Comhairle Contae Fhine Gall
Fingal County Council

MAKING COMPLEX EASY

CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Ecological Appraisal

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Contents

1 INTRODUCTION 1
1.1 Purpose and Scope 1
1.2 Legislation, Policy and Guidelines 1

2 PROPOSED DEVELOPMENT 2
2.1 Project Description 2
2.1.1 Surface Water 5
2.1.2 Construction Programme/Phasing 6
2.1.3 Habitat Removal and Alteration 7

3 METHODOLOGY 10
3.1 Zone(s) of Influence and Proposed Development 10
3.2 Desk Study 10
3.3 Field Study 11
3.3.1 Habitats and Flora 11
3.3.2 Invasive Alien Plant Species 11
3.3.3 Mammals, Amphibians and Reptiles 11
3.3.4 Birds 12
3.3.5 Aquatic Ecology 12
3.4 Impact Appraisal 12
3.5 Limitations 13
3.5.1 Desk based Assessment 13
3.5.2 Field Surveys 13

4 RECEIVING ENVIRONMENT 15
4.1 Site overview 15
4.2 Designated Sites 15
4.3 Desk Study 23
4.4 Field Study 29
4.4.1 Habitats 29
4.4.2 Protected Flora/Species of Conservation Concern 32
4.4.3 Invasive Plants and Animals 32
4.4.4 Mammals 33
4.4.5 Avifauna 35
4.4.6 Amphibians and Reptiles 35
4.4.7 Invertebrates 36
4.4.8 Aquatic Environment 36

5 VALUATION 39
5.1 Significant Ecological Features 39

6 MITIGATION AND ENHANCEMENT 41
6.1 Roles and Responsibilities 41
6.2 Construction Environmental Management Plan (CEMP) 42
6.3 Environmental Commitments 42
6.4 Biodiversity Management 42
6.4.1 Pre-construction Surveys 42
6.4.2 Construction Stage 42
6.5 Surface Water and Soil Management 43
6.5.1 Construction 43
6.5.2 Materials Management 43
6.6 Designated Sites 44
6.7 Habitats and Flora 45
6.7.1 Habitat Loss/Alteration 45

6.7.2 Protected Flora 45
6.7.3 Invasive Alien Plant Species....45
6.8 Fauna 46
6.8.1 Badger 46
6.8.2 Otter 47
6.8.3 Bats 47
6.8.4 Other Mammals 47
6.8.5 Avifauna 48
6.8.6 Amphibians and Reptiles 48
6.8.7 Invertebrates 48
6.8.8 Aquatic Environment....48
6.9 Enhancement Opportunities....48

7 REFERENCES 50

Tables

Table 2-1: WFD River Water Quality (2010-2015) for the River Water Bodies within the proposed development....6
Table 4-1: European Sites within the ZoI of the Proposed Development....15
Table 4-2: National Sites within the ZoI of the Proposed Development 19
Table 4-3: NBDC Protected and Rare Species Records within 5km from proposed development 23
Table 4-4: Habitat Types recorded and their Ecological Valuation 30
Table 4-5: NBDC Third Schedule Invasive Plants and Species Records within 5km from proposed development....32
Table 4-6 Badger Sett Evidence....33
Table 4-7 Suitability Index for Different Bat Species (as per Lundy *et al*., 2011)....34
Table 4-8 Bird Species observed during Ecological Study....35
Table 5-1: Summary Valuation of Significant Ecological Features 39

Figures

Figure 2-1: Preferred Option – Typical arrangement....3
Figure 2-2: Proposed Development Location 9
Figure 4-1: Designated Sites within the ZoI of the Proposed Development....21
Figure 4-2: Nationally Designated Sites within the ZoI of the Proposed Development....22
Figure 4-3: Habitat Map 38

Appendices

Appendix A Proposed Development General Arrangement Drawings....A-1
Appendix B Proposed Outline Drainage Design Drawings B-1
Appendix C Ecological Valuation Criteria C-1
Appendix D Proposed Landscaping Design & Replanting Schedule D-1

1 INTRODUCTION

1.1 Purpose and Scope

RPS was commissioned by Fingal County Council (FCC) to complete the design of the proposed Church Fields Link Road from Damastown Avenue to Wellview Avenue including the upgrade of Wellview Avenue to Lady's Well Road, Mulhuddart, Dublin 15 (hereafter 'the proposed development'). The scope also included for a cycle network along Damastown Avenue, Powerstown Road, and discrete sections leading from the adjacent Roundabout, as well as widening of the existing narrow path running along the recreational ground along the eastern boundary of the site.

There is a contract requirement to undertake an Ecological Appraisal of the proposed development. This included an assessment of the potential ecological impact of the proposed development, a desk study, habitat survey, bird survey, and a protected species assessment.

This report pertains to these results only; recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS. The surveys and desk-based assessment undertaken as part of this review and subsequent report including the Ecological Appraisal Notes are prepared in accordance with the relevant legislation, policy, and guidelines outlined in **Section 1.2**.

1.2 Legislation, Policy and Guidelines

The assessment of the likely significant impacts of the proposed development on ecological features has taken account of the following policy documents and legislation, where relevant:

- EU Birds Directive 2009/147/EEC;
- EU Habitats Directive 92/43/EEC (as amended);
- EU Water Framework Directive (WFD) 2000/60/EC;
- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (as amended);
- Planning and Development Act 2010 (as amended);
- Fingal Development Plan 2017-2023;
- Wildlife Acts 1976 and Wildlife (Amendment) Act (2000) (as amended);
- Flora (Protection) Order, 2015.
- National Biodiversity Action Plan 2017-2021; and
- Fingal Biodiversity Action Plan 2010-2015 (still applicable)

The surveys and impact assessment have been carried out in accordance with the following guidelines:

- Best Practice Guidance for Habitat Survey and Mapping (Smith *et al*., 2011);
- A Guide to Habitats in Ireland (Fossitt, 2000);
- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2009a);
- Guidelines for the Assessment of Ecological Impacts of National Road Schemes Rev. 2. (NRA, 2009b);
- Guidelines for Preliminary Ecological Assessment (CIEEM, 2017);
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018, version 1.1);
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.) (Collins, 2016);
- Bat Surveys: Good Practice Guidelines (Hundt, 2012);
- Bat Mitigation Guidelines for Ireland (Kelleher & Marnell, 2006);
- Environmental Planning and Construction Guidelines Series (National Roads Authority, 2005 – 2011); and
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016).

The assessment was carried out in two stages, initially through a desktop study, followed by field surveys in order to identify, describe and map areas of known or potential ecological value.

2 PROPOSED DEVELOPMENT

The proposed development comprises a new link road from an existing roundabout on Damastown Avenue on the northern end of the Church Fields study area connecting to the established Wellview Avenue to service the development lands in the north adjacent to Damastown Avenue which it is intended to be developed (at a later date) in accordance with the Church Field Land Management Plan (CFLMP). It is also proposed to upgrade the existing Wellview Avenue as far as, and including, Ladyswell Road Roundabout in accordance with the CFLMP. This is in keeping with a number of objectives contained within the current Fingal Development Plan 2017-2023 for Mulhuddart and Tyrellstown, whereby sustainable connectivity between communities is provided. A new combined cycle-track and footway along Damastown Avenue and through the future parkland area parallel to, but separate from, Church Road is also proposed. This also includes the upgrade and provision of vulnerable road user (VRU) facilities at various locations to tie in with other existing facilities in the area (**Appendix A**).

2.1 Project Description

The proposed development (**Appendix A)** consists of a number of elements specifically;

- New link road section – two lanes, approximately 300m in length, from an existing roundabout on Damastown Avenue connecting to Wellview Avenue, including 2m cycle tracks/lanes, 3m footpaths with appropriately located zebra crossings, planted grass medians and verges, and a new roundabout junction to access the future Church Fields development lands;

- Upgrade the existing two lane Wellview Avenue road section from the above new section to as far as and including Ladyswell Road Roundabout approximately 400m in length, and to include all of the same facilities as above;

- A new combined 4m two-way cycle track and adjacent 2m / 3m footpath approximately 600m in length along the southern side of Damastown Avenue adjacent to existing grassed verge running along the carriageway kerb line, and through the future parkland area adjacent to Church Road, approximately 700m in length, and following the alignment of existing footpath through the existing parkland areas;

- It is proposed to retain the existing adjacent westbound on-road cycle lane for continuity with other sections, likewise for the existing eastbound on-road cycle lane;

- The proposed off-road footpath & cycle-track in this case are at the same level and segregated by different surface finishes and road marking delineation;

- The section provided through the future parkland parallel to Church Road, approximately 700m in length, will follow an alignment to ensure the existing trees are retained and not impacted on by the new track;

- This also includes the upgrade and provision of vulnerable road user (VRU) facilities through and around the Church Road /Damastown Avenue Roundabout to tie in with other existing facilities in the area;

- The upgrade of existing /poorly constructed cycleways on the roundabout to tie in to existing cycleways on the R121 and R121 Cruiserath Road. On the south-western and northern sections around the roundabout will be a 4m two-way cycle track, However, owing to space limitations on the southern and south-eastern sections, these small sections of cycle lanes will be 2m one-way cycle lanes, therefore cyclists will be required to make use of dedicated crossing points to venture around the roundabout;

- An upgrade to the southern side of the Powerstown Road footpath to include a 4m two-way cycle track to provide a link from the above roundabout to as far as Powerstown Educate Together National School. This is the only section of the entire scheme that will require land-take, albeit narrow, which will be by agreement with the Department of Education.

- The existing Pelican crossing on the eastern approach of Damastown Avenue to the Church Road /Damastown Avenue Roundabout is to be upgraded to a Toucan crossing, and new Toucan crossings are proposed on each of the other arms of this roundabout also;

- New Toucan crossings are proposed on the eastern and western side of the Damastown / Church Field Link Road roundabout at the top of the new link road section;

- New replacement street lighting is proposed on the new and upgraded link road sections, while along the new Damastown Avenue cycle track, the existing street lighting is to be relocated closer to the road, with additional lighting provided on the back to light the new cycle track and footpath. There is minimal existing lighting in the parkland areas along the existing footpath, which is proposed to be replaced with more frequent pathway lighting.

- The existing road markings and signage would be refreshed, and new signage and road markings installed as required.

Taking into consideration the findings of separate multi-criteria analysis prepared by RPS (2019a), and feedback and preferences of the client, FCC, the typical road cross section arrangement is for a two-way carriageway that is segregated by a planted grassed median, with cycle tracks and footpaths behind the grassed verges, which themselves are segregated from each other by a 75mm upstand kerb – see **Figure 2-1.**

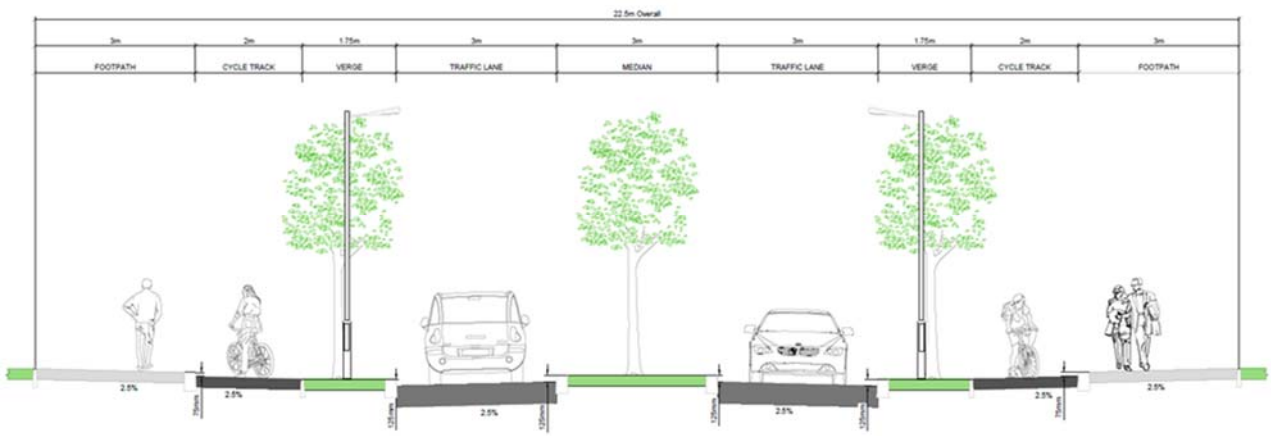


Figure 2-1: Preferred Option – Typical arrangement

With respect to the surface water drainage at this stage of the project, the design has focussed on reinforcing the existing road drainage. All new drainage incorporated as part of the detailed solution shall follow the SuDS train. This will include bio-retention features under the tree pits in the grassed verges, additional percolation pipes in the verge also, as well as attenuated discharge via petrol interceptor into local watercourses.

The proposed development will incorporate a surface water management system which has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS, 2005) approach using Sustainable Drainage Systems (SuDS) techniques. This system, which is illustrated in Drainage Drawings in **Appendix B,** recognises seven discrete drainage network areas covering the entirety of the proposed development.

With the existing road sections, the design will reinforce the management of the surface waters to ensure no impact on receiving waters. The key elements of the design, which are applicable across six of the proposed drainage networks identified rely on a number of overlapping drainage solutions.

On the new and upgraded link road sections, where new central carrier drains are proposed, the following are proposed:

- Tree Pit drainage – For each tree, side-inlet gullies will be the first capture of carriageway surface water through stone lined pits that will focus water into the topsoil tree pit to discharge downwards through the soil into a filter drain lying beneath. The filter drain will direct capture water to the central carrier drains;

- Additional Verge Storage / Percolation – Downstream of the tree pit gullies, additional side-inlet gullies will be the second capture of carriageway surface water, which are linked into closed perforated pipes extending approximately 10m in the grassed verges, where additional surface water will be stored and can percolated down through the filter drain material into the filter drain lying beneath, which captures the water to the central carrier drains as above.

- By-pass Gullies – Further downstream of the two previous systems, a standard by-pass gully will take any remaining carriageway surface water that has not been taken into the two previous systems and pipe this into the verge filter drain below, and similarly into the central carrier drains.

- Footpath & Cycle Track drainage – the surface water from the footpaths and off-road cycle tracks will flow into the dished grassed verges where it can percolate through the filter material into the filter drain beneath, which captures the water to the central carrier drains as above

Percolation alone will not adequately deal with surface water, particularly given the fact that much of the surrounding lands is built upon or destined to be built upon as part of the Church Fields Land Development Plan. The design includes for the enhancement of the existing drainage network and include standard features such as bypass separators, retention pipes and attenuation ponds to deal with surface water.

Each of the seven networks identified (**Appendix B**) have differing conditions and the discharge of the attenuated surface waters are detailed below.

Area 1 – All flows will follow through the above drainage steps, and ultimately flow through a proposed petrol interceptor at the Damastown Road / Ladyswell Road roundabout. This will tie-in to the existing road drainage and likely discharges into the Powerstown_09 further west along Damastown Road.

Area 2 – Similar to Area 1 drainage solution, the next section will rely on the same drainage steps, but will be directed to Gaywood river, which is largely modified through a housing estate before entering the Powerstown_09 to the west of Tyrellstown.

Area 3 – This is the longest stretch of drainage network identified and will ultimately discharge into the Macetown South, a tributary of the Powerstown_09 river, which itself flows into the Tolka River. The new link road section will follow the same principles as Area 1 and 2, while the drainage of the new cycle track along Damastown Avenue will be through a filter drain adjacent to the track for the most part, with the drainage of a section of the parklands cycle track to the north connected to this filter drain via a filter drain also. Prior to any discharge, surface water will be directed by the proposed road drainage to flow into a proposed new section of pipeline that will run alongside the existing historical road (which follows the line of the future main development western street footpath) before flowing into a proposed series of three attenuation ponds, that are to be located to the west of the wooded section of the Macetown_South. The proposed attenuation ponds will include a bypass separator treatment at its inlet, and a hydro-break or similar at its outfall. These attenuation ponds will form part of the Church Fields Land Management Plan and will complement the vegetated swale that is proposed for the urban linear park.

Due to the presence of a surface water drainage pipe and manhole which drains a recently built housing development at Avondale Place conflicting with the southernmost pond no. 3, there will be a requirement to redirect this drainage line and manhole through a proposed new section of pipeline and manholes to divert it around pond no. 3 and tie back in to a new combined headwall with the pond discharge outlet at the location of the existing headwall.

Area 4 – The drainage solution for the proposed widened cycle-track and footpath in the park, will comprise a filter drain adjacent to the cycle track where it with flows directed in a southerly direction. A temporary construction tie-in will be provided to tie-in to an existing ditch until such time that the future Linear Park swale is constructed. The surface water from this section will attenuate and infiltrate in this vegetated ditch. The plan is that this Area 4 drainage will be incorporated into the future Linear Park swale when it is constructed.

Area 5 – This area in the parklands will comprise a filter drain where drainage from the proposed cycle-track will be directed into it. The filter drain on for this section will tie-in to the existing road carrier drainage on Church Road just south of the park entrance. The discharge location of this existing road drainage is unknown at present but owing to ground conditions likely flows in a southerly direction to the Powerstown _09 or Tolka River.

Area 6 – The last area in the parkland will comprise discrete works around the Damastown Avenue / Church Road / Powerstown Road roundabout. On the southwest corner of this roundabout, the proposed cycle track drainage forms part of Area 3. On the north-western and northern sections, the drainage of these small sections of additional two-way cycle track proposed is to crossfall out to the existing roadside gullies and into the existing drainage network on the roundabout. On the south-eastern and southern sections, surface water from the small one-way additional cycle track is allowed to percolate into the retained grassy verges but also to flow to existing road gullies on the carriageway if necessary. Records seem to indicate that this existing roundabout road drainage is piped along Damastown Avenue to the west where it seems to discharge unattenuated or untreated to the Powerstown_09. Owing to the limited nature of the discrete works being carried out around the outside of the roundabout, the drainage solutions are considered to have a negligible impact on the existing drainage and outfall.

Area 7 – The final drainage area for the cycle track link along Powerstown Road from the roundabout to the national school will comprise a filter drain at the back of the cycle track that will be connected via a carrier pipe across the Powerstown Road to the existing drainage network on Curragh Hall Crescent in the housing estate on the opposite side of this road. This existing network, which captures all of the surface water drainage for Tyrrellstown, flows to the west, where the outfall is unknown, but likely to be the Powerstown_09 watercourse.

2.1.1 Surface Water

The proposed development will be undertaken in the vicinity of the lands drained by two river water bodies; Tolka_030 (IE_EA_09T010800) [Tolka River] and Powerstown (Dublin)_010 (IE_EA_09P210700) [Pinkeen river][1]. For the purpose of this appraisal, the river water bodies are referred to their given EPA names as used for their WFD water quality status 2010-2015[2] i.e. tributaries of the Tolka are labelled Macetown south and Gaywood by the EPA River Network dataset (2012)[3] but will refer here to its WFD River Water Quality EPA name.

The proposed development does not intersect the Tolka River, but the closest points lies 30m west of Wellview Avenue where the proposed development is to be carried out. A ditch that also runs 105m east of the proposed development, in an inaccessible area densely vegetated (brambles, willow) and fenced off, leads to a tributary of the Tolka. In addition to this, the Tolka River flows under Damastown Avenue approximately 170m west of the roundabout on the northern half of the site. Other ditches with potential surface water flow have been identified as dry or intersected by made ground that seems to interrupt current possible flow. The Tolka further extends 500m upstream before connecting with the Pinkeen River.

2.1.1.1 Existing Environment

The existing surface water drainage within the proposed development site consists of urban fabric and run-off from grassland into two tributary watercourses of the Tolka River. These watercourses flow westwards of the proposed development into the Tolka River, where its flows along the south boundary of the Church Fields development lands and then in a south easterly direction into Dublin Bay. **Table 2-1** lists the WFD

[1] For the purposes of this report, and to avoid possible confusion with other reports, the watercourses will be referred to the EPA 2012 river network names

[2] Available at https://gis.epa.ie/geonetwork/srv/eng/catalog.search#/metadata/0aa63697-525c-4c02-9fdb-9ac09a473822. Accessed January 2020.

[3] Available at https://gis.epa.ie/geonetwork/srv/eng/catalog.search#/metadata/c4043e19-38ec-4120-a588-8cd01ac94a9c. Accessed January 2020.

river water bodies within the vicinity of the proposed development and their water quality status for the period 2013-2018.

There is some existing foul water management associated with developed land along either side of the Wellview Avenue, where already built.

Table 2-1: WFD River Water Quality (2013-2018) for the River Water Bodies within the proposed development.

River Water Body	EPA 2012 name	European Code	WFD Water Quality Status (2013-2018)	Limiting drivers
TOLKA_030	Macetown South Gaywood Powerstown_09	IE_EA_09T010800	Poor	-
POWERSTOWN (Dublin)_010	Powerstown_09	IE_EA_09P210700	Poor	-

2.1.1.2 Proposed Environment

As described in **Section 2.1**, the proposed development will incorporate a surface water management system which has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS, 2005) approach using Sustainable Drainage Systems (SuDS) techniques. The proposed drainage network has identified seven (7) areas, with all ultimately discharging to the Tolka River via a number of smaller tributary watercourses.

This system, detailed in **Appendix B,** will include:

- Bio-retention tree pits;
- Surface water drainage piping and gullies within the hardstanding;
- Class 1 bypass oil interceptor;
- Attenuation pond;
- Flow control device (hydro-break or similar) to greenfield rates;
- Precast outfall to unnamed ditch at the north west of the proposed development site. The installation of the outfall will be completed without the need for instream works or pouring of concrete within 5 m of the watercourse; and
- Filter drains, atop filtration pipes to be constructed in non-road sections.

In addition, it is proposed that a tie-in to the foul drainage network will be provided along the as yet unbuilt section of the new Church Fields Link Road to accommodate future developments arising out of the Church Fields Land Management Plan. The proposed foul sewer pipeline will not serve the proposed road and cycle network and would require the consent of Irish Water.

2.1.2 Construction Programme/Phasing

The proposed development can be further characterised by a number of phases, although the duration for each is not yet confirmed. The phases include the following:

2.1.2.1 Advance works

- Preparation of site compound – likely on existing made ground on proposed extension to Wellview Avenue at northern end of proposed development;

- Fencing of working area;
- Changes to existing overhead utilities e.g. existing street lighting, by third party contractor; and
- Traffic management measures on live roads as necessary.

2.1.2.2 Construction

- Bulk earthworks as necessary – excavation of soil berm to facilitate widened footpath/cycle-lane;
- Removal/Disposal of Construction and Demolition (C&D) waste from removed/remodelled roads etc;
- Installation of new drainage (and tie-in to existing drainage as necessary);
- Installation of other utilities or provision of ducting for future installation;
- Installation of culvert connecting the future swale on either side of the proposed Church Fields Linear Biodiversity park connection.
- Installation of retaining walls, if required;
- Construction of road and cycle running surfaces/roundabouts;
- Upgrade to existing Pelican crossing and construction of new pedestrian/shared (Toucan) crossing points;
- Marking of road surfaces and installation of signage etc;
- Landscaping and reinstatement of vegetation (owing to the seasonality, this may continue into the operational phase of the proposed development until such time that it becomes established; and
- Removal of works compounds.

2.1.2.3 Operational

- At this stage, it is unknown if the proposed development will be brought into operation as built or as phased elements for take-over and management by the Local Authority; and
- Elements of the construction that might overlap with the earlier stages of the operation of the proposed development (depending on the seasonality) include boundary landscaping treatments as necessary.

2.1.3 Habitat Removal and Alteration

Sections of the proposed development are located within an area that is currently developed as residential and commercial developments, as well as ongoing adjacent housing development. The remainder of the land is characterised by made ground (roads and footpaths), rank waste ground and amenity playing fields. There will be no significant alteration of semi-natural habitats associated with the proposed development.

There will be loss of existing grassland and footpath to accommodate widened cycle lane/footpath. There will also be loss of narrow strips of grassland to allow for the creation of filter drains.

The removal of juvenile landscaping trees on roadside verges along Wellview Avenue will be required to facilitate the proposed widened foot and cycle paths.

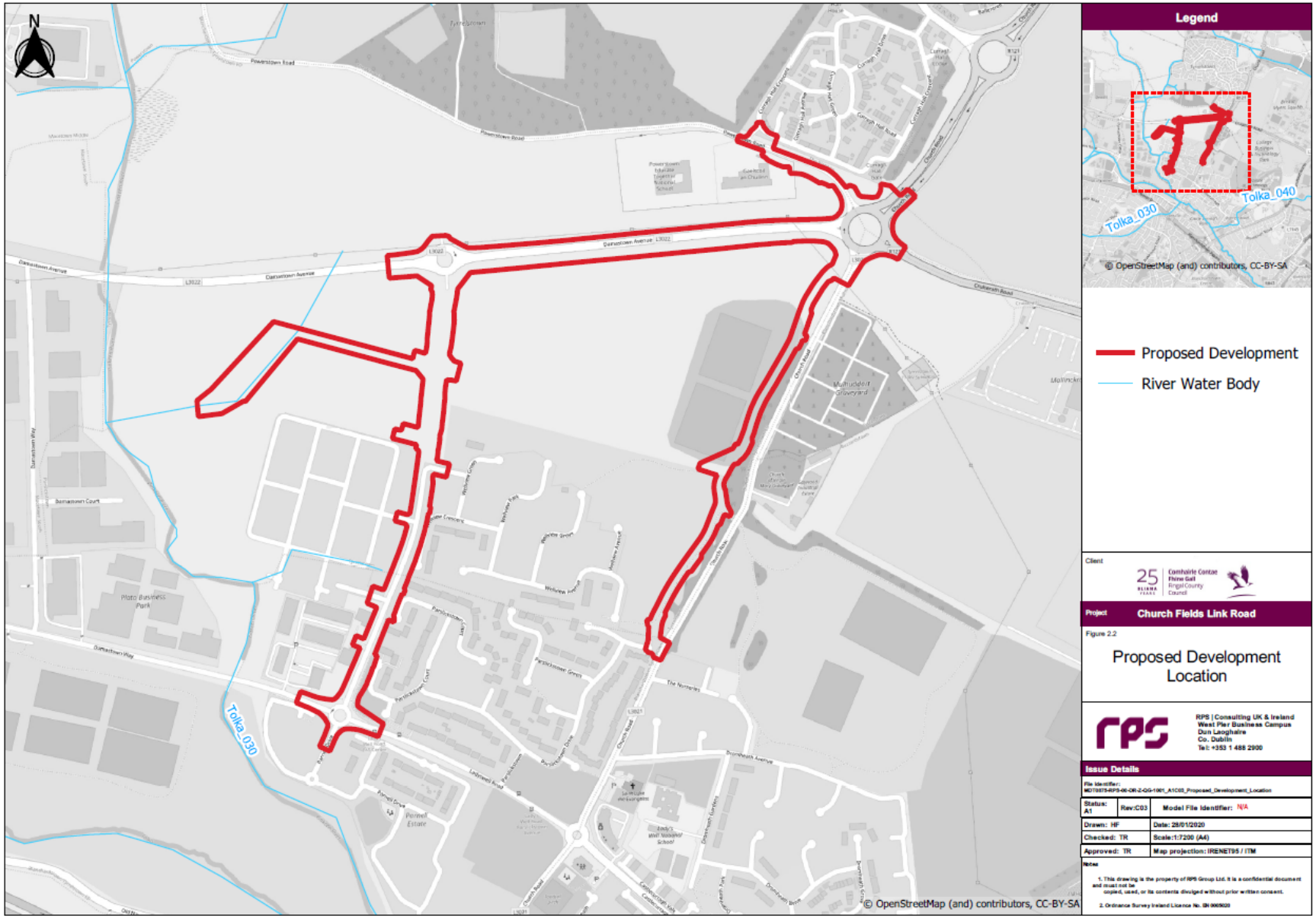
As the development of the cycle network continues from Damastown Avenue to the Church Road intersection, the excavation of soil berm to facilitate the widened footpath/cycle-lane will be carried out and will result in the loss of patches of scrub and grassland mosaic.

There will also be some alteration of amenity grassland along the eastern boundary of the site to construct a filter drain.

To facilitate the extension of the new cycle path and connection with an upgraded path alongside the amenity grassland parallel to Church Road, there is a need to remove a narrow area of scrub vegetation.

With the exception of two trees to the west of the proposed development, alongside attenuation pond #1 of 3, all of the mature trees along within the project will be retained, as it is proposed that the upgraded cycle path extend into the amenity grassland. However, it is necessary to deviate the existing path in the direction (1.8m) of the mature wooded vegetation along Church Field Roads between chainage 1+670 to 1+720 to accommodate the installation of the pathways alongside existing service.

Figure 2-2: Proposed Development Location



3 METHODOLOGY

3.1 Zone(s) of Influence and Proposed Development

The 'zone of influence' (ZoI) for a project (or 'spatial extent of the impact' as described in Annex III(3) of the EIA Directive) is the area over which ecological features may be subject to significant impacts as a result of the proposed project and associated activities.

The ZoI will vary for different ecological features depending on their sensitivity to an environmental change. It is therefore appropriate to identify different ZoI for different features. The features affected could include habitats, species, and the processes on which they depend. ZoI are specified for different features, and types of potential impact.

The ZoI for terrestrial habitats is limited to the footprint of the proposed development, with groundwater movement and levels considered in relation to groundwater dependent terrestrial habitats (where they occur) outside of the footprint of the development.

Hydrological linkages between a proposed development and aquatic habitats/species can occur over varying distances; however, the significance of the impact will be site specific depending on the receiving water environment and nature of the potential impact. A conservative approach has been adopted assuming that the ZoI includes all areas downstream of the proposed development, which are within the same water catchment, in addition to the immediate and adjacent lands to which the proposed development will occur.

The ZoI for significant impacts to breeding birds is considered to extend no more than 100m from the proposed development to take account of disturbance during construction.

The ZoI for mammals such as bats, badgers and otters may extend over larger distances due to the fact that they can commute and forage many kilometers from their breeding sites.

3.2 Desk Study

A desk study was completed to assess the potential for all species of conservation interest to occur within the ZoI of the proposed development.

This included a review of existing statutory sites of nature conservation interest, including:

- Special Areas of Conservation (SACs);
- Special Protection Areas (SPAs);
- Natural Heritage Areas (NHAs);
- proposed Natural Heritage Areas (pNHAs);
- RAMSAR Sites; and
- Nature Reserves and National Parks

Sources of information that were used to inform the assessment included:

- NPWS online maps and data, site synopsis and conservation objectives www.npws.ie;
- National Biodiversity Data Centre (NBDC) online maps and data www.biodiversityireland.ie;
- Environmental Protection Agency (EPA) Maps https://gis.epa.ie/EPAMaps/
- EPA Catchments Website – for the River Basin Management Planning www.catchments.ie
- Geological Survey of Ireland online mapping www.gsi.ie;
- Information on the conservation status of birds in Ireland (Colhoun & Cummins, 2013);
- OSI Map Viewer www.osi.ie;

- Fingal Development Plan 2017-2023 (Variation number 1 now adopted);
- Fingal Biodiversity Action Plan 2010-2015;

3.3 Field Study

The preliminary site walkover on the 25th June 2019 included habitat characterisation, an assessment of the presence, or likely presence, of a range of rare or protected fauna and an *ad hoc* survey for bird species. The preliminary design covered the proposed Church Field Link Road, a study area which in terms of ecological sensitivity was highly modified, characterised by built environment or rough ground supporting construction haul road. The ecological appraisal consisted of three components: a habitat survey (Fossitt, 2000), a breeding bird assessment, and a scoping survey for protected species and other species of conservation concern which could be present within the ZoI of the proposed development.

Habitats were assessed for field signs and/or usage by fauna, such as well-used pathways, droppings, places of shelter and features or areas likely to be of particular value as foraging resources. Surveys were carried out in accordance with the National Roads Authority publication '*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'.* An assessment of features in the study area that were of potential value to bats was also made in accordance with the Bat Conservation Trust Publication '*Bat Surveys for Professional Ecologists- Good Practice Guidelines* (Collins, 2016). A visual assessment of Suitability for Roosting Bats as carried out by identifying features of most value to bats, for example, crevices, splits, holes, loose bark, hollows or cavities and thick ivy. Potential areas of value to bats for foraging or commuting were also noted, as was the presence of old or derelict buildings. No caves were noted.

A second and third visit on 8th October 2019 and 16th February 2020 was warranted owing to project revisions, and recognition of the further potential ecological sensitivity of the final scheme design. The follow-on surveys, while being carried out at the appropriate season, and covering the entirety of the project footprint, meant that some surveys such as breeding bird were not undertaken during the breeding bird season and therefore actual occurrence of breeding birds and their nesting sites were not identified. Records of birds observed or heard were made. As a precautionary measure, it was assumed that all significant woody vegetation cover, rank grassland and buildings within the proposed development areas have the potential to support breeding birds during the breeding bird season.

3.3.1 Habitats and Flora

Habitats on site were classified using A Guide to Habitats in Ireland (Fossitt, 2000) and mapped in accordance with the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith *et al*., 2011). The classification is a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. The classification is hierarchical and operates at three levels, using codes to differentiate habitats based on the plant species present. Species recorded in this report are given both their scientific and common names, following the nomenclature as given in the 'New flora of the British Isles' (Stace, 2010 3rd edition).

Habitat surveys were carried out in early September to record dominant species, indicator species for different habitat types or conditions, rare or declining species identified on relevant Red Lists and invasive species (as listed in the Third Schedule of the EC Birds and Natural Habitats Regulations 2011, as amended). The information gained from the survey was used to describe habitat features.

3.3.2 Invasive Alien Plant Species

Invasive Alien Plant Species (IAPS) were searched for during both of the multidisciplinary site visits. While all IAPS were searched for, particular focus was paid to species listed on Schedule 3 of the Birds and Natural Habitats Regulations 2011 (as amended).

3.3.3 Mammals, Amphibians and Reptiles

The site walkovers included an assessment of the presence, or likely presence, of a range of protected fauna as well as habitats that might support Amphibians and Reptiles. Habitats were assessed for field signs

and/or usage by fauna, such as well-used pathways, droppings, places of shelter and features or areas likely to be of particular value as foraging resources. Some areas could not be accessed and searched for evidence of mammals due to dense scrub. In these instances, the assessment relied on observations of secondary evidence e.g. mammal runs into scrub.

Badger and Otter surveys were carried out in accordance with the National Roads Authority publication 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'. An assessment of potential habitat for Red Squirrel and Pine Marten and observation for evidence of activity was also undertaken, although no dedicated surveys for same were undertaken owing to lack of suitable habitat.

An assessment of features in the study area that were of potential value to bats was also made in accordance with current guidance (Collins, 2016). A visual assessment of Suitability for Roosting Bats as carried out by identifying features of most value to bats, for example, crevices, splits, holes, loose bark, hollows or cavities and thick ivy. Potential areas of value to bats for foraging or commuting were also noted, as was the presence of old or derelict buildings. The need to undertake bat activity surveys was scoped out based on the nature of the proposed development and the habitat suitability.

3.3.4 Birds

Given the nature and dimension of the original study area and works associated with the construction of the proposed development, a complete bird survey was considered unnecessary. Owing to the timing of the extension to the proposed design, it was not possible to undertake detailed breeding bird surveys. Notwithstanding this, an *ad hoc* survey of birds was undertaken with the objective of identifying any protected bird species and areas of nesting potential that might be impacted by the proposed development.

Dedicated surveys for wintering birds was not deemed necessary due in large part to habitat suitability and results from the desk study. However, the desktop study notes that intermittent use of large open playing fields by SCI Light-bellied Brent Geese *Branta bernicla hrota* to the east of the study area was recognised and has been considered in the assessment of the proposed development.

3.3.5 Aquatic Ecology

Although a number of watercourses were identified from the EPA website as occurring in close proximity to the study area, the proposed development does not cross with, nor directly intersect with any such watercourse. A ditch was noted crossing part of the land, but it is dry for most of the season, as evidence by the vegetation. Thus, the need for aquatic surveys was scoped out.

3.4 Impact Appraisal

The overall ecological appraisal is based on the methodology provided by CIEEM (2018) and NRA (2009b). The assessment identifies sites, habitats, species and other ecological features that are of value based on factors such as legal protection, statutory or local site designations or inclusion on Red Data Book Lists or Biodiversity Action Plans.

The methodology for evaluation of the nature conservation value of ecological features affected by development (ecological receptors) is adapted from CIEEM guidelines for Ecological Impact Assessment (CIEEM, 2018). These guidelines recommend assignment of value (or potential value) to ecological receptors in accordance with the following scale:

- International;
- National;
- Regional;
- County;
- Local; and

- within immediate zone of influence only.

Following on from the above, potential constraints to development are identified on that basis, with recommendations for further, more detailed surveys made as appropriate, for example to fully investigate botanical value or to confirm presence / likely absence of a protected species.

In appraising any impacts, the review considers the proposed development with any recommendations made proportionate and appropriate to the site having considered the mitigation hierarchy as identified below:

- **Avoid:** Provide advice on how the development may proceed by avoiding impacts to any species or sites by either consideration of site design or identification of an alternative option.
- **Mitigate:** Where avoidance cannot be implemented, mitigation proposals are put forward to minimise impacts to species or sites as a result of the proposals. Mitigation put forward is proportionate to the site.
- **Compensate:** Where avoidance cannot be achieved any mitigation strategy will consider the requirements for site compensatory measures.
- **Enhance:** Identify appropriate and proportionate ecological enhancement.

When describing impacts on ecosystem structure and function, reference is made to the following aspects where appropriate:

- extent;
- magnitude;
- duration;
- reversibility; and
- timing and frequency.

3.5 Limitations

3.5.1 Desk based Assessment

Sources of desk study information are neither exhaustive nor necessarily easily available, and a reasoned effort was made to obtain ecological data in the public domain to inform the description of the receiving environment (baseline condition) and its assessment. Additional information, not in the public domain, is likely to exist, but could not be obtained or assessed here. This limitation is acknowledged and incorporated into the assessment.

3.5.2 Field Surveys

The field surveys were completed over two separate days in 2019. The first survey was carried out on the 25th June 2019. It encompassed the lands within a ZoI that were associated with the original proposal centred on Wellview Avenue.

Owing to modifications to, and expansion of the proposed scheme remit to include a network of cycle lanes in specific areas (**Figure 2.1** & **Appendix A**), a revisit on October 8th 2019 was necessary to understand the wider ecological potential of the study area and evaluate the ecological impacts. This limitation is acknowledged and incorporated into the assessment.

A third and final visit was undertaken on 16th January 2020, owing to a change to the location and number of proposed attenuation ponds. The expansion of, and potential need to understand the biodiversity of the lands to the west of the original study area was required to facilitate the ecological assessment. It is noted that while this is the appropriate season to search for badger etc and assess habitat suitability for

amphibians, it is outside the optimal flowering season. However, given the nature and condition of the habitats, this is not considered an impediment to the assessment, based on the evidence of earlier surveys for the proposed development in the surrounding area.

Surveys for breeding birds were not undertaken owing to the nature of likely impact of the original proposal. The expansion of the project was outside of the optimal breeding bird survey times. Therefore, surveys were unable to confirm breeding status or the number of territories. This limitation is acknowledged and incorporated into the assessment.

A visual assessment was carried out in respect of vegetation with features with suitability for bat roosting. There is limited suitable features within the study area and all such vegetation is purposely being avoided by the proposed development and as such no bat activity or emergence/re-entry survey were undertaken. This limitation is acknowledged and incorporated into the assessment.

4 RECEIVING ENVIRONMENT

4.1 Site overview

The predominant land use within the ZoI of the proposed development is residential development, road infrastructure and amenity grassland with limited agricultural land (arable) along the northern boundary of the study area.

4.2 Designated Sites

The proposed development is not located within any European site designated for biodiversity conservation. There are seven European sites within the ZoI of the proposed development. These consist of the Malahide Estuary SAC, South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA, Malahide Estuary SPA and the closest European site Rye Water Valley/Carton SAC, distanced approximately 7.4km from the proposed development. Of these, South Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA and North Dublin Bay SAC are located downstream where the Tolka_010 river water body drains the vicinity of the proposed development and discharges into Dublin bay. All European sites are within the same Catchment Management Unit (Catchment Id: 09-Liffey and Dublin Bay) of the proposed development.

The proposed development is not located within any nationally designated site. There are eleven proposed National Heritage Areas (pNHAs) and no Natural Heritage Areas (NHAs) located within the ZoI of the proposed development. The closest of these is the Royal Canal pNHA, located 3.2km south from the proposed development and Liffey Valley pNHA located 4.3km southwest of the proposed development. Only the following pNHAs (Dolphins, Dublin Docks; North Dublin Bay; South Dublin Bay) are hydrologically connected to the proposed development via the Tolka_030 river body of which discharges into Dublin Bay. For the purpose of this report and unless otherwise stated, the EPA WFD 2010-2015 waterbody names will be used.

A summary of these sites is provided in **Table 4-1** and **Table 4-2** below and the location of each site is detailed in **Figure 4-1** and **4.2**.There were no other designated sites identified within the ZoI of the proposed development.

