



**Comhairle Contae
Dhún na nGall**
Donegal County Council

Donegal County Council

Roads and Transportation Directorate

Constraints Report

Muff to Quigleys Point Greenway (R238)

June 2021

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Constraints Report

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1 EXECUTIVE SUMMARY

The R238 National Road runs from the intersection with the R239 / Culmore Road / R239 in Muff and travels north through Quigleys Point and branches off in Moville travelling through Carndonagh and Bunrana. The section of the R238 under consideration for the purposes of this report is the section between the urban environs of Muff and the area of Quigleys Point.

The road is one of the main arterial and strategic links in Donegal leading to Northern Ireland and beyond and serves as the main access route for many people from Inishowen travelling to the Derry City region towards Belfast and beyond. The road possesses a high HGV content as it is used for the transportation of goods and a number of heavy industry businesses are located beyond this section.

There are limited pedestrian and cyclist facilities along this section of the R238 and are confined to the urban environs of Muff leading north. There is a natural linkage within the urban boundary of Muff in the form of the Muff to Derry Greenway.

This report sets out the project background and the European, national and local policy guidelines which frame the scheme and the development of Greenway Schemes. It also sets out the overall aims and objectives of the NWGN scheme and route specific aims.

The report identifies a Study Area and describes the Constraints and Areas of Interest within the Study Area that will inform the selection of suitable options.

The Public Consultation Process (of which this report forms a part) that will be undertaken in advance of the Preferred Route Selection is outlined.

The DMRB design standards will be applied in the development of solution in conjunction with the National Cycle Manual, DMURS and all appropriate guidance documents related to pedestrian and cyclist facilities. The proposed works will be low maintenance, durable and cost effective. The detailed design stage will further refine the project to ensure value for money and provide safe transport links for vulnerable road users.

The design of the project will ensure that any construction works undertaken are in a sensitive manner, while maintaining the ecological diversity and ensure that any resultant works will not have a negative impact on the local Special Protection Area (SPA).

2 INTRODUCTION

In December 2016 Derry and Strabane District Council, Donegal County Council, the Department for Infrastructure (NI) and Sustrans (the UK-based cycling and walking charity), were awarded €14.8 million funding from the EU's INTERREG programme, administered by the Special EU Programmes Body (SEUPB), to construct 46.5kms of cross-border greenway. Match-funding has been provided by the Department for Infrastructure in Northern Ireland and the Department of Transport, Tourism and Sport in Ireland.

These routes link Derry to Buncrana via Bridgend; Muff to Derry via Culmore; and Lifford to Strabane. Once completed, this will result in a greenway network of approximately 126.5km in the North West, of which 76.5km will be classified as high quality greenway.

Objectives:

- To develop a cross border network of greenways that link people with places locally,
- regionally and nationally – bringing social, economic and environmental well-being to all
- To construct 46.5kms of greenway and cycling/walking routes
- Encourage a minimum of 500 people to cycle or walk to school, work or college by 2022
- Encourage more people to walk and cycle as part of their daily routine (non commute)
- Invest in the wider economic and social infrastructure in the North West Region
- Adoption and compliance with policies such as Active Travel etc
- Improve safety for vulnerable road users and reduce their interaction with vehicular traffic

The purpose of the project is to develop an extension to the Muff to Derry Greenway, linking the population centres of the Quigleys Point environs and Muff, thereby supporting the achievement of the NWGN objectives.

This report will outline the constraints encountered and make recommendations for the provision of an appropriate way forward.

2.1 LOCATION

The location of the proposed project is from the urban environs of the R238 in Muff (specifically at the tie in or termination point of the Muff to Derry Greenway) and the Urban environs of the R238 in Quigleys Point in the Municipal District of Inishowen in County Donegal.

The route is approximately 7.0 kilometres in length and comprises mostly of a rural setting with dispersed rural housing, businesses and agriculture land use. The urban sections under consideration in this project comprise mostly of town or terraced houses with mixed business and retail units that are located in close proximity to existing pedestrian facilities or the R238.

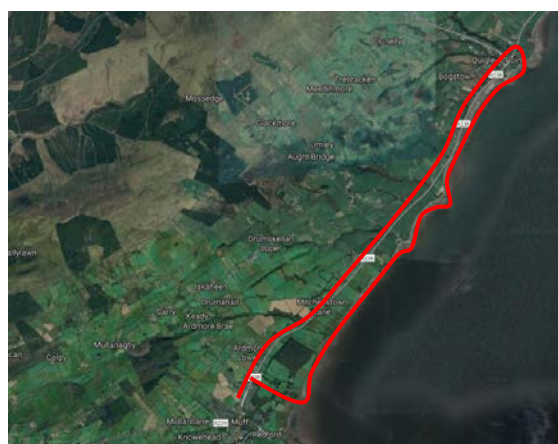


Figure 2.1 – Aerial view of location

National Planning Framework to 2040

This is the Government's high-level strategic plan for shaping the future growth and development of the country out to the year 2040. It seeks to achieve ten strategic outcomes including the following which are relevant to the North West Greenway Project:

- *National Strategic Outcome 3: Strengthened Rural Economies and Communities* including an objective to "Invest in Greenways, blueways and peatways as part of a nationally coordinated strategy"
- *National Strategic Outcome 4: Sustainable Mobility* including an objective to "Develop a comprehensive network of safe cycling routes in metropolitan areas to address travel needs and to provide similar facilities in towns and villages where appropriate."
- *National Strategic Outcome 7: Enhanced Amenities and Heritage* including an objective to "Invest in and enable access to recreational facilities, including trails networks, designed and delivered with a strong emphasis on conservation"
- *National Strategic Outcome 8: Transition to a Low-Carbon and Climate-Resilient Society* including developing metropolitan cycling and walking networks and Greenways.

A key policy priority for the Northern and Western Region includes "building on the progress made in developing an integrated network of Greenways, blueways and peatways that will support the diversification of rural and regional economies and promote more sustainable forms of travel and activity based recreation"

The importance of Greenway development to support Rural Job Creation is highlighted noting that "the development of Greenways, blueways and peatways offer a unique alternative means for tourists and visitors to access and enjoy rural Ireland. The development of a strategic national network of these trails is a priority and will support the development of rural communities and job creation in the rural economy"

National Policy Objective #46 includes the enhancement of "transport connectivity between Ireland and Northern Ireland, to include cross-border road and rail, cycling and walking routes, as well as blueways, Greenways and peatways."

National Development Plan 2018 – 2027

The National Development Plan 2018–2027 is the most recent in the series of Government Capital plans adopted since 1988 and identifies the strategic priorities for public capital investment for all sectors to meet the strategic outcomes of the National Planning Framework.

It includes as a "Priority Investment Action" the facilitation of Cross Border Sustainable Transport with the North West Greenway Network listed as a specific action.

Investment in activity based tourism, including Greenways, is identified as be a priority over the period of the National Development Plan and the publication of a Government Greenways Strategy is identified as a priority and targeted for Q1/Q2 of 2018.

Investment in sustainable travel measures, including comprehensive Cycling and Walking Networks for metropolitan areas, and expanded Greenways is also identified as a priority in delivering a transition to a Low-Carbon society.

Dept. for Transport, Tourism and Sport's: "Strategy for the Future Development of Greenways"

Developed following an extensive national consultations process this Strategy outlines the Irish Government's objective to assist in the strategic development of Greenways to an appropriate standard in order to deliver a quality experience for Greenway users. It highlights the benefits (based on experience to date in the Rep of Ireland) that can arise from the further development of Greenways as:

- A tourism product with significant potential to attract overseas visitors
- For local communities in terms of economic benefits
- As an amenity for physical activity and a contributor to health and wellbeing.

Smarter Travel - A Sustainable Transport Future

A New Transport Policy for Ireland 2009-2020- The NWGN project supports:

- Action 15 of the plan by striving to create a strong cycling culture in the NW;
- Action 17 through exploring opportunities to make a former railway line available for walking and cycling trails.

National Cycle Policy Framework 2009

Ireland's first National Cycle Policy Framework was launched in April 2009. It outlines 19 specific objectives, and details the 109 individual but integrated actions, aimed at ensuring that a cycling culture is developed in Ireland to the extent that, by 2020, 10% of all journeys will be by bike. The NGWN supports the overall aims and objectives of the plan and in particular (but not limited to):

- Objective 3: Provide designated rural cycle networks especially for visitors and recreational cycling.

Regional Planning Guidelines (2010-2022)

The Guidelines acknowledge that current cycling infrastructure in border regions is currently limited but outlines an aim to encourage greater shift to cycling/ walking by the promotions of the strategies outlined in the Smarter Travel Policy and the National Cycling Policy Framework as referenced above.

The NWGN will support specific cycling and walking Policy INFP13 of the Guidelines which seeks to 'Promote and support cycling and walking within the Region, particularly within urban centres.' while the Guidelines recommend that Local Authorities should also consider the use of "off road" routes for both walking and cycling such as disused railway lines, canals and bridle paths to improve access to rural tourist attractions.

People, Place and Policy – Growing Tourism to 2025 (March 2015)

This Government Tourism Policy Statement sets out the Government's primary objective in maximising the services export revenue of the sector. The policy highlights the importance of high quality facilities for activity based tourism in the marketing of Ireland as a holiday destination. It notes the Government's support for development and improvement of facilities for visitor activities including Greenways.

Fáilte Ireland Strategy for Development of Irish Cycle Tourism 2007

Fáilte Ireland (FI) produced its Strategy for the Development of Irish Cycle Tourism in 2007. It observed that cycle tourism had declined in Ireland since 2000. The FI Strategy also referenced a research project conducted by the research company MORI in 2005 which found, among other things, that:

- Cycling on Irish roads is not perceived to be safe – cyclists face dangerous bends, fast cars, intimidating HGVs, more traffic and higher speeds;
- There are very few, if any, traffic-free routes to cater for touring cyclists wanting to leave the cities to discover the countryside or for families who wish to participate in cycling.

The purpose of the FI strategy was to determine how best to renew the popularity of cycling in Ireland, how to encourage visitors to come to cycle in Ireland, and how to ensure that cycle tourism can generate visitor spend in rural areas. It proposed an approximately 3,000km long cycle network running from Donegal along the West, South and South-east coasts and continuing along the East coast as far as the Northern Ireland border.

The Strategy identified the following needs for cycle tourists:

- Safe places to cycle and consideration from other road users;
- Attractive routes with good scenery;
- Well-connected and signposted routes and destinations avoiding long detours;
- Opportunities to visit local attractions and specific places of interest;
- Food, accommodation and refreshments available at intervals, which reflect comfortable distances for stopping off / overnight stops.

Fáilte Ireland Cycling and Activities Research, 2013

In May 2013 Fáilte Ireland commissioned cycling research in order to, among other things; inform the route selection process of the route. Just over 15,000 people surveyed in Germany, France, Great Britain and Ireland.

Respondents to this market research identified traffic free cycling and safety of the cycle route as the most important attributes of a tourism cycle route after a beautiful landscape and scenery.

This research indicates that directness of route is not a critical factor in the provision of a satisfactory leisure cycle route. On the contrary, picturesque landscapes and traffic free routes with good connections to towns and villages are rated highly.

Realising our Rural Potential – Action Plan for Rural Development (2017)

A Government Strategy aimed at delivering change for people living and working in Rural Ireland with key objectives including increasing the number of visitors to rural Ireland by 12% and supporting the creation of 135,000 new jobs in rural Ireland by 2020.

