

Natura Impact Statement

N17 Milltown to
Gortnagunne
Realignment, County
Galway





DOCUMENT DETAILS

Client: **Galway County Council**

Project Title: **N17 Milltown to Gortnagunned Realignment, County Galway**

Project Number: **190540**

Document Title: **Natura Impact Statement**

Document File Name: **NIS – F- 2021.12.09 – 190540**

Prepared By: **MKO
Tuam Road
Galway
Ireland
H91 VW84**



Rev	Status	Date	Author(s)	Approved By
01	Draft	26/11/2020	JOS	JH/PR
02	Draft	08/11/2021	JOS/SM	PR
03	Final	09/12/2021	JOS/SM	PR

Table of Contents

1.	INTRODUCTION.....	2
1.1	Background.....	2
1.2	Statement of Authority	2
1.3	Structure and Format of this NIS	2
2.	CONCLUSIONS OF ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING REPORT	4
2.1	Lough Corrib SAC.....	4
2.2	Lough Corrib SPA.....	5
3.	DESCRIPTION OF PROPOSED DEVELOPMENT	7
3.1	Site Location.....	7
3.2	Characteristics of the Proposed Development	7
3.2.1	Description of the project	7
3.2.2	Outline Erosion and Sediment Control Plan (OESC)	9
4.	CHARACTERISTICS OF THE RECEIVING ENVIRONMENT	14
4.1	Desk Study.....	14
4.1.1	Desk Study methodology.....	14
4.2	Ecological Survey Methodologies.....	14
4.2.1	Ecological Multidisciplinary Walkover Surveys.....	14
4.2.2	Watercourses.....	14
4.2.3	Otter Survey	15
4.3	Desk Study Results.....	15
4.3.1	EPA River Catchments & Watercourses	15
4.3.2	IFI assessment of Clare River	16
4.3.3	Lough Corrib SAC	16
4.3.4	Lough Corrib SPA	21
4.4	Ecological Survey results	22
4.4.1	Habitat survey	22
4.4.2	Invasive species	30
4.4.3	Watercourses and Aquatic Fauna.....	30
4.4.4	Otter.....	30
5.	ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION.....	31
5.1	Potential for Direct Effects on the European Sites.....	31
5.2	Potential for Indirect Effects on the European Sites.....	31
5.2.1	Deterioration of Water Quality.....	31
5.2.2	Otter - Disturbance, Displace and Mortality	32
5.2.3	Best Practice to prevent the Spread of Invasive Species.....	34
6.	ASSESSMENT OF RESIDUAL ADVERSE EFFECTS	36
6.1	Lough Corrib SAC.....	36
6.1.1	White-clawed Crayfish (<i>Austropotamobius pallipes</i>)	36
6.1.2	Brook Lamprey (<i>Lampetra planeri</i>).....	37
6.1.3	<i>Petromyzon marinus</i> (Sea Lamprey) [1095].....	37
6.1.4	<i>Salmo salar</i> (Salmon) [1106]	38
6.1.5	<i>Lutra lutra</i> (Otter) [1355]	39
6.1.6	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i> ’	40
6.1.7	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)	43
6.1.8	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.....	44

6.1.9	Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation.....	46
6.2	Lough Corrib SPA.....	52
6.2.1	Wetland and Waterbirds [A999].....	52
6.3	Conclusion of Residual Impact Assessment.....	52
7.	CUMULATIVE EFFECTS.....	54
7.1.1	Plans.....	54
7.1.2	Other Projects.....	58
7.1.3	Conclusion of Cumulative Assessment.....	59
8.	CONCLUDING STATEMENT	61
	BIBLIOGRAPHY	62

TABLE OF TABLES

<i>Table 4-1 Qualifying Interest and Conservation Objectives (Version 01, 2017).....</i>	16
<i>Table 4-2 Site-specific threats, pressures and activities.....</i>	18
<i>Table 4-3 Qualifying Interest and Conservation Objectives (Version 06, NPWS, 2018).....</i>	21
<i>Table 4-4 Site-specific threats, pressures and activities.....</i>	21
<i>Table 4-5 Habitats within the development site.....</i>	23
<i>Table 6-1 Targets and attributes associated with nominated site-specific conservation objectives for White-clawed Crayfish.....</i>	36
<i>Table 6-2 Targets and attributes associated with nominated site-specific conservation objectives for Brook Lamprey.....</i>	37
<i>Table 6-3 Targets and attributes associated with site-specific conservation objectives for <i>Petromyzon marinus</i> (Sea Lamprey).....</i>	38
<i>Table 6-4 Targets and attributes associated with nominated site-specific conservation objectives for <i>Salmo salar</i> (Salmon) [1106].....</i>	38
<i>Table 6-5 Targets and attributes associated with the site-specific conservation objectives for otter [1355].....</i>	39
<i>Table 6-6 Targets and attributes associated with the site-specific conservation objectives for Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i>.....</i>	40
<i>Table 6-7 Targets and attributes associated with the site-specific conservation objectives for Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletea uniflorae</i>).....</i>	43
<i>Table 6-8 Targets and attributes associated with the site-specific conservation objectives for Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i>.....</i>	45
<i>Table 6-9 Targets and attributes associated with the site-specific conservation objectives for Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation.....</i>	46
<i>Table 6-10 Targets and attributes associated with the site-specific conservation objectives for Wetland and Waterbirds [A999].....</i>	52
<i>Table 7-1 Review of plans.....</i>	55

APPENDICES

Appendix 1	Appropriate Assessment Screening Report (AASR)
Appendix 2	Design Drawings

1. INTRODUCTION

1.1 Background

McCarthy Keville O’Sullivan Ltd. (MKO) has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment of the proposed N17 Milltown to Gortnagunned road realignment in Co. Galway.

An Appropriate Assessment Screening Report has been prepared and is provided in Appendix 1. The Article 6(3) Appropriate Assessment Screening Report has identified the European Sites upon which the proposed development has the potential to result in significant effects and the pathways by which those effects may occur. It has also identified those qualifying interests/special conservation interests that have the potential to be affected by the proposed development.

This NIS has been prepared in accordance with the European Commission guidance document Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001), European Communities (2018) Managing Natura 2000 Sites: the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission and the Department of the Environment’s Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

In addition to the guidelines referenced above, the following relevant guidance was considered in preparation of this report:

1. *European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
2. *Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
3. *EC (2007) Guidance document on Article 6(4) of the ‘Habitats Directive’ 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission.*
4. *EC 2021., Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*

1.2 Statement of Authority

A field assessment was undertaken by Julie O’Sullivan (B.Sc., M.Sc.) and Aoife Joyce (B.Sc., M.Sc.) on the 11th of July 2019 and 28th of August 2019, and again on 14th October 2021 by Claire Stephens (B.Sc.). Aoife is an experienced ecologist with three years’ experience. This report has been prepared by Julie O’Sullivan. Julie is an experienced ecologist with over five years professional experience. This report has been reviewed by John Hynes (B.Sc., M.Sc., MCIEEM) who has over ten years’ experience in ecological consultancy and Pat Roberts (B.Sc., MCIEEM), who has over fifteen years’ experience in ecological consultancy.

1.3 Structure and Format of this NIS

This NIS firstly provides a summary of the findings of the Article 6(3) Appropriate Assessment Screening Report. This clearly identifies the European Sites that have the potential to be significantly

affected by the proposed development and the pathways by which they might be affected. This sets out the scope of the NIS. Following this, the all elements of the proposed project are fully described as is the baseline environment with respect to the relevant QI/SCI of the screened in European Sites.

Section 5 provides an assessment of the potential for adverse effects on the identified European Sites and prescribes mitigation to robustly block any identified pathways for impact. Section 6 provides an assessment of residual effects taking into consideration the proposed mitigation.

In Section 7, the potential in combination effects of the proposed project on European Sites, when considered in combination with other plans and projects was considered. A concluding statement is provided in Section 8.

2.

CONCLUSIONS OF ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING REPORT

The Article 6(3) Appropriate Assessment Screening report, that is provided as Appendix 1 to this NIS, identified the potential for the proposed development to result in likely significant effects on the following European Sites:

- Lough Corrib SAC
- Lough Corrib SPA

A summary of the screening assessment for each of these sites is discussed individually below in terms of the Qualifying Interests/Special Conservation Interests with the potential to be affected and the pathways by which any such effects may occur. The location of the proposed development in relation to EU Designated sites is shown in Figure 2.1 and the relation of the proposed development in relation to Lough Corrib SAC is shown in Figure 2.2.

2.1

Lough Corrib SAC

This European Site is adjacent to the boundary of the proposed works area. There is no potential for direct impact as the proposed development is outside of the site boundary.

Indirect impacts on the following QIs were ruled out at the screening stage due to the terrestrial nature of the habitats/species, the distance from the proposed development and the absence of a complete source-pathway-receptor chain for impact:

- Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
- Active raised bogs*
- Degraded raised bogs still capable of natural regeneration Depressions on peat substrates of the Rhynchosporion
- Limestone pavements*
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
- Bog Woodland
- Slender Green Feather-moss (*Drepanocladus vernicosus*)

Indirect impacts on freshwater pearl mussel (*Margaritifera margaritifera*) and lesser horseshoe bat (*Rhinolophus hipposideros*) were also ruled out at the screening stage. This SAC is designated for the Owenriff freshwater pearl mussel population, which occurs in separate hydrological catchment to the works area. There is no pathway for significant effect on this population as a result of the proposed development.

According to Map 11 of the site-specific conservation objects document, Lough Corrib SAC has been selected for lesser horseshoe bats because of the presence of one important summer roost, located on the northern shores of Lough Corrib, more than 26km north-west of the proposed development. The proposed development is outside the foraging range of the lesser horseshoe bat population for which the SAC is designated (i.e. 2.5km as per Map 11 of the SSCO document). There is no pathway for significant effect on the population of lesser horseshoe bat as a result of the proposed development.

The individual pathways for effect that were identified in Table 3.1 of the AA Screening Report (Appendix 1) and the QIs with the potential to be affected are described below.

The proposed development has the potential to cause deterioration in surface water quality during construction and operation, potentially affecting the following aquatic habitats and supporting habitats for the aquatic fauna where they occur downstream of the proposed development:

- > White-clawed Crayfish (*Austropotamobius pallipes*)
- > Brook Lamprey (*Lampetra planeri*)
- > Sea Lamprey (*Petromyzon marinus*)
- > Salmon (*Salmo salar*)
- > Otter (*Lutra lutra*)
- > Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- > Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*
- > Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- > Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation
- > Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae**
- > Petrifying springs with tufa formation (*Cratoneurion*)*
- > Alkaline fens
- > Slender naiad (*Najas flexilis*)

Taking a precautionary approach there is also potential for percolation of pollutants to groundwater during construction activities, potentially affecting the above listed aquatic QIs.

The proposed development also has the potential to cause disturbance, displacement and collision mortality related effects to Otter during construction works and during the operational phase of the development.

2.2 Lough Corrib SPA

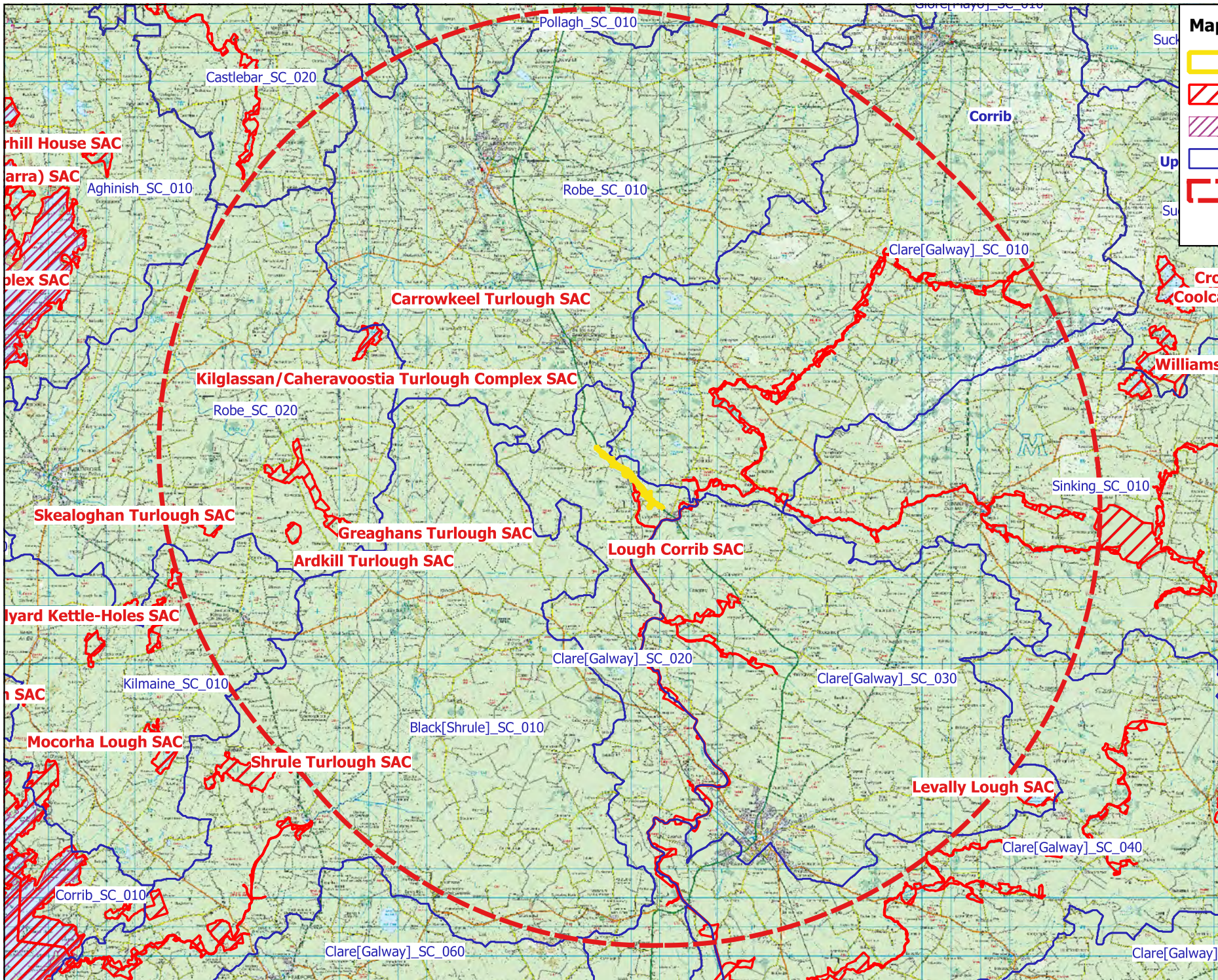
The individual pathways for effect that were identified in Table 3.1 of the AA Screening Report (Appendix 1) and the SCIs with the potential to be affected are described below.