Table 4-1: European Sites within the ZoI of the Proposed Development

Site (Code), Distance from Proposed Development, and Conservation Objectives Version	Qualifying Interest(s) [code] * Priority Habitat / Special Conservation interest(s)	Conservation Objective(s)
Malahide Estuary SAC (000205); located ca. 13.5 km northeast of the proposed development; Version 1.0, 27 May 2013 (NPWS, 2013a)	[1140] Mudflats and sandflats not covered by seawater at low tide	To maintain or restore the favourable conservation condition
	[1310] *Salicornia* and other annuals colonising mud and sand	To maintain or restore the favourable conservation condition
	[1320] *Spartina* swards (Spartinion maritimae)	*Spartina* swards (Spartinion maritimae) was originally listed as a qualifying Annex I habitat for Malahide Estuary SAC due to historical records of two rare forms of cordgrass– small cordgrass (*Spartina maritima*) and Townsend's cordgrass (*S. x townsendii*.). However, Preston *et al.* (2002) considers both forms to be alien. In addition, all stands of cordgrass in Ireland are now regarded as common cordgrass (*S. anglica*) (McCorry *et al.,* 2003; McCorry and Ryle, 2009). As a consequence, a conservation objective has not been prepared for this habitat. It will therefore not be necessary to assess the likely effects of plans or projects against this Annex I habitat at this site.
	[1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	To restore the favourable conservation condition

Site (Code), Distance from Proposed Development, and Conservation Objectives Version	Qualifying Interest(s) [code] * Priority Habitat / Special Conservation interest(s)	Conservation Objective(s)
	[1410] Mediterranean salt meadows (Juncetalia maritimi)	To maintain the favourable conservation condition
	[2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	To restore the favourable conservation condition
	[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)*	To restore the favourable conservation condition
North Dublin Bay SAC (000206); located ca. 12km south east of the proposed development; Version 1.0, 06 November 2013 (NPWS, 2013d)	[1210] Annual vegetation of drift lines	To restore the favourable conservation condition
	[1310] *Salicornia* and other annuals colonising mud and sand	To restore the favourable conservation condition
	[1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	To maintain the favourable conservation condition
	[1410] Mediterranean salt meadows (Juncetalia maritimi)	To maintain the favourable conservation condition
	[2110] Embryonic shifting dunes	To restore the favourable conservation condition
	[2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	To restore the favourable conservation condition
	[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)	To restore the favourable conservation condition
	[2190] Humid dune slacks	To restore the favourable conservation condition
	[1395] Petalwort *Petalophyllum ralfsii*	To maintain the favourable conservation condition
	[1140] Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition
Rye Water Valley/Carton SAC (001398); located ca. 7.4 km southwest of the proposed development; Version 6.0, 21 February 2018 (NPWS, 2018a)	[7220] Petrifying springs with tufa formation (Cratoneurion)*	To maintain or restore the favourable conservation condition
	[1014] Narrow-mouthed Whorl Snail *Vertigo angustior*	To maintain or restore the favourable conservation condition
	[1016] Desmoulin's Whorl Snail *Vertigo moulinsiana*	To maintain or restore the favourable conservation condition
South Dublin Bay SAC (000210); located ca. 14.5km south east of the proposed development; Version 1.0, 22 August 2013 (NPWS, 2013b)	[1140] Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition
South Dublin Bay and River Tolka Estuary SPA (004024); intersects the buffer at two places, closest point located ca. 12.5 km southeast of the proposed development;	[A046] Light-bellied Brent Goose *Branta bernicla hrota*	To maintain the favourable conservation condition
	[A130] Oystercatcher *Haematopus ostralegus*	To maintain the favourable conservation condition
	[A137] Ringed Plover *Charadrius hiaticula*	To maintain the favourable conservation condition

Site (Code), Distance from Proposed Development, and Conservation Objectives Version	Qualifying Interest(s) [code] * Priority Habitat / Special Conservation interest(s)	Conservation Objective(s)
Version 1.0, 09 March 2015 (NPWS, 2015a)	[A141] Grey Plover *Pluvialis squatarola*	Grey Plover is proposed for removal from the list of Special Conservation Interests for South Dublin Bay and River Tolka Estuary SPA. As a result, a site-specific conservation objective has not been set for this species.
	[A143] Knot *Calidris canutus*	To maintain the favourable conservation condition
	[A144] Sanderling *Calidris alba*	To maintain the favourable conservation condition
	[A149] Dunlin Calidris *alpina*	To maintain the favourable conservation condition
	[A157] Bar-tailed Godwit *Limosa lapponica*	To maintain the favourable conservation condition
	[A156] Redshank *Tringa totanus*	To maintain the favourable conservation condition
	[A179] Black-headed Gull *Chroicocephalus ridibundus*	To maintain the favourable conservation condition
	[A192] Roseate Tern *Sterna dougallii*	To maintain the favourable conservation condition
	[A193] Common Tern *Sterna hirundo*	To maintain the favourable conservation condition
	[A194] Arctic Tern *Sterna paradisaea*	To maintain the favourable conservation condition
	[A999] Wetlands	To maintain the favourable conservation condition
North Bull Island SPA (004006); located ca. 12.2km south east of the proposed development; Version 1.0, 09 March 2015 (NPWS, 2015b)	[A046] Brent Goose *Branta bernicla hrota*	To maintain the favourable conservation condition
	[A048] Shelduck *Tadorna*	To maintain the favourable conservation condition
	[A052] Teal *Anas crecca*	To maintain the favourable conservation condition
	[A054] Pintail *Anas acuta*	To maintain the favourable conservation
	[A056] Shoveler *Anas clypeata*	To maintain the favourable conservation condition
	[A130] Oystercatcher *Haematopus ostralegus*	To maintain the favourable conservation condition
	[A140] Golden Plover *Pluvialis apricaria*	To maintain the favourable conservation condition
	[A141] Grey Plover *Pluvialis squatarola*	To maintain the favourable conservation condition
	[A143] Knot *Calidris canutus*	To maintain the favourable conservation condition
	[A144] Sanderling *Calidris alba*	To maintain the favourable conservation condition
	[A149] Dunlin *Calidris alpina*	To maintain the favourable conservation condition

Site (Code), Distance from Proposed Development, and Conservation Objectives Version	Qualifying Interest(s) [code] * Priority Habitat / Special Conservation interest(s)	Conservation Objective(s)
	[A156] Black-tailed Godwit *Limosa*	To maintain the favourable conservation condition
	[A157] Bar-tailed Godwit *Limosa lapponica*	To maintain the favourable conservation condition
	[A160] Curlew *Numenius arquata*	To maintain the favourable conservation condition
	[A162] Redshank *Tringa totanus*	To maintain the favourable conservation condition
	[A169] Turnstone *Arenaria interpres*	To maintain the favourable conservation condition
	[A179] Black-headed Gull *Chroicocephalus ridibundus*	To maintain the favourable conservation condition
	[A999] Wetlands	To maintain the favourable conservation condition
Malahide Estuary SPA (004025); located ca. 13.9 km north east of the proposed development; Version 1.0, 16 August 2013 (NPWS, 2013c)	[A005] Great Crested Grebe *Podiceps cristatus*	To maintain or restore the favourable conservation condition
	[A046] Brent Goose *Branta bernicla hrota*	To maintain the favourable conservation condition
	[A048] Shelduck *Tadorna*	To maintain the favourable conservation condition
	[A054] Pintail *Anas acuta*	To maintain the favourable conservation condition
	[A067] Goldeneye *Bucephala clangula*	To maintain the favourable conservation condition
	[A069] Red-breasted *Merganser Mergus serrator*	To maintain the favourable conservation condition
	[A130] Oystercatcher *Haematopus ostralegus*	To maintain the favourable conservation condition
	[A140] Golden Plover *Pluvialis apricaria*	To maintain the favourable conservation condition
	[A141] Grey Plover *Pluvialis squatarola*	To maintain the favourable conservation condition
	[A143] Knot *Calidris canutus*	To maintain the favourable conservation condition
	[A149] Dunlin *Calidris alpina*	To maintain the favourable conservation condition
	[A156] Black-tailed Godwit *Limosa*	To maintain the favourable conservation condition
	[A157] Bar-tailed Godwit *Limosa lapponica*	To maintain the favourable conservation condition

Site (Code), Distance from Proposed Development, and Conservation Objectives Version	Qualifying Interest(s) [code] * Priority Habitat / Special Conservation interest(s)	Conservation Objective(s)
	[A162] Redshank *Tringa totanus*	To maintain the favourable conservation condition
	[A999] Wetlands	To maintain or restore the favourable conservation condition

Table 4-2: National Sites within the ZoI of the Proposed Development

Site (Code), and Distance from Proposed Development	Qualifying Interest(s) [code] * / Special Conservation interest(s)
Royal Canal pNHA (002103); located c. 3.2km south of the proposed development.	A man-made waterway linking the River Liffey at Dublin to the River Shannon near Tarmonbarry. The rare and legally protected Opposite-leaved Pondweed (*Groenlandia densa*) (Flora Protection Order 1987) is present at one site in Dublin, between Locks 4 and 5. *Tolypella intricata* (a stonewort listed in the Red Data Book as being vulnerable) is also in the Royal Canal in Dublin, the only site in Ireland where it is now found. Otter is known to frequent the area.
Grand Canal pNHA (002104); located 8.6 km south of the proposed development.	A man-made waterway linking the River Liffey at Dublin with the Shannon at Shannon Harbour and the Barrow at Athy. The rare and legally protected Opposite-leaved Pondweed (*Groenlandia densa*) (FloraProtection Order 1987) is present at a number of sites in the eastern section of the Main Line. The Smooth Newt (*Lissotriton vulgaris*) breeds in the ponds on the bank at Gollierstown in Co. Dublin while Otter is also known to frequent the area.
Dodder Valley pNHA (000991); located 13.8km south east of the proposed development.	Stretches for about 2 km between Firhouse Bridge and Oldbawn Bridge in the south-west of Dublin City. Forty-eight bird species have been recorded recently in the area, including Little Grebe (SCI), Kingfisher (Annex I & SCI), Dipper and Grey Wagtail. Part of the river bank supports a Sand Martin colony of up to 100 pairs. The site represents the last remaining stretch of natural river bank vegetation on the River Dodder in the built-up Greater Dublin Area.
Rye Water Valley/Carton pNHA (001398); located 7.4km southwest of the proposed development.	The site shares the boundary and ecological interests as Rye Water Valley/Carton SAC (**Table 4.1**).
Feltrim Hill pNHA (001208); located 12.7km northeast of proposed development.	A Knoll-reef regarded as a good example of the phenomenon and a number of fish species that have been described from the lower shales. The site was previously known to contain two rare plant species, namely Spring Squill (*Scilla verna*) and Long-stalked Crane's-bill (*Geranium columbinum*).
Liffey Valley pNHA (00128); located 4.3km southwest of the proposed development.	Situated along the River Liffey. The threatened Green Figwort (*Scrophularia umbrosa*), a species listed in the Irish Red Data Book, is recorded from a number of stations along the river within the site. The rare and legally protected Hairy St. John's wort (*Hypericum hirsutum*) (Flora Protection Order 1987) has been recorded from the woodlands in this site. The threatened Yellow Archangel (*Lamiastrum galeobdolon*), listed in the Irish Red Data Book, is also recorded from these woodlands. The aquatic and terrestrial diversity of this site is important.
Dolphins, Dublin Docks pNHA (00201); location 14.9 km southeast of proposed the development.	Forms part of Dublin Bay and comprises of 2 mooring 'dolphins' in the River Liffey near Pigeon House Harbour. These 'dolphins' are used by nesting terns with approximately 350 breeding pairs of common terns recorded in 2006. Both Common Tern and Arctic Tern breed on these man-made structures.
Malahide Estuary pNHA (00205); located 13.9 km north east of the proposed development	The site shares the boundary and ecological interests as Malahide Estuary SAC (**Table 4-2**)
North Dublin Bay pNHA (00206); located 12.2 km southeast of the proposed development	The site shares the boundary and ecological interests as North Dublin Bay SAC (**Table 4-2**)
South Dublin Bay pNHA (00210); located 14.5 km southeast of the proposed development	The site shares the boundary and ecological interests as South Dublin Bay SAC (**Table 4-2)**
Santry Demesne pNHA (00178); located 8.6km east	Located immediately north of old Santry village. Comprises the remnants of a former demesne woodland. A species legally protected under the Flora Protection Order 1987 (Now FPO 2015), Hairy St. John's wort

Site (Code), and Distance from Proposed Development	Qualifying Interest(s) [code] * / Special Conservation interest(s)
of the proposed development	(*Hypericum hirsutum*), was recorded here in 1991. The woodland, however, is of general ecological interest as it occurs in an area where little has survived of the original vegetation.

Figure 4-1: Designated Sites within the ZoI of the Proposed Development

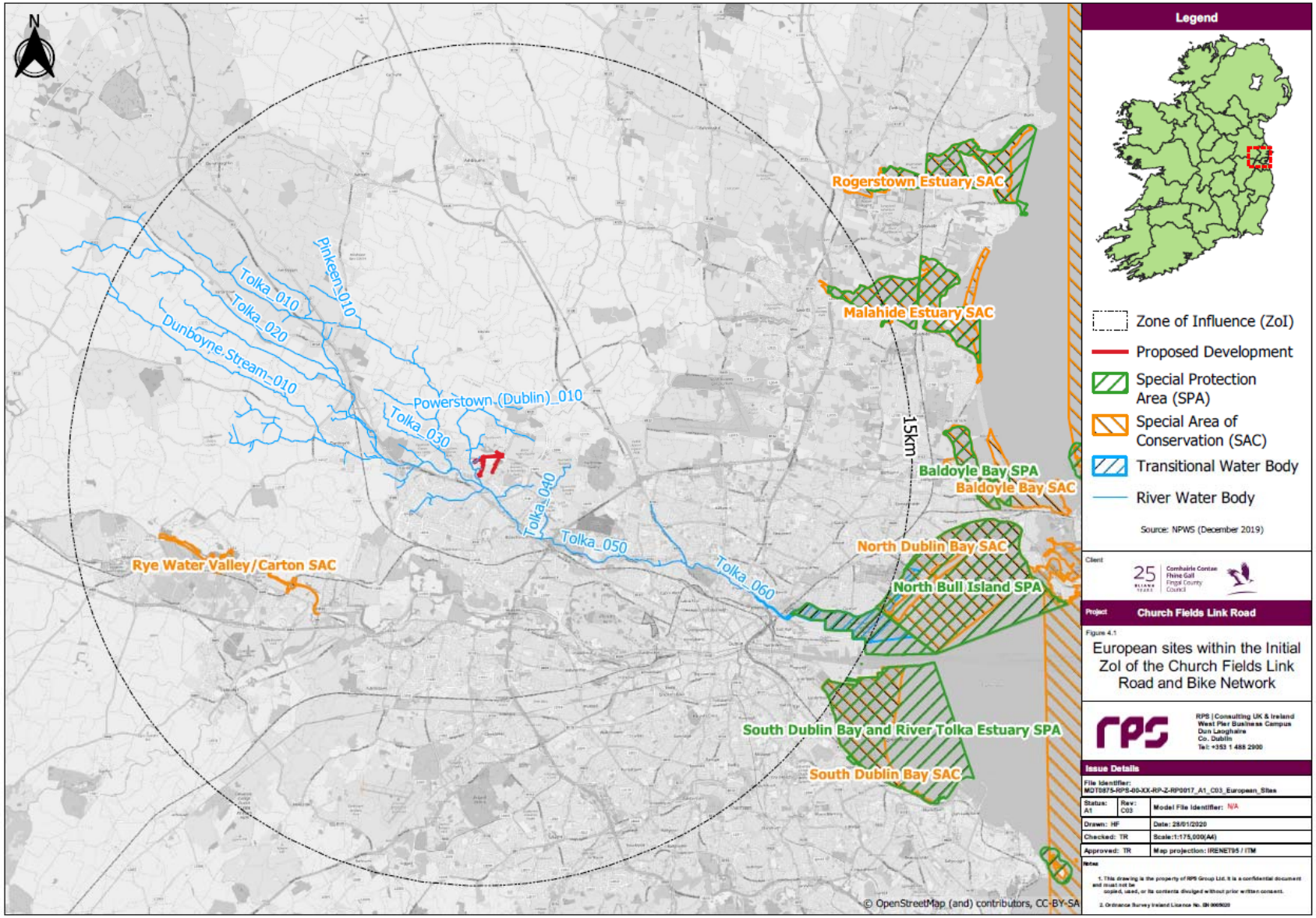
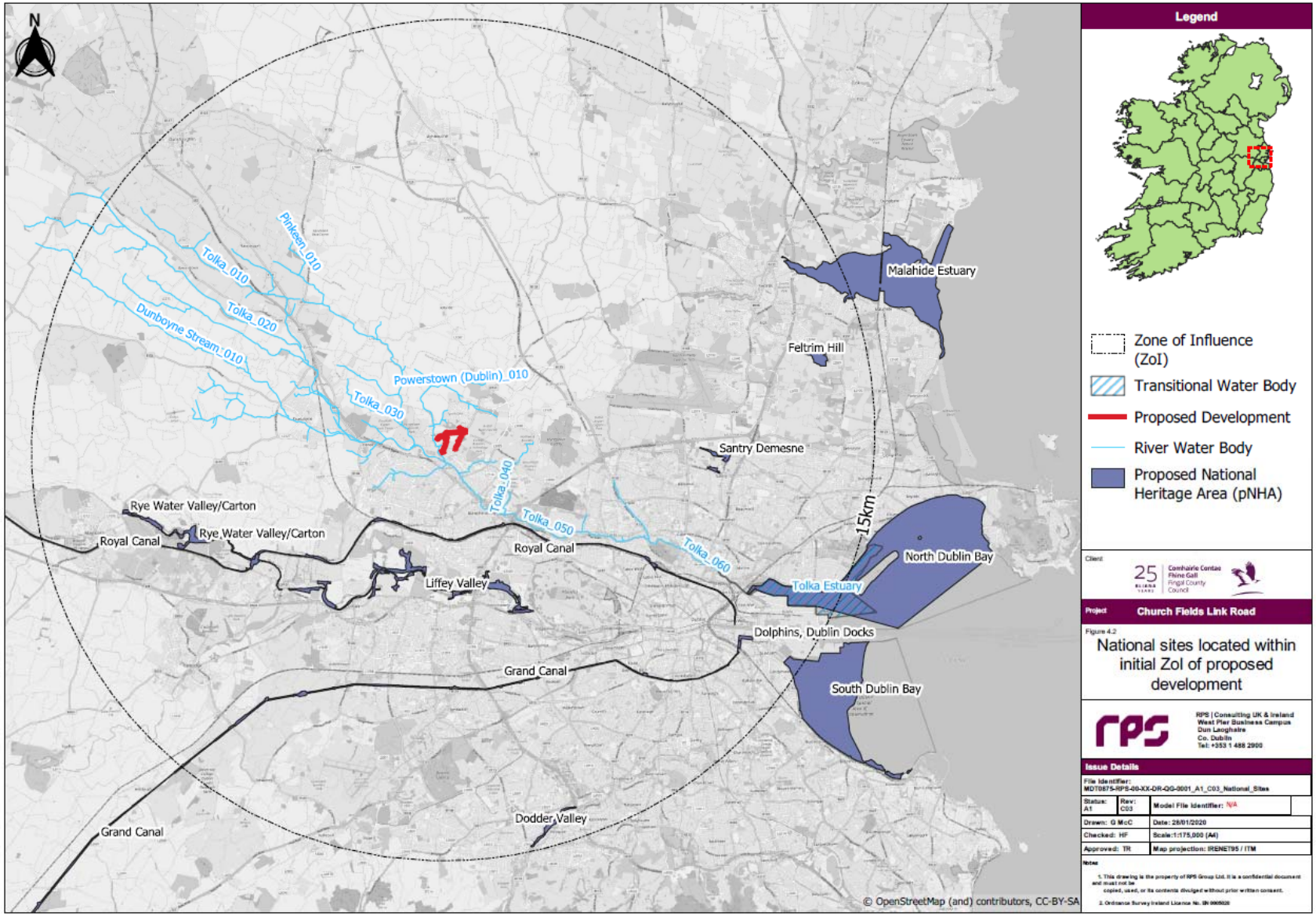


Figure 4-2: Nationally Designated Sites within the ZoI of the Proposed Development



4.3 Desk Study

Records of protected and rare flora and fauna within 5km of the proposed development were obtained from the NBDC. Only records from the last 10 years were obtained. A summary of these records is provided in **Table 4-3.**

Table 4-3: NBDC Protected and Rare Species Records within 5km from proposed development

Species Name	Legislative Protection*	Red List Status	Record Count	Date of Last Record	Habitat Preferences (Birds[4]; All Remaining[5])
Birds					
Arctic Tern (*Sterna paradisaea*)	✓a,d	Amber Listed	2	31/12/2011	Summer visitor from March to September to all Irish coasts. Mainly a coastal breeding bird, but in Ireland the species also breeds inland on the freshwater lakes of Lough Corrib (Co. Galway) and Lough Conn (Co. Mayo). More colonies are found on the west coast.
Barn Owl (*Tyto alba*)		Red Listed	14	31/12/2011	Scarce resident mainly in central and southern Ireland. Breeds in ruined buildings, such as castles and to a lesser extent in outbuildings (barns/sheds).
Barn Swallow (*Hirundo rustica*)		Amber Listed	21	31/12/2011	Summer visitor throughout Ireland. Range of habitat preferences, flocks gather at wetland sites in autumn.
Bar-tailed Godwit (*Limosa lapponica*)	✓a,d	Amber Listed	3	31/12/2011	Winter visitor to coastal estuaries from October to April from Russia and Scandinavia. Wintering distribution entirely coastal. They are largely confined to estuaries, with largest numbers recorded on sandy estuaries. Small numbers recorded using non-estuarine coastline.
Black Guillemot (*Cepphus grylle*)		Amber Listed	3	31/12/2011	Sedentary resident, generally staying in close proximity to coastal cliffs and crags. Widespread along rocky coasts, harbours and man-made maritime structures.
Black-headed Gull (*Larus ridibundus*)	✓d	Red Listed	17	31/12/2011	Resident along all Irish coasts, wintering inland also. Breading nests on the ground in wetland areas, i.e. bogs, marshes, man-made lakes. Widespread across agricultural fields, and urban areas.
Black-legged Kittiwake (*Rissa tridactyla*)	✓d	Amber Listed	1	31/12/2011	Summer visitor to steep coastal cliffs along all Irish coasts. Disperses to the open ocean in winter and less frequently seen. Breeds on steep sea cliffs where it builds a nesting platform on the most vertical and sometimes improbably steep areas. Will occasionally use man-made structures such as old buildings.
Black-tailed Godwit (*Limosa limosa*)	✓d	Amber Listed	2	31/12/2011	Winter visitor to both inland and coastal estuarine habitats. Rare Irish breeding sites in lowland wet grassland and marshes.
Brent Goose (*Branta bernicla*)	✓d	Amber Listed	22	31/12/2011	Winter migrant from high-Arctic Canada. Most occur in Ireland between October and April. This population winters almost entirely in Ireland, with small numbers in parts of Britain and France. Mostly found on coastal estuaries during the autumn and early winter, and also on grasslands from mid-winter, until departure for the breeding grounds begins in late April.
Common Coot (*Fulica atra*)	✓d	Amber Listed	35	31/12/2011	Resident at ponds and lakes throughout Ireland. Wintering in lakes, coastal estuaries and river systems.

[4] Available online at https://birdwatchireland.ie/irelands-birds/list-of-irelands-birds/. Accessed October 2019

[5] Available online at https://species.biodiversityireland.ie/. Accessed October 2019, confirmed January 2020

Species Name	Legislative Protection*	Red List Status	Record Count	Date of Last Record	Habitat Preferences (Birds[4]; All Remaining[5])
Common Goldeneye (*Bucephala clangula*)	✓d	Red Listed	3	31/12/2011	Winter visitor between November and April on coastal estuaries and inland lakes.
Common Greenshank (Tringa nebularia)	✓d	-	2	31/12/2011	Winter visitor to estuaries from September to April
Common Kestrel (*Falco tinnunculus*)		Amber Listed	26	31/12/2011	Widespread resident throughout Ireland. Nests in trees, buildings or in cracks in cliffs. Will use old crow's nests. Found in wide variety of open habitats including coasts, moor land, farmland, wetlands, roadside verges and town parks.
Common Kingfisher (*Alcedo atthis*)	✓a,d	Amber Listed	19	31/12/2011	Resident on Irish streams, rivers and canals. Wintering in lakes and coasts during extended poor weather.
Common Linnet (*Carduelis cannabina*)		Amber Listed	25	31/12/2011	Widespread resident throughout Ireland. Breed in a variety of habitats, including rough grassland, uplands and in coastal areas with gorse.
Common Pochard (*Aythya ferina*)	✓d	Amber Listed	6	31/12/2011	Scarce summer visitor and widespread winter migrant between October & February to large shallow eutrophic waters i.e. well-vegetated marshes and swamps and slow flowing rivers.
Common Redshank (*Tringa totanus*)	✓d	Red Listed	7	31/12/2011	Resident and visitor populations. A common wader of wetlands throughout the country, though mainly coastal estuaries in winter. Nests in grassy tussock, in wet, marshy areas and occasionally heather. Breeds mainly in midlands.
Common Shelduck (*Tadorna tadorna*)	✓d	Amber Listed	8	31/12/2011	Resident and winter migrant to sheltered estuaries or tidal mudflats. Breeds in open areas along seashores, larger lakes and rivers. Nest in holes in banks, trees, occasionally strawstacks or buildings. Increasing displacement to inland sites.
Common Snipe (*Gallinago gallinago*)		Amber Listed	13	31/12/2011	Summer and winter visitor to Ireland. They forage across a variety of wetland and damp habitats. Nests on the ground, usually concealed in a grassy tussock, in or near wet or boggy terrain.
Common Starling (*Sturnus vulgaris*)		Amber Listed	38	31/12/2011	Widespread garden bird, Irish resident. Foraging in grassland in parks, gardens and farmland, and trees. Also found in urban environments as well as woodland and farmland.
Common Swift (*Apus apus*)		Amber Listed	17	31/12/2011	Common summer visitor throughout Ireland. Nests in small recesses in buildings, both occupied and derelict. Less frequently in holes in trees or caves in uplands or coastal areas.
Common Tern (Sterna hirundo)	✓a,d	Amber Listed	4	31/12/2011	Summer visitor from March to October to all Irish coasts. Ground nester on coasts and inland on islets in freshwater lakes.
Dunlin (*Calidris alpina*)	✓a,d	Red Listed	5	31/12/2011	Summer and winter visitor to coastal areas, tidal mudflats and estuaries are preferred. Breeding in machair habitats.
Eurasian Curlew (*Numenius arquata*)	✓d	Red Listed	12	31/12/2011	Winter visitor to Irish wetlands. Breeding throughout ireland in floodplains, boglands, meadows, rough pasture and heather.
Eurasian Oystercatcher (*Haematopus ostralegus*)	✓d	Amber Listed	6	31/12/2011	Resident & winter visitor to all coastal habitats, and particularly favour open sandy coasts. Nests principally on shingle beaches, dunes, salt marshes and rocky shores around the coast.

Species Name	Legislative Protection*	Red List Status	Record Count	Date of Last Record	Habitat Preferences (Birds[4]; All Remaining[5])
Eurasian Teal (*Anas crecca*)	✓d	Amber Listed	8	31/12/2011	Resident & winter migrant. Wetland preferences in covered freshwater lakes, pools and small upland streams away from the coast. Wintering in coastal lagoons and estuaries and inland marshes, lakes, ponds and turloughs.
Eurasian Tree Sparrow (*Passer montanus*)		Amber Listed	19	31/12/2011	Local resident in the east of Ireland, scarce along the south and west coasts. Largely associated with cereal production. Nests in cavity in building, especially under eaves or holes formed by missing brickwork.
Eurasian Wigeon (*Anas penelope*)	✓d	Amber Listed	5	31/12/2011	Fairly widespread and common winter visitor. Can be found in flocks up to and over 1000 birds on large wetlands and waterbodies. Non-breeding in Ireland.
Eurasian Woodcock (*Scolopax rusticola*)	✓d	Amber Listed	9	31/12/2011	Resident & winter visitor to Ireland. Habitat preferences include woodland and areas of dead leaves and low vegetation, scrub and some open areas (bracken and heather-covered hills).
European Golden Plover (*Pluvialis apricaria*)	✓a,d	Red Listed	8	31/12/2011	Widespread distribution during wintering in coastal and inland habitats. Summer populations restricted to uplands in NW Ireland with heather moors, blanket bogs, and acidic grasslands.
Gadwall (*Anas strepera*)		Amber Listed	3	31/12/2011	Localised wintering distribution at a variety of inland and coastal sites. Nest on a variety of freshwater and brackish wetlands, especially shallow lakes with abundant emergent vegetation, slow moving rivers and marshes.
Goosander (*Mergus merganser*)		Amber Listed	2	31/12/2011	Resident at larger lakes in Counties Wicklow and Donegal. Rare winter visitor throughout Ireland. Irish birds appear to be largely resident. Birds from Continental Europe can occasionally found along coastal areas in winter.
Great Black-backed Gull (*Larus marinus*)		Amber Listed	8	31/12/2011	Resident along all Irish coasts. Breeds on the ground in colonies all around the coast of Ireland. Most colonies are on well-vegetated off-shore islands, or in other areas difficult of access.
Great Cormorant (*Phalacrocorax carbo*)	✓d	Amber Listed	7	31/12/2011	Irish resident either at sea or on inland lakes and rivers. Breeds in colonies mainly around the coast of Ireland, with some birds breeding inland.
Great Crested Grebe (*Podiceps cristatus*)	✓d	Amber Listed	5	31/12/2011	Winter distribution is widespread with greatest concentration in the north midlands and northeast and birds from the continent join the resident population. Outside the breeding season are often solitary with some birds moving to the coast through the winter. Breed on large, shallow eutrophic loughs, and along canals and slow flowing rivers – wetlands with emergent vegetation bordered by open water are generally selected.
Great Northern Diver (*Gavia immer*)	✓a,d	Amber Listed	1	31/12/2011	Great Northern Divers occur along the Irish coastline between September and April and are usually observed as single birds or small groups. They are the most numerous of the divers occurring in Ireland and are particularly abundant off the south, west and northwest coasts over the winter. Do not breed in Ireland.
Greater Scaup (*Aythya marila*)	✓d	Amber Listed	3	31/12/2011	Recent colonist to broadleaf forests in eastern Ireland. Breeding in oak woodlands with some coniferous woods nearby.
Grey Heron (*Ardea cinerea*)	✓d		27	14/09/2012	Common resident at wetlands, estuaries and along rivers throughout Ireland.

Species Name	Legislative Protection*	Red List Status	Record Count	Date of Last Record	Habitat Preferences (Birds[4]; All Remaining[5])
Grey Partridge (*Perdix perdix*)		Red Listed	4	31/12/2011	Resident in lowland farmland in County Offaly. Small numbers in Meath, Kildare and Cork.
Grey Plover (Pluvialis squatarola)	✓d	Amber Listed	3	31/12/2011	Distribution in Ireland is widespread, but exclusively coastal. They occur mostly along eastern and southern coasts, most often on large muddy estuaries. They regularly roost among dense flocks during high tide, while their distribution is more scattered while feeding.
Grey Wagtail (*Motacilla cinerea*)		Red Listed	28	30/06/2012	A widespread resident along fast flowing streams and rivers throughout Ireland, and nests under bridges. Some winter in coastal areas with large seaweed supply.
Hen Harrier (*Circus cyaneus*)	✓a,d	Amber Listed	1	31/12/2011	Winter visitor to low-lying countryside along the coast. Breeding in upland areas and bogs confined to heather moorland and young forestry plantations.
Herring Gull (*Larus argentatus*)	✓d	Red Listed	14	31/12/2011	Resident along all Irish coasts, breeding inland also. Widespread distribution.
House Martin (*Delichon urbicum*)		Red Listed	18	31/12/2011	Common summer visitor throughout Ireland. Nests usually sited underneath the eaves of a house. Also nests on cliffs.
House Sparrow (*Passer domesticus*)		Amber Listed	34	31/12/2011	Widespread garden bird, Irish resident. Breeds throughout Ireland - mainly around farm buildings and built-up areas. Nests in cavity in building, especially under eaves or holes formed by missing brickwork.
Lesser Black-backed Gull (*Larus fuscus)*	✓d	Amber Listed	9	31/12/2011	Summer populations are distributed across the Irish coastline including offshore islands, islands in inland lakes, sand dunes and coastal cliffs. Winter visitors to more inland lakes.
Little Egret (*Egretta garzetta*)	✓a		7	31/12/2011	Resident along coasts and rivers throughout Ireland. A variety of wetland habitats are used including shallow lakes, riverbanks, lagoons, coastal estuaries and rocky shoreline.
Little Grebe (*Tachybaptus ruficollis*)	✓d	Amber Listed	15	31/12/2011	Resident on vegetated ponds and lakes throughout Ireland. Wintering habitat extends to include ephemeral wetlands and are often encountered on sheltered coasts, estuaries and coastal lakes and lagoons
Little Gull (*Larus minutus*)	✓a	Amber Listed	1	31/12/2011	Winter visitor to east and south Irish coasts from October to March and scarce passage migrant in spring and autumn. Does not breed in Ireland.
Mallard (*Anas platyrhynchos*)	✓d		30	17/01/2015	Resident across all wetland habitats in Ireland.
Mediterranean Gull (*Larus melanocephalus*)	✓a	Amber Listed	3	31/12/2011	Winter visitor from September to April. Regularly breeds, at Ladies Island Lake in Co. Wexford. Prefers low lying islands near the coast on which to breed. Bulk of the population breeds in eastern Europe with smaller populations found in western Europe.
Merlin (*Falco columbarius*)	✓a,d	Amber Listed	2	31/12/2011	Favours upland habitats in summer and lowland and coastal sites October-April. Nesting on the ground on moorland, mountain and blanket bog. Also nests in woodland and has taken to nesting in forestry plantations adjacent to moorland.
Mew Gull (*Larus canus*)		Amber Listed	12	31/12/2011	Widespread across Irish coastland. Nests on the ground in a wide variety of situations, including, islands, cliffs and shingle banks. Breeds on the coast and inland lakes in the west of Ireland.

Species Name	Legislative Protection*	Red List Status	Record Count	Date of Last Record	Habitat Preferences (Birds[4]; All Remaining[5])
Mistle Thrush (*Turdus viscivorus*)		Amber Listed	47	26/11/2017	Widespread garden bird, Irish resident. Breeds mainly in hedgerows and gardens. Nest in trees, bushes, ivy, brambles and sometimes conifers.
Mute Swan (*Cygnus olor*)		Amber Listed	86	06/12/2017	Resident at wetlands throughout Ireland.
Northern Lapwing (*Vanellus vanellus*)	✓d	Red Listed	20	31/12/2011	Irish resident and summer visitor across wetlands, pasture and rough land adjacent to bogs. Breed on open farmland, and bare fields.
Northern Pintail (*Anas acuta*)	✓d	Red Listed	3	31/12/2011	Local winter visitor to wetlands throughout Ireland from October to March. In winter, they form large flocks on brackish coastal lagoons, in estuaries and on large inland lakes.
Northern Shoveler (*Anas clypeata*)	✓d	Red Listed	1	31/12/2011	Resident & winter migrant. Most occur between October and March. Prefer shallow eutrophic waters rich in plankton and occur on a variety of habitats while wintering in Ireland, including coastal estuaries, lagoons and inland lakes and callows.
Northern Wheatear (*Oenanthe oenanthe*)		Amber Listed	3	31/12/2011	Widespread summer visitor to uplands and scrubland throughout Ireland, from mid-March to early-October. Common passage migrant to all coasts in spring and autumn. Winters in southern Africa. Has one of the longest migration routes of any songbird. Birds breeding in north-eastern Canada fly almost non-stop across the northern Atlantic to Iberia and North Africa.
Peregrine Falcon (*Falco peregrinus*)	✓a,d		12	31/12/2011	Widespread resident in Ireland favouring coastal sites and cities with high vantage points.
Red Grouse (*Lagopus lagopus*)		Red Listed	1	31/12/2011	Resident in the west and north of Britain and in Ireland.
Red Knot (*Calidris canutus*)	✓d	Red Listed	3	31/12/2011	Winter visitor to Irish coasts between October & February. The preferred habitat mostly includes estuarine sites with extensive areas of muddy sand. They occur mostly in large flocks and on fewer estuaries than other wader species. Breed at low density, and often close to the coast, nesting on well concealed and sparsely vegetated gravel and rocky slopes.
Red-breasted Merganser (*Mergus serrator*)	✓d		2	31/12/2011	Resident and winter visitor to brackish and marine waters, particularly in shallow protected estuaries and bays and lagoons, and also offshore. Nest on sheltered lakes and large rivers throughout the west and north of the country, though they are largely absent from Clare and a few pairs have been recorded in Wexford.
Red-throated Diver (*Gavia stellata*)	✓d	Amber Listed	1	31/12/2011	Winter visitor to all Irish coasts from September to April. There is a very small breeding population in County Donegal. During the winter they are well distributed around the Irish coastline and are typically associated with shallow sandy bays. In Ireland they breed on small freshwater loughs. Ireland is the most southerly breeding location in the species' range.
Ringed Plover (*Charadrius hiaticula*)	✓d	Amber Listed	4	31/12/2011	Resident & winter visitor. Peak numbers between August and early October. Winter around the entire coastline but are quite sparse along the north and southeast coasts. Mostly recorded along sandy stretches or along the upper shores of estuaries and non-estuarine coastline.

Species Name	Legislative Protection*	Red List Status	Record Count	Date of Last Record	Habitat Preferences (Birds[4]; All Remaining[5])
Ruff (*Philomachus pugnax*)	✓a	Amber Listed	1	31/12/2011	Scarce spring & autumn passage migrant in small flocks in marshes, fields and mudflats. Small numbers winter on estuaries along the southern coast of Ireland.
Sand Martin (*Riparia riparia*)		Amber Listed	11	31/12/2011	Widespread summer visitor throughout Ireland. Breed in burrows dug into riverbanks or quarries.
Sanderling (*Calidris alba*)	✓d	Amber Listed	2	31/12/2011	First seen along the Irish coastline in July or August, though most arrive in Ireland between September & April. Found along sandy coastlines, especially non-estuarine.
Short-eared Owl (*Asio flammeus*)	✓a	Amber Listed	1	31/12/2011	A scarce winter visitor throughout Ireland and rare breeding species in upland locations, mainly in the south and east. Favours uplands and coastal lowlands.
Sky Lark (*Alauda arvensis*)		Amber Listed	22	31/12/2011	Common resident throughout Ireland in uplands and areas of farmland, especially cereal. Breeds in a variety of habitats including cultivated areas, ungrazed grasslands and upland heaths. Winters in flocks on stubble fields, grasslands and coastal areas.
Spotted Flycatcher (*Muscicapa striata*)		Amber Listed	12	31/12/2011	A widespread summer visitor to broadleaf woodlands, well-vegetated hedgerows, parks and gardens.
Stock Pigeon (*Columba oenas*)		Amber Listed	19	31/12/2011	A widespread resident throughout Ireland favouring areas of cereal cultivation. Breeds in lowlands of eastern and southern Ireland, almost invariably near agricultural areas, especially cereal. Nests in holes in trees.
Tufted Duck (*Aythya fuligula*)		Amber Listed	14	31/12/2011	Resident & winter visitor. Preference for large open lakes in lowland areas for breeding, where nests are built in waterside vegetation. Also seen on town lakes, canals and slow-moving rivers.
Water Rail (*Rallus aquaticus*)		Amber Listed	3	31/12/2011	Resident at wetlands throughout Ireland. Widespread.
Whooper Swan (*Cygnus cygnus*)	✓a,d	Amber Listed	2	31/12/2011	Winter visitor to wetlands and nearby open farmland throughout Ireland. Breeding in open shallow water, by coastal inlets, estuaries and rivers.
Yellowhammer (*Emberiza citrinella*)		Red Listed	25	31/12/2011	Declining resident mainly in the east and south of Ireland. Strongly linked with the cultivation of cereals.
Mammals					
Lesser Noctule (*Nyctalus leisleri*)	✓c,e		14	07/10/2010	Woodland species but it is also to be found in parkland, along treelines, pasture and riparian habitats, over lakes, beaches and dunes and above streetlights in urban areas. Not as dependent on linear features like hedgerows as our other bat species.
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	✓c,e		27	07/10/2010	As with the Common Pipistrelle, the Soprano forages along linear landscape features such as hedgerows and tree lines as well as within woodland. Notable preference for riparian habitats and has adapted to modern dwellings. The species is loyal to its roost site and returns year after year.
Pipistrelle (*Pipistrellus sensu lato*)	✓c,e		21	06/06/2013	Highly adaptable species foraging along linear landscape features such as hedgerows and tree lines as well as within woodland and parkland. Roosting in old and modern structures in addition to trees and bat boxes.
Irish Hare (*Lepus timidus* subsp. *hibernicus*)	✓c,e		4	12/05/2016	Widespread in Ireland. Found in habitats as far ranging as coastal dunes to mountain tops. Make forms in sheltered locations, often in dense vegetation such as rushes, heather,

Species Name	Legislative Protection*	Red List Status	Record Count	Date of Last Record	Habitat Preferences (Birds[4]; All Remaining[5])
					tall grass and even marram grass, and occasionally in hedgerows.
Eurasian Pygmy Shrew (*Sorex minutus*)	✓e		2	11/04/2017	Prefers relatively damp areas with dense vegetation at ground level, and it occurs in a wide variety of habitats including swamps, grasslands, heaths, sand dunes, woodland edge, rocky areas, shrubland, and montane forests. It feeds on invertebrates. The species is loyal to its roost site and returns year after year.
Pine Marten (*Martes martes*)	✓e		1	04/06/2017	Habitat specialists. Require forest or scrub cover to exist in a landscape. In the west of Ireland, they may have adapted to relatively open habitats due to historical clearance of woodland habitat. Semi-natural woodland, Mixed broadleaved woodland, Mixed broadleaved / conifer woodland, Mixed conifer woodland, conifer plantation.
Eurasian Badger (*Meles meles)*	✓e		16	16/07/2017	Varied habitats including grassland, woodland and Bog often near hedgerows or treelines and streams.
West European Hedgehog (*Erinaceus europaeus)*	✓e		14	16/07/2017	Irish resident in all lowland habitats where there is sufficient food to eat and ground cover for nesting, and commonest where grassland abuts mixed woodland and scrub. It appears to avoid coniferous woodland, blanket bog and other wet areas.
European Otter (*Lutra lutra)*	✓b,e	Near Threatened	5	06/12/2018	Lakes and Ponds, watercourses, riparian woodland, estuaries, sea inlets and bays, saltmarshes, swamps.
Common Seal (*Phoca vitulina*)	✓b,e		2	16/07/2017	Forages at sea, but likely at closer proximity to 'haul-out' sites. 'Haul-out' sites may be on rocky, shingle or sandy shores and even on grassland if it is within c.300ms of the sea.
Amphibians & Fish					
Smooth Newt (*Lissotriton vulgaris)*	✓e		4	28/09/18	Native to Ireland. Like the common frog, smooth newts may colonise garden ponds during the breeding season. Outside of the breeding season, newts come onto land and are often found in damp places, frequently underneath logs and debris in the summer months.

* a = Annex I Birds Directive, b = Annex II Habitats Directive, c = Annex IV Habitats Directive, d = Special Conservation Interest bird species (within SPA), e = Wildlife Act (excluding birds)

4.4 Field Study

The ecological survey was undertaken within the footprint and the areas directly adjoining the vicinity of the proposed development to identify habitats and ecological features (e.g. protected species, evidence of presence). The Church Fields Development Lands are located close to a number of existing established neighbourhoods or areas currently under construction. The land reveals some evidence of previous halted development including degrading roads.

4.4.1 Habitats

Given the modified nature of the site owing to development as well as historic ground preparations for part of the large Church Fields Land Management Area, the number of habitat types surrounding the proposed development is limited. They are listed in **Table 4-4** along with their ecological valuation and illustrated in **Figure 4.3**. It should be noted that other consented developments are in progress or commenced after the initial survey, and that the habitat map captures a snapshot of the area at the time. Changes in the landscape and adjacent habitats are thus not captured. No habitats, ascribable to Annex I of the Habitats Directive, were noted from the site.

Table 4-4: Habitat Types recorded and their Ecological Valuation

Habitat Type	Fossitt Category	Ecological Valuation
Buildings and artificial surfaces	BL3	Local (Lower)
Spoil and bare ground	ED2	Local (Lower)
Recolonising bare ground	ED3	Local (Lower)
Amenity grassland (improved)	GA2	Local (Lower)
Amenity grassland/neutral grassland mosaic	GA2/GS1	Local (Lower)
Scrub	WS1	Local (Lower)
Hedgeline	WL1	Local (Lower)
Treelines	WL2	Local (Higher)
(Mixed) Broadleaved woodland	WD1	Local (Higher)
Drainage ditches	FW4	Local (Lower)
Depositing/Lowland river	FW2	Local (Higher)
Arable crops	BC1	Local (Lower)

4.4.1.1 Buildings and Artificial Surfaces (BL3)

This category refers to all the areas that are characterised by built environment and typically does not support flora unless planted in discrete area e.g. roadside verges, gardens etc. With regard to the proposed development, the habitat covers all roads, pavement and built roundabouts. Many, but not all of the roads, are separated from existing footpaths by a narrow band of managed grassland as a roadside verge.

4.4.1.2 Amenity Grassland (GA2) & Amenity grassland/neutral grassland mosaic (GA2/GS1)

With the exception of the road infrastructure, a large part of study area is characterised by managed grasslands, most of which are characterised by species poor swards. However, the nature of the grassland is such that mosaics are common, reflecting a number of factors including the level of management such as roadside verges and open areas managed for recreation, as well as recently planted amenity grassland associated with the new Avondale estate at the western side of the study area). Other areas are less intensively managed and in places, have lain derelict for a number of years owing to the lack of development.

The largest area of open grassland sward is associated with the eastern boundary, where it is characterised by open ground: comprising grassland sward and some amenity playing fields. Other discrete areas of the habitat include managed roadside verge along Wellview Avenue where interspaced with occasional urban planting. The composition of the grassland sward is dominated by a number of common grass species including Cocksfoot (*Dactylis glomerata*), Poa grasses (*Poa* spp.), Bents (*Agrostis* spp.) as well as Crested dogtail's (*Cynosurus cristatus*) and False oat grass (*Arrhenatherum elatius*), where ground conditions favour their presence. The common flowering species include Dandelion (*Taraxacum officinale* agg.) and Clover (*Trifolium* spp.). These are less abundant in more managed recreational areas but are nonetheless locally abundant throughout the sward.

In less managed areas, there is an obvious reduction in mowing regime and the sward is rank. Much of the unmanaged grassland is located mainly in the north and east of stud lands. Rank swards vary between wet and dry grassland subject to compaction and is highly disturbed. Regular species include Poa grasses (*Poa* spp.), Cocksfoot (*Dactlyis glomeratus*) and to a lesser degree perennial rye grass (*Lolium perenne*). Frequent species across the mosaic included Dock (*Rumex* spp.), Dandelion (*Taraxacum officinale* agg.) and Wild Teasel (*Dipsacus fullonum*) present in disturbed areas. There are instances of scrub development dominated by Bramble (*Rubus fruticosus* agg.) in less disturbed areas with juvenile Willow (*Salix* spp.) and beech (*Fagus sylvatica)* growing sporadically. Where recent disturbance has occurred (Spoil and Bare ground ED2), the species are interspersed with pioneer species typical of disturbance, whilst in wetter conditions with high compaction of ground there are elements of GS4 in habitat mosaic dominated by moss species.

4.4.1.3 Hedgeline (WL1)

Hedgelines are characterised by linear extent of woody vegetation, typically with little or no mature tree development above 4/5metres. The species assemblage is often poor, dominated by Hawthorn (*Crataegus monogyna*), scrubby Ash (*Fraxinus excelsior*) and Brambles. Hedgelines and Scrub are closely related in places, particularly where the adjacent lands have been left neglected. Thus, the hedgeline in undeveloped areas often grade into Scrub, dominated by Bramble. Another feature of the linear features, particularly along the western part of the study area is the level of infill, largely waste (domestic, social and construction) associated with them. This has led to the expansion of scrub vegetation – largely unmanaged bramble.