Specific key objectives and actions of the Strategy supported by the NWGN include:

- Develop and promote Activity Tourism in rural areas through the development of blueways, Greenways and other recreational opportunities.
- Develop cross-Border tourism initiatives to support the tourism potential of the Border region, building on projects such as the Ulster Canal Greenway from Smithboro (Co. Monaghan) to Middletown (Co. Armagh), the Carlingford Lough Greenway, and historic literary trails.

Donegal County Council Development Plan 2018 – 2024:

Chapter 5 – Infrastructure, Section 5.1, Transportation:

- Transportation Policy T-P-11: It is a policy of the Council to facilitate the appropriate development of affordable, multi-modal transport solutions that offer communities and future generations real transport choices such as park and ride; pedestrian and cycling; bus and taxi services; and ancillary infrastructure.
- T-P-24: It is a policy of the Council to protect established/historic railway corridors throughout the County primarily for strategic infrastructure provision (such as rail/road projects) and secondly for recreational development. Along these corridors other uses shall not be considered. Where these corridors have already been compromised by development, adjacent lands which could provide opportunities to bypass such an impediment and reconnect these routes for amenity purposes (walking/cycling) shall be protected for this purpose. However, in all instances, the over-riding objective shall be the provision of strategic infrastructure.
- T-P-34: It is a policy of the Council to encourage and facilitate joined up long distance walking and cycling routes for recreation and as alternatives to the car, particularly in rural areas, between settlements. Adequate car parking facilities shall be provided, where required, in association with any such developments.

- T-P-35: It is a policy of the Council to support and facilitate the maintenance, enhancement and expansion of the National Cycle Network.

Chapter 9 – Tourism:

Section 9.1 – Other Tourism Products and Attractions (pg 138):

“The Council will ... continue to protect the routes of such potential Greenways through the policies of this plan and will actively work with all stakeholders to facilitate the development of Greenways and walking and cycling routes throughout the County.” and “... the Council recognise that Donegal effectively sits within a wider cross border tourism region and will work with local authorities and tourism agencies in Northern Ireland to exploit the these natural cross border synergies in order to unlock the regions full tourism potential.”

It also notes that “Protecting the routes and visual settings of potential Greenways and other recreational walkways and cycling routes.” is a Key Planning Challenge.

Section 9.1.2, Objectives:

- TOU-O-9: To support the development of new, and protect the functionality of existing, Greenways, walking and cycling routes as keys components of an overall green tourism infrastructure and as standalone tourism products in their own right.

Action Plan for Jobs: North East/North West 2015 – 2017 notes the following action:

- Identify and develop Greenway / blueway networks in the Region (Ref Page 95, Pt 108)

The Donegal Local Economic & Community Plan 2016 – 2022:

Volume 1, identifies ‘To develop Donegal as a Connect Place’ as a priority goal. Volume 2 sets out the Action Areas of the Plan and notes the following actions:

- Section 1.9.1: To develop an integrated North West Greenway
- Section 1.9.3: To identify a programme of walkways, cycleways and Greenways within towns and their hinterland, to enhance town centre connectivity, support regeneration of town centres and improve health and recreation opportunities.
- Section 2.4.5: To develop an integrated North West Greenway (Walking, Trails, Cycling) as a key tourism project on a cross-border basis.
- Section 4.4.16: To maximise health and wellbeing outcomes for communities in the proposed development of the North West Greenway and other initiatives involving outdoor spaces.

In addition to the policies and guidelines listed above, there are numerous Northern Ireland / UK policy documents that the project adheres to that are not covered in this report.

2.3 REQUIREMENT FOR THE SCHEME

This section of the road network has no facilities for vulnerable road users to travel safely with adequate and appropriate separation from vehicular traffic.

Transportation Policy T-P-11 of the County Development Plan outlines that the appropriate development of affordable, multi-modal transport solutions that offer communities and future generations real transport choices such as park and ride; pedestrian and cycling; bus and taxi services; and ancillary infrastructure should be provided.

As the Muff to Derry Greenway planned construction start date is forecast in Q3 of 2021, this project will form a natural extension of same to provide a broader scope for recreational use in this region of the County.

A review of RSA's Collision Statistics identifies three minor injury accidents in 2006, 2010 and 2011 involving pedestrians being in collision with a vehicle. There is one serious injury collision involving a pedestrian in 2012. These are depicted in Figure 2.4.1. Overall collision statistics are depicted in Figure 2.4.2 and table 2.4.1.

There is however anecdotal evidence to suggest that there has been further collisions on this stretch of road in addition to a numerous near misses. In addition, many collisions (minor / no injury) involving pedestrians and cyclists remain unreported to Gardai. There are also unverified collisions between 2016 & 2021 including fatalities.

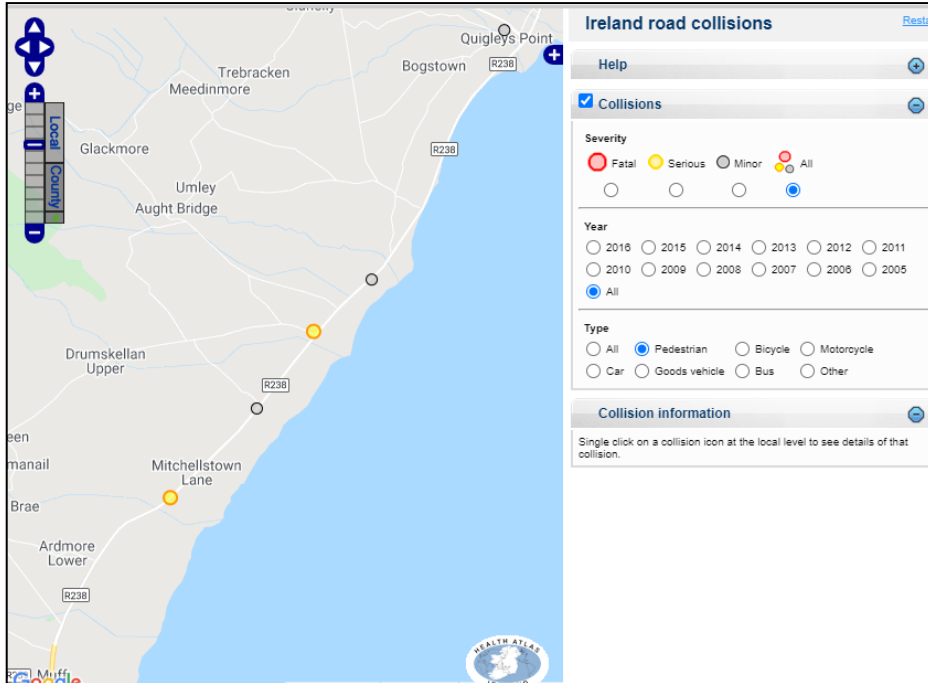


Figure 2.4.1 – Verified RSA Collision Statistics for Pedestrians between 2005 & 2016

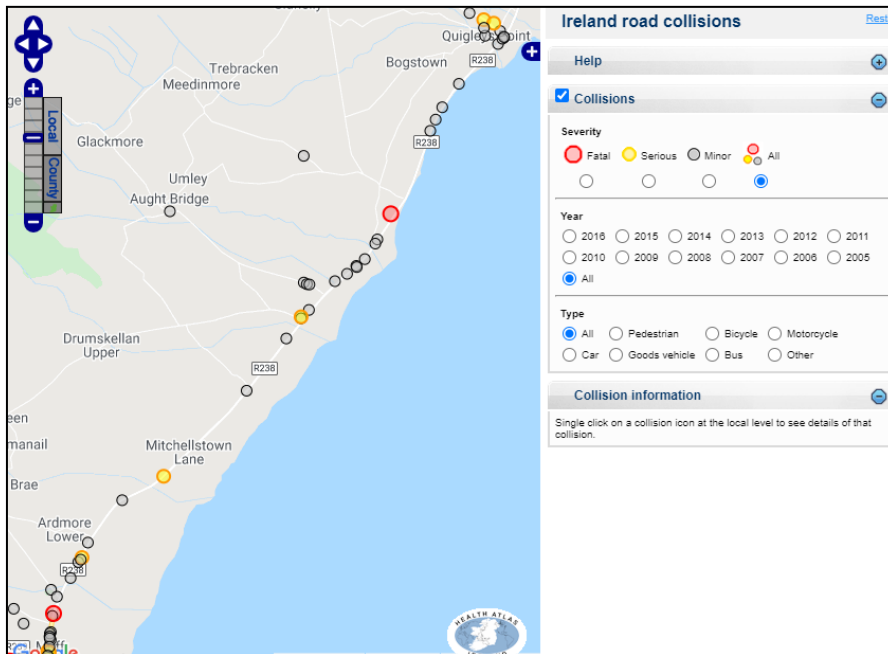


Figure 2.4.2 – Verified RSA Collision Statistics for all road users between 2005 & 2016

Year	Fatal	Serious	Minor
2005			1
2006		3	2
2007	1		2
2008	1	2	1
2009		2	
2010			3
2011			1
2012			3
2013			4
2014			6
2015			2
2016			2

Table 2.4.1 – Verified RSA Collision Statistics for all road users between 2005 & 2016

The verified collision data is show in context on drawings CS-1629-01 to CS-1629-04.

3 CONSTRAINTS

This report identifies the rural constraints within 5m of the road edge. This in general allows for:

- 2.0m separation for rural cycle facilities (Table 4.6 of TII Design Standard DN-GEO-03036)
- 2.0m two-way cycle facility (Low volume i.e. <1500 users per day) – 1 Step below standard.
- Desirable minimum of 1m setback to any vertical hazard to impede or obstruct the users of the greenway.

This report also identifies the urban constraints within 3m of the road edge. This in general allows for:

- 3.0m two-way urban cycle facility (Low volume i.e. <1500 users per day)

The following section outlines constraints associated with the subject site and which will inform the outcome of the various route options. These constraints are classified into two subsections and are listed below:

- **Primary Constraints**
- **Utility Constraints**

3.1 Primary Constraints

3.1.1 Designated Sites and Protected Areas

A desktop study was carried out to collate information on the ecology of the receiving environment. Information on species listed on Annexes II and V to the Habitats Directive, the Wildlife Act, the Flora (Protection) Order, Annex I to the Birds Directive and the Third Schedule to the Habitats Regulations were sourced from the statutory consultee, the NPWS. The NPWS online interactive map-viewer provided information relating to designated sites of conservation importance within the Zone of Influence of the scheme.

For this review the likely zone of impact for the construction and operation of the route options is the entire land and surface water area within 5km of the proposed development. The ‘likely zone of impact’ of a plan or project is the geographic extent over which significant ecological effects are likely to occur. In the case of plans, this zone should extend to a distance of 15 km in all directions from the boundary of the plan area. In the case of projects, however, the guidance recognises that the likely zone of impact must be established on a case-by-case basis, with reference to the following key variables:

- The nature, size and location of the project;
- The sensitivities of the ecological receptors
- The potential for cumulative effects.

For example, in the case of a project that could affect a watercourse, it may be necessary to include the entire upstream and/or downstream catchment in order to capture all European sites with water-dependent Qualifying Interests.

Having regard to the location and the nature and size of the proposed development, and the potential for cumulative effects, it is considered that its likely ecological effects are:

Pollution of surface waters in the event of accidental input of sediment or construction material.