A potential pathway for indirect effects was identified in the form of deterioration of surface water quality resulting from pollution, associated with the construction of the development. The proposed development has connectivity to this SPA, 56.3km via surface water distance downstream of the development, via drainage ditches and watercourses that discharge to the River Clare. Taking a precautionary approach there is a potential pathway for indirect effects on the following SCI species of the SPA via impact to their supporting habitat, Wetland and Waterbirds [A999], through deterioration of water quality during the construction and operational phases of the development:

- > Gadwall (*Anas strepera*)
- > Shoveler (*Anas clypeata*)
- > Pochard (*Aythya ferina*)
- > Tufted Duck (*Aythya fuligula*)
- > Common Scoter (*Melanitta nigra*)
- > Hen Harrier (*Circus cyaneus*)
- > Coot (*Fulica atra*)
- > Golden Plover (*Pluvialis apricaria*)
- > Black-headed Gull (*Chroicocephalus ridibundus*)
- > Common Gull (*Larus canus*)
- > Common Tern (*Sterna hirundo*)
- > Arctic Tern (*Sterna paradisaea*)
- > Greenland White-fronted Goose (*Anser albifrons flavirostris*)

The potential pathway for indirect effects on the habitat of above listed SCI species has been considered below under the following SCI habitat:

- Wetland and Waterbirds [A999]



Map Legend

- Site Location
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- WFD Hydrological Sub-catchment
- 15km Buffer

Ordnance Survey Ireland Licence No. AR 0021821 © Ordnance Survey Ireland/Government of Ireland



Drawing Title
European Designated Sites within 15km

Project Title
N17 Milltown to Gortnagunned

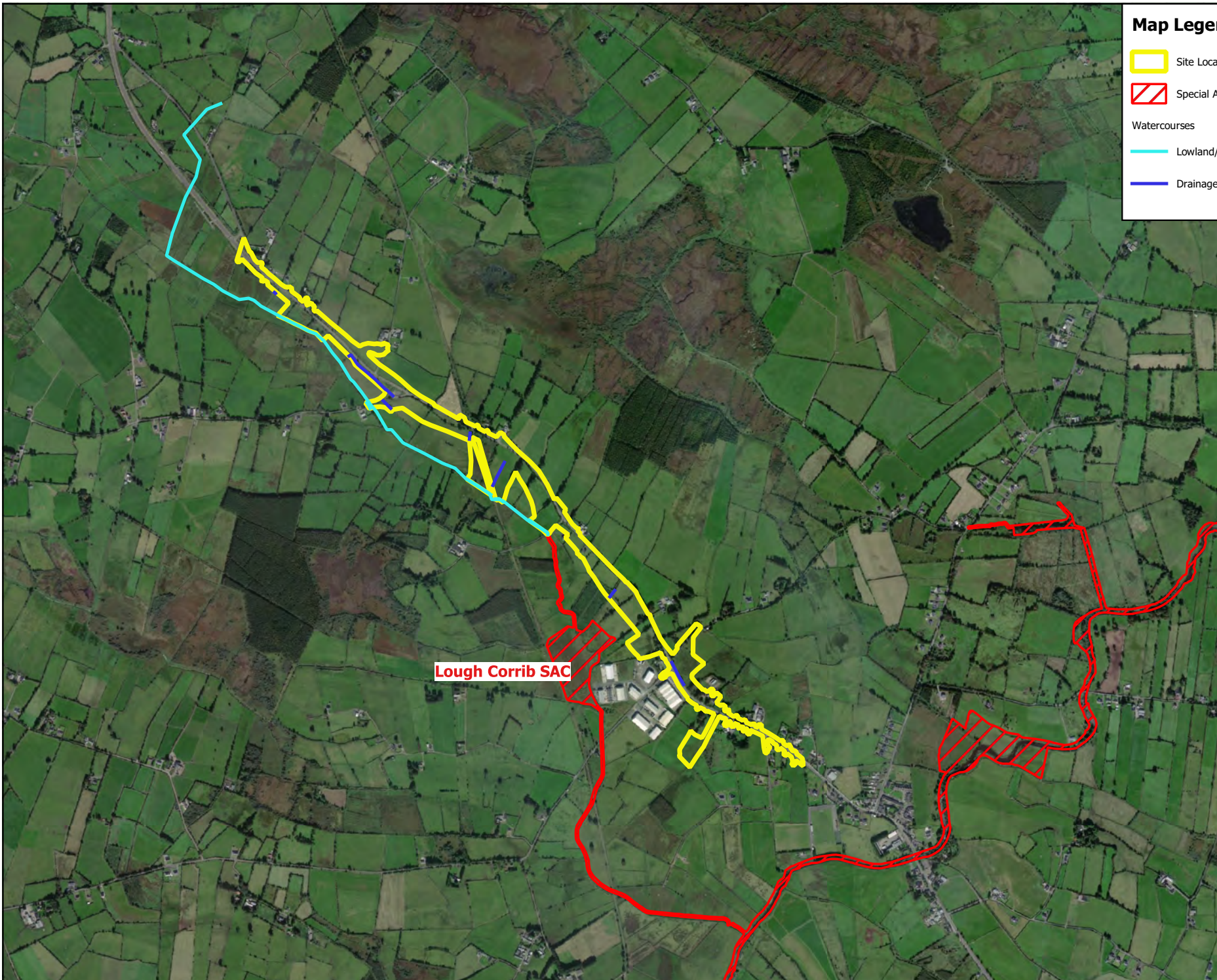
Drawn By	Checked By
CS	SM

Project No.	Drawing No.
190540	Figure 2.1

Scale	Date
1:170000	2021-11-08



MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Webste: ww.mkofireland.ie



Map Legend

-  Site Location
-  Special Area of Conservation (SAC)
- Watercourses
-  Lowland/Depositing River/Stream (FW2)
-  Drainage Ditch (FW4)

Lough Corrib SAC



Drawing Title
Location of Proposed Development in relation to Lough Corrib SAC

Project Title
N17 Milltown to Gortnagunned

Drawn By CS	Checked By SM
Project No. 190540	Drawing No. Figure 2.2
Scale 1:20220	Date 2021-11-08



MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Webste: www.mkofireland.ie

3. DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 Site Location

Galway County Council is currently planning a 3km (approx.) upgrade of the N17 National Primary Route, between the townlands of Milltown and Gortnagunned, located immediately north-west of Milltown, Co. Galway (grid reference: M 40235 63265).

The project is located along N17 from Milltown to Gortnagunned and consists of both online and offline realignment of the existing road. The scheme commences north at Gortnagunned and extends approximately 3.0km south where it ties in at Milltown.

The realignment will take place in the townlands of Milltown, Cartron, Gortnaloura, Cloonnacross, Drum and Gortnagunned. The project will remove a number of substantially deficient bends on this section of the route and in so doing, will improve aspects such as safety, sight distance, cross sectional width and drainage.

The proposed scheme will tie-in on the Northern end with an existing section of the N17 that has already been upgraded and is of a higher standard and on the Southern end will tie in with the town of Milltown.

The proposed development location is provided in Figure 2.3.

3.2 Characteristics of the Proposed Development

3.2.1 Description of the project

The project will remove a number of substantially deficient bends on this section of the route and in so doing, will improve aspects such as safety, sight distance, cross sectional width and drainage. The road type proposed for the project corresponds to a Type 1 Single Carriageway arrangement. The site layout is shown in Drawings SE01-SE04 in the Design Drawings submitted with the planning application and also included in Appendix 2 of this report.

The scheme includes the upgrade of 3km of the N17 North of Milltown, Co Galway. The realignment consists of both online on offline construction. The route consists of a Type 1 single carriageway and is designed in accordance with TII Rural Road Link Design, DN-GEO-03031. The road will consist of two lanes of 3.65m, a hard shoulder for each carriageway of 2.5m, a verge of 3m on the right-hand side and a verge of 5m on the left-hand side incorporating a shared footpath/cycle track. This cross section shall extend from Ch + 0 to Ch 2 + 560 of the scheme. Ch 2 + 560 to the end of the scheme is a Single Carriageway Urban Road with footway and cycleway on both sides of the carriageway. The design speeds for the proposed scheme are listed below, which is consistent and designed in accordance with TII DMRB's and DMURS.

- The design speed is 100km CH +0 to CH 2+180
- The design speed is 85km CH 2+180 to CH 2+560
- The design speed is 60km CH 2+560 to CH 2+945

The project will entail:

- Circa 3km of Realignment to the existing N17 National Primary Route (c. 1550m online and c.1450m offline);

- Junction Improvements including:

 - 7 no. Simple T Junctions, including one Right/Left Staggered T Junction;
 - Circa 0.775km of realignment to the existing local road network (tie-in works);
 - 34no. Direct Access connections to the National Primary network (17 no. agricultural and 17 no. residential); Where the new road has been realigned away from the original N17, the number of local access points have been rationalised to provide one access point onto the main carriageway from a number of access points. This will improve the safety of the route by reducing the number of possible conflicts.
 - Where direct vehicular access to local properties and farmland has to be provided to the realigned road and cannot be mitigated, the minimum SSD will be maintained at all access points, particularly those that agricultural machinery will use.
- It is proposed to provide a footway/cycleway on the Left Hand Side (LHS) from Ch + 0 to Ch 2 + 560, 3m wide with a 2% slope falling towards the carriageway, with a reduced width of 2m from Ch 0 + 120 to Ch 0 + 200. The footway/cycleway is designed in accordance with DN – GEO – 03047 Rural Cycleway Design (Offline). Also, it is proposed to extend the footway/cycleway on both sides of the alignment from an approximate chainage of Ch 2 + 560 to Ch 2 + 945. The footway/cycleway is proposed to be 4.5m wide. This footway/cycleway is then extended on the western side of the alignment and goes offline from Ch 2 + 560 to Ch 2 + 310 utilising the old road corridor providing connectivity to the N17 Store. The footway/cycleway is designed in accordance with TD300/14 of the TII DMRBs.
- The proposed road drainage system will replace the current organic system where the road run-off is discharging directly to the receiving water courses and groundwater. The proposed system has been designed to ensure the speedy removal of surface water in order to provide safe driving conditions and to minimise the impact of runoff on the receiving environment. The drainage proposals have been developed in accordance with the TII Design Manual for Roads and Bridges and the principles of SuDS (Sustainable Drainage Systems) will be applied throughout. The proposed drainage system includes petrol interceptors and attenuation ponds, all of which ensure that run off is attenuated and treated before being discharged.

 - Runoff from the road will be collected via filter drainage pipes, concrete channels and gullies at various chainages.
 - The proposed drainage system will be installed in the verge of the carriageway and drain to 4 no. outfalls positioned at low points in the alignment adjacent to existing watercourses.
 - Water will be discharged to attenuation ponds prior to discharging to reaching the outfalls. Upstream of all outfalls, runoff will be detained and treated in the ponds.
 - Downstream of all outfalls, an oil/petrol interceptor will be provided prior to water entering a watercourse at the outfall.
 - Attenuation ponds have been designed using a 1 in 100 storm event plus 20% for climate change.
 - The drainage system discharges via all outfalls either directly or indirectly to the Drum stream to the south of the proposed development, which flows south before eventually connecting into the River Clare approximately 1.5 km downstream. The River Clare is included within the Lough Corrib SAC.
 - The drainage layout, including the location of attenuation ponds and outfalls is shown on Drawings DR-01 to DR-04 and OD-01 to OD-04 of the design drawings submitted with the planning application (and also included in Appendix 2 of this report).
- The new scheme intercepts various utility services along its mainline, link roads and side roads. The works required to protect/divert existing services shall be developed further during detailed design. Affected utilities include the following

 - Low and Medium Voltage Electricity Lines
 - Water Supply
 - Telecommunications
 - Irish Rail
- Earthworks operations; Data gained from the ground investigation will be interpreted and utilized during detailed design for the design of the earthworks required in the construction of the scheme. It is expected that the majority of materials required in construction will be imported as it is

expected from that there are low volumes of acceptable material available within the site extents. There will be 2 no. Spoil Repository/Borrow Pits. A set back of 25m is provided at the spoil area which is adjacent to the tributary stream of the Clare River.