4.4.1.4 Treeline (WL2)

This habitat is characterised by a single row of trees and is limited in extent. It overlaps with hedgelines, where mature trees, often Ash (*Fraxinus excelsior*) are dominant.

4.4.1.5 (Mixed) Broadleaved Woodland (WD1)

There are a number of discrete areas where mature or semi mature woodland vegetation occurs. Given the nature and management of the landscape, none truly characterise as woodland. Indeed, mosaics, particularly with Treeline (WL2) and Hedgeline (WL1) are noted. The key area where mature trees were noted is along Churchfield Road.

A key feature of this habitat is that although possibly planted, and obviously managed, particularly alongside the public footpaths and road, the species diversity is limited. Key tree species include Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*) and Ash (*Fraxinus excelsior*). Under storey trees include hawthorn and willow.

4.4.1.6 Scrub (WS1)

Given nature of this site, scrub occurs locally, often in areas which have previously been subject to disturbance, but also along linear hedgeline features to which no recent management is apparent. The key species is Brambles (*Rubus fruticosus* agg.). In areas where linear wooded features are known and owing to a neglect as well as social gathering and dumping of waste, scrub is expanding the expense of some sections of linear hedgerow features.

4.4.1.7 Spoil and Bare Ground (ED2)

This habitat refers to an area currently occupied by road construction works, west of the proposed development. It consists of disturbed, unconsolidated material, unvegetated due to regular machinery traffic and trampling.

4.4.1.8 Recolonising Bare Ground (ED3)

The desk survey revealed evidence of abandoned preparatory roads or tracks leading in a north-easterly direction and north-westerly direction from the as yet unbuilt section of Wellview Avenue. These are not managed and recolonization by vegetation (e.g. pioneer herb species and scrubby species) is occurring.

4.4.1.9 Drainage Ditch (FW4)

A drainage ditch, in an east-west direction, divides the proposed Church Fields development lands. To the west of the of proposed road (existing haul road), the drain (approximately 0.4m deep by 1.5m wide) that, although dry in its whole extension at the time of each survey, runs along approximately 500m until it joins the Pinkeen River (EPA name: Powerstown_09). The habitat is highly shaded with dense overhanging vegetation, resulting in little instream vegetation.

The ditch on the western side of the proposed extended Wellview Avenue, appears man-made and is dry, supporting flora typical of the adjacent grassland sward, albeit somewhat rank as it is not as managed.

The Macetown South river water body is mapped to flowing south underneath Damastown Avenue before continuing in a south-westerly direction where it joins the Powerstown_09 river water body approximately 200m west of the proposed development. This river water body is for much of its extent within the study area

dry and infilled and shows no signs of supporting aquatic life. It is classified as a dry drainage ditch, until a noticeable flow begins intermittently from a recently installed culvert outlet approximately 100m upstream of its confluence with the Powerstown_09. The habitat is highly shaded with dense overhanging vegetation, flow is either very slow or stagnant.

4.4.1.10 Lowland River (FW2)

The Powerstown_09 river water body flows in a north-south direction and at its closest point is located approximately 200m west of the proposed development (attenuation pond #3). It is bordered by unmanaged grasslands to the east and Damastown Industrial Park to the west. The river channel has been previously managed to a consistent width of 1-1.5m and represents part of the western boundary of the Church Fields Land Management Plan lands.

4.4.1.11 Arable Crops (BC1)

The footprint of part of the proposed development is adjacent to cultivated lands (crop unidentified) at the roundabout intersecting Damastown Avenue with the new Wellview Avenue. Although proximal to, it is unlikely that these lands will be required for, nor impacted by the proposed development.

4.4.2 Protected Flora/Species of Conservation Concern

No rare or protected flora are noted from the NBDC database (Error! Reference source not found. for the footprint of the proposed development. Similarly, no rare or protected flora were returned from the search of the NPWS 10km grid square in which the proposed development is located.

Although much of the proposed development is located on existing built environment, which has been subject to historical and ongoing disturbance to parts of the site, the cycle paths will involve the expansion of existing footpaths and alteration of existing vegetation or disturbed ground. No rare or protected flora were noted from field surveys, nor would they be likely expected based on the habitat requirements.

4.4.3 Invasive Plants and Animals

One invasive alien plant species and three invasive alien animal species, scheduled to the European Communities (Bird and Natural Habitats Regulations) 2011, were returned from the data search (**Table 4-5**). Japanese knotweed (*Fallopia japonica*) was recorded c. 1.2 km south east of the proposed development with no known hydrological connections. There are several records of Japanese knotweed (*Fallopia japonica*) further east along the River Tolka but are located downstream of the proposed development.

Of the three invasive alien animal species, scheduled to the European Communities (Bird and Natural Habitats Regulations) 2011 returned from the data search (**Table 4-5**), all are common throughout the wider Dublin area but have not been documented from a search of the NBDC database as being within or in close proximity to the proposed development.

No scheduled invasive alien plants or animals were noted during the field survey of the proposed development site.

Table 4-5: NBDC Third Schedule Invasive Plants and Species Records within 5km from proposed development

Species Name	Record Count	Date of Last Record
Japanese Knotweed (*Fallopia japonica)*	3	10/07/2017
Brown Rat (*Rattus norvegicus*)*	4	20/11/2015
Eastern Grey Squirrel (*Sciurus carolinensis*)	17	30/07/2017
European Rabbit (*Oryctolagus cuniculus*)	14	12/06/2018

* offshore islands only

4.4.4 Mammals

4.4.4.1 Badger

The desk study returned several records of Badger *(Meles meles)* throughout the wider area of the proposed development, with the closest record 360m east of the proposed development. Badger are legally protected under the Wildlife Act 1976 (as amended). The field survey returned several badger sized holes of varying degrees of use and collapsed tunnels within broadleaf woodland 160m north west of the proposed development (See **Table 4-6**). One potential maternity sett was identified with bedding and recent activity. Several snuffle holes and scratch marks were identified. There is evidence of human gathering and disturbance in the area around the sett and across the wider study lands and although no other evidence of badger activity was noted in the wider environs during the various site visits.

Table 4-6 Badger Sett Evidence

Ref	Entrance Aspect	Tunnel Direction	Tunnel Wider than Tall	Soil Heap	Entrance Condition		Sett Type	Usage	Notes
					Detritus Cover	Cobwebs			
BS1	NW	SE	✓	Vegetated	51-75%	X	Outlier	Disused	
BS2	NW	SE → S	X	Unvegetated	26-50%	X	Outlier	Partially Used	
BS3	W	E	✓	Unvegetated	26-50%	X	Outlier	Partially Used	
BS4	N	S	✓	Unvegetated	<25%	X	Main	Well used	Bedding and scratch marks
BS5	W	N & S	✓	Unvegetated	<25%	X	Collapsed Tunnel	Partially used	Additional collapsed tunnel adjacent
BS5.1	W	N	✓	Unvegetated	<25%	X	Outlier	Well used	BS5 entrance
BS5.2	W	N	✓	Unvegetated	<25%	X	Outlier	Partially used	
BS6	W	N & S	✓	Unvegetated	26-50%	X	Collapsed Tunnel	Partially used	
BS6.1	W	N	✓	Unvegetated	26-50%	X	Outlier	Partially used	BS6 entrance
BS7	W	NE	✓	Unvegetated	26-50%	X	Outlier	Partially used	

4.4.4.2 Otter

Otters (*Lutra lutra*) are protected under the Wildlife Act 1976 (as amended) and are listed on Annex II and IV of the EU Habitats Directive. Given the relative lack of suitable habitat surrounding the proposed development, there was no evidence of otter activity, nor habitation around the proposed development. There was no discernible evidence of holts, resting sites (couchés), trials and sprainting all ditches or watercourses within the study area. The lack of water in and level of blockage/interference with the upperparts of the Macewood-South suggests that otter would not ordinarily make use of this area. The Powerstown_09 watercourse has been modified and owing to the turbid nature of the watercourse and the lack of cover in places, it is suggested that does not provide suitable otter territory.

4.4.4.3 Bats

All bats and their roosting sites are legally protected under the EU Habitats Directive as transposed into Irish law by the Habitats Regulations. With the exception of Lesser Horseshoe bat (*Rhinolophus hipposideros*), which is an Annex II species, the remainder are classified as Annex IV species. They are also protected under the Wildlife Act 1976 (as amended). Across Europe, bats are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both of these conventions.

The desk study returned several records of Lesser Noctule *(Nyctalus leisleri),* Common Pipistrelle (*Pipistrellus sensu lato),* and Soprano Pipistrelle (*Pipistrellus pygmaeus),* throughout the wider area of the proposed development.

A suitability index developed by Bat Conservation Ireland (Lundy *et al*., 2011) identifies the proposed development site within a moderate suitability quintile (36.11) for all bat species combined (**Table 4-7).** The highest suitability index scores were recorded for Leisler's bat, common pipistrelle, soprano pipistrelle, and brown long-eared bat.

Table 4-7 Suitability Index for Different Bat Species (as per Lundy *et al*., 2011)

Scientific name (Common Name)	Suitability index
Nyctalus leisleri (Leisler's bat)	51
Pipistrellus (common pipistrelle)	53
Pipistrellus pygmaeus (soprano pipistrelle)	46
Plecotus auratus (brown long-eared bat)	47
Myotis nattereri (Natterer's bat)	44
Myotis daubentonii (Daubenton's bat)	38
Myotis mystacinus (whiskered bat)	30
Pipistrellus nathusii (Nathusius' pipistrelle)	16
Rhinolophus hipposideros (lesser horseshoe bat)	0
All Bats	**36.11**

Given the nature of the area in the vicinity of the proposed development, heavily built up with widespread artificial lighting coupled with the relative lack of suitable roosting features, the potential for bat roosts is considered to be low. All hedgerows and surrounding landscape were assessed for bat commuting and foraging suitability. Adjacent and nearby hedgerows were largely unmanaged with a mixture of tree ages, and as such were deemed to provide low-moderate suitability to commuting and foraging bats. The mature treeline provides some degree of a good quality commuting corridor but is effectively isolated owing to level of urban pressures – lighting, buildings and lack of suitable connectivity to foraging habitat in the wider landscape, particularly to the north of the proposed development.

The visual assessment revealed negligible to low potential for bat roosting features. The absence of suitable mature vegetation across much of the site coupled with the condition of the highly managed landscape, devoid of suitable commuting features inhibit a higher potential for bats. No Moderate or High potential trees/features for roosting were noted. The field study identified a group of semi-mature ash trees at the western end of the proposed development alongside attenuation pond #1 with high ivy coverage adjacent marked for removal. These were considered to have roosting features of low potential.

4.4.4.4 Other Mammals

The desk study returned some records of Eurasian pygmy shrew (*Sorex minutus)*, Irish Hare (*Lepus timidus* subsp. *hibernicus*) and European hedgehog (*Erinaceus europaeus)* throughout the wider area of the proposed development. Pine Marten (*Martes martes*) was also recorded in the wider area but to a lesser extent.

No evidence of these species was noted during site visits, however there is potential for hedgehog and pygmy shrew to occur within the ZoI of the proposed development, particularly within the scrubby vegetation adjacent Church Road.

The only mammals for which evidence of activity was noted was Fox (*Vulpes vulpes*) and Rabbit (*Oryctolagus cuniculus*). Neither are afforded protection under Wildlife legislation.

4.4.4.5 Amphibians and Reptiles

No evidence of Common frog (*Rana temporaria*), Smooth newt (*Lissotriton vulgaris*), Viviparous lizard (*Zootoca vivipara*) was encountered during the survey. Other than the drainage ditches, there is limited long term standing water within the immediate environs of the proposed development. The made land would certainly have the potential for the development of ephemeral standing water where drainage is retarded owing to compacted ground. However, this is unlikely within the footprint of much of the proposed

development. There is potential along the slower reaches of the Tolka River and other unculverted tributary watercourses. However, the proposed development will not result in any impact to these.

4.4.5 Avifauna

Birds and their nests are protected under the Wildlife Act 1976 (as amended). A large number of bird species are also afforded protection under the EU Birds Directive.

Considering the linear nature of the proposed development Wellview Avenue upgrade in the first instance and later expansion of the study area to include the prosed cycle network, a detailed bird survey was not carried out as part of the ecological survey. However, the limited ecological value and potential of the habitats surrounding the proposed development largely negate the site of suitable feature for accommodating protected birds. A considerable number of bird species (45) was returned from the search of the NBDC database, of which 40 are Special Conservation Interest birds from coastal European sites within the ZoI of the proposed development. Between both walkover site visits, a limited number of bird species noted in the lands surrounding the proposed development (**Table 4-8**). The birds were mostly associated with the scrubby hedgerow to the east of the proposed development and the mature wooded vegetation that separates the proposed development and Church Road.

Table 4-8 Bird Species observed during Ecological Study

Common Name	Scientific Name	Conservation Status
Rook	*Corvus frugilegus*	-
Hooded crow	*Corvus cornix*	-
Woodpigeon	*Columba palumbus*	-
Common Gull	*Larus canus*	BoCCI – Amber list
Robin	*Erithacus rubecula*	BoCCI – Amber list
Blackbird	*Turdus merula*	-
Bullfinch	*Pyrrhula*	-
Magpie	*Pica*	-

There is no wetland habitat in the immediate footprint of the site. With the exception of the amenity grassland to the eastern part of the study area, there is negligible potential for wintering wildfowl to support or use the site. Many of the Special Conservation Interest (SCI) birds are coastal species and would not ordinarily venture inland. However, the NBDC did note the presence of Brent Geese, approximately 4km east of the site. This species is known to occasionally flock inland on open fields to graze.

While it cannot be ruled out that geese might utilise the open grasslands, the proposed development, by virtue of its relatively narrow linear nature and occurring alongside the interface of the amenity grassland and wooded vegetation along Church Road would not be predicted to alter potential usage of the open grounds were they to be used.

Common Gulls are also SCI species that are often found on open pitches. They are a widely distributed species that in places is known to be habituated to background disturbance including pedestrians and walkers along existing paths. There may be some disturbance impact associated with the construction of the cycle networks but given the likely duration of the works to upgrade an existing footpath, it is predicted that the birds would avoid the area and congregate on open ground away from paths.

4.4.6 Amphibians and Reptiles

The desk study only returned records of Smooth Newt *Lissotriton vulgaris*. No evidence of Common frog (*Rana temporaria*), Smooth newt (*Lissotriton vulgaris*), Viviparous lizard (*Zootoca vivipara*) was encountered during the survey. Other than the drainage ditches, there is limited potential for suitable standing water within the study area, and certainly, none that would be impacted by the proposed development. The adjacent watercourses including quitter sections of the Tolka River or Powerrstown_09 may provide suitable conditions for frog spawn.

4.4.7 Invertebrates

The desk study returned no records of protected or rare invertebrates. No butterflies, bees etc. were identified during the field survey.

4.4.8 Aquatic Environment

The desk study returned no records of aquatic species of note from within the footprint of the proposed development. The marine species - Common Seal (*Phoca vitulina*) is recorded occurring approximately 15km southeast of the proposed development, in coastal waters.

Two watercourses were identified as part of the Tolka_030 water body during the field survey named using their more recent EPA names of Macetown south and Gaywwod stream. As a whole the Tolka_030 river water body is classified as Poor WFD status (2013-2018) and at risk of failing to meet its WFD objectives. The Macetown south intersects Damastown Avenue 105m west of the northern roundabout while Gaywood stream leads into a residential area just west of the proposed development site. Both streams flow east to west where they meet the Tolka_030 which flows downstream along the southern site boundary and into Dublin Bay. The path of the Tolka River is well defined confluencing with numerous rivers downstream.

The Macetown south river water body is largely dry, and heavily infilled with vegetation and construction waste. Sporadic and slow/stagnant flow begins approximately 100m upstream of its confluence with the Powerstown_09 at a recently installed culvert outlet. The Powerstown_09 is culverted under Damastown Avenue and is subject to channel straightening with a consistent width of 1-1.5m (see **Image 4-1**). The water course is highly turbid appearing grey in colour. There were several sightings of dumping within and adjacent to the water body.

Image 4-1 Powerstown_09 River Water Body

The River Tolka is designated along its downstream reaches as both an SPA and SAC (South Dublin Bay and River Tolka Estuary SPA and South Dublin Bay SAC) and provide connectivity to downstream pNHAs: Dolphins, Dublin Docks pNHA; North Dublin Bay pNHA; South Dublin Bay pNHA). The Tolka and its associated streams are hydrologically connected to the proposed development via overland run-off and drainage ditches. There are several monitoring stations of this river which flows southeast of the proposed development and into Dublin Bay.

An EPA monitoring stations (StationID: RS09P210850) located c. 200m southwest of the proposed development, indicates a water quality status of 'Bad' in 2010-2015 (the most recent data). The proposed development is within the Dublin groundwater body (IE_EA_G_008), which is classified as being of 'good' status, for the period 2010-2015. This groundwater body adjoins all the associated SACs, SPAs and pNHAs aforementioned.

The flood extents on the OPW FloodInfo website are currently under review for the River Tolka. However, a draft Strategic Flood Risk Assessment Report (ROD, 2019) for the Church Fields Land Management Plan was carried out in three stages:

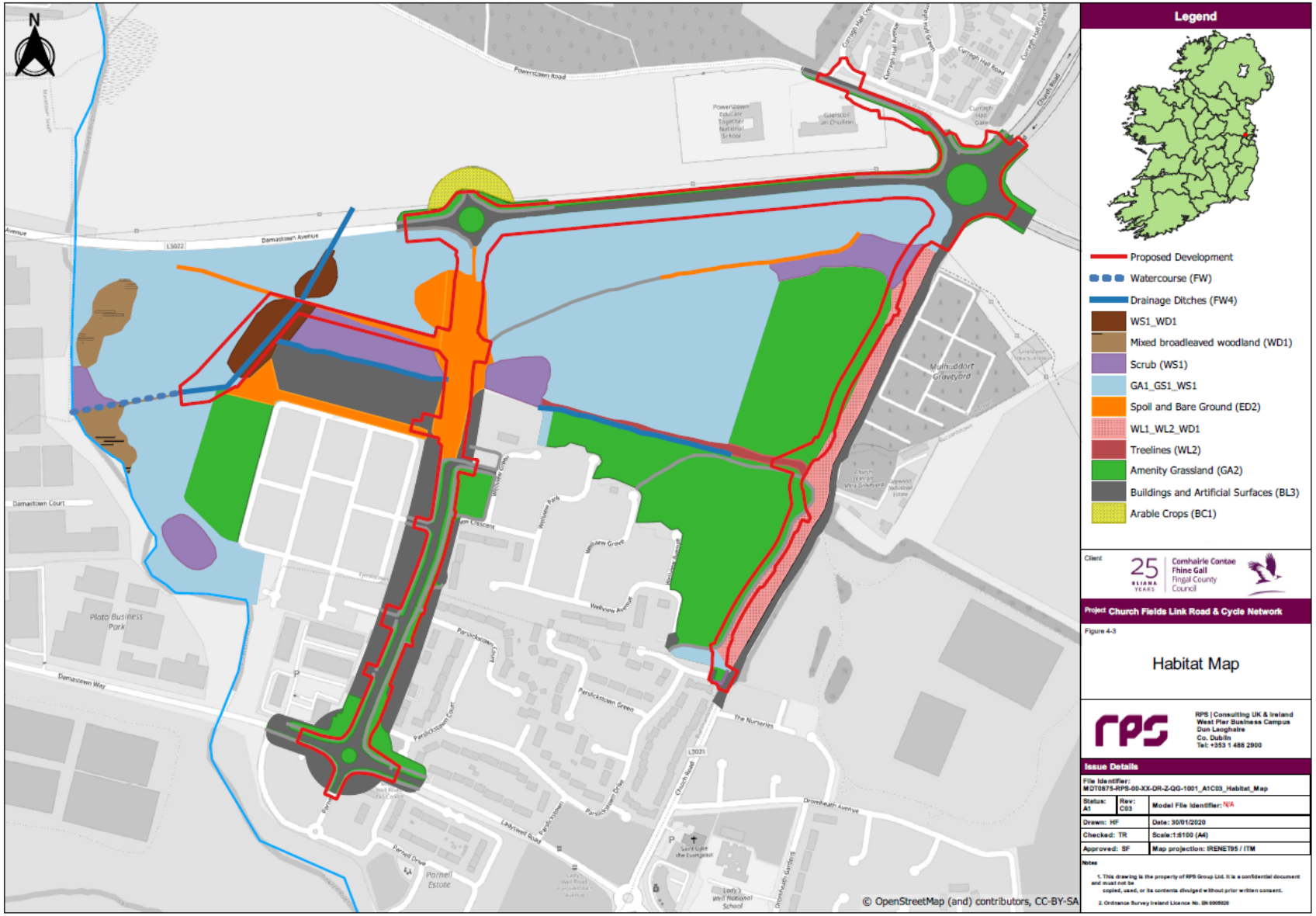
- Stage 1 – Flood Risk Identification
- Stage 2 – Initial Flood Risk Assessment
- Stage 3 – Detailed Flood Risk Assessment

A Flood Risk Review report by RPS (2019a) has been produced as part of the assessment of Church Field Link Road and Cycle network project. The results of the hydraulic modelling indicated that the proposed link road will not to be susceptible to fluvial flooding from the East Pinkeen Stream for both the 1% and the 0.1% Annual Exceedance Probability (AEP) events. However, the proposed link road is indicated to be susceptible to flooding from overland flow. The report proposes SuDS to address flooding from pluvial sources. Therefore, recommending the draft FRA to be adopted to inform the design and final layout for Church Fields Road Link design.

The proposed development site is not within any historically recorded flood event, and it does not intersect any area associated with low, medium or high flood probability. Furthermore, the proposed development site has an AEP of less than 0.1%[6].

[6] Available online at: http://www.floodinfo.ie/map/floodmaps/. Accessed October 2019. Reconfirmed January 2020.

Figure 4-3: Habitat Map



5 VALUATION

5.1 Significant Ecological Features

Significant ecological features are considered to be those valued at 'Local Importance (Higher Value)' or higher as per NRA (2009a) definitions (**Appendix C**). Ecological features valued at Local Importance (Lower Value), negligible value, or which were considered not to be impacted by the proposed development were not considered significant features and are not ordinarily carried forward for mitigation assessment. However, precautionary measures have been included where habitats could support mobile species e.g. birds or where the potential for encountering mobile introduced species remains. **Table 5-1** summarises all significant ecological features identified within the ZoI of potentially significant impacts.

Table 5-1: Summary Valuation of Significant Ecological Features

	Ecological Features	Highest Ecological Valuation within ZoI of Proposed Development	Requires Mitigation	Precautionary Mitigation Included
Designated Sites	European sites (SPAs and SACs)	International	No	No
	National sites (NHA/pNHA)	National	No	No
Habitats and Flora	BL3 Buildings and Artificial Surfaces	Local (Lower)	No	No
	ED2 Spoil and Bare Ground	Local (Lower)	No	No
	ED3 Recolonising Bare Ground	Local (Lower)	No	No
	GA2 Amenity Grassland (improved)	Local (Lower)	No	No
	GA2/GS1 Amenity grassland/neutral grassland mosaic	Local (Lower)	No	No
	WL1 Hedgerow	Local (Lower)	No	**Yes**
	WS1 Scrub	Local (Lower)	No	**Yes**
	WL2 Treeline	Local (Lower)	No	**Yes**
	BC1 Arable Crops	Local (Lower)	No	No
	WD1 Mixed (Broadleaved) Woodland	Local (Higher)	**Yes**	
	FW4 Drainage Ditch	Local (Lower)	No	**Yes**
	FW2 Lowland River	Local (Higher)	No	**Yes**
	BC1 Arable Crop	Local (Lower)	No	No
	Rare or Protected Flora	N/A	No	No
	Invasive Alien Plant Species	Local (Lower)	No	**Yes**
Fauna	Bats (roosting)	Local (Higher)	**Yes**	
	Bats (commuting and foraging)	Local (Higher)	No	**Yes**
	Badger	Local (Higher)	**Yes**	
	Otter (no evidence but presumed to forage downstream)	Local (Higher)	No	No
	Breeding birds (including those of medium or high conservation concern)	Local (Higher)	**Yes**	
	Wintering birds	Local (Lower)	No	No
	Hedgehog and pygmy shrew (presumed present*)	Local (Lower)	No	**Yes**
	Red squirrel	Local (Lower)	No	**Yes**

Ecological Features	Highest Ecological Valuation within ZoI of Proposed Development	Requires Mitigation	Precautionary Mitigation Included
Common frog	Local (Lower)	No	No
Smooth newt	Local (Lower)	No	No
Fish (including lamprey, Atlantic salmon, trout, European eel)	Local (Lower)	No	No
Butterflies	Local (lower)	No	No
Other Invertebrates	Local (lower)	No	No
Invasive alien animal species	Local (Lower)	No	No

6 MITIGATION AND ENHANCEMENT

The following sections set out measures required to protect and eliminate the potential for significant impact to biodiversity. These must be carried out together with any relevant guidance documents and legislative requirements.

6.1 Roles and Responsibilities

Fingal County Council and/or any Contractor appointed by FCC shall retain a suitably qualified and experienced ecologist (the 'retained Ecologist') to undertake multidisciplinary preconstruction surveys and to advise as necessary so that all relevant environmental legislation is complied with and included in a detailed Construction Environmental Management Plan (CEMP) or similar, to be developed by the appointed Contractor.

The retained Ecologist shall be suitably qualified and experienced, with Chartership and/or full membership of an appropriate professional body, e.g. the Chartered institute of Ecology and Environmental Management (CIEEM). They will have the authority to review method statements, oversee works and instruct action, as appropriate, including the authority to require the temporary cessation of works, where necessary.

The retained Ecologist shall be familiar with and carry out the following duties:

- Be familiar with the contract documents and in particular be aware of all Environmental Commitments, Controls and Mitigation Measures;
- Be familiar with all relevant environmental legislation and ensure compliance with same;
- Liaise with all site management as required including the Employer's Site Representative Staff and establish and maintain close working relationship with the Employer's Site Representative;
- Undertake periodic site inspections and monitoring of mitigation measures, in accordance with method statements (MS) and other guidance documents and based on professional judgement;
- Conduct site specific environmental awareness training, as required;
- Investigate and report on any environmental incidents and ensure that appropriate action is taken;
- Complete environmental checklists;
- Undertake environmental monitoring requirements as required by approvals, licenses and permits;
- Advise and input (where necessary) into the CEMP or similar and ensure same is updated on a regular scheduled basis.
- Liaise and meet on site with the environmental statutory bodies, as required;
- Provide toolbox talks at project inception and during the project, as required;
- Maintain a register indicating whether all mitigation measures have been carried out satisfactorily.

All other personnel shall:

- Be aware of all Environmental Commitments, Controls and Mitigation Measures;
- Implement the Health and Safety and Environmental Protection Measures and Controls on site;
- Express their duty of care to do all that is reasonable and practicable to minimise the risk of environmental harm;
- Comply with the relevant Acts, Regulations, Codes of Practice and Standards and the approvals or limits imposed by such Acts, permits and approvals;
- Follow the instructions of the Contractor's Management Staff (and retained Ecologist) in relation to environmental requirements;

- Promptly report to management any risks of non-conformances and/or breaches of the plans, procedures or systems; and
- Participate in awareness training as directed by management.

6.2 Construction Environmental Management Plan (CEMP)

Fingal County Council or its Appointed Contractor shall prepare a Construction and Environmental Management Plan (CEMP) in respect of the proposed development. The CEMP will cover the potential environmental risks and the proposed environmental construction strategies that are to be carried out before and during the proposed works. It shall include as a minimum the mitigation measures detailed in planning submissions. It shall also include details on scheduling of works within the boundary of proposed development and best practice measures in relation to preventing impacts to ground and surface waters and precautionary management of invasive species. Specific section or subplans from the CEMP shall include:

- Sediment /Surface Water Management Plan; and
- Pollution Control, including unintended spillages or emergency events;
- Dewatering of Excavation Plan.

6.3 Environmental Commitments

The appointed Contractor will be responsible for preparing and maintaining the Environmental Policy and ensuring adherence to the Environmental Commitments for the proposed development during its construction. The policy will be appropriate to the proposed development and will comply with legal requirements and provide a framework for environmental objectives and associated targets. Environmental commitments associated with the proposed development will be communicated to all site staff as part of site inductions and ongoing toolbox talks.

6.4 Biodiversity Management

In order to comply with relevant guidance (e.g. NRA 2005, 2006, 2008) and legal requirements (e.g. Wildlife Act 1976 (as amended), EU Habitats Directive, and EU Birds Directive), pre-construction and during construction protected biodiversity (protected flora and fauna, and their habitats) measures shall be implemented.

6.4.1 Pre-construction Surveys

Depending on the duration between the current surveys and the grant of planning, the retained Ecologist shall undertake a preconstruction survey to confirm that no changes in the ecological environment have occurred.

- A pre-construction biodiversity walkover survey (carried out by a suitably qualified Ecologist in the optimal season (see NRA, 2008)) shall be carried out no more than 10-12 months in advance of construction activities;
  - Any measures identified during the pre-construction biodiversity walkover survey (e.g. root protection areas for tree, standoff areas from badger setts, and requirements for derogation licences) shall be fully implemented pre-construction.
- No clearance or removal of vegetation shall occur during the bird breeding season (1st March to 31st August, inclusive). If clearance of vegetation is required within the bird nesting season, consultation with a suitable qualified ecologist is required, and a licence from the Wildlife Licencing Unit of the National Parks and Wildlife Service (Department of Culture, Heritage and the Gaeltacht), may be required.

6.4.2 Construction Stage

During construction, Fingal County Council and/or any Contractor appointed by FCC, must ensure that:

- Any measures implemented as a result of the pre-construction biodiversity walkover survey (e.g. root protection areas for trees, limited clearance of scrub outside the bird nesting season, requirements for derogation licences or similar if required) shall be fully maintained during construction;
- No clearance or removal of vegetation shall occur during the bird breeding season (1st March to 31st August, inclusive). If clearance of vegetation is required within the bird nesting season, consultation with a suitable qualified ecologist is required, and a licence from the Wildlife Licencing Unit of the National Parks and Wildlife Service (Department of Culture, Heritage and the Gaeltacht), may be required.
- If protected flora and/or fauna are encountered during the construction, works will immediately be stopped in the immediate vicinity of the new record, and the site manager will be informed. The retained Ecologist will be contacted to provide advice on how to proceed.

6.5 Surface Water and Soil Management

There are watercourses in close proximity to the proposed development, however, no instream works will be required. The construction works shall be undertaken within a framework of environmental protection practices following the approach of the Greater Dublin Strategic Drainage Study (GSDSD), which are an integral element of the design. Any measures proposed by the appointed Contractor shall meet legislative requirements, and key regulatory guidance that define working practices during construction, most notably the CIRIA guidance for the *Control of Water Pollution from Construction Sites* (CIRIA, 2001).

6.5.1 Construction

During construction, Fingal County Council and/or any Contractor appointed by FCC, must ensure that:

- There shall be no unattenuated discharge to the constructed drainage network. Similarly, no unattenuated discharge to drainage ditches, whether they be dry or wet.
- Control measures shall be clearly described in a Sediment /Surface Water Management Plan to be prepared as part of the required CEMP; and
- Pollution Control measures, including unintended spillages or emergency events shall also be prepared as part of the required CEMP.

6.5.2 Materials Management

During construction, FCC and/or any Contractor appointed by FCC, must ensure that:

- Temporary construction compounds shall not be located within 20m of watercourses, or where it is likely that groundwater will be encountered;
- No harmful materials shall be deposited into nearby watercourses, including drainage ditches/pipes, on or adjacent to the site;
- Excavated road building material shall be temporarily stored at a site compound, or preferably removed offsite to a facility licenced to accept such waste;
- Waste materials shall be stored in designated areas that are isolated from surface water drains. Skips will be closed or covered to prevent materials being blown or washed away and to reduce the likelihood of contaminated water leakage;
- Topsoil, where required to be removed, shall be:
  - stripped to an average depth of 300mm over the whole site area bounded by the temporary fencing;
  - maintained in a tidy condition, separate from general spoil, with side slopes not steeper than 1 in 3;
  - maintained in good condition keeping weeds under control and preventing vermin infestation.

- Stockpiling of construction materials shall be strictly prohibited within 5 m of any watercourse or water-laden channel, and appropriate management of excess material stockpiles will be enforced, to prevent potential siltation of watercourses;
- Excavations shall be left open for minimal periods to avoid acting as a conduit for surface water flows;
- All ready-mixed concrete shall be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to existing drains or the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite;
- Any dewatering of standing water within the proposed development site (e.g. water accumulated in excavations) shall require a Dewatering Plan to be incorporated. The Dewatering Plan will be agreed with the Local Authorities retained Ecologist before implementation, and include a commitment to dewatering, following suitable attenuation, at a rate equivalent to greenfield run-off (to be established); and
- Concrete shall be contained and managed appropriately to prevent pollution of ditches. Concrete pouring will be prevented during periods of heavy rainfall, and quick setting mixes will be used.

6.5.2.1 Hydrocarbon Management

During construction, FCC and/or any Contractor appointed by FCC, must ensure that:

- Protection measures shall be put in place to ensure that all hydrocarbons used during the Construction are appropriately handled, stored and disposed of in accordance with recognised standards. These measures will include:
  - Hazardous materials including diesel, fuel oils, solvents, paints and/or lubricants stored on site will be stored within suitably designed bunded areas with a bund volume of 110% of the capacity of the largest tank/container.
  - Re-fuelling of plant will not occur within 50m of any watercourse or surface water/groundwater feature. Drip trays will be used, and spill kits will be kept available;
  - Machinery used on site will be regularly inspected to ensure there is no leakage from them and to ensure the machinery will not cause contamination of watercourses;
  - Where required, fuel will be transported in a mobile, double skinned tank and a spill tray will be used when refuelling (if taking place outside a compound area);
  - Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or re-cycling;
  - Only emergency breakdown maintenance will be carried out on site. Emergency procedures and spillage kits will be readily available at strategic site locations and construction staff will be familiar with emergency procedures; and
  - Any spillage of fuels, lubricants of hydraulic oils will be immediately contained, with an appropriate emergent response put in place. Any contaminated soil will be removed from the site and properly disposed of.

6.6 Designated Sites

There is no direct impact on any European or National sites. No mitigation measures are specified.

6.7 Habitats and Flora

6.7.1 Habitat Loss/Alteration

Every effort should be made to retain all vegetation not directly impacted by the proposed development. Vegetation clearance of linear features such as hedgerows, no matter how limited, must be planned and carried out outside of the bird breeding season from 1st March to 31st August.

In general, no works shall be permitted to the mature treeline along the eastern boundary of the study area. This area will be fenced off at the outset of works in the adjacent working area and for the duration of the works in that area to avoid structural damage to the trunk, branches or root systems of the trees. These works will be in accordance with the requirements of BS 5837:2012. Temporary fencing (post and rail) will be erected at a sufficient distance from linear features so as to enclose the Root Protection Area (RPA) of the tree. In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees, or above the root flare for multi-stemmed trees).

Furthermore, the area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) will not be undertaken within 10m of any retained trees, hedgerows and treelines.

However, owing to the presence of underground services and the need to facilitate the pathways, there is a requirement to deviate approximately 1.8m at most from the existing path in the direction of the mature treeline at chainages 1+670 to 1+720, a distance of approximately 50 metres. The proposed deviation will not require the works to be undertaken within the mature canopy, but will likely be within the RPA in this area. Furthermore, if limited construction activities are required within the RPA, e.g. excavation work to tie into existing drainage features, then a qualified arborist will advise on the best methods for protecting the tree. For example, any excavation works carried out within the RPA will need to avoid damage to the protective bark covering larger roots. This may involve excavation by mini-digger and/or hand as deemed appropriate. Exposed roots will be wrapped in a hessian sacking to avoid desiccation and roots less than 2.5cm in diameter can be pruned back to a side root. The advice of a qualified arborist will be sought if larger roots that influence anchorage need to be severed. Any remedial works required to trees will be carried out by a qualified arborist.

The removal of juvenile/ landscaped trees on managed roadside verges along either side of Wellview Avenue will additionally take place in order to allow for a widened footpath. Their loss will be compensated for through the re-planting design as shown in Landscape Drawings, (**Appendix D**).

6.7.2 Protected Flora

No mitigation measures specified.

6.7.3 Invasive Alien Plant Species

The presence of invasive alien plant species has the potential to lead to an offence under the European Communities (Birds and Natural Habitats) Regulations 2011. Regulation 49 of the Regulations prohibits (unless under licence) the breeding, release, or allowing or causing the dispersal from confinement of any animal listed in the Third Schedule of the Regulations; or the planting, allowing or causing dispersal, and spreading of any plant listed in the Third Schedule.

It is an offence to plant or encourage the spread of any third schedule invasive species by moving contaminated soil from one place to another, or incorrectly handling and transporting contaminated material or plant cuttings. Persons must therefore take all reasonable steps and exercise due diligence to avoid committing an offence under the 2011 Regulations (as amended).

While no third schedule IAPS were recorded from the field surveys, scheduled invasive plants are known to grow within the zone of influence of the proposed development site and there is potential for these species to enter and spread throughout the proposed development site during construction either unwittingly or thought poor site practices.

6.7.3.1 Pre-construction

Fingal County Council and/or any Contractor appointed by FCC, must ensure that:

- A pre-construction survey (carried out by a suitably qualified ecologist (retained Ecologist) or invasive species specialist in the correct botanical season: e.g. April - September) shall be carried out in advance of construction activities; and
- Where a third schedule IAPS is recorded, no works shall be permitted within an exclusion zone advised by the specialist. An Invasive Species Management Plan (ISMP) shall be prepared as necessary and will include management protocols for dealing with occurrences of scheduled invasive species.

6.7.3.2 Construction

Where a scheduled invasive species is accidentally introduced or becomes established within the proposed development site during the construction phase, works shall be immediately halted, and an effective exclusion zone will be erected (minimum 7 m) until such time that a suitably qualified ecologist/invasive species specialist can assess the site(s) and implement the required management protocol (as set out in the ISMP).

To limit the potential for such occurrence, it is recommended that the appointed Contractor require that

- All machinery entering the site during construction activities shall be free from contamination with scheduled invasive plants, as far as is practical; and
- Material which are introduced to the site during the construction shall be free from scheduled invasive species, with certification of such.

6.8 Fauna

6.8.1 Badger

Several potential badger holes were identified within the ZOI of the proposed development, with one potential maternity sett noted (approximately 160m north west of the proposed attenuation ponds). Although the woodland habitat will not be removed during the construction or operation of the proposed development, there is potential for the construction works to disturb the badger sett if active, by virtue of proximity and alteration roaming territory including the presence of open excavations.

Notwithstanding this fact, badger(s) could establish new setts in the intervening period between site survey and commencement of construction of the proposed development. Precise mitigation measures for badger will be informed by a preconstruction badger survey prior to commencement of works to identify any setts and confirm the level of activity and breeding status of setts at that time.

The following measures are to be implemented:

- Prior to construction works commencing the Contractor will engage the services of a suitably qualified ecologist to conduct a pre-construction badger survey of the proposed development area, including habitat features within 50m of same;
- If an active sett is encountered, mitigation measures as outlined in national *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (NRA, 2005) will apply. In brief these are, but are not limited to:
  - During the breeding season (December to June inclusive) a clearly marked exclusion zone of 50m (or 150m where blasting or pile driving methodologies are employed) will be established around the active sett and no works should take place within this exclusion zone;
  - Outside of the breeding season (July – November inclusive) a clearly marked exclusion zone of 30m should be established around the active sett and no heavy machinery used within this exclusion zone. Lighter machinery (wheeled vehicles) should not be used within 20m of a sett entrance and light work such as digging by hand will not take place within 10m of a sett entrance;

- Any works in and around setts must be supervised/carried out by a suitably qualified and experienced ecologist;
- If the above detailed exclusion zones cannot be adhered to and disturbance to setts is deemed likely during construction works, then the local NPWS conservation ranger will be contacted. This may require an application for a "Letter of non-opposition" from the NPWS to exclude the sett during the construction phase. If required, any further mitigation measures required will follow those outlined in the *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (NRA, 2005) and will be agreed with the NPWS at the time of licence application.

6.8.2 Otter

No mitigation measures specified.

6.8.3 Bats

Although the majority of the proposed development was deemed to provide negligible potential for bat roosting, a semi-mature ash tree line marked for removal was deemed to have low roosting potential. Notwithstanding this, disturbance to commuting/foraging routes is possible during the construction and operational phase. There may be interference with commuting/foraging habitat for bats during the construction phase, possibly along the eastern boundary of the study area due to proximity of works and construction noises.

Artificial light creates a barrier for commuting bats so lighting should be avoided where possible. While most of the proposed development lands are already lit by Local Authority lighting, the proposed design calls for additional lighting columns for security purposes to be installed along the cycle path in the park along the eastern part of the proposed development. There may also be some construction lighting required or security lighting.

The following mitigation applies:

- The treeline marked for removal (alongside attenuation pond #1) will be 'soft-felled' under a watching brief of a trained ecologist. This is where tree limbs are cut and left grounded over night to allow any bats to make their way out. This should ideally be conducted in September/October, to avoid maternity and hibernation seasons when bats are most vulnerable to disturbance.

- In the unlikely event that bats are found on the proposed development sites during construction works, works will immediately cease in that area and the local NPWS conservation ranger will be contacted. The bats will be removed by hand by a suitably qualified bat surveyor, under licence from the NPWS.

- The bulk of the urban landscaping works where appropriate, including the reinstatement of linear planting features should be implemented in the first growing season post construction. Thus, the retained or existing mature urban landscape will provide some potential foraging and commuting routes for bats.

- In general, artificial light creates a barrier for commuting bats. However, the lack of vegetation along many parts of the proposed development coupled with the presence of street lighting cannot be avoided. Where new lighting is proposed, particularly near areas of linear vegetation features or treelines, directional lighting (i.e. lighting which is focussed on work areas and not nearby countryside) should be used to prevent overspill. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only. Lighting levels should be the minimum required for health and safety requirements, and vertical light spill at light sources should be below 3m to avoid identified or potential bat flight paths. The location and design of any new or additional lighting, if required shall be cognisant of the recent BCT (2018) guidance.

6.8.4 Other Mammals

No mitigation measures are specified for mammals such as Fox or rabbit.

If during the preconstruction survey or at any other time, a mammal is encountered, the appointed Contractor shall consult with the retained Ecologist for advice and recommended solution. This may require consultation with National Parks and Wildlife Service and/or application for a wildlife licence.

6.8.5 Avifauna

To limit the potential impact of construction on breeding birds, any vegetation removal/trimming (including individual trees, treelines and hedgerows) will not be permitted during the breeding bird season (1st March to 31st August inclusive). If this seasonal restriction cannot be accommodated, a suitably qualified ecologist will be required to confirm presence/absence of breeding birds prior to removal/trimming and seek a derogation licence from NPWS as necessary.

6.8.6 Amphibians and Reptiles

No mitigation measures specified.

6.8.7 Invertebrates

No mitigation measures specified.

6.8.8 Aquatic Environment

No mitigation measures specified.

6.9 Enhancement Opportunities

The National Biodiversity Action Plan 2017-2021 (DCHG, 2017) sets out key objectives to meet Irelands obligations to protect its biodiversity and halt the degradation of ecosystem services for future generations to come. Two objectives in this plan aim to '*Mainstream biodiversity into decision-making across all sectors'* and '*Strengthen the knowledge base for conservation, management, and sustainable use of biodiversity'.* These objectives detail actions to move towards no net loss of biodiversity and mainstreaming this throughout the planning process. No net loss of biodiversity in the planning and development industry follows the mitigation hierarchy to firstly avoid impacts on biodiversity, followed by actions to minimise. Compensation is treated as a last-resort under agreement with external decision-makers. Finally, if compensation within the footprint of the proposed development is not possible then biodiversity gains are offset.

Striving beyond No Net Loss of biodiversity, developments can allow for enhancement opportunities. This approach to developments leave biodiversity in a better state than before and is known as Biodiversity Net Gain. CIRIA, CIEEM and IEMA have developed key principles on good practice to achieve Biodiversity Net Gain (CIEEM, CIRIA, IEMA, 2016). This is completed by incorporating environmental enhancements into the design of developments and creating a net gain legacy so that stakeholders are engaged and contribute to the management of Biodiversity Net Gain going forward.

This is reinforced by biodiversity-themed objectives in the Fingal Development Plan 2017-2023 including:

Objective GI24

Ensure biodiversity conservation and/or enhancement measures, as appropriate, are included in all proposals for large scale development such as road or drainage schemes, wind farms, housing estates, industrial parks or shopping centres.

