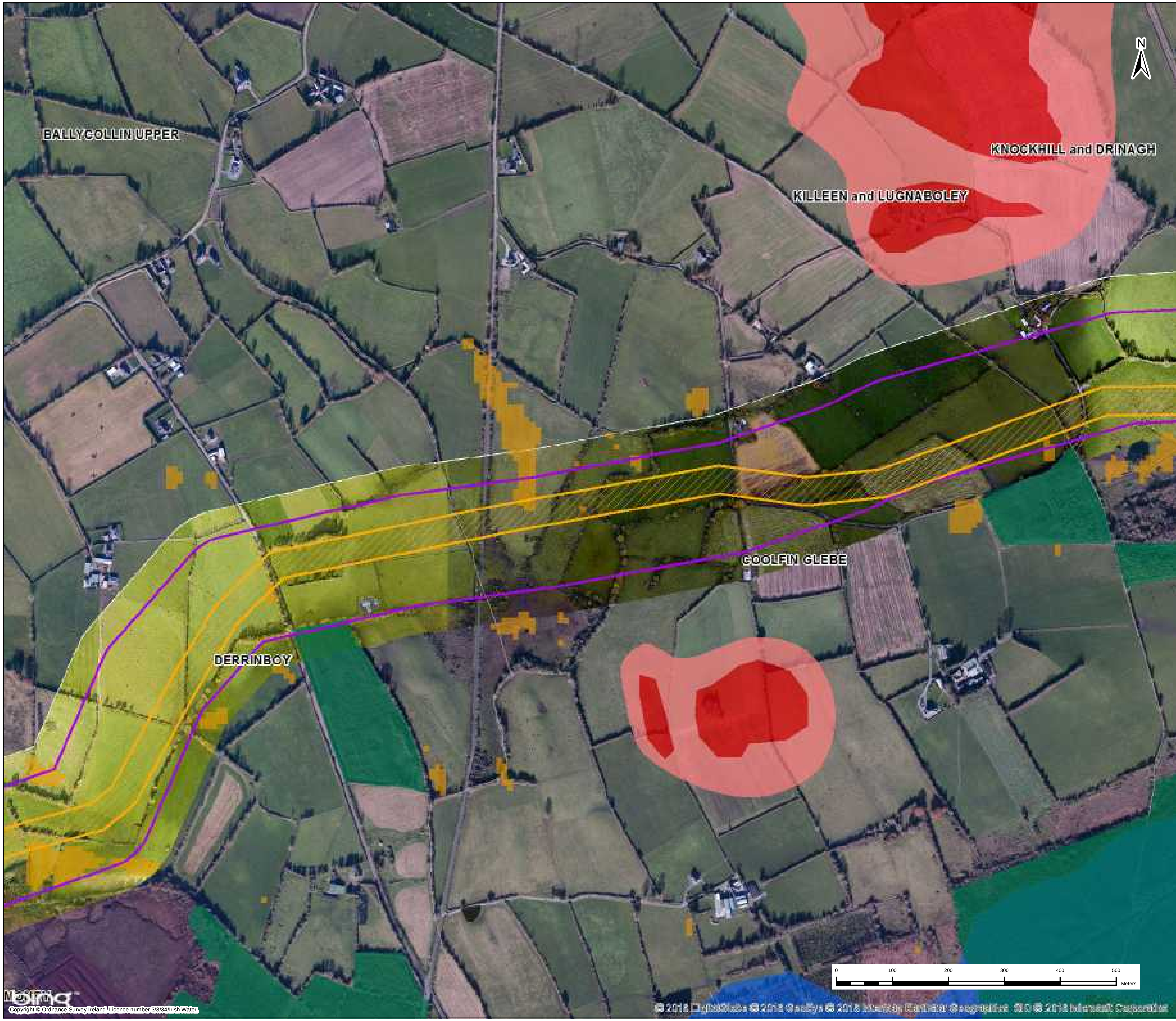
Drawing Status: For Issue

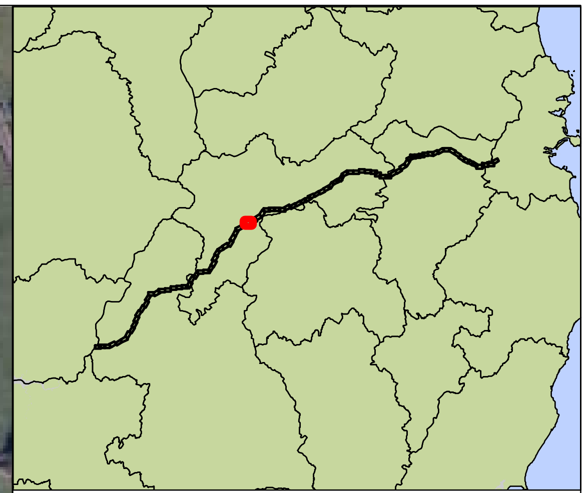
Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1

Filepath

Drawing No. 2.37

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

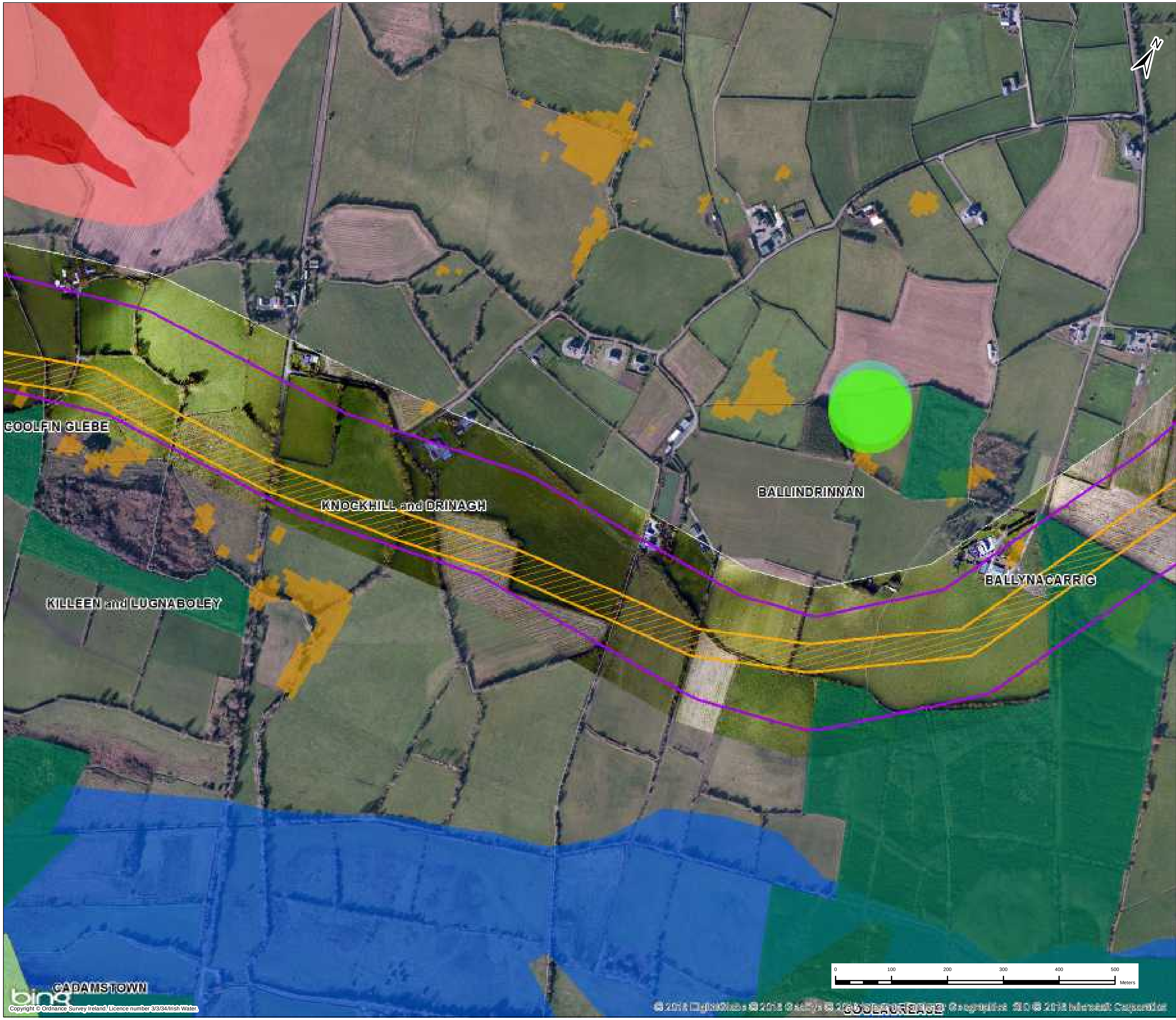
Drawing Title

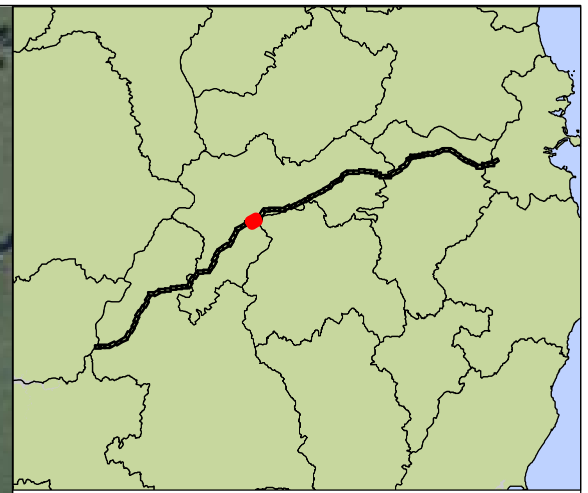
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.38		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client: UISCE ÉIREANN IRISH WATER

Project: Water Supply Project - Eastern and Midlands Region

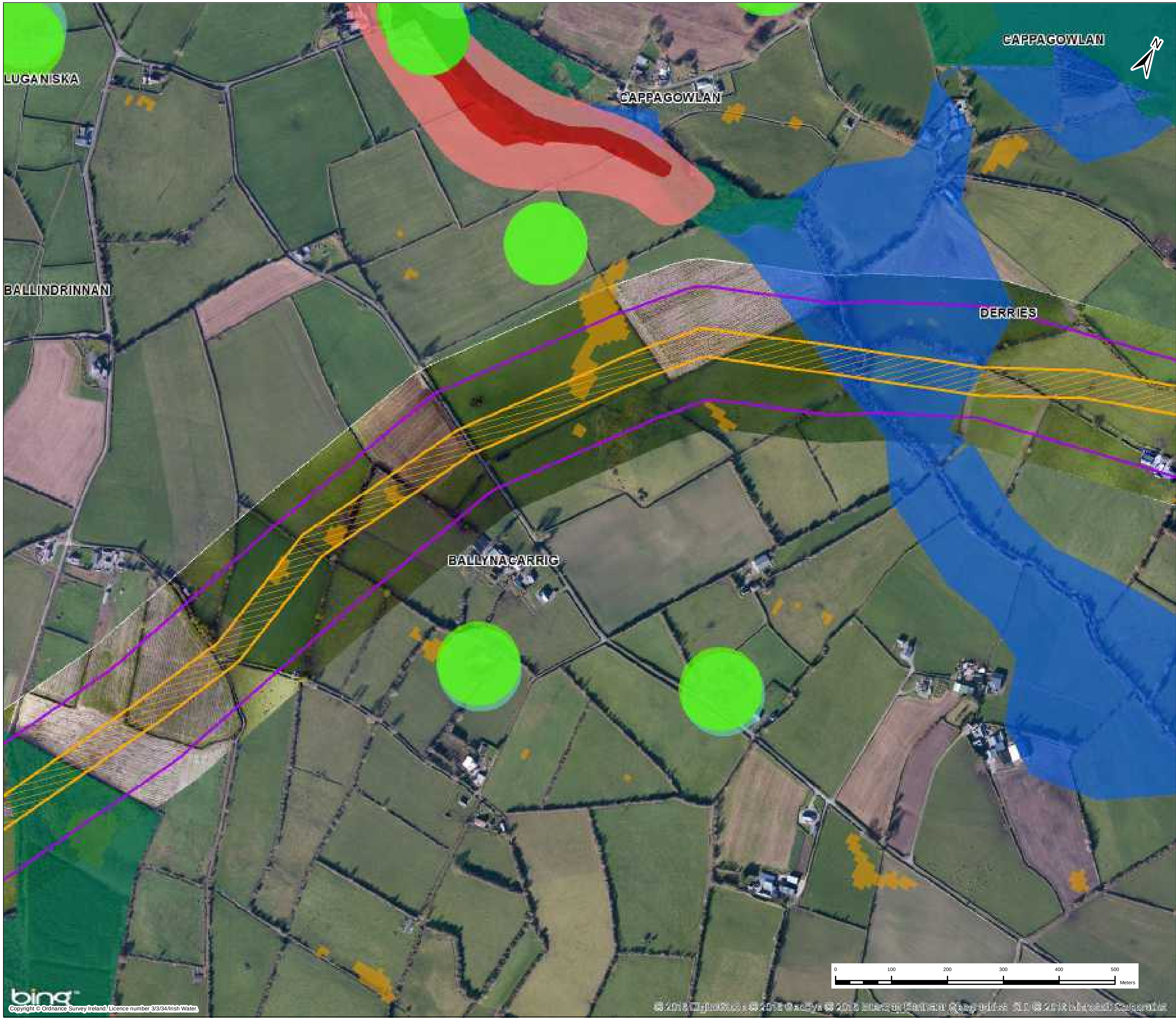
Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

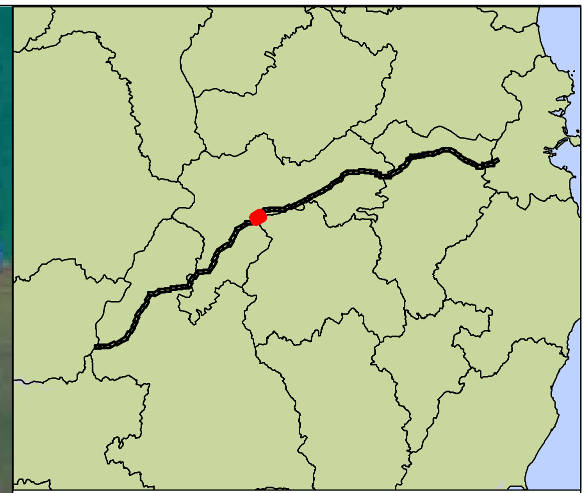
Drawing Status: For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No. 2.39

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

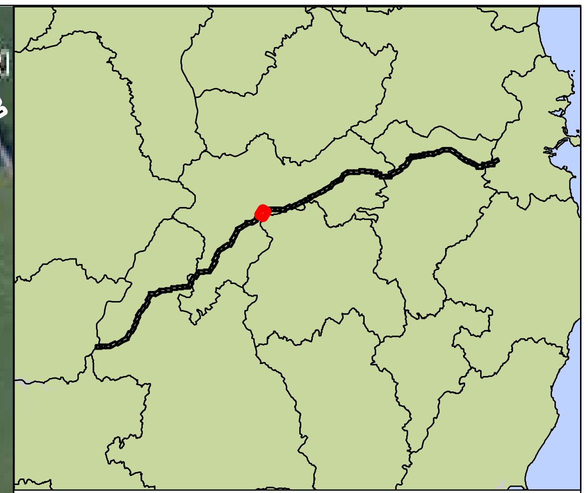
Client: UISCE ÉIREANN IRISH WATER

Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.40		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Additional Habitats
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

Client

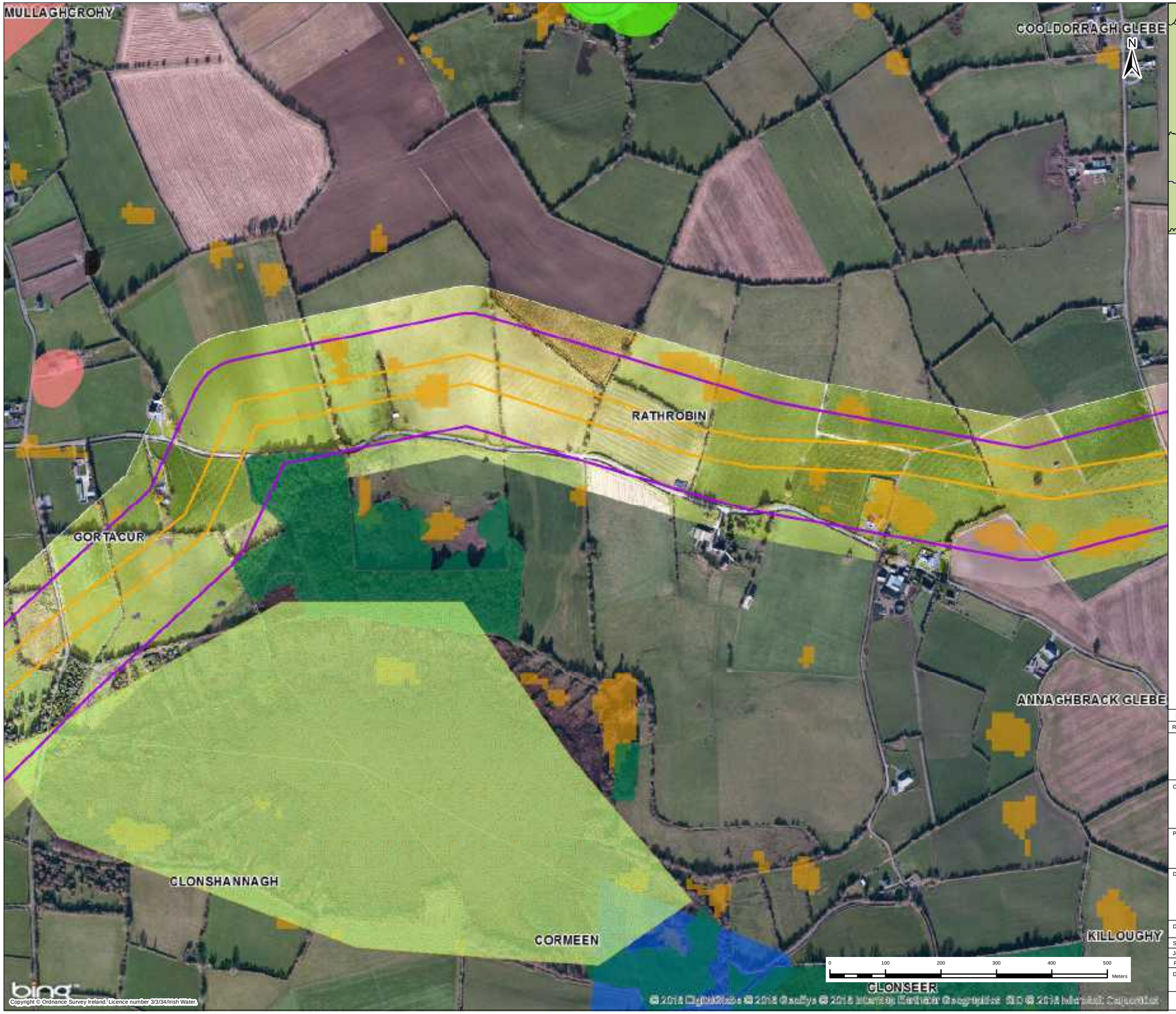
Project

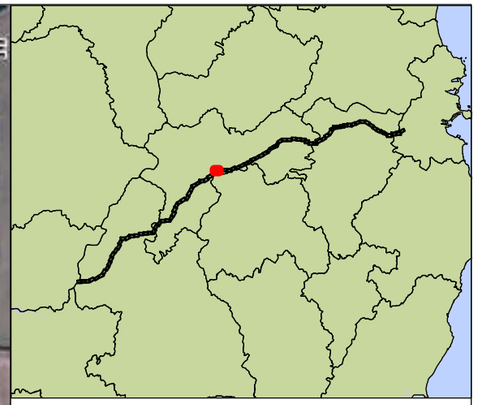
Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status	**For Issue**		
Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath	G:\JI\GIS\32105801 - WSP-DR\GIS Tasks\5_Mxds\Report Maps\FOAR\EIS\EIS Constraints Map.mxd		
Drawing No.	2.41		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- SMR Zone
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

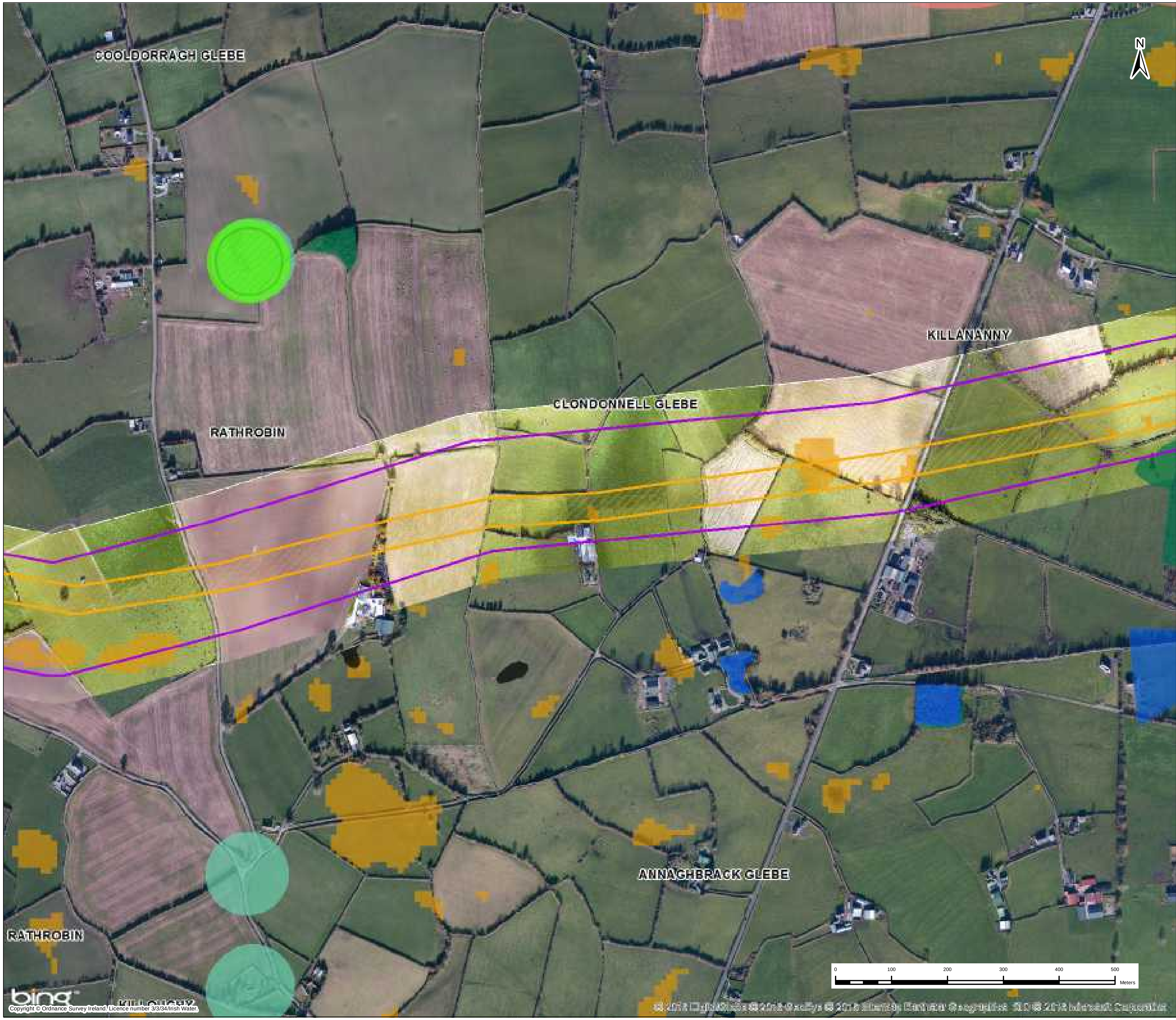
Client: UISCE EIREANN WATER

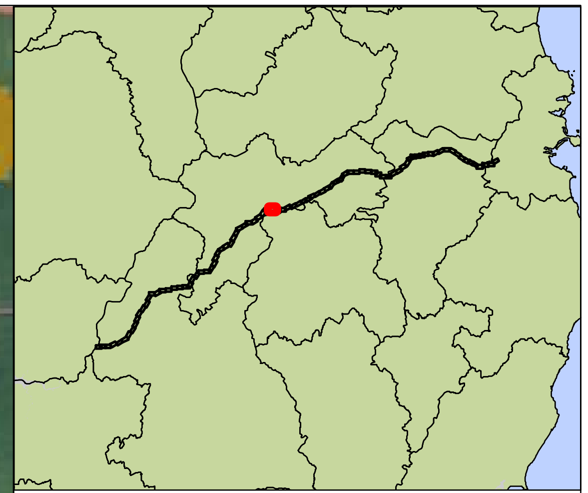
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.42		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Lakes
- Forestry
- SMR Zone
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