- As the scheme has sections of work that are both on-line and offline and as such the Contractor shall be responsible to undertake the works in a manner that will cause the least amount of traffic disruption. The haulage of materials to and from the site will create a significant temporary impact to both road users and to residents living this section of the N17. To minimize these impacts, only authorized site access roads, as directed by the Local Authority, will be used by construction vehicles. The construction process will be planned to accommodate existing traffic flows and the daily construction operations adjacent to the scheme.

3.2.2

Outline Erosion and Sediment Control Plan (OESC)

An Outline Erosion and Sediment Control Plan (OESC), accompanies this application, and has been prepared as a method of water quality preservation to offset potential construction stage pollution impacts from the N17 project to adjacent watercourses including various tributaries of the River Clare which is protected under Lough Corrib SAC (000297).

The Principal mitigation Measures included in the OESC are summarised below:

General

- The site will be fenced off, prior to works commencing.
- Before earthworks commence on site – drainage, erosion control and sediment control measures will be in place and functioning.
- Silt Fences will be erected in accordance with the manufacturer's recommendations and in compliance with the Design Criteria outlined in CIRIA C648 Control of Water Pollution from Linear Construction Projects:
 - a. At all sections of road construction where the works are at or above existing ground level
 - b. Along any other identified surface pathways for sediment laden runoff;
- Where land drains intersect the site boundary or where the adjacent land falls towards the construction site – temporary cut-off drains will be provided to intercept this clean runoff water and divert to the nearest watercourse. Small check dams will be constructed in these cut-off drains to trap any sediment and prevent erosion. Silt fences will be provided immediately before the outfall to existing watercourses as a precaution and to allow a response time in the event of an emergency. Trapped sediment will be removed regularly from behind the check dams, deposited >25m from any watercourse and reseeded with grass seed or alternatively removed to licenced waste facility.
- All watercourses will be fenced off with double silt fences located at least 10m back from the watercourse bank until such time as the road crossing is constructed.
- All silt fences at watercourse crossings will be inspected on a daily basis and repairs or replacements carried out as required.
- Dewatering and surface water runoff discharges from the construction site will be controlled, collected and routed via appropriate treatment measures. The measures will include appropriately sized settlement ponds as shown in Drawings DR01 to DR04 of the design drawings submitted with the planning application (and also included in Appendix 2 of this report). Each pond will be provided with a double silt curtain at the outfall from the pond and a further double silt fence located before the discharge point. These facilities will be inspected/ maintained at least on a daily basis.
- Check dams and sediment traps shall be placed along constructed drains to reduce the velocity of concentrated runoff.
- Direct connections between the settlement pond outfalls and the watercourse will not be allowed. Instead, the outfall will be allowed to disperse across at least 3m of undisturbed vegetated ground, covered with a coir mesh or similar matting prior to reaching the watercourse;
- Where these ponds cannot be constructed in the dry, then they shall be formed by constructing bunds and placing an appropriate geotextile liner on top. Any/ all materials arising from the

construction of the temporary settlement ponds shall be removed offsite to a licensed facility or used elsewhere in the works if deemed appropriate.

- Landscaping of the constructed road will be carried out in stages as the works progress and will commence as soon as is practicable in each of the outfall catchment areas;
- The requirement for reseeding will be determined by the final land use (i.e. agricultural, amenity etc.). If seeding of cut/fill slopes is not practical, the use of roughened slope surfaces shall be considered by the contractor which will encourage water infiltration, and decrease runoff velocity;
- Silt fencing shall remain in place until ground vegetation has recovered. Any accumulated silt will then be removed and disposed of to a licensed facility.
- Ensure that control measures are correctly installed and adequately sized prior to commencing site clearance and earthworks;
- Develop a maintenance checklist for control measures and inspect controls measures regularly throughout the project, particularly after heavy rainfall;
- Maintain controls through project such as removing sediment in silt traps once half full.
- Where excavated spoil is temporarily stockpiled on site, it will be stockpiled >25m from any watercourse and surrounded by a silt fence.

Earthworks – Cuts and Embankment Excavation

- The excavation of peat and other soft materials (if required) will be carried out in a manner that minimises the amount of water entering the face of the works. This will be achieved by placing fill in the excavated area as soon as is practicable (generally the same day).
- All excavators working in soft ground conditions, including peat, will be operated from a solid stone base and peat removed from the site in sealed containers to a designated storage location.
- The area of the earthworks operation will be kept to an absolute minimum at any one time.
- Where pumping out of the excavation is necessary, this will be carried out using appropriately sized pumps. A clean stone filled perforated pipe (or similar) will be used as a sump for the pump intake. The pumped out water will be directed to the earthworks drainage system and to the settlement pond (or other) treatment system. The outlet from the pump shall be designed so as not to mobilise additional sediment.
- A secondary pump will be kept on site to replace the primary pump in case of operational breakdown.

Earthworks – Subsoil Stabilisation

Subsoil Stabilisation is an activity which involves spreading powdered lime evenly over the surface of thin loose lifts (150-350 mm) of the Class U1 material, mixing it with the clay by rotavating, and then allowing the mix to dry or cure over a short period of time prior to compaction. Should this activity be proposed to be used by the contractor, the following controls will be applied:

- The activity shall only be carried out under calm dry metrological conditions. Lime application shall not be exposed to wind and where any risk occurs will be misted/sprayed down immediately;
- The activity will not take place within 100m of any watercourse;
- Following mixing (which should take place generally within 15 minutes of spreading the lime on the surface) the material shall be compacted within 1 hour and appropriately sealed. In no case will this material be allowed to be left unsealed overnight;

Transportation

- Road cleaning will be carried out at least daily to ensure that there is no build-up of sediment on the public road;
- In the event of a substantial quantity of spoil material being required to be exported offsite then a proprietary mobile truck wheel wash system shall be installed at the relevant locations.

Stockpiles

- Topsoil stripping over large areas in advance of main excavation works will not be permitted. It will be restricted to the minimum required for efficient earthworks operations and will only be carried out in construction area units where earthworks is on-going.
- Each construction area unit will be topsoiled as the works proceeds thus limiting both the amount and the length of time for which materials have to be stockpiled.
- Stockpiles will not be located within 25m of a watercourse and shall be surrounded with a continuous silt fence.
- Runoff from a stockpile will be collected via a shallow toe drain, located outside the silt fence, which will have check dams at regular intervals and will be designed to have a retention time of at least 5 hours. Prior to outfall straw wrapped in geotextile bags and inset into the base of the drain by at least 100mm shall be provided followed by a silt fence upstream of the outlet.
- Stockpiles of non-granular materials shall be limited in height to not more than 2.5m.
- Where stockpiling of peat or organic clays is required they shall be limited in height to 1m (with 1V:5H side slopes) or fully contained within an appropriately designed bund.

Waterbodies and Sensitive Habitats

- All works in proximity to watercourses shall follow the best practice guidance outlined in the following documents:
 - TII/NRA 'Guidelines for the crossing of Watercourses During Construction of National Road Schemes (2008);
 - Inland Fisheries Ireland, Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters, 2016;
- Preserve natural vegetation near watercourses and along the perimeter of the site as much as practically possible.
- Leave a 5m grassed strip next to river banks when stripping topsoil or place grassed soil bunds along river banks to prevent site runoff directly entering watercourses.
- Place straw bales or sand bags along the sides of temporary or existing bridges to prevent runoff entering the watercourse.
- Any watercourse crossings will be replaced by piped (or box) crossings of at least 900mm diameter;
- The works will be programmed so that where watercourses are dry for a portion of the year then the crossing will be constructed "in the dry" during that period.
- Crossings in wet watercourses will be provided with a silt trap and a sediment immediately downstream of the crossing point.
- The silt trap shall be left in place for at least 6 weeks following completion of the work and shall be inspected and maintained at least 3 times per week.
- The area of disturbance of the watercourse bed and bank shall be the absolute minimum required for the installation of the crossing.
- Only precast Concrete pipes/ units will be used in the installation of these crossings.
- Where some of these minor watercourses require diversion, cut-off drains will be constructed to divert water away from the construction site. Small check dams will be constructed in these cut-off drains to trap any sediment and silt fences will be provided immediately before the outfall to existing watercourses.

Concrete Works

Where the use of concrete near watercourses cannot be avoided the following control measures will be employed:

- Hydrophilic grout and quick-setting mixes or rapid hardener additives shall be used to promote the early set of concrete surfaces exposed to water.
- When working in or near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used.

- There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials. Such spills shall be contained immediately, and runoff prevented from entering the watercourse.
- Concrete waste shall be disposed of in accordance with the site-specific Construction & Demolition Waste Management Plan which accompanies this application;
 - No batching of wet-cement products will occur on site;
 - Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. Where possible pre-cast elements for culverts and concrete works will be used;
 - No washing out of any plant used in concrete transport or concreting operations will be allowed on-site;
 - Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed.
 - Use weather forecasting to plan dry days for pouring concrete;

Construction Compounds

- Construction compounds shall be located on dry land and set back a minimum of 25m from lakes, river and stream channels, ecological sensitive areas (internationally and nationally important habitats, wet areas such as wetland habitats, marshes and fens, etc.) and away from potential floodplain areas.
- Construction compounds shall not be located in European Sites or within 50m of the boundary of same.
- Construction compounds shall not be located within other designated environmental sites or other ecologically sensitive sites.
- The storage of fuels, other hydrocarbons, and other chemicals within the construction compounds will not be permitted within 30m of any sensitive watercourse.
- Surface runoff from compounds will be minimised by ensuring that the paved/ impervious area is minimised. All surface water runoff will be intercepted and directed to appropriate treatment systems for the removal of pollutants prior to discharge
- All site compounds will be fenced off and a silt fence erected and maintained on the site boundary.
- Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.

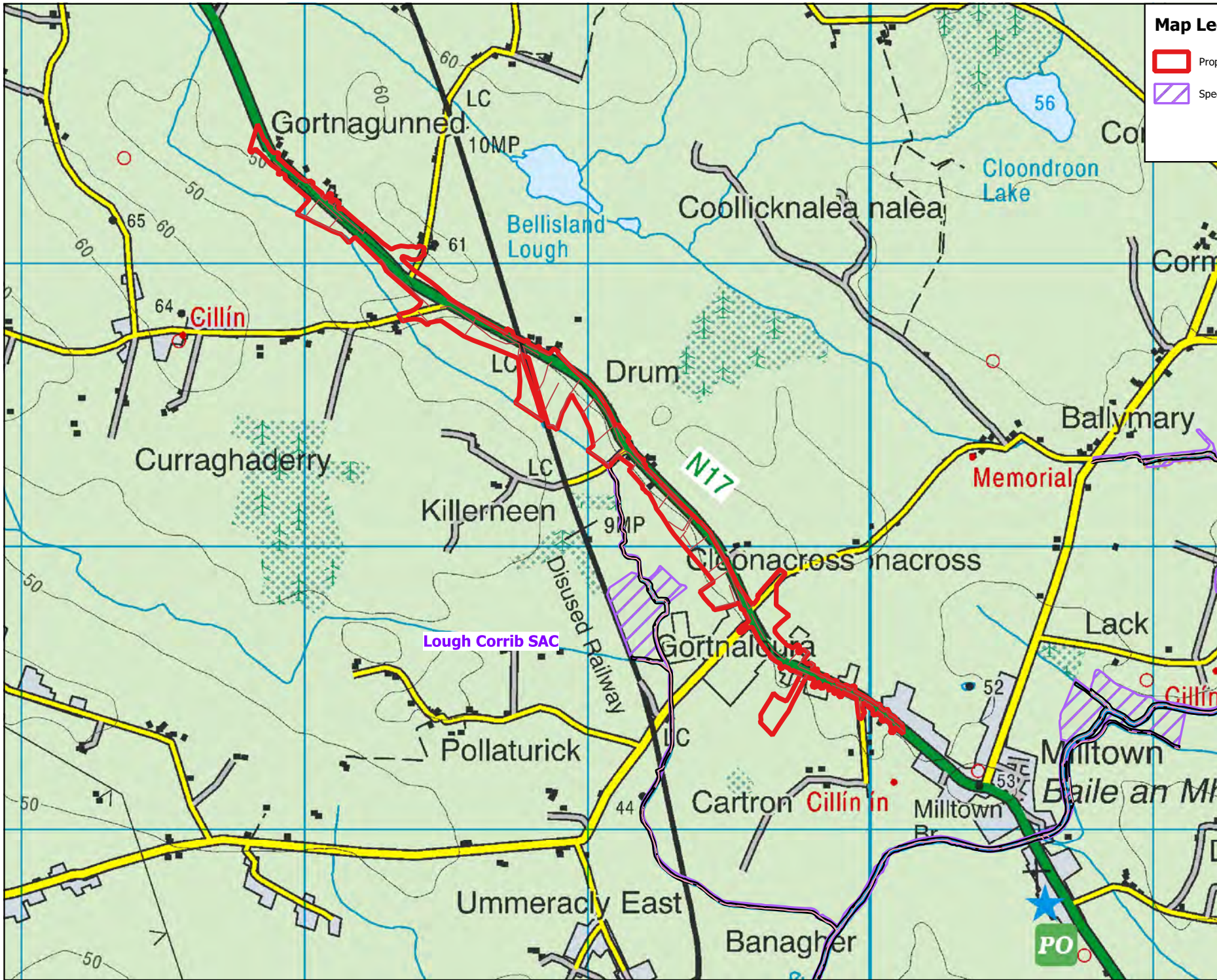
The storage of fuels, other hydrocarbons and other chemicals within the construction compounds shall be in accordance with relevant legislation and with best practice. In particular:

- All fuel/ Hydrocarbon/ Chemical (fluid) storage areas shall be bunded to 110% of storage capacity.
- Storage of these materials within a compound shall be organised so as to be as far away from all water bodies as is practicable.
- The Emergency Response Plan shall include arrangements for dealing with accidental spillage and relevant staff shall be trained in these procedures.