Objective NH03

Implement the Fingal Biodiversity Action Plan 2015 (Fingal County Council, 2010) *and any revisions thereof in partnership with all relevant stakeholders.*

Objective NH09

Support the National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, in the maintenance and, as appropriate, the achievement of favourable conservation status for the habitats and species in Fingal to which the Habitats Directive applies.

Objective NH27

Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management.

Objective NH52

Ensure that development reflects and reinforces the distinctiveness and sense of place of High Amenity areas, including the retention of important features or characteristics, taking into account the various elements which contribute to its distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity.

With that in mind however, and given the nature of the proposed development, which is in essence the enabling phase for the Church Fields Land Management Plan, a few practical recommendations are made in respect of the proposed development as there is:

1. limited loss or alteration of ecologically sensitive territory or species supporting habitat.

2. Many of the common positive measures that might be recommended could ultimately be lost through future development of the bulk of the Church Fields Lands.

Fingal County Council has recognised the need for biodiversity to be accommodated within the Church Fields Land Development Plan, which is a high-level concept for the study area. In terms of green infrastructure and biodiversity enhancements, the land management plan identifies key measures, which are applicable in the context of the proposed development, namely: the protection of the existing wooded ditch and the mature trees and established verge on Church Road.

The Local Authority will be coordinating future developments on the site including the development of the linear biodiversity park including additional water features that would be incorporated into the proposed attenuation pond for the proposed development. Notwithstanding this it is recommended that the following measures are incorporated into the construction phase of the proposed development:

- Avoidance of any works within/beneath the mature wooded area, or clearance of its understorey vegetation along the eastern boundary of the study area (Church Road). This follows on from map based objective #89 of the FDP 2017-2023, namely "*Protect the woodland along Church Road in tandem with the retention of scenic views to County Meath*" [This measures provides additional protection for archaeological features along Church Road namely Lady's Well and Mulhuddart Church and Cemetery, both of which have a zone of notification which extends into the linear wooded area, but not the proposed development;

- Reinstatement of urban landscaping to compensate for loss of removed planted trees; and

- Regreening of all drainage swales with suitable species, and consideration of inclusion of wetland species in permeant swales.

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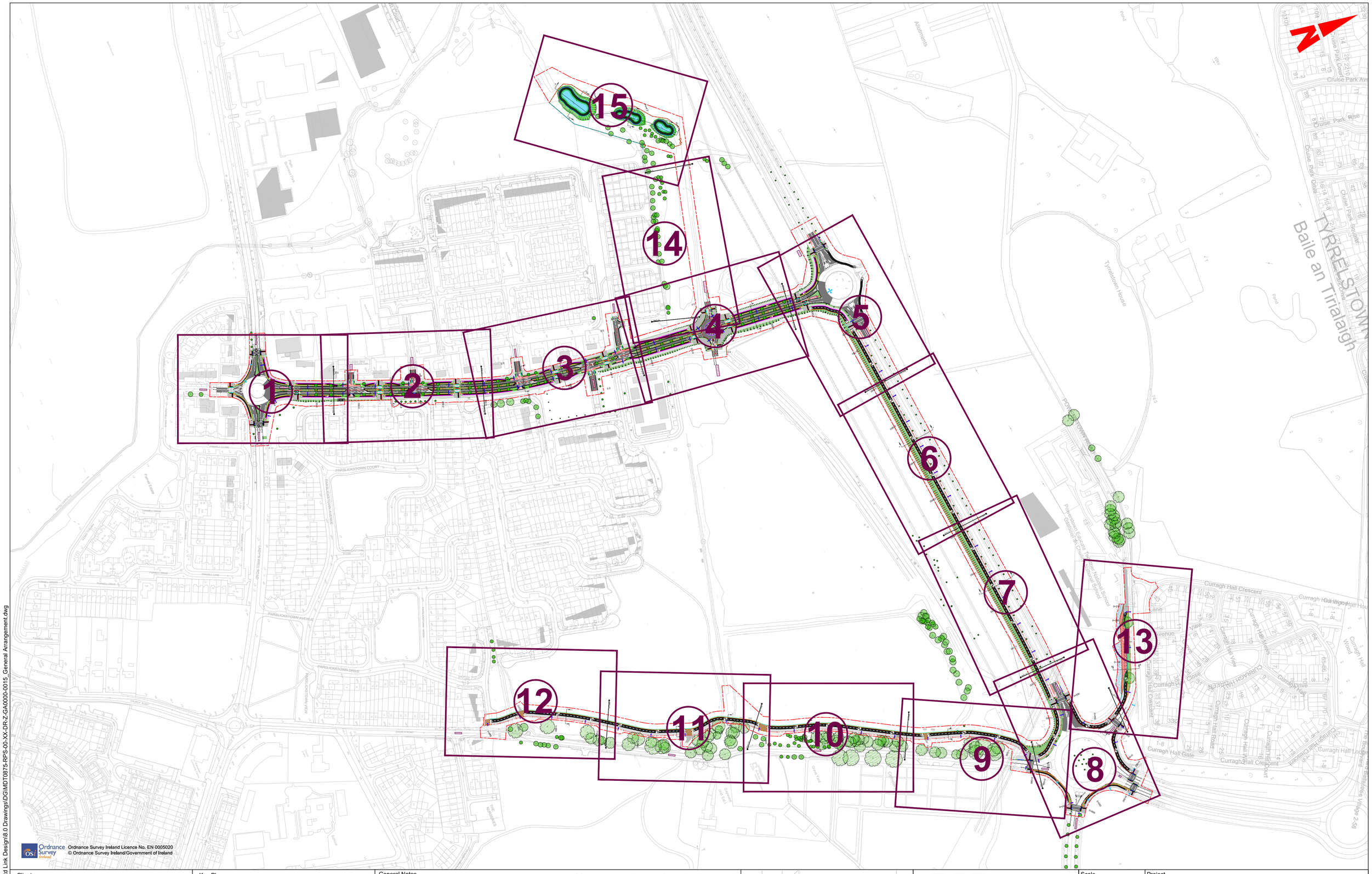
Appendix A
Proposed Development General Arrangement Drawings



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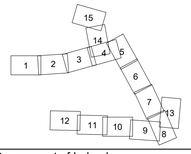
Fingal County Council

Key Plan



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Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
GENERAL ARRANGEMENT
KEY PLAN

File Identifier
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Status
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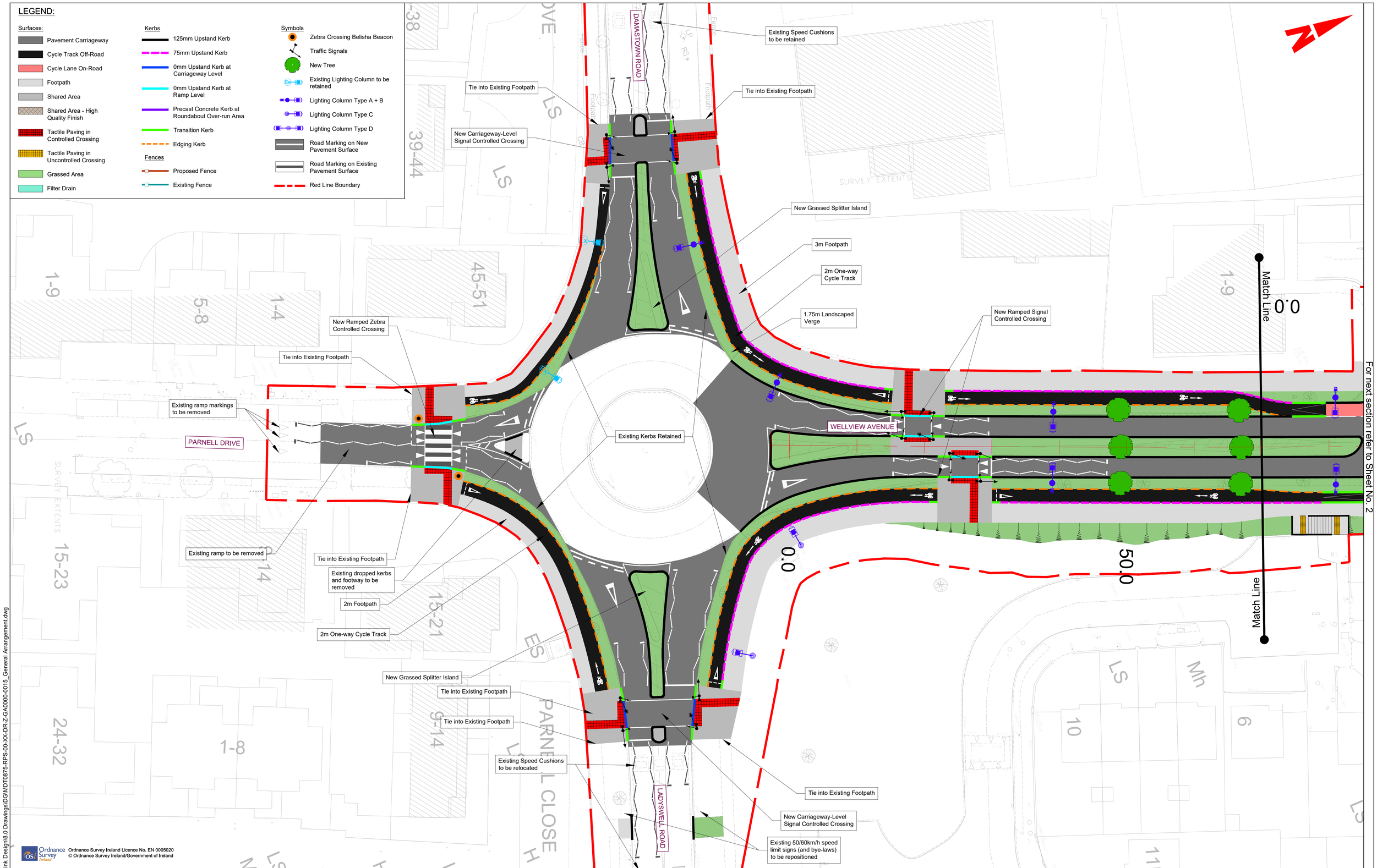

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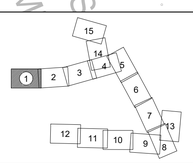

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CHURCH FIELDS LINK ROAD & CYCLE NETWORK

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GENERAL ARRANGEMENT

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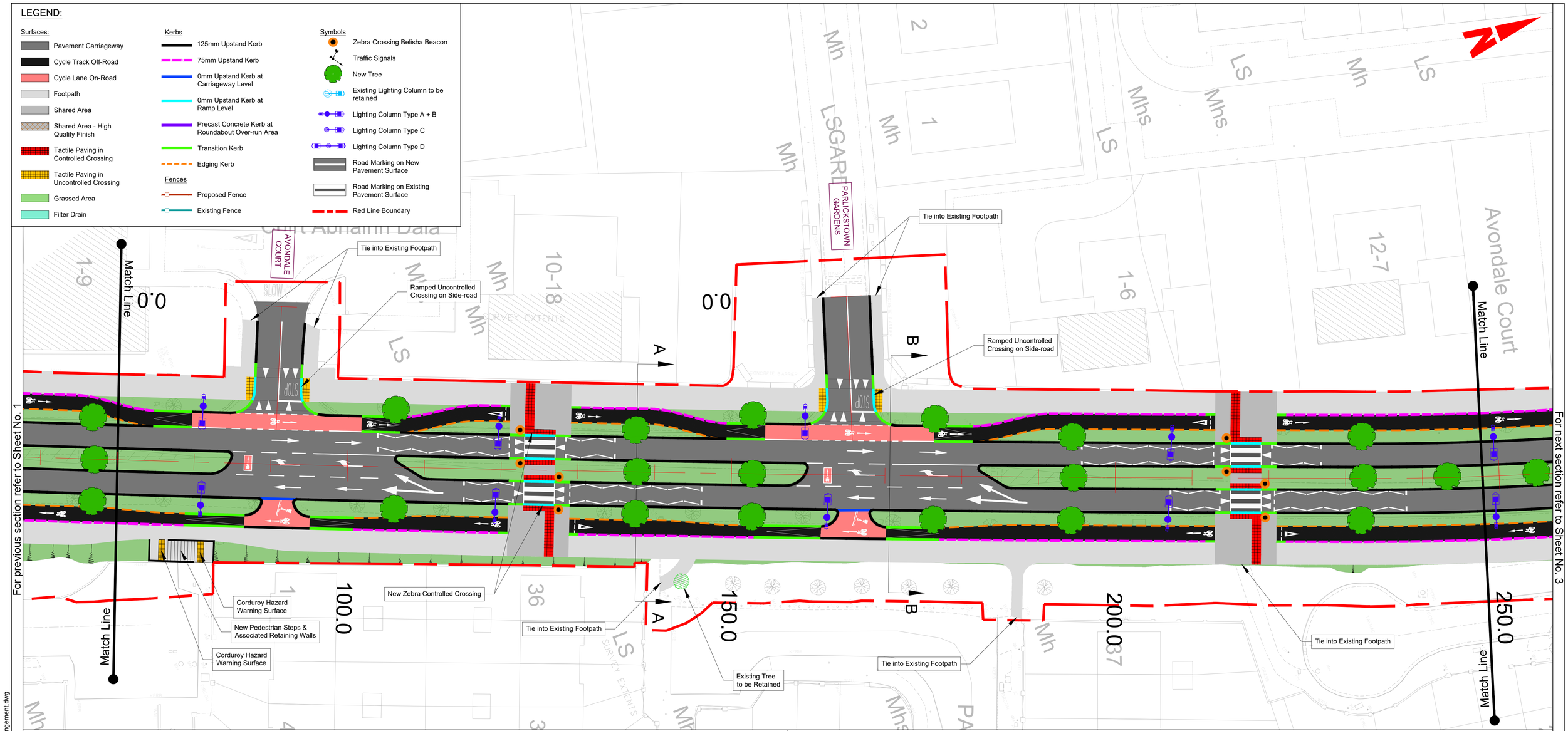

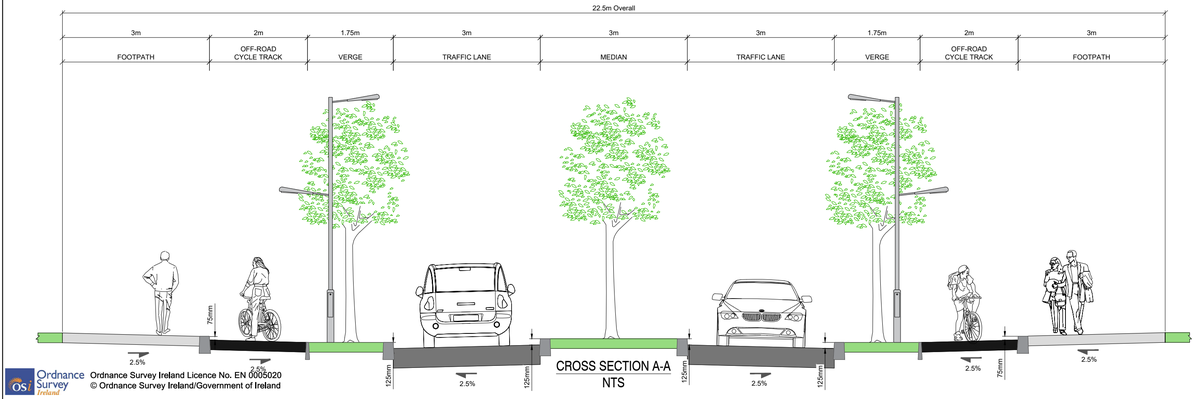

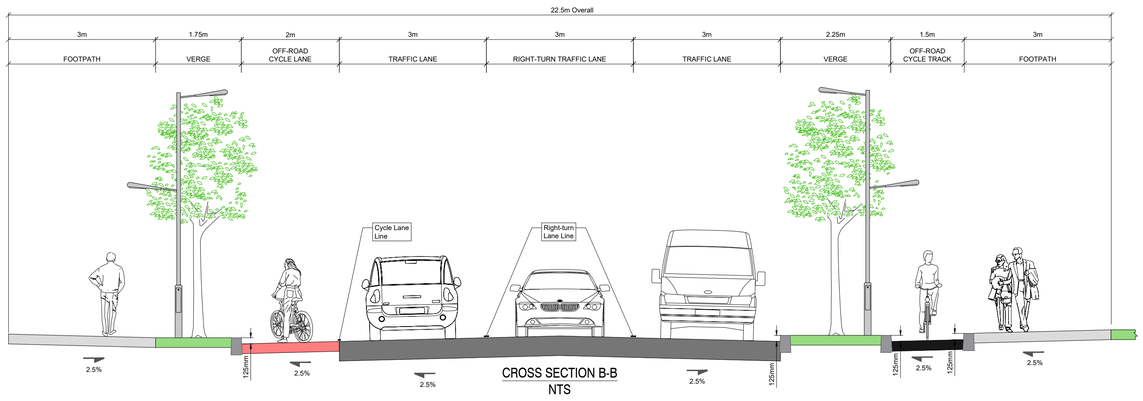

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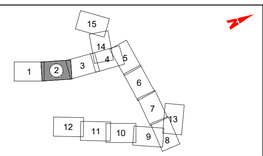

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Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title PART 8 PLANNING GENERAL ARRANGEMENT

File Identifier MDT0875-RPS-00-XX-DR-Z- GA0002

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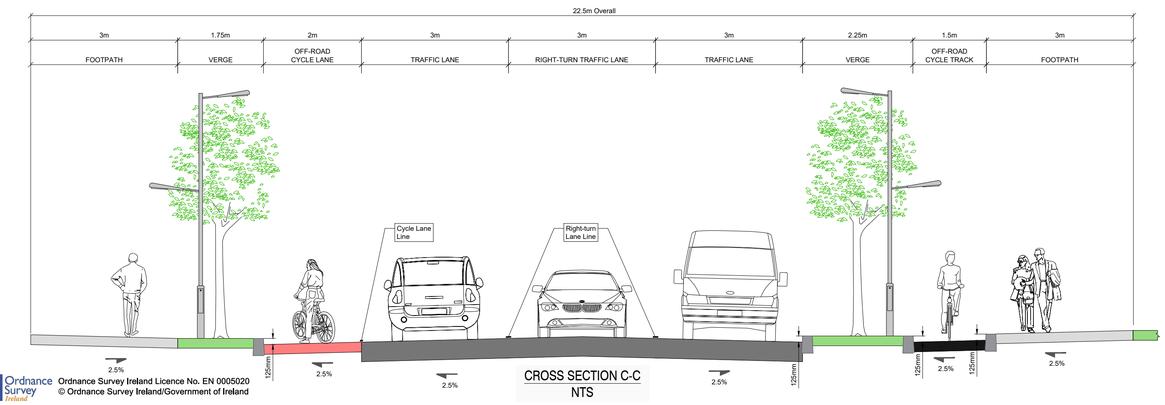
LEGEND:

Surfaces:
- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Tactile Paving in Controlled Crossing
- Tactile Paving in Uncontrolled Crossing
- Grassed Area
- Filter Drain

Kerbs
- 125mm Upstand Kerb
- 75mm Upstand Kerb
- 0mm Upstand Kerb at Carriageway Level
- 0mm Upstand Kerb at Ramp Level
- Precast Concrete Kerb at Roundabout Over-run Area
- Transition Kerb
- Edging Kerb

Fences
- Proposed Fence
- Existing Fence

Symbols
- Zebra Crossing Belisha Beacon
- Traffic Signals
- New Tree
- Existing Lighting Column to be retained
- Lighting Column Type A + B
- Lighting Column Type C
- Lighting Column Type D
- Road Marking on New Pavement Surface
- Road Marking on Existing Pavement Surface
- Red Line Boundary



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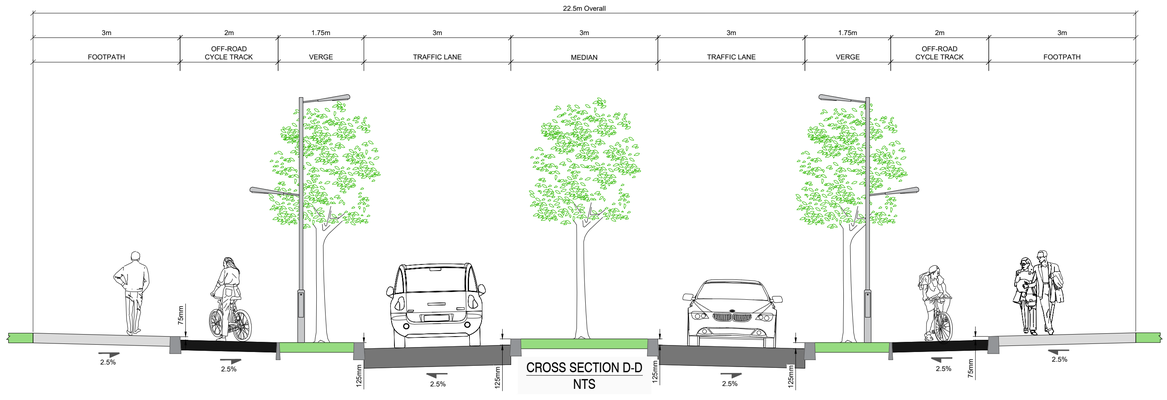

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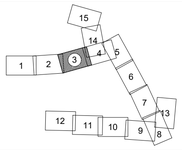

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Status S4

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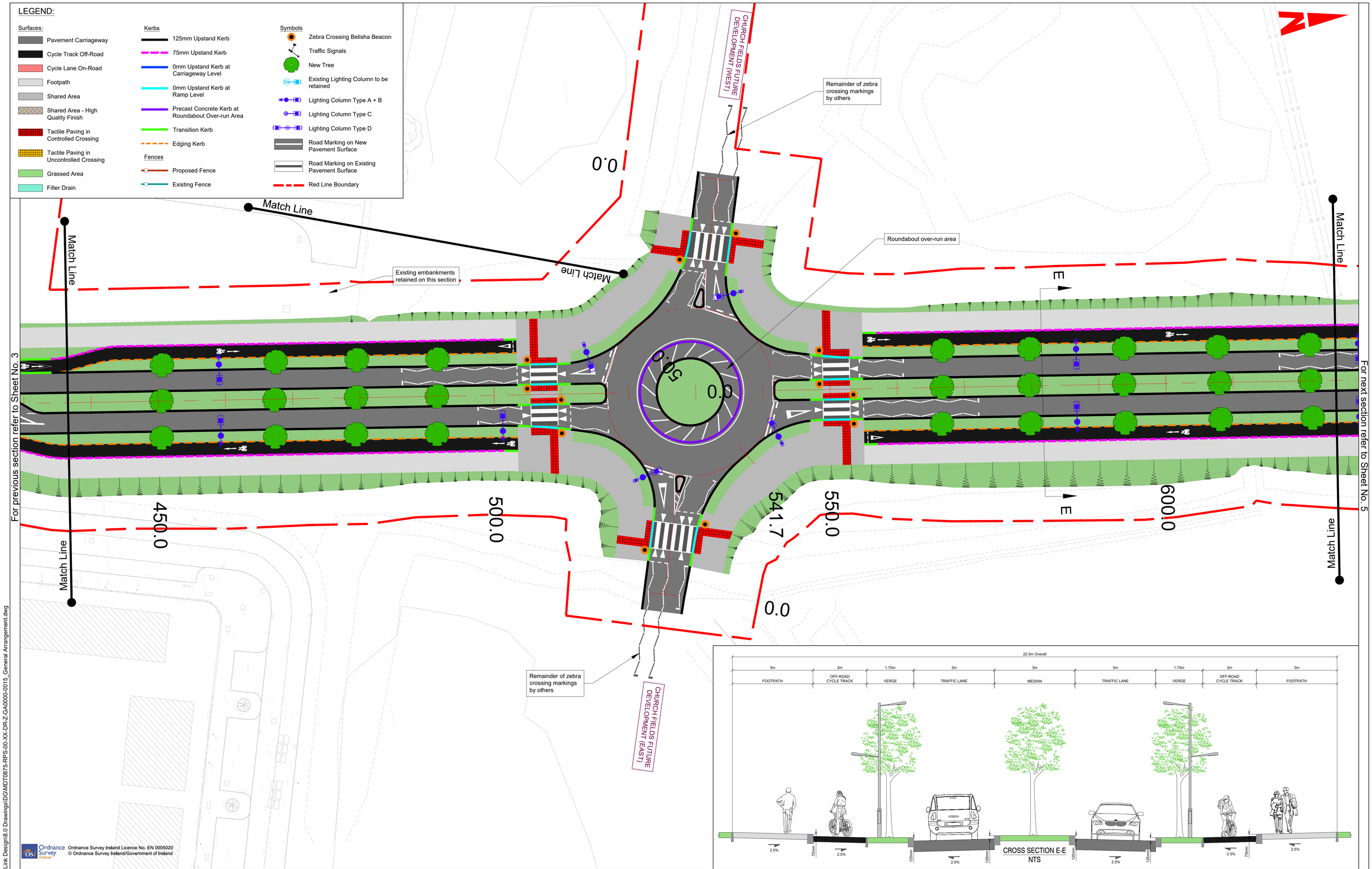
LEGEND:

Surfaces:
- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Tactile Paving in Controlled Crossing
- Tactile Paving in Uncontrolled Crossing
- Grassed Area
- Filter Drain

Kerbs
- 125mm Upstand Kerb
- 75mm Upstand Kerb
- 0mm Upstand Kerb at Carriageway Level
- 0mm Upstand Kerb at Ramp Level
- Precast Concrete Kerb at Roundabout Over-run Area
- Transition Kerb
- Edging Kerb

Fences
- Proposed Fence
- Existing Fence

Symbols
- Zebra Crossing Belisha Beacon
- Traffic Signals
- New Tree
- Existing Lighting Column to be retained
- Lighting Column Type A + B
- Lighting Column Type C
- Lighting Column Type D
- Road Marking on New Pavement Surface
- Road Marking on Existing Pavement Surface
- Red Line Boundary



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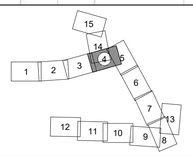
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Rev	Date	Drn / Chk	Amendment / Issue	App
P03	07.02.20	MOD / SF	ISSUED FOR PLANNING	MN
P02	29.01.20	JL / SF	ISSUED FOR PLANNING	MN
P01	29.11.19	MOD / SF	ISSUED FOR PLANNING	MN

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Model File Identifier

Scale
1:250 @ A1
1:500 @ A3

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NOV. '19

Sheet
4 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
GENERAL ARRANGEMENT

File Identifier
MDT0875-RPS-00-XX-DR-Z- GA0004

Status
S4

Rev
P03

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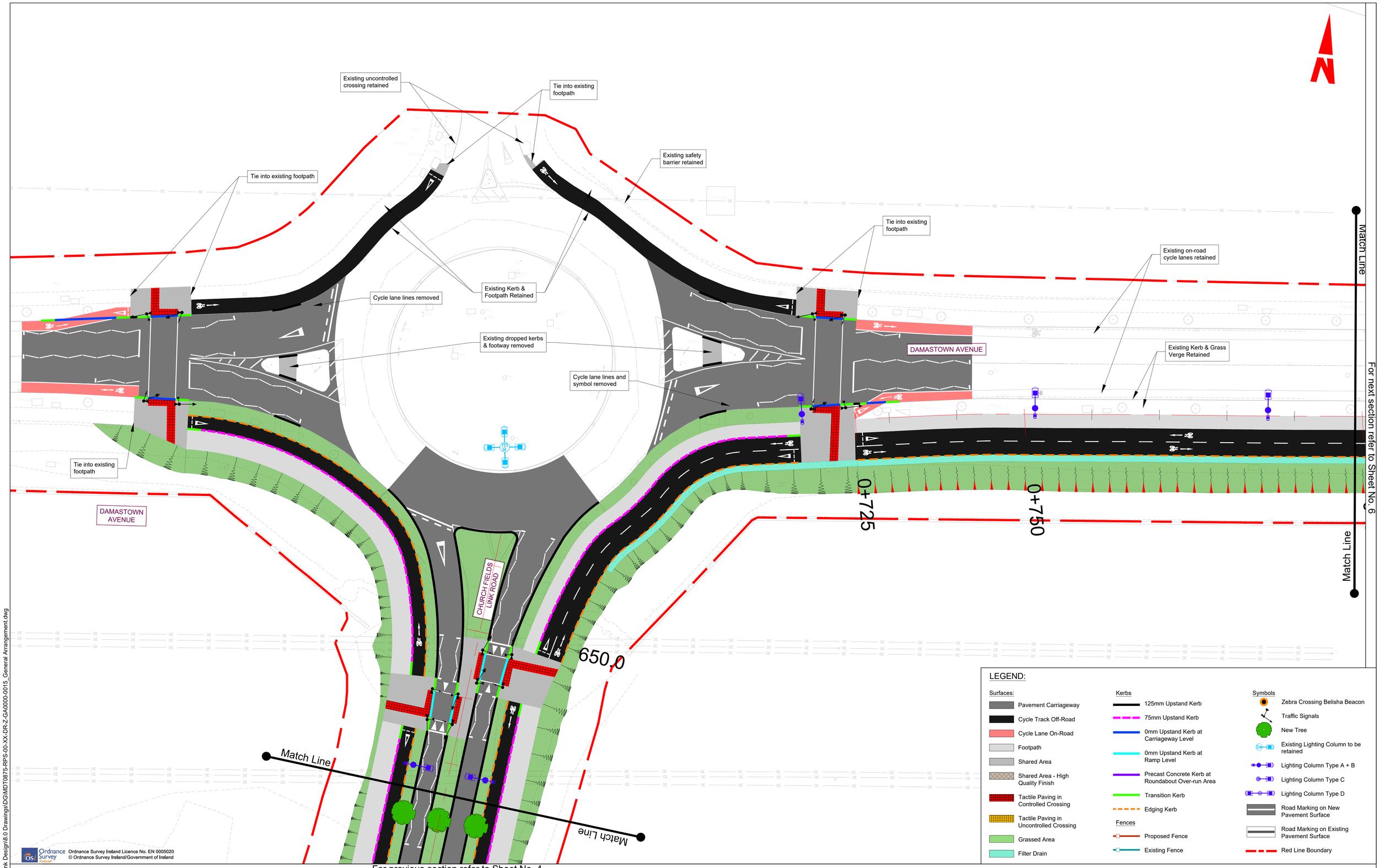
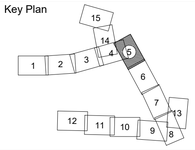


For previous section refer to Sheet No. 4

Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

Scale 1:250 @ A1 1:500 @ A3

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Sheet 5 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title PART 8 PLANNING GENERAL ARRANGEMENT

File Identifier MDT0875-RPS-00-XX-DR-Z- GA0005

Status S4

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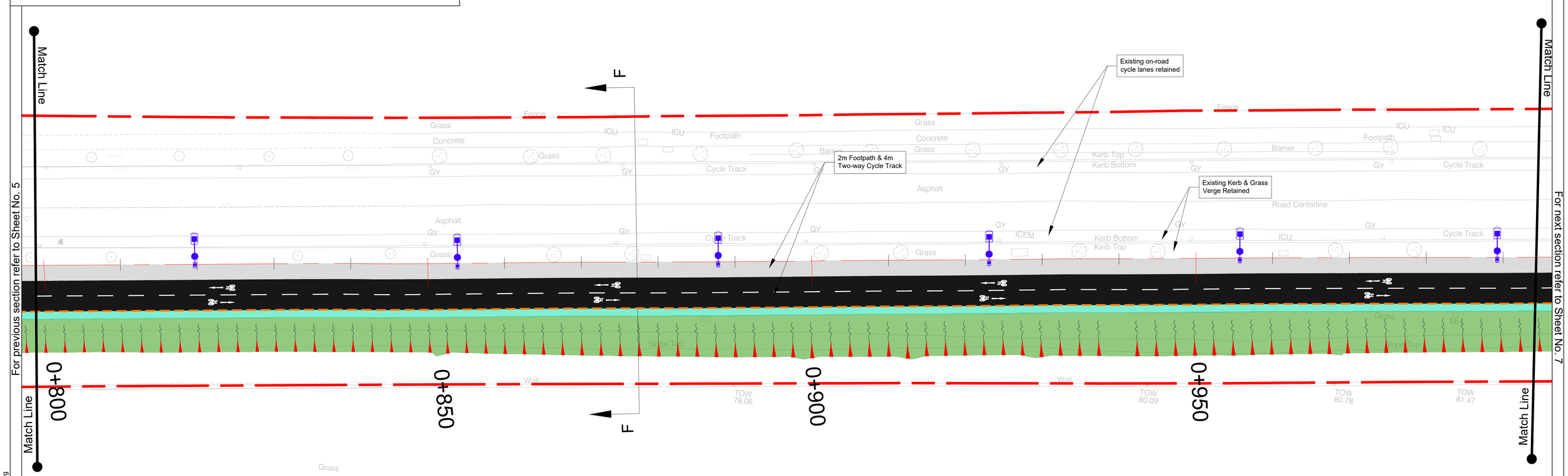
LEGEND:

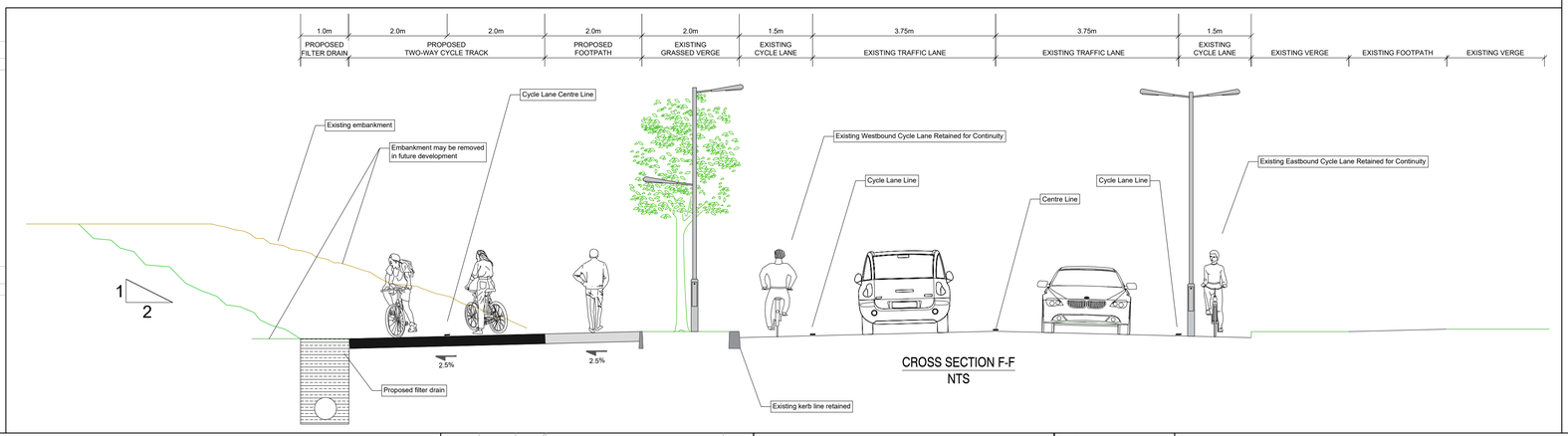
Surfaces:
- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Tactile Paving in Controlled Crossing
- Tactile Paving in Uncontrolled Crossing
- Grassed Area
- Filter Drain

Kerbs
- 125mm Upstand Kerb
- 75mm Upstand Kerb
- 0mm Upstand Kerb at Carriageway Level
- 0mm Upstand Kerb at Ramp Level
- Precast Concrete Kerb at Roundabout Over-run Area
- Transition Kerb
- Edging Kerb

Fences
- Proposed Fence
- Existing Fence

Symbols
- Zebra Crossing Belisha Beacon
- Traffic Signals
- New Tree
- Existing Lighting Column to be retained
- Lighting Column Type A + B
- Lighting Column Type C
- Lighting Column Type D
- Road Marking on New Pavement Surface
- Road Marking on Existing Pavement Surface
- Red Line Boundary





CROSS SECTION F-F
NTS

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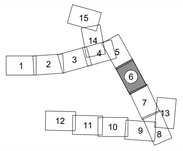
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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P03	07.02.20	MOD / SF	ISSUED FOR PLANNING	MN
P02	29.01.20	JL / SF	ISSUED FOR PLANNING	MN
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Scale
1:250 @ A1
1:500 @ A3

Created on
NOV. '19

Sheet
6 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
GENERAL ARRANGEMENT

File Identifier
MDT0875-RPS-00-XX-DR-Z- GA0006

Status
S4

Rev
P03

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LEGEND:

Surfaces:
- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Tactile Paving in Controlled Crossing
- Tactile Paving in Uncontrolled Crossing
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- Filter Drain

Kerbs
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Fences
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- Lighting Column Type D
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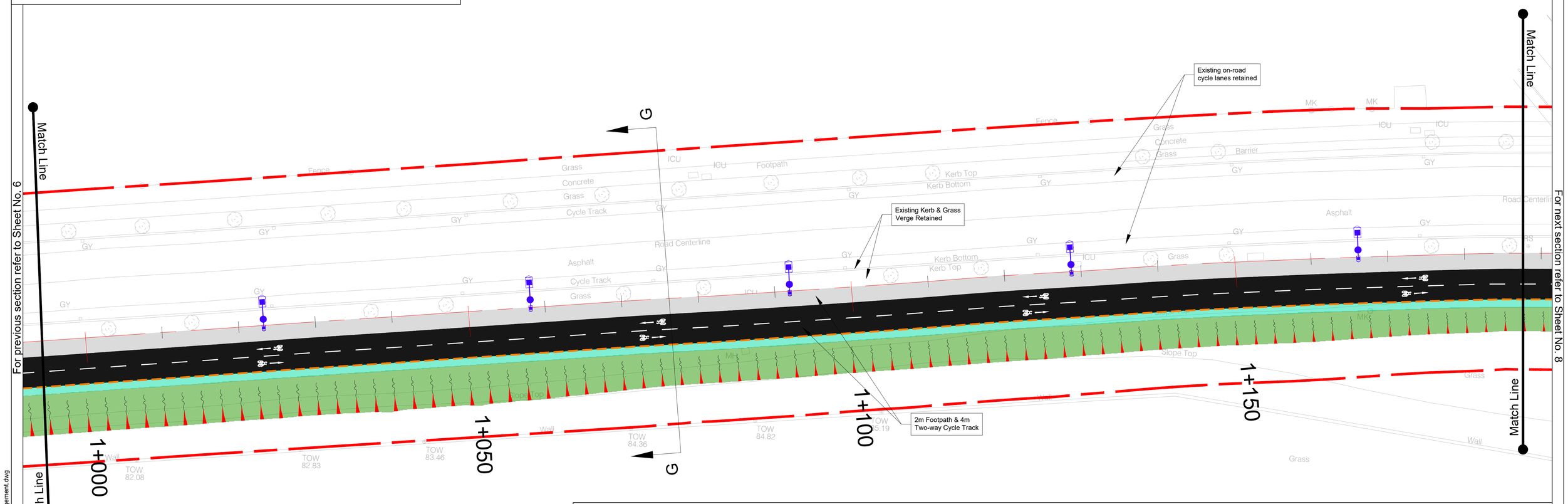
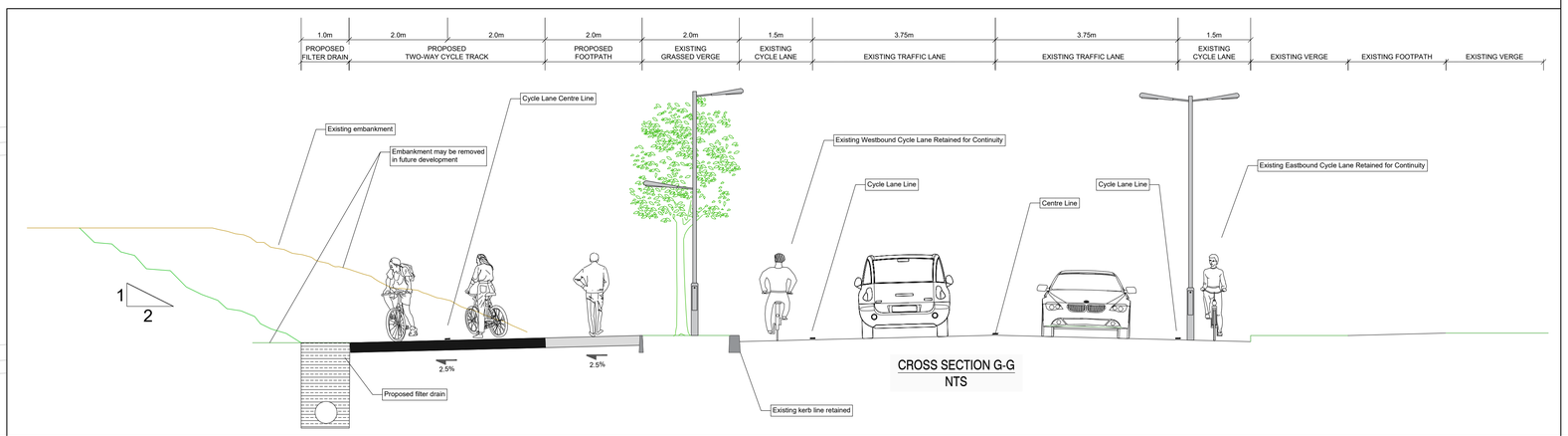
- Road Marking on Existing Pavement Surface
- Red Line Boundary





CROSS SECTION G-G
NTS

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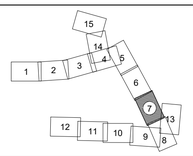
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

Scale: 1:250 @ A1, 1:500 @ A3

Created on: NOV. '19

Sheet: 7 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: PART 8 PLANNING GENERAL ARRANGEMENT

File Identifier: MDT0875-RPS-00-XX-DR-Z- GA0007

Status: S4

Rev: P03

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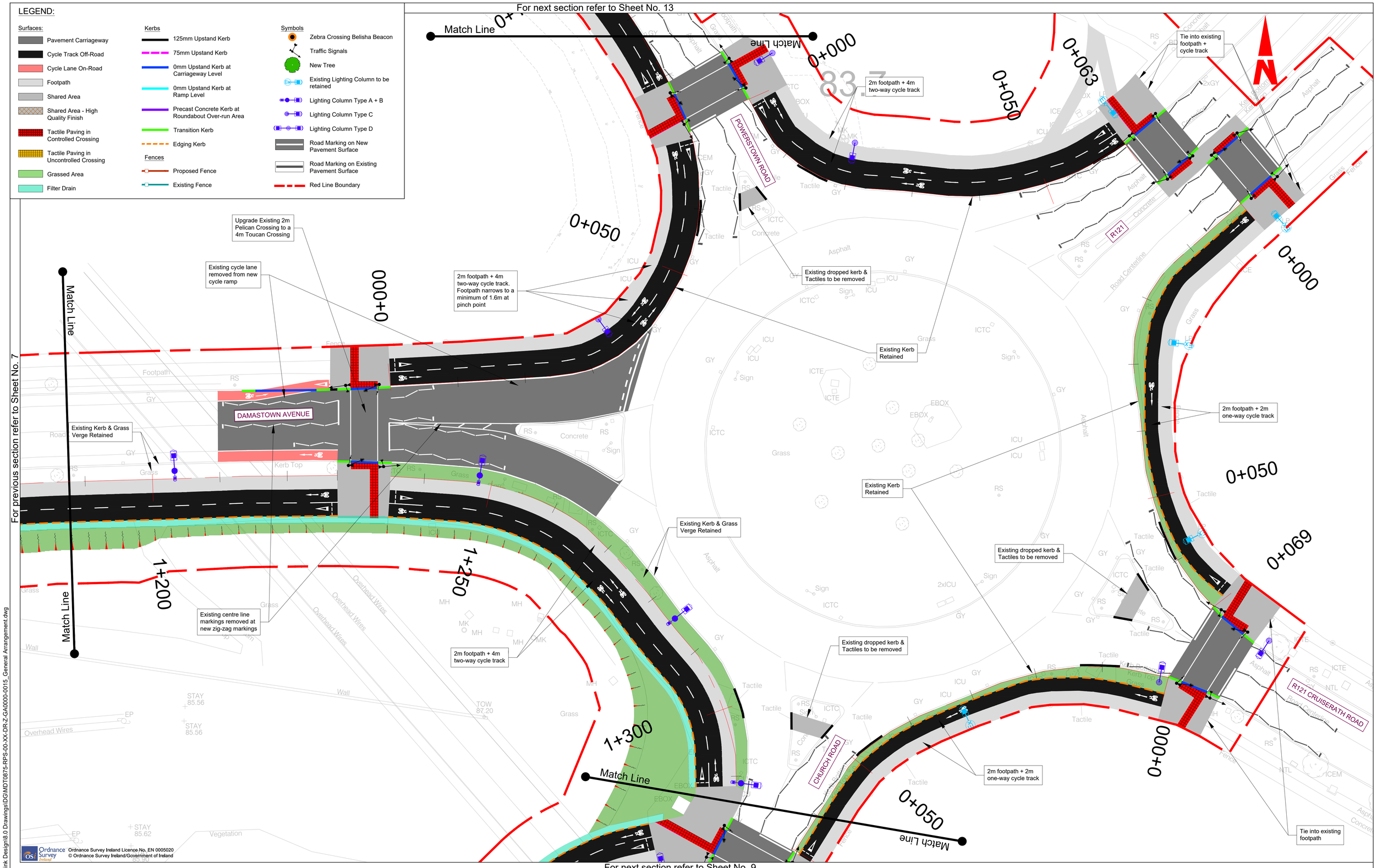
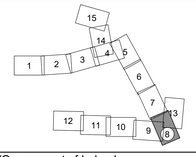


Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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P03	07.02.20	MOD / SF	ISSUED FOR PLANNING	MN
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Model File Identifier

Scale	Project
1:250 @ A1 1:500 @ A3	CHURCH FIELDS LINK ROAD & CYCLE NETWORK
Created on: NOV. '19	Title: PART 8 PLANNING GENERAL ARRANGEMENT
Sheet: 8 of 15	

File Identifier	Status	Rev
MDT0875-RPS-00-XX-DR-Z- GA0008	S4	P03

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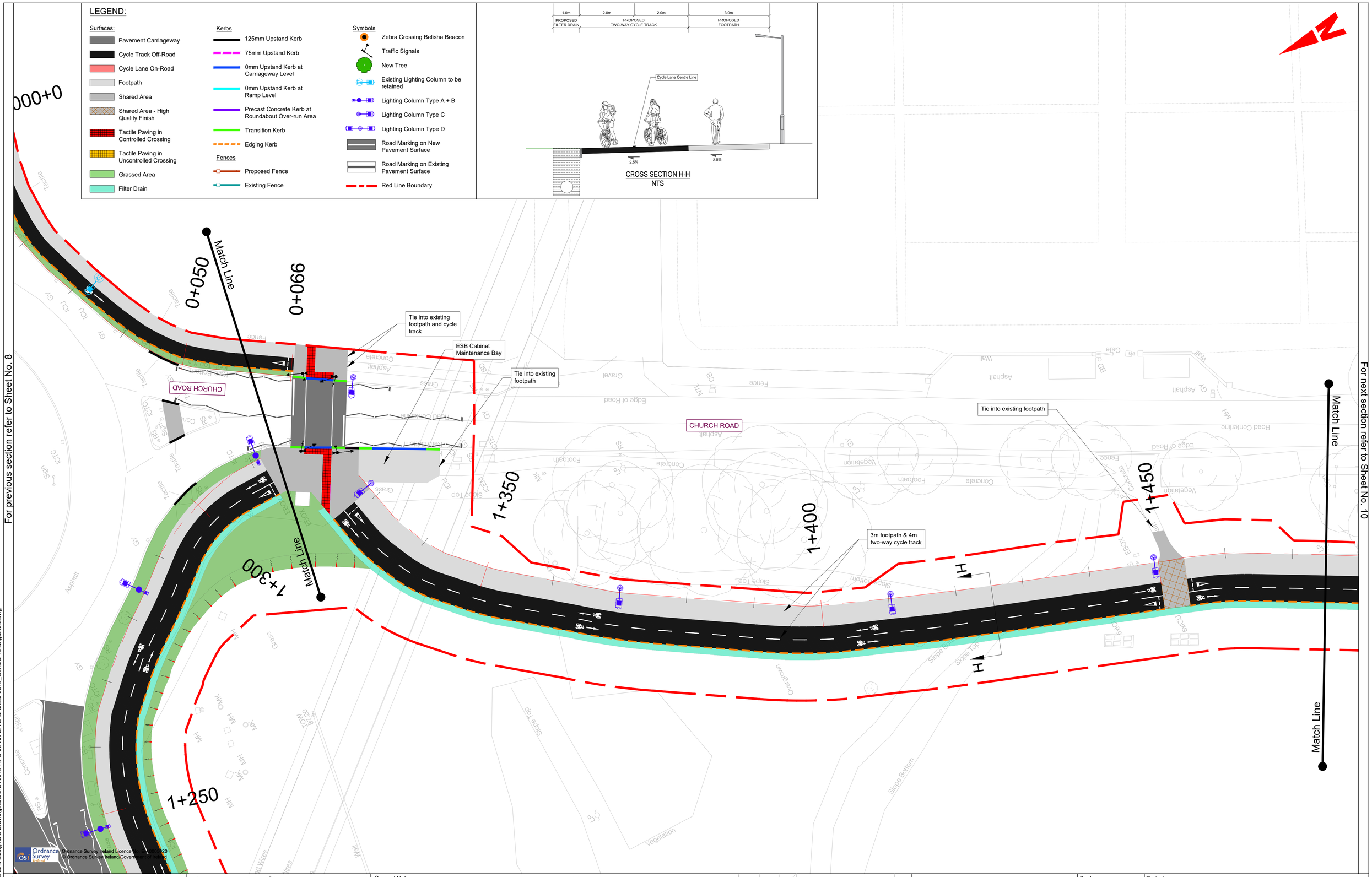

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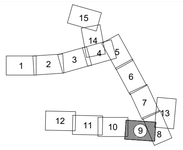
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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P03	07.02.20	MOD / SF	ISSUED FOR PLANNING	MN
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P01	29.11.19	MOD / SF	ISSUED FOR PLANNING	MN

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Model File Identifier

Scale
1:250 @ A1
1:500 @ A3

Created on
NOV. '19

Sheet
9 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
GENERAL ARRANGEMENT

File Identifier
MDT0875-RPS-00-XX-DR-Z- GA0009

Status
S4

Rev
P03

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LEGEND:

Surfaces:
- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Tactile Paving in Controlled Crossing
- Tactile Paving in Uncontrolled Crossing
- Grassed Area
- Filter Drain

Kerbs
- 125mm Upstand Kerb
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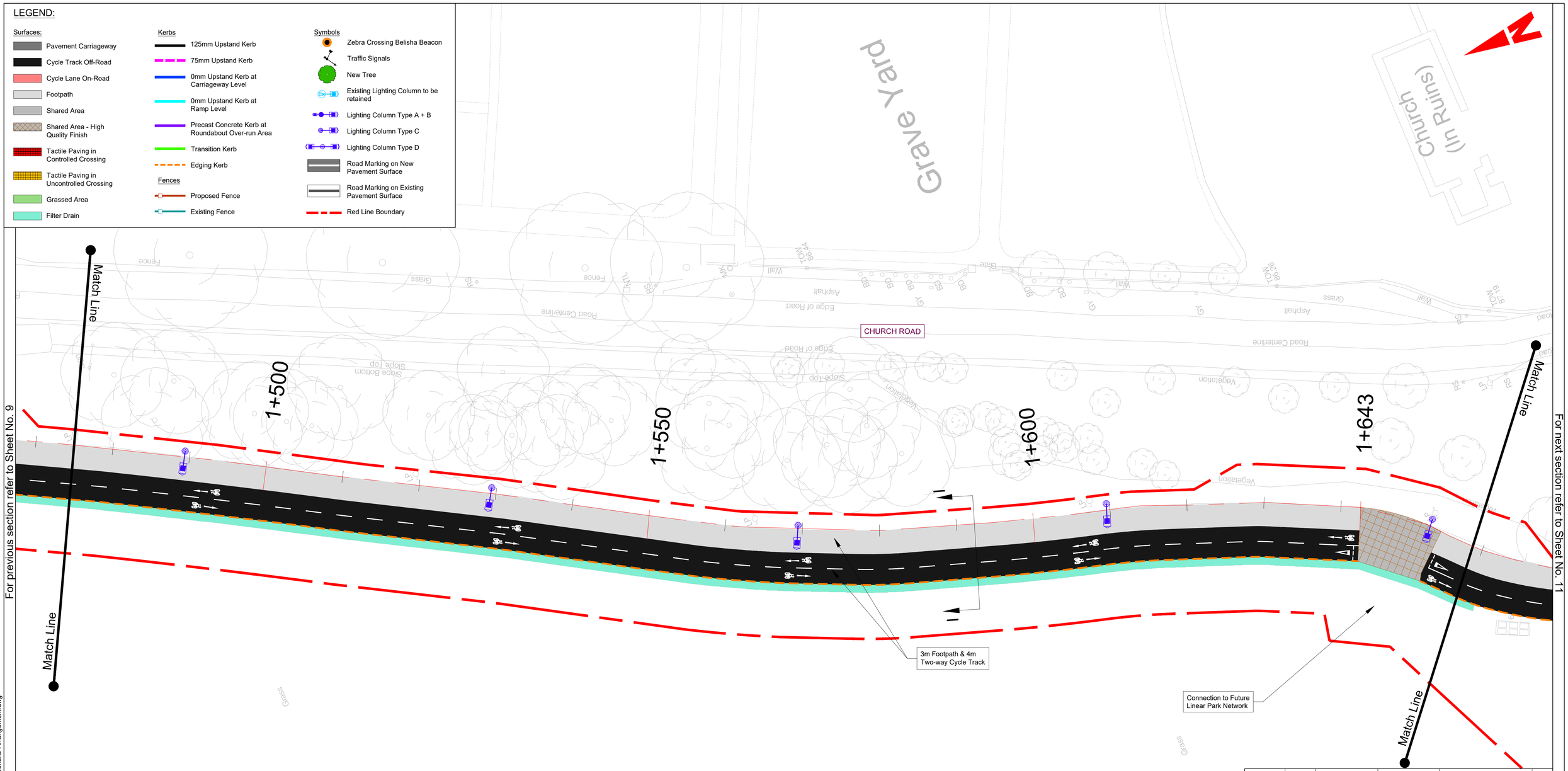
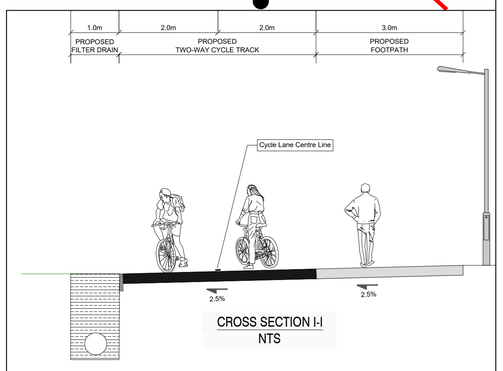
- Red Line Boundary





CROSS SECTION I-I
NTS

For previous section refer to Sheet No. 9

For next section refer to Sheet No. 11

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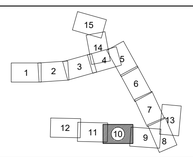
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Rev	Date	Drn Chk	Amendment / Issue	App
P03	07.02.20	MOD SF	ISSUED FOR PLANNING	MN
P02	29.01.20	JI SF	ISSUED FOR PLANNING	MN
P01	29.11.19	MOD SF	ISSUED FOR PLANNING	MN

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Model File Identifier

Scale
1:250 @ A1
1:500 @ A3

Created on
NOV. '19

Sheet
10 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
GENERAL ARRANGEMENT

File Identifier
MDT0875-RPS-00-XX-DR-Z- GA0010

Status
S4

Rev
P03

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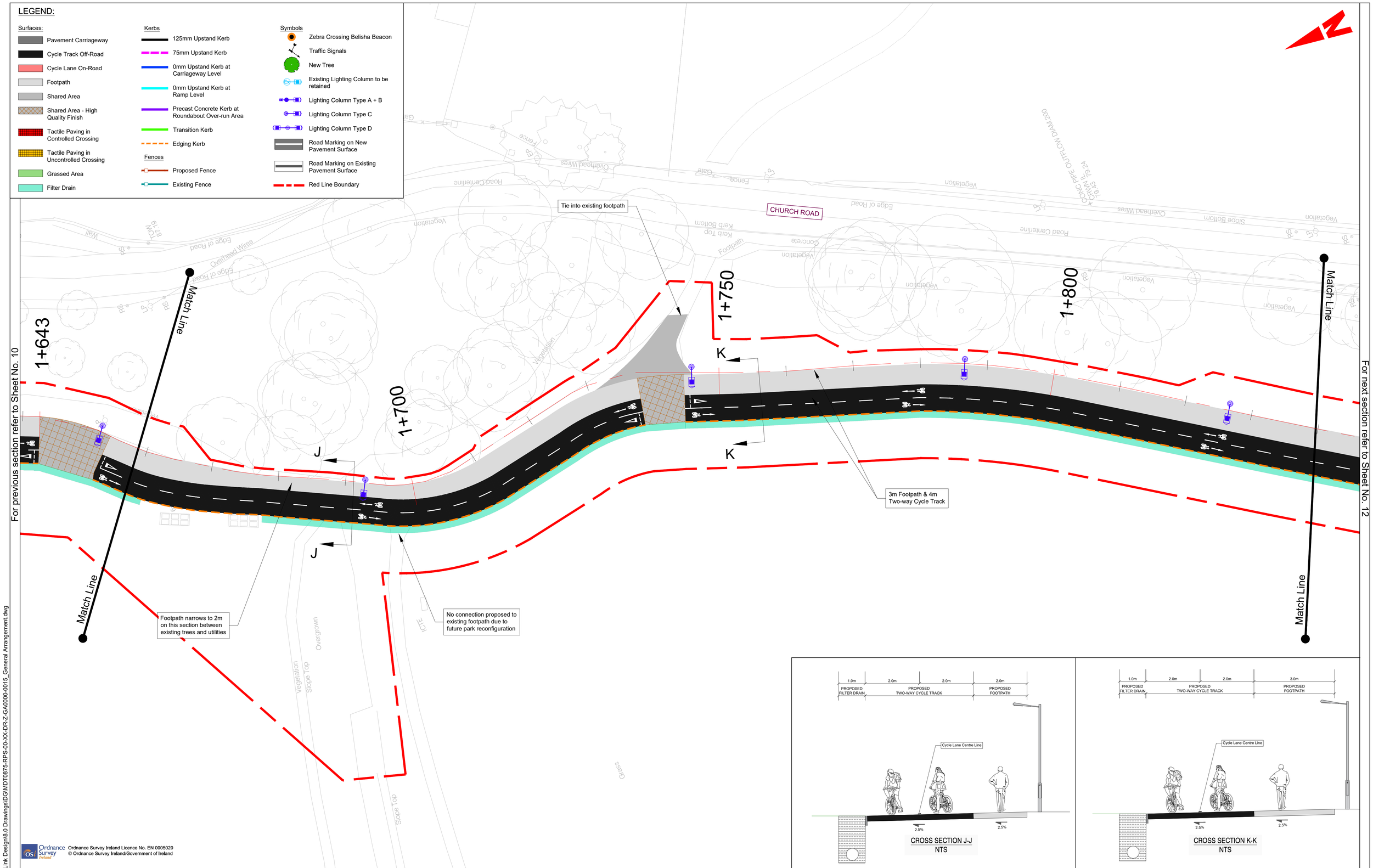
LEGEND:

Surfaces:
- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Tactile Paving in Controlled Crossing
- Tactile Paving in Uncontrolled Crossing
- Grassed Area
- Filter Drain

Kerbs
- 125mm Upstand Kerb
- 75mm Upstand Kerb
- 0mm Upstand Kerb at Carriageway Level
- 0mm Upstand Kerb at Ramp Level
- Precast Concrete Kerb at Roundabout Over-run Area
- Transition Kerb
- Edging Kerb

Fences
- Proposed Fence
- Existing Fence

Symbols
- Zebra Crossing Belisha Beacon
- Traffic Signals
- New Tree
- Existing Lighting Column to be retained
- Lighting Column Type A + B
- Lighting Column Type C
- Lighting Column Type D
- Road Marking on New Pavement Surface
- Road Marking on Existing Pavement Surface
- Red Line Boundary



CROSS SECTION J-J
NTS

CROSS SECTION K-K
NTS

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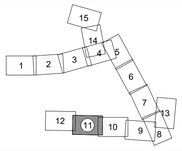
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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1:250 @ A1
1:500 @ A3

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NOV. '19

Sheet
11 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
GENERAL ARRANGEMENT

File Identifier
MDT0875-RPS-00-XX-DR-Z- GA0011

Status
S4

Rev
P03

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For previous section refer to Sheet No. 11

Match Line

1+850

1+900

1+950

1+989

L

L

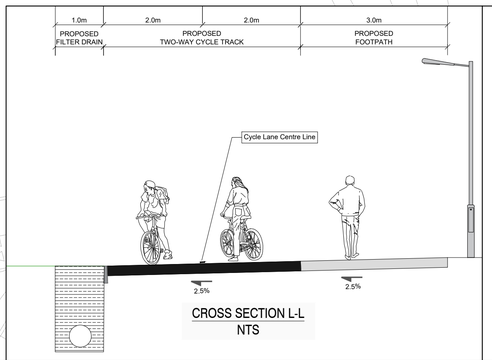
3m Footpath & 4m
Two-way Cycle Track

Tie into existing footpath

Tie into existing footpath

CHURCH ROAD

BM 70.39



CROSS SECTION L-L
NTS

LEGEND:

Surfaces:

- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Tactile Paving in Controlled Crossing
- Tactile Paving in Uncontrolled Crossing
- Grassed Area
- Filter Drain

Kerbs

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- Existing Fence

Symbols

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- Road Marking on Existing Pavement Surface
- Red Line Boundary

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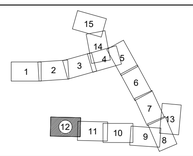
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Sheet
12 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
GENERAL ARRANGEMENT

File Identifier
MDT0875-RPS-00-XX-DR-Z- GA0012

Status
S4

Rev
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LEGEND:

Surfaces:
- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Tactile Paving in Controlled Crossing
- Tactile Paving in Uncontrolled Crossing
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- Filter Drain

Kerbs
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- 0mm Upstand Kerb at Ramp Level
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Fences
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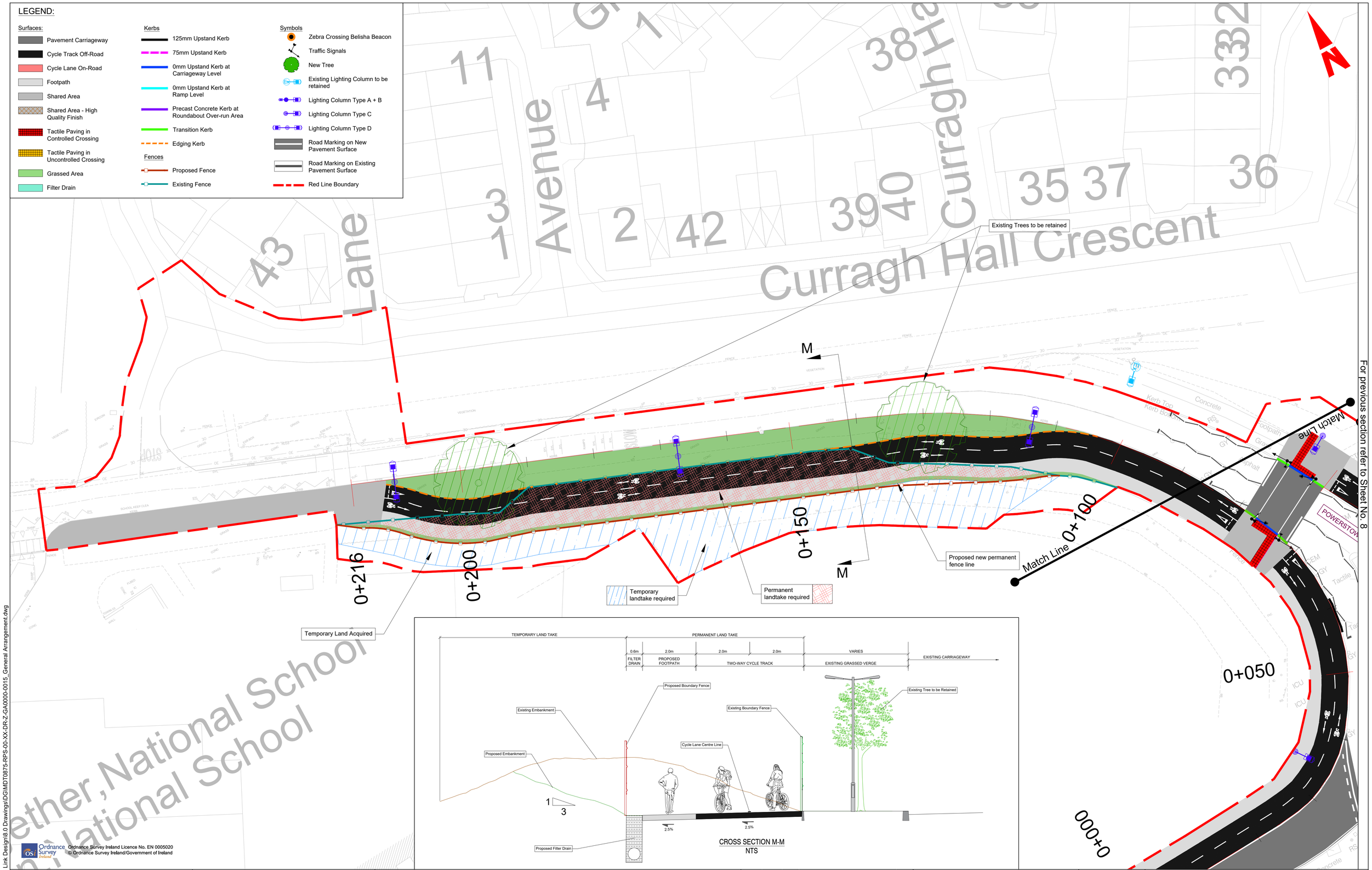
- Road Marking on Existing Pavement Surface
- Red Line Boundary



For previous section refer to Sheet No. 8

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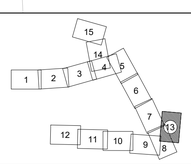
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

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Sheet 13 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title PART 8 PLANNING GENERAL ARRANGEMENT

File Identifier MDT0875-RPS-00-XX-DR-Z- GA0013

Status S4

Rev P03

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For next section refer to Sheet No. 15

Match Line

STAY 66.30

STAY 66.55

Vegetation

Slope Bottom

MH

Asphalt

Slope Top

CHURCH FIELDS FUTURE DEVELOPMENT (WEST)

0.0

Vegetation

Slope Top

Slope Top

Slope Bottom

Overgrown

Vegetation

Grass

Overgrown

Vegetation

AREA UNDER CONSTRUCTION

Match Line

Match Line

Match Line

For previous section refer to Sheet No. 4

LEGEND:

Surfaces:

- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Tactile Paving in Controlled Crossing
- Tactile Paving in Uncontrolled Crossing
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- Filter Drain

Kerbs

- 125mm Upstand Kerb
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- Transition Kerb
- Edging Kerb

Fences

- Proposed Fence
- Existing Fence

Symbols

- Zebra Crossing Belisha Beacon
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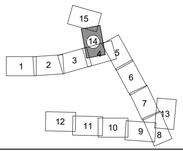
- Road Marking on Existing Pavement Surface
- Red Line Boundary

Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

Scale
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1:500 @ A3

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Sheet
14 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
GENERAL ARRANGEMENT

File Identifier
MDT0875-RPS-00-XX-DR-Z- GA0014

Status
S4

Rev
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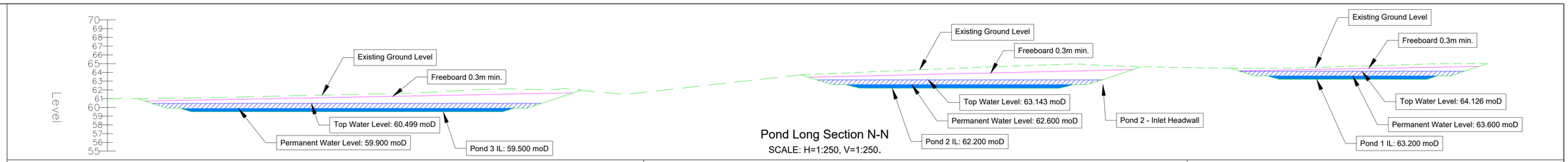

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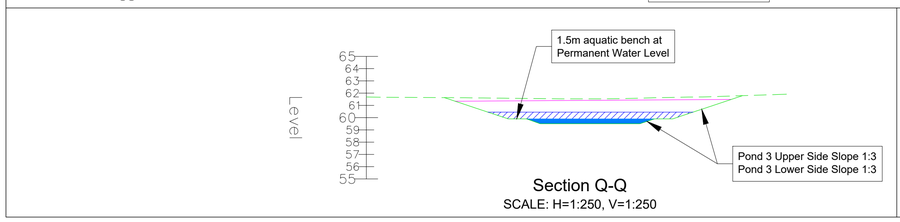

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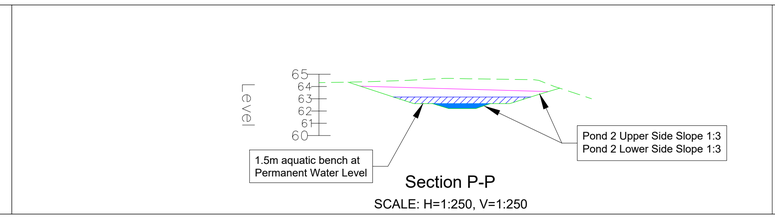

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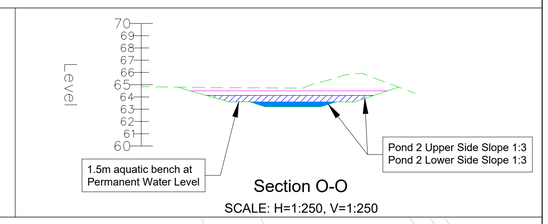

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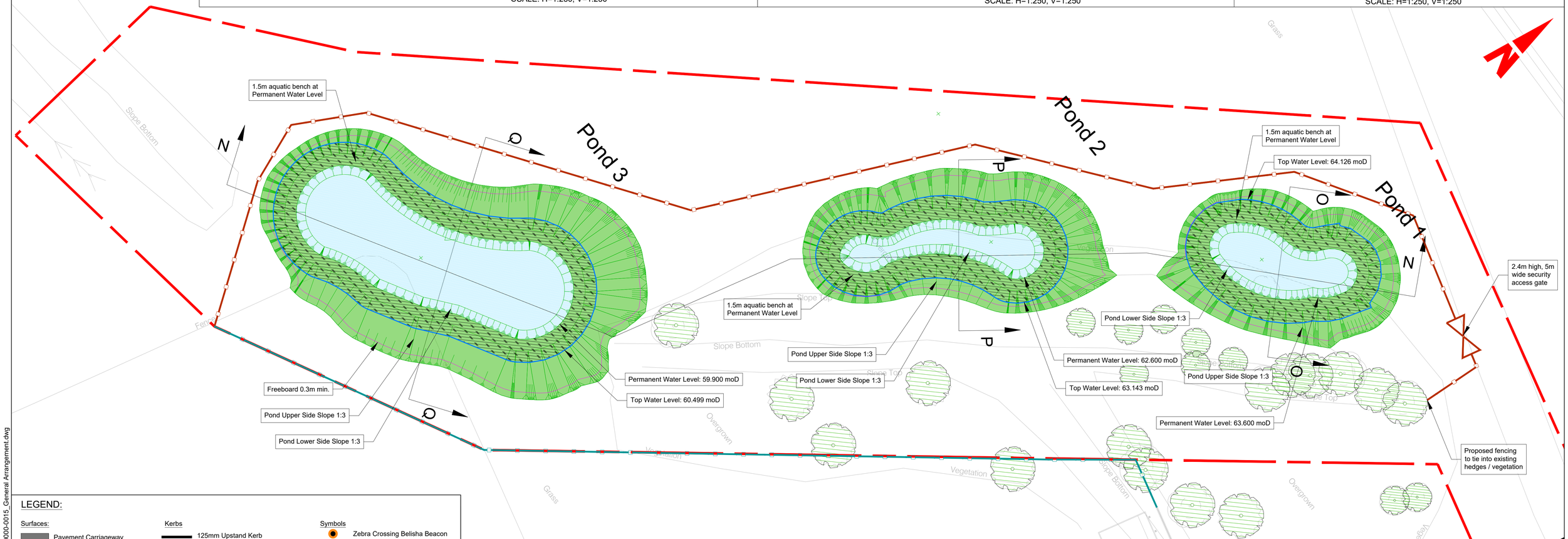

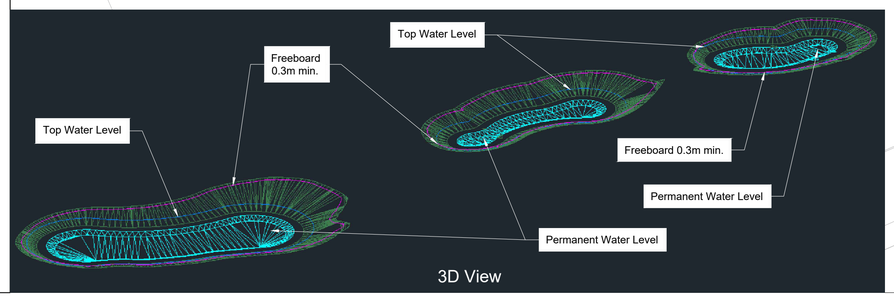

LEGEND:

Surfaces:
- Pavement Carriageway
- Cycle Track Off-Road
- Cycle Lane On-Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
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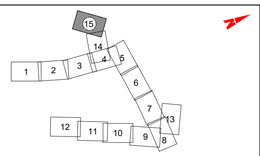
- Red Line Boundary

For previous section refer to Sheet No. 14

Client
Comhairle Contae Fhine Gall
Fingal County Council



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Sheet 15 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK
Title: PART 8 PLANNING GENERAL ARRANGEMENT

File Identifier: MDT0875-RPS-00-XX-DR-Z- GA0015
Status: S4
Rev: P03

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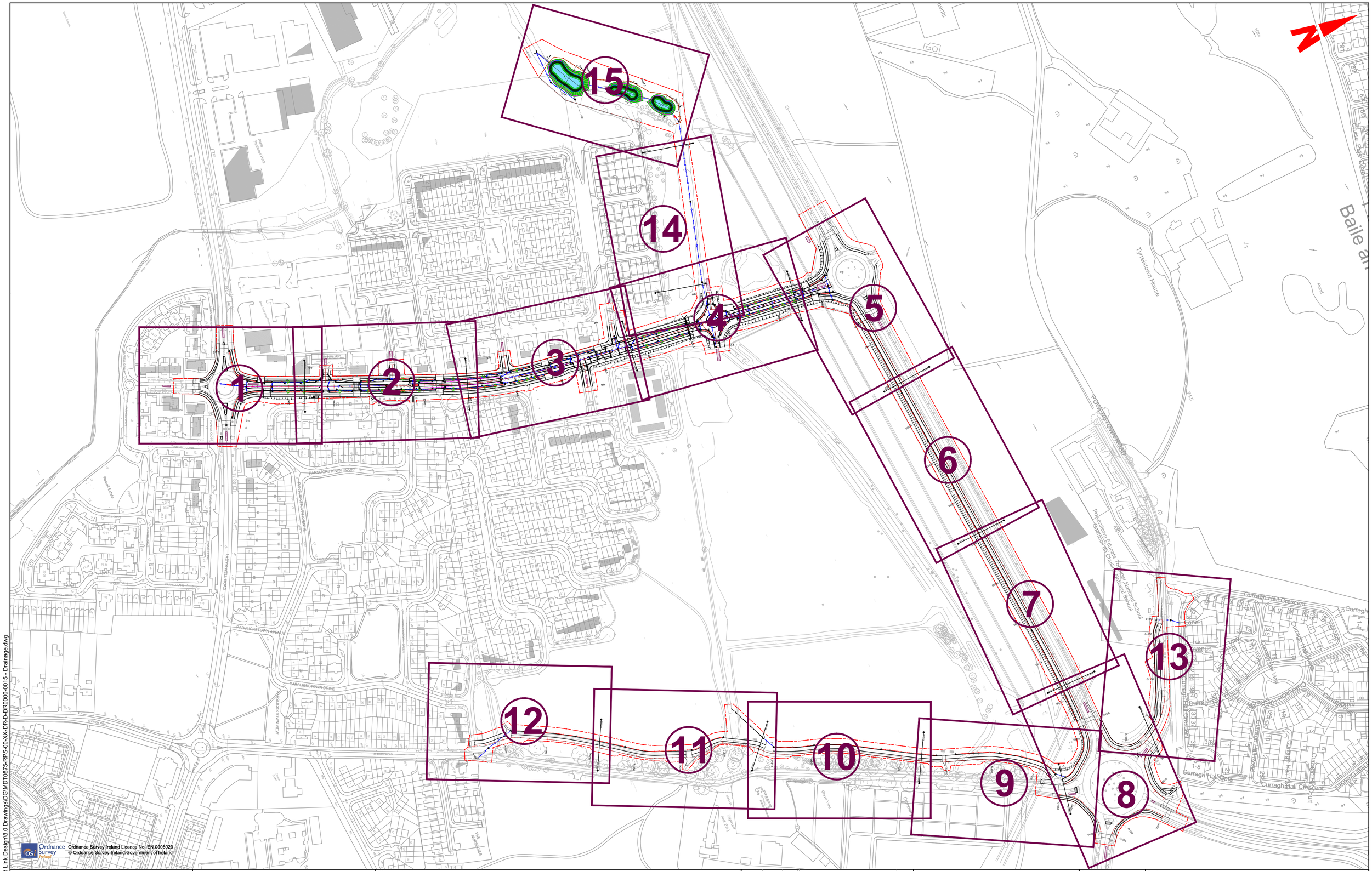
Appendix B
Proposed Outline Drainage Design Drawings



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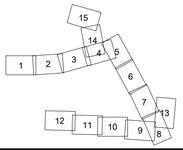
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

Scale: NTS @ A1, NTS @ A3

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Sheet: 1 of 1

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: OUTLINE DRAINAGE LAYOUT

File Identifier: MDT0875-RPS-00-XX-DR-D-DR0000

Status: S4

Rev: P02

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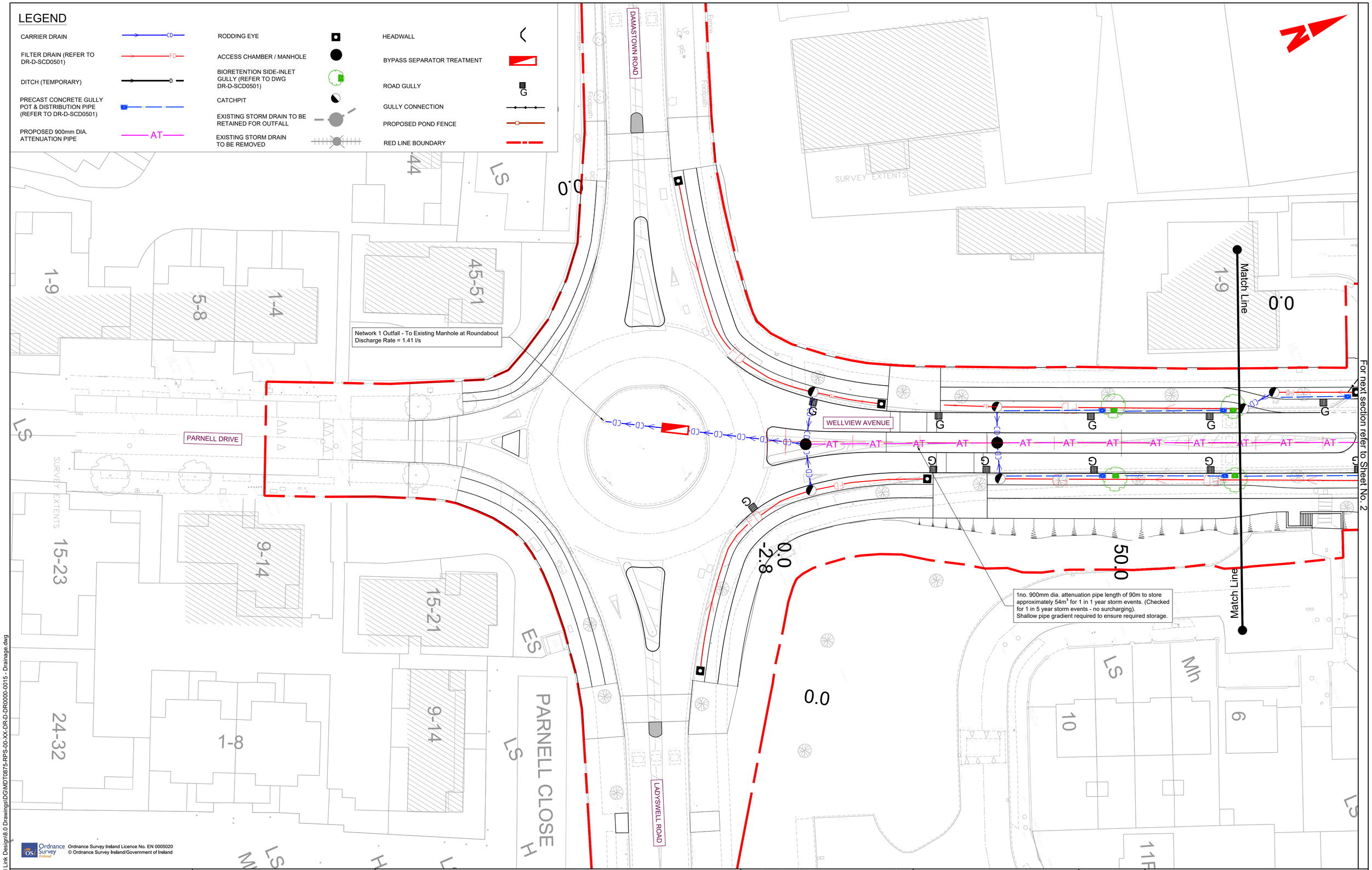
LEGEND

CARRIER DRAIN	
FILTER DRAIN (REFER TO DR-D-SCD0501)	
DITCH (TEMPORARY)	
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	G
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	



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Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan

General Notes

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Scale 1:250 @ A1 1:500 @ A3

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Sheet 1 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title OUTLINE DRAINAGE LAYOUT

File Identifier MDT0875-RPS-00-XX-DR-D-DR0001

Status S4

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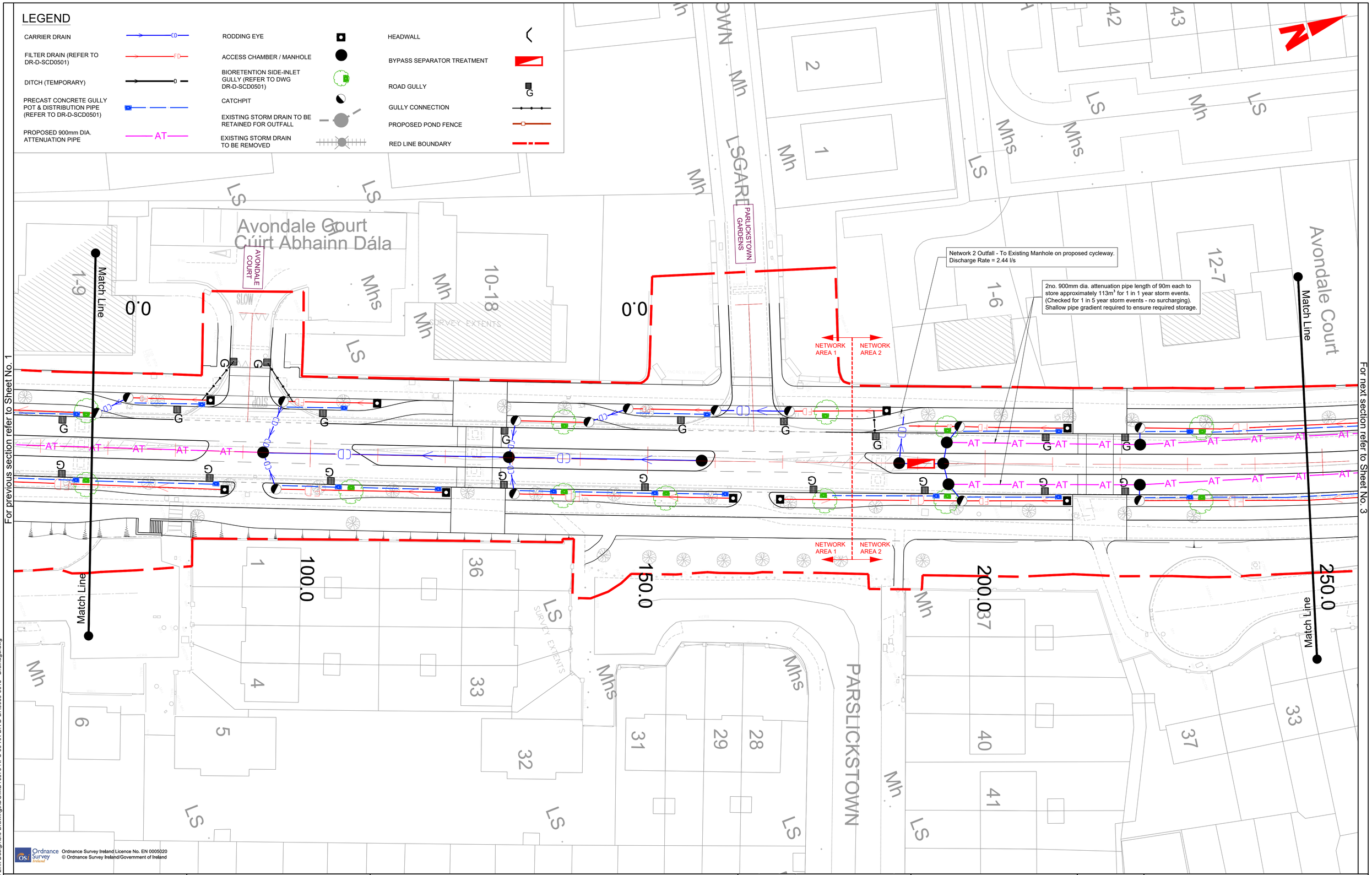
LEGEND

CARRIER DRAIN	CD
FILTER DRAIN (REFER TO DR-D-SCD0501)	FD
DITCH (TEMPORARY)	D
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	G
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	



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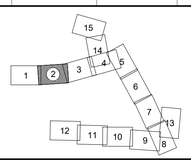
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

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Sheet 2 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title OUTLINE DRAINAGE LAYOUT

File Identifier MDT0875-RPS-00-XX-DR-D-DR0002

Status S4

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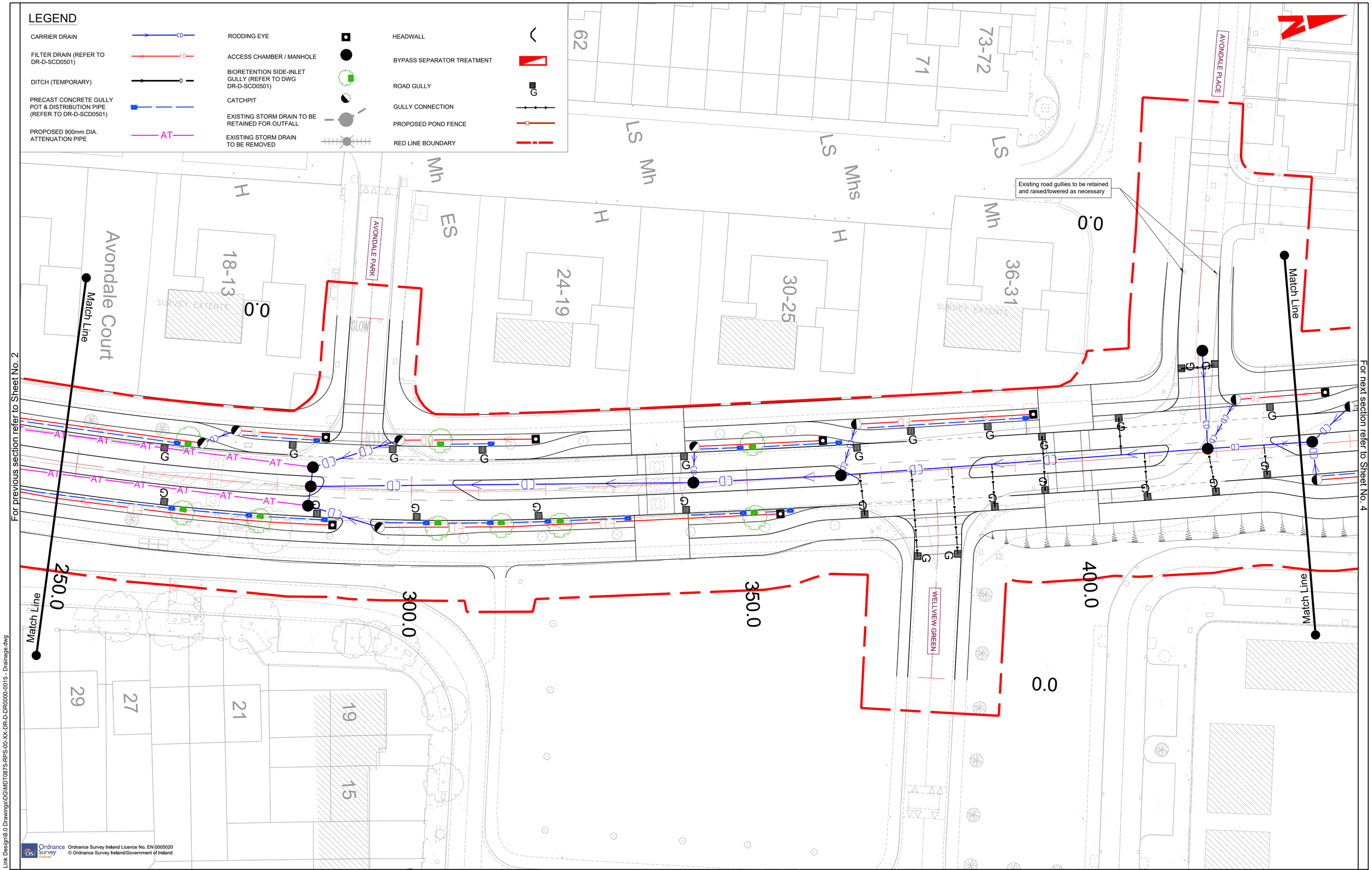

For previous section refer to Sheet No. 2

For next section refer to Sheet No. 4

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Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan

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Model File Identifier

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Sheet 3 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title OUTLINE DRAINAGE LAYOUT

File Identifier MDT0875-RPS-00-XX-DR-D-DR0003

Status S4

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For next section refer to Sheet No. 16

For previous section refer to Sheet No. 3

For next section refer to Sheet No. 5

LEGEND

CARRIER DRAIN	
FILTER DRAIN (REFER TO DR-D-SCD0501)	
DITCH (TEMPORARY)	
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	

Match Line

Match Line

Match Line

Match Line

Match Line

CHURCH FIELDS FUTURE DEVELOPMENT (WEST)

CHURCH FIELDS FUTURE DEVELOPMENT (EAST)

450.0

500.0

541.7

550.0

600.0

0.0

900mm dia. culvert for future linear park swale crossing.