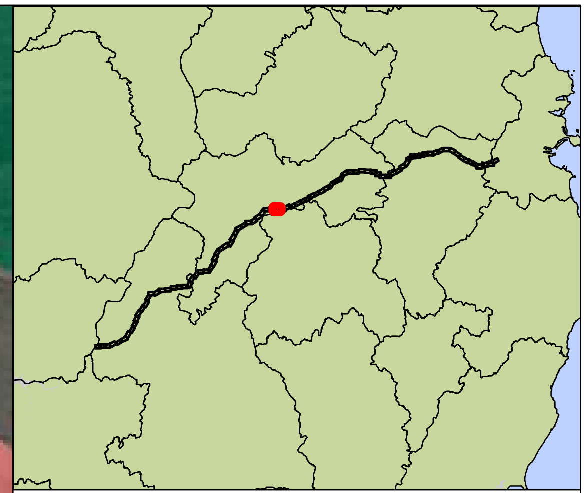
Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.43		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Proposed Natural Heritage Area
- Woodland_Habitats
- Lakes
- Forestry
- Native Woodland Survey
- Landscape Classification Areas Offaly High Sensitivity
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

Project

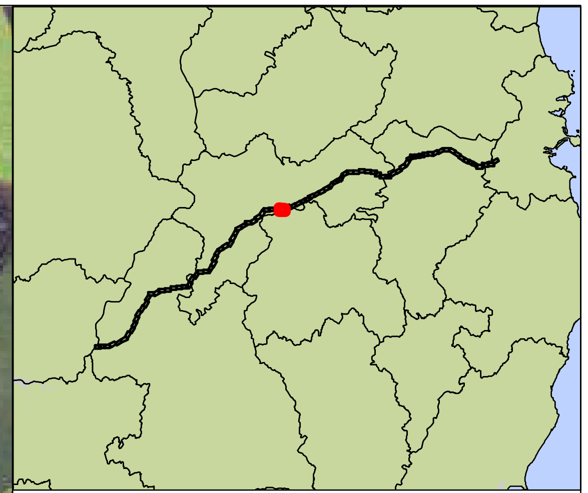
Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.44		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Pits And Quarries
- Additional Habitats
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Proposed Natural Heritage Area
- Woodland_Habitats
- Lakes
- Forestry
- Native Woodland Survey
- Landscape Classification Areas Offaly High Sensitivity
- Architectural Conservation Areas Offaly
- Mineral Locations
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

Project

Water Supply Project - Eastern and Midlands Region

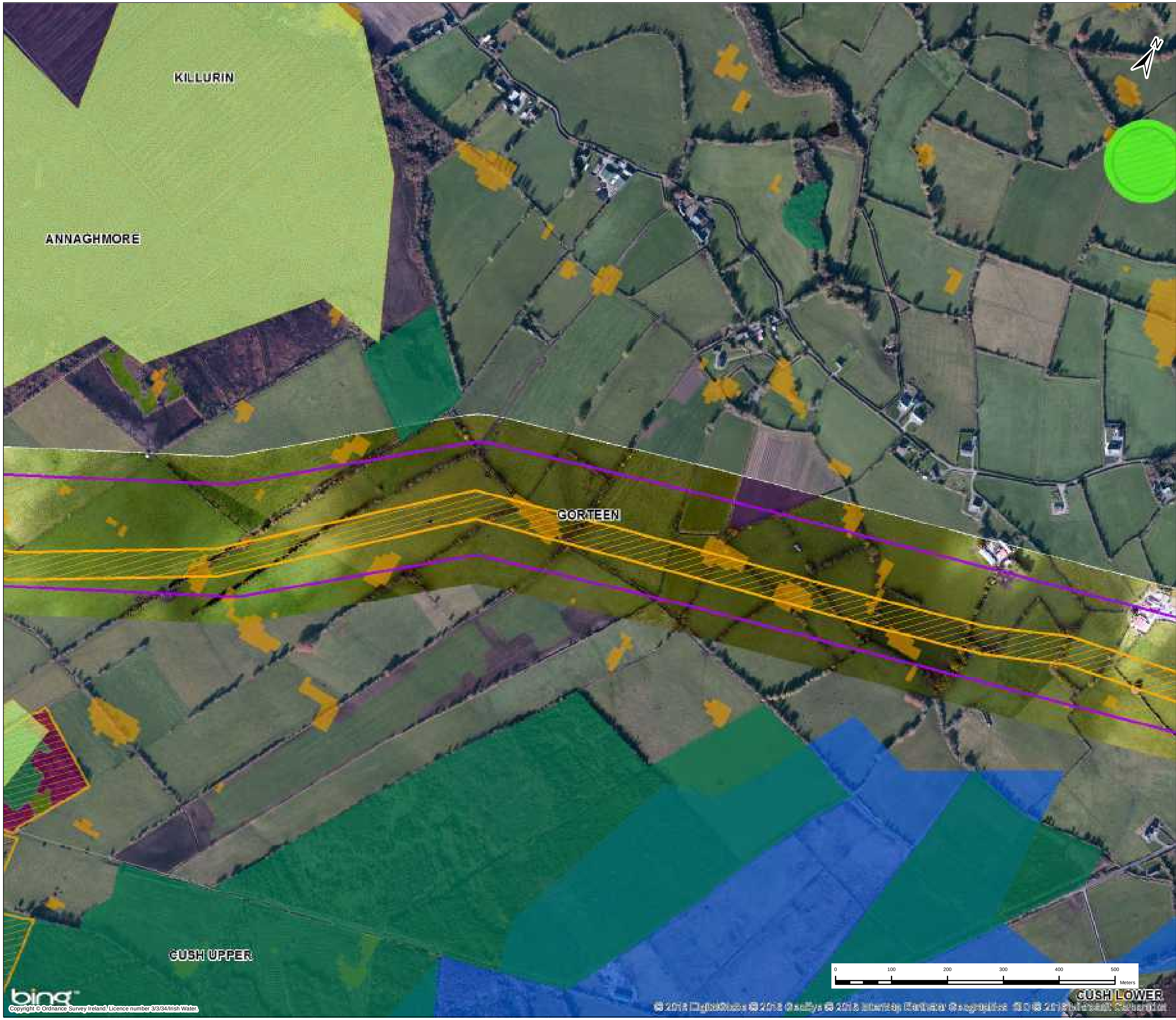
Drawing Title

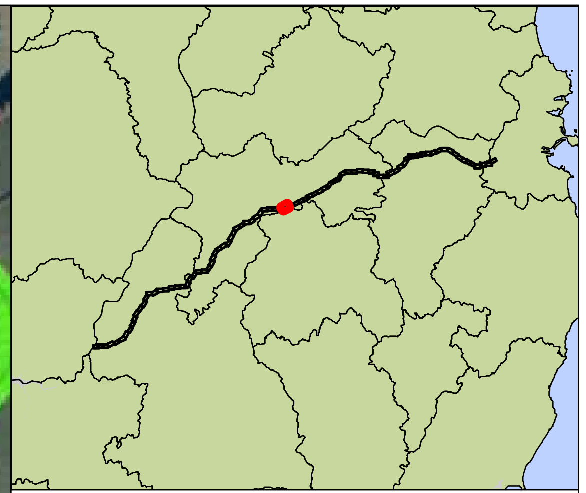
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.45		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Additional Habitats
- Proposed Natural Heritage Area
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- SMR Zone
- Landscape Classification Areas Offaly High Sensitivity
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

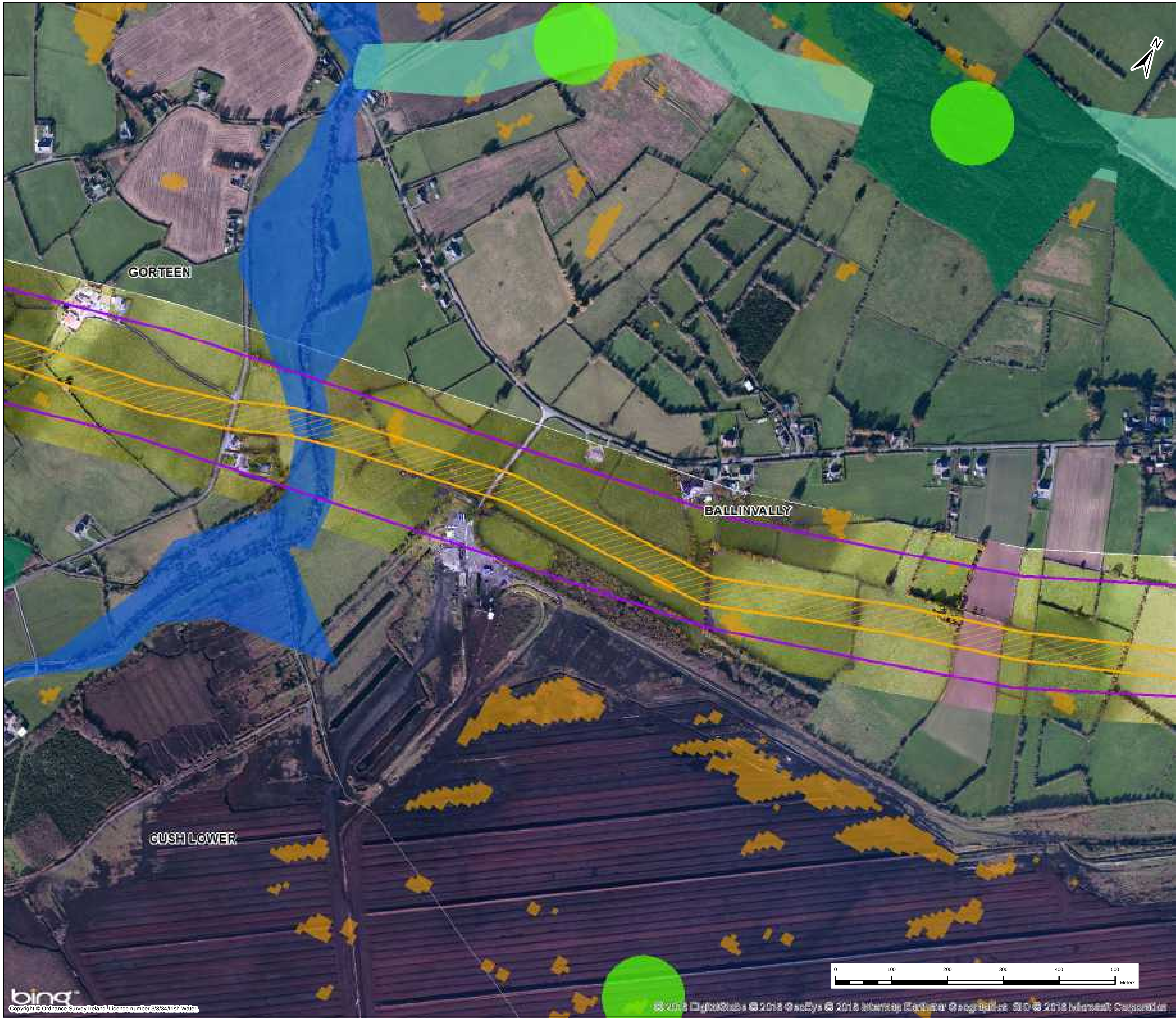
Drawing Title

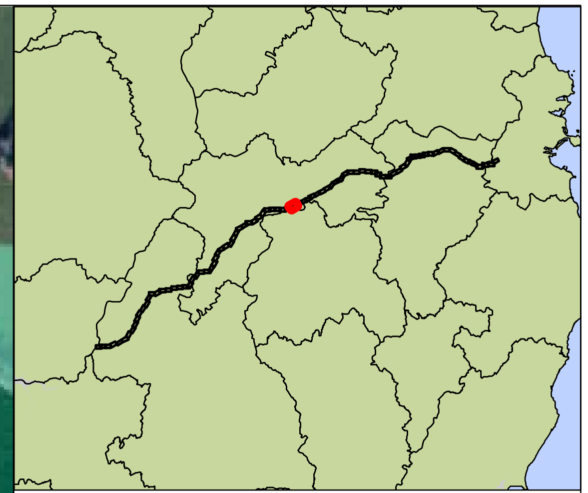
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.46		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Forestry
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

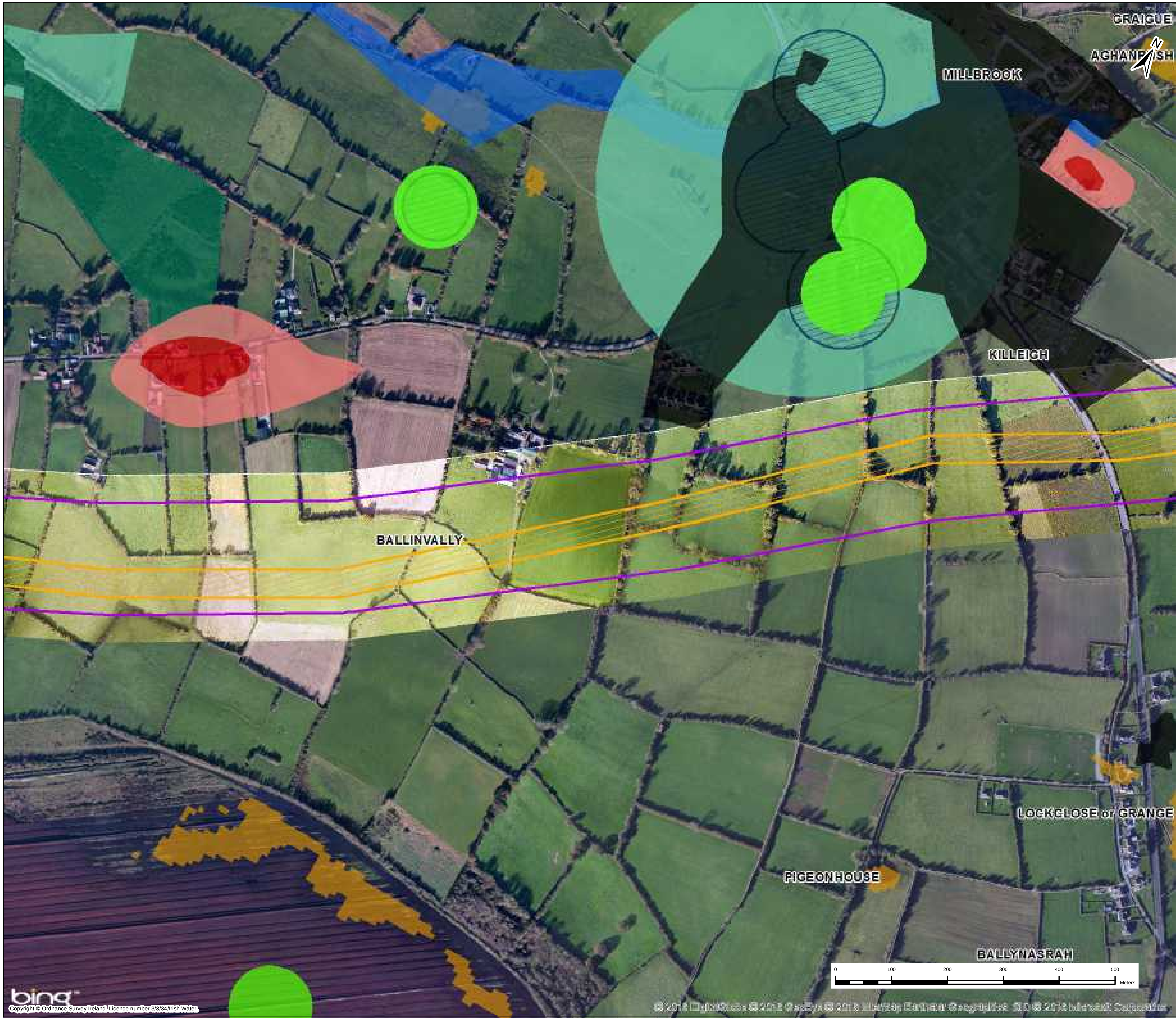
Drawing Title

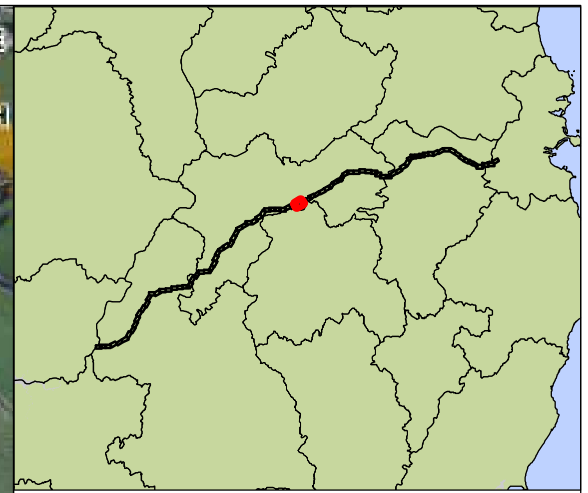
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.47		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Settlements
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- SMR Zone
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN WATER

Project

Water Supply Project - Eastern and Midlands Region

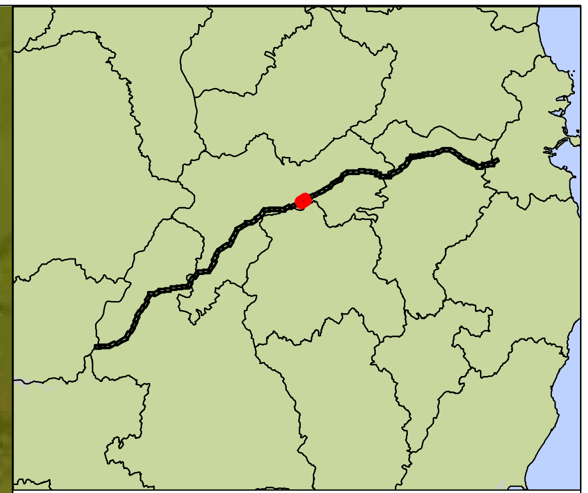
Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.48		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Settlements
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Source Protection Areas
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

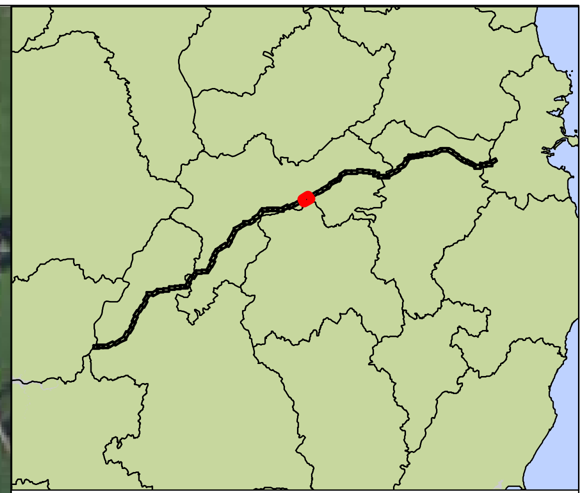
Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.49		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- SMR Zone
- Source Protection Areas
- Architectural Conservation Areas Offaly
- Mineral Locations
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

Project

Water Supply Project - Eastern and Midlands Region

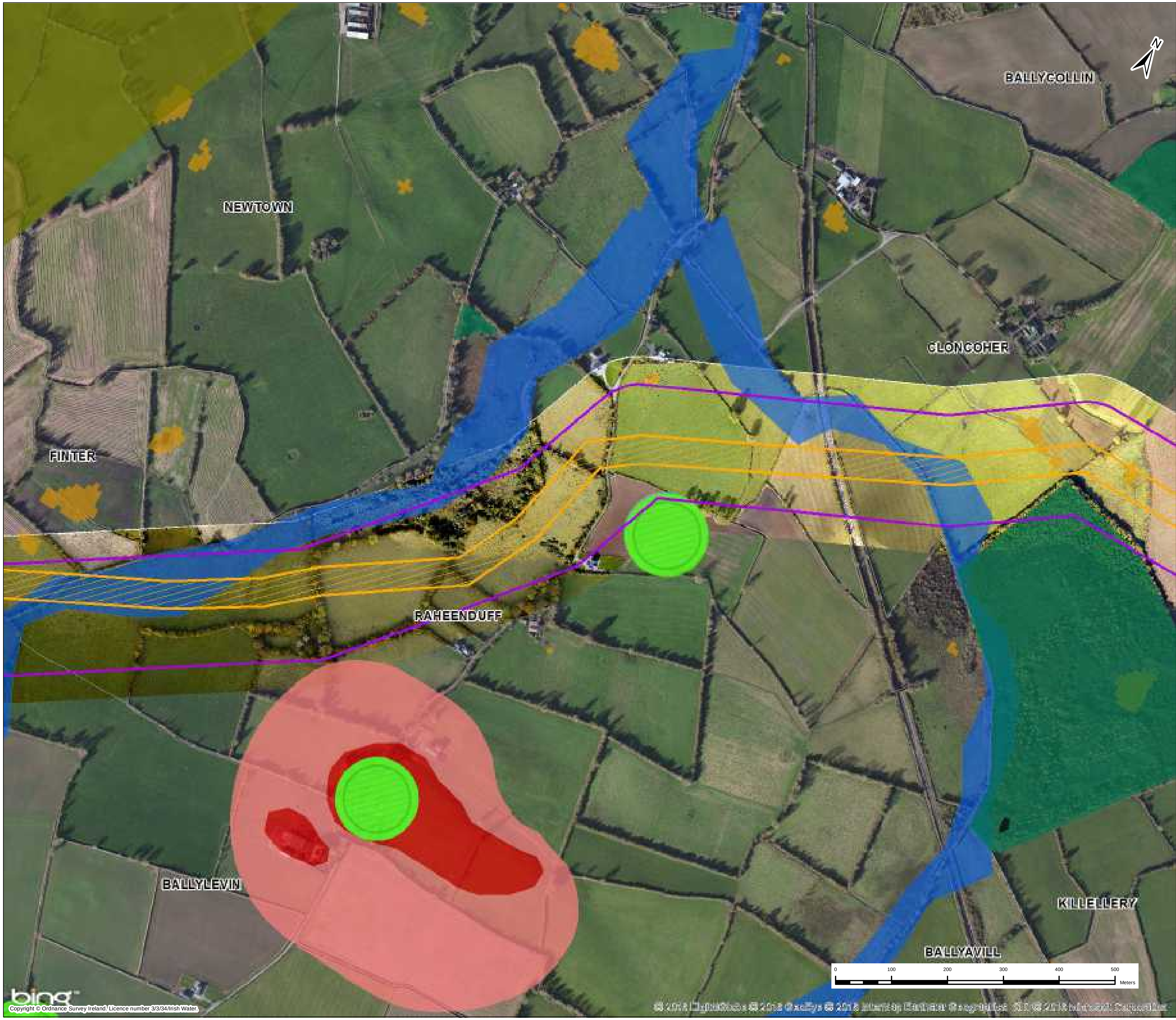
Drawing Title

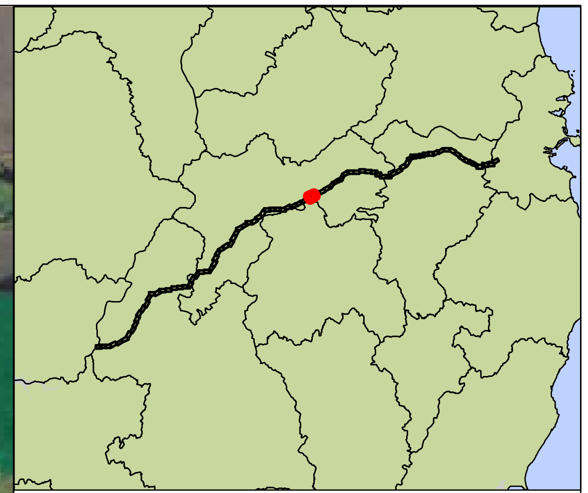
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.50		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- SMR Zone
- Source Protection Areas
- Architectural Conservation Areas Offaly
- Mineral Locations
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

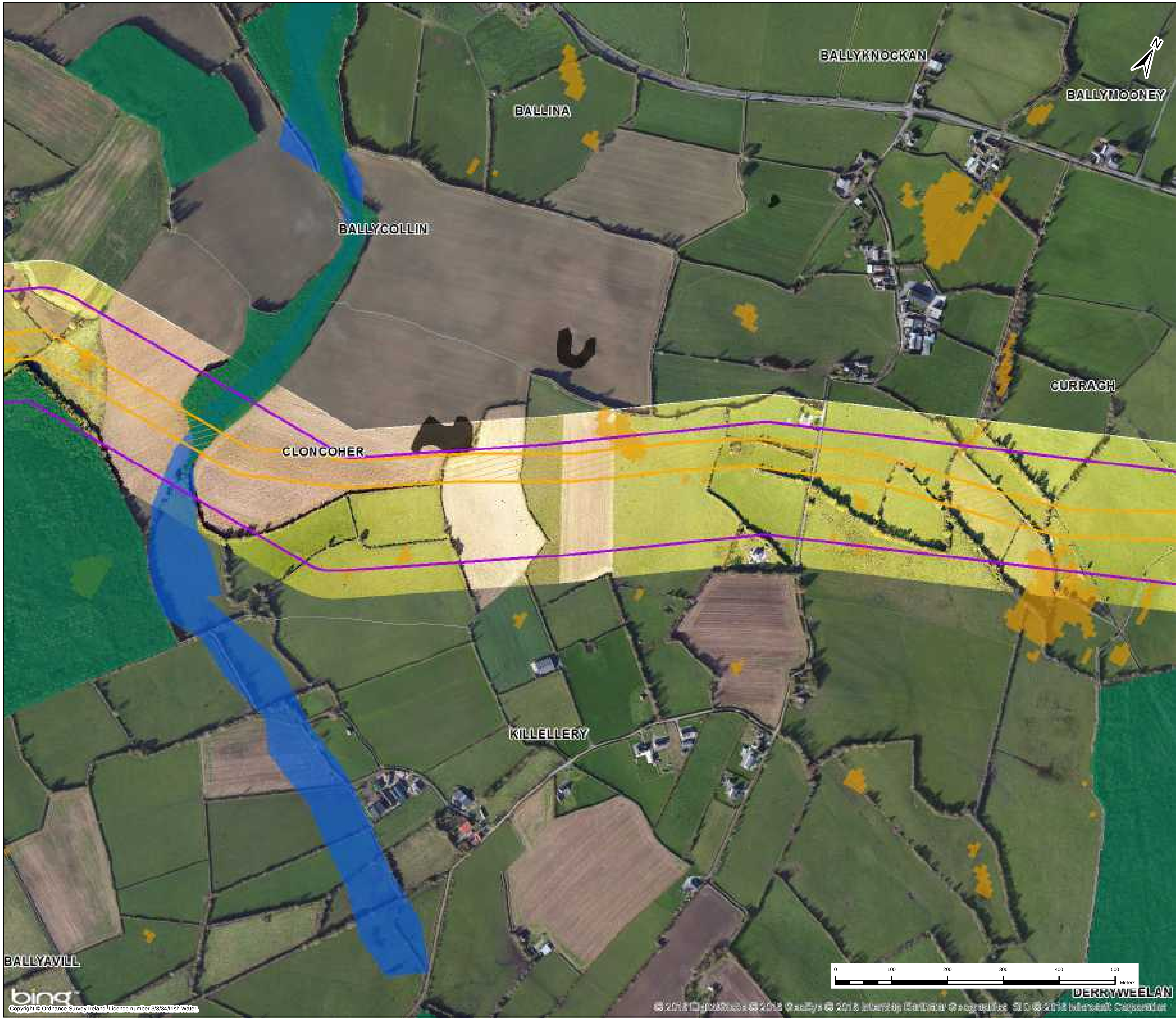
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

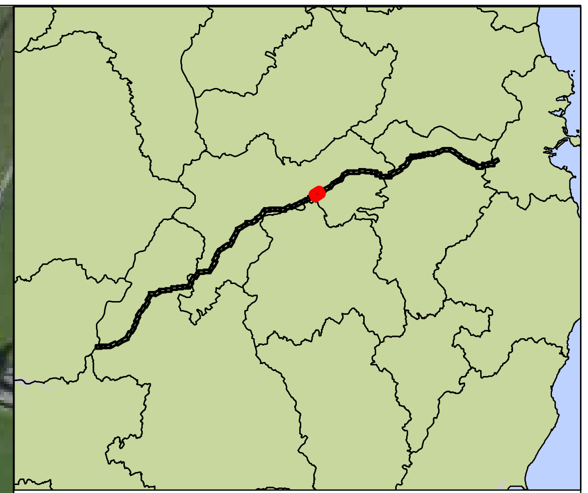
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.51		

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Pits And Quarries
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

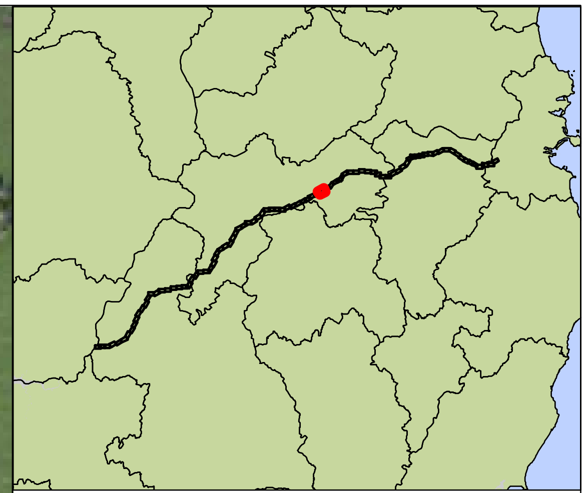
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.