Environmental Monitoring

- The contractor will assign a member of the site staff as the environmental officer with the responsibility for ensuring the environmental measures prescribed in this document are adhered to. Any environmental incidents or non-compliance issues will immediately be reported to the project team.
- An Environmental Manager, Environmental Clerk of Works (EcoW) and suitably qualified Project Ecologist will be appointed by the contractor to monitor the construction work.

- Prior to the commencement of works the Environmental Manager, Environmental Clerk of Works (EcoW) and Project Ecologist shall provide a Toolbox Talk to all operatives on site, making them aware of any ecological sensitivities.
- A pre-commencement otter survey and invasive species survey will be undertaken by the Project Ecologist.
- The Project Ecologist will also undertake periodic surveys of the site during the construction phase for signs of otter activity.



Map Legend

- Proposed Development Site
- Special Area of Conservation (SAC)



Drawing Title	
Site Location	
Project Title	
GCC N17 Milltown to Gortnagunned	
Drawn By	Checked By
CS	SM
Project No.	Drawing No.
190540	Figure 2.3
Scale: 1:7500	Date
	2021-11-05



MKO
 Planning and Environmental Consultants
 Tuam Road, Galway
 Ireland, H91 VW84
 +353 (0) 91 735611
 email: info@mkofireland.ie
 Website: www.mkofireland.ie

Microsoft product screen shots reprinted with permission from Microsoft Corporation
 Ordnance Survey Ireland Licence No. AR 0021821 © Ordnance Survey Ireland/Government of Ireland

4. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

The ecological surveys that were undertaken to inform this NIS are fully described in this section. The specific surveys that were undertaken to assess the potential effects on the identified European Sites are described below.

4.1 Desk Study

4.1.1 Desk Study methodology

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with the study area of the proposed development. Sources of data included the following:

- Review of NPWS Conservation Objectives supporting documents, site synopsis, standard data forms and supporting documents for EU Designated Sites,
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA),
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper,
- Inland Fisheries Ireland (IFI) reports, where relevant/available,
- Review of NPWS Article 17 metadata and GIS database.

4.2 Ecological Survey Methodologies

4.2.1 Ecological Multidisciplinary Walkover Surveys

Multidisciplinary walkover surveys were conducted on the 11th of July 2019, 28th August 2019 and on 14th October 2021 in line with TII (2009) guidelines (*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*) by Julie O' Sullivan (BSc., MSc), Aoife Joyce (BSc., MSc.) and Claire Stephens (B.Sc.). All habitats within and adjacent to the proposed development were readily identifiable during the site visit. Habitats were identified in accordance with the Heritage Council's *'Guide to Habitats in Ireland'* (Fossitt, 2000). Habitat mapping was undertaken with regard to guidance set out in *'Best Practice Guidance for Habitat Survey and Mapping'* (Smith et al., 2011). Plant nomenclature for vascular plants follows *'New Flora of the British Isles'* (Stace, 2010), while mosses and liverworts nomenclature follows *'Mosses and Liverworts of Britain and Ireland – a field guide'* (British Bryological Society, 2010).

The Zone of Influence (ZOI) has been determined by careful analysis of the proposed road development and the receiving environment within which the development is located. The ZOI includes the full extent of the surface water catchment to its coastal outfall. Habitats and potential foraging routes remote from the development, particularly for mammal species, were all considered in the establishment of the ZOI.

4.2.2 Watercourses

During the habitat surveys the watercourses within and adjacent to the site were walked. The nature of the watercourse, including structure, width, substrate and flow was recorded. Instream and bankside vegetation were also recorded.

During the survey, the watercourses were also assessed for their potential to support habitat for aquatic fauna listed on Annex II and IV of the EU Habitats Directive including white-clawed crayfish, salmon and lamprey species.

4.2.3 Otter Survey

Dedicated otter surveys were carried out on the 11th of July 2019 by Julie O' Sullivan (BSc., MSc.) and Aoife Joyce (BSc., MSc.) of MKO and again on 14th October 2021 by Claire Stephens (B.Sc.) of MKO. Otter surveys can be undertaken at any time of year (NRA, 2008) and the surveys undertaken had a seasonal spread. The otter surveys were conducted as per TII (2006) guidelines. Drainage ditches and watercourses within and adjacent to the works area and were surveyed 150m upstream and downstream of the proposed works area. This involved a search for otter signs e.g. spraints, scat, prints, slides, trails, couches and holts, particularly natal holts.

4.3 Desk Study Results

4.3.1 Environmental Protection Agency (EPA) River Catchments & Watercourses

The EPA Envision map viewer was consulted on 01st of October 2021 regarding the water quality status of the watercourses in the study area.

The 3km road is located entirely within the River Clare Sub-Catchment which is within the Corrib Catchment. The River Clare is a primary tributary of the Corrib, discharging to Lough Corrib west of the N84 Headford Road and the Carrowbrowne in the townlands of Coarsefield and Angilham.

The River Clare passes through Milltown Village to the Southwest of the project area. Almost the entire project area drains southwest to Carrownageeha Stream (EPA code IE_WE_30C010300). This stream flows in a southerly direction to the west of the proposed development and discharges to the River Clare, 2.3km downstream of the proposed development, in the townland of Cartron 400m downstream of Milltown GAA Grounds. The Carrownageeha Stream is designated as part of Lough Corrib SAC.

The Biotic Index of Water Quality (BIWQ) was developed in Ireland by the Environmental Protection Agency (EPA). Q-values are assigned using a combination of habitat characteristics and structure of the macro-invertebrate community within the waterbody. Individual macro-invertebrate families are classified according to their sensitivity to organic pollution and the Q-value is assessed based primarily on their relative abundance within a sample.

There is one Environmental Protection Agency (EPA) Q-value monitoring site in close proximity to the proposed development. The relevant up to date station for the Clare River near Milltown is located at a road bridge 1.5km upstream of Milltown (RS30C010100). The latest published Q-rating for 2018 gives a Q-rating of 3-4 representing moderate ecological status. No Q values were available for the portion of Clare River through Milltown and its downstream tributaries including the subject streams of the Drum and Carrownageeha.

The closest Q-value monitoring site downstream of the proposed development is located on the River Clare at Liskeevy Bridge (sample station: RS30C010200), approximately 3.9km downstream of the site. The latest Q-Value at this location has been recorded as “Q3 – Poor”, surveyed in 1993. Further downstream the River Clare near Tuam the latest published Q-Rating is “Q4 – Good”. The EPA Q values provide a baseline against which any water quality changes occurring in the future can be measured.

River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive (WFD). The WFD River

Waterbody Status 2013-2018 of the River Clare in the vicinity of the proposed development is unassigned. The River Clare has been scored as ‘not at risk’.

The proposed development is located within the Clare (Galway) hydrological sub catchment and the Clare-Corrib groundwater body. The flow regime is noted as “Karstic”. The groundwater vulnerability is noted as ‘Low’ within the works area.

4.3.2 Inland Fisheries Ireland (IFI) assessment of Clare River

There are no Inland Fisheries Ireland (IFI) fish sampling points located within the watercourses within or adjacent to the proposed development.

In 2010, Inland Fisheries Ireland (IFI) conducted fish sampling on the River Clare at Corofin Bridge approximately 29km downstream of the proposed development. The species assemblage in this river included brown trout, nine-spined stickleback, perch, pike, roach, salmon, stone loach and three-spined stickleback. This site was resurveyed in 2014, with species including brown trout (*Salmo trutta*), perch (*Perca fluviatilis*), pike (*Esox ucius*), roach (*Rutilus rutilus*), salmon (*Salmo salar*) and stone loach (*Barbatula barbatula*). The results give an indication of the species richness in the Clare catchment.

4.3.3 Lough Corrib SAC

The following downstream aquatic QI habitats and QI Species were identified in the AASR (Appendix 1) as having the potential to be affected through deterioration of surface and/or groundwater quality due to pollution during the construction and operational phases of the development;

- White-clawed Crayfish (*Austropotamobius pallipes*)
- Brook Lamprey (*Lampetra planeri*)
- Sea Lamprey (*Petromyzon marinus*)
- Salmon (*Salmo salar*)
- Otter (*Lutra lutra*)
- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation
- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae**
- Petrifying springs with tufa formation (*Cratoneurion*)*
- Alkaline fens
- Slender naiad (*Najas flexilis*)

There is potential for direct effects due to disturbance and displacement related impacts as well as collision mortality during construction and operation of the proposed development to the following species:

- Otter (*Lutra lutra*)

4.3.3.1 Review of conservation objectives

The relevant QIs and the associated conservation objectives are presented in Table 4-1. Specific Attributes and Targets for each of the QIs listed below as per the Site Specific Conservation Interests for Lough Corrib SAC are reviewed and assessed in Section 6.1 below.

Table 4-1 Qualifying Interest and Conservation Objectives (Version 01, 2017)

Qualifying Interest	Conservation Objective
White-clawed Crayfish (<i>Austropotamobius pallipes</i>)	To maintain the favourable conservation condition of White-clawed Crayfish in Lough Corrib SAC
Brook Lamprey (<i>Lampetra planeri</i>)	To maintain the favourable conservation condition of Brook Lamprey in Lough Corrib SAC
Sea Lamprey (<i>Petromyzon marinus</i>)	To restore the favourable conservation condition of Sea Lamprey in Lough Corrib SAC
Salmon (<i>Salmo salar</i>)	To maintain the favourable conservation condition of Atlantic Salmon in Lough Corrib SAC
Otter (<i>Lutra lutra</i>)	To maintain the favourable conservation condition of Otter in Lough Corrib SAC
Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)	To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojuncetea in Lough Corrib SAC
Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i>	To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojuncetea in Lough Corrib SAC
Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	To restore the favourable conservation condition of Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. In Lough Corrib SAC
Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	To maintain the favourable conservation condition of Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation in Lough Corrib SAC
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	To maintain the favourable conservation condition of Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> in Lough Corrib SAC
Petrifying springs with tufa formation (Cratoneurion)	To maintain the favourable conservation condition of Petrifying springs with tufa formation (Cratoneurion)* in Lough Corrib SAC
Alkaline fens	To maintain the favourable conservation condition of Alkaline fens in Lough Corrib SAC

Qualifying Interest	Conservation Objective
Slender naiad (<i>Najas flexilis</i>)	To restore the favourable conservation condition of Slender Naiad in Lough Corrib SAC

4.3.3.2 Review of site-specific pressures and threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the SAC were reviewed and considered in relation to the proposed development. These are provided in Table 4-2.

Table 4-2 Site-specific threats, pressures and activities

Negative Impacts		
Rank	Threats and Pressures	
(High)	A02.01	Agricultural intensification
(High)	I01	Invasive non-native species
(Medium)	D03.01.02	Piers / tourist harbours or recreational piers
(High)	H01.08	Diffuse pollution to surface waters due to household sewage and waste waters
(Medium)	E01.01	Continuous urbanization
(Medium)	B01	Forest planting on open ground
(Medium)	J02.01.03	Infilling of ditches, dykes, ponds, pools, marshes or pits
(Low)	C01.01	Sand and gravel extraction
(Medium)	A04.03	Abandonment of pastoral systems, lack of grazing
(Medium)	J02.15	Other human induced changes in hydraulic conditions
(Medium)	D01	Roads, paths and railroads
(High)	G05	Other human intrusions and disturbances
(Medium)	A10.01	Removal of hedges and copses or scrub
(High)	C01.03.02	Mechanical removal of peat
(Low)	E03.01	Disposal of household / recreational facility waste
(Medium)	A08	Fertilisation
(Medium)	E01.03	Dispersed habitation

Pathways for impact with regard to *Removal of hedges and copses or scrub (A10.01)*, *Roads, paths and railroads (D01)* and the spread of *Invasive non-native species (I01)* were identified.