NETWORK AREA 1

NETWORK AREA 2

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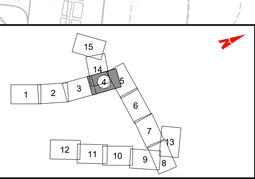
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Created on
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Sheet
4 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
OUTLINE DRAINAGE LAYOUT

File Identifier
MDT0875-RPS-00-XX-DR-D-DR0004

Status
S4

Rev
P02

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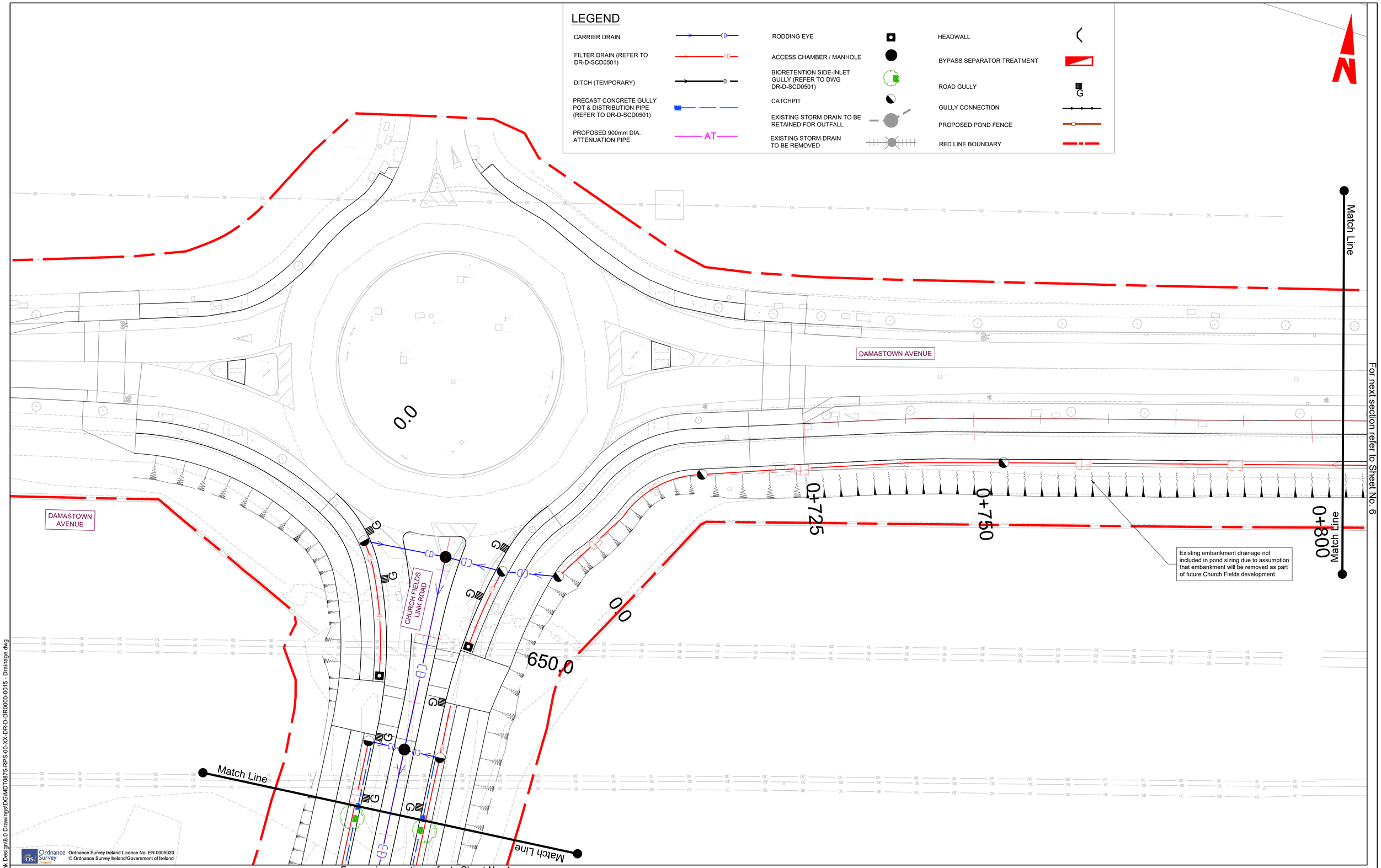
LEGEND

CARRIER DRAIN	CD
FILTER DRAIN (REFER TO DR-D-SCD0501)	FD
DITCH (TEMPORARY)	D
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	G
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	



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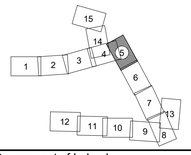
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Sheet 5 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title OUTLINE DRAINAGE LAYOUT

File Identifier MDT0875-RPS-00-XX-DR-D-DR0005

Status S4

Rev P02

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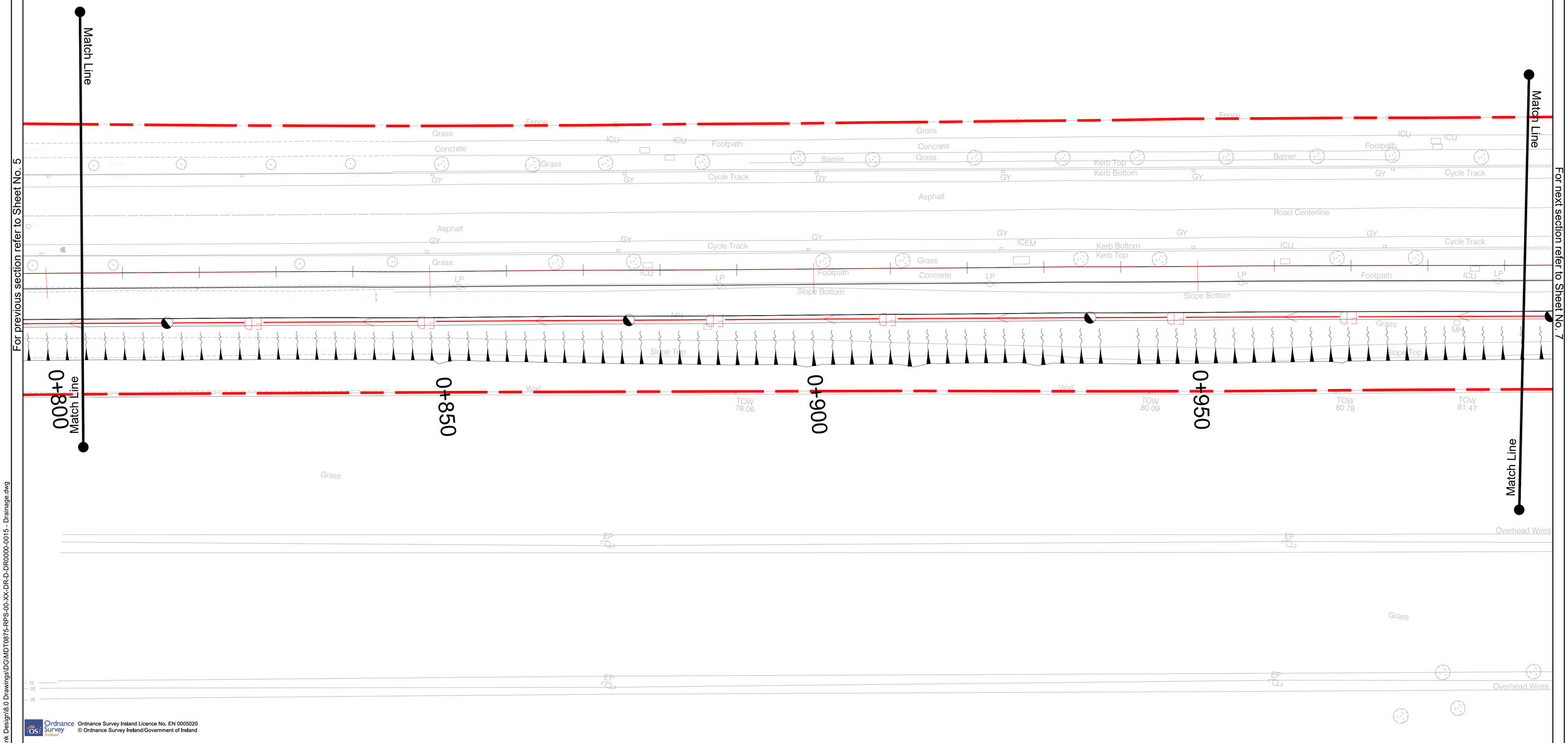
LEGEND

CARRIER DRAIN	CD
FILTER DRAIN (REFER TO DR-D-SCD0501)	FD
DITCH (TEMPORARY)	D
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	G
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	



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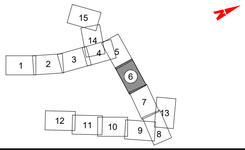
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Sheet 6 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title OUTLINE DRAINAGE LAYOUT

File Identifier MDT0875-RPS-00-XX-DR-D-DR0006

Status S4

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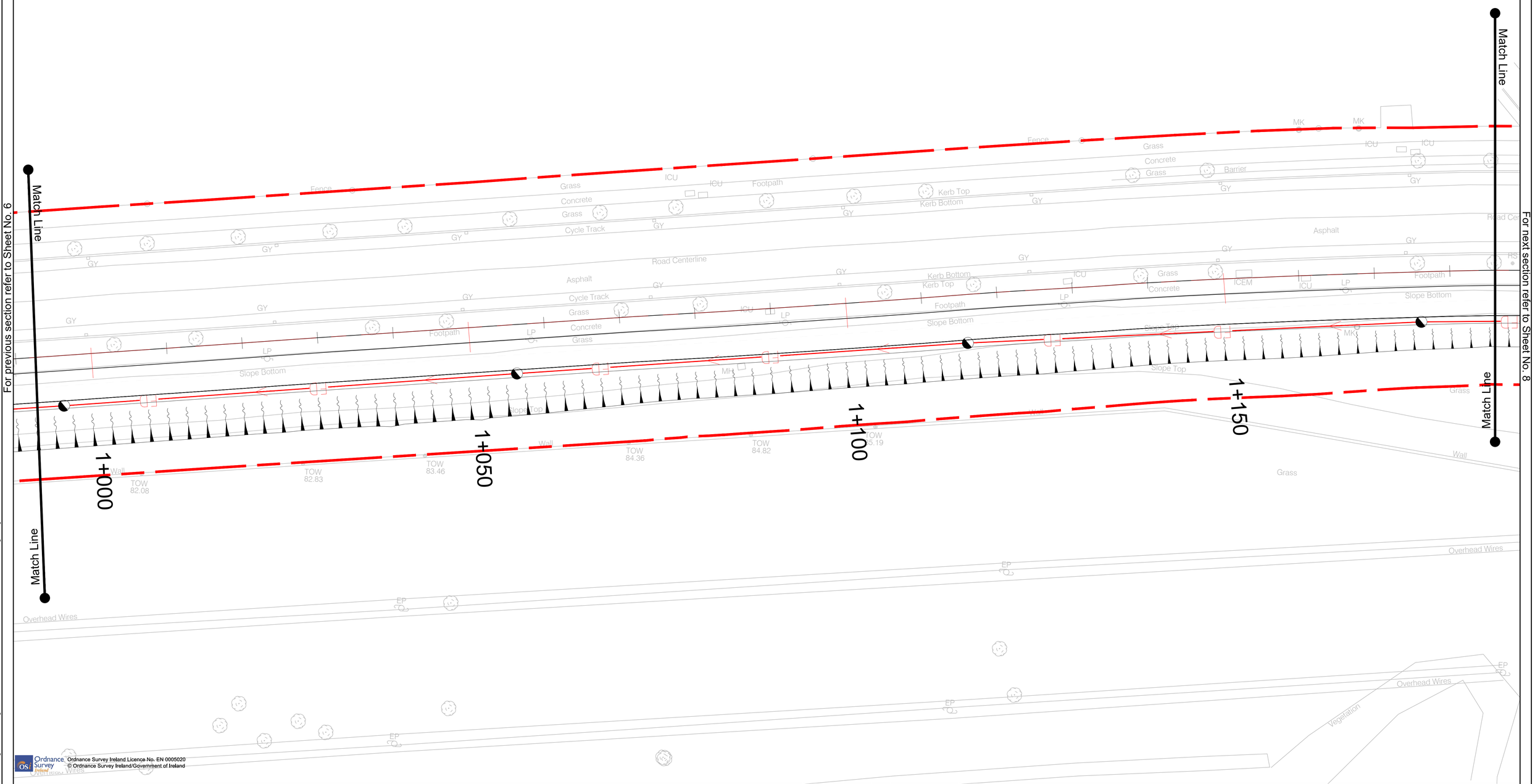
LEGEND

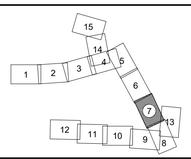
CARRIER DRAIN	CD
FILTER DRAIN (REFER TO DR-D-SCD0501)	FD
DITCH (TEMPORARY)	D
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	G
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	



Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Sheet: 7 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: OUTLINE DRAINAGE LAYOUT

File Identifier: MDT0875-RPS-00-XX-DR-D-DR0007

Status: S4

Rev: P02

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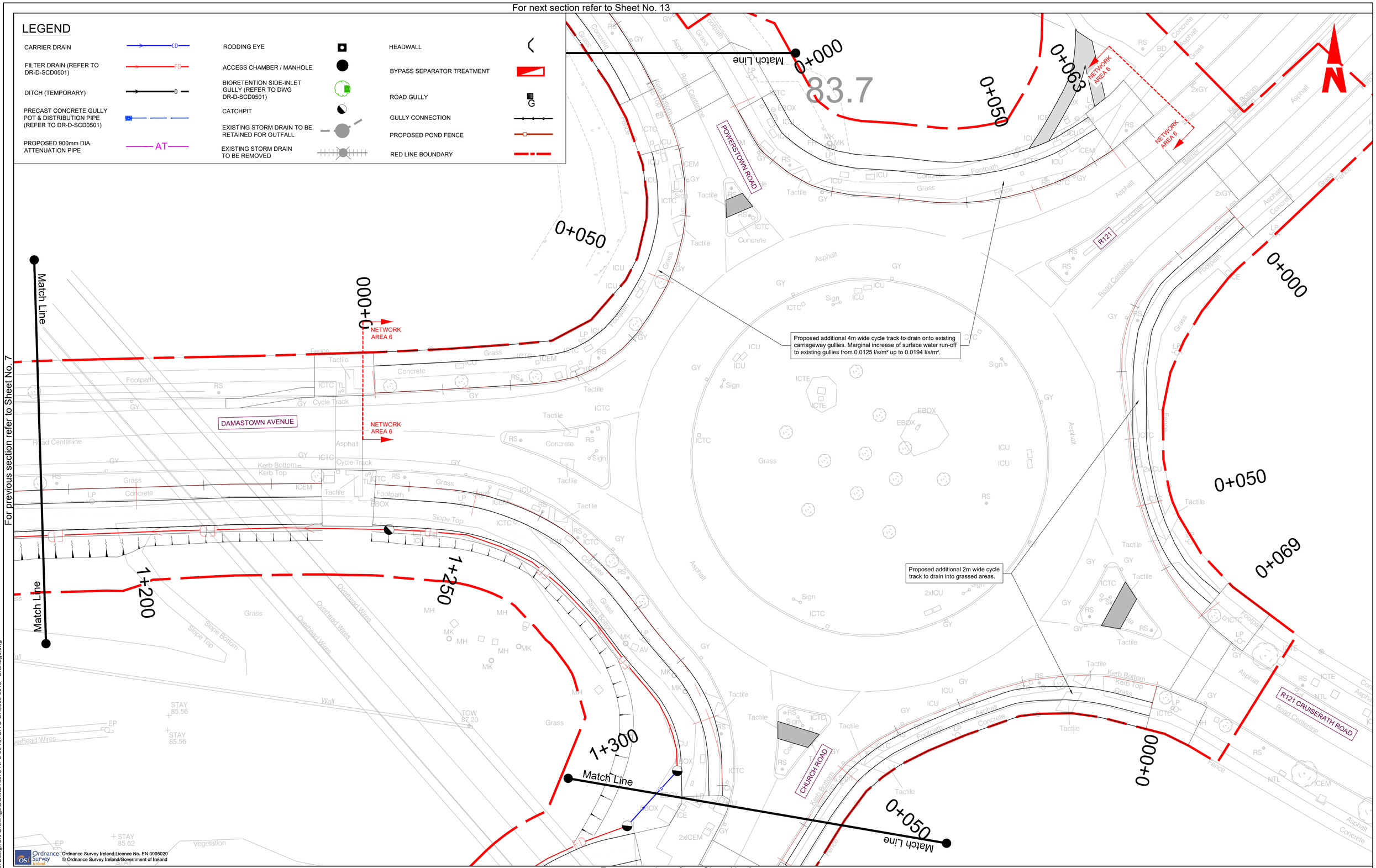


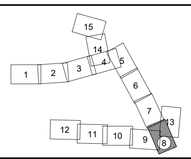
For previous section refer to Sheet No. 7

For next section refer to Sheet No. 9

Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title OUTLINE DRAINAGE LAYOUT

File Identifier MDT0875-RPS-00-XX-DR-D-DR0008

Status S4

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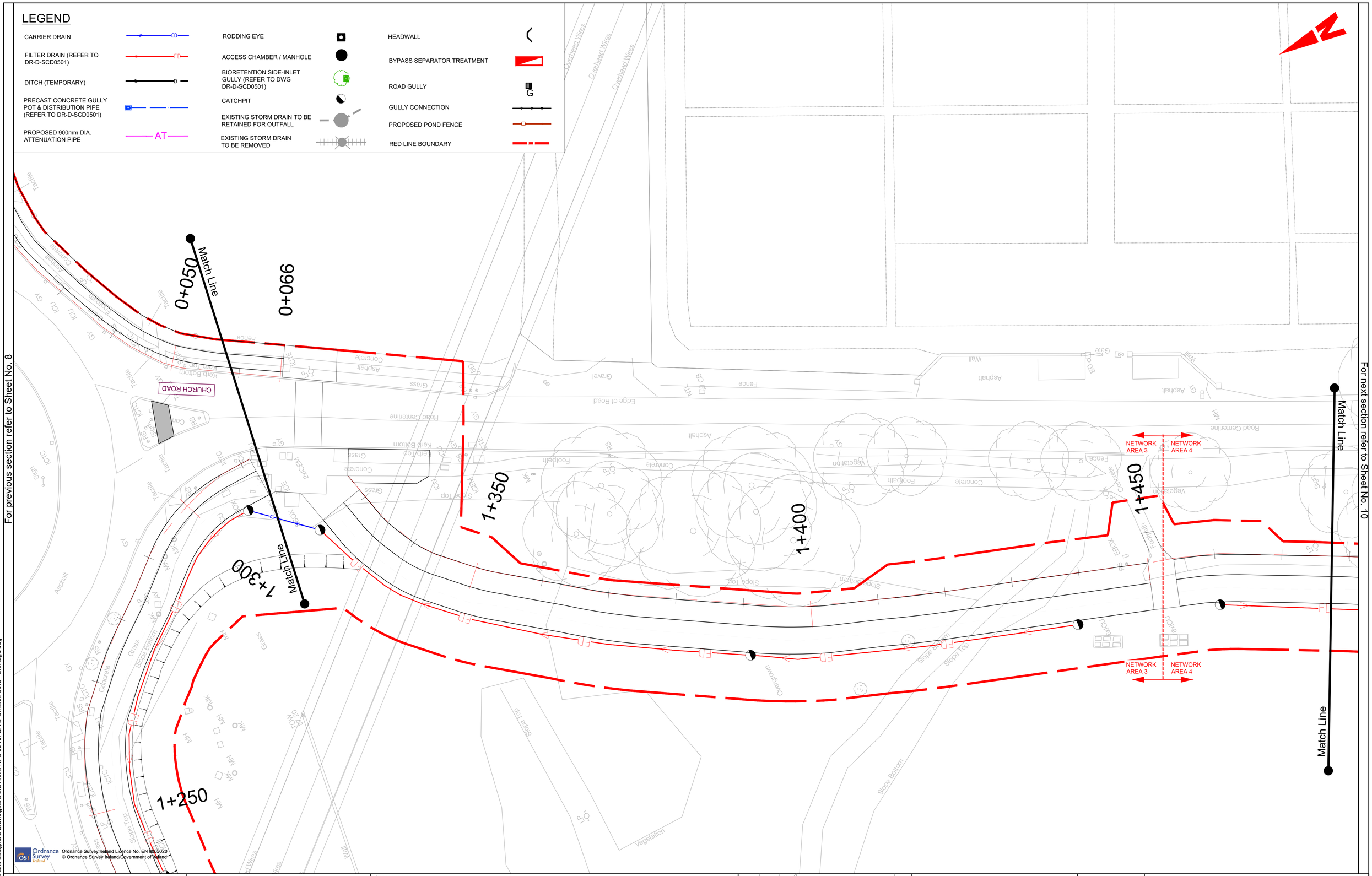
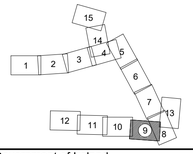


Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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(v) All Levels refer to Ordnance Survey Datum, Malin Head.

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P02	29.01.20	AF / SF	ISSUED FOR PLANNING	MN
P01	29.11.19	AF / TD	ISSUED FOR PLANNING	MN

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Model File Identifier

Scale
1:250 @ A1
1:500 @ A3

Created on
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Sheet
9 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
OUTLINE DRAINAGE LAYOUT

File Identifier
MDT0875-RPS-00-XX-DR-D-DR0009

Status
S4

Rev
P02

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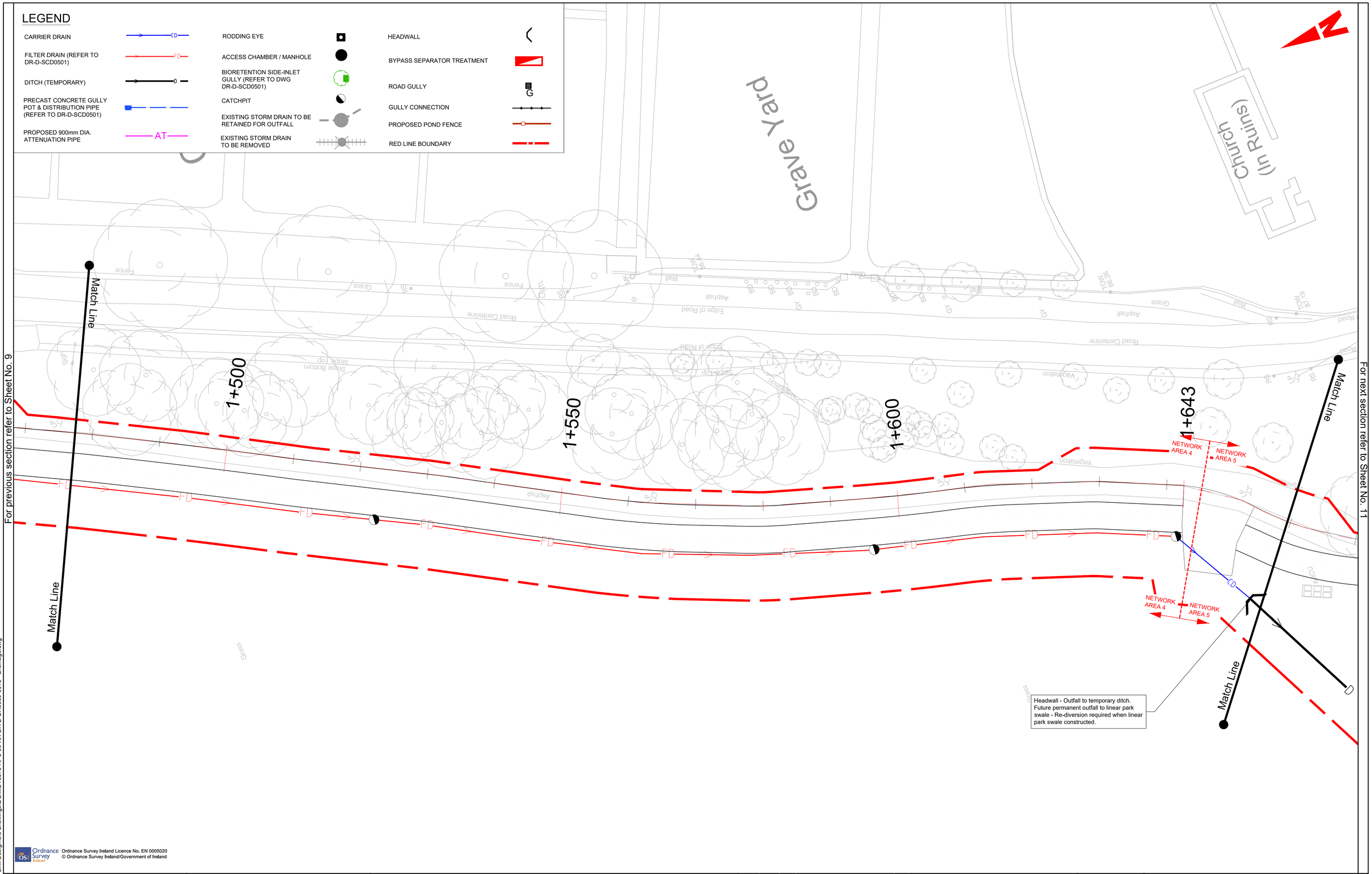

For previous section refer to Sheet No. 9

For next section refer to Sheet No. 11

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Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan

General Notes

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Model File Identifier

Scale 1:250 @ A1 1:500 @ A3

Created on NOV. '19

Sheet 10 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title OUTLINE DRAINAGE LAYOUT

File Identifier MDT0875-RPS-00-XX-DR-D-DR0010

Status S4

Rev P02

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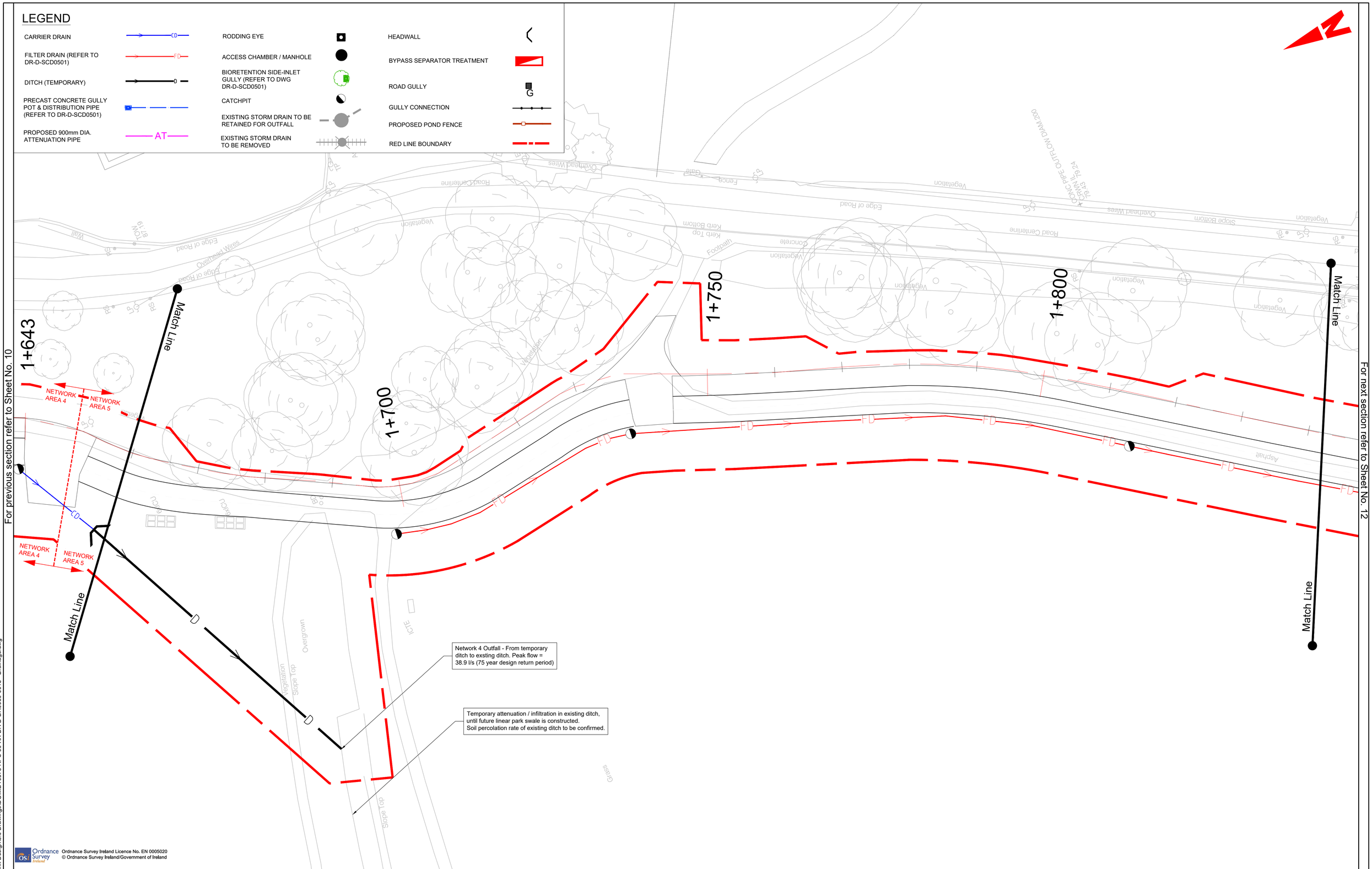
LEGEND

CARRIER DRAIN	CD
FILTER DRAIN (REFER TO DR-D-SCD0501)	FD
DITCH (TEMPORARY)	D
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	G
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	



For previous section refer to Sheet No. 10

For next section refer to Sheet No. 12

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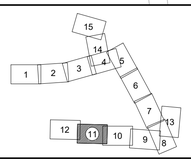
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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P02	29.01.20	AK / MF	ISSUED FOR PLANNING	MN
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Model File Identifier

Scale: 1:250 @ A1, 1:500 @ A3

Created on: NOV. '19

Sheet: 11 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: OUTLINE DRAINAGE LAYOUT

File Identifier: MDT0875-RPS-00-XX-DR-D-DR0011

Status: S4

Rev: P02

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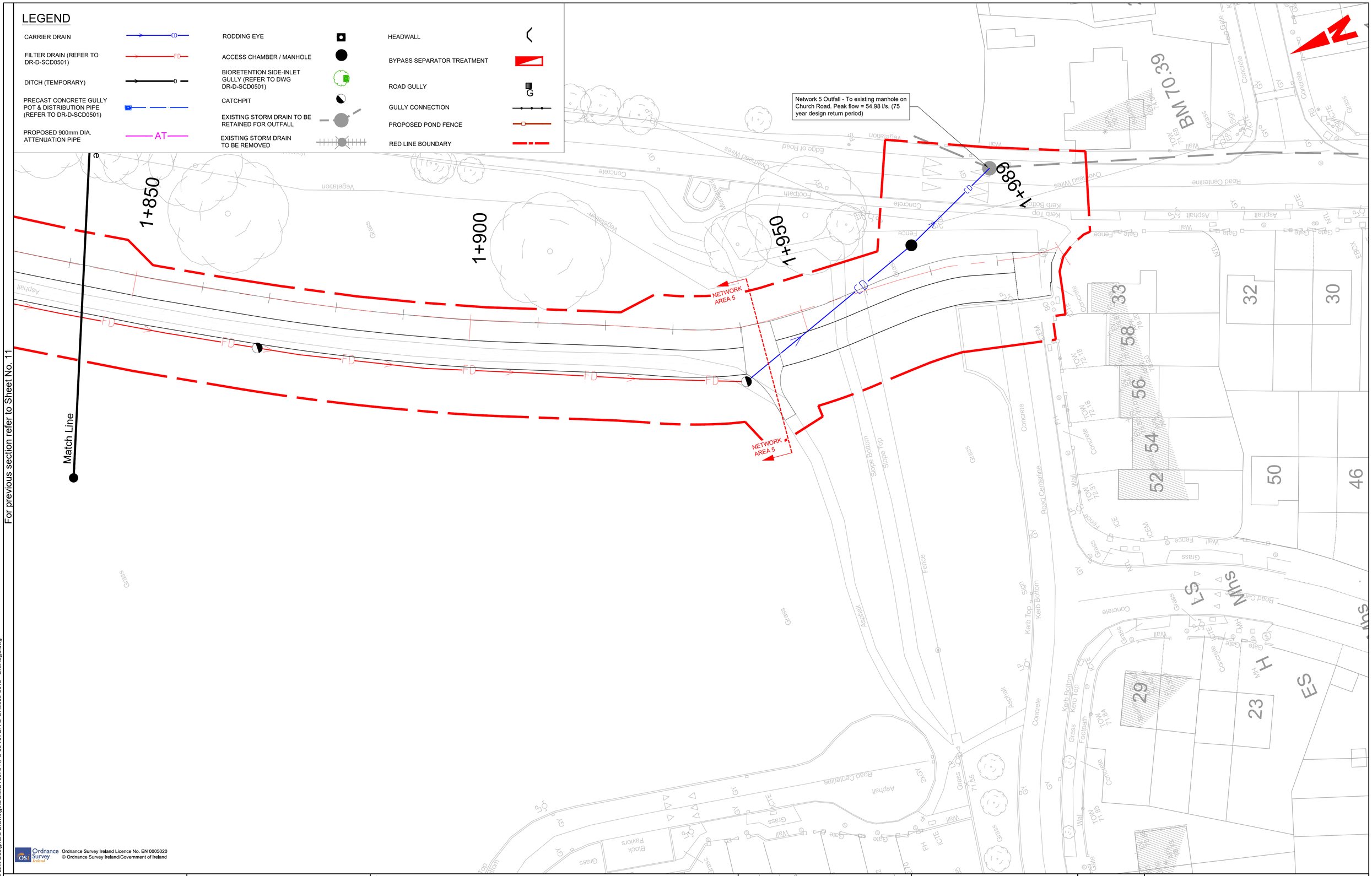
LEGEND

CARRIER DRAIN	CD
FILTER DRAIN (REFER TO DR-D-SCD0501)	FD
DITCH (TEMPORARY)	D
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	G
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	



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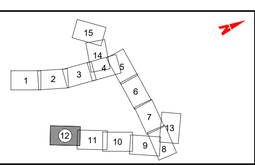
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

Scale
1:250 @ A1
1:500 @ A3

Created on
NOV. '19

Sheet
12 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
OUTLINE DRAINAGE LAYOUT

File Identifier
MDT0875-RPS-00-XX-DR-D-DR0012

Status
S4

Rev
P02

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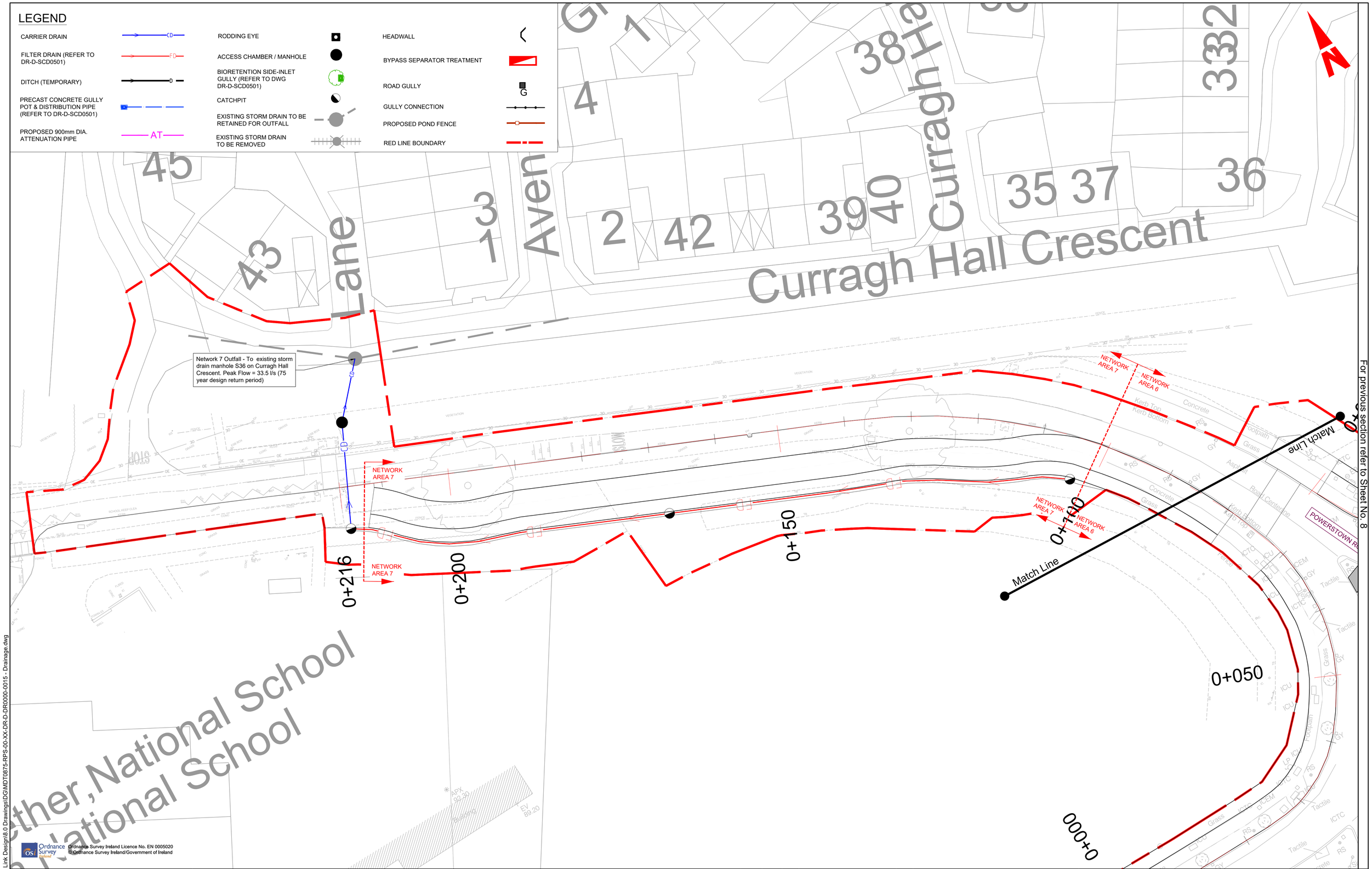
LEGEND

CARRIER DRAIN	CD
FILTER DRAIN (REFER TO DR-D-SCD0501)	FD
DITCH (TEMPORARY)	D
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	G
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	



For previous section refer to Sheet No. 8

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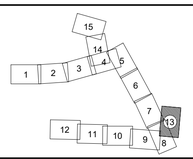
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

Scale
1:250 @ A1
1:500 @ A3

Created on
NOV. '19

Sheet
13 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
OUTLINE DRAINAGE LAYOUT

File Identifier
MDT0875-RPS-00-XX-DR-D-DR0013

Status
S4

Rev
P02

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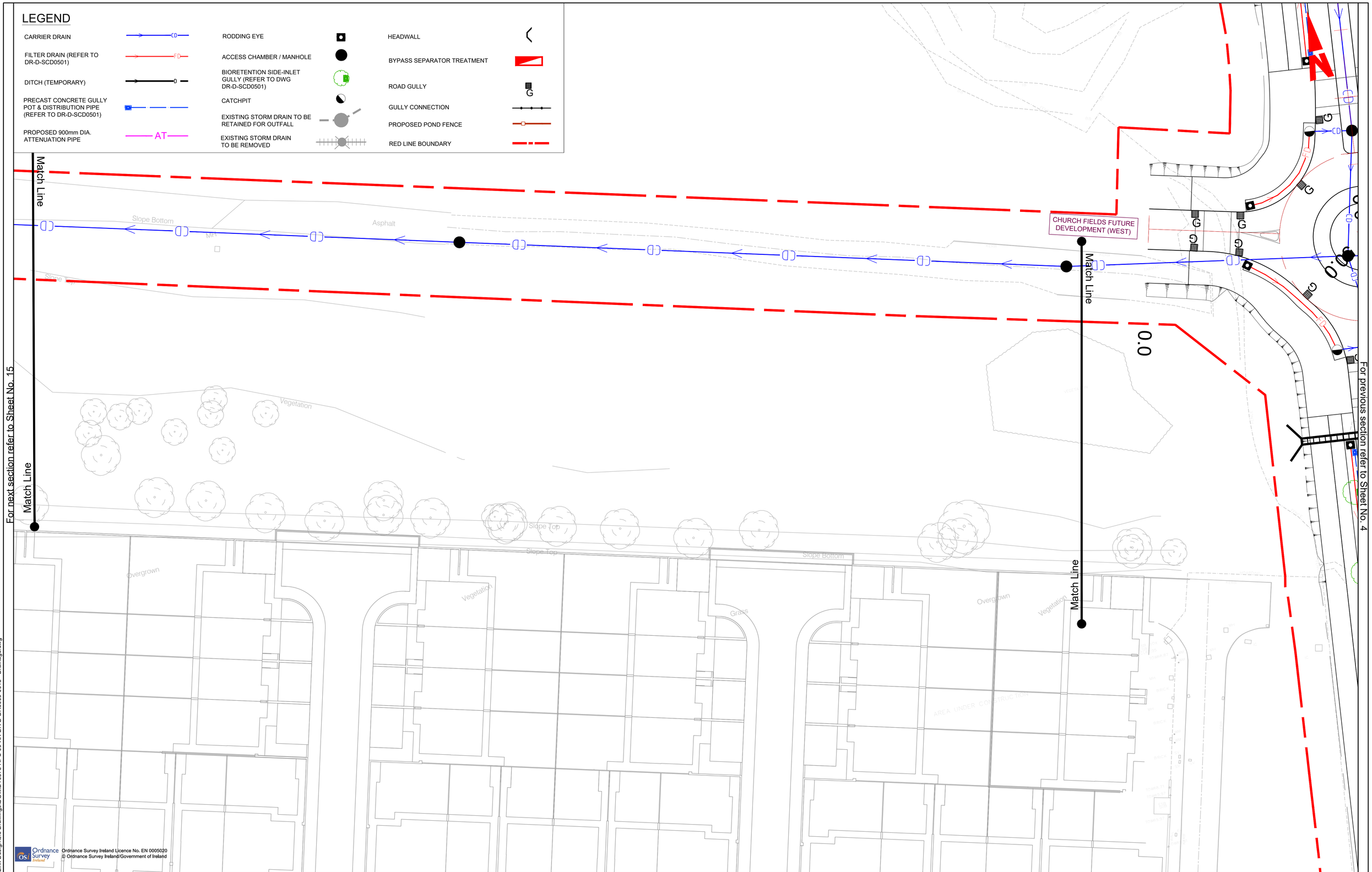
LEGEND