2.52



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Settlements
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- SMR Zone
- Landscape Classification Areas Offaly High Sensitivity
- High Amenity Areas
- Source Protection Areas
- Architectural Conservation Areas Offaly
- KarstFeatures
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

1	03/11/2016	For Issue	PW	CK	ND	MG
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

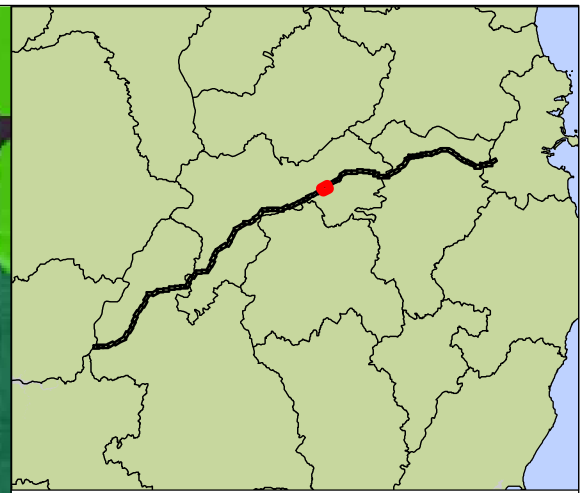
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.

2.53



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Source Protection Areas
- Mineral Locations
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

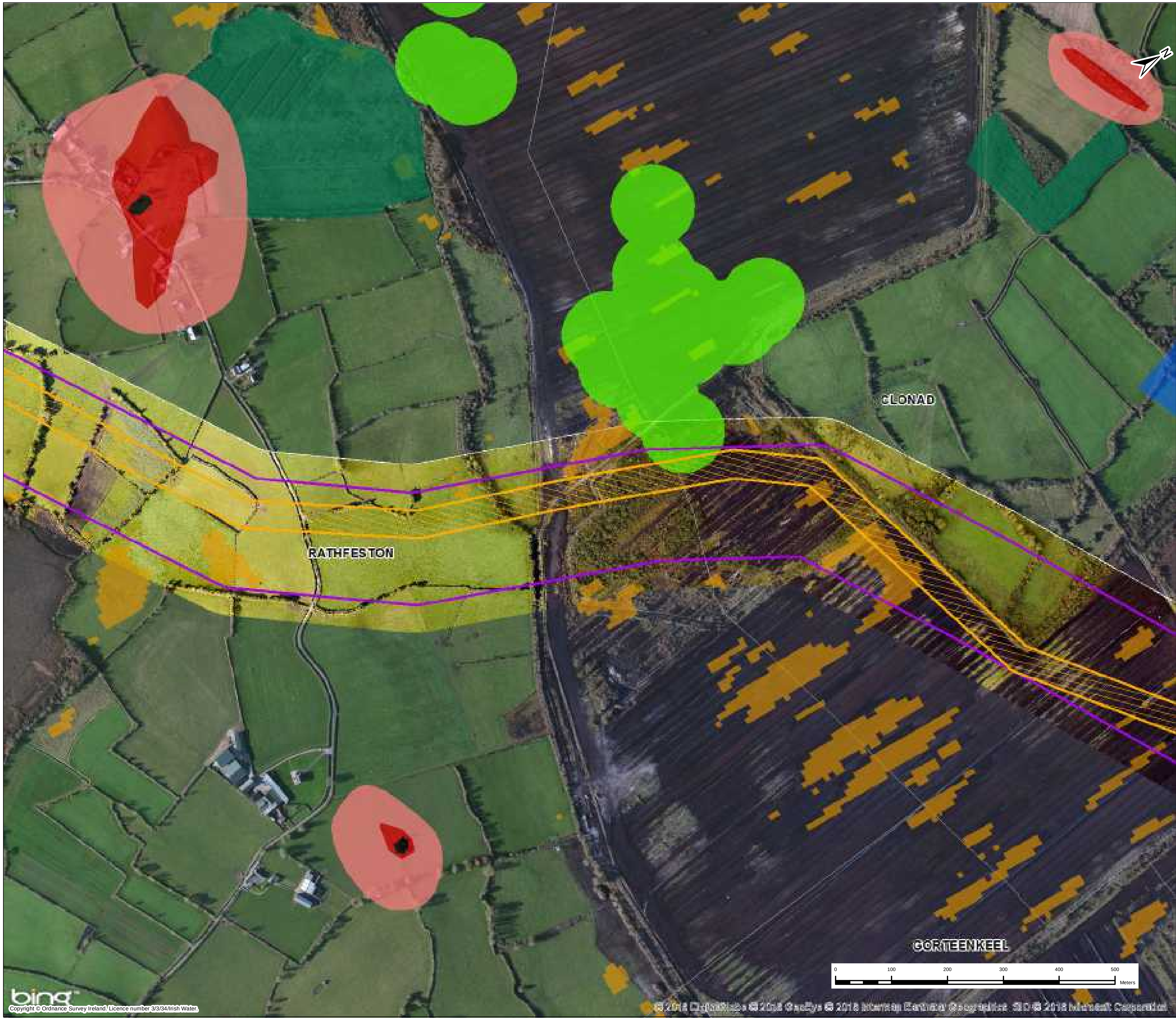
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

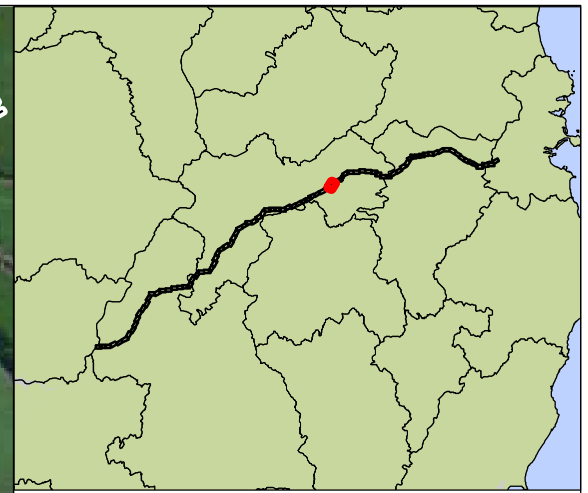
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.54		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Mineral Locations
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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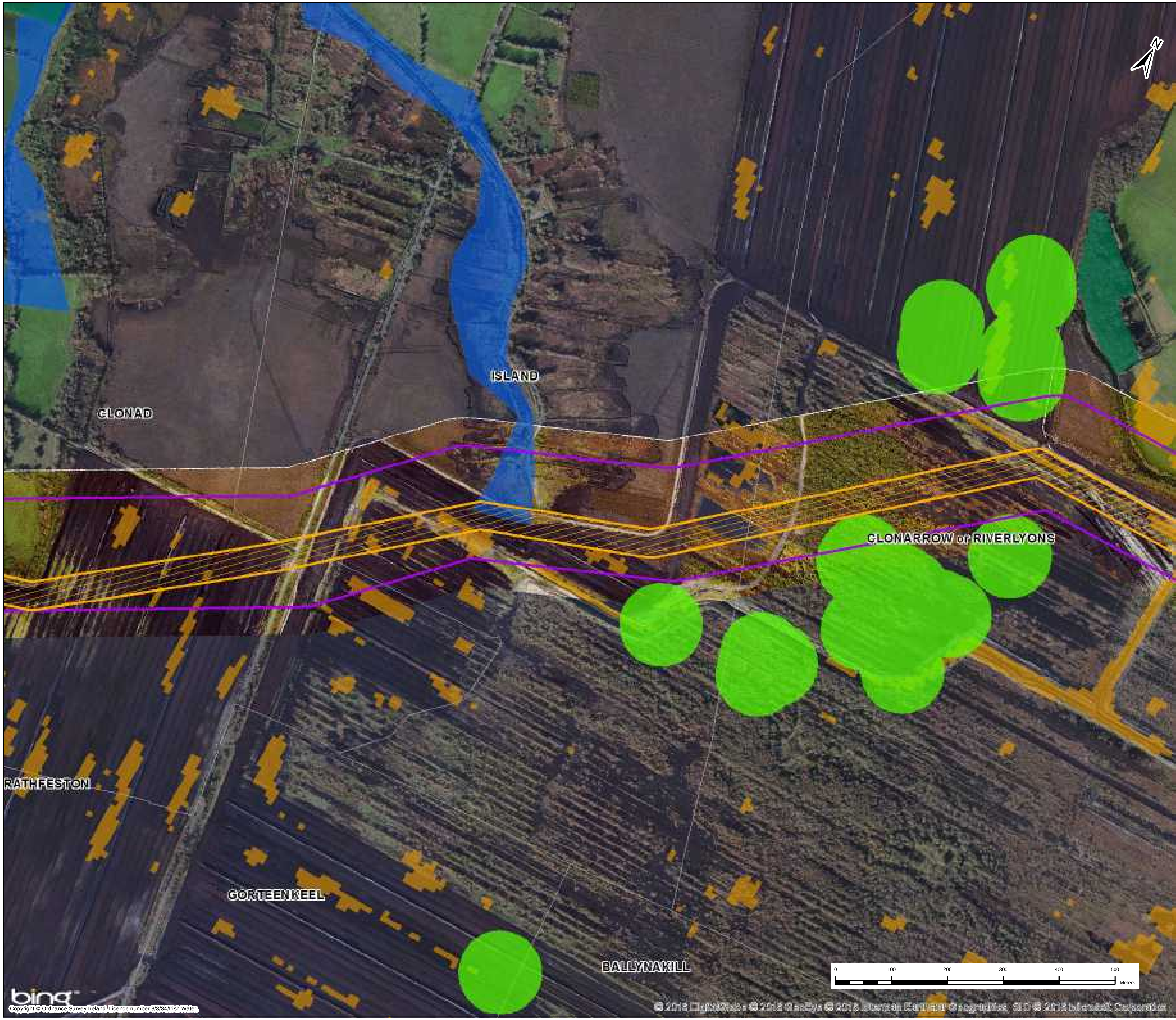
Client: UISCE ÉIREANN IRISH WATER

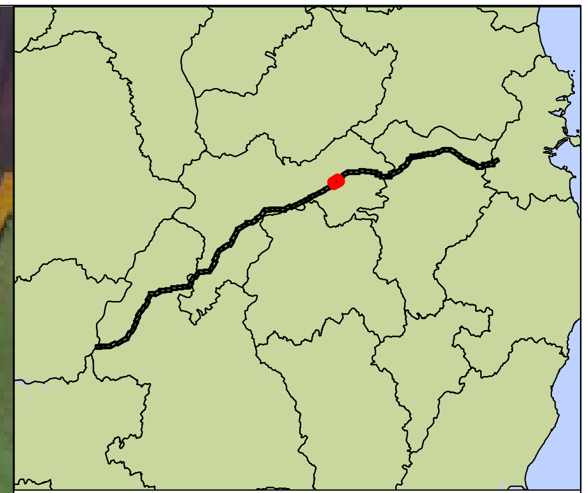
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.55		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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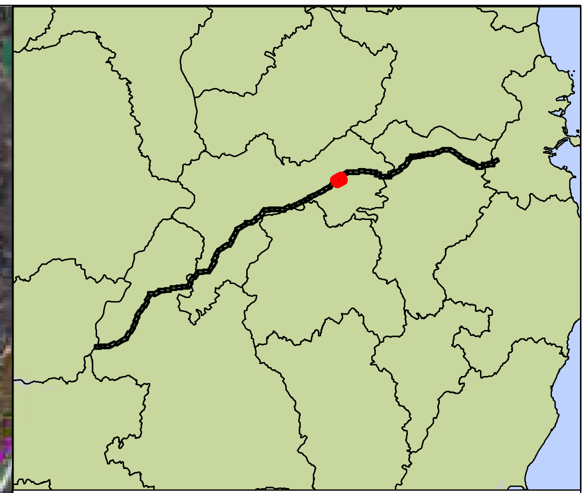
Client: UISCE WATER

Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.56		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Forestry
- SMR Zone
- Source Protection Areas
- Architectural Conservation Areas Offaly
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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UISCE ÉIREANN WATER

Project

Water Supply Project - Eastern and Midlands Region

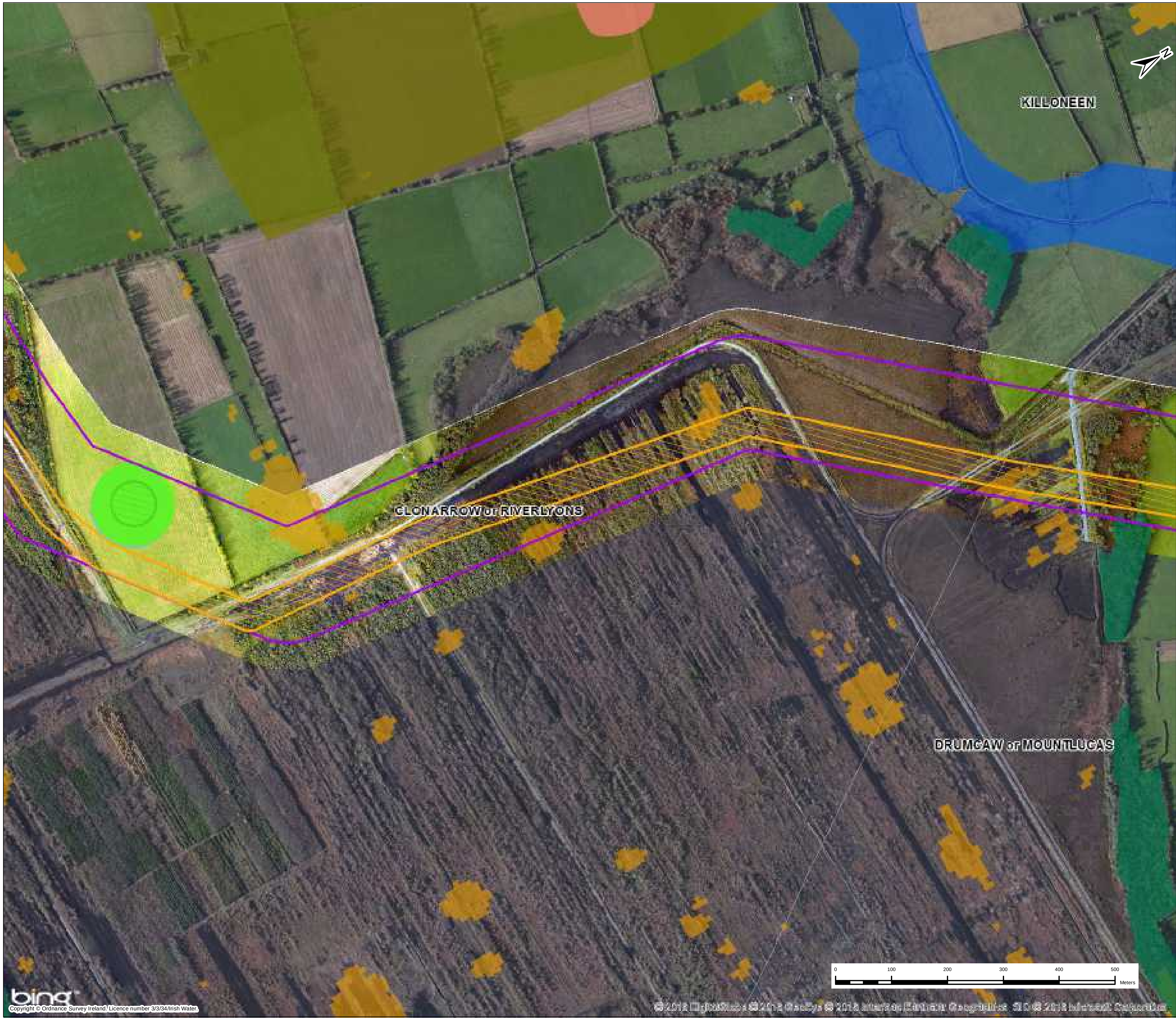
Drawing Title

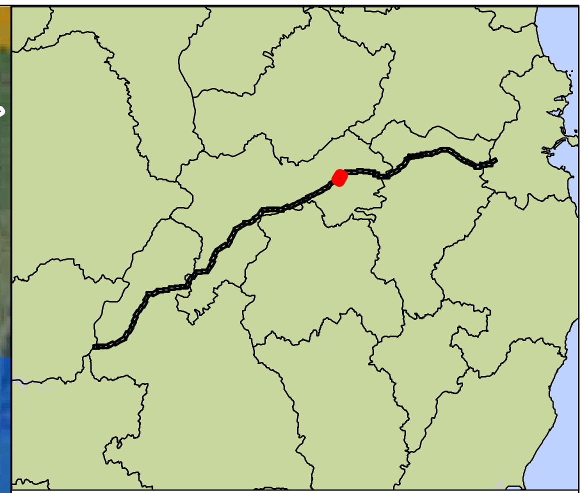
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.57		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Groundwater Vulnerabilty Extreme
- Forestry
- SMR Zone
- Source Protection Areas
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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UISCE ÉIREANN WATER

Project

Water Supply Project - Eastern and Midlands Region

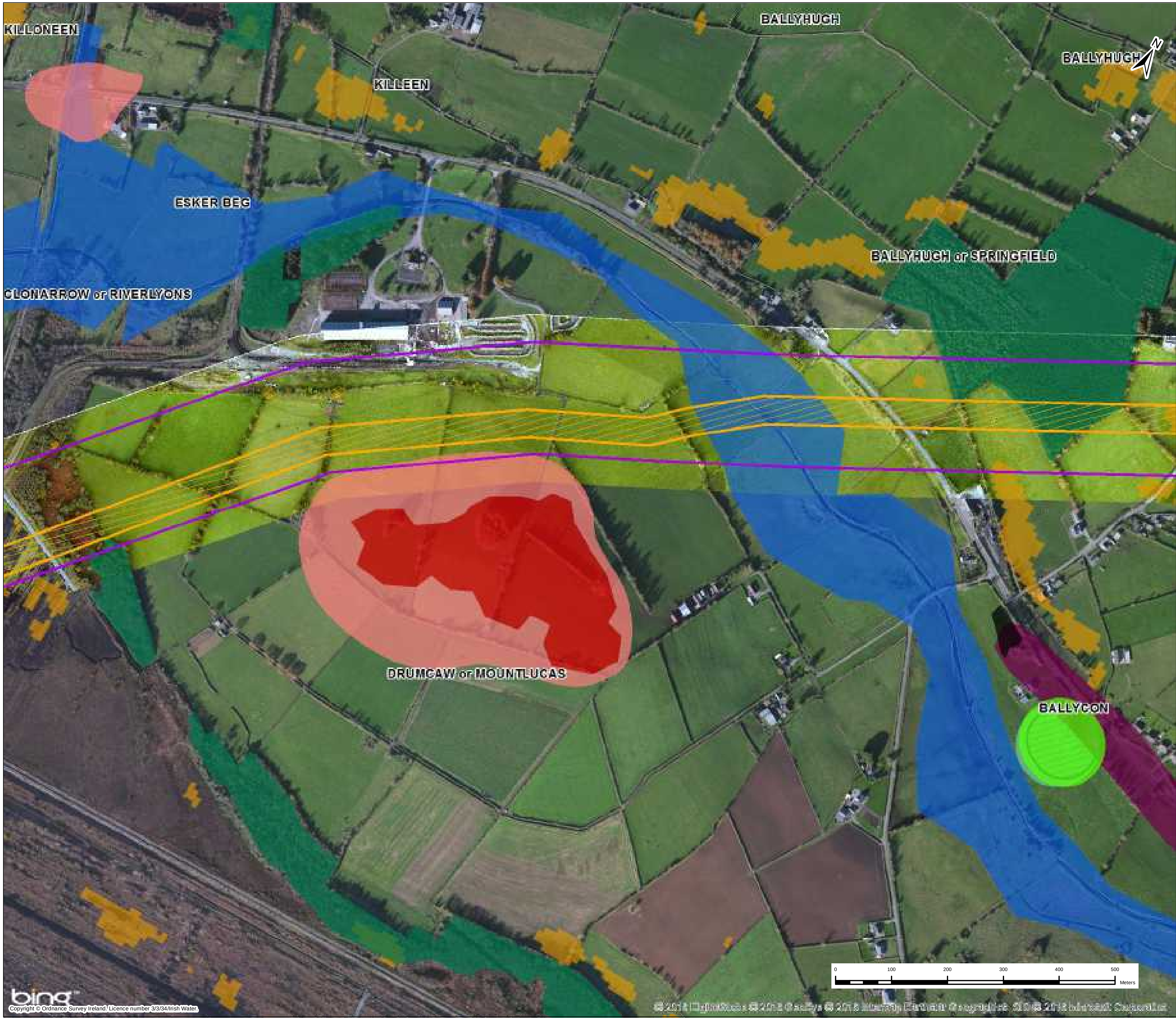
Drawing Title

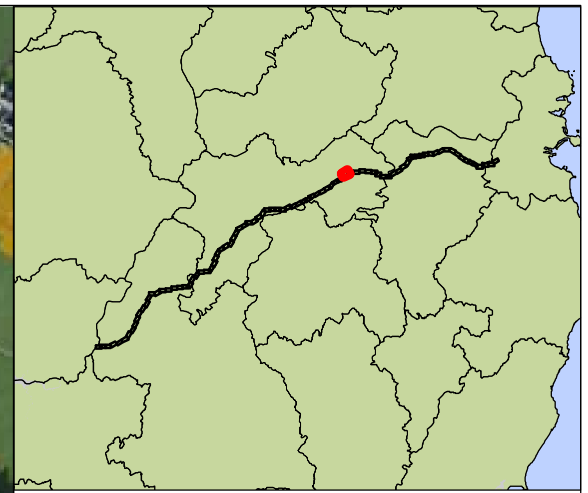
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.58		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- SMR Zone
- Landscape Classification Areas Offaly High Sensitivity
- High Amenity Areas
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