4.3.3.3 Qualifying Interests

4.3.3.3.1 White-clawed Crayfish (*Austropotamobius pallipes*)

The distribution of white-clawed crayfish within Lough Corrib SAC is illustrated on Map 10 of the site-specific conservation objective document (NPWS, 2017). According to the site-specific conservation objectives white-clawed crayfish (*Austropotamobius pallipes*) is recorded from the entire lengths of the four main tributaries of the River Clare. There are post-1996 records from the following tributaries: Abbert, Grange, Dalgan and Sinking Rivers. It is also present in some minor lower order streams within the Clare catchment.

4.3.3.3.2 Brook Lamprey (*Lampetra planeri*)

According to the site-specific conservation objectives document (NPWS, 2017), 50% of surveyed sites in the catchment were positive in 2013 (IFI, unpublished data) compared with 49% in 2006 (O'Connor, 2007).

The River Clare was surveyed in 2006 as part of a catchment wide survey of the Corrib for Juvenile Lamprey populations (O'Connor, 2007). Qualitative surveys were carried out on 37 sites on the Clare River with Brook/River Lampreys recorded at 24 out of 37 of the survey sites.

4.3.3.3.3 Sea Lamprey (*Petromyzon marinus*)

According to the site-specific conservation objectives document “Sea lamprey (*Petromyzon marinus*) congregate and build spawning nests in the River Corrib in Galway city, both up- and downstream of the Salmon Weir Bridge. Their further upstream passage is impeded by the regulating weir immediately upstream. The combination of barriers to passage and low flows can impede further upstream passage in Irish catchments and prevent or reduce penetration and extensive colonisation (Gargan et al., 2011; Rooney et al., 2015). Sea lamprey have been recorded passing through the denil fish passage facility at the regulating weir” (NPWS, 2017).

According to the catchment wide survey of the Corrib for Juvenile Lamprey populations (O'Connor, 2007);

‘Sea lampreys are present in the Corrib catchment but seem to be confined to below the Galway Regulating Weir. Although there are records of sea lampreys in some of the tributaries of Lough Corrib (Kurz & Costello, 1999), these records pre-date the construction of the existing weir. Sea lampreys are known to spawn below the weir and have been recently seen by fisheries board staff in Galway (Seamus Hartigan, pers. Comm.). However, the success of sea lamprey spawning activity below the regulating weir is unknown’.

4.3.3.3.4 Salmon (*Salmo salar*)

According to the site-specific conservation objectives document (NPWS, 2017), there are no barriers to migration of salmon (*Salmo salar*) in Lough Corrib SAC. Salmon spawn in the headwaters of Lough Corrib tributaries.

The Inland Fisheries Ireland Water Framework Directive map was consulted on 28/08/2019. The closest survey location was at Corrofin Bridge on the River Clare downstream of the proposed works area. This section of the river was surveyed in 2010. Salmon were recorded in this stretch of river during the survey.

4.3.3.3.5 Otter (*Lutra lutra*)

The extent of terrestrial commuting otter habitat is illustrated on Map 12 of the site-specific conservation objective document (NPWS, 2017). According to the site-specific conservation objectives (NPWS, 2013) the extent of freshwater (river) habitat is 314.2km. The river length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters. The site-specific conservation objectives document states that areas mapped should include 10m terrestrial buffer along shoreline and riverbanks identified as critical for otters (NPWS, 2007).

4.3.3.3.6 **Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)**

The extent of this habitat is illustrated on Map 3 of the site-specific conservation objective document (NPWS, 2017). According to the site-specific conservation objectives (NPWS, 2017) the distribution of this habitat within the SAC has not been fully surveyed. Krause and King (1994) recorded it in the “western arm proper”. Within Lough Corrib, it is likely to be restricted to this ‘western arm’ (the north-western bay).

4.3.3.3.7 **Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea***

The extent of this habitat is illustrated on Map 3 of the site-specific conservation objective document (NPWS, 2017). According to the site-specific conservation objectives (NPWS, 2017) the distribution of this habitat within the SAC has not been mapped. Krause and King (1994) recorded it in the “western arm proper”. Within Lough Corrib, it is likely to be restricted to this ‘western arm’ (the north-western bay). While the characteristic species slender naiad (*Najas flexilis*) was recorded in the western arm of Lough Corrib, that area appears to be dominated by lake habitat ‘Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)’, with lake habitat ‘Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*’ found towards the northern basin proper.

4.3.3.3.8 **Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.**

According to the site-specific conservation objectives (NPWS, 2017) this habitat is found in Lough Corrib, notably the southern basin, however its exact distribution and area has not been mapped, and it is likely to also extend along the eastern side of the northern basin.

4.3.3.3.9 **Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation**

According to the site-specific conservation objectives (NPWS, 2017) little is known, about the characteristics or sub-types of this habitat within the Lough Corrib SAC. Most of the rivers are in arterial drainage schemes that have altered aquatic plant distribution and species composition.

4.3.3.3.10 **Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae***

According to the site-specific conservation objectives (NPWS, 2017) this habitat has not been mapped in detail for Lough Corrib SAC and thus total area of the qualifying habitat is unknown. While the full extent of Annex I fen habitats (both this habitat and Alkaline fens (7230)) within the SAC is currently unknown, their area is extensive and they often occur in association with and transitional to other habitats including Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) (6410), Active raised bogs (7110), Petrifying springs with tufa formation (*Cratoneurion*) (7220) and Limestone pavements (8240).

4.3.3.3.11 **Alkaline fen**

According to the site-specific conservation objectives (NPWS, 2017) this habitat has not been mapped in detail for Lough Corrib SAC and thus total area of the qualifying habitat is unknown. While the full extent of Annex I fen habitats (both this habitat and Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (7210)) within the SAC is currently unknown, their area is extensive and they often occur in association with and transitional to other habitats including *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) (6410), Active raised bogs (7110), Petrifying springs with tufa formation (*Cratoneurion*) (7220) and Limestone pavements (8240)

4.3.3.3.12 **Petrifying springs with tufa formation (*Cratoneurion*)**

According to the site-specific conservation objectives (NPWS, 2017) this habitat has not been mapped in detail for Lough Corrib SAC and thus total area of the qualifying habitat is unknown, however the necessary ecological conditions for this habitat occur around Lough Corrib.

4.3.3.3.13 **Slender naiad (*Najas flexilis*)**

According to the conservation objectives supporting document for Lough Corrib SAC Slender naiad has been recorded on just one occasion in 1986 from one location in Lough Corrib in the north-western arm of the lake. The document states that it is possible that the species has become extinct in Lough Corrib since 1986, however, it also states that the large size of Lough Corrib means it may have been missed in subsequent surveys. It is likely, however, given the condition of the lake habitat, that the population has declined in number and/or become more fragmented.

4.3.4 **Lough Corrib SPA**

Following a precautionary approach, the construction and operational phases of the proposed development have potential to result in deterioration of surface and ground water quality. A potential pathway for indirect effects on the habitat of all SCI species of the SPA was identified and the effects on all species have been considered under the following SCI habitat:

- Wetlands and waterbirds

4.3.4.1 **Review of Conservation Objectives**

The relevant SCI and the associated conservation objective is presented in Table 4.3. The specific targets and attributes for this habitat, as described in the Site-specific Conservation Objectives document, were reviewed and considered in this assessment in Section 6.2 below.

Table 4-3 Qualifying Interest and Conservation Objectives (Version 06, NPWS, 2018)

Special Conservation Interest (SCI)	Conservation Objective
Wetland and Waterbirds	To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

4.3.4.2 **Review of site-specific pressures and threats**

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to effect on the SPA were reviewed and considered in relation to the proposed development. These are provided in Table 4.4.

Table 4-4 Site-specific threats, pressures and activities

Negative Impacts		
Rank	Threats and Pressures	
Medium	A08	Fertilisation
Medium	B	Sylviculture, forestry
High	F03.01	Hunting
Low	G01.01	Nautical sports
High	E01	Urbanised areas, human habitation
High	F02.03	Leisure fishing
Low	A04	Grazing

No pathways for impact with regard to any site-specific threats, pressures and activities were identified.

4.3.4.3 Wetlands and Waterbirds

The following relevant information has been extracted from the NPWS site synopsis and Natura 2000 Data Form for the SPA:

‘The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Greenland White-fronted Goose, Gadwall, Shoveler, Pochard, Tufted Duck, Common Scoter, Hen Harrier, Coot, Golden Plover, Black-headed Gull, Common Gull, Common Tern and Arctic Tern. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetlands & Waterbirds.

Lough Corrib SPA is an internationally important site which supports in excess of 20,000 wintering waterbirds, including a population of Pochard that is, itself, of international importance. A further six species of wintering waterfowl have populations of national importance. The site also contains a nationally important communal roost site for Hen Harrier. Lough Corrib is the most important site in the country for breeding Common Scoter. Its populations of breeding gulls and terns are also notable, with nationally important numbers of Black-headed Gull, Common Gull, Common Tern and Arctic Tern occurring. It is of note that several species which regularly occur are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Greenland White-fronted Goose, Hen Harrier, Golden Plover, Common Tern and Arctic Tern. Lough Corrib is a Ramsar Convention site.’

4.4 Ecological Survey results

4.4.1 Habitat survey

Dedicated habitat surveys of the area within and in the vicinity of the proposed road development were undertaken on the 11th of July 2019, 28th of August 2019 and 14th October 2021. The surveys undertaken are outlined in Section 4.2 above.

Habitats recorded during the surveys are listed in Table 4.5 below. The habitat classifications and codes correspond to those described in ‘A Guide to Habitats in Ireland’ (Fossitt, 2000). A map of the habitats within the development site is provided in Figure 4.1.

Table 4-5 Habitats within the development site.

Habitat	Code
Improved Agricultural Grassland	GA1
Buildings and Artificial Surfaces	BL3
Amenity Grassland	GA2
Dry Meadows and Grassy verges	GS2
Wet Grassland	GS4
Scattered Trees and Parkland	WD5
Scrub	WS1
Depositing/ Lowland River	FW2
Drainage Ditches	FW4
Hedgerows	WL1
Treelines	WL2

The route is described from the south-eastern tie-in in the townlands of Milltown and Gortnaloura to the north-western tie-in with the existing N17 road in the townland of Gortnagunne.

Initially the Proposed Road Development follows the route of the existing N17, through the village of Milltown. The road was classified as **Buildings and artificial surfaces (BL3)** (Plate 4.1).

This section of the proposed road will be widened along its northern extent and will incorporate habitats including **Dry meadows and Grassy Verges (GS2)**, **Stonewalls and Other Stonework (BL1)**, **Hedgerows (WL1)**, **Amenity Grassland (GA2)**, **Improved Agricultural Grassland (GA1)** and **Buildings and Artificial Surfaces (BL3)**.

The existing roadside verge is dominated by **Dry meadows and Grassy Verges (GS2)** (Plate 4.1). Species recorded in this habitat included sweet vernal-grass (*Anthoxanthum odoratum*), Cocks foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), willowherb (*Epilobium* spp.), common knapweed (*Centaurea nigra*), wild carrot (*Daucus carota*), white clover (*Trifolium repens*), ribwort plantain (*Plantago lanceolata*), broadleaved dock (*Rumex obtusifolius*), tufted vetch (*Vicia cracca*), meadow vetchling (*Lathyrus pratensis*), silverweed (*Potentilla anserina*), creeping thistle (*Cirsium arvense*), creeping bent (*Agrostis stolonifera*), nettle (*Urtica dioica*), bindweed (*Convolvulus arvensis*) and marsh thistle (*Cirsium palustre*).

Land boundaries are dominated by a mixture of stonewalls, classified as **Stonewalls and Other Stonework (BL1)** and **Hedgerows (WL1)** of coppiced hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and bramble (*Rubus fruticosus*).

After approximately 375m, in the townland of Gortnaloura, the route diverges from the existing N17 through existing dwelling houses and yards, that will be demolished and are classified as **Buildings and Artificial Surfaces (BL3)** and **Amenity Grassland (GA2)** (Plate 4.2 – Plate 4.3).

This section of the route also traverses fields classified as **Improved Agricultural Grassland (GA1)** habitat and a mosaic of **Wet Grassland GS4/ Agricultural Grassland (GA1)** (Plate 4.4), grazed by cattle and sheep. Species recorded in the improved agricultural grassland habitat include perennial rye-grass

(*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), annual meadow grass (*Poa annua*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), creeping buttercup (*Ranunculus repens*), ribwort plantain (*Plantago lanceolata*), broadleaved dock (*Rumex obtusifolius*), dandelion (*Taraxacum* spp.), creeping thistle (*Cirsium arvense*), and daisy (*Bellis perennis*). The Wet Grassland (GS4)/ Agricultural Grassland (GA1) mosaic habitat has a similar species composition but soft rush (*Juncus effusus*) and marsh thistle (*Cirsium palustre*) and creeping buttercup (*Ranunculus repens*), become more dominant in the vegetation.

After approximately 660m, the route crosses the existing N17 route, and continues along the south west of the existing route between the townlands of Gortnaloura and Drum.