CARRIER DRAIN	CD
FILTER DRAIN (REFER TO DR-D-SCD0501)	FD
DITCH (TEMPORARY)	D
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT
RODDING EYE	
ACCESS CHAMBER / MANHOLE	
BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)	
CATCHPIT	
EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL	
EXISTING STORM DRAIN TO BE REMOVED	
HEADWALL	
BYPASS SEPARATOR TREATMENT	
ROAD GULLY	G
GULLY CONNECTION	
PROPOSED POND FENCE	
RED LINE BOUNDARY	



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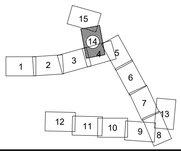
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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P02	29.01.20	JL / SK	ISSUED FOR PLANNING	MN
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Model File Identifier

Scale
1:250 @ A1
1:500 @ A3

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Sheet
14 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
OUTLINE DRAINAGE LAYOUT

File Identifier
MDT0875-RPS-00-XX-DR-D-DR0014

Status
S4

Rev
P02

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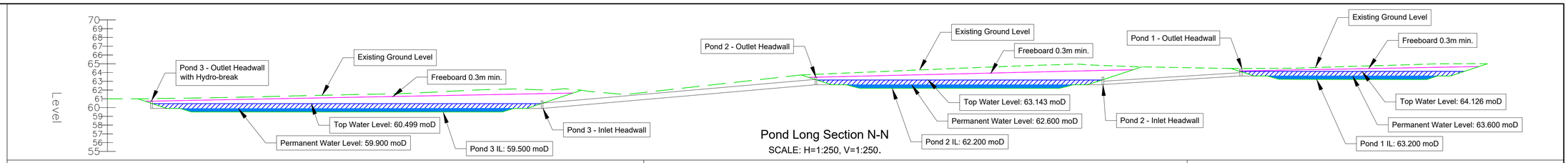

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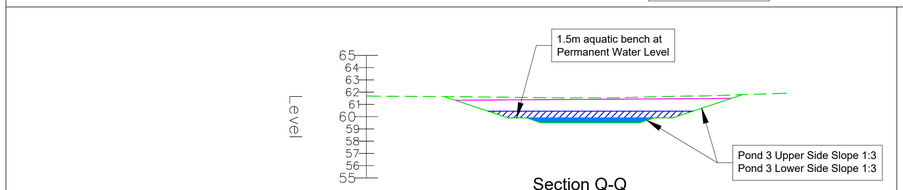

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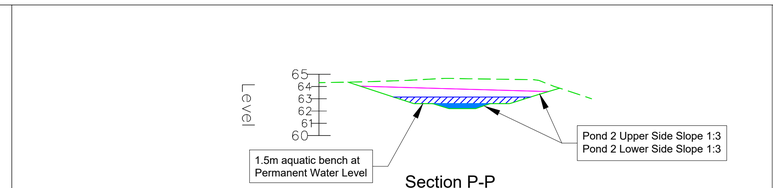

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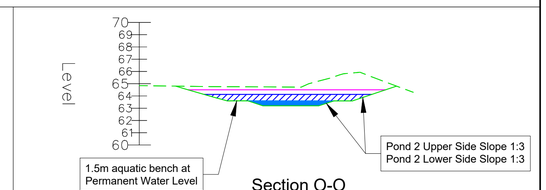

Section O-O
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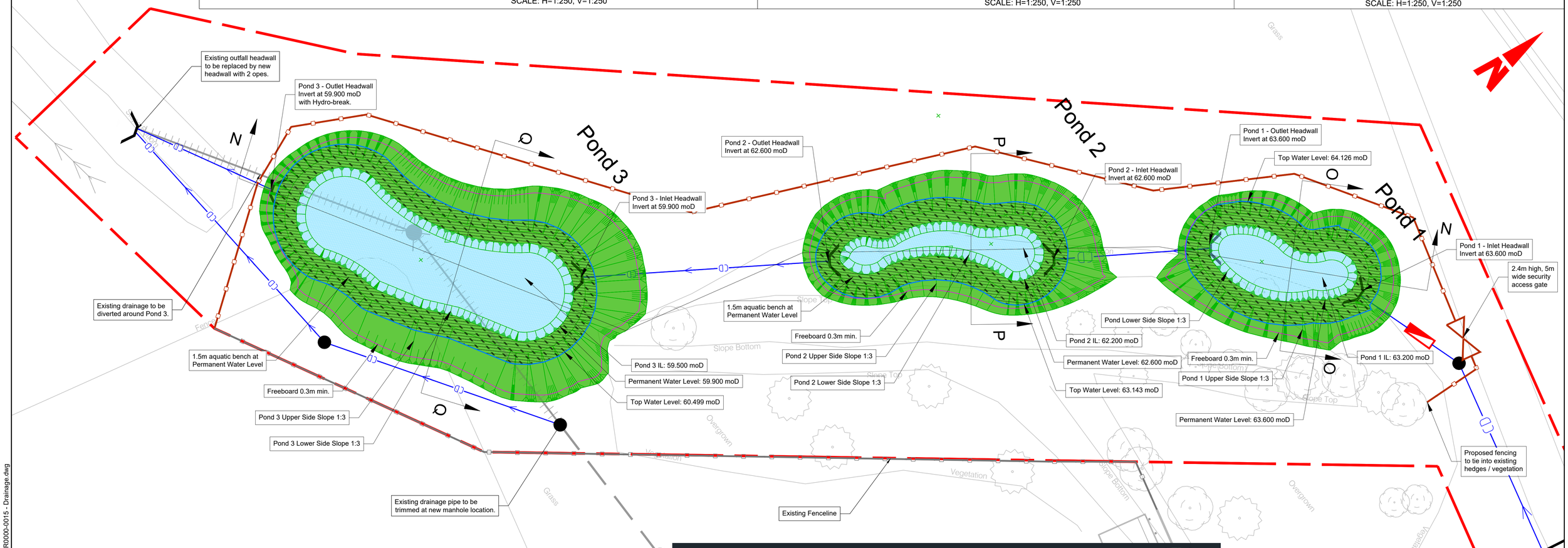
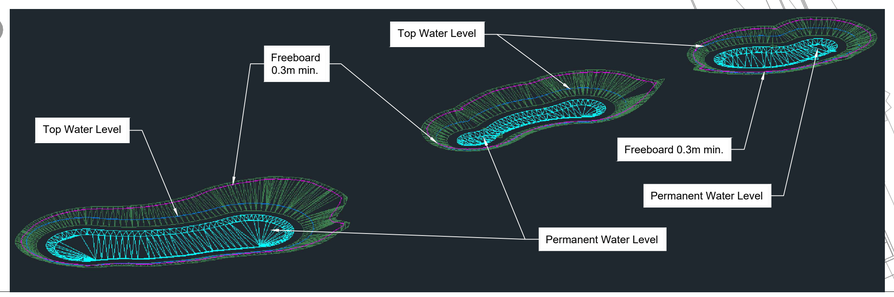




LEGEND

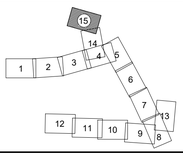
CARRIER DRAIN	CD	RODDING EYE		HEADWALL	
FILTER DRAIN (REFER TO DR-D-SCD0501)	FD	ACCESS CHAMBER / MANHOLE		BYPASS SEPARATOR TREATMENT	
DITCH (TEMPORARY)	D	BIORETENTION SIDE-INLET GULLY (REFER TO DWG DR-D-SCD0501)		ROAD GULLY	G
PRECAST CONCRETE GULLY POT & DISTRIBUTION PIPE (REFER TO DR-D-SCD0501)		CATCHPIT		GULLY CONNECTION	
		EXISTING STORM DRAIN TO BE RETAINED FOR OUTFALL		PROPOSED POND FENCE	
PROPOSED 900mm DIA. ATTENUATION PIPE	AT	EXISTING STORM DRAIN TO BE REMOVED		RED LINE BOUNDARY	

For previous section refer to Sheet No. 14

Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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P02	29.01.20	JL	SF	ISSUED FOR PLANNING	MN
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Model File Identifier

Scale: 1:250 @ A1, 1:500 @ A3

Created on: NOV. '19

Sheet: 15 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: OUTLINE DRAINAGE LAYOUT

File Identifier: MDT0875-RPS-00-XX-DR-D-DR0015

Status: S4

Rev: P02

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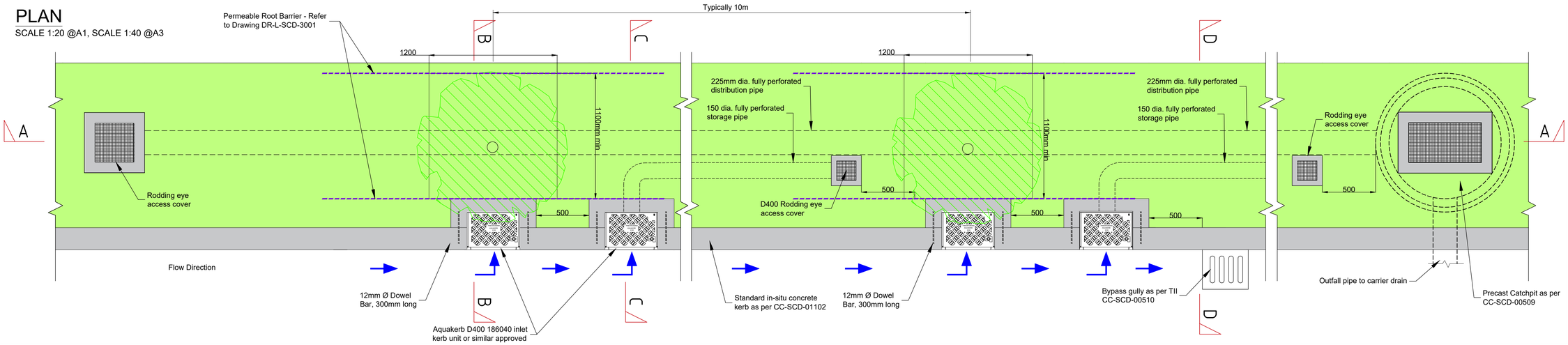
PLAN

SCALE 1:20 @A1, SCALE 1:40 @A3



LEGEND

- Topsoil
- Subsoil
- Cut concrete section
- Granular material
- In-situ concrete
- Filter Drain filling material
- Standard engineering brick
- Pea Gravel (10mm graded) Separator Layer
- Geotextile
- Root Barrier

Notes:

1. All dimensions are millimeters unless specified otherwise.
2. Drawing shows typical details only. Element locations may vary based on drainage layout drawings MDT0875-RPS-00-XX-DR-D-DR0000-0015.
3. For Tree Pit details refer to drawing MDT0875-RPS-00-XX-DR-L-SCD3001.

LONG SECTION A - A

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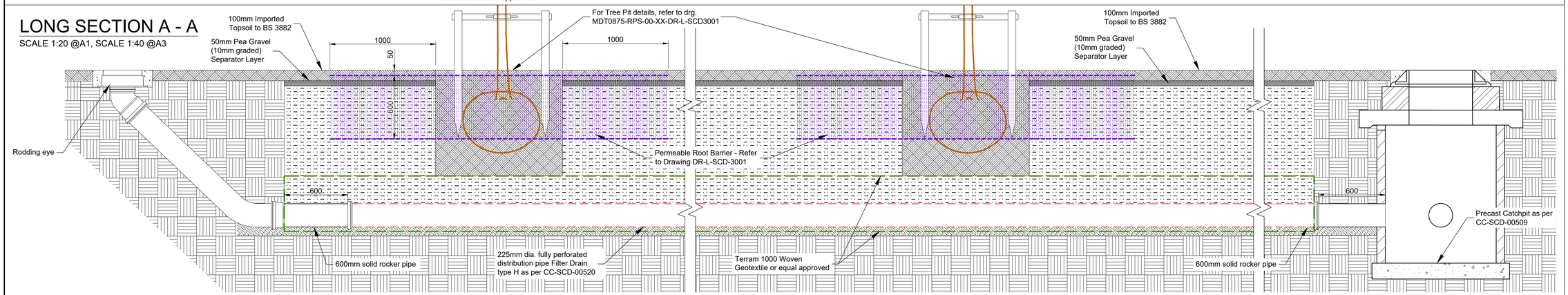

SECTION B - B
TREE PIT & INLET KERB

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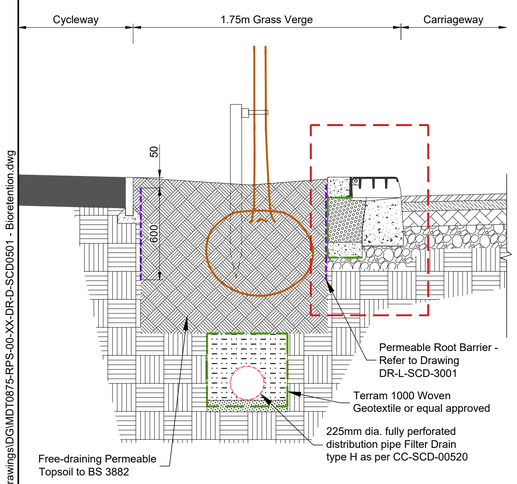

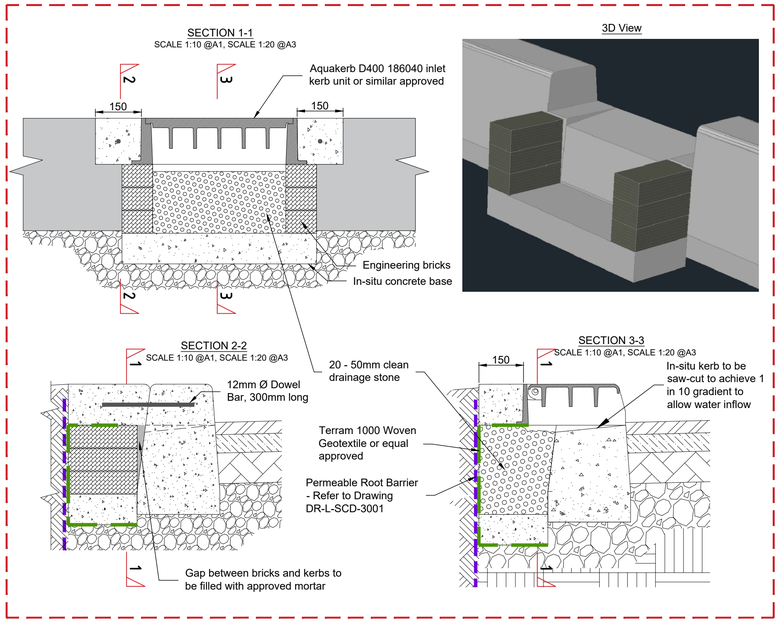

SECTION C - C
INLET KERB TO STORAGE PIPE

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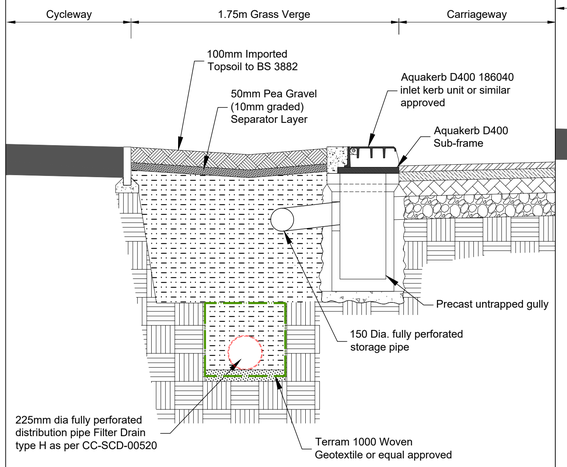

SECTION D - D
BYPASS GULLY

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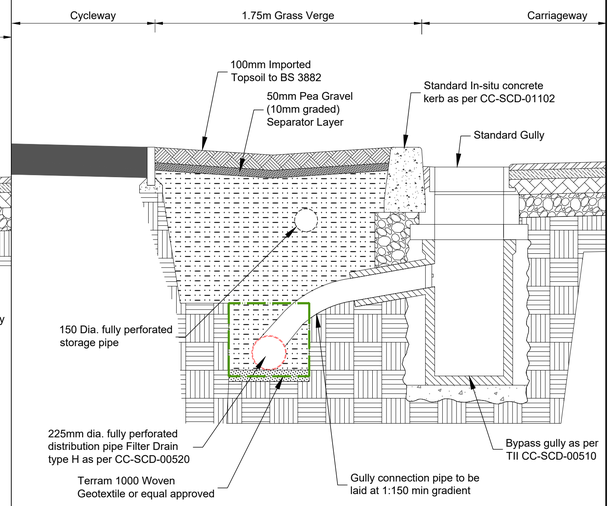

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Client

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(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drn / Chk	Amendment / Issue	App
P02	27.01.20	JV / SK	ISSUED FOR PLANNING	MN
P01	29.11.19	JL / TO	ISSUED FOR PLANNING	MN

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Sheet: 1 of 1

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: PART 8 PLANNING
DRAINAGE STANDARD DETAILS
BIO-RETENTION DETAILS

File Identifier: MDT0875-RPS-00-XX-DR-D-SCD0501

Status: S4

Rev: P02

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Appendix C
Ecological Valuation Criteria

Ecological Valuation Criteria

International Importance:

- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
- Proposed Special Protection Area (pSPA).
- Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
- Features essential to maintaining the coherence of the Natura 2000 Network.[7]
- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
- Resident or regularly occurring populations (assessed to be important at the national level)[8] of the following:
    - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and / or
    - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
- Biosphere Reserve (UNESCO Man and the Biosphere Programme).
- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
- Biogenetic Reserve under the Council of Europe.
- European Diploma Site under the Council of Europe.
- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).[9]

National Importance:

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.

[7] See Articles 3 and 10 of the Habitats Directive.

[8] It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[9] Note that such waters are designated based on these waters' capabilities of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

Ecological Valuation Criteria
• Resident or regularly occurring populations (assessed to be important at the national level)[10] of the following: ✓ Species protected under the Wildlife Acts; and/or ✓ Species listed on the relevant Red Data list. Site containing 'viable areas'[11] of the habitat types listed in Annex I of the Habitats Directive
National Importance: • Site designated or proposed as a Natural Heritage Area (NHA). • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Acts. • National Park. • Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. • Resident or regularly occurring populations (assessed to be important at the national level)[12] of the following: ✓ Species protected under the Wildlife Acts; and/or ✓ Species listed on the relevant Red Data list. • Site containing 'viable areas'[13] of the habitat types listed in Annex I of the Habitats Directive.

[10] It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[11] A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

[12] It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[13] A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

Ecological Valuation Criteria

County Importance:

- Area of Special Amenity.[14]
- Area subject to a Tree Preservation Order.
- Area of High Amenity, or equivalent, designated under the County Development Plan.
- Resident or regularly occurring populations (assessed to be important at the County level)[15] of the following:
    - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
    - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
    - Species protected under the Wildlife Acts; and/or
    - Species listed on the relevant Red Data list.
- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP) if this has been prepared.
- Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (higher value):

- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
- Resident or regularly occurring populations (assessed to be important at the Local level)[16] of the following:
    - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
    - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
    - Species protected under the Wildlife Acts; and/or
    - Species listed on the relevant Red Data list.
- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;

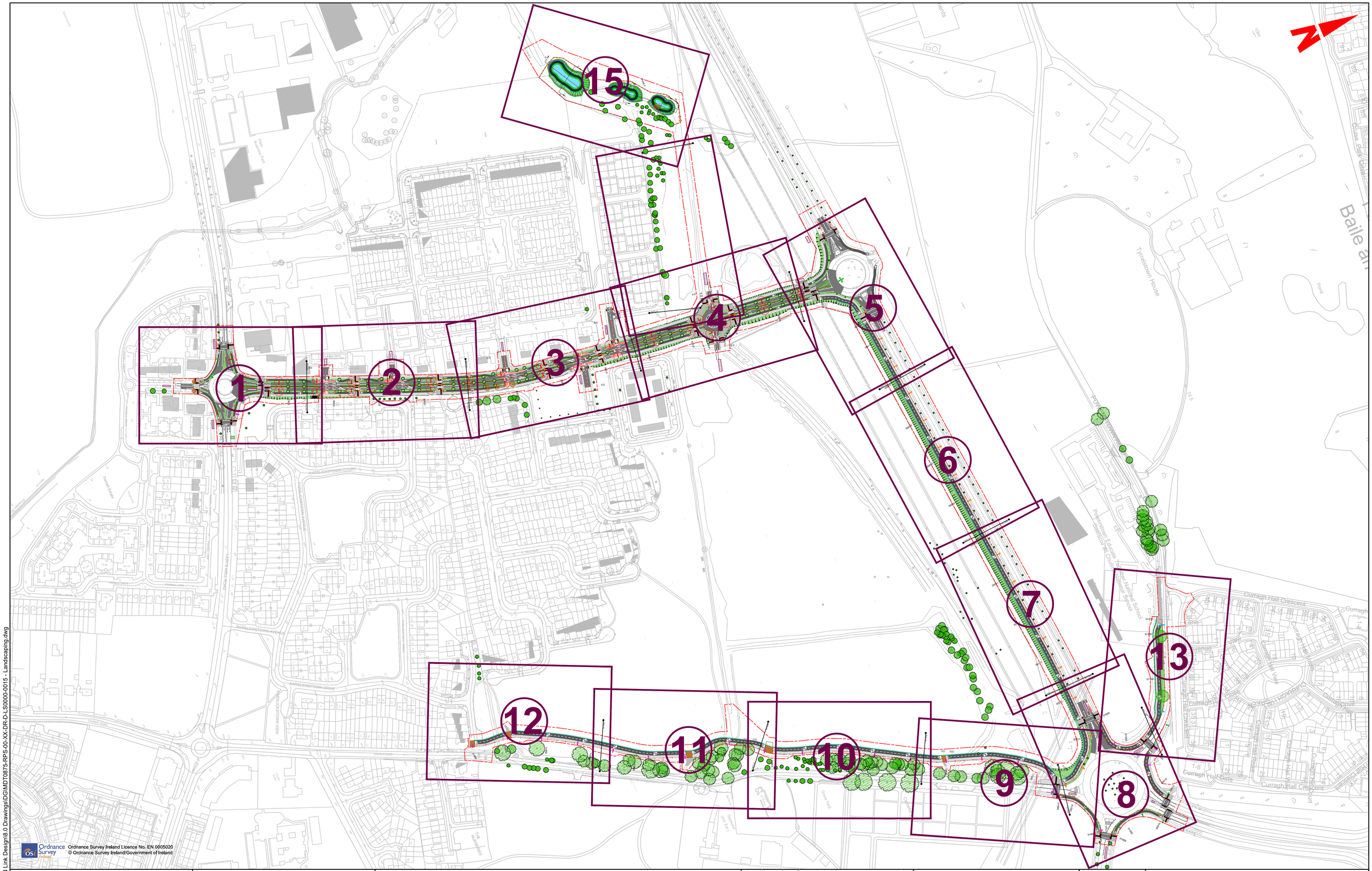
[14] It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

[15] It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County importance where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[16] It is suggested that, in general, 1%of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

Ecological Valuation Criteria
• Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value): • Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; • Sites or features containing non-native species that are of some importance in maintaining habitat links.

Appendix D
Proposed Landscaping Design & Replanting Schedule



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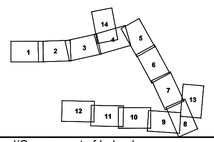
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

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NTS @ A1
NTS @ A3

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Sheet
1 of 1

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN
KEY PLAN

File Identifier
MDT0875-RPS-00-XX-DR-L- LS0000

Status
S4

Rev
P02

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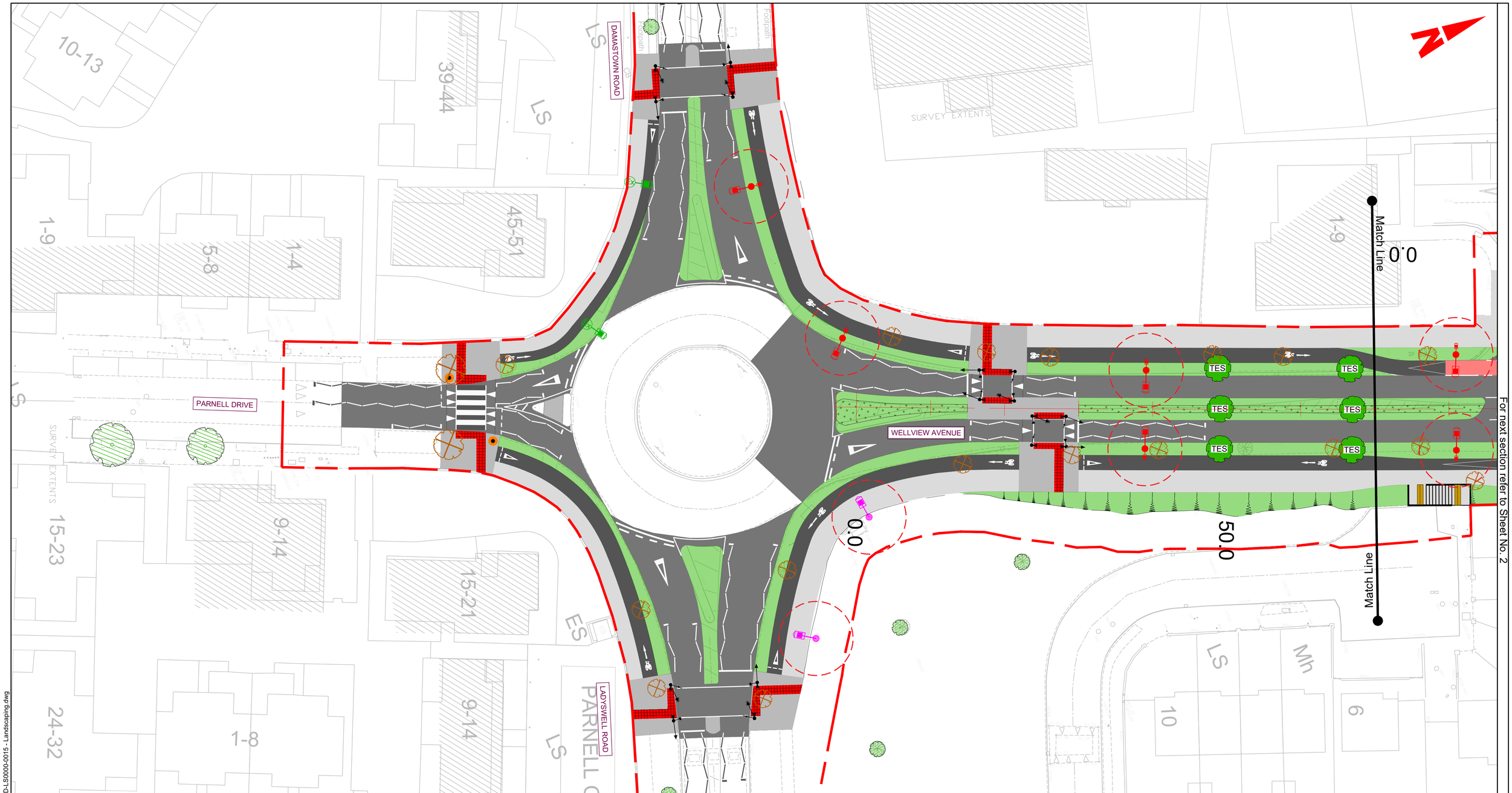

PROPOSED BULB PLANTING	No. per m²	% mix
Galanthus nivalis	50	30
Crocus spp	40	20
Nacissus spp	30	25
Nerine bowdenii	25	25

PROPOSED GRASS SEEDING

Proposed Low Maintenance Grass Seed Mix
Sown @ 40g per m^2 to amenity grassed areas to be reinstated to replace disturbed grassed areas
- 20% Hard Fescue
- 30% Strong Creeping Red Fescue
- 15% Smooth Stalked Meadow Grass
- 20% Chewings Fescue
- 15% Browntop Bentgrass

Proposed Wildflower & Grass Seed Mix
For wet ground at suds ponds edges - EC05 mix by Design by Nature or equivalent approved. Sown at a rate of 1.5grams per square metre.

PROPOSED TREE PLANTING

Botanical Name	Specification	Root Condition	Spacing
Semi Mature Tree Planting			
TES - Tilia cordata 'Greenspire'	14-16cm girth, min 200cm clear stem	Root balled	As shown

NOTE:

1. Protective fencing in accordance with the provisions of BS 5837: 2012 is to be erected prior to the construction works commencing on site to enclose the root zone of the trees to be retained. Once erected it is to remain in place for the duration of the project.

2. Prior to the commencement of any works on site, a meeting with the project manager/site foremen & Parks Superintendent from the Parks & Green Infrastructure Division shall be carried out to discuss the Tree Protection Plan at this location to ensure all parties are well briefed on necessary Tree Protection measures.

3. Existing Trees to be removed in accordance with BS3998 (2010) Tree Work - Recommendations.

LEGEND:

- Proposed Tree Planting
- Existing trees to be Retained
- Existing trees to be Removed
- Proposed Low Maintenance Grass Seed Mix
- Proposed Wild Flower & Grass Seed Mix
- Proposed Bulb Planting and Low Maintenance Grass Seed Mix
- Cyclepath off Road
- Cyclepath on Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Filter Drain
- Red Line Boundary
- Proposed Lighting Column with 5m radius tree planting exclusion zone

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Client
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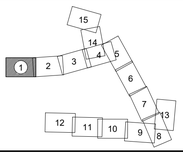
Fingal County Council

Key Plan



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Model File Identifier

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Sheet 1 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier MDT0875-RPS-00-XX-DR-L- LS0001
Status S4
Rev P02

For next section refer to Sheet No. 2

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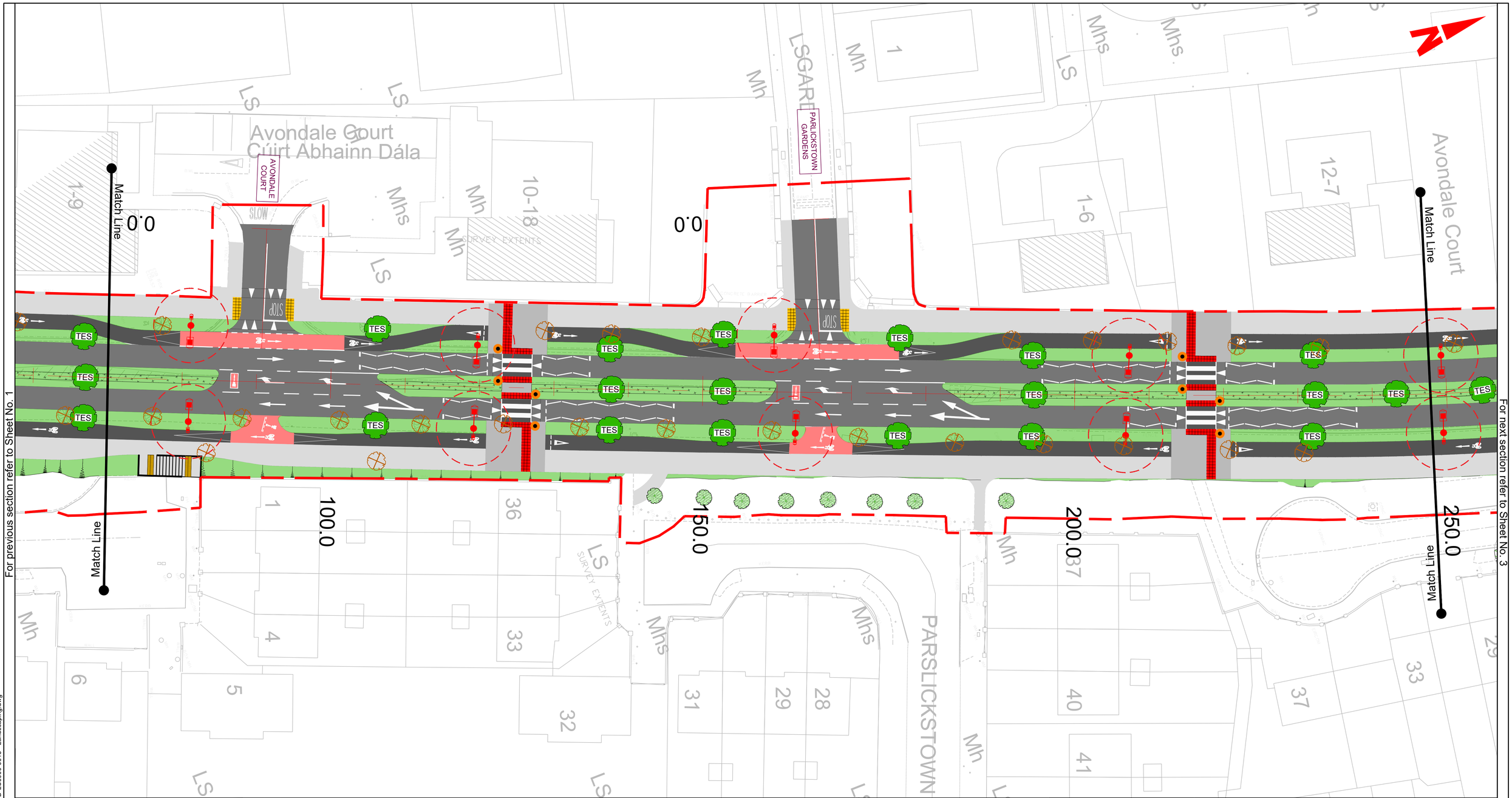

For previous section refer to Sheet No. 1

For next section refer to Sheet No. 3

PROPOSED BULB PLANTING	No. per m²	% mix
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Crocus spp	40	20
Nacissus spp	30	25
Nerine bowdenii	25	25

PROPOSED GRASS SEEDING

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- 20% Chewings Fescue
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Client
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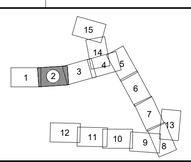
Fingal County Council

Key Plan



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Sheet
2 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier
MDT0875-RPS-00-XX-DR-L- LS0002

Status
S4

Rev
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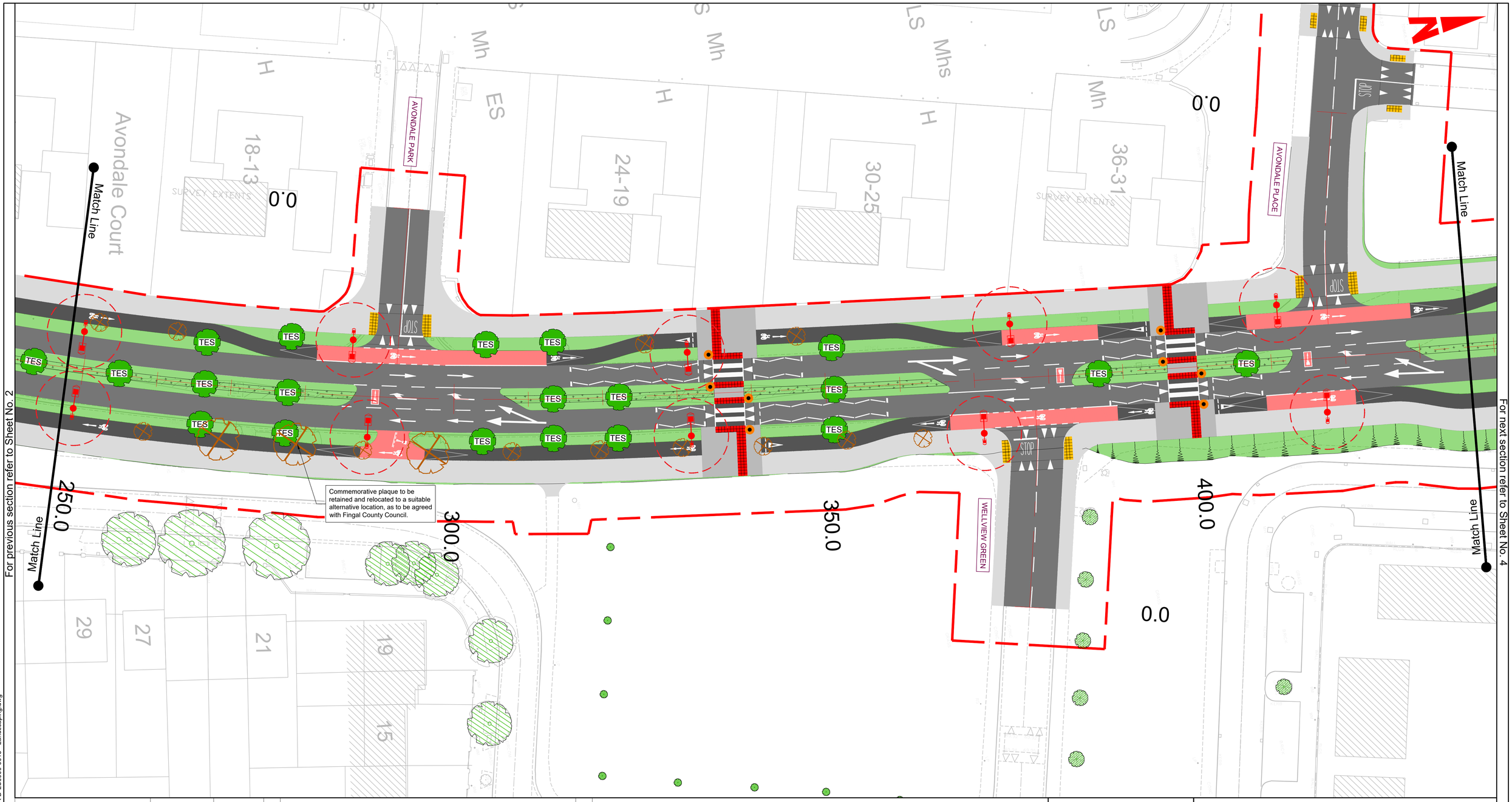
For previous section refer to Sheet No. 2



For next section refer to Sheet No. 4

PROPOSED BULB PLANTING	No. per m²	% mix
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3. Existing Trees to be removed in accordance with BS3998 (2010) Tree Work - Recommendations.

LEGEND:

- Proposed Tree Planting
- Existing trees to be Retained
- Existing trees to be Removed
- Proposed Low Maintenance Grass Seed Mix
- Proposed Wild Flower & Grass Seed Mix
- Proposed Bulb Planting and Low Maintenance Grass Seed Mix
- Cyclepath off Road
- Cyclepath on Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Filter Drain
- Red Line Boundary
- Proposed Lighting Column with 5m radius tree planting exclusion zone

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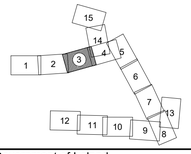
Client
Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Rev	Date	Drn / Chk	Amendment / Issue	App
P02	29.01.20	JK / SF	ISSUED FOR PLANNING	MN
P01	29.11.19	MOD / SF	ISSUED FOR PLANNING	MN

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Scale
1:250 @ A1
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Created on
NOV. '19

Sheet
3 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier
MDT0875-RPS-00-XX-DR-L- LS0003

Status
S4

Rev
P02

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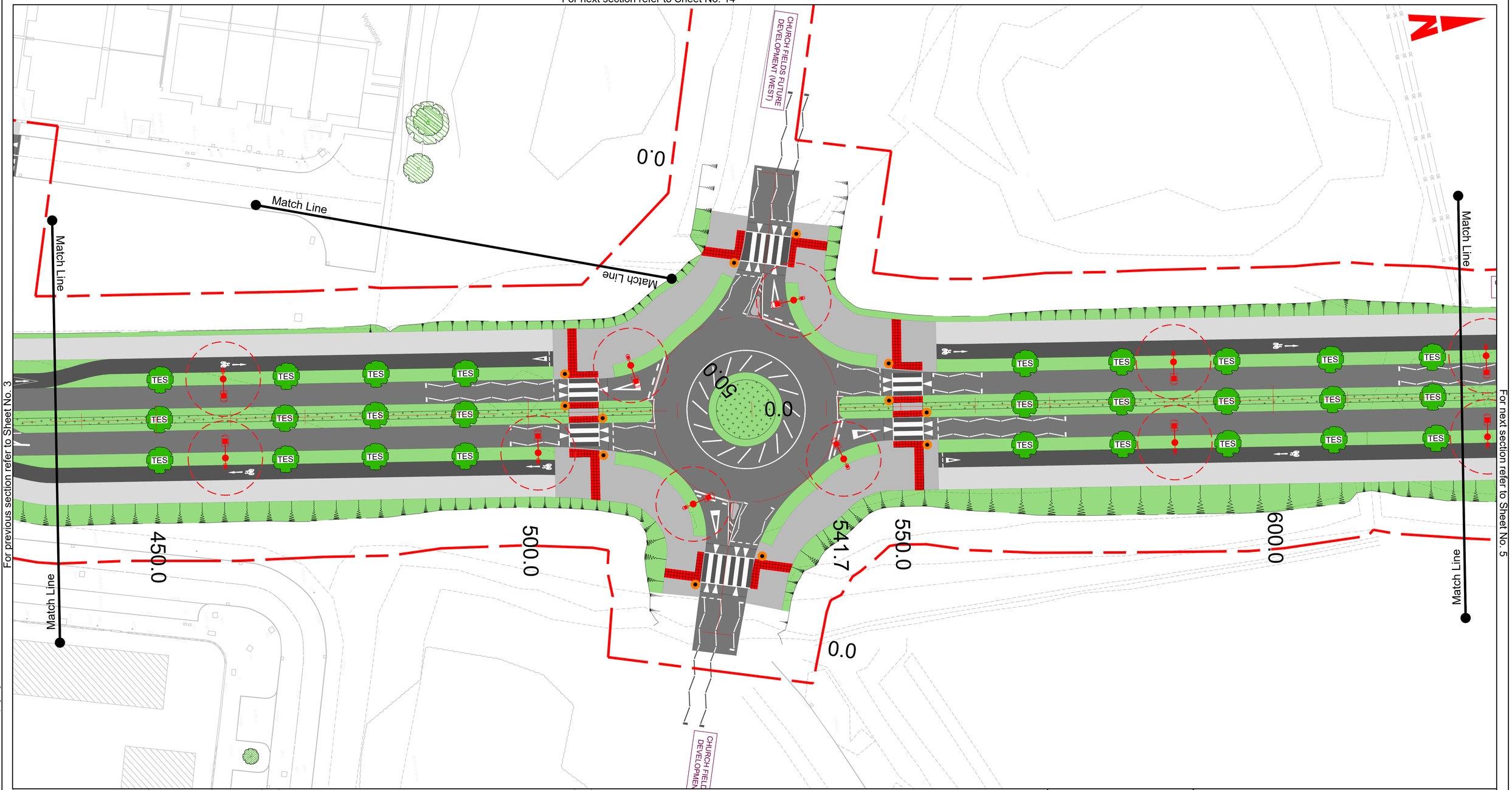
For next section refer to Sheet No. 14

For previous section refer to Sheet No. 3



For next section refer to Sheet No. 5

PROPOSED BULB PLANTING	No. per m²	% mix
Galanthus nivalis	50	30
Crocus spp	40	20
Nacissus spp	30	25
Nerine bowdenii	25	25

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PROPOSED GRASS SEEDING

Proposed Low Maintenance Grass Seed Mix
Sown @ 40g per m^2 to amenity grassed areas to be reinstated to replace disturbed grassed areas
- 20% Hard Fescue
- 30% Strong Creeping Red Fescue
- 15% Smooth Stalked Meadow Grass
- 20% Chewings Fescue
- 15% Browntop Bentgrass

Proposed Wildflower & Grass Seed Mix
For wet ground at suds ponds edges - EC05 mix by Design by Nature or equivalent approved. Sown at a rate of 1.5grams per square metre.

PROPOSED TREE PLANTING

Botanical Name	Specification	Root Condition	Spacing
Semi Mature Tree Planting			
TES - Tilia cordata 'Greenspire'	14-16cm girth, min 200cm clear stem	Root balled	As shown

NOTE:

1. Protective fencing in accordance with the provisions of BS 5837: 2012 is to be erected prior to the construction works commencing on site to enclose the root zone of the trees to be retained. Once erected it is to remain in place for the duration of the project.

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3. Existing Trees to be removed in accordance with BS3998 (2010) Tree Work - Recommendations.