Therefore, having had regard to the above variables, the likely zone of impact was defined as:

The entire land and surface water area within 5 km of the proposed development.

It was determined that one European site, Lough Foyle SPA is present within the likely zone of impact. This is depicted in Figure 3.1.1. Given that this project is sub threshold for EIA, prior to planning an EIA and Appropriate Assessment Screening process shall be undertaken to determine whether or not the proposed development, either individually or in combination with other plans or projects, is likely to have a significant effect on areas designated as being of European or National importance for nature conservation.

The Lough Foyle SPA is shown in context on Drawing Numbers CS-1629-01 to CS-1629-04.

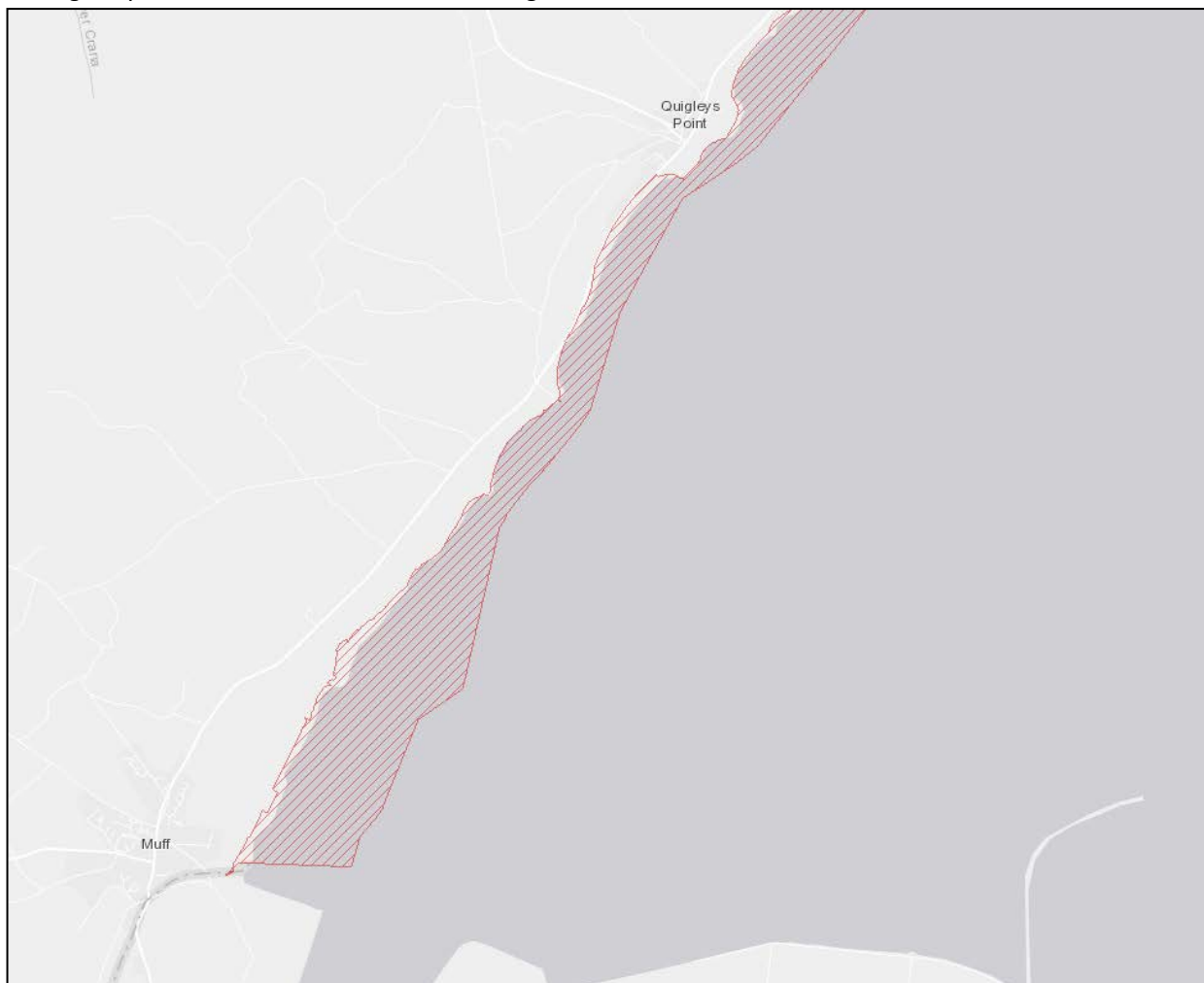


Figure 3.1.1 – Natura 2000 Sites adjacent to Proposal (Lough Foyle SPA)

3.1.2 Invasive Species

Roads and watercourses can act as corridors for invasive species. Of particular concern are plant and animal species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended (S.I. 477 of 2011). DCC conduct a four year treatment programme for sightings of invasive species, the GIS which records these reported locations should confirm the walkover results. There are numerous outcrops of giant hogweed throughout the project. Figure 3.1.2 below outlines the known Invasive Species locations along the route.



Figure 3.1.2 – Known locations of Invasive Species

3.1.3 Local Terrain and Topography

The scheme commences at the terminus of the Muff to Derry Greenway (which is intended to go to construction in July 2021) on the northern side of Muff on the R238. It will move in a northerly direction with the topography being reasonably flat in nature. On the Lough Foyle side, there are significant areas of steep drop off from the road edge to lower lying agricultural land. On the western side of the R238, there is mixed use land also which varies in nature from

flat or undulating pastures to steep rock outcrops and hills. The surrounding terrain is typically low-lying agricultural land, with mixed land uses. In general, the width available from fence line to fence line throughout the rural element of the project is approximately 16m. This comprises of a 7m carriageway and shoulders and verges of varying widths. The urban areas (inclusive of Quigleys Point) are not as wide and typical widths in these locations are approximately 13m comprising of a 7m carriageway (increasing to accommodate right turning lanes in places) with hatched areas and footways of varying widths.

3.1.4 Environmental Impact (Noise and Visual)

The proposed route is rural in nature with two urban tie-ins at both termination points. There are multiple residential developments, businesses, schools and agricultural properties adjacent to the proposals. Due to the nature and scale of the proposed development and the expected or targeted traffic thereon, (i.e. pedestrians and cyclists) it is considered that there are no receptors that will be significantly impacted by noise or vibration effects during the operational phase. Construction phase noise and vibration controls will be put in place at detailed design stage in accordance with current legislation and best practice.

3.1.5 Archaeology & Cultural Heritage

The National Monuments Service GIS viewer shows a number of recorded monuments within the constraints area. There are as follows:

- Greenbank Presbyterian Church and it is depicted in Figure 3.1.5a and the location in context is shown on Drawing Numbers CS-1629-01 to CS-1629-04.



Figure 3.1.5a – Greenbank Presbyterian Church (Reg No. 40903001)



Figure 3.1.5b – Ardmore Standing Stones (Reg Nos. DG039-010---- & DG-039-011----)

- Ture House (Reg No 40903914) as shown in figures 3.1.5c & d)



Figure 3.1.5c – Ture House

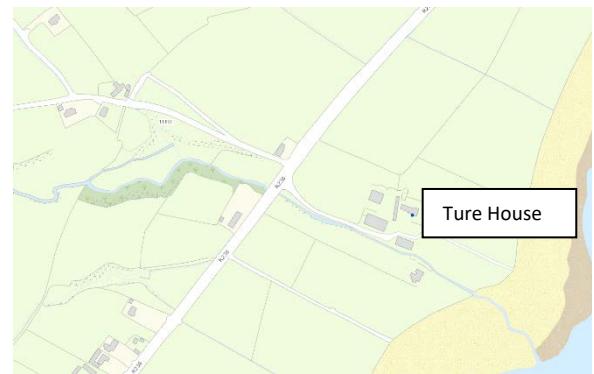


Figure 3.1.5d – Ture House Location

3.1.6 Flood Risks

Floods are a natural and inevitable part of life in Ireland. They are usually caused by a combination of events including overflowing river banks, coastal storms or blocked or overloaded drainage ditches. Numerous severe floods have occurred throughout the country in the last decade. Coastal flooding occurs when sea levels along the coast or in estuaries exceed neighbouring land levels or overcome coastal defences where these exist. Wind speed and direction and low-pressure weather systems can force water into estuaries and can cause surge effects and create extreme wave conditions as experienced in Winter 2013 / 2014.

The Office of Public Works (OPW) is coordinating Ireland's whole of Government approach to flood risk management across three strategic and policy areas and the GIS information for the Lough Foyle shows that some encroachment occurs into the constraints area to the west of the R238 but significant areas of encroachment is evident to the east of the R238 due to the proximity to the coast. Coastal flooding is broken up into 3 sections for the purposes of this report:

- High Probability flood events have approximately a 1-in-a-10 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 10%. This event is currently unavailable as reference material as it is being updated. Once available, it will be included in any future analysis of options or routes.
- Medium Probability flood events have approximately a 1-in-a-200 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 0.5%.
- Low Probability flood events have an indicative 1-in-a-1000 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 0.1%.

A lower probability means the flood event will have a higher impact on the surrounding area. The medium probability coastal flood event for Lough Foyle is depicted in Figure 3.1.6 and low and medium flood events are shown in context in Drawing Numbers CS-1629-01 to CS-1629-04.



Figure 3.1.6 – Medium probability coastal flood event for Lough Foyle catchment (1 in 200 chance)

3.1.7 Road Network and Junctions

Throughout the constraints area there are a number of roads of varying classifications including Regional and Local (both primary and tertiary). For the purposes of this report, larger clusters of residential, agricultural and business buildings accessing the R238 at a common location are being treated as junctions due to the type and size of vehicles being used and the number of trips observed to be undertaken on them. These trips are not verified counts but observations taken in the field when conducting onsite scoping.

It is not proposed to alter any roads or junctions as part of this project; however some minor works may be required to realign / square up some junctions to allow the proposed greenway to traverse the junctions in a safe and appropriate manner. In the case of a quiet side road being selected as an appropriate “offline” solution to the greenway location, the surfacing of that side road will be reviewed at the appropriate stage in the design process.

The road network includes the following road numbers: R-238, L-7741, L-77311, L-77312, L-7451-1, L-1911-2, L-1811-1, L-1821-1, L-18211, L-72911, L-7171-1, R-240, L-1951-1 and the L-1751-1. The road network and location of junctions (and associated junction ID’s) are depicted on Drawing Numbers CS-1629-01 to CS-1629-04.

Within the constraints area, there are a total of 36 No. agricultural entrances, 61 No. domestic entrances and 7 No. business entrances with direct access onto the R-238. These are shown in context on Drawing Numbers CS-1629-01 to CS-1629-04. They are also listed in Table 3.1.7 and broken down into which side of the road they access the R-238.

Access Type	LHS of Road (West of R238)	RHS of Road (East of R238)	Totals
Domestic	57	4	61
Agricultural	11	25*	36
Business	6	1	7
Totals	74	30	104

Table 3.1.7 – Number and location of accesses to R238

* Includes aquaculture access points

3.1.8 Safety Barriers

There is one observed safety barrier along the scheme running adjacent to the existing R238 development. This is located adjacent to St Patricks GAA pitch and is in severe disrepair and no longer fit for purpose. Design Standard DN-REQ-03034 gives requirements for roadside Safety Barriers and where the Designer considers that a particular hazard warrants the provision of a barrier (or guardrail). An assessment for the requirement of a safety barrier on a scheme shall be undertaken by the designer, the judgment of the designer is required in the risk assessment and in the inclusion or omission of barriers. Given the narrow corridor being assessed in this project, Design Standard DN-REQ-03079 (Design of Road Restraint Systems for Constrained Locations) may be utilized instead.