This section of the route traverses **Improved Agricultural Grassland (GA1)** habitat and **Treelines (WL2)** and **Hedgerows (WL1)** that delineate the existing field boundaries in this section (Plate 4.4). Species recorded in the treelines include Ash (*Fraxinus excelsior*), Hawthorn (*Crataegus monogyna*), Sycamore (*Acer pseudoplatanus*), elder (*Sambucus nigra*), crab apple (*Malus sylvestris*) and alder (*Alnus glutinosa*). **Improved Agricultural Grassland (GA1)** habitat in this section had a similar species composition to the aforementioned example of this habitat.

This section of the route also crosses a network of **Drainage Ditches (FW4)** that have connectivity with the Drum Stream (Plate 4.5), a tributary of the Carrownageeha stream (EPA Code: IE_WE_30C010300), that occurs to the south west of the proposed development, after approximately 1.4km (Plate 4.5). The lower reaches of the Drum stream and the Carrownageeha stream, a tributary of the River Clare, are designated as part of Lough Corrib SAC downstream of this location, and outside of the works area.

The Drum stream, Carrownageeha Stream and River Clare have undergone Arterial drainage works in the 1960's by the OPW and are maintained channels. These watercourses are heavily modified watercourses with maintenance works carried out on the Carrownageeha typically every 5 to 7 years, including sediment and vegetation removal and vegetation cutback using an excavator.

The Drum Stream is reminiscent of a drainage ditch and has been highly modified and channelised and is classified as a **Lowland/Depositing River (FW2)** (Plate 4.5). The river is approximately 1.5 – 2m wide, and was heavily vegetated, with a very low flow at the time of survey. In stream vegetation was dominated by fool's water-cress (*Apium nodiflorum*) and water-cress (*Nasturtium officinale*).

Marginal and bankside vegetation included bramble (*Rubus fruticosus*), bindweed (*Convolvulus arvensis*), nettle (*Urtica dioica*), false oat-grass (*Arrhenatherum elatius*), fool's water-cress (*Apium nodiflorum*), willowherb (*Epilobium* spp.), tufted vetch (*Vicia cracca*), marsh valerian (*Valeriana dioica*), yellow iris (*Iris pseudacorus*) and meadowsweet (*Filipendula ulmaria*). This watercourse also falls within the study area approximately 1.1km upstream and at this location is densely shaded by willows and bramble (Plate 4.6).

Moving north-west the route traverses **Wet Grassland (GS4)** and **Scrub (WS1)** habitats located in fields adjacent to the decommissioned railway line (Plate 4.6 & Plate 4.7). Species recorded in the wet grassland habitat included marsh thistle (*Cirsium palustre*), creeping bent (*Agrostis stolonifera*), meadowsweet (*Filipendula ulmaria*), Yorkshire fog (*Holcus lanatus*), soft rush (*Juncus effusus*), bramble (*Rubus fruticosus*), nettle (*Urtica dioica*), marsh valerian (*Valeriana dioica*), meadow buttercup (*Ranunculus acris*), ash saplings (*Fraxinus excelsior*), angelica (*Angelica sylvestris*), hard fern (*Blechnum spicant*), horsetails (*Equisetum* spp.) and herb Robert (*Geranium robertianum*). The old railway line is fringed with **Dry Meadows and Grassy Verges (GS2)** and **Treeline (WL1)**, dominated by ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and bramble (*Rubus fruticosus*) (Plate 4.8).

Moving north-west of the disused railway towards Gortnagunnad the route continues through Agricultural Grassland (GA1) and Drainage Ditches (FW4) then veers slightly north to following the existing N17 route. Approaching the northern terminus of the proposed road development the roadside verges are dominated by Dry meadow and grassy verges (GS2) and the land boundaries are demarcated by fences.

Habitats through which the route traverses include Agricultural Grassland (GA1), Dry Meadows and Grassy Verges (GS2), Wet Grassland (GS4) and Drainage ditches (FW4). These habitats had a similar species composition to other examples of these habitats along the route.

The lower reaches of the Drum stream and the Carrownageeha stream are designated as part of Lough Corrib SAC. However, no Annex I Qualifying Interests of this SAC were recorded in the study area. No Annex I habitats were recorded within or adjacent to the development site boundary. The terrestrial and freshwater habitats recorded have no links to any habitats listed on Annex I of the EU habitats Directive. Flora protected under the Flora Protection Order 2015 or those listed in the Irish Red Data Book were not recorded during the site visit. No rare or protected flora identified in the desk study were recorded during the field surveys.

No non-native invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015) were recorded during the site visit. However, the non-native invasive species winter heliotrope (*Petasites fragrans*), was recorded in amenity grassland habitat in the front garden of a house earmarked for development. A map of its location is provided as Figure 4.2.



Plate 4-1 The existing N17 Road at the northern extent of the road development, fringed with Dry Meadows and Grassy verge habitat, with Improved Agricultural Grassland (GA1) in the wider surroundings.



Plate 4-2 Dwelling house to be demolished at Gortnaloura, classified as Buildings and Artificial Surfaces (BL3)



Plate 4-3 Dwelling house to be demolished at Gortnaloura, classified as Buildings and Artificial Surfaces (BL3)



Plate 4-4 Improved Agricultural Grassland (GA1) and Treeline (WL2) habitats, in the townland of Kilerneen, which the route will traverse.



Plate 4-5 The Drum Stream, a tributary of the Carrownageha stream, is classified as a Depositing/Lowland River (FW2), occurs within the works area, in the townland of Kilerneen, and is surrounded by Improved Agricultural Grassland (GA1).



Plate 4-6 Watercourse classified as Depositing/Lowland River (FW2) at the northern extent of the works area.



Plate 4-7 Wet Grassland (GS4)/Improved Agricultural Grassland (GA1) mosaic habitat in the townland of Drum, which the route will traverse.



Plate 4-8 Wet Grassland (GS4) adjacent to the decommissioned railway, in the townland of Drum, which the route will traverse.










Plate 4-9 Dry Meadows and Grassy Verge Habitat along the decommissioned railway line, fringed by ash dominated Treeline (WL2).









Map Legend

 Site Boundary

Habitat Map

-  Amenity grassland (GA2)
-  Buildings and Artificial surfaces (BL3)
-  Dry meadows and grassy verges (GS2)
-  Improved agricultural grassland (GA1)
-  Scrub (WS1)
-  Wet grassland (GS4)
-  Conifer plantation (WD4)

Linear habitats

-  Stonewalls (BL1)
-  Buildings and artificial surfaces (BL3)
-  Lowland River (FW2)
-  Drain (FW4)
-  Hedgerow (WL1)
-  Treeline (WL2)



Microsoft product screen
shots reprinted with
permission from
Microsoft Corporation

Drawing Title

Habitat map

Project Title

GCC N17 Milltown to Gortnagunned

Drawn By

JOS

Checked By

JH

Project No.

190540

Drawing No.

Figure 4.1

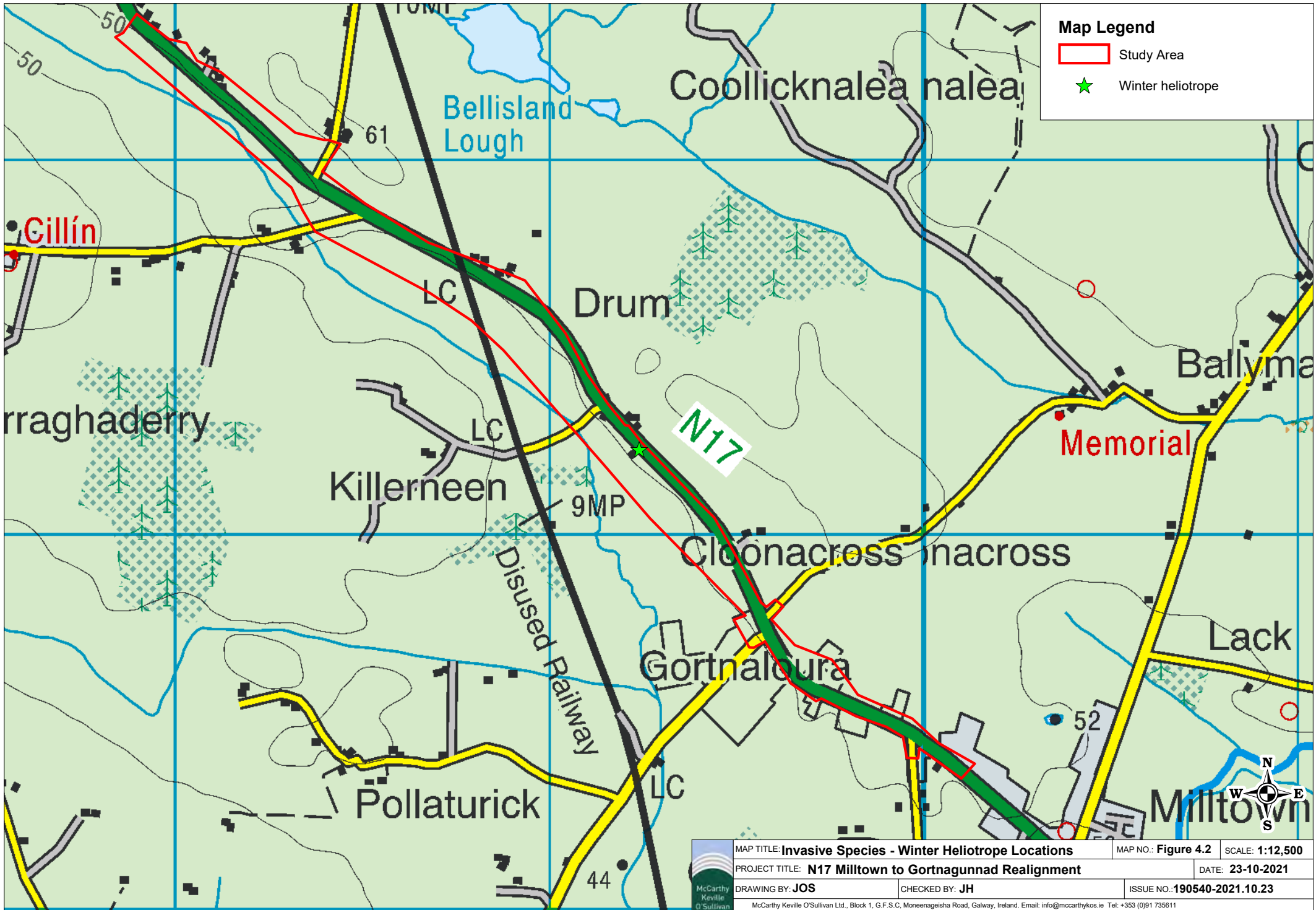
Scale

1:10500

Date

16.11.2020

 **MKO**
Planning and
Environmental
Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email: info@mkofireland.ie
Webste: ww.mkofireland.ie



4.4.2 Invasive species

The invasive species winter heliotrope (*Petasites fragrans*) was recorded within the proposed development site in the amenity grassland of a house earmarked for demolition along the realignment route. No non-native invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015) were recorded during the site visit.

4.4.3 Watercourses and Aquatic Fauna

This proposed route crosses a network of **Drainage Ditches (FW4)** that have connectivity with the Drum Stream, a tributary of the Carrownageeha stream (EPA Code: IE_WE_30C010300), that occurs to the south west of the works area, after approximately 1.4km (Plate 4.5). The lower reaches of the Drum stream and the Carrownageeha stream, a tributary of the River Clare, are designated as part of Lough Corrib SAC downstream of this location, and outside of the works area.

The Drum Stream is reminiscent of a drainage ditch and has been highly modified and channelised and is classified as a **Lowland/Depositing River (FW2)**. The stream is approximately 1.5 – 2m wide, had a silty substrate and was heavily vegetated, with a very low flow at the time of survey. In stream vegetation was dominated by fool's water-cress (*Apium nodiflorum*) and water-cress (*Nasturtium officinale*).

Marginal and bankside vegetation included bramble (*Rubus fruticosus*), bindweed (*Convolvulus arvensis*), nettle (*Urtica dioica*), false oat-grass (*Arrhenatherum elatius*), fool's water-cress (*Apium nodiflorum*), willowherb (*Epilobium spp.*), tufted vetch (*Vicia cracca*), marsh valerian (*Valeriana dioica*), yellow iris (*Iris pseudacorus*) and meadowsweet (*Filipendula ulmaria*). The upstream extent of this watercourse is in parts is densely shaded by willows and bramble.

The watercourse is reminiscent of a drainage ditch where it occurs within the study area and is heavily vegetated with little perceivable flow. It had a silty substrate, was typical of a highly managed lowland stream, and did not support suitable spawning habitat for salmon or other fish species. The watercourse has connectivity to potential supporting habitat for Annex II species including lamprey, crayfish and salmonids, downstream in the Clare catchment and provides connectivity to the aquatic features of interest for which the Lough Corrib SAC has been designated.

4.4.4 Otter

A comprehensive search for otter was undertaken of drainage ditches and the unnamed watercourse adjacent to the works area. These watercourses were surveyed 150m upstream and downstream of the works area, as well as a 10m riparian buffer (TII, 2008 and Reid, et al 2013). No evidence of otter was recorded within the proposed development boundary. No breeding or resting sites of Otter were observed during the site visits. A potential otter spraint was recorded on the railway bridge outside of the study area.

5. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

5.1 Potential for Direct Effects on the European Sites

The development site lies entirely outside of the boundaries of the Lough Corrib SAC and Lough Corrib SPA however there is potential for direct impact on this EU site in the form of collision mortality for otter. Direct impacts on otter are considered in section 5.2.2 along with indirect effects on otter.

5.2 Potential for Indirect Effects on the European Sites

5.2.1 Deterioration of Water Quality

A potential pathway for indirect impact in the form of deterioration of water quality during construction works as a result of surface water run-off or percolation of pollutants to groundwater was identified with respect to the following QIs/SCIs, in the absence of mitigation:

- > Lough Corrib SAC
 - White-clawed Crayfish (*Austropotamobius pallipes*)
 - Brook Lamprey (*Lampetra planeri*)
 - Sea Lamprey (*Petromyzon marinus*)
 - Salmon (*Salmo salar*)
 - Otter (*Lutra lutra*)
 - Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
 - Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea*
 - Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
 - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation
 - Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae**
 - Petrifying springs with tufa formation (Cratoneurion)*
 - Alkaline fens
 - Slender naiad (*Najas flexilis*)

- > Lough Corrib SPA
 - Wetlands and Waterbirds (A999). The potential pathway for indirect effects on the habitat of all SCI species for the SPA has been considered under 'Wetlands and Waterbirds [A999].

5.2.1.1 Construction Site Management Incorporated into the Project Design

5.2.1.1.1 Construction Phase

This project has potential to cause pollution of the surrounding environment. Pollution could take a number of forms and could occur during a number of the operations involved in the construction process. An Outline Erosion and Sediment Control Plan (OESC), accompanies this application, and sets out the environmental management framework to be adhered to during the pre-commencement, construction and operational phases of the development and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for any environmental impacts to occur. The Principal mitigation Measures included in the OESC are summarised in section 3.2.2 of this report.

Post implementation of best practice and preventive measures as described in the OESC, the potential for any effect on the designated sites is negligible.

5.2.1.1.2 Operational Phase

Specific measures to offset potential impacts relating to surface water runoff, during the operation of the road, have been incorporated into the design of the proposed development. Runoff from the road will be collected via filter drainage pipes, concrete channels and gullies at various chainages. The proposed drainage system will be installed in the verge of the carriageway and drain to 4 no. outfalls positioned at low points in the alignment adjacent to existing watercourses. Water will be discharged to attenuation ponds prior to discharging to reaching the outfalls. Upstream of all outfalls, runoff will be detained and treated in the ponds. Downstream of all outfalls, an oil/petrol interceptor will be provided prior to water entering a watercourse at the outfall. Attenuation ponds have been designed using a 1 in 100 storm event plus 20% for climate change. Details of the measures to be included are summarised in section 3.2.1 above and provided in the hydrological impact assessment report (HEL, 2020) and preliminary design report (2021) accompanying this application.

It is noted that the Proposed Road Development will convey traffic diverted off the existing section of N17 road and, given the pollution prevention measures incorporated into the project design, will result in a far greater level of ecological protection in relation to water pollution from such traffic during the operational phase of the Proposed Road Development.

5.2.2 Otter – Disturbance, Displacement and Mortality

5.2.2.1 Direct Impacts – Collision mortality

The welfare of Otters will be ensured primarily through the provision of continued safe access for Otters to their ranges and foraging habitats. Adequate provision for Otters at affected watercourse crossings is required to allow the species to retain continued access to their foraging areas. No requirement for Otter underpasses were identified given that no natural watercourses are to be crossed by the proposed development.

Otters may cross roads some distance from watercourses. Taking a precautionary approach mammal resistant fencing has been incorporated into the design of the project in accordance with NRA guidance. This fencing will be extended along the length of the scheme running parallel to the Drum Stream.

The locations of mammal proof fencing are shown on Drawings AC-01, AC-02, AC-03 and AC-04 of the Design Drawings submitted with the planning application and also included in Appendix 2.

5.2.2.2 Indirect Impacts - disturbance and displacement

The proposed development site lies adjacent to Lough Corrib SAC, which is designated for Otter. Therefore, the potential for indirect effects on Otter in term of disturbance were identified.

An assessment of the potential effects on otter in respect of disturbance and displacement impacts is provided below. This assessment is informed by the detailed field and desk surveys that were undertaken and are described in this NIS. No couches, holts or layups were recorded within the development site or along the riverbanks during the dedicated otter survey undertaken.

The development site is located in land managed for agricultural and is adjacent to a busy road. It is likely that otter are habituated to anthropogenic activity in the area.

Irish Wildlife Manual No 76 (*National Otter Survey of Ireland 2010/2012*) notes that the occurrence of Otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between Otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes et al. 1991; Bailey & Rochford, 2006). Irish Wildlife Manual No 23 (*National Otter Survey of Ireland 2004/2005*) found no significant relationship between disturbance and otter occurrence. It also states “the lowest percentage occurrence was found at the sites with the lowest recorded disturbance”.

Channin P (2003) ^[1] provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to Otters (Jefferies, 1987), (Durbin, 1993), (Green & Green, 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe’s largest oil and gas terminals at Sullom Voe in North Scotland.

Based on the above no adverse impact on otter is anticipated. However, the following best practice disturbance limitation measures will be adhered to on a precautionary basis.

Disturbance Limitation Measures

The measures provided below ensure that there will be no adverse effects on otter as a result of disturbance or displacement.

- During the construction phase, noise limits, noise control measures, hours of operation (i.e. dusk and dawn is high faunal activity time) and selection of plant items will be considered in relation to disturbance of animals.
- All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1998, and any subsequent amendments.
- Plant machinery will be turned off when not in use. Machines, which are used intermittently, will be shut down during those periods when they are not in use.
- Operating machinery will be restricted to the proposed development site boundary.
- Construction works will be limited to daylight hours.
- Reduced illumination of the site will be used where possible to prevent disturbance to local fauna that may potentially occur in the wider area. Light spills during construction works will be minimised where possible thus reducing the effect on areas outside the proposed development, and consequently on fauna of conservation value including otter.
- All plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (SI 359/1996).
- Prior to the commencement of works, the appointed Ecological Clerk of Works (ECoW) will provide Toolbox Talks to all operatives to make them aware of any ecological sensitivities

^[1] Chanin P (2003). *Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.*

within the area including otter and to ensure that all mitigation measures for the protection of otter are implemented in full.

- The ECoW will undertake period surveys of the site for signs of otter activity during the construction phase.
- Mammal ramps will be placed in excavations to allow any mammals which may become trapped to escape.
- Pipes will not be allowed to become a hazard for mammals.

5.2.2.3 Pre-construction Otter survey (TII Guidelines)

Full and comprehensive otter surveys were completed in 2019 and again in 2021 and were utilised to inform this impact assessment.

In accordance with TII guidance, a pre-construction Otter survey will be undertaken to ensure that Otter have not taken up residence within or close to the road footprint prior to any works being carried out. Should any holt be encountered during the pre-construction surveys, it will be subject to exclusion procedures as outlined in the TII guidelines (2006).

5.2.2.4 Conclusions - Otter

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the project design which are considered in the preceding section, the Proposed project will not have an adverse effect on the integrity of the Otter population associated with Lough Corrib SAC.

The proposed project will not affect the favourable conservation condition of otter in Lough Corrib SAC.

5.2.3 Best Practice to prevent the Spread of Invasive Species

Due to the legislative requirements to control the spread of noxious weeds and non-native invasive plant species, it is important that any activities associated with the planning, construction and operation of national road schemes comply with the requirements of the Wildlife Acts, 1976-2012. Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015) include legislative measures to deal with the dispersal and introduction of Invasive Alien Species (IAS), which are listed in the Third Schedule of the regulations.

Regulation 49 deals with the Prohibition on introduction and dispersal of certain species while Regulation 50 relates to Prohibition on dealing in and keeping certain species (Regulation 50 has not yet been commenced). Invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015).

The non-native invasive species winter heliotrope was recorded within the development boundary. Although not listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015), the introduction and/or spread of invasive species such as winter heliotrope, as well as Third schedule species including Himalayan Balsam, Giant Rhubarb or Rhododendron for example, could result in the establishment of invasive alien species and this may have negative impacts on the surrounding environs. The treatment and control of winter heliotrope within the proposed development boundary will follow guidelines issued by Transport Infrastructure Ireland – Invasive Alien Plant Species on National Roads – Technical Guidance (TII 2020). In addition, appropriate spread and prevention measures for all invasive species, including invasive species which are not listed on the Third Schedule have been incorporated into the design of the project.

Control measures for the management of Invasive Species

The following measures address potential impacts associated with the construction phase of the project:

- Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g. Himalayan Balsam, Japanese Knotweed etc.) by thoroughly washing vehicles prior to leaving any site.
- All plant and equipment employed on the construction site (e.g. excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species and to ensure no spread of aquatic invasive species or crayfish plague.
- All plant and equipment, including pumps, employed during the instream works element of the project will be thoroughly disinfected using virkon aquatic on site to prevent the spread of crayfish plague.
- All washing must be undertaken in areas with no potential to result in the spread of invasive species. This process will be detailed in the contractor's method statement.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.
- All planting and landscaping associated with the proposed development shall avoid the use on invasive shrubs such as Rhododendron.

The treatment and control of invasive alien species will follow guidelines issued by Transport Infrastructure Ireland – Invasive Alien Plant Species on National Roads – Technical Guidance (TII 2020).

6. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The sections provided below detail the site-specific residual impact assessment in relation to the relevant QIs of the above EU sites in light of their site-specific targets and attributes.

6.1 Lough Corrib SAC

6.1.1 White-clawed Crayfish (*Austropotamobius pallipes*)

The identified pathways for effect are deterioration in water quality during the construction phase of the development. The conservation objective for this QI is:

‘To maintain the favourable conservation condition of White-clawed Crayfish in Lough Corrib SAC’

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6-1 below.

Table 6-1 Targets and attributes associated with nominated site-specific conservation objectives for White-clawed Crayfish

Attribute	Target	Assessment
Distribution: rivers	No reduction from baseline	There will be no alteration in distribution of this species as a result of the proposed works. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Distribution: Lough Corrib	No reduction from baseline	
Population structure: recruitment	Juveniles and/or females with eggs in all occupied tributaries and occupied parts of Lough Corrib	There will be no alteration in population structure of this species as a result of the proposed works. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation.
Negative indicator species	No alien crayfish species	There will be no introduction of negative indicator species as a result of the proposed works due to the adoption of biosecurity measures as outlined in Section 5.2.3 above.
Disease	No instances of disease	There will be no introduction or spread of disease as a result of the proposed works. All plant and equipment employed on the construction site (e.g. excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent

Attribute	Target	Assessment
		the spread of invasive plant species and to ensure no spread of aquatic invasive species or crayfish plague. All plant and equipment employed during the instream works will be thoroughly disinfected using virkon aquatic on site to prevent the spread of crayfish plague.
Water quality	At least Q3-4 at all sites sampled by the EPA.	A range of measures, outlined in Section 3.2.2 and 5.2.16 are in place to avoid all water pollution during construction and operation. There will be no impact on habitat heterogeneity or habitat quality.
Habitat quality: heterogeneity	No decline in habitat heterogeneity or habitat quality	

6.1.2 Brook Lamprey (*Lampetra planeri*)

The identified pathways for effect are deterioration in water quality during the construction phase of the development. The conservation objective for this QI is:

The conservation objective for this QI is:

To maintain the favourable conservation condition of Brook Lamprey in Lough Corrib SAC.

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6-2 below.

Table 6-2 Targets and attributes associated with nominated site-specific conservation objectives for Brook Lamprey

Attribute	Target	Assessment
Distribution	Percentage of river accessible	A range of measures outlined in Section 3.2.2 above are in place to avoid all water pollution during construction and operation. Watercourses and drainage ditches will be protected by a silt fence. There will be no release of suspended solids during construction works as a direct or indirect result of the proposed works. There will be no barriers to connectivity as a result of the proposal. There will be no impact on the population structure of juveniles or juvenile density. There will be no impact on the extent and distribution of spawning habitat or the availability of juvenile habitat.
Population structure of juveniles	At least three age/size groups present	
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 5/m ²	
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	
Availability of juvenile habitat	More than 50% of sample sites positive	

6.1.3 *Petromyzon marinus* (Sea Lamprey) [1095]

The identified pathways for effect are deterioration in water quality and habitat quality during the construction phase of the development.

The conservation objective for this QI is:

‘To restore the favourable conservation condition of Sea Lamprey in Lough Corrib SAC’.

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.3.

Table 6-3 Targets and attributes associated with site-specific conservation objectives for *Petromyzon marinus* (Sea Lamprey)

Attribute	Target	Assessment
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary.	A range of measures, outlined in Section 3.2.2, are in place to avoid all water pollution during construction. Watercourses and drainage ditches will be protected by a silt fence. There will be no release of suspended solids during construction works as a direct or indirect result of the proposed works. There will be no barriers to connectivity as a result of the proposal. There will be no impact on the population structure of juveniles or juvenile density. There will be no impact on the extent and distribution of spawning habitat or the availability of juvenile habitat.
Population structure of juveniles	At least three age/size groups present	
Juvenile density in fine sediment	Juvenile density at least 1/m ²	
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	
Availability of juvenile habitat	More than 50% of sample sites positive, with a minimum of four positive sites in a catchment, which are at least 5km apart.	