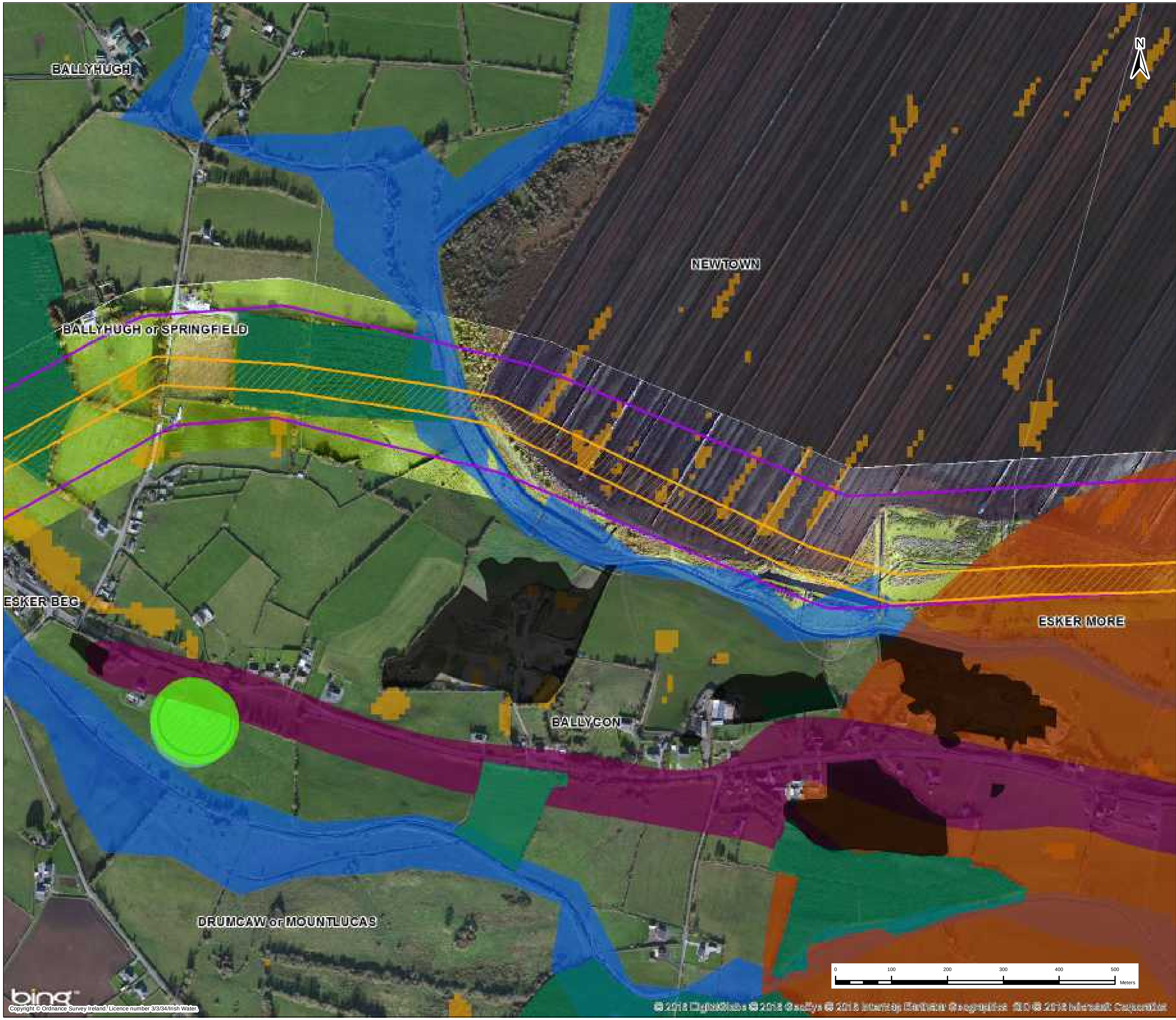
Drawing Title

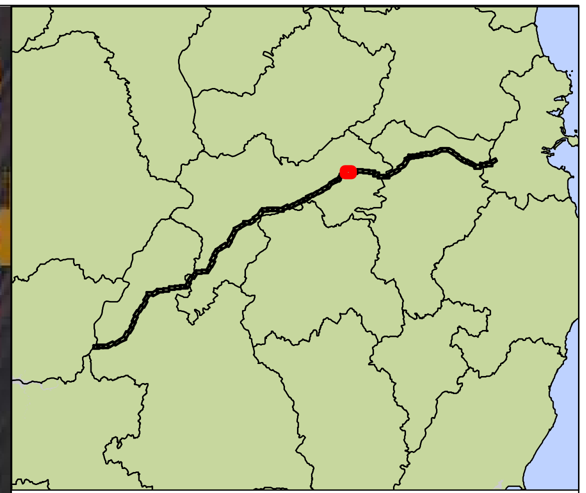
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.59		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Forestry
- SMR Zone
- Landscape Classification Areas Offaly High Sensitivity
- High Amenity Areas
- Geological Heritage Sites No Bound
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

Client

Project

Water Supply Project - Eastern and Midlands Region

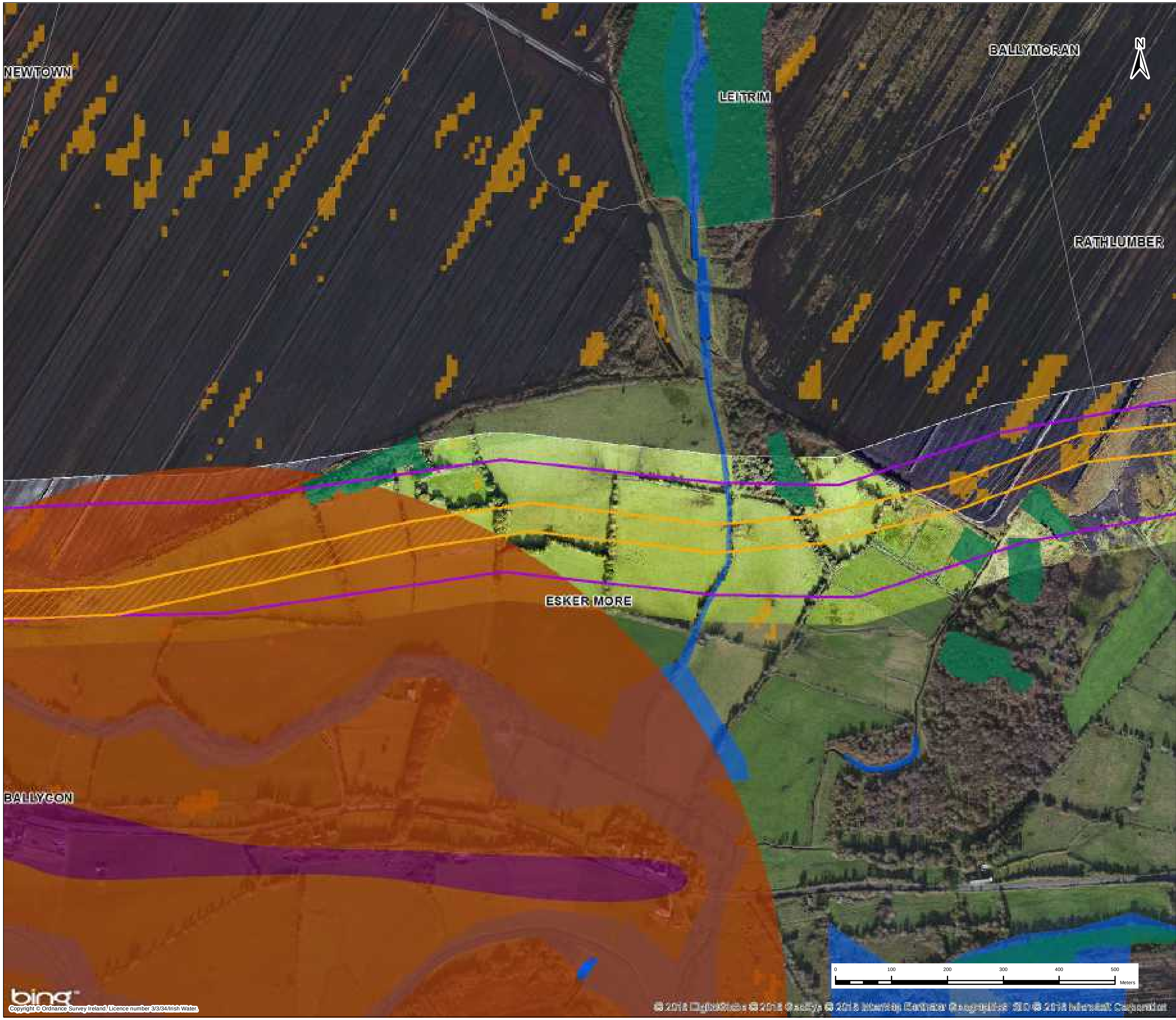
Drawing Title

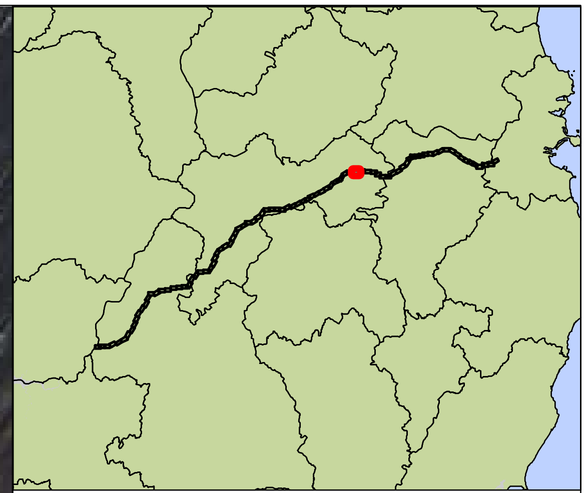
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath	G:\JI\GIS\32105801 - WSP-DR\GIS Tasks\5_Mxds\Report Maps\FOAR\EIS\EIS Constraints Map.mxd		

Drawing No. 2.60





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Lakes
- Forestry
- Landscape Classification Areas Offaly High Sensitivity
- High Amenity Areas
- Geological Heritage Sites No Bound
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

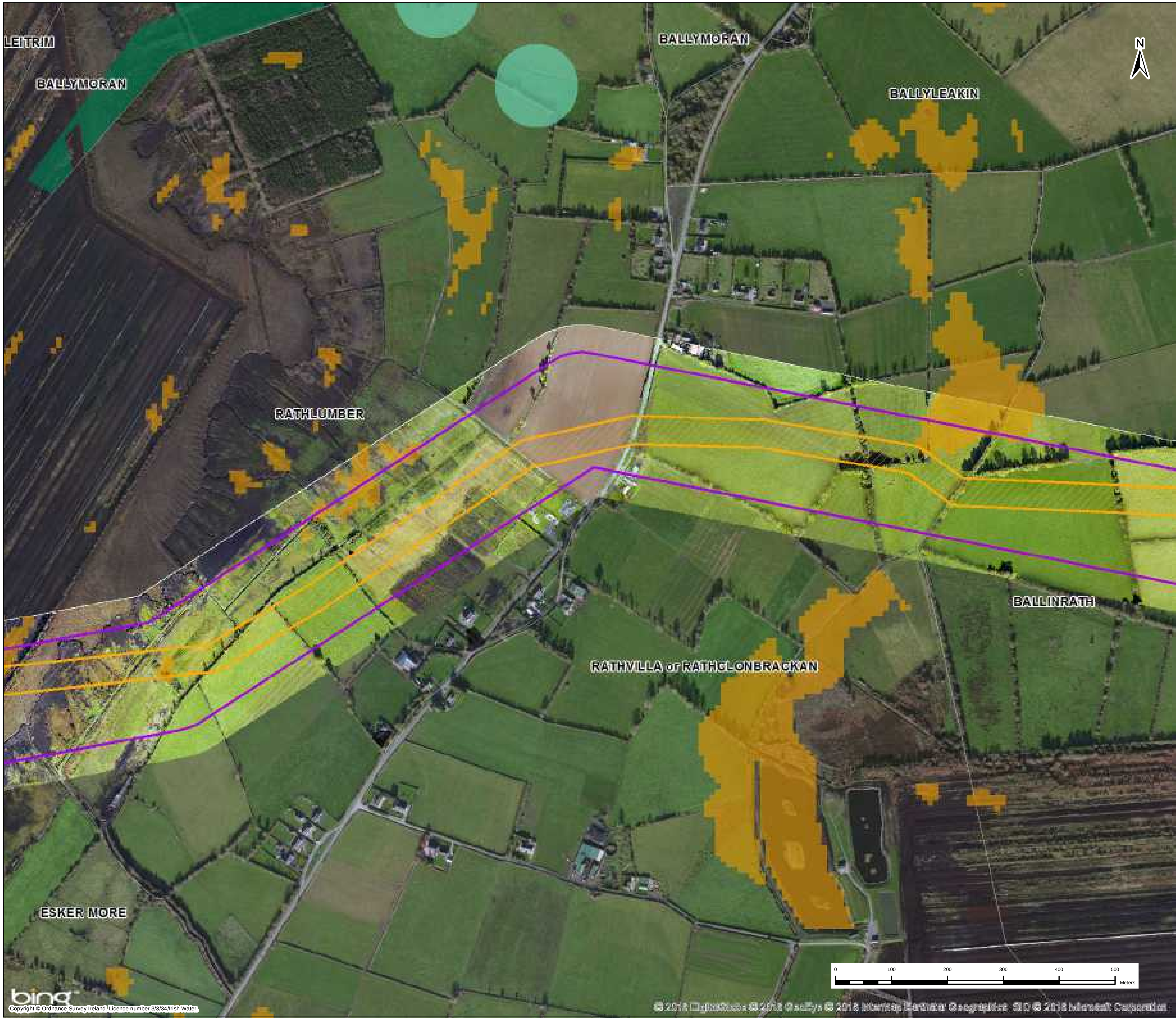
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

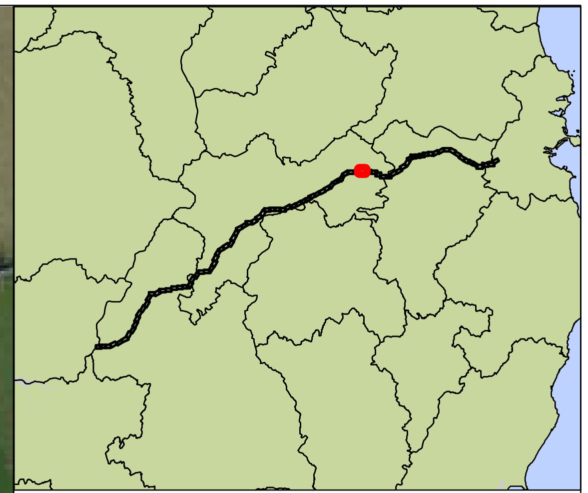
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.61		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Pits And Quarries
- Forestry
- Architectural Conservation Areas Offaly
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

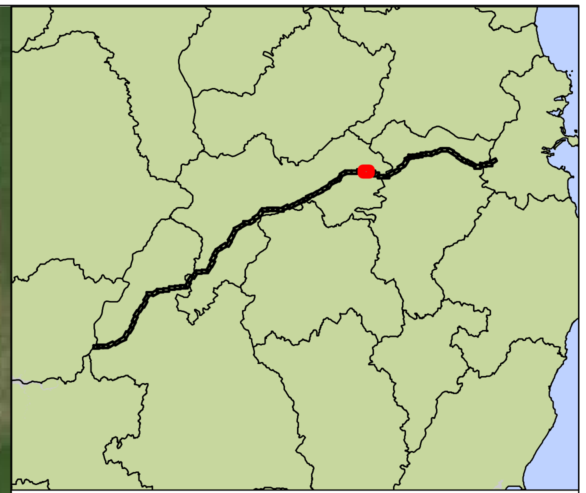
Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.62		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- SMR Zone
- Architectural Conservation Areas Offaly
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

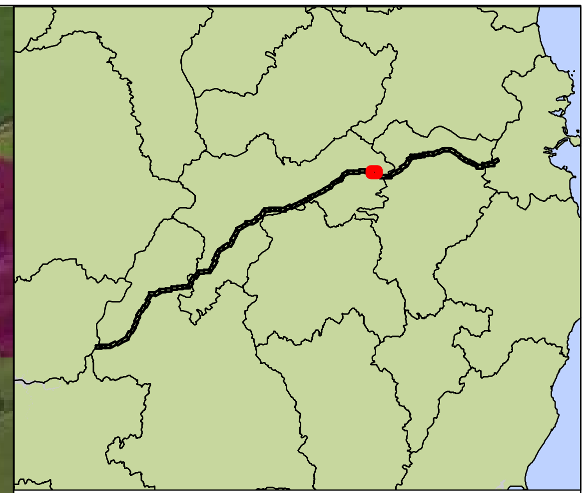
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.63		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- Forestry
- Landscape Classification Areas Offaly High Sensitivity
- High Amenity Areas
- Architectural Conservation Areas Offaly
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

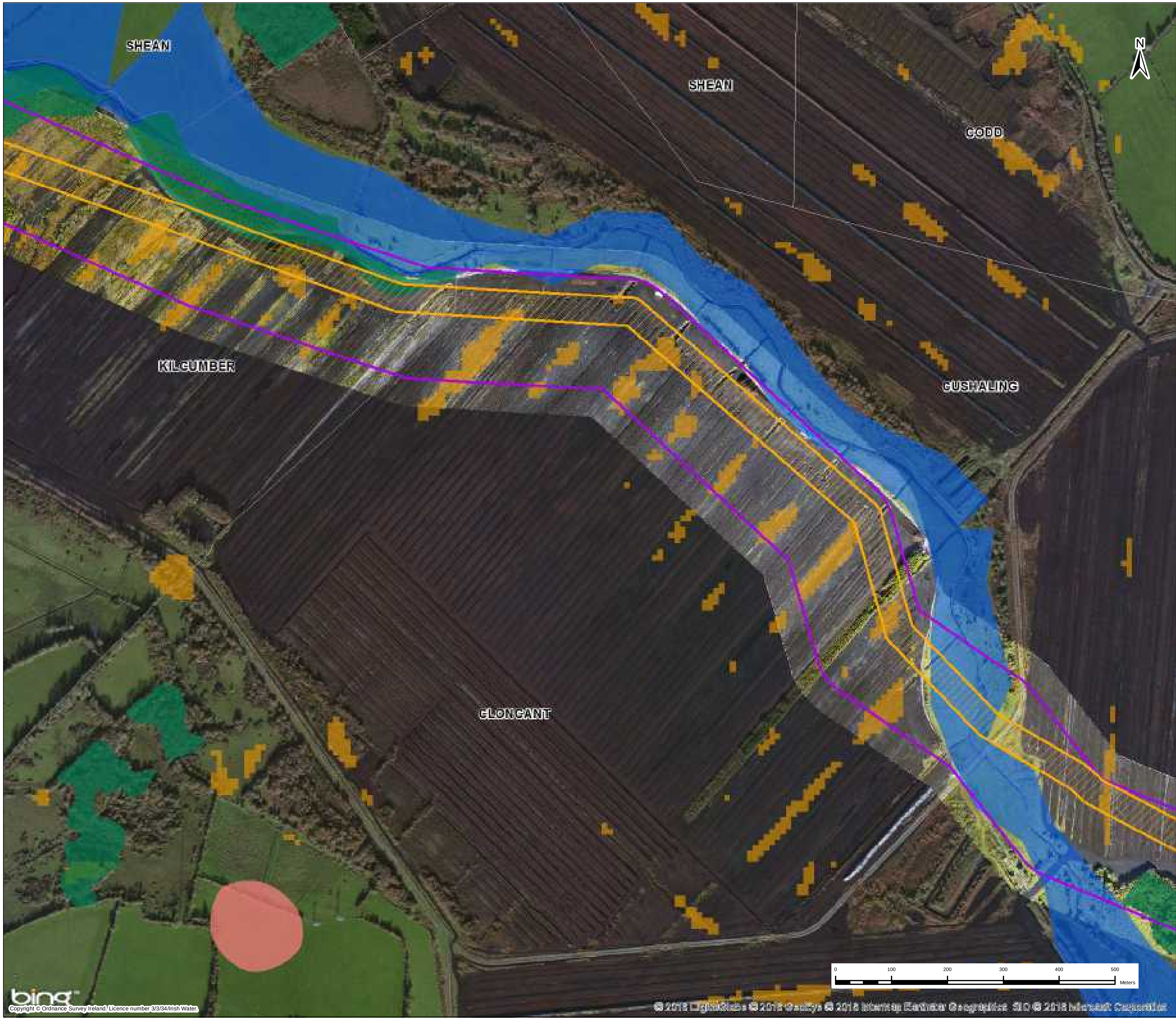
Drawing Title

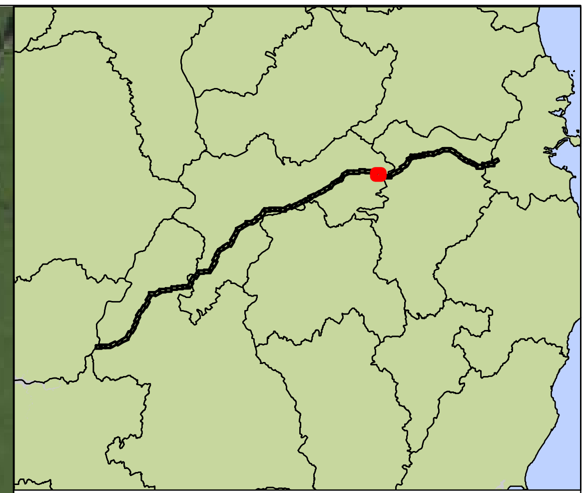
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.64		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Groundwater Vulnerabilty Extreme
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

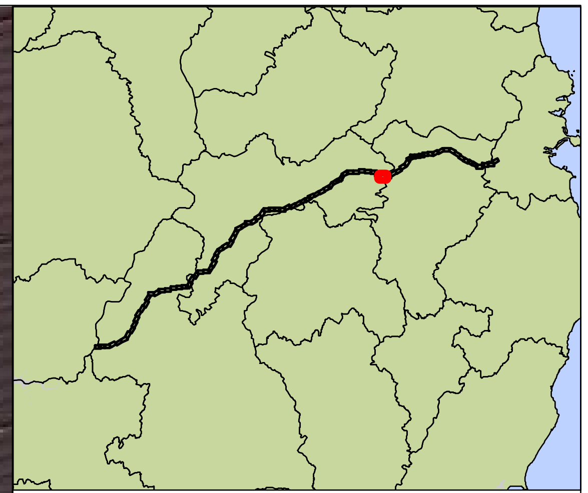
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.65		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

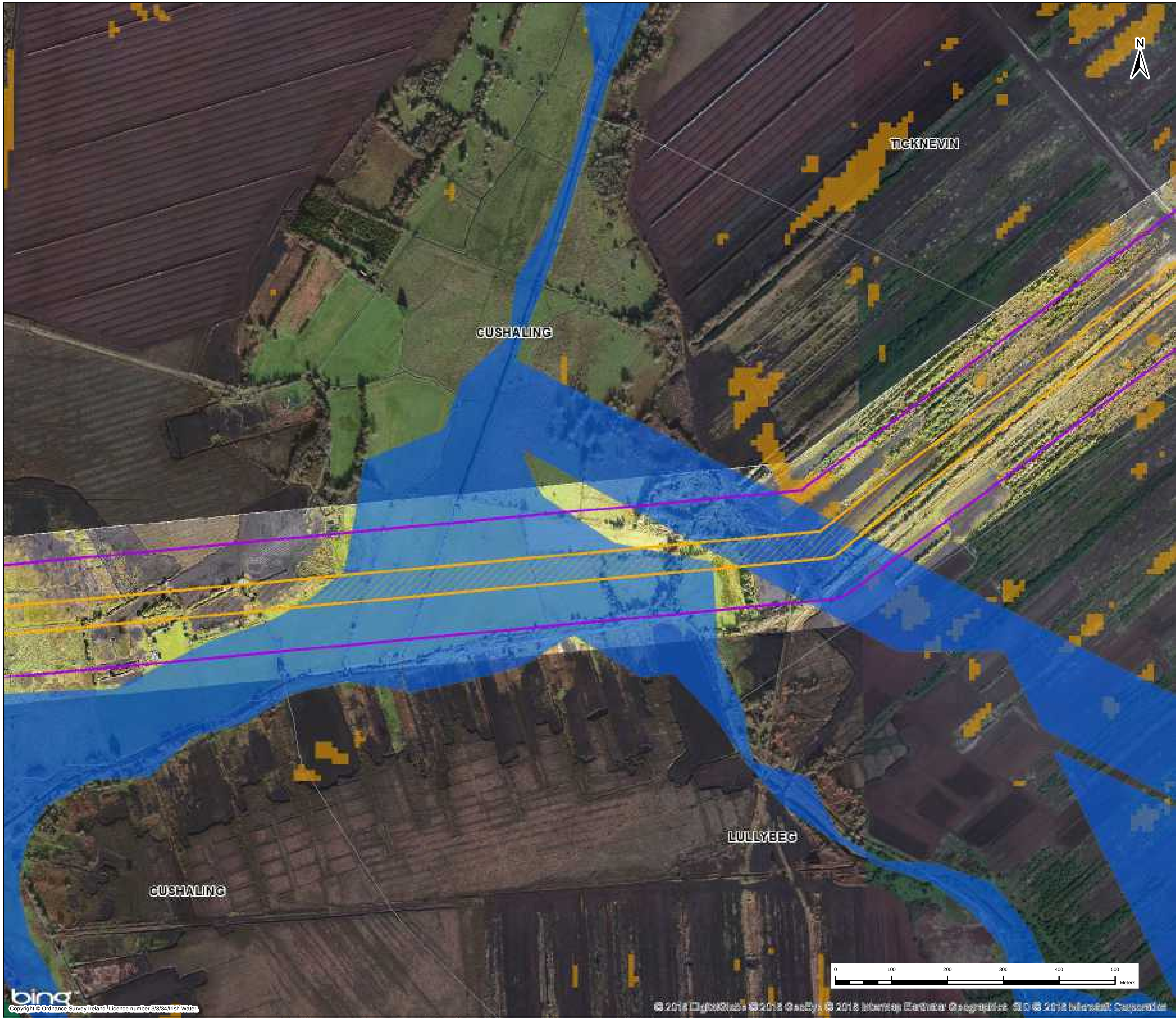
Drawing Title

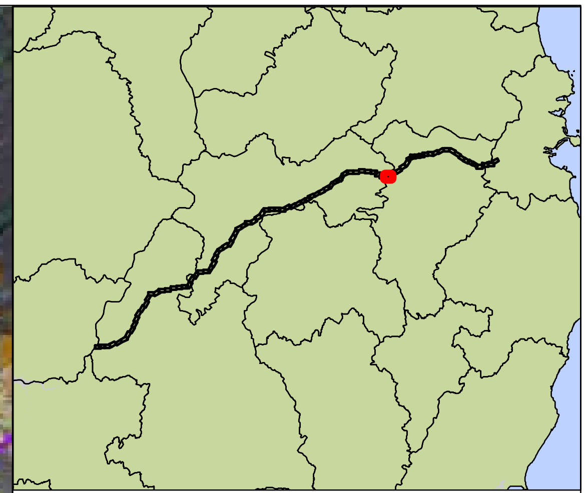
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.66		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