3.1.9 Structures and Culverts

Throughout the project, there are numerous tributaries of the Foyle estuary of varying sizes crossing the R238. They cross the Regional Road by way of bridges or culverts.

The bridges and culverts vary in size depending on the capacity requirements of each catchment. It is not envisaged to make any changes to any watercourses as part of this project however small scale culvert extensions may be required to facilitate same. The exception being to tie in any proposed drainage into existing watercourses or headwalls.

In the event extensions or replacement culverts are required, an application under Section 50 of the Arterial Drainage Act, 1945 will be submitted to the OPW in respect of each individual alteration to the arterial drainage network.

3.1.10 Groundwater Vulnerability

Groundwater is most at risk where the subsoils are absent or thin and in areas of karstic limestone, where surface streams sink underground at swallow holes. Groundwater vulnerability maps are based on the type and thicknesses of subsoils (sands, gravels, glacial tills (or boulder clays), peat, lake and alluvial silts and clays) and the presence of karst features.

Groundwater that readily and quickly receives water (and contaminants) from the land surface is considered to be more vulnerable than groundwater that receives water (and contaminants) more slowly and consequently in lower quantities. Groundwater vulnerability is classified as follows:

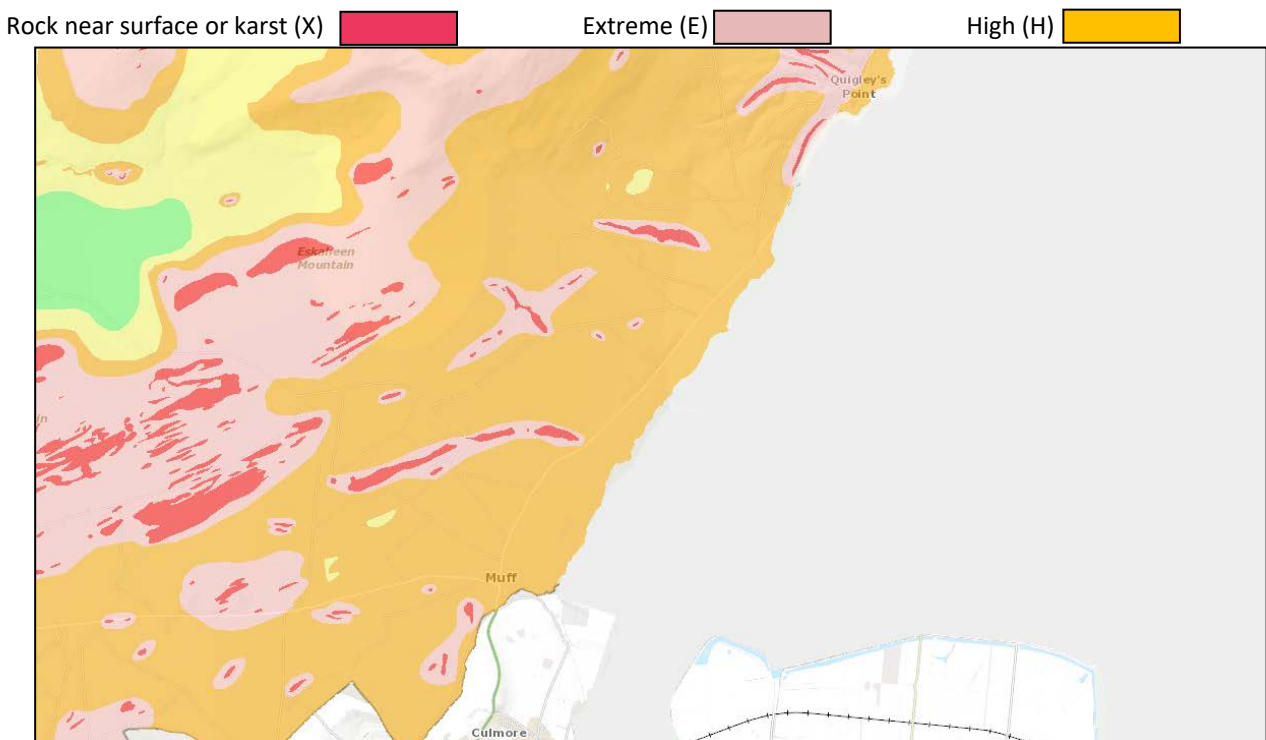


Figure 3.1.9 – Groundwater vulnerability map

The Groundwater Vulnerability map along with the Aquifer maps and Source Protection Area maps are merged to produce Groundwater Protection Zones. Each zone enables an assessment of the risk to groundwater, independent of any particular hazard or contaminant type. The Groundwater Protection Zones form one of two components of Groundwater Protection Schemes.

A Groundwater Protection Scheme provides guidelines for the planning and licensing authorities in carrying out their functions, and a framework to assist in decision-making on the location, nature and control of developments and activities in order to protect groundwater. Use of a scheme will help to ensure that within the planning and licensing processes due regard is taken of the need to maintain the beneficial use of groundwater.

The County Donegal Groundwater Protection Scheme indicates that the constraints area is located in “Permeability Region 3: Central Western and Northern Area”. Covering the majority of the county from Killybegs to Bloody Foreland and over to Inishowen, this region is underlain by a southwest to northeast trending outcrop of granite and igneous intrusive rocks, which is surrounded by Precambrian quartzites, gneisses and schists. The harder of these rocks form spectacular landscape (Derryveagh Mountains; Bluestack Mountains; the upland areas between Killybegs, Glencolumbkille and Ardara), and all of them have a low permeability.

The most extensive subsoil is blanket peat, which is generally deposited on higher, more mountainous areas (Permeability Region 5). Till is limited to the lower lying areas, both surrounding the central mountains, and within the inter-mountain valleys, the latter of which also include small pockets of alluvial material (Region 6).

The till descriptions range from granite till in the west to metamorphic over the main eastern area and quartzite till within the Fanad Peninsula. The distribution of till types reflects the underlying bedrock, from which they are probably derived. It is noted that the majority of these rocks are essentially coarse-grained and in many cases, the overlying till constitute an ‘immature’, or poorly developed subsoil, due to minimal glacial movement that grinds, crushes and mixes the material. In many of the till areas, the vegetation and land use reflect a relatively well drained subsoil, however there is some variability across this region.

Areas exhibiting indicators of higher water content (higher natural and artificial drainage density, rushes, rough grazing) do exist, although are likely to result from a combination of lower topographic/high water-table locations, large areas of relatively shallow (albeit greater than 3 m), low permeability bedrock, and high rainfall. The till-specific data, however, clearly indicate a moderate permeability material: BS 5930 descriptions of ‘SAND/GRAVEL’ or ‘SILT’; low clay contents (all nine PSAs have 12%, or less) and only one PSA having greater than 50% fines. These descriptions and grain size data further reflect the coarse-grained nature of the bedrock from which the till were derived and the poorly developed nature of the material. Furthermore, free draining brown podzolic topsoil is mapped in some of the lower lying areas and larger valleys, especially on the Inishowen Peninsula.

Any known wells and springs located in or immediately adjacent to the constraints area are shown on Drawing Numbers CS-1629-01 to CS-1629-04.

3.1.11 Built Environment

The built environment between Muff and Quigleys Point is typical of that found in Ireland. It can be separated into the urban and the rural context.

Urban: Typically town houses or terraced houses with minimal setback from the road edge. In most cases the building façade is located at the back of the existing footpath or there are small gardens with masonry walls as a boundary treatment. Businesses are located in a similar fashion to maximize visibility to passing trade.

Rural: Typically detached single dwellings located a significant distance away from the road edge (this distance varies depending on when construction took place – setback distances have changed in the legislation over the years). There are a small number of locations where older dwellings or agricultural buildings are located in close proximity to the road (i.e. minima of under 5 metres for rural and under 3.0m for urban). These are itemized under paragraph. 3.1.12. All buildings or structures are shown on Drawing Numbers CS-1629-01 to CS-1629-04.

Planning applications that have been granted or are pending will be included in the Options analysis during the to the public consultation process.

3.1.12 Boundary Restrictions

The width constraints contained in the study area vary depending on the urban or rural context. The types of primary width constraints are outlined in Table 3.1.12.

Urban / Rural Fringe Width Constraint	Rural Context Width Constraint
Existing R238 Road	Existing R238 Road
Existing junctions	Existing junctions
Boundary walls / Pillars	Boundary walls / Fences / Pillars
Residential or Commercial Buildings	Residential / Agricultural Buildings
Public Lighting Poles	Schools
Signs	Culvert Headwalls / Bridge Parapets
Schools	Significant embankment heights

Table 3.1.12 – Typical types of Boundary Restrictions

Significant locations of boundary constraint are shown and labelled in context in Drawing Numbers CS-1629-01 to CS-1629-08 and they are also itemized in Table 3.1.12a. This report was compiled primarily through desktop studies assisted by windscreen surveys and some walkover surveys and it is envisaged that any inadvertent omissions will be dealt with as the design and statutory process evolves in conjunction with Public Consultation.

Reference	Urban or Rural Fringe	Rural	Description	Location
WR-01	Y	N	Boundary fences and significant roadside embankment / drop	Ch 0 to Ch 175 RHS
WR-02	Y	N	Boundary fences and significant roadside embankment / drop	Ch 190 to Ch 240 RHS
WR-03	Y	Y	Boundary fences and significant roadside embankment / drop	Ch 250 to Ch 1100 RHS
WR-04	N	Y	Steep roadside embankment	Ch 410 to Ch 460 LHS
WR-05	N	Y	Steep roadside embankment	Ch 475 to Ch 540 LHS
WR-06	N	Y	Steep roadside embankment & Hedging	Ch 550 to Ch 730 LHS
WR-07	N	Y	Steep roadside embankment	Ch 670 to Ch 740 RHS
WR-08	N	Y	Boundary Hedging	Ch 900 to Ch 1110 LHS
WR-09	N	Y	Boundary fences and significant roadside embankment / drop	Ch 1110 to Ch 1300 RHS
WR-10	N	Y	Steep roadside embankment & Hedging	Ch 1180 to Ch 1275 LHS
WR-11	N	Y	Boundary fencing	Ch 1450 to Ch 1500 LHS
WR-12	N	Y	Boundary fences and significant roadside embankment / drop	Ch 1310 to Ch 1850 LHS
WR-13	N	Y	Boundary fencing	Ch 1515 to Ch 1590 LHS
WR-14	N	Y	Roadside building	Ch 1675 LHS
WR-15	N	Y	Boundary fencing	Ch 1750 to Ch 1810 RHS
WR-16	N	Y	Informal road side parking arrangements	Ch 1860 to Ch 1920
WR-17	N	Y	Tree outcrop	Ch 1975 to Ch 2060 LHS
WR-18	N	Y	Boundary fences and significant roadside embankment / drop	Ch 1925 to Ch 2200 RHS

WR-19	N	Y	Boundary fences and significant roadside embankment / drop	Ch 2220 to Ch 2520 RHS
WR-20	N	Y	Boundary fences and significant roadside embankment / drop	Ch 2530 to Ch 2680 RHS
WR-21	N	Y	Boundary walls & fences	Ch 2575 to Ch 2710 LHS
WR-22	N	Y	Boundary fences and significant roadside embankment / drop	Ch 2760 to Ch 2850 RHS
WR-23	N	Y	Boundary fences and significant roadside embankment / drop	Ch 2870 to Ch 3600 RHS
WR-24	N	Y	Domestic boundaries & hedges	Ch 3025 to Ch 3110 LHS
WR-25	N	Y	Domestic boundaries & walls	Ch 3200 to Ch 3340 LHS
WR-26	N	Y	Domestic boundaries & walls	Ch 3410 to Ch 3525 LHS
WR-27	N	Y	Boundary walls	Ch 2350 to Ch 2430 LHS
WR-28	N	Y	Agricultural boundary & steep embankment	Ch 3580 to Ch 3630 LHS
WR-29	N	Y	Boundary fences and significant roadside embankment / drop or road side bund	Ch 3620 to Ch 4700 RHS
WR-30	N	Y	Boundary hedge, Steep embankment, boundary fence & informal road side parking	Ch 3900 to Ch 3960 LHS
WR-31	N	Y	Boundary hedge, Steep embankment, boundary fence	Ch 3980 to Ch 4180 RHS

Table 3.1.12a – Boundary or Width Restrictions, Type & Location.