6.1.4 **Salmo salar (Salmon) [1106]**

The identified pathways for effect are deterioration in water quality and habitat quality during the construction and decommissioning phase of the development.

The conservation objective for this QI is:

‘To maintain the favourable conservation condition of Atlantic Salmon in Lough Corrib SAC’.

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.4 below.

Table 6-4 Targets and attributes associated with nominated site-specific conservation objectives for *Salmo salar* (Salmon) [1106]

Attribute	Target	Assessment
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary.	A range of measures, outlined in Section 3.2.2 above, are in place to avoid all water pollution during construction. Watercourses and drainage ditches will be protected by a silt fence. There will be no release of suspended solids during construction works as a direct or indirect result of the proposed works.
Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded.	
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	

Attribute	Target	Assessment
Out-migrating smolt abundance	No significant decline.	There will be no barriers to connectivity as a result of the proposal.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes.	There will be no impact on the population structure of adult spawning fish, salmon fry abundance, smolt abundance, number and distribution of redds.
Water quality	At least Q4 at all sites sampled by EPA	There will be no decline in water quality as a result of the proposal. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation.

6.1.5 *Lutra lutra* (Otter) [1355]

The conservation objective for this QI is:

'To maintain the favourable conservation condition of Lutra lutra (Otter) [1355] in the Lough Corrib SAC'.

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.5 below.

Table 6-5 Targets and attributes associated with the site-specific conservation objectives for otter [1355]

Attribute	Target	Assessment
Distribution	No significant decline	No signs of otter, including holts, slides, prints or spraints were recorded within the sites drainage ditches and watercourses adjacent to the site during the course of the survey. There is no impact pathway which could lead to a decline in the distribution of this species associated with the proposed development
Extent of terrestrial habitat	No significant decline.	There will be no decline in the extent of terrestrial or freshwater habitat associated with the proposed development. A range of measures, outlined in Section 3.2.2, are in place to avoid all water pollution during construction.
Extent of freshwater (river) habitat	No significant decline.	
Extent of freshwater (lake habitat)	No significant decline.	
Couching sites and holts.	No significant decline	No couches or otter holts were identified within the development site boundary and none were identified in the vicinity of the proposed works. There will be no decline in couching or holt sites associated with the proposed development.

Attribute	Target	Assessment
		<p>As outlined in section 5, prior to any works being carried out, a pre-construction Otter survey will be undertaken by a qualified ecologist to ensure that Otter has not taken up residence within or close to the proposed works area.</p> <p>Should any holt be encountered during the pre-construction surveys, it will be subject to exclusion procedures as outlined in the TII/TII guidelines (2006).</p>
Fish biomass available	No significant decline.	<p>There will be no decline in availability of fish biomass associated with the proposed development. Pathways that would allow impacts to occur were considered in the design of the proposed development and a range of measures, outlined in Section 5.2.1 and Section 3.2.2, are in place to avoid all water pollution during construction.</p>
Barrier to connectivity	No significant increase	<p>The proposed development will not result in any barrier to connectivity within or outside the SAC.</p>

6.1.6

Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoëto-Nanojuncetea*

The conservation objective for this QI is:

‘To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojuncetea in Lough Corrib SAC’.

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.6 below.

Table 6-6 Targets and attributes associated with the site-specific conservation objectives for Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoëto-Nanojuncetea

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decrease in habitat area or decline in habitat distribution.
Habitat distribution	No decline, subject to natural processes.	As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution.	There will be no alteration of typical species abundance or condition as a result of the proposed development. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	There will be no alteration in vegetation composition or vegetation distribution as a result of the proposed development.
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes	As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	There will be no alteration in hydrological regime as a result of the proposed development.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation	There will be no effect on lake substratum quality as a result of the proposed development.
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	There will be no deterioration in water quality as a result of the proposed development.
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status	
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status	

Attribute	Target	Assessment
Water quality: macrophyte status	Maintain high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	
Water colour	Restore/maintain appropriate water colour to support the habitat	
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat	
Turbidity	Restore/maintain appropriate turbidity to support the habitat	
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3130	There will be no impact on the fringing habitat in terms of area or condition as a result of the proposed development.

6.1.7

Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)

The conservation objective for this QI is:

*‘To restore the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) in Lough Corrib SAC’.*

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.7 below.

Table 6-7 Targets and attributes associated with the site-specific conservation objectives for Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decrease in habitat area or decline in habitat distribution. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Habitat distribution	No decline, subject to natural processes.	
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution.	There will be no alteration of typical species abundance or condition as a result of the proposed development. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	There will be no alteration in vegetation composition or vegetation distribution as a result of the proposed development. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	There will be no alteration in hydrological regime as a result of the proposed development.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation	There will be no effect on lake substratum quality as a result of the proposed development.
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	There will be no deterioration in water quality as a result of the proposed development.
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	As outlined in Section 5.2.1 and Section 3.2.2 above, a range of

Attribute	Target	Assessment
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status	measures are in place to avoid all water pollution during construction.
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status	
Water quality: macrophyte status	Maintain high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	
Water colour	Restore/maintain appropriate water colour to support the habitat	
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat	
Turbidity	Restore/maintain appropriate turbidity to support the habitat	
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110	There will be no impact on the fringing habitat in terms of area or condition as a result of the proposed development.

6.1.8

Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

The conservation objective for this QI is:

‘To restore the favourable conservation condition of Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. in Lough Corrib SAC’.

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.8 below.

Table 6-8 Targets and attributes associated with the site-specific conservation objectives for Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decrease in habitat area or decline in habitat distribution. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Habitat distribution	No decline, subject to natural processes.	
Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution.	There will be no alteration of typical species abundance or condition as a result of the proposed development. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	There will be no alteration in vegetation composition or vegetation distribution as a result of the proposed development. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Vegetation distribution: maximum depth	Restore maximum depth of vegetation, subject to natural processes	
Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	There will be no alteration in hydrological regime as a result of the proposed development.
Lake substratum quality	Restore appropriate substratum type, extent and chemistry to support the vegetation	There will be no effect on lake substratum quality as a result of the proposed development.
Water quality: transparency	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	There will be no deterioration in water quality as a result of the proposed development. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Water quality: nutrients	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species	
Water quality: phytoplankton biomass	Restore appropriate water quality to support the habitat, including high chlorophyll a status	
Water quality: phytoplankton composition	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	
Water quality: attached algal biomass	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status	

Attribute	Target	Assessment
Water quality: macrophyte status	Maintain high macrophyte status	
Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	
Water colour	Restore/maintain appropriate water colour to support the habitat	
Dissolved organic carbon (DOC)	Restore/maintain appropriate organic carbon levels to support the habitat	
Turbidity	Restore/maintain appropriate turbidity to support the habitat	
Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3140	There will be no impact on the fringing habitat in terms of area or condition as a result of the proposed development.

6.1.9

Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation

The conservation objective for this QI is:

*‘To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation in Lough Corrib SAC’.*

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.9 below.

Table 6-9 Targets and attributes associated with the site-specific conservation objectives for Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation.

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decrease in habitat area or decline in habitat distribution. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Habitat distribution	No decline, subject to natural processes.	
Hydrological regime: River flow	Maintain appropriate hydrological regimes	There will be no alteration in the hydrological regime as a result of the proposed development.
Hydrological regime: groundwater discharge	Maintain appropriate hydrological regimes	

Attribute	Target	Assessment
Substratum composition: particle size range	Maintain appropriate substratum particle size range, quantity and quality, subject to natural process	There will be no alteration to the substratum composition as a result of the proposed development.
Water quality	Maintain appropriate water quality to support the natural structure and functioning of the habitat	There will be no deterioration in water quality as a result of the proposed development. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction.
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	There will be no alteration in vegetation composition as a result of the proposed development.
Floodplain connectivity: area	The area of active floodplain at and upstream of the habitat should be maintained	There will be no alteration to the floodplain as a result of the proposed development. Connectivity between the river and the floodplain will be maintained.
Riparian habitat: area	Maintain the area and condition of fringing habitats necessary to support the habitat and its sub-types	The area and condition of fringing habitats will no be affected due to the proposed development.

6.1.10 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*

The conservation objective for this QI is:

‘To maintain the favourable conservation condition of Calcareous fens with Cladium mariscus and species of the Caricion davallianae in Lough Corrib SAC’.

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.10 below.

Table 6-10 Targets and attributes associated with the site-specific conservation objectives for Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decrease in habitat area or decline in habitat distribution. The works are located entirely outside the SAC boundary As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation.
Habitat distribution	No decline, subject to natural processes.	

Attribute	Target	Assessment
Ecosystem function: hydrology	Maintain appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	There will be no changes to ecosystem function. There will be no abstractions, no alterations to the water table or hydrological regime, and the works will not affect peat formation within the SAC.
Ecosystem function: peat formation	Maintain active peat formation, where appropriate	
Ecosystem function: water quality	Maintain appropriate water quality, particularly nutrient levels, to support the natural structure and functioning of the habitat	
Vegetation structure: typical species	Maintain vegetation cover of typical species including brown mosses and vascular plants	There will be no changes to vegetation structure. The works are located entirely outside the SAC boundary. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation.
Vegetation composition: non-native species	Cover of non-native species less than 1%	There will be no changes to vegetation composition. The works are located entirely outside the SAC boundary. Best practice mitigation measures outline in Section 5.2.3 will be in place to ensure that there is no disturbance or spread of invasive species. There will be no changes to tree and shrub cover within this habitat.
Vegetation composition: trees and shrubs	Cover of scattered native trees and shrubs less than 10%	
Physical structure: disturbed bare ground	Cover of disturbed bare ground not more than 10%. Where tufa is present, disturbed bare ground not more than 1%	There will be no changes to physical structure of this habitat, including cover of disturbed or bare ground or cover of areas showing signs of drainage or heavy trampling. The works are located entirely outside the SAC boundary.
Physical structure: drainage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling not more than 10%	
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	There will be no declines in distribution or population sizes of rare, threatened or scarce species associated with the habitat. The works are located entirely outside the site boundary. Pathways that could result in indirect effects were considered in the design of the development and a range of measures, outlined in Section 5.2.1 and Section 3.2.2 above, are in place to avoid all water pollution during construction and operation.

6.1.11 Alkaline Fen

The conservation objective for this QI is:

To maintain the favourable conservation condition of Alkaline fens in Lough Corrib SAC.

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.11 below.

Table 6-1011 Targets and attributes associated with the site-specific conservation objectives for Alkaline fen

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decrease in habitat area or decline in habitat distribution. The works are located entirely outside the SAC boundary As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation.
Habitat distribution	No decline, subject to natural processes.	
Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	There will be no changes to ecosystem function. There will be no abstractions, no alterations to the water table or hydrological regime, and the works will not affect peat formation within the SAC.
Ecosystem function: hydrology	Maintain appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	
Ecosystem function: peat formation	Maintain active peat formation, where appropriate	There will be no changes to soil nutrients within the habitat.
Ecosystem function: water quality	Maintain appropriate water quality, particularly nutrient levels, to support the natural structure and functioning of the habitat	As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation
Community diversity	Maintain variety of vegetation communities, subject to natural processes	There will be no alterations to vegetation communities in this habitat. The works are located entirely outside the SAC boundary. Pathways that could result in indirect effects were considered in the design of the development and a range of measures, outlined in Section 5.2.1 and Section 3.2.2 above, are in place to avoid all water pollution during construction and operation.
Vegetation composition: number of positive indicator species (brown mosses)	Number of brown moss species present at each monitoring stop is at least one	There will be no changes to vegetation composition or structure. Pathways that could result in indirect effects were considered in the design of the development and a range of measures, outlined in Section 5.2.1
Vegetation composition: number	Number of positive vascular plant indicator species present at each monitoring stop is	

Attribute	Target	Assessment
of positive indicator species (vascular plants)	at least two for small-sedge flushes and at least three for black bog-rush (<i>Schoenus nigricans</i>) flush and bottle sedge (<i>Carex rostrata</i>) fen	and Section 3.2.2 above, are in place to avoid all water pollution during construction and operation.
Vegetation composition: cover of positive indicator species	Total cover of brown moss species and positive vascular plant indicator species at least 20% for small-sedge flushes and at least 75% cover for black bog-rush (<i>Schoenus nigricans</i>) flush and bottle sedge (<i>Carex rostrata</i>) fen	Best practice mitigation measures outline in Section 5.2.3 will be in place to ensure that there is no disturbance or spread of invasive species.
Vegetation composition: negative indicator species	Total cover of negative indicator species less than 1%	
Vegetation composition: nonnative species	Cover of non-native species less than 1%	
Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 10%	
Vegetation composition: soft rush and common reed cover	Total cover of soft rush (<i>Juncus effusus</i>) and common reed (<i>Phragmites australis</i>) less than 10%	
Vegetation structure: height	Proportion of live leaves and/or flowering shoots of vascular plants that are more than 5cm above the ground surface should be