1	03/11/2016	For Issue	PW	CK	ND	MG
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	App'd

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UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

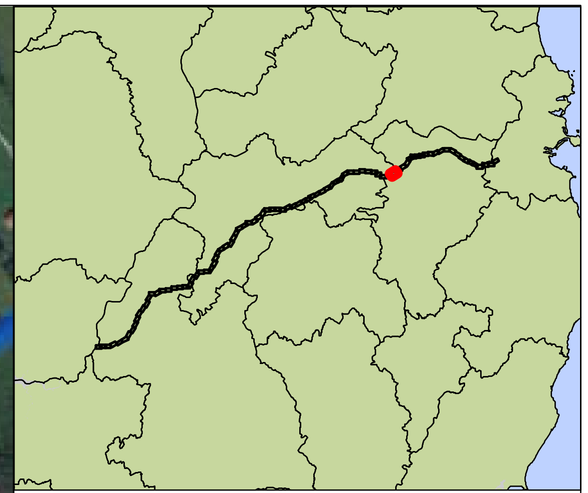
Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.67		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

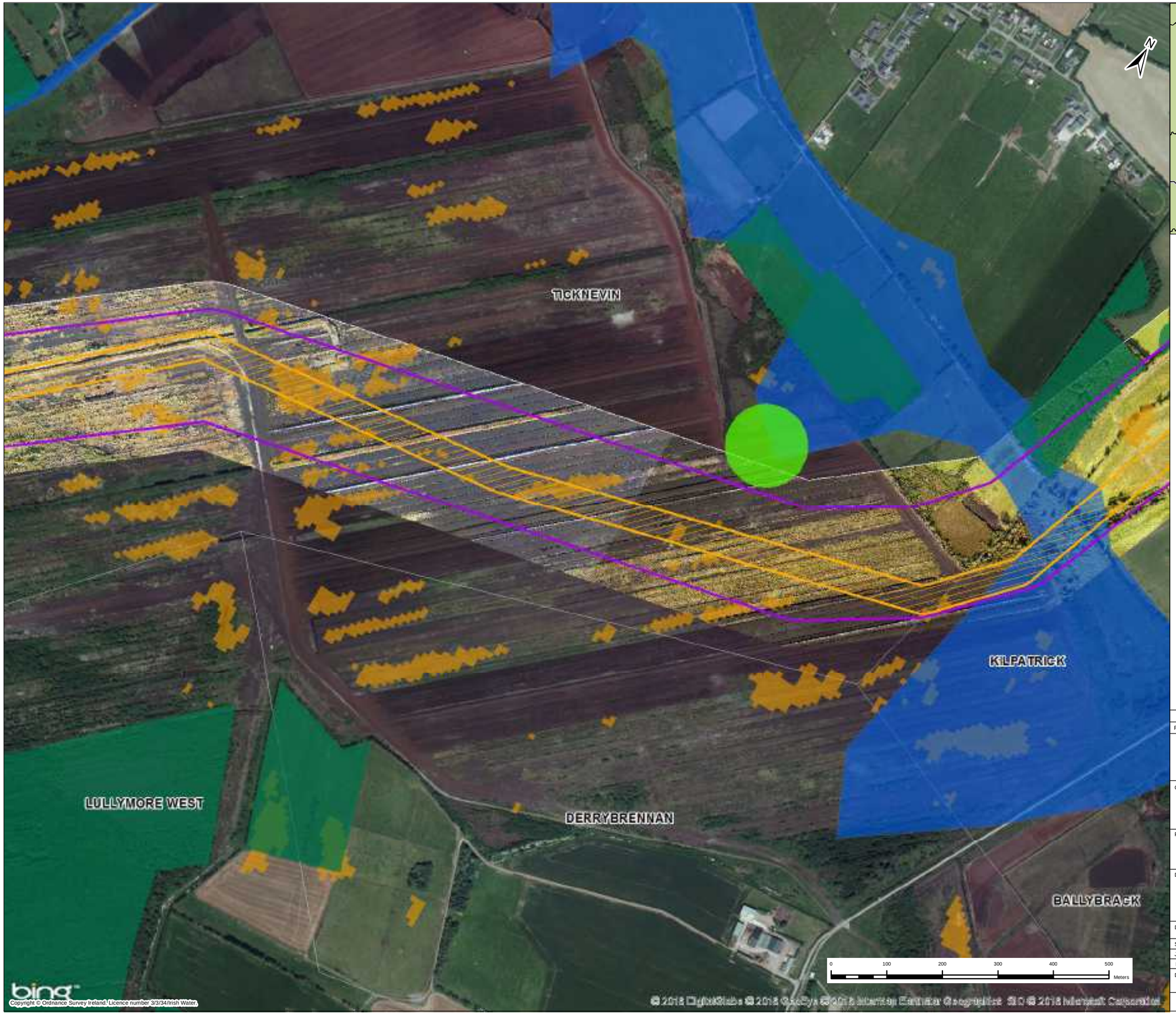
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

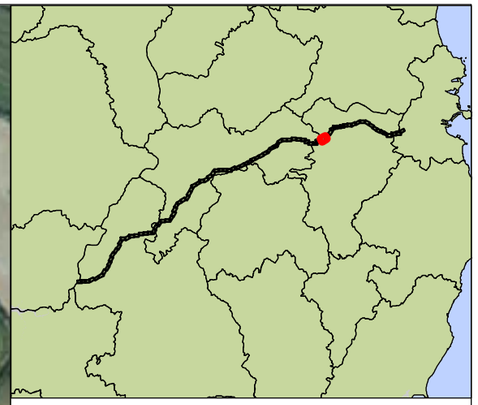
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.68		

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client: UISCE EIREANN WATER

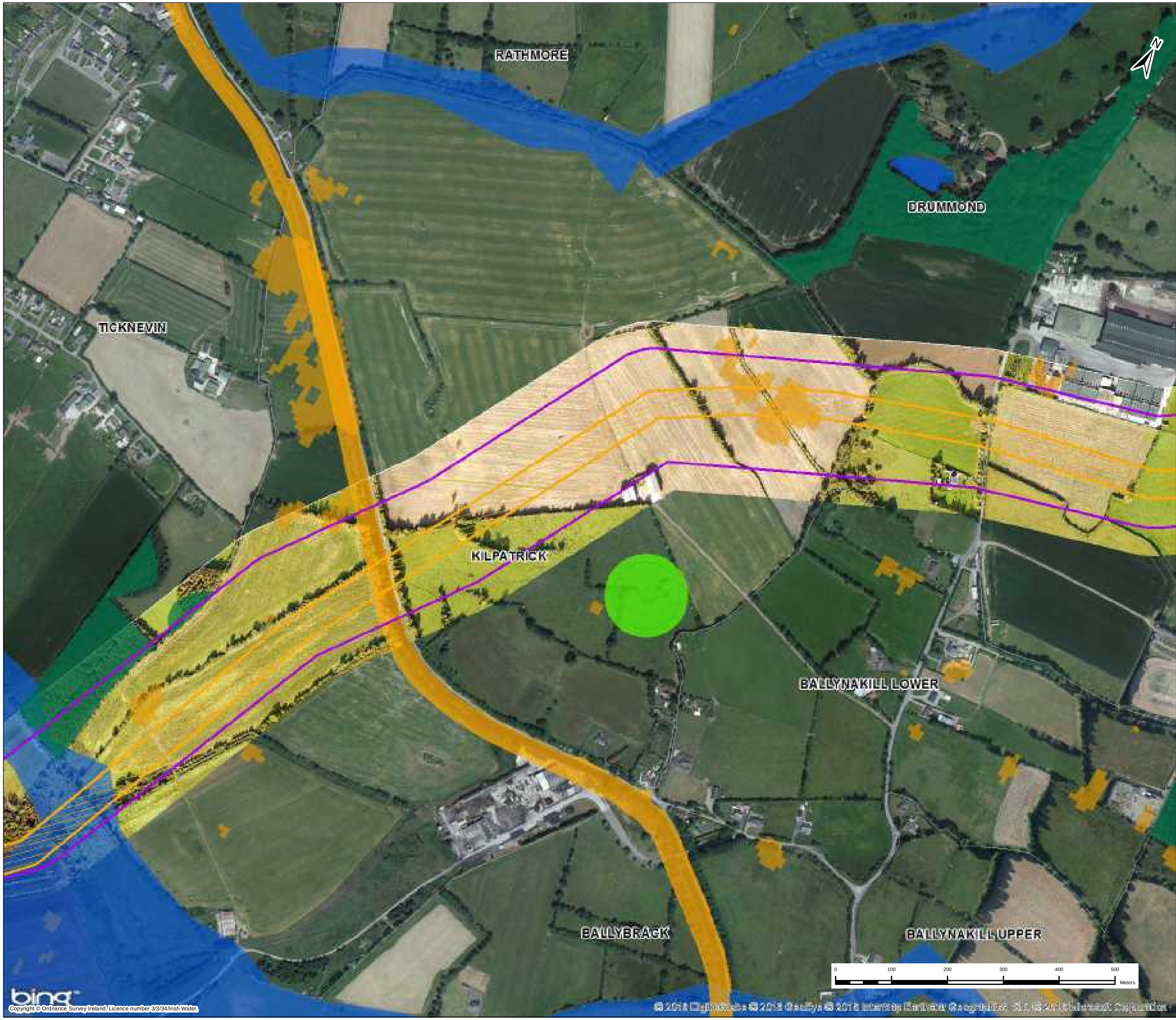
Project: Water Supply Project - Eastern and Midlands Region

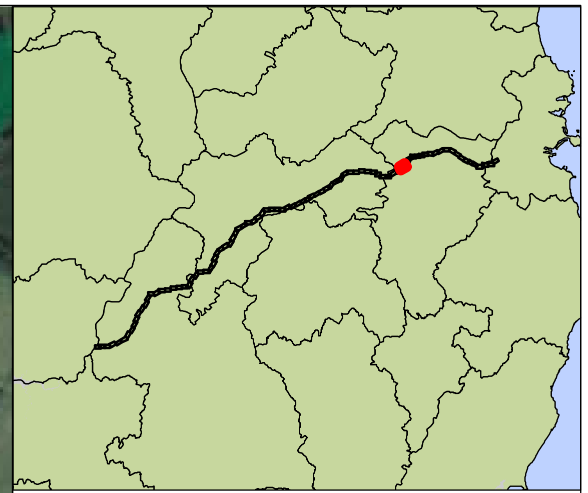
Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.: 2.69





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- RPS__9_Counties
- Landscape Classification Areas Kildare High
- Proposed Natural Heritage Area
- Lakes
- Forestry
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

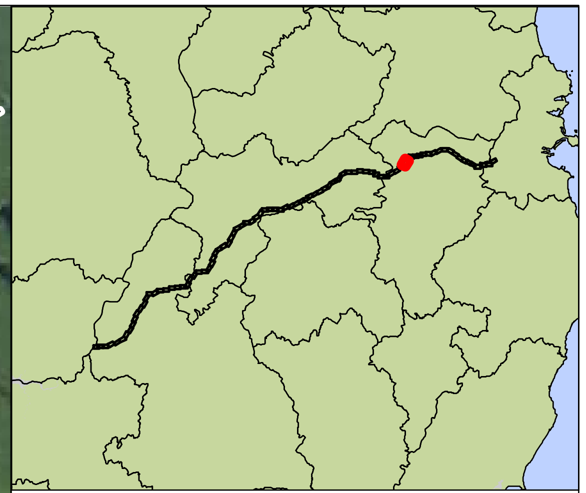
Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.70		



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Building Density >100 Properties per km^2
- RPS__9_Counties
- Lakes
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

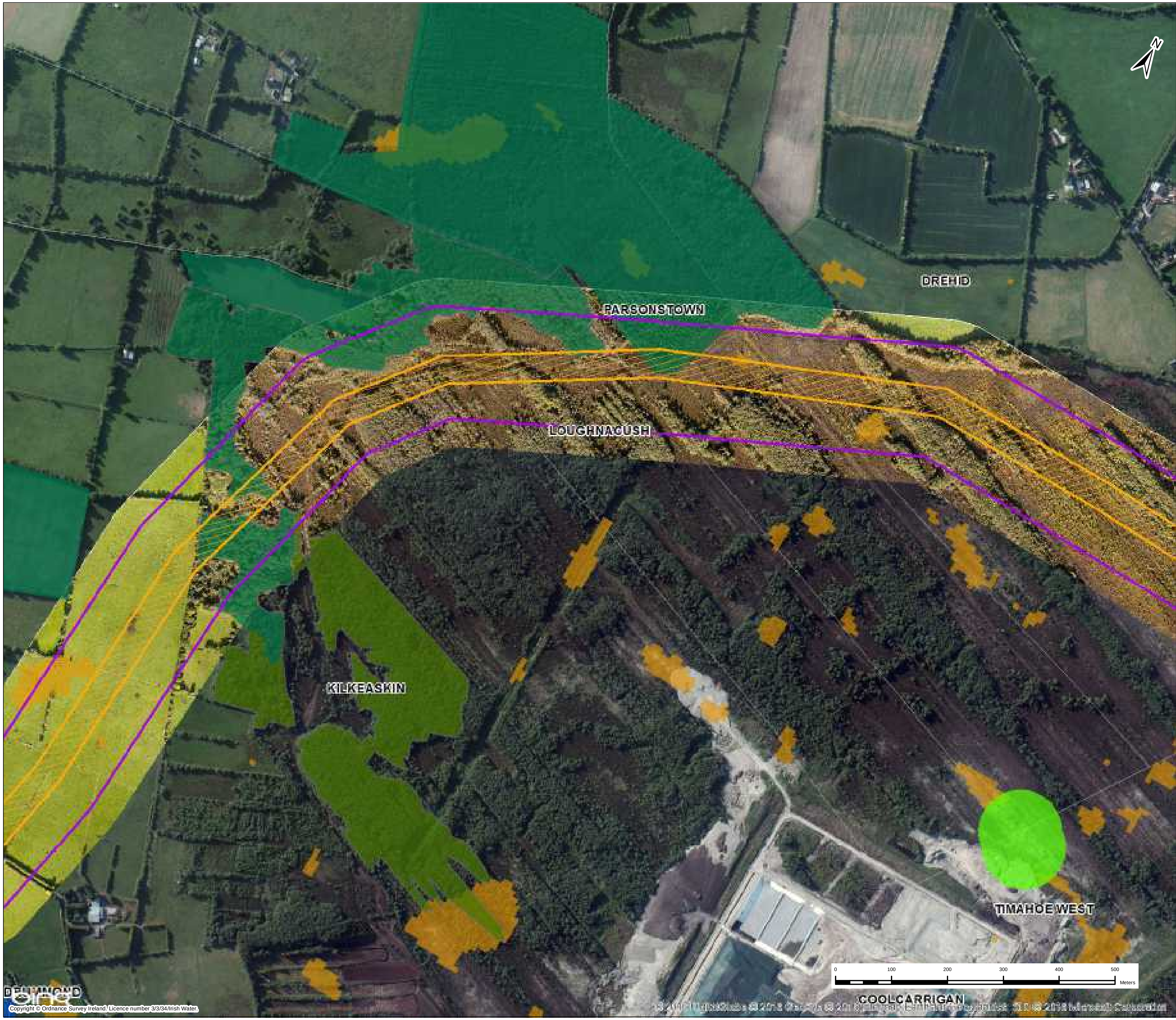
Client: UISCE ÉIREANN IRISH WATER

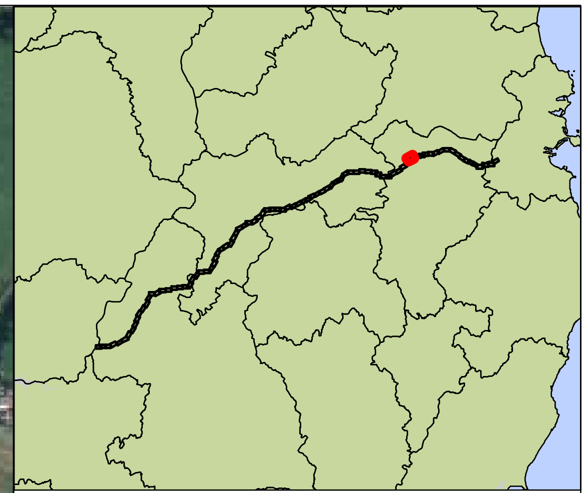
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.71		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

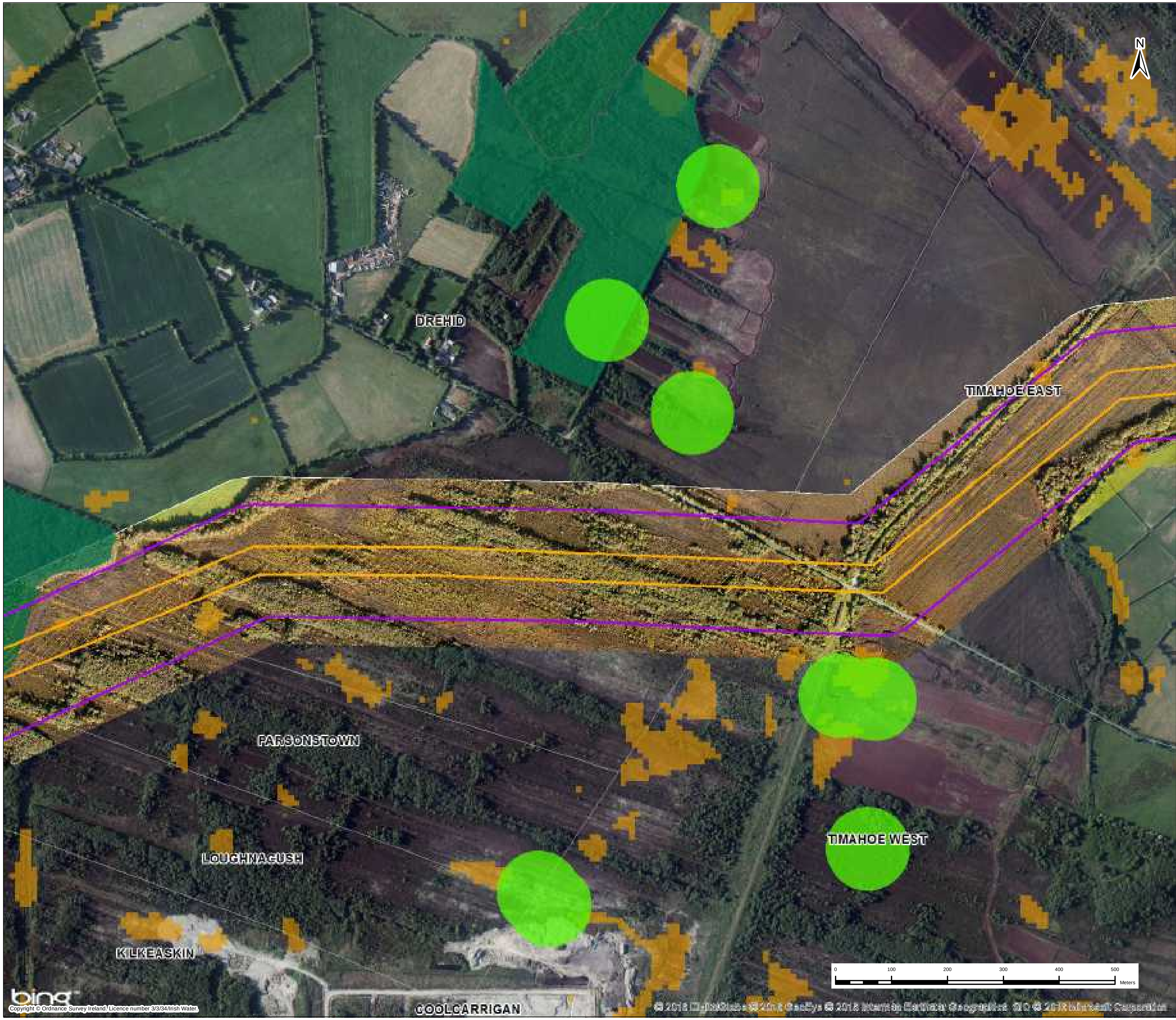
Drawing Title

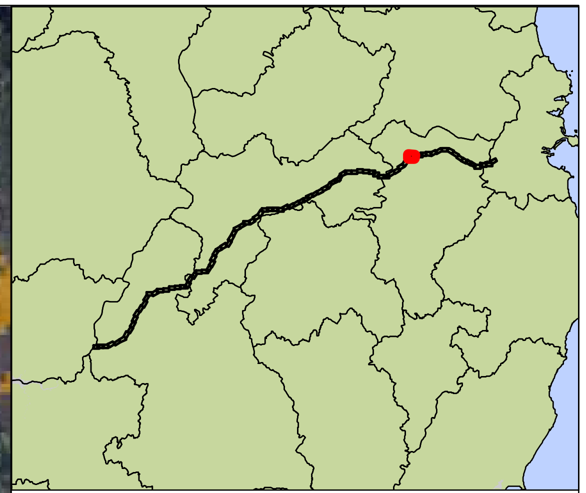
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.72		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

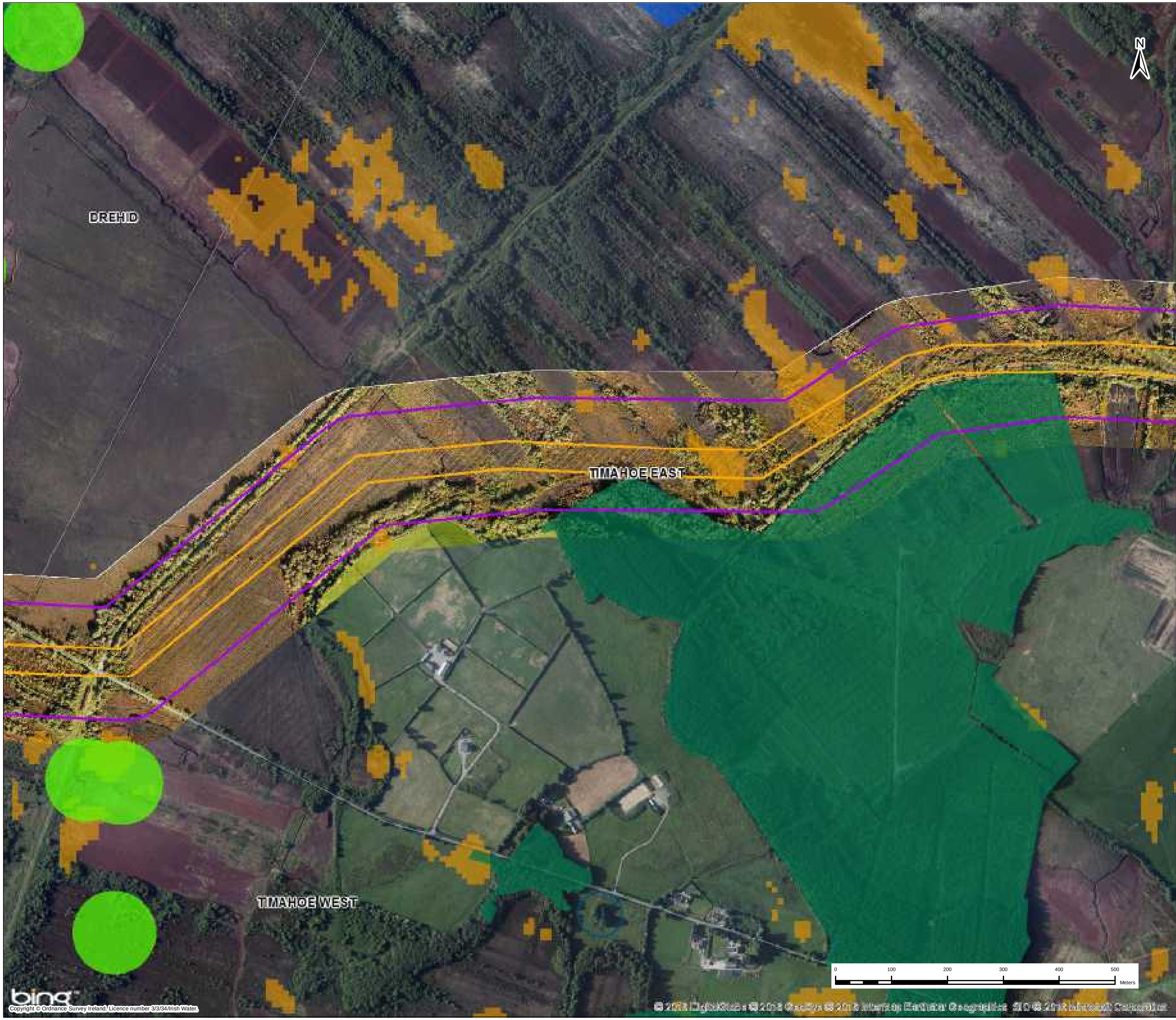
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