Reference	Urban or Rural Fringe	Rural	Description	Location
WR-32	N	Y	Domestic boundary wall & hedging	Ch 4500 to Ch 4620 LHS
WR-33	N	Y	Roadside fencing boundary or bund & significant drop	Ch 4720 to Ch 5120 RHS
WR-34	N	Y	Domestic boundary wall parapet & agricultural boundary fence	Ch 4820 to Ch 4880 LHS
WR-35	N	Y	Roadside bund / no boundary / seawall with significant roadside drop	Ch 5125 to Ch 7040 RHS
WR-36	N	Y	Roadside bund and parapet	Ch 5160 to Ch 5250 LHS
WR-37	N	Y	Agricultural boundaries and steep embankment	Ch 5300 to Ch 5540 LHS
WR-38	Y	Y	Domestic boundaries of setback kerbing and steep embankment	Ch 5575 to Ch 5660 LHS
WR-39	Y	Y	Steep roadside embankment	Ch 5780 to Ch 5910 LHS
WR-40	Y	N	Domestic wall boundary	Ch 5910 to Ch 5960 LHS
WR-41	Y	Y	Domestic wall and fence boundaries	Ch 6280 to Ch 6400 LHS
WR-42	Y	Y	Informal parking at Greenbank Church	Ch 6560 to Ch 6680 LHS
WR-43	Y	N	Domestic boundary and hedging	Ch 6725 to Ch 6820 LHS
WR-44	Y	N	Quigleys Point “Urban” extents, boundaries, kerbs, walls and fences both domestic & commercial.	Ch 7040 to Ch 7500 and adjacent to bus stop

Table 3.1.12a (Cont.) – Boundary or Width Restrictions, Type & Location

3.1.13 Land Ownership

There are numerous landowners along the extents of the project, and they number approximately 140 between the urban and rural areas. The rural areas contain primarily agricultural land with dispersed detached housing. In the urban area, terraced and town houses with small garden frontage with dispersed businesses are encountered. In general, the majority of the developments are to the western side of the existing R238 development and away from the estuary side.

3.2 Utility Constraints

Although the route and area under consideration in this report is primarily rural in nature, it does include two significant urban fringes at both ends of the project, namely, Muff and Quigleys Point. This gives rise to the potential interaction with numerous Utility providers.

3.2.1 ESB

There are extensive ESB networks running both laterally and longitudinally throughout the proposed constraints area. They take the form of both high and low voltage and comprise of overhead networks and underground services. It is envisaged that the progression of the project may involve some minimal relocation of services. There are no known high voltage networks in the area, however all relevant utility bodies will be contacted during detailed design stage for input and consultation for potential conflicts and permanent and temporary diversions required. Details of known Utility Providers are show on Drawing Numbers CS-1629-05 to CS-1629-08.

3.2.2 Public Lighting

There is public lighting at both urban ends of the proposed constraints area. They are varied in terms of design, usage and construction. It is envisaged that the progression of the project may involve some minimal relocation of services. All relevant utility bodies will be contacted during detailed design stage for input and consultation for potential permanent and temporary diversions required. Details of known Utility Providers are show on Drawing Numbers CS-1629-05 to CS-1629-08.

3.2.3 eir

There are extensive eir networks running both laterally and longitudinally throughout the proposed constraints area. They take the form of overhead networks and underground services. It is envisaged that the progression of the project may involve some minimal relocation of services. No details are available at present for these networks, however all relevant utility bodies will be contacted during detailed design stage for input and consultation for potential conflicts and permanent and temporary diversions required.

3.2.4 Irish Water

There are extensive Irish Water networks running both laterally and longitudinally throughout the proposed constraints area. They take the form of Watermains and in the urban area of Muff, Public Sewers. It is envisaged that the progression of the project will avoid relocation of these services. All relevant utility bodies will be contacted during detailed design stage for input and consultation for potential conflicts and any permanent and temporary diversions required. Details of known Utility Providers are show on Drawing Numbers CS-1629-05 to CS-1629-08.

4 CONCLUSION AND RECOMMENDATION

One of the core objectives of the project is to encourage modal shift. For the delivery of this modal shift objective, it is deemed essential that the solution is adjacent to or in the immediate vicinity of as many potential users as possible with low impact on environmental constraints and their sensitive receptors.

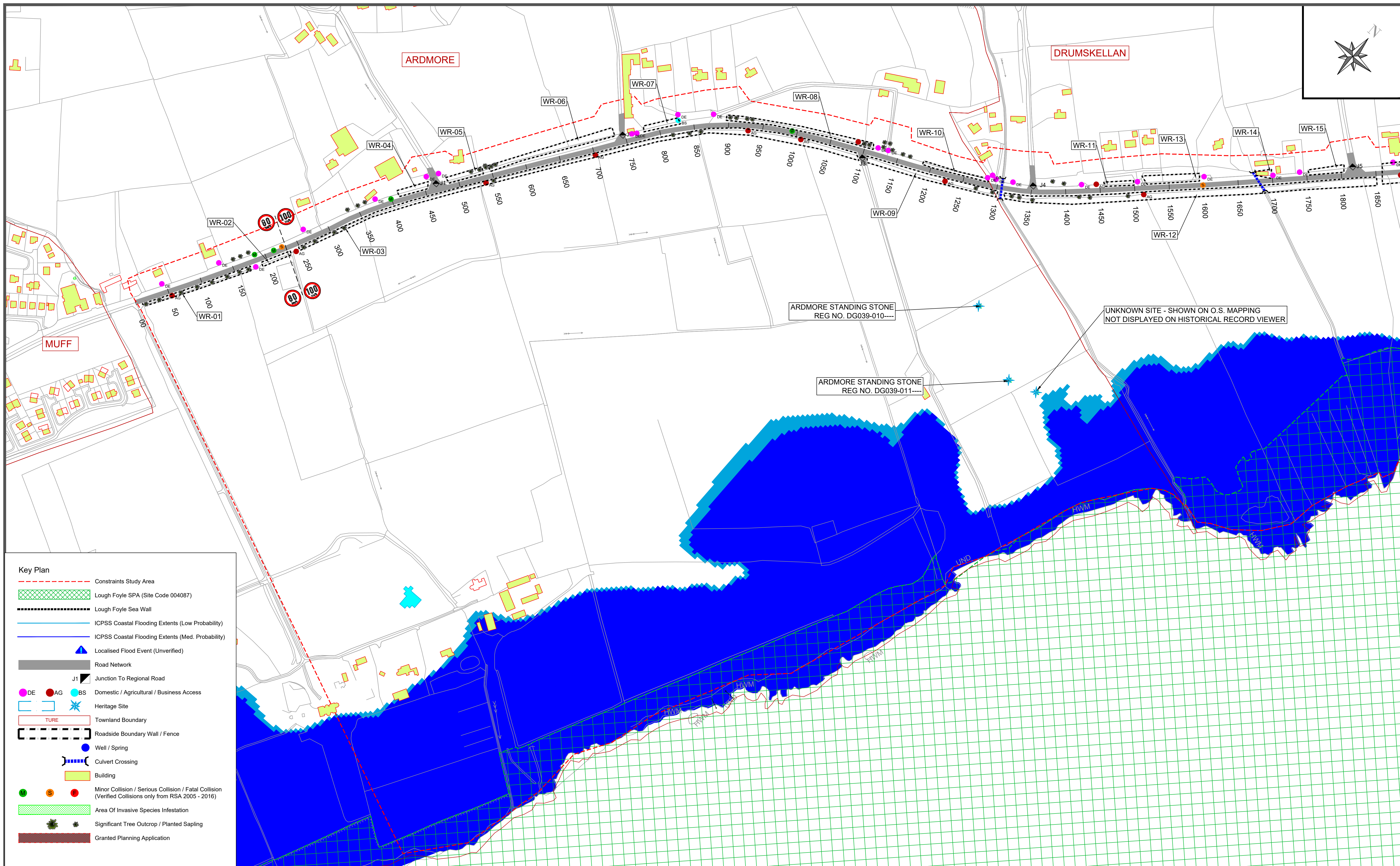
To the west of the existing R238 development, there is dispersed rural development with varied setback distance from the road edge. The topography behind the houses to the north is steep and undulating with mixed woodland areas.

The recommendation therefore is to further refine and develop appropriate options that shall be informed by objective driven outcomes, detailed surveys, environmental considerations, permissible widths, flooding analysis and geotechnical investigations as the scheme is taken through the design and statutory processes.