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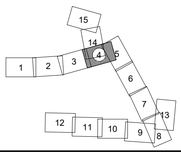
- Cyclepath on Road
- Footpath
- Shared Area
- Shared Area - High Quality Finish
- Filter Drain
- Red Line Boundary
- Proposed Lighting Column with 5m radius tree planting exclusion zone

Client
Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Rev	Date	Drn / Chk	Amendment / Issue	App
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Sheet 4 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier: MDT0875-RPS-00-XX-DR-L- LS0004
Status: S4
Rev: P02

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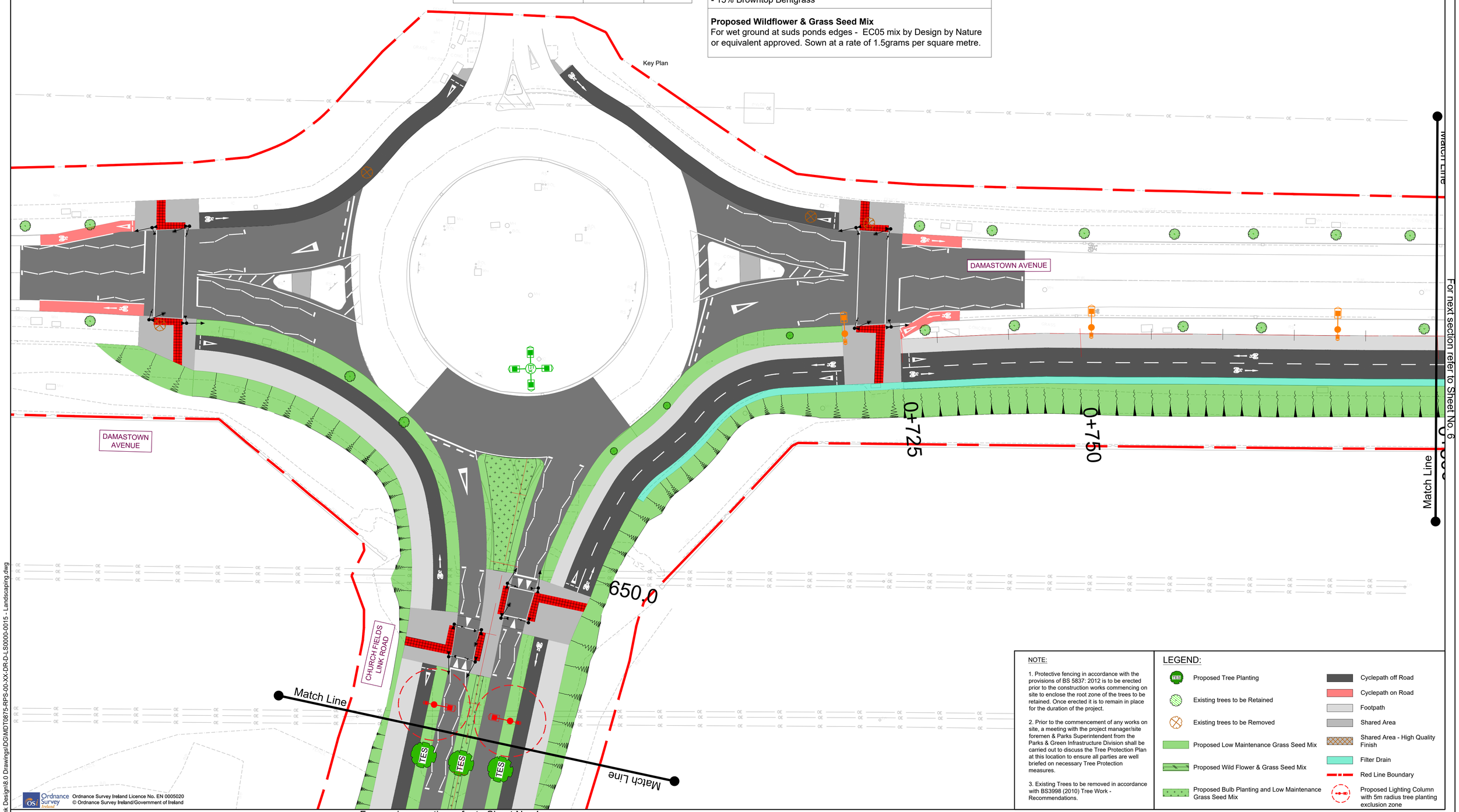

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- Red Line Boundary
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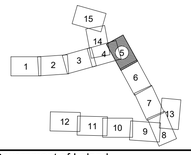
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Rev	Date	Drn / Chk	Amendment / Issue	App
P02	29.01.20	JL / SF	ISSUED FOR PLANNING	MN
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Sheet 5 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title PART 8 PLANNING PROPOSED SOFT LANDSCAPE DESIGN

File Identifier MDT0875-RPS-00-XX-DR-L- LS0005

Status S4

Rev P02

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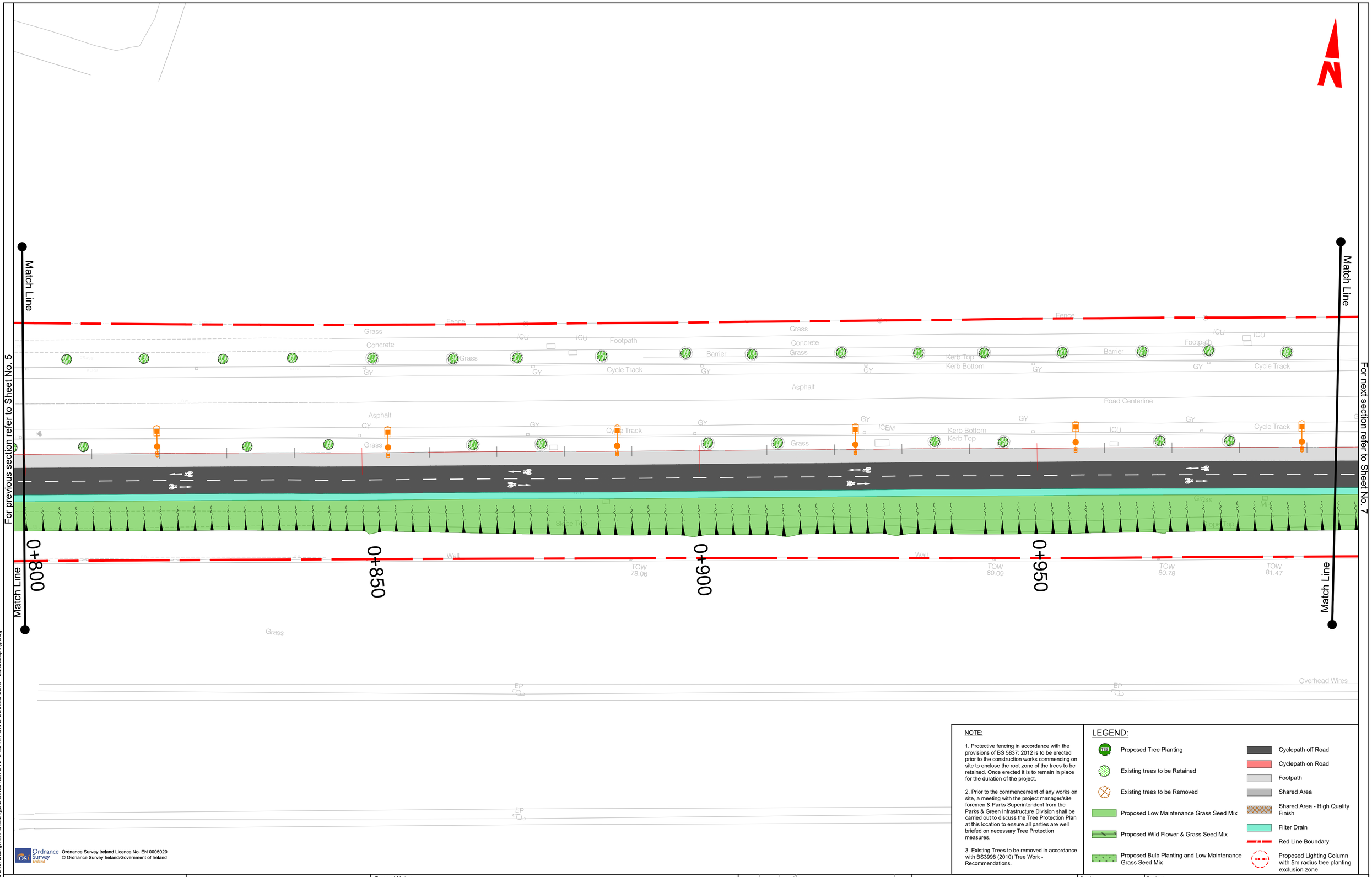

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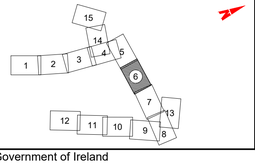
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Sheet
6 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier
MDT0875-RPS-00-XX-DR-L- LS0006

Status
S4

Rev
P02

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For previous section refer to Sheet No. 6

For next section refer to Sheet No. 8

Match Line

Match Line

Match Line

Match Line

1+000

1+050

1+100

1+150

Fence
Grass
Concrete
Grass
Cycle Track
ICU
ICU
Footpath
Kerb Top
Kerb Bottom
Road Centerline
Asphalt
Cycle Track
Grass
Kerb Bottom
Kerb Top
ICU
Grass
Asphalt
Grass
Concrete
Grass
Barrier
MK
MK
ICU
ICU
Road Center
Slope Top
Grass
Wall
Grass
Wall
TOW 82.08
TOW 82.83
TOW 83.46
TOW 84.36
TOW 84.82
TOW 85.19
Overhead Wires
Overhead Wires
Overhead Wires
GY
EP
MH

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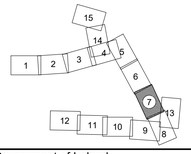
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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NOV. '19

Sheet
7 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier
MDT0875-RPS-00-XX-DR-L- LS0007

Status
S4

Rev
P02

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For next section refer to Sheet No. 13

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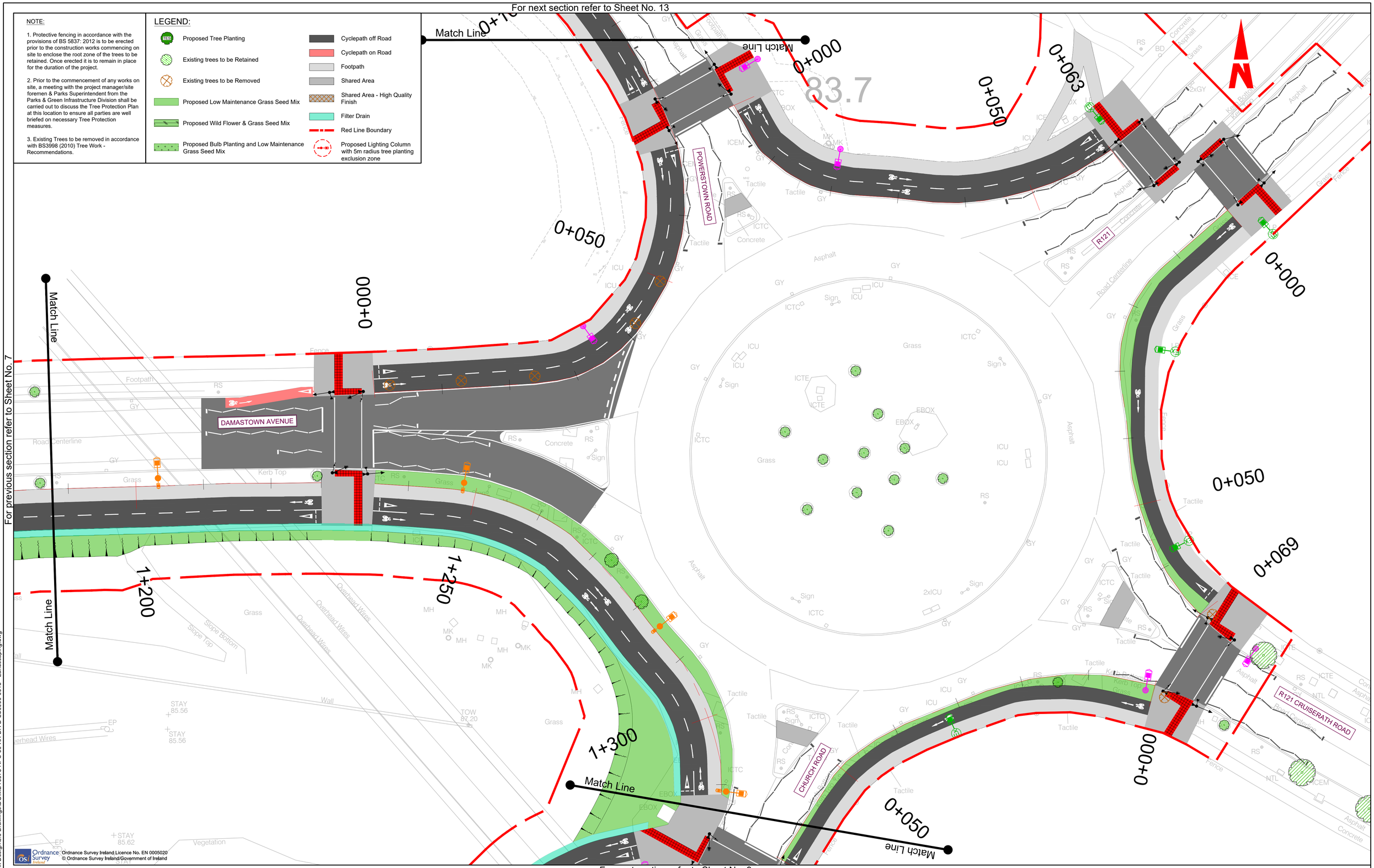


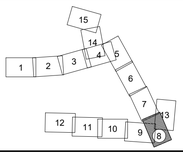
For previous section refer to Sheet No. 7

For next section refer to Sheet No. 9

Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Model File Identifier

Scale 1:250 @ A1 1:500 @ A3

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Sheet 8 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title PART 8 PLANNING PROPOSED SOFT LANDSCAPE DESIGN

File Identifier MDT0875-RPS-00-XX-DR-L- LS0008

Status S4

Rev P02

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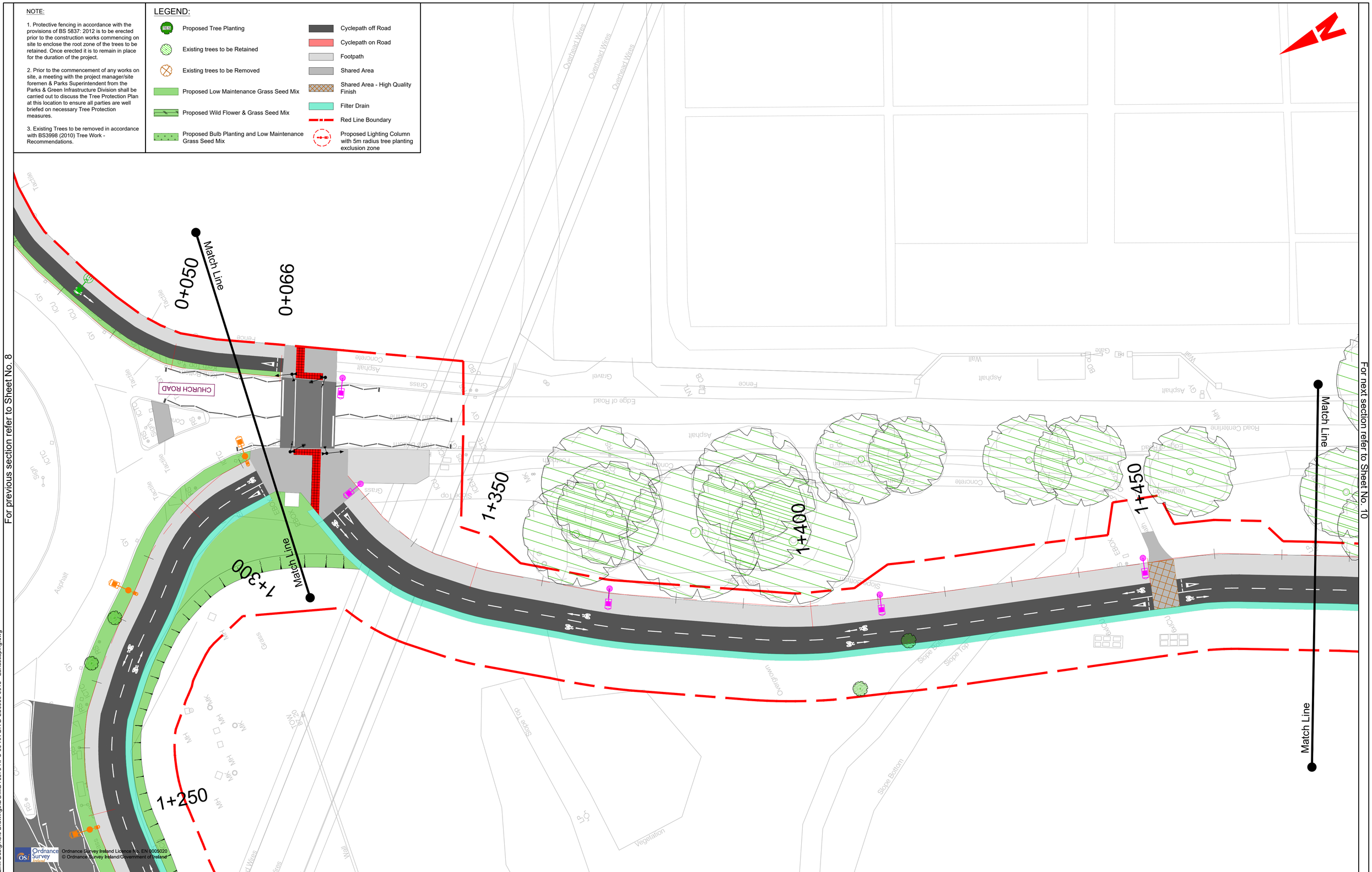

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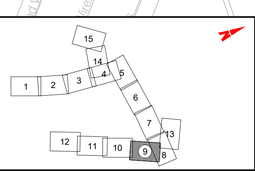
Fingal County Council

Key Plan



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Rev	Date	Drn / Chk	Amendment / Issue	App
P02	29.01.20	JL / SF	ISSUED FOR PLANNING	MN
P01	29.11.19	MCD / SF	ISSUED FOR PLANNING	MN

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Model File Identifier

Scale 1:250 @ A1 1:500 @ A3

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Sheet 9 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title PART 8 PLANNING PROPOSED SOFT LANDSCAPE DESIGN

File Identifier MDT0875-RPS-00-XX-DR-L- LS0009

Status S4

Rev P02

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NOTE:

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LEGEND:

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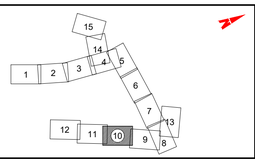
- Shared Area
- Shared Area - High Quality Finish
- Filter Drain
- Red Line Boundary
- Proposed Lighting Column with 5m radius tree planting exclusion zone

Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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P02	29.01.20	JA / SF	ISSUED FOR PLANNING	MN
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Model File Identifier

Scale: 1:250 @ A1, 1:500 @ A3

Created on: NOV. '19

Sheet: 10 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier: MDT0875-RPS-00-XX-DR-L- LS0010

Status: S4

Rev: P02

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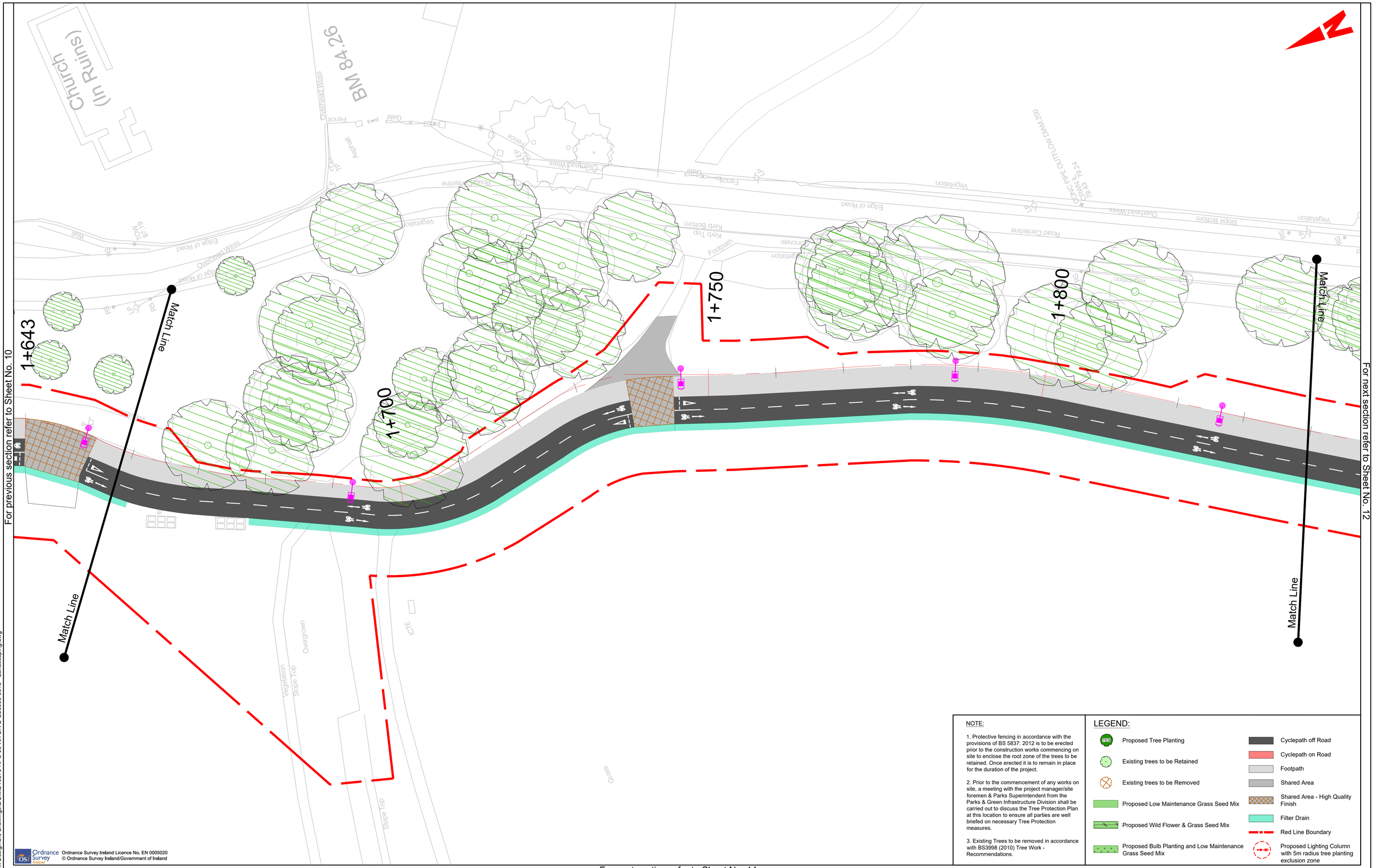
For previous section refer to Sheet No. 10



For next section refer to Sheet No. 12

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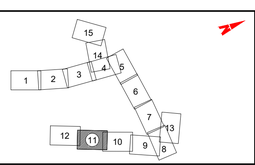
For next section refer to Sheet No. 14

Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Scale: 1:250 @ A1, 1:500 @ A3

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Sheet: 11 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier: MDT0875-RPS-00-XX-DR-L- LS0011

Status: S4

Rev: P02

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For previous section refer to Sheet No. 11

Match Line

Match Line

1+850

1+900

1+950

1+989

BM 70.39

NOTE:

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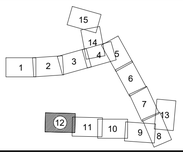
Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Scale
1:250 @ A1
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Created on
NOV. '19

Sheet
12 of 15

Project
CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title
PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier
MDT0875-RPS-00-XX-DR-L- LS0012

Status
S4

Rev
P02

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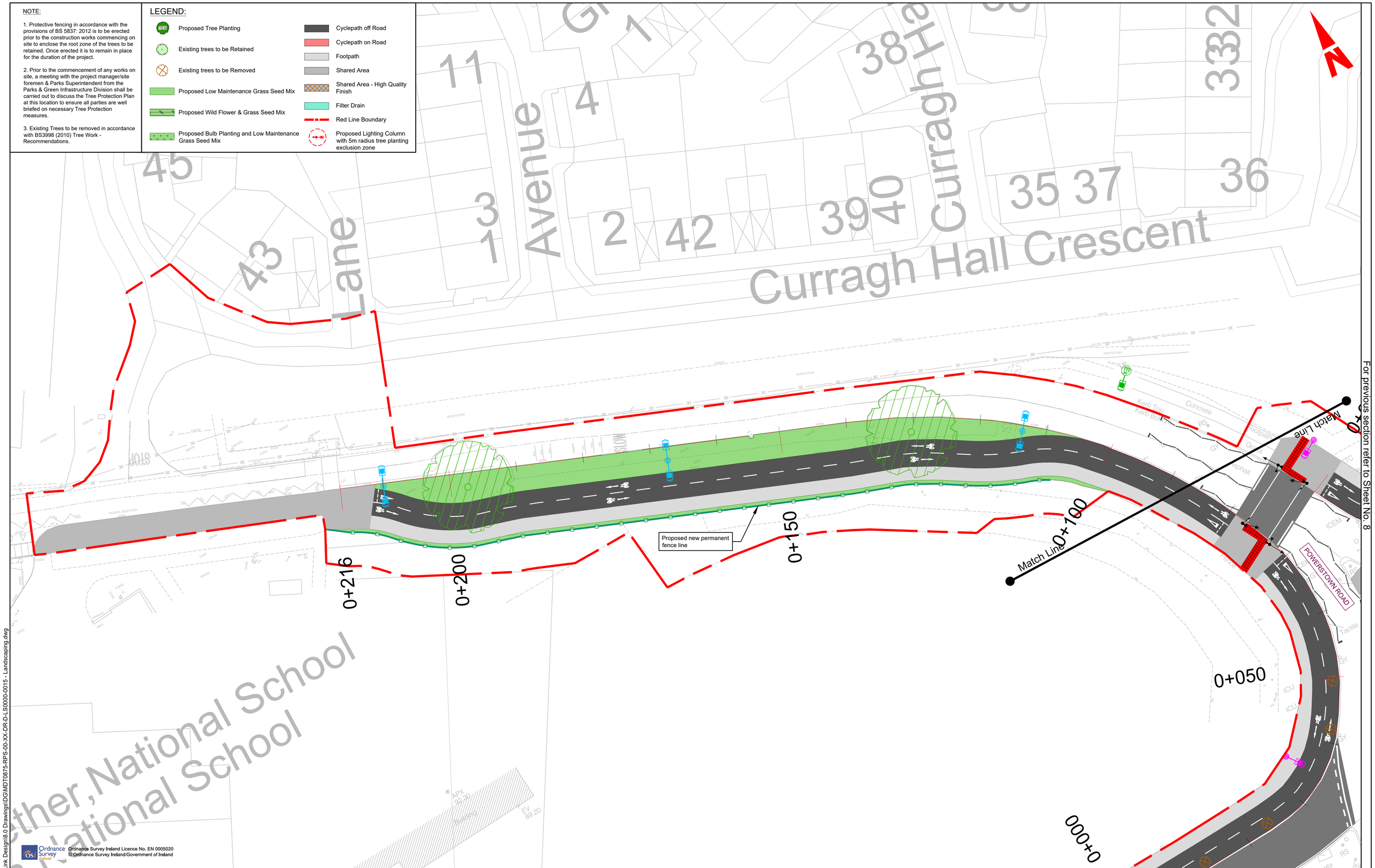
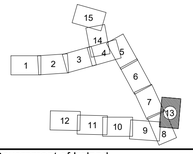


Client

Comhairle Contae Fhine Gall
Fingal County Council

Key Plan



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Scale: 1:250 @ A1, 1:500 @ A3

Created on: NOV. '19

Sheet: 13 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier: MDT0875-RPS-00-XX-DR-L- LS0013

Status: S4

Rev: P02

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For next section refer to Sheet No. 15

Match Line

STAY 66.30

STAY 66.55

Vegetation

Slope Bottom

MH

Asphalt

Slope Top

CHURCH FIELDS FUTURE DEVELOPMENT (WEST)

0.0

50.0

Match Line

For previous section refer to Sheet No. 4

TES

Vegetation

Slope Top

Slope Bottom

Overgrown

Grass

AREA UNDER CONSTRUCTION

Match Line

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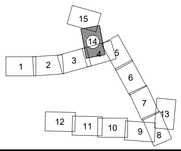

Client

Comhairle Contae Fhine Gall
Fingal County Council

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Model File Identifier

Scale 1:250 @ A1 1:500 @ A3

Created on NOV. '19

Sheet 14 of 15

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title PART 8 PLANNING PROPOSED SOFT LANDSCAPE DESIGN

File Identifier MDT0875-RPS-00-XX-DR-L- LS0014

Status S4

Rev P02

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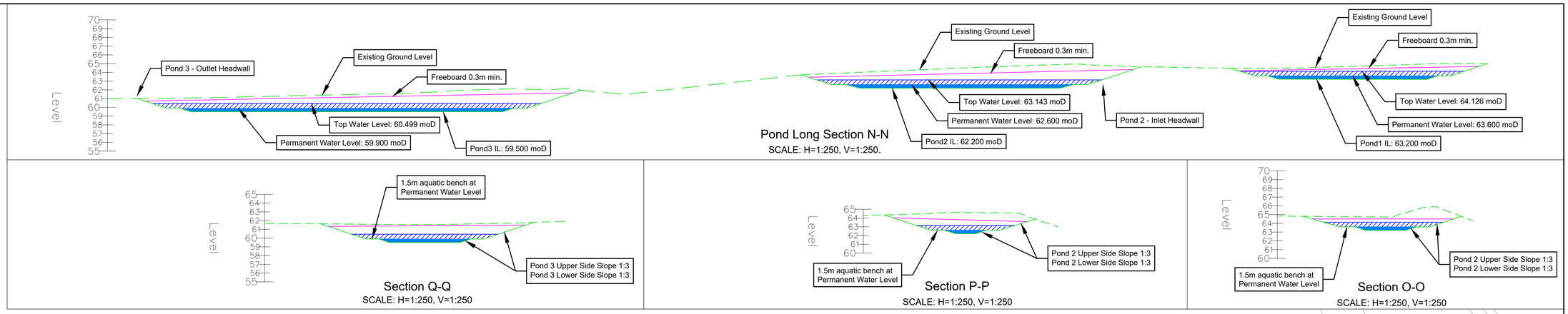

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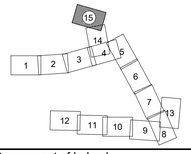
Fingal County Council



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Model File Identifier

Scale: 1:250 @ A1, 1:500 @ A3

Created on: NOV. '19

Sheet: 15 of 15

Project: CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title: PART 8 PLANNING
PROPOSED SOFT LANDSCAPE DESIGN

File Identifier: MDT0875-RPS-00-XX-DR-L- LS0015

Status: S4

Rev: P02

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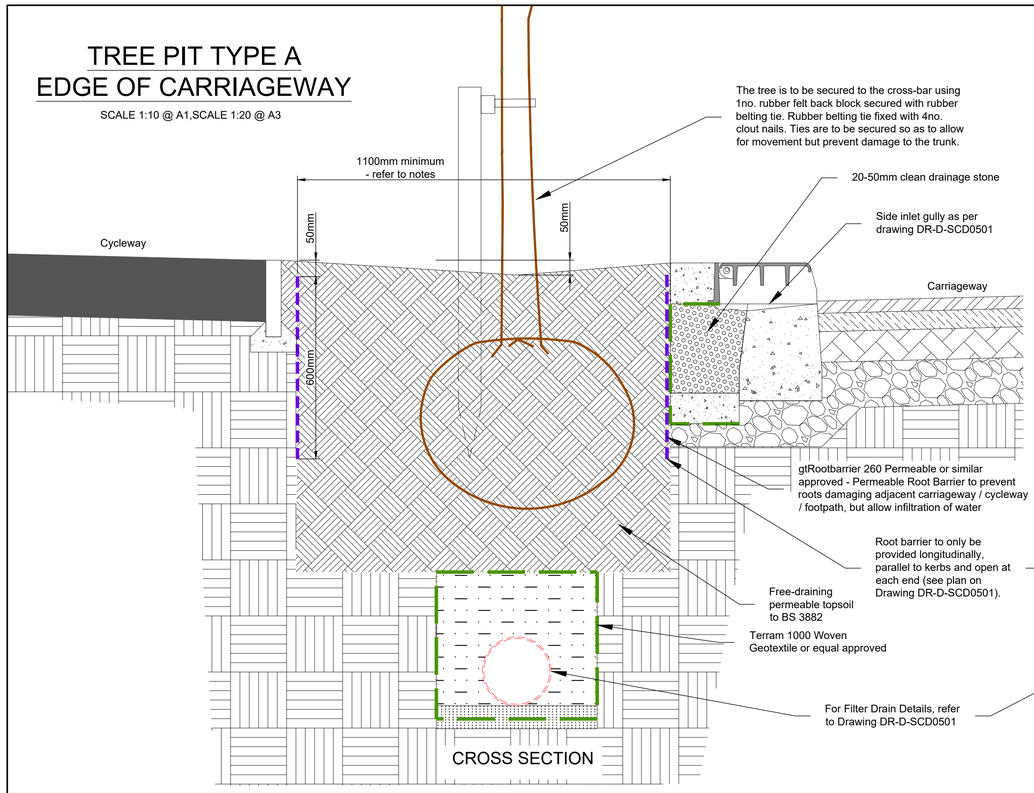
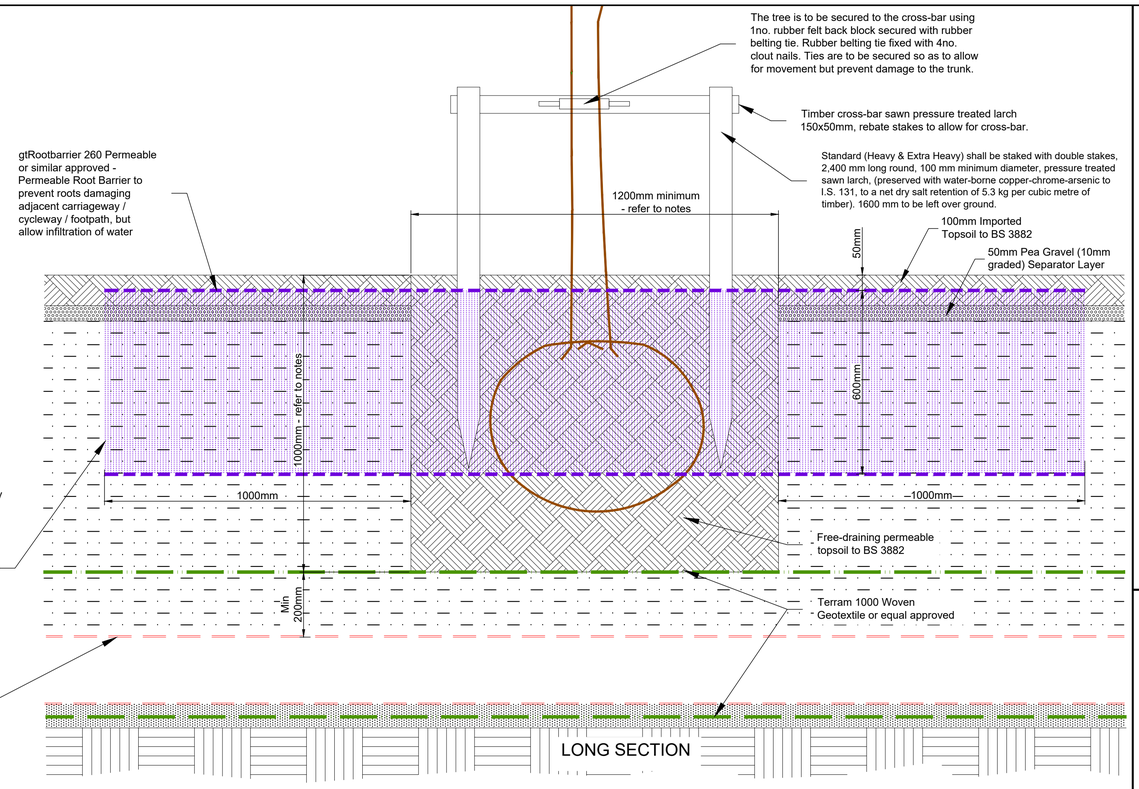
TREE PIT TYPE A
EDGE OF CARRIAGEWAY

SCALE 1:10 @ A1,SCALE 1:20 @ A3



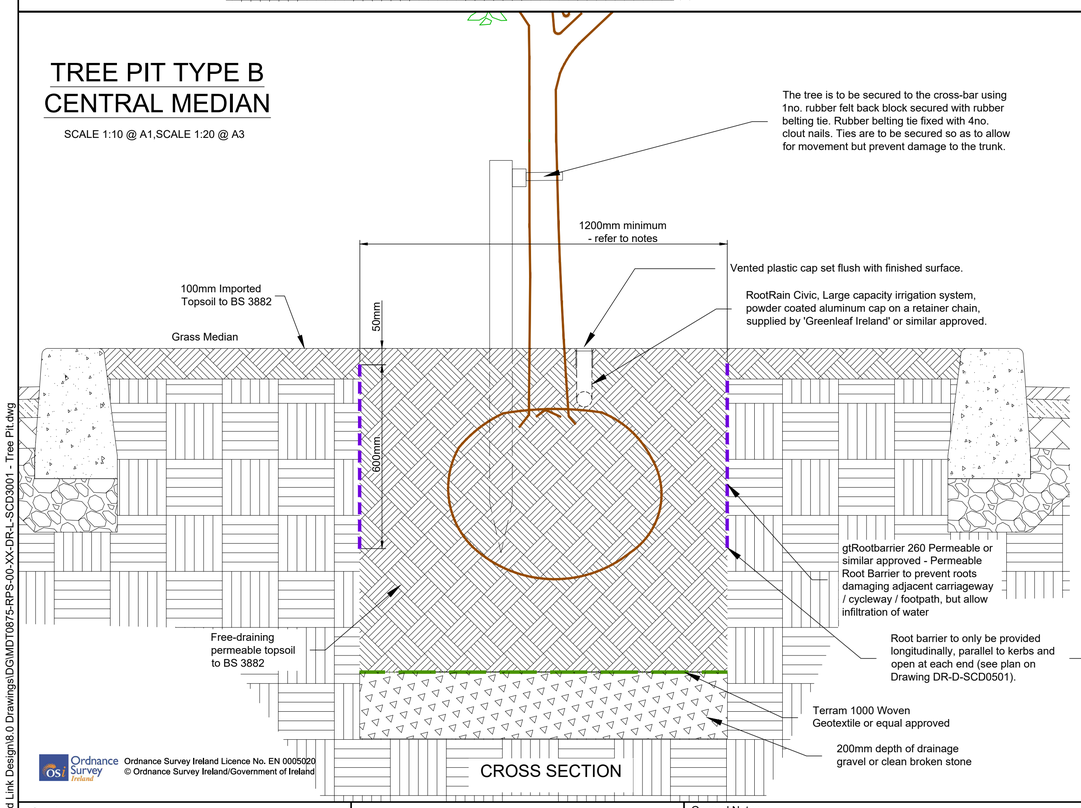
CROSS SECTION



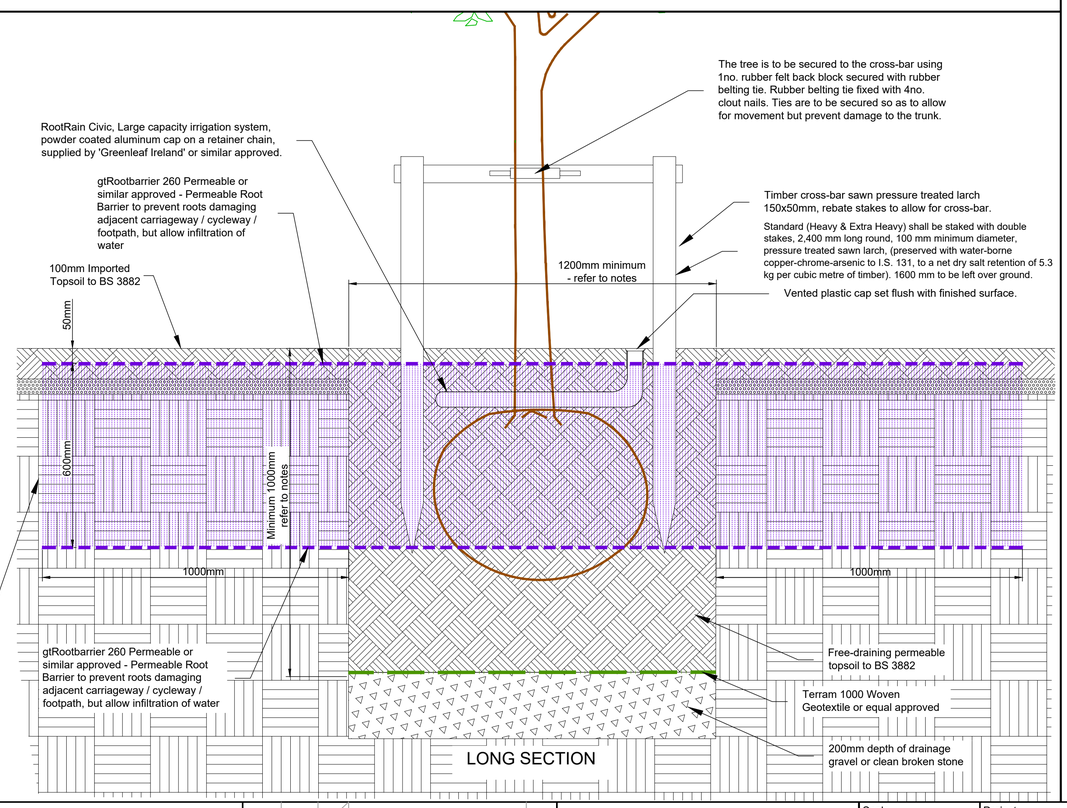
LONG SECTION

TREE PIT TYPE B
CENTRAL MEDIAN

SCALE 1:10 @ A1,SCALE 1:20 @ A3



CROSS SECTION



LONG SECTION

Notes:

1. Tree selected and planted as per bs 3936 - 1:1992 nursery stock. part 1: specification for trees and shrubs.

2. The tree pit should be excavated to allow adequate clearance between the perimeter of the rootball and the side of the pit. A minimum dimension of 1200mm x 1200mm is required for tree pits in the carriageway median. A minimum dimension of 1200mm x 1100mm is required for trees along the carriageway edge. The depth of the pit should be a minimum of 1000mm and deeper than the depth of the root-ball.

3. Fork the bottom and sides of the pit to break up the subsoil. mix the dug soil with a slow release fertiliser.backfill with good quality imported top soil, plant the tree, ensuring that the soil is carefully backfilled in layers to manufacturers specification (backfilled in 300mm layers each layer compacted to 1.5-2.0 mega pascals and checked with a pantograph). backfilled topsoil to be brought up to existing ground level and to match the line of the original nursery mark on the tree.

4. Drive in the stakes vertically on either side of the tree position before planting so that they are 300mm minimum below the bottom of the pit and 650mm above ground level. stakes will be machine rounded sweet chestnut or peeled larch poles, pointed at one end, preserved to avoid rot for their required lifespan and stong enough to take nails without splitting.

5. Crossbar to be sawn pressure treated larch 150x50mm. secure crossbar to stakes using 2 galvanised clout nails per stake. secure tree to crossbar with 1 rubber felt back block secured with rubber tie. tie to be secured to allow expansion / growth of tree without damage to trunk.

6. Stakes and rail to be removed as soon as the tree is established and firmly supported by its own root growth.

LEGEND:

- Imported Topsoil to BS 3882
- Subsoil
- Filter Drain filling material
- Cut concrete section
- Granular material (Type 1, clean stone)
- Pea Gravel (10mm graded) Separator Layer
- Geotextile
- Root Barrier

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Client

Comhairle Contae Fhine Gall
Fingal County Council

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(iv) Information including topographical survey, geotechnical investigation and utility detail used in the design have been provided by others.

(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drn	Chk	Amendment / Issue	App
P02	27.01.20	JL	SF	ISSUED FOR PLANNING	MN
P01	29.11.19	JL	SF	ISSUED FOR PLANNING	MN

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Model File Identifier

Scale 1:10 @ A1 1:20 @ A3

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Sheet 1 of 1

Project CHURCH FIELDS LINK ROAD & CYCLE NETWORK

Title PART 8 PLANNING
LANDSCAPING STANDARD DETAILS
TREE PIT DETAILS

File Identifier MDT0875-RPS-00-XX-DR-L-SCD3001

Status S4

Rev P02

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