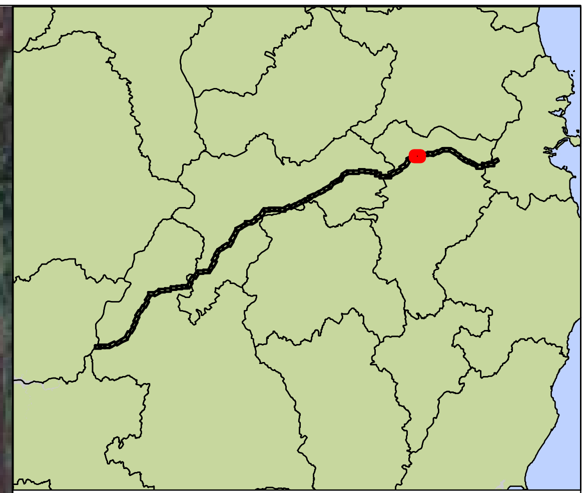
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.73		

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Project

Water Supply Project - Eastern and Midlands Region

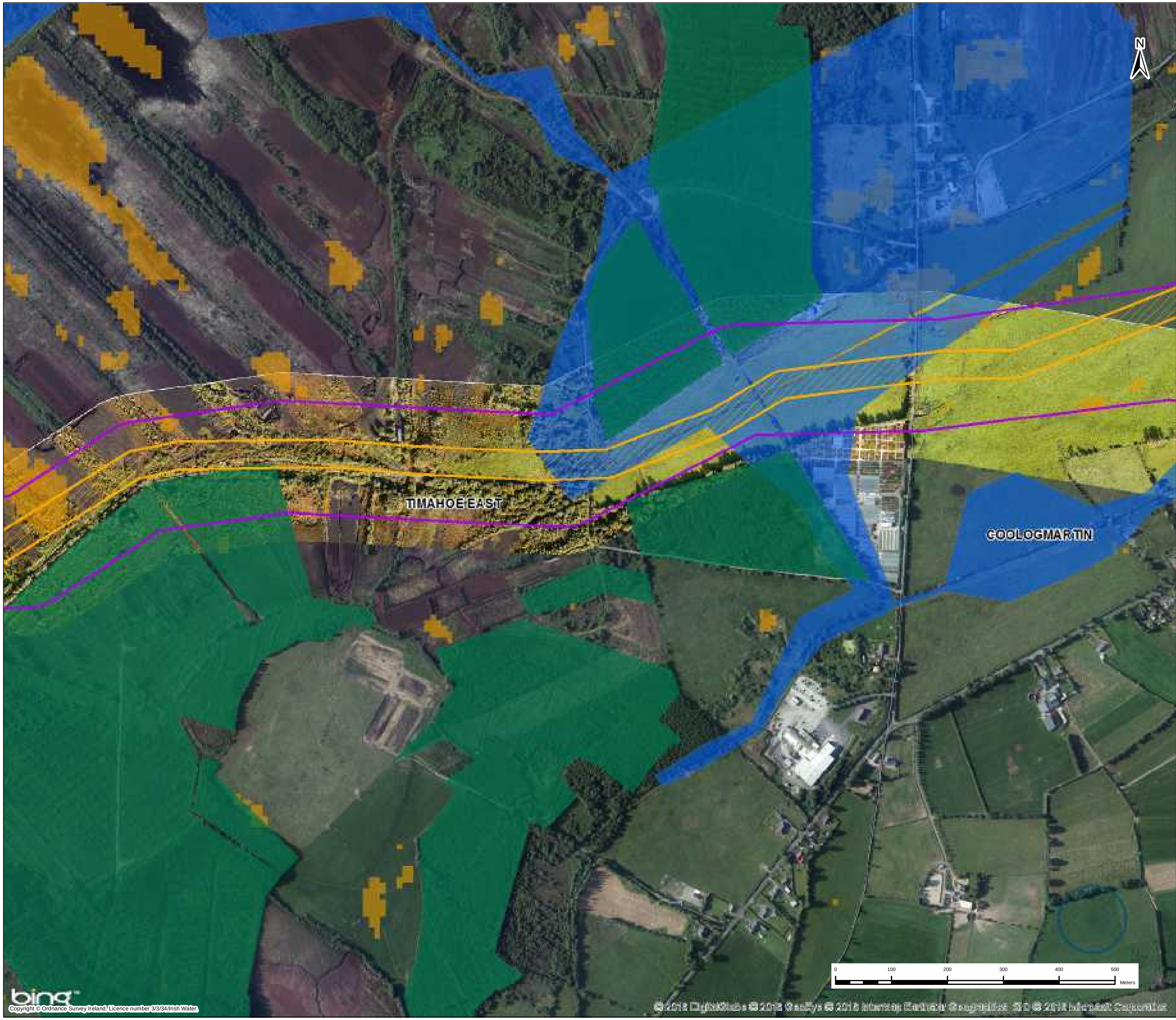
Drawing Title

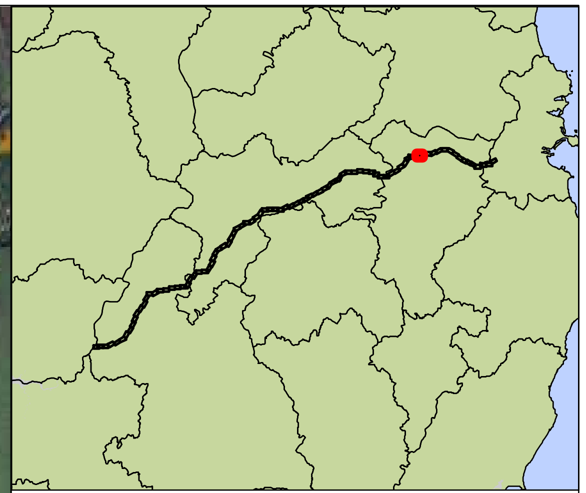
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.74		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Forestry
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

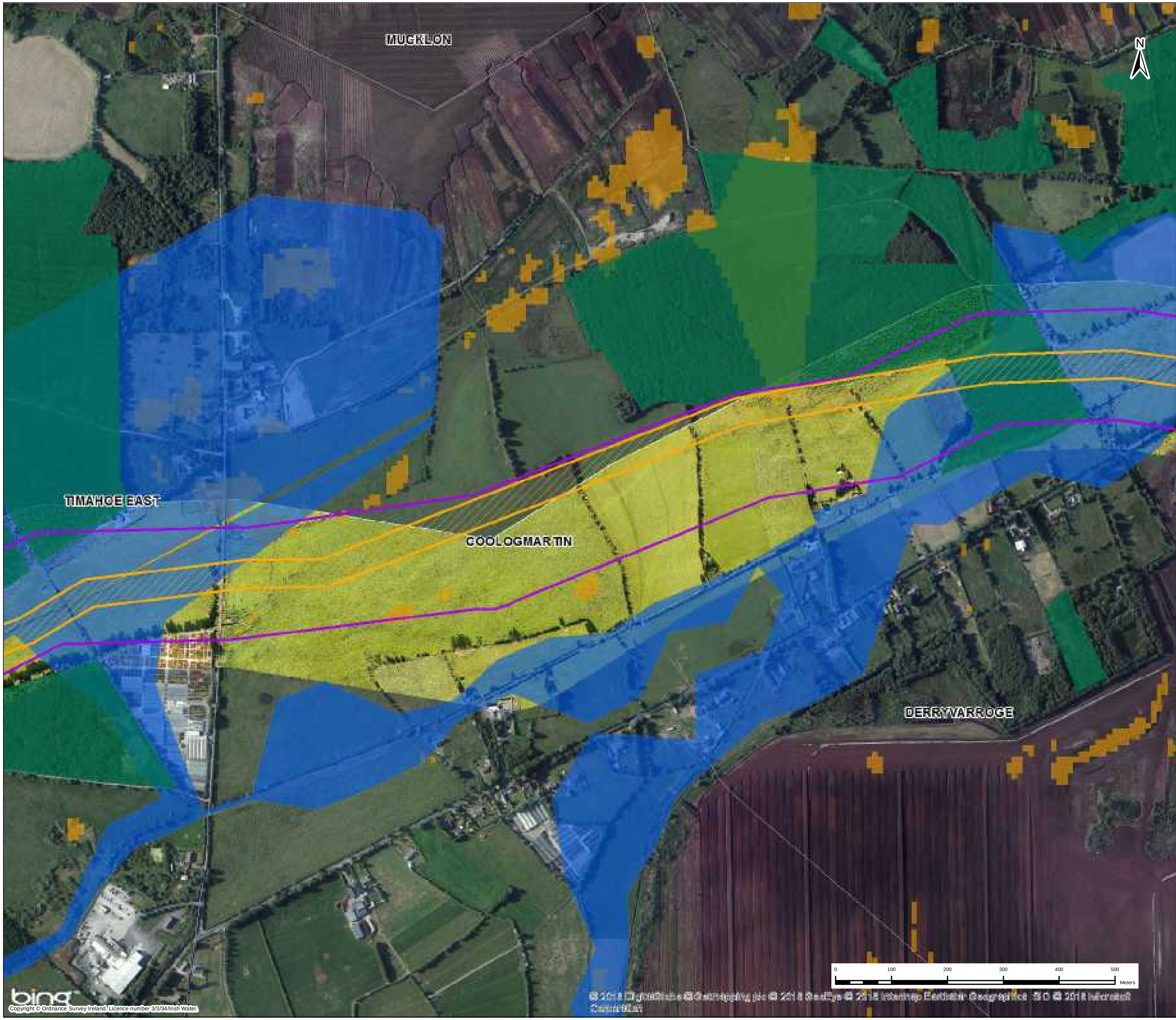
Drawing Title

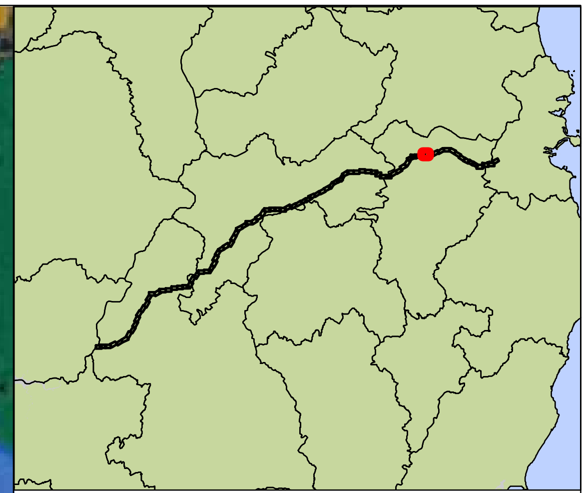
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.75		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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UISCE ÉIREANN WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

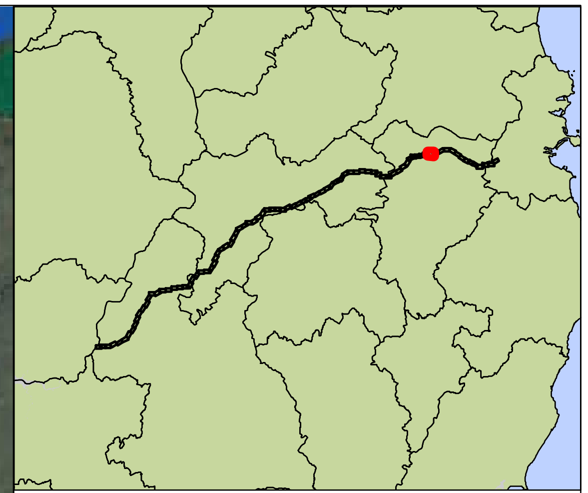
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.76		

This drawing is not to be used in whole in or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

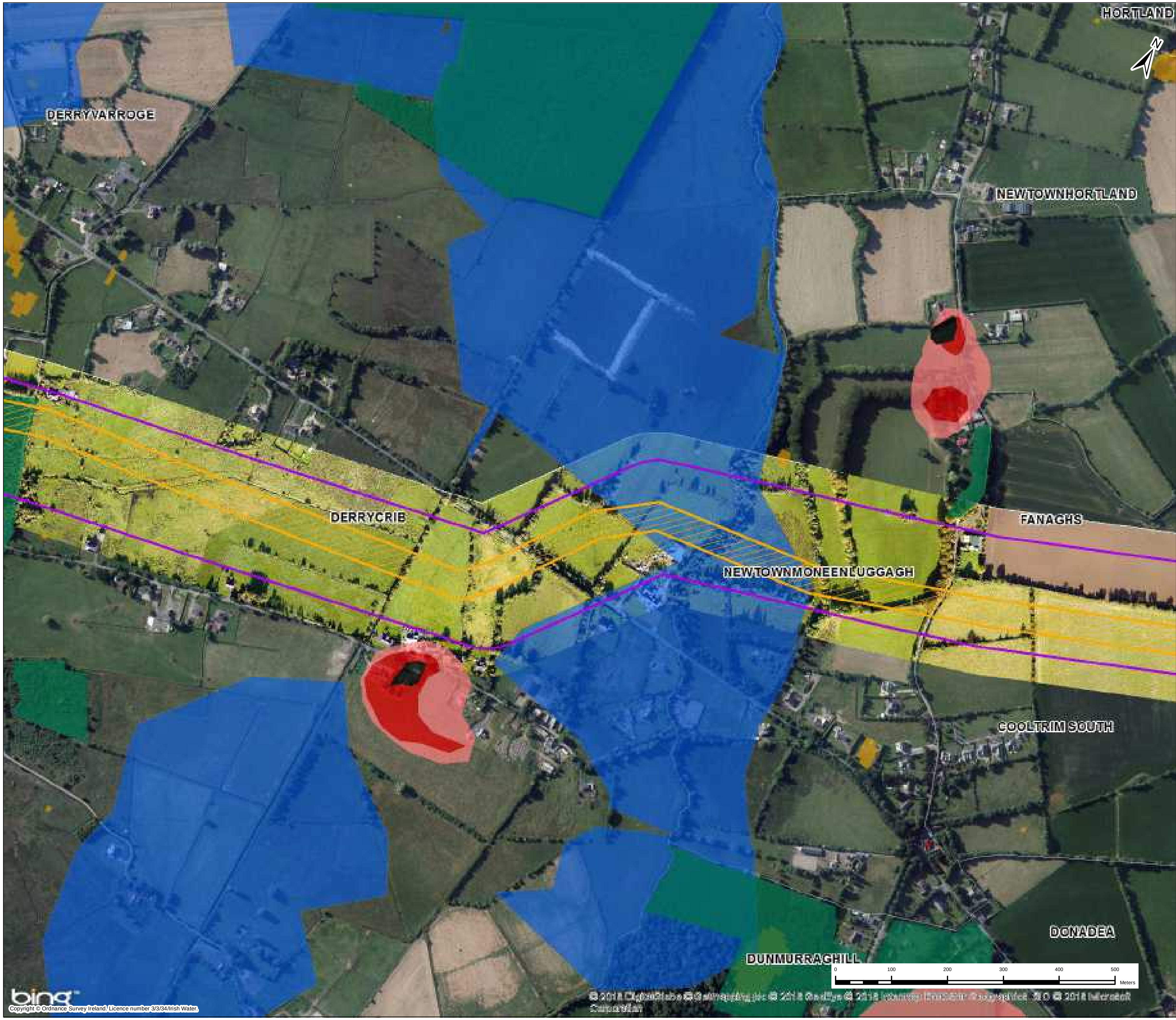
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

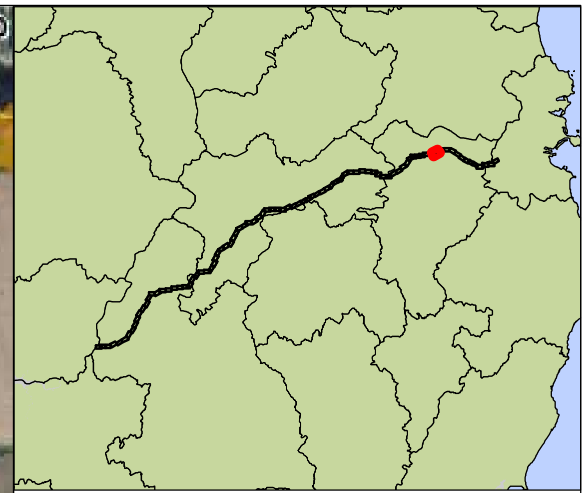
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.77		

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Forestry
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

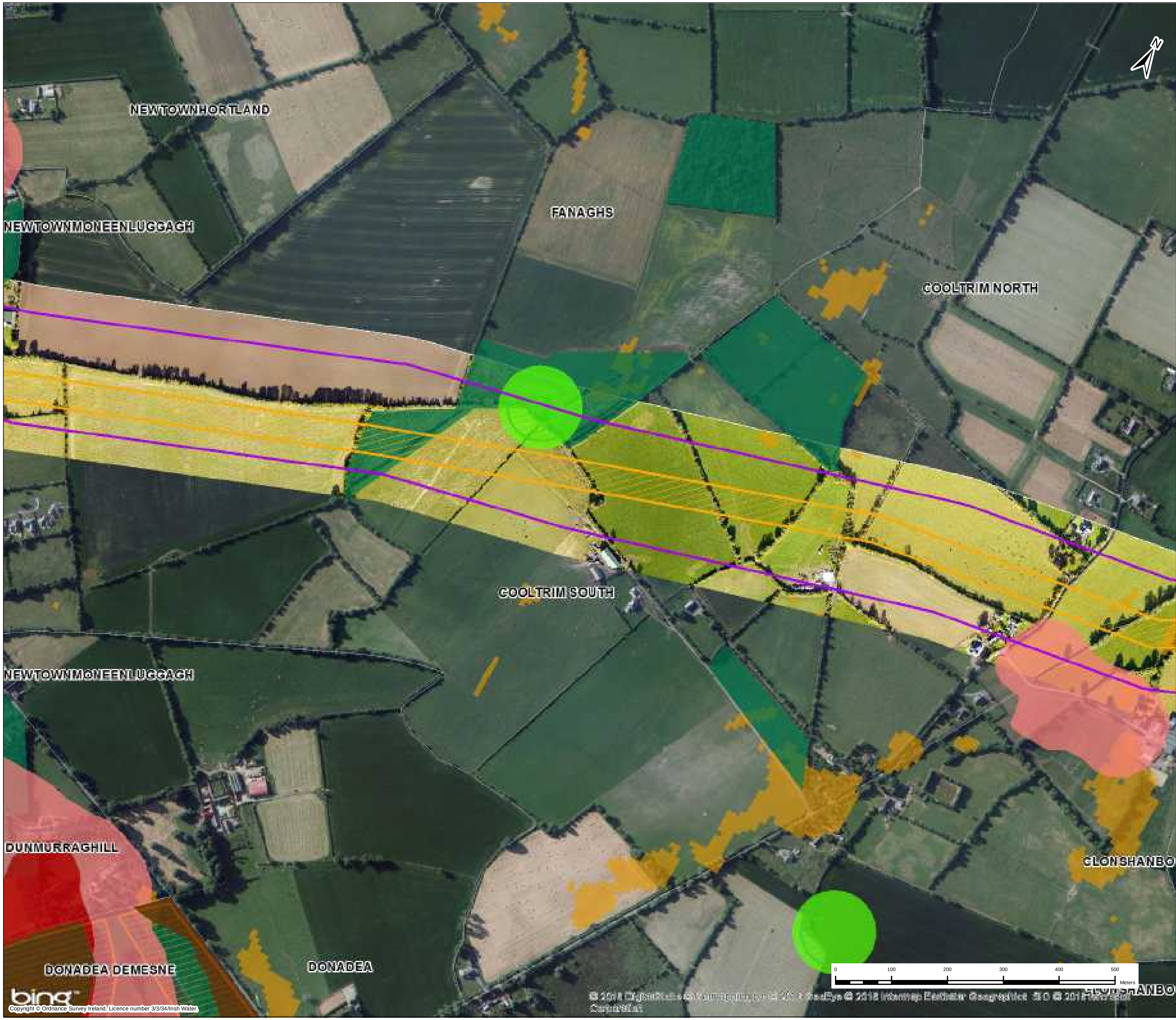
Drawing Title

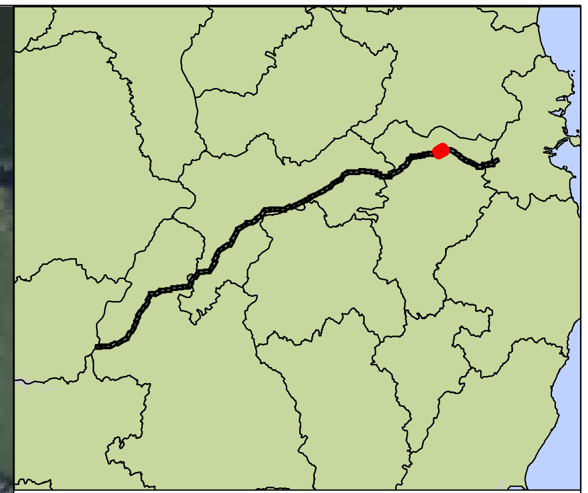
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.78		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Ancient Woodland
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Proposed Natural Heritage Area
- Woodland_Habitats
- Forestry
- Native Woodland Survey
- SMR Zone
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

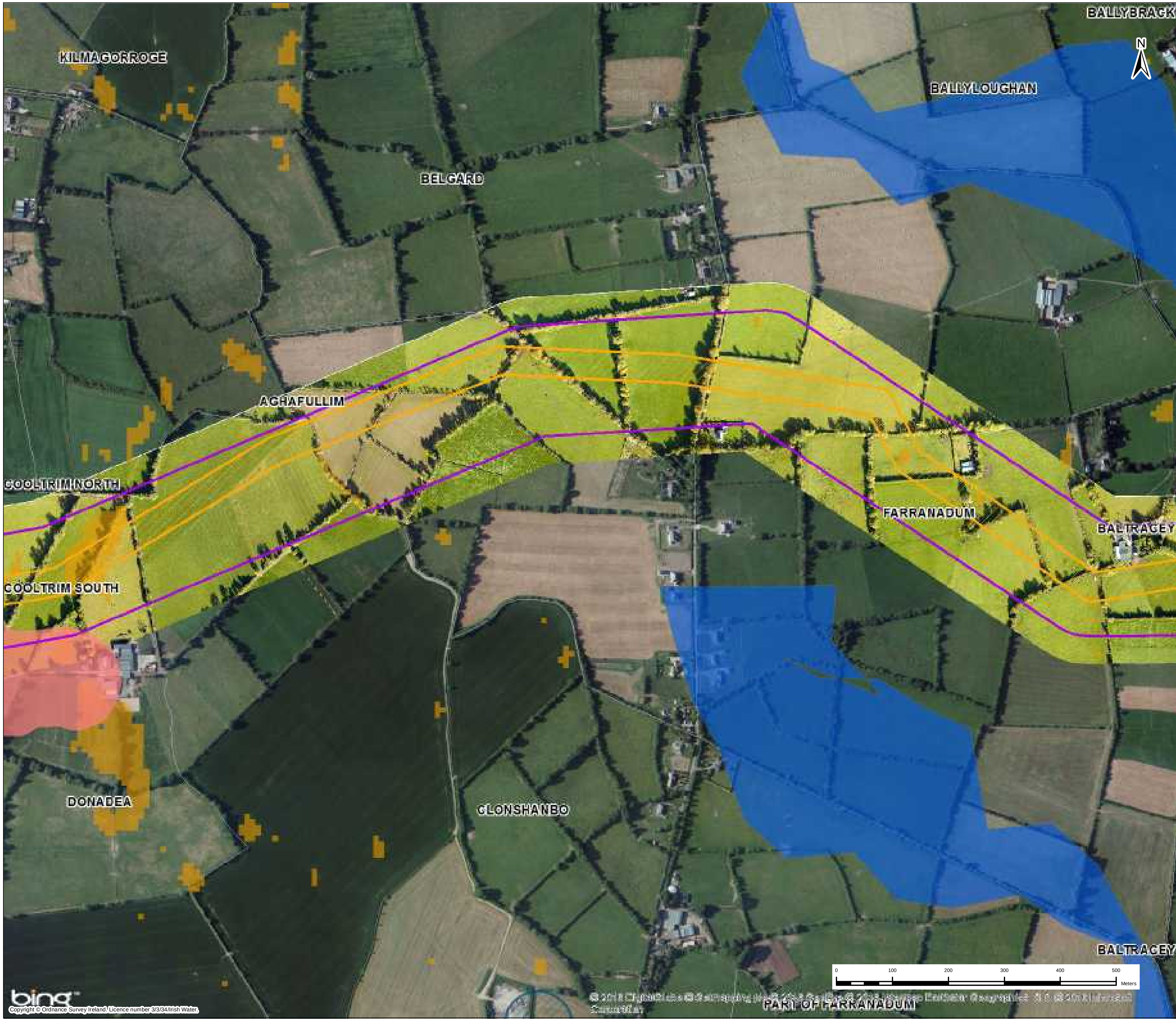
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