Muff To Quigleys Point Greenway (R238)

Constraints Study Drawings



Key Plan

- Constraints Study Area
- Lough Foyle SPA (Site Code 004087)
- Lough Foyle Sea Wall
- ICPSS Coastal Flooding Extents (Low Probability)
- ICPSS Coastal Flooding Extents (Med. Probability)
- ▲ Localised Flood Event (Unverified)
- Road Network
- J1 Junction To Regional Road
- DE ● AG ● BS Domestic / Agricultural / Business Access
- ★ Heritage Site
- TURE Townland Boundary
- Roadside Boundary Wall / Fence
- Well / Spring
- Culvert Crossing
- Building
- ● ● Minor Collision / Serious Collision / Fatal Collision (Verified Collisions only from RSA 2005 - 2016)
- Area Of Invasive Species Infestation
- ★ Significant Tree Outcrop / Planted Sapling
- Granted Planning Application



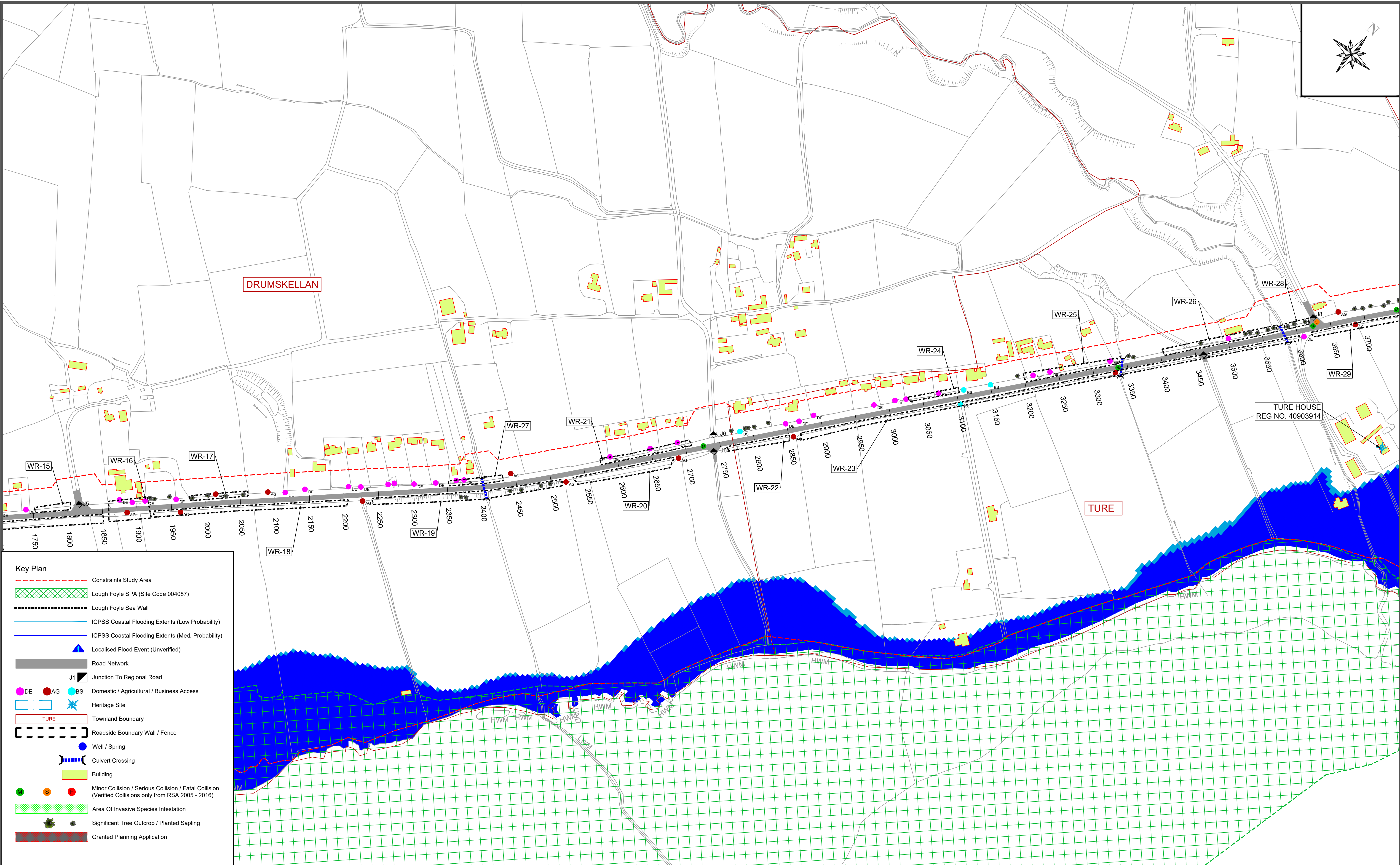
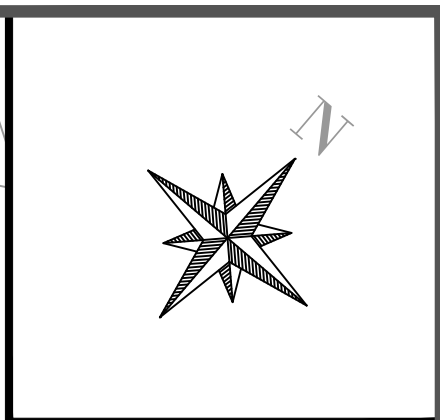
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Checked: A Smith	Date: 02/06/2021	
Approved: C Campbell	Date:	

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Vert. Scale:	N/A
File no:	P1629

Project:	Muff To Quigleys Point Greenway (R238)
Location:	Inishowen MD
Dwg Title:	Constraints Study - Primary Constraints

Rev:	--
Drawing no.:	CS-1629-01



Key Plan

- Constraints Study Area
- Lough Foyle SPA (Site Code 004087)
- Lough Foyle Sea Wall
- ICPSS Coastal Flooding Extents (Low Probability)
- ICPSS Coastal Flooding Extents (Med. Probability)
- ▲ Localised Flood Event (Unverified)
- Road Network
- J1 Junction To Regional Road
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- Heritage Site
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- Roadside Boundary Wall / Fence
- Well / Spring
- Culvert Crossing
- Building
- ● ● Minor Collision / Serious Collision / Fatal Collision (Verified Collisions only from RSA 2005 - 2016)
- Area Of Invasive Species Infestation
- Significant Tree Outcrop / Planted Sapling
- Granted Planning Application



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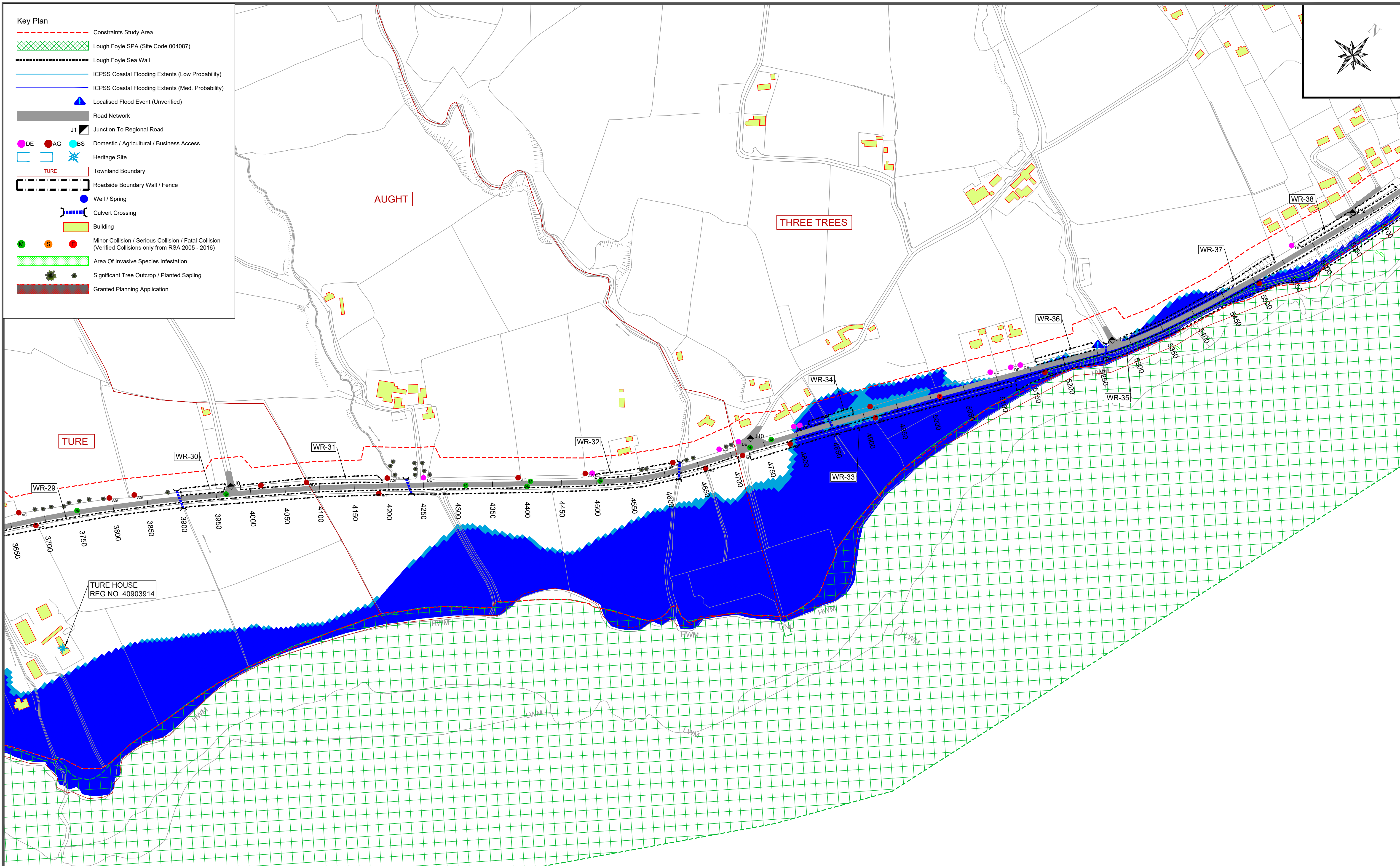
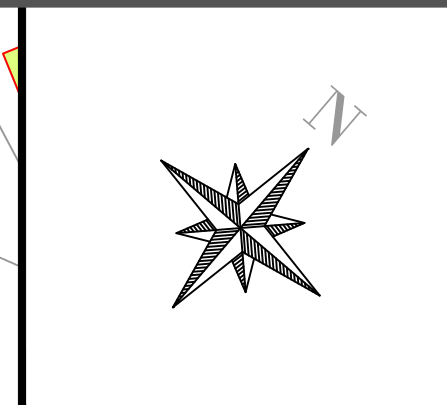
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Checked: A Smith	Date: 02/06/2021	
Approved: C Campbell	Date:	

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 File no: P1629

Project: Muff To Quigleys Point Greenway (R238)
 Location: Inishowen MD
 Dwg Title: Constraints Study - Primary Constraints

Rev: --
 Drawing no.: CS-1629-02

- Key Plan**
- Constraints Study Area
 - Lough Foyle SPA (Site Code 004087)
 - Lough Foyle Sea Wall
 - ICPSS Coastal Flooding Extents (Low Probability)
 - ICPSS Coastal Flooding Extents (Med. Probability)
 - ▲ Localised Flood Event (Unverified)
 - Road Network
 - J1 Junction To Regional Road
 - DE Domestic / Agricultural / Business Access
 - BS Heritage Site
 - Townland Boundary
 - Roadside Boundary Wall / Fence
 - Well / Spring
 - Culvert Crossing
 - Building
 - S Minor Collision / Serious Collision / Fatal Collision (Verified Collisions only from RSA 2005 - 2016)
 - F
 - Area Of Invasive Species Infestation
 - Significant Tree Outcrop / Planted Sapling
 - Granted Planning Application