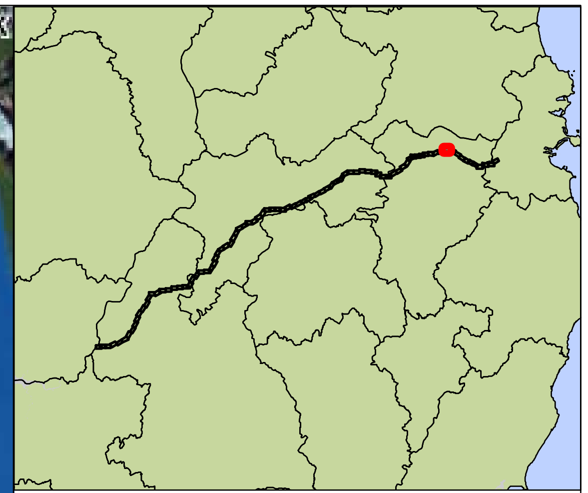
Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.79		

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Groundwater Vulnerabilty Extreme
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	App'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

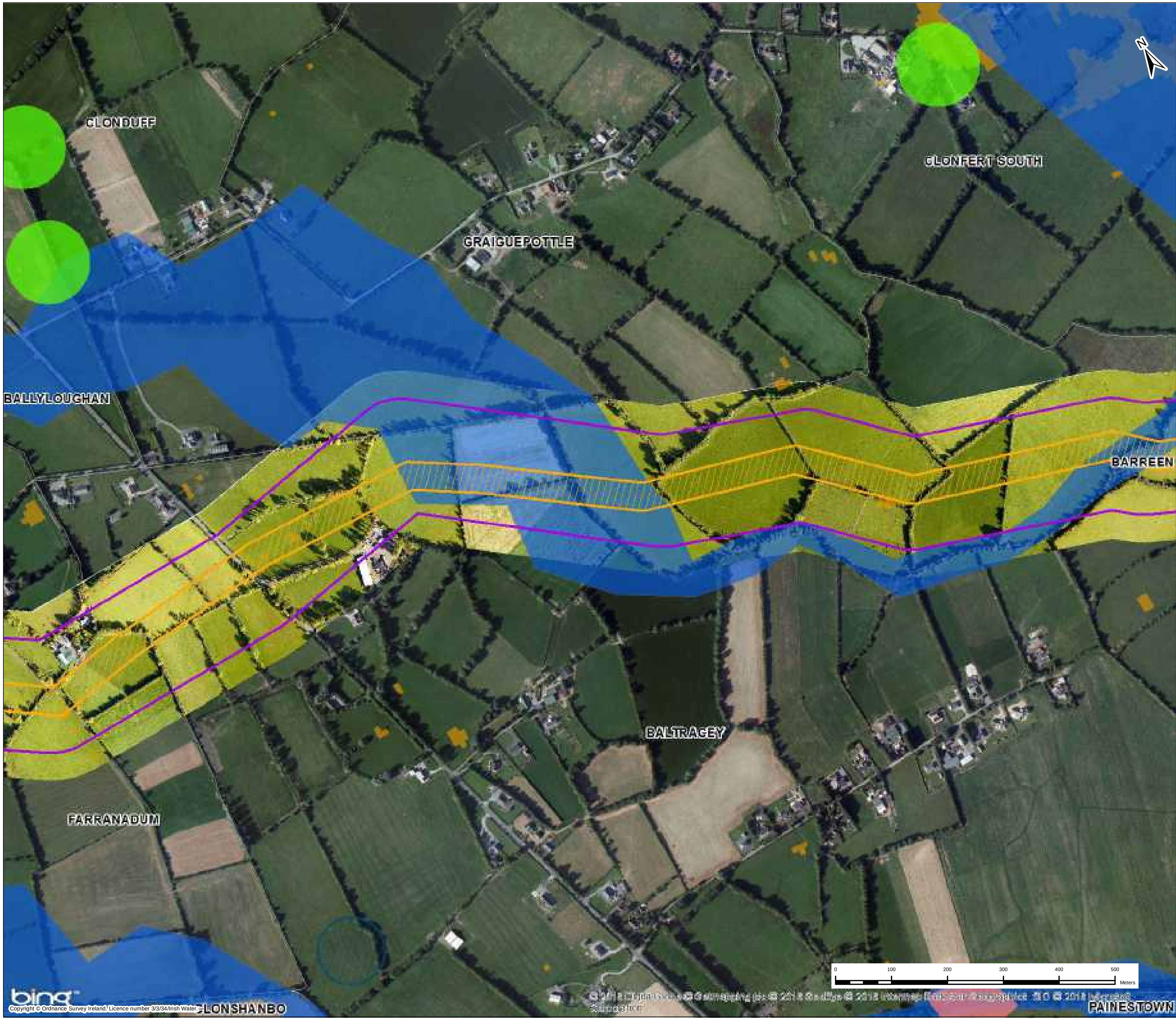
Drawing Title

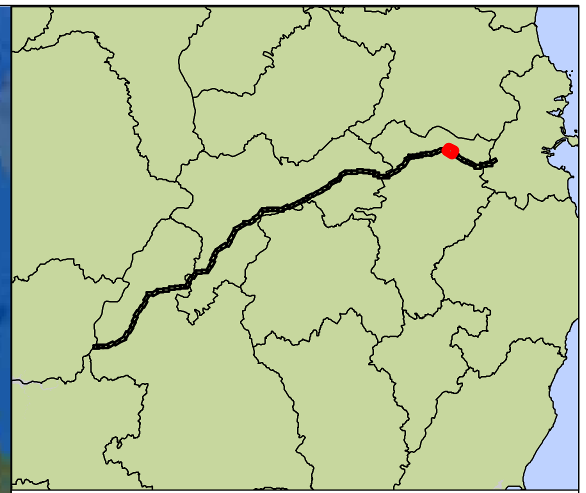
Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.80		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Groundwater Vulnerabilty Extreme
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

Project

Water Supply Project - Eastern and Midlands Region

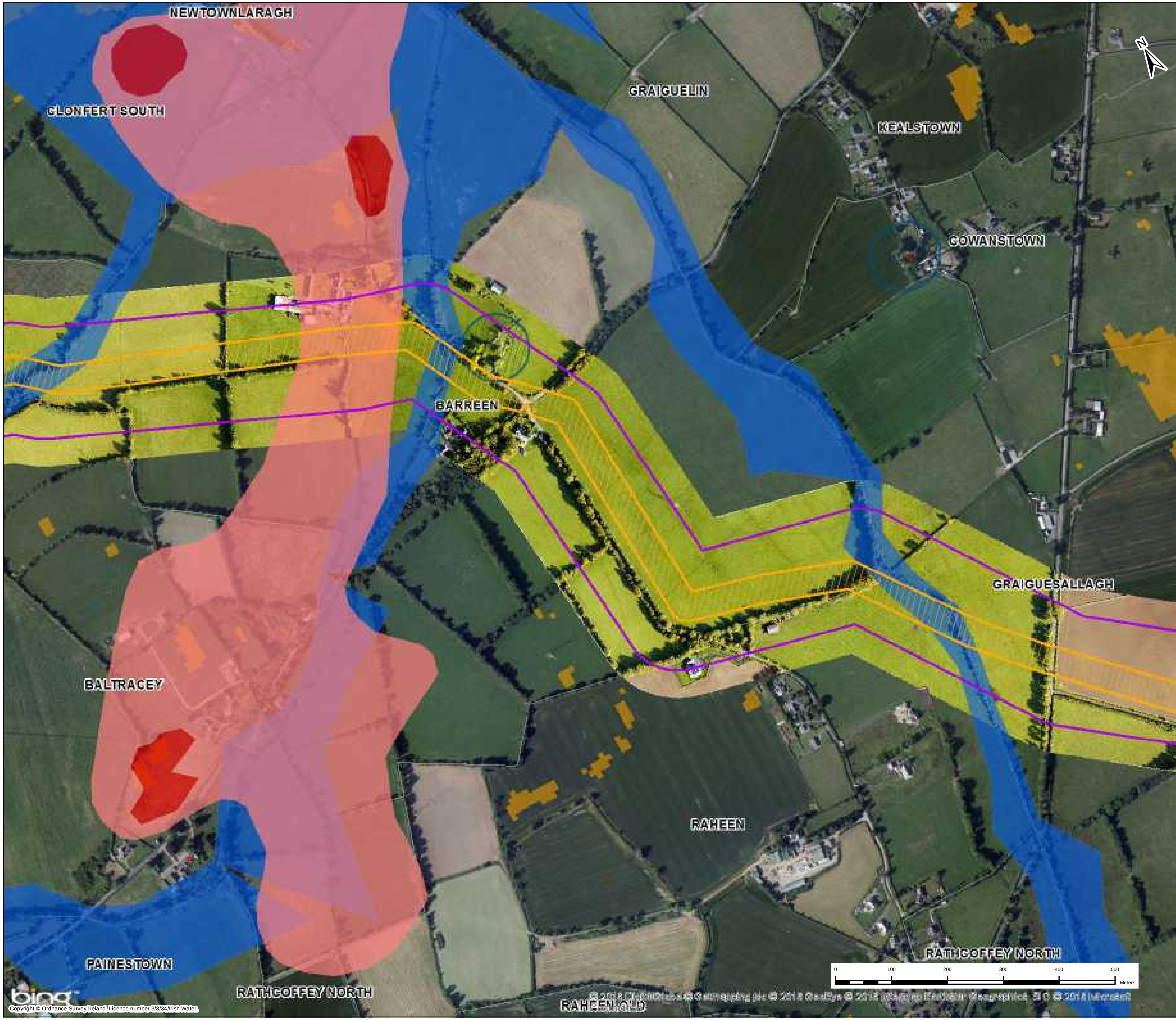
Drawing Title

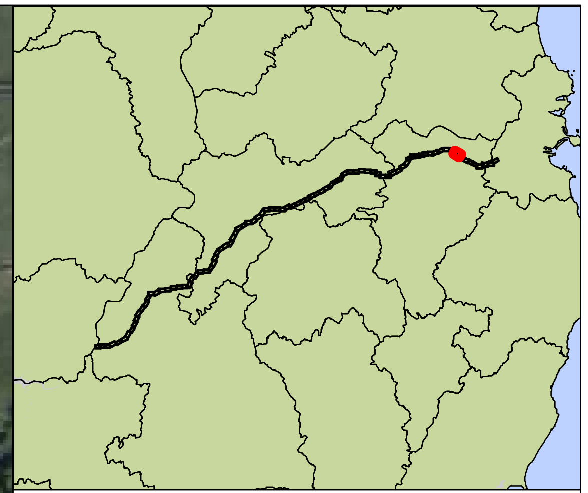
Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.81		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

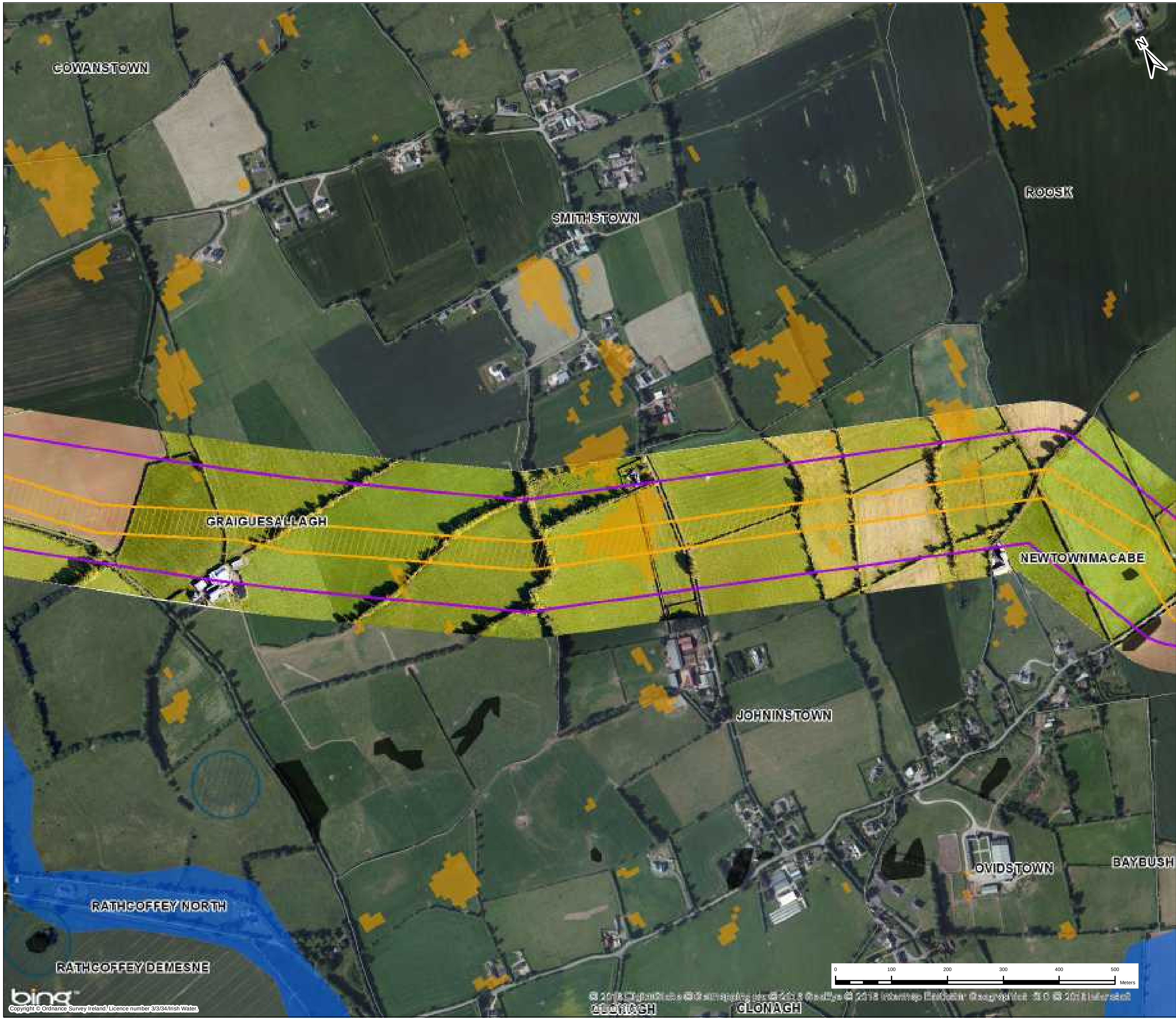
For Issue

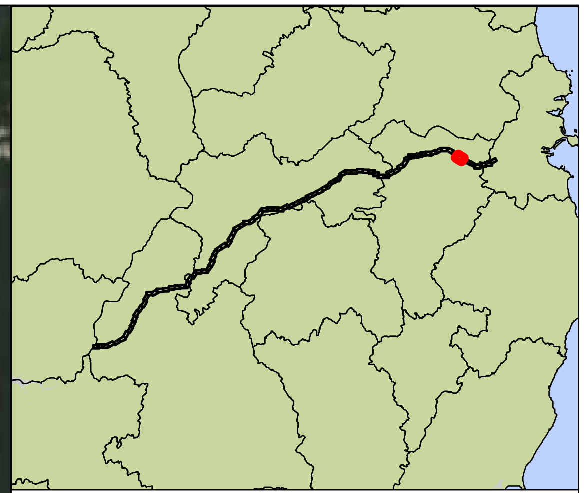
Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No.

2.82

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Pits And Quarries
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client: UISCE ÉIREANN IRISH WATER

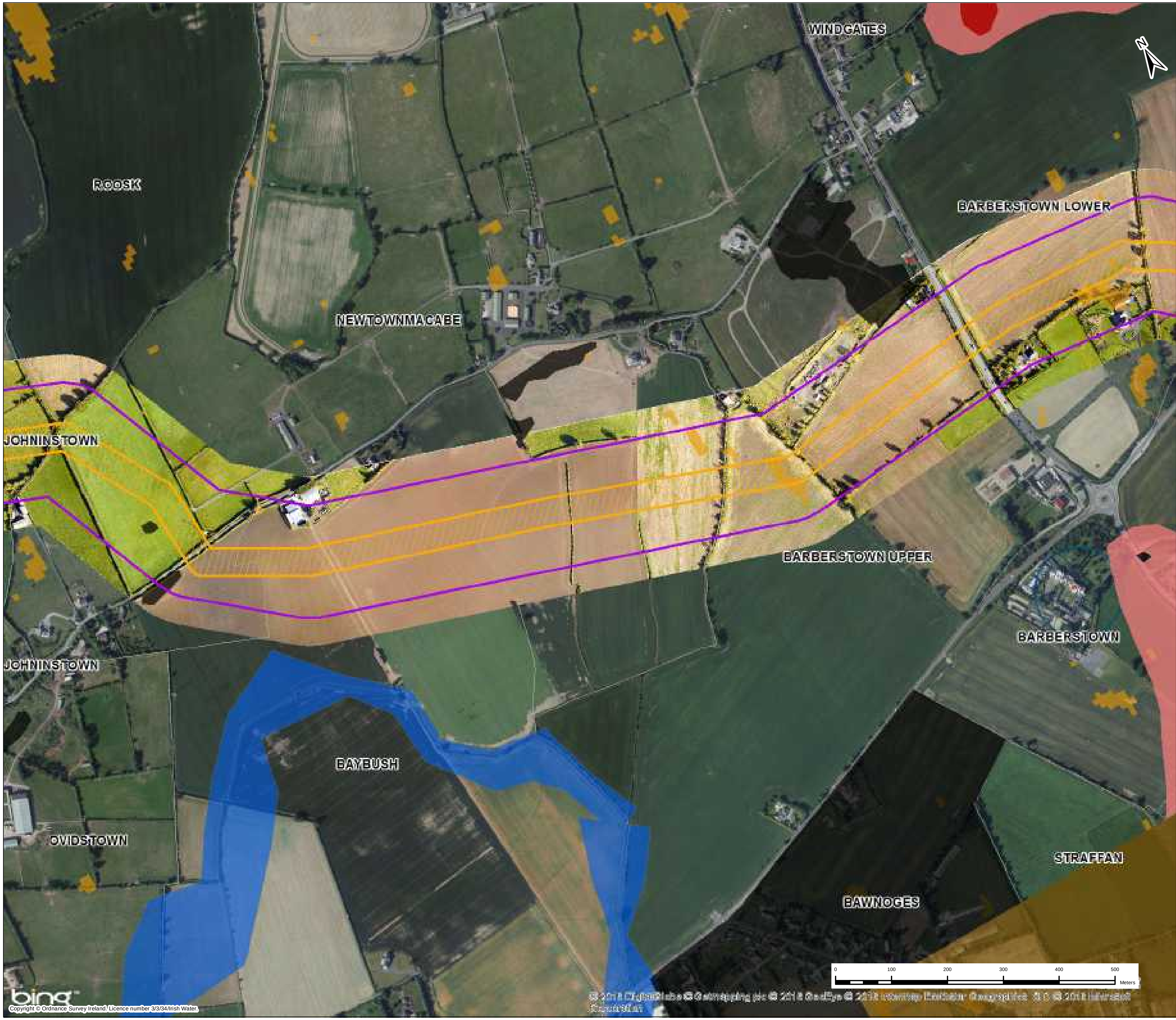
Project: Water Supply Project - Eastern and Midlands Region

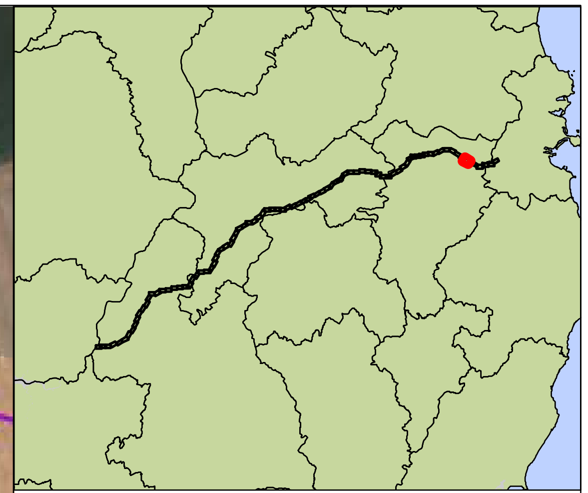
Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1

Drawing No. 2.83





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- Building Density >100 Properties per km²
- Settlements
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.84		

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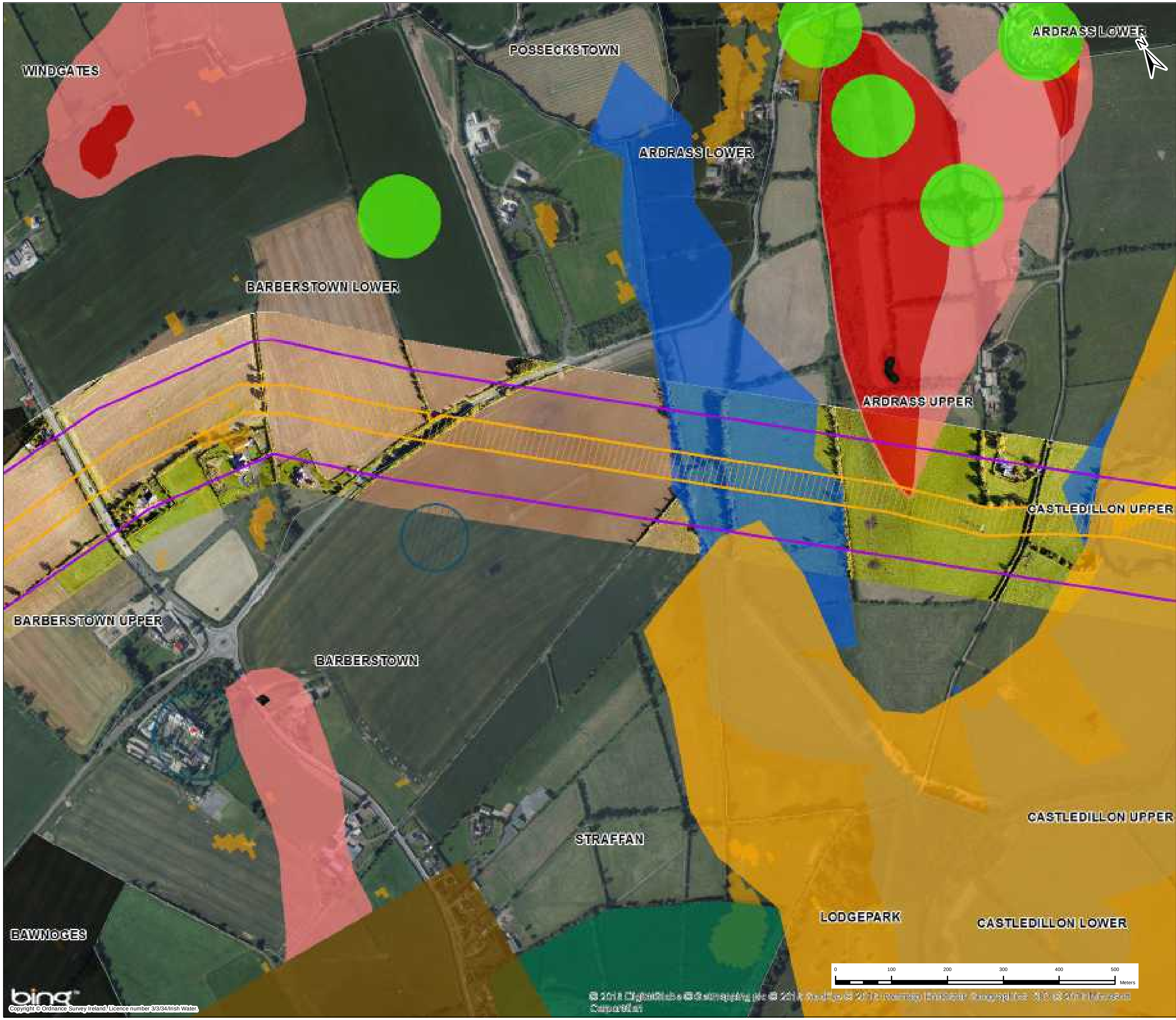

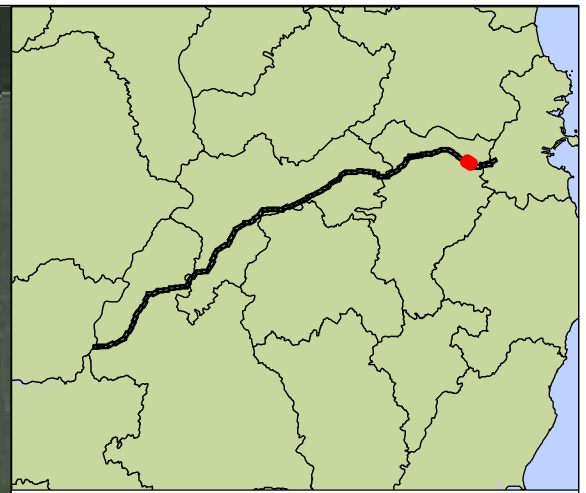

Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Building Density >100 Properties per km^2
- Settlements
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Landscape Classification Areas Kildare High
- Forestry
- SMR Zone
- Geological Heritage Sites Bound
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

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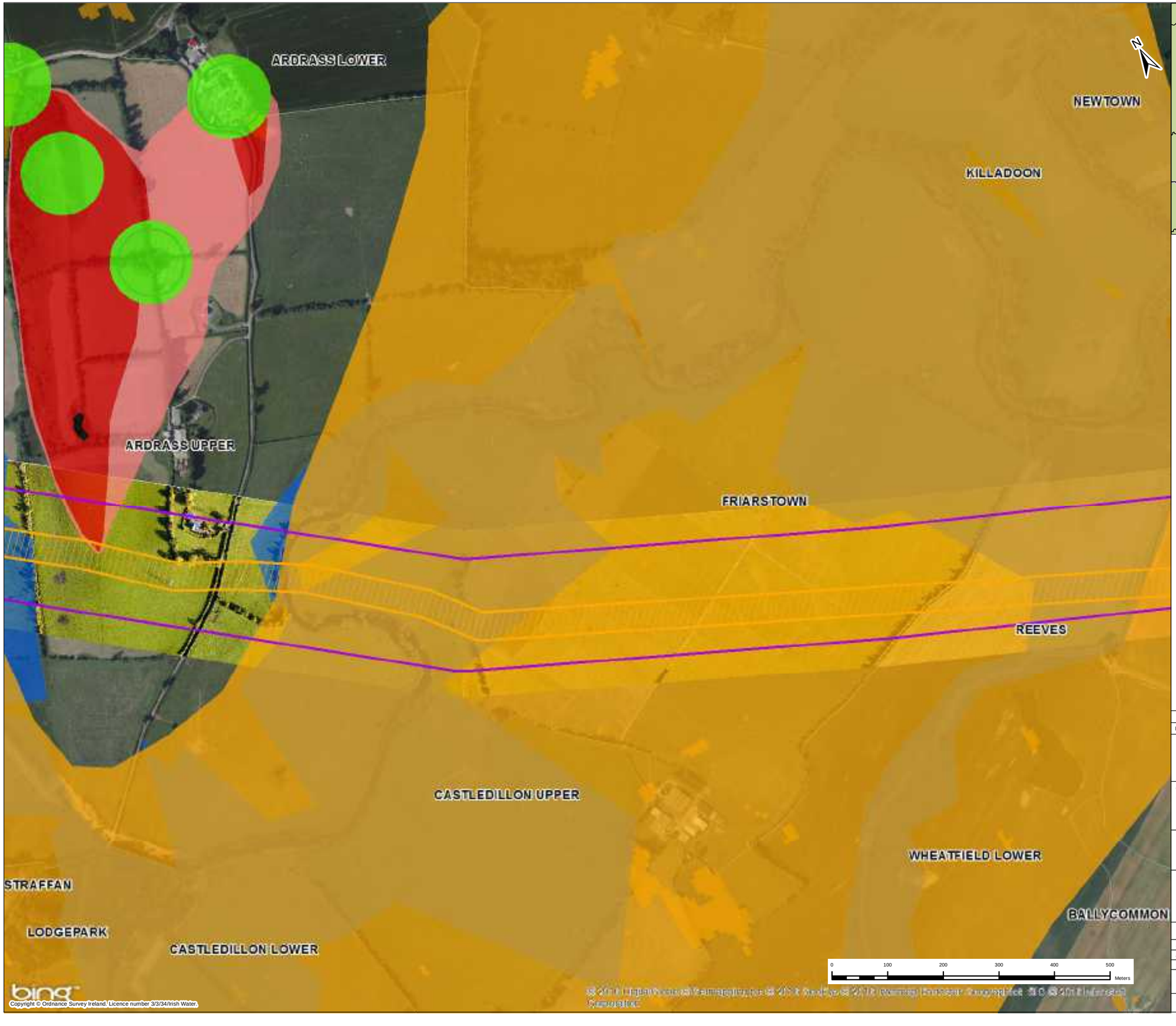
Client: UISCE ÉIREANN IRISH WATER

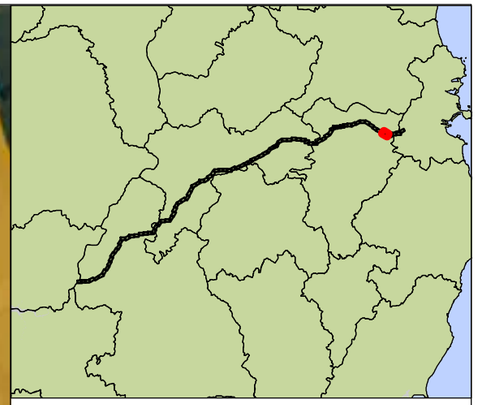
Project: Water Supply Project - Eastern and Midlands Region

Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.85		





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Landscape Classification Areas Kildare High
- Forestry
- SMR Zone
- Geological Heritage Sites Bound
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	03/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client: UISCE EIREANN WATER

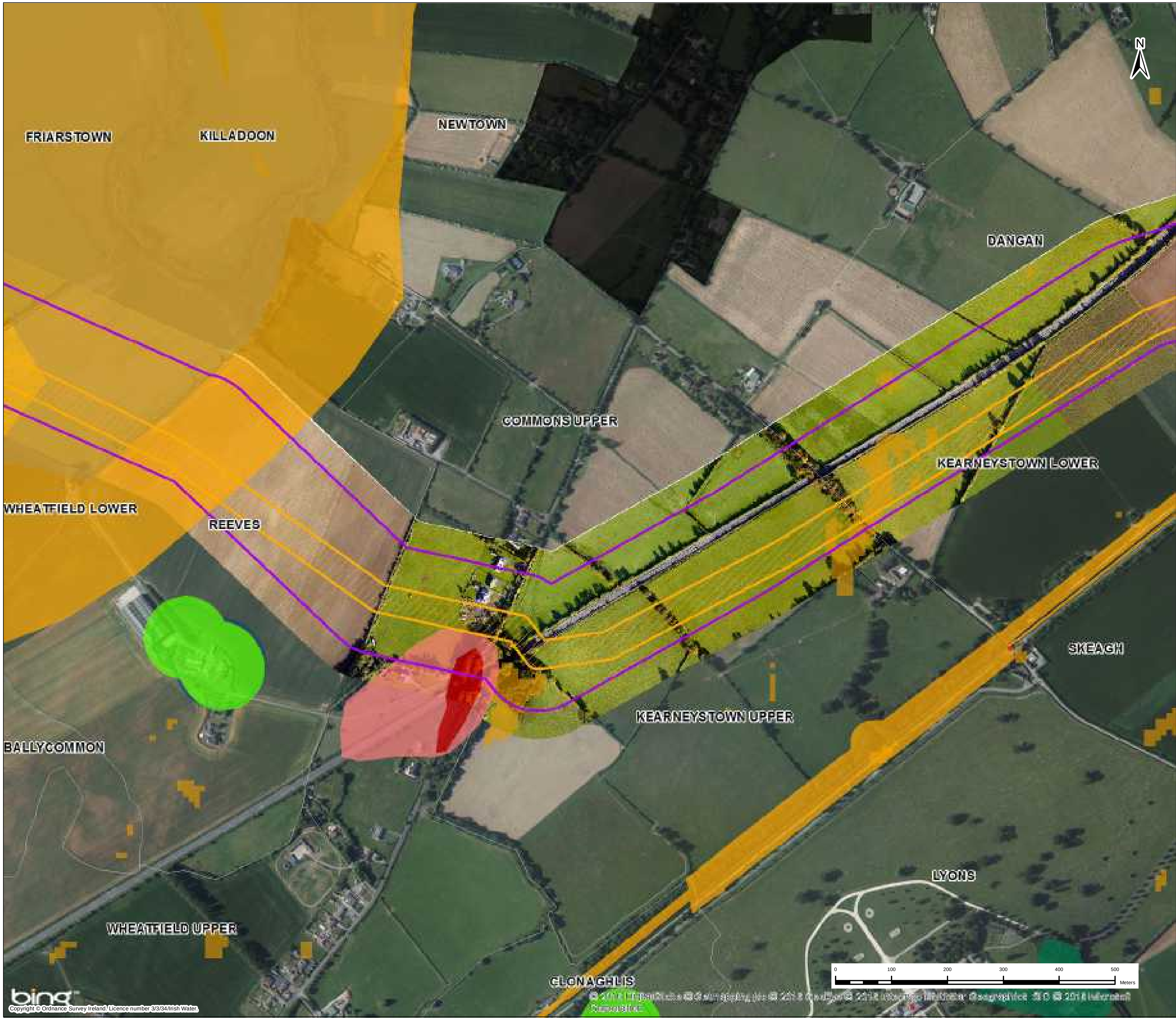
Project: Water Supply Project - Eastern and Midlands Region

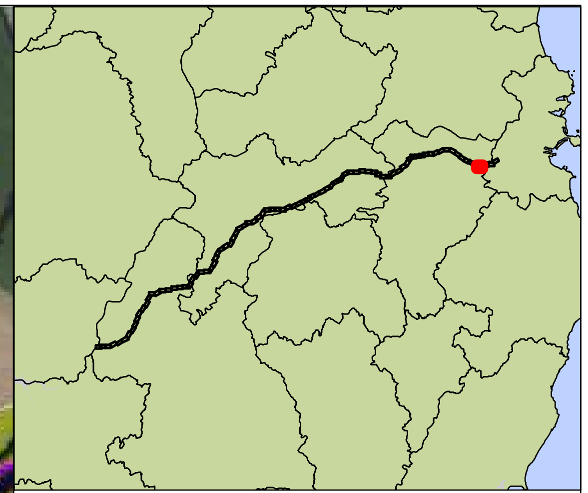
Drawing Title: Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			

Drawing No. 2.86





Key

- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Settlements
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Landscape Classification Areas Kildare High
- Proposed Natural Heritage Area
- Forestry
- SMR Zone
- Fluvial Indicative Flooding 1%AEP
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	04/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.87		

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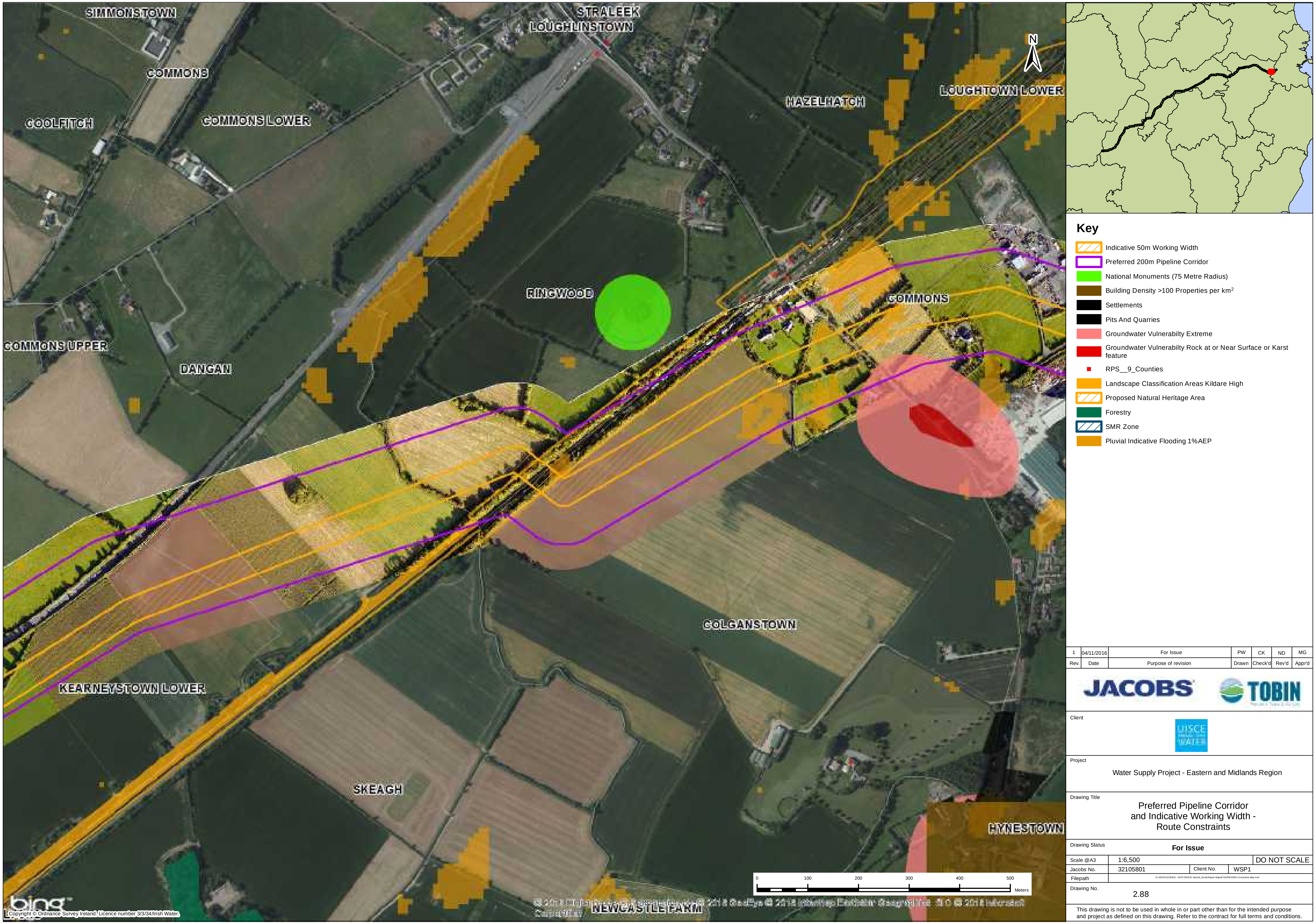

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	04/11/2016	For Issue	PW	CK	ND	MG

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Client

UISCE ÉIREANN IRISH WATER

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status

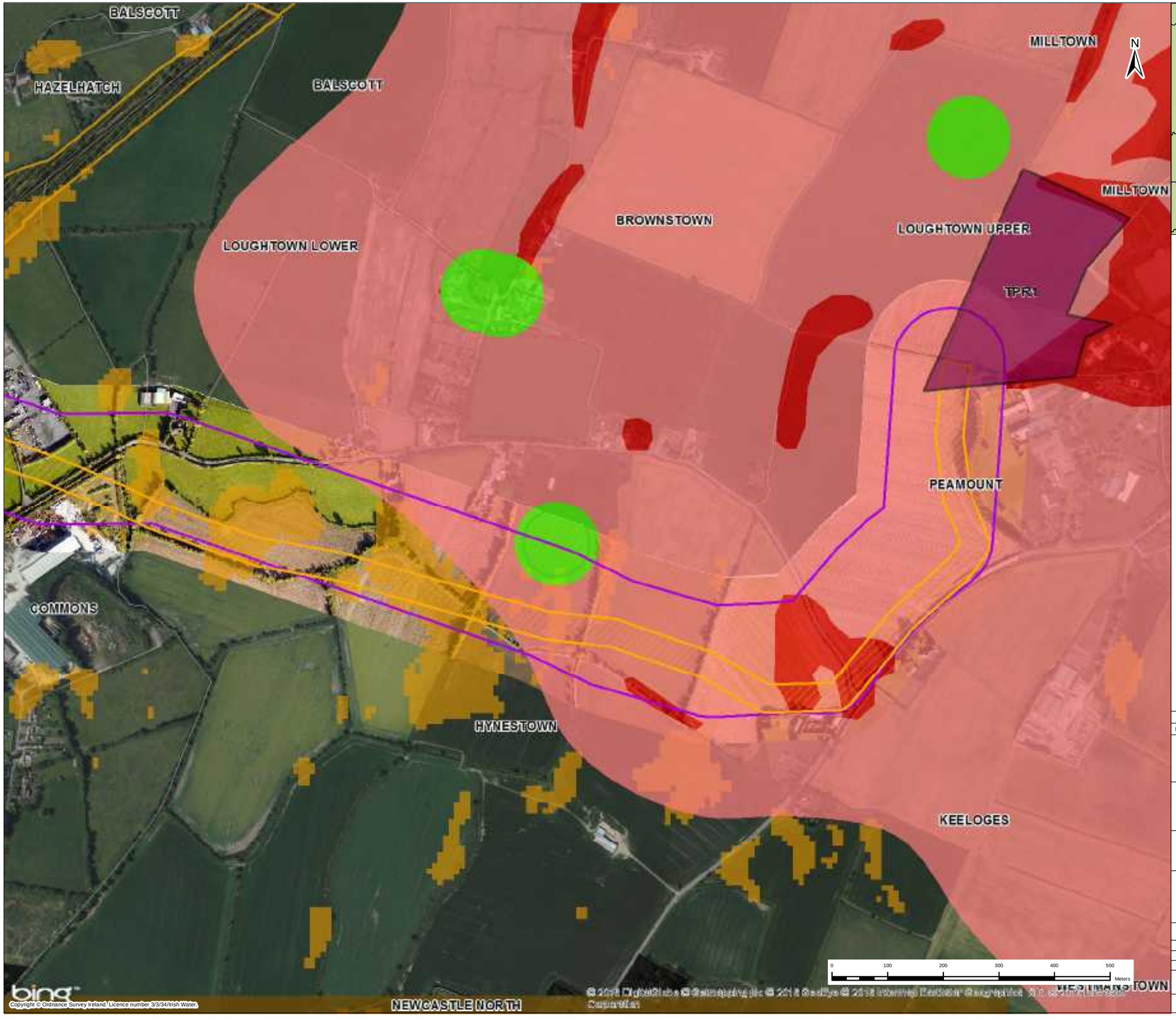
For Issue

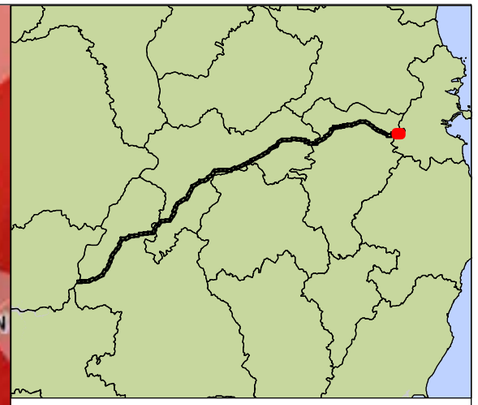
Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1

Filepath

Drawing No. 2.88

This drawing is not to be used in whole or in part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.





Key

- Least Constrained Termination Point Reservoir Site
- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Building Density >100 Properties per km²
- Settlements
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Proposed Natural Heritage Area
- SMR Zone
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	04/11/2016	For Issue	PW	CK	ND	MG

JACOBS TOBIN

Client

UISCE EIREANN WATER

Project

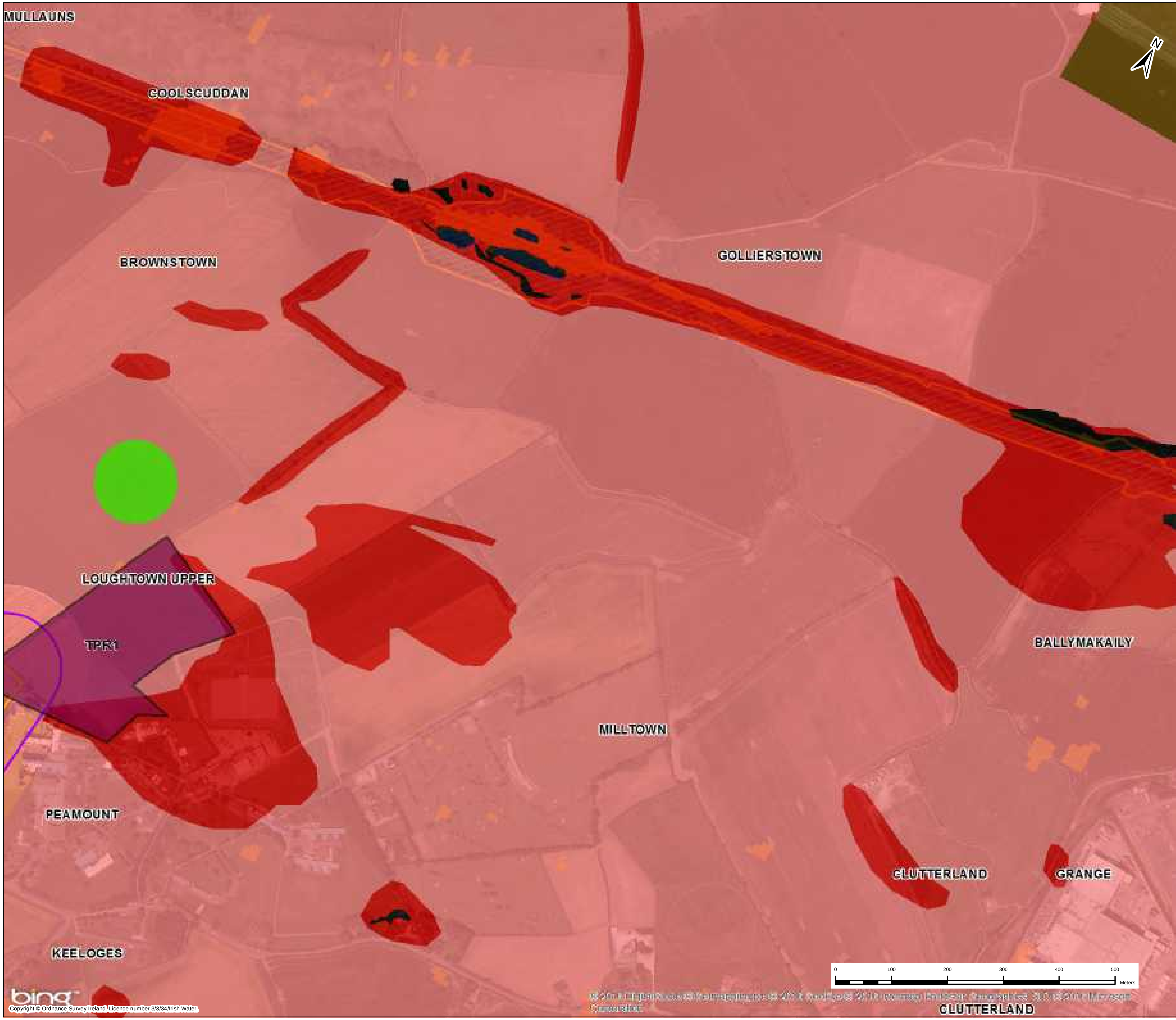
Water Supply Project - Eastern and Midlands Region

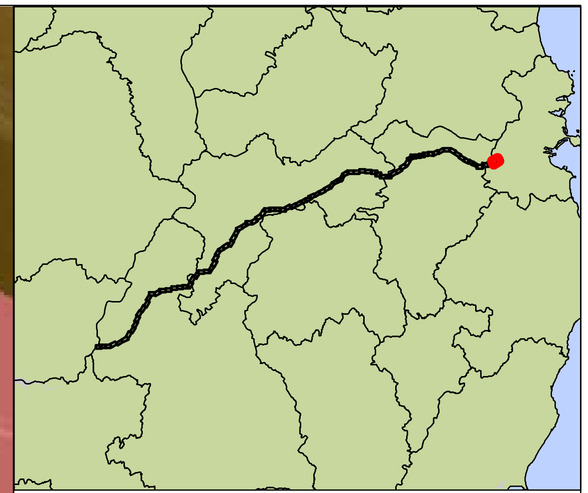
Drawing Title

Preferred Pipeline Corridor
and Indicative Working Width -
Route Constraints

Drawing Status: **For Issue**

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
Filepath			
Drawing No.	2.89		





Key

- Least Constrained Termination Point Reservoir Site
- Indicative 50m Working Width
- Preferred 200m Pipeline Corridor
- National Monuments (75 Metre Radius)
- Building Density >100 Properties per km^2
- Settlements
- Pits And Quarries
- Groundwater Vulnerabilty Extreme
- Groundwater Vulnerabilty Rock at or Near Surface or Karst feature
- RPS__9_Counties
- Proposed Natural Heritage Area
- Lakes
- Pluvial Indicative Flooding 1%AEP

Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	04/11/2016	For Issue	PW	CK	ND	MG

Client

Project

Water Supply Project - Eastern and Midlands Region

Drawing Title

Preferred Pipeline Corridor and Indicative Working Width - Route Constraints

Drawing Status

For Issue

Scale @A3	1:6,500		DO NOT SCALE
Jacobs No.	32105801	Client No.	WSP1
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Drawing No.

2.90

UISCE
ÉIREANN : IRISH
WATER