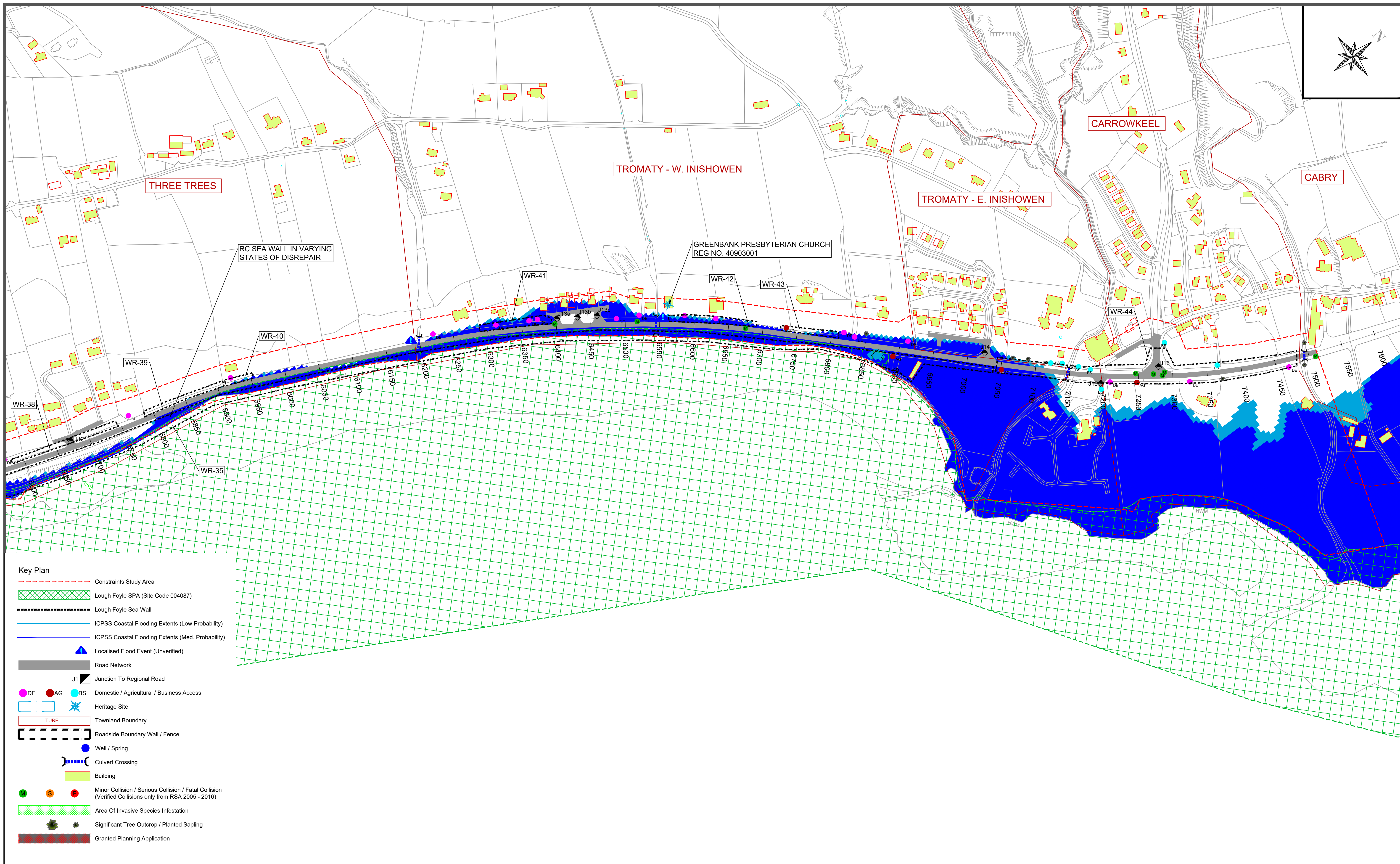
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Checked: A Smith	Date: 02/06/2021	
Approved: C Campbell	Date:	

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Project: Muff To Quigleys Point Greenway (R238)
 Location: Inishowen MD
 Dwg Title: Constraints Study - Primary Constraints

Rev: --
 Drawing no.: CS-1629-03



- Key Plan**
- Constraints Study Area
 - Lough Foyle SPA (Site Code 004087)
 - Lough Foyle Sea Wall
 - ICPSS Coastal Flooding Extents (Low Probability)
 - ICPSS Coastal Flooding Extents (Med. Probability)
 - ▲ Localised Flood Event (Unverified)
 - Road Network
 - J1 Junction To Regional Road
 - DE ● AG ● BS Domestic / Agricultural / Business Access
 - ★ Heritage Site
 - Townland Boundary
 - Roadside Boundary Wall / Fence
 - Well / Spring
 - Culvert Crossing
 - Building
 - G ● S ● R Minor Collision / Serious Collision / Fatal Collision (Verified Collisions only from RSA 2005 - 2016)
 - Area Of Invasive Species Infestation
 - Significant Tree Outcrop / Planted Sapling
 - Granted Planning Application



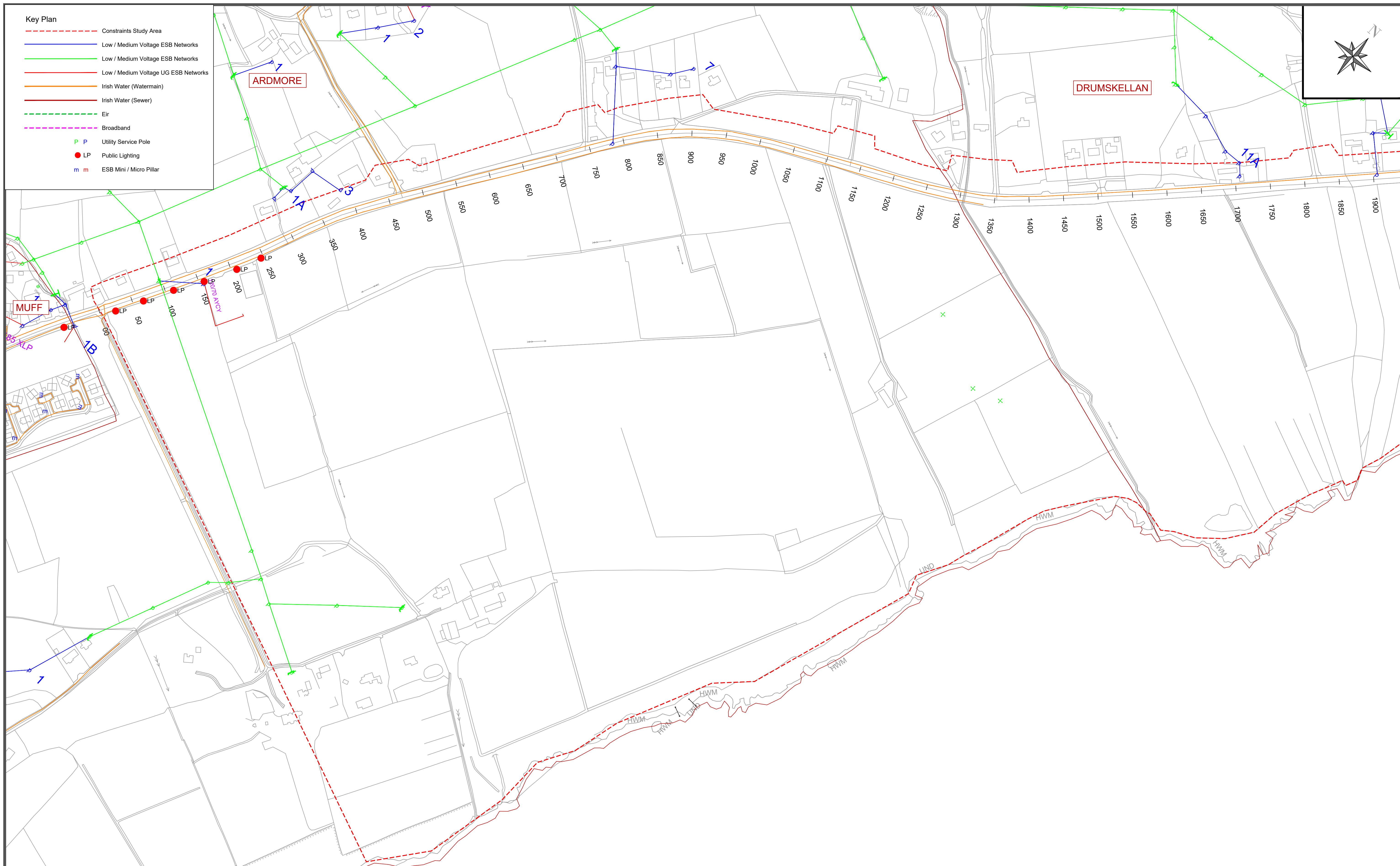
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Approved: C Campbell	Date:	

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Project:	Muff To Quigleys Point Greenway (R238)
Location:	Inishowen MD
Dwg Title:	Constraints Study - Primary Constraints

Rev:	A
Drawing no.:	CS-1629-04



Rev	By	Date	Description

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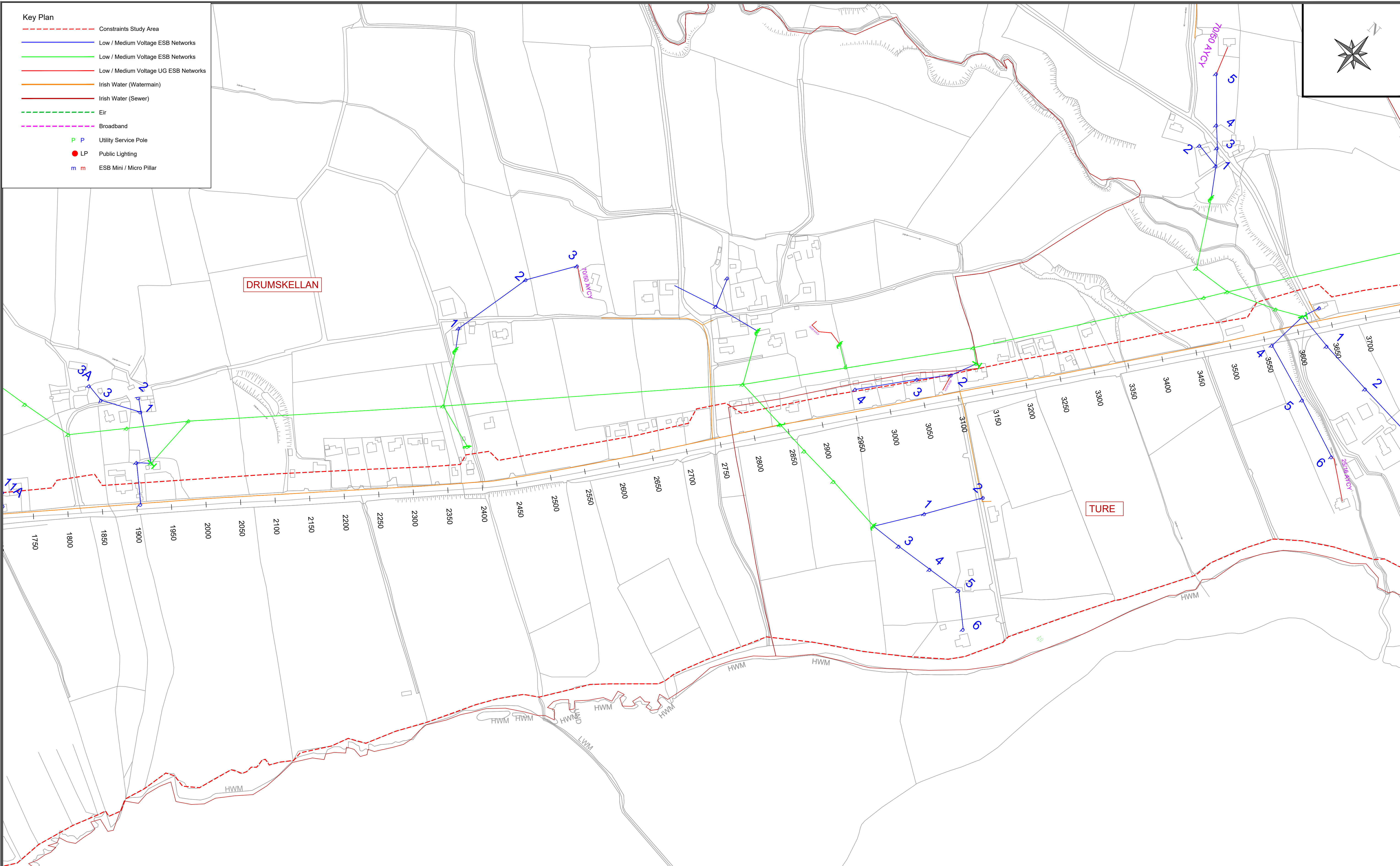
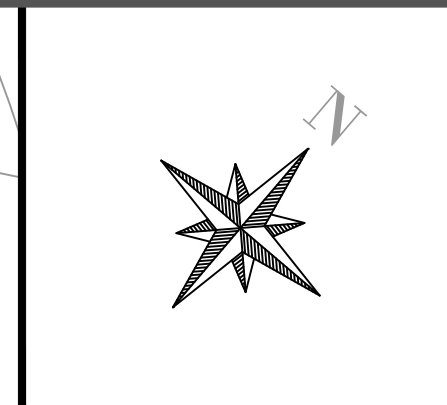
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Project: Muff To Quigleys Point Greenway (R238)
Location: Inishowen MD
Dwg Title: Constraints Study - Utility Providers

Rev: --
Drawing no.: CS-1629-05

Key Plan

- Constraints Study Area
- Low / Medium Voltage ESB Networks
- Low / Medium Voltage ESB Networks
- Low / Medium Voltage UG ESB Networks
- Irish Water (Watermain)
- Irish Water (Sewer)
- Eir
- Broadband
- P Utility Service Pole
- LP Public Lighting
- m ESB Mini / Micro Pillar



Rev	By	Date	Description

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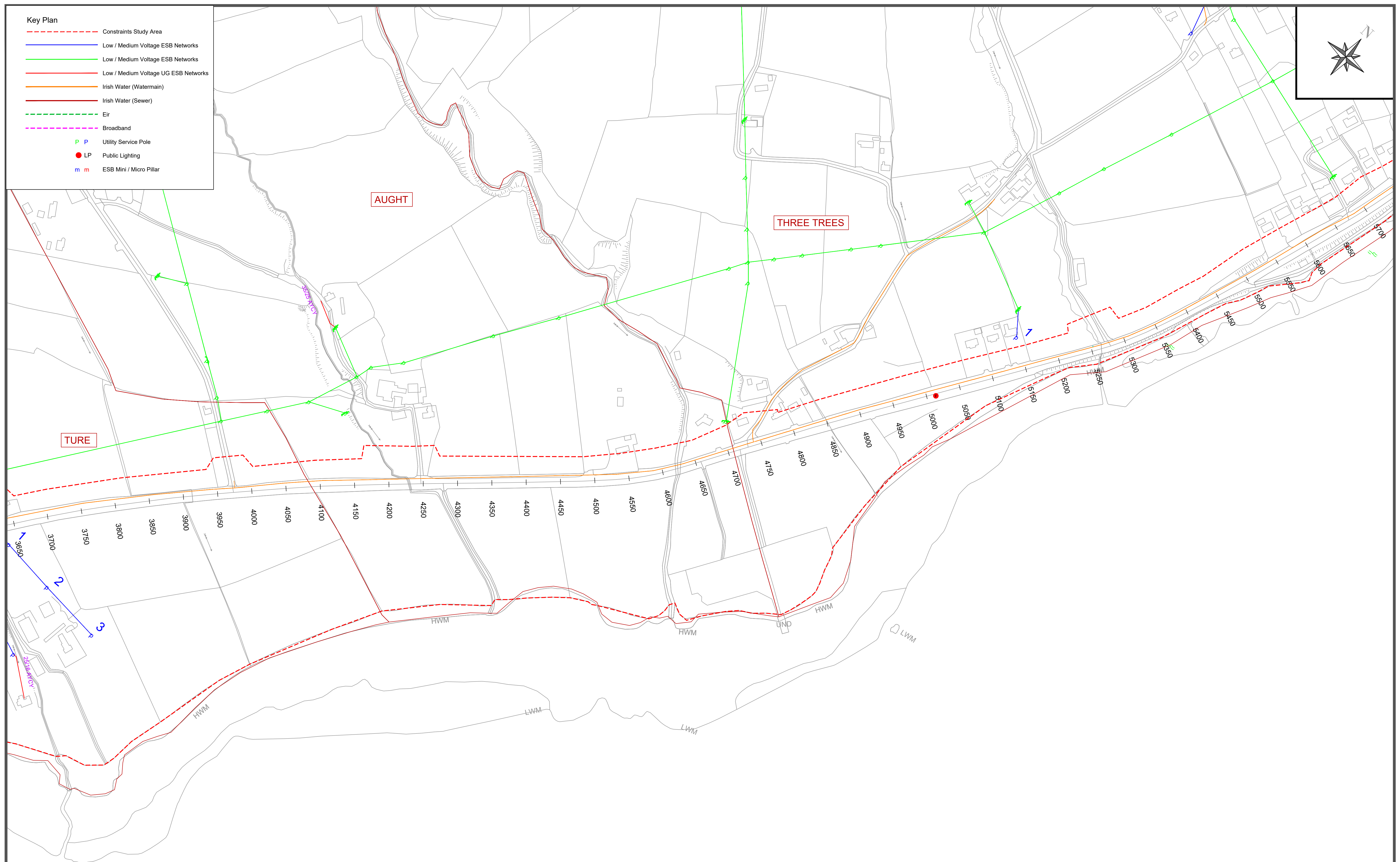
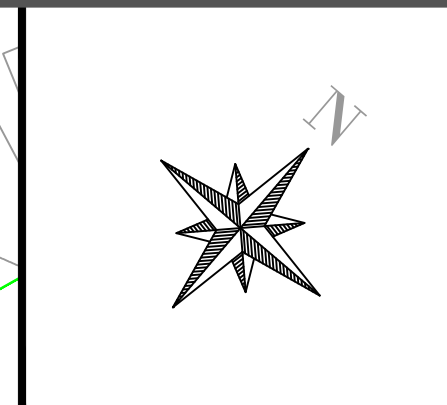
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Project:	Muff To Quigleys Point Greenway (R238)
Location:	Inishowen MD
Dwg Title:	Constraints Study - Utility Providers

Rev:	--
Drawing no.:	CS-1629-06

Key Plan

- Constraints Study Area
- Low / Medium Voltage ESB Networks
- Low / Medium Voltage ESB Networks
- Low / Medium Voltage UG ESB Networks
- Irish Water (Watermain)
- Irish Water (Sewer)
- Eir
- Broadband
- P Utility Service Pole
- LP Public Lighting
- m ESB Mini / Micro Pillar



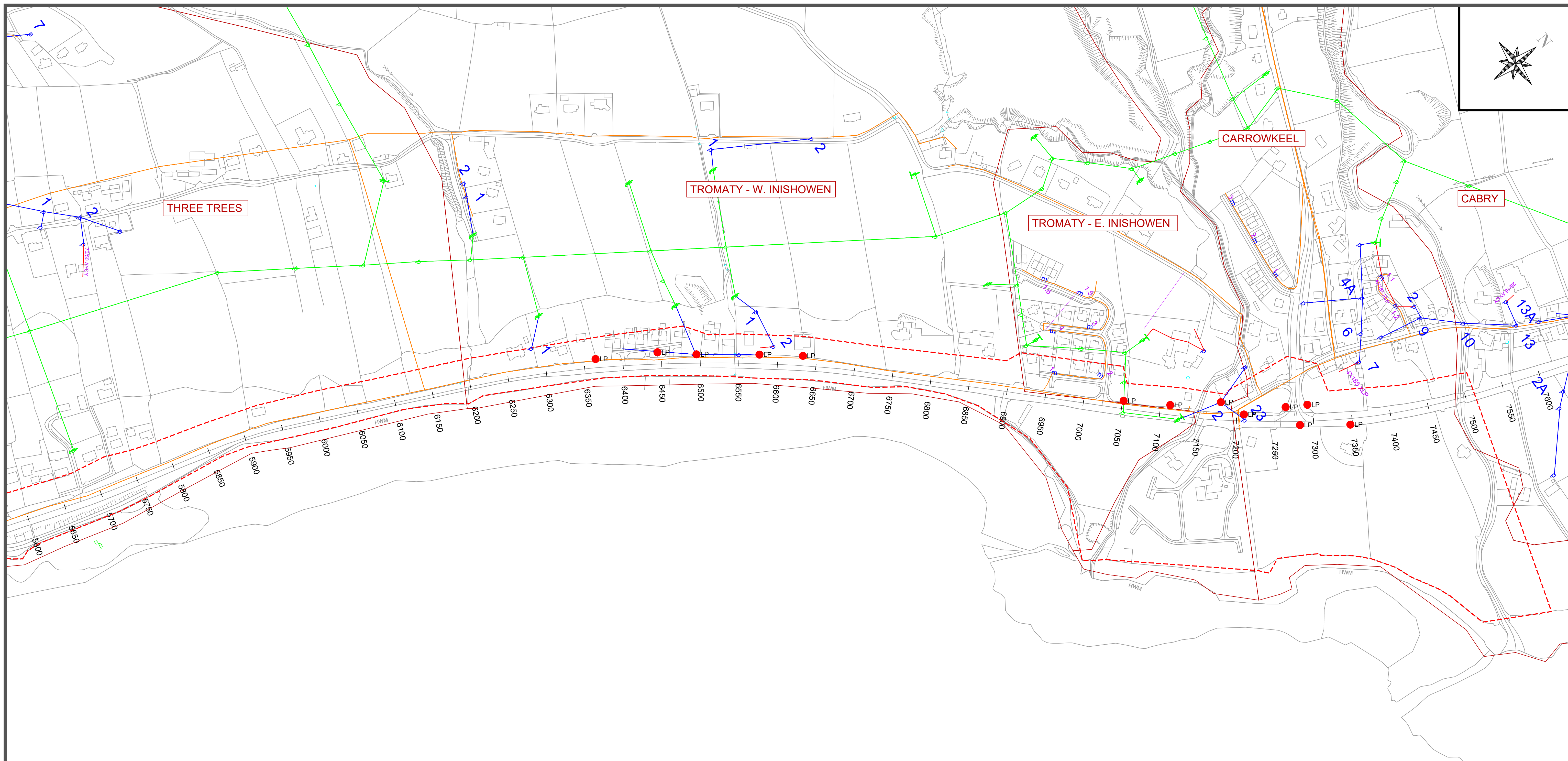
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Project:	Muff To Quigleys Point Greenway (R238)
Location:	Inishowen MD
Dwg Title:	Constraints Study - Utility Providers

Rev:	--
Drawing no.:	CS-1629-07



- Key Plan**
- Constraints Study Area
 - Low / Medium Voltage ESB Networks
 - Low / Medium Voltage ESB Networks
 - Low / Medium Voltage UG ESB Networks
 - Irish Water (Watermain)
 - Irish Water (Sewer)
 - Eir
 - Broadband
 - P Utility Service Pole
 - LP Public Lighting
 - m ESB Mini / Micro Pillar



Rev	By	Date	Description

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Dwg Title:	Constraints Study - Utility Providers

Rev:	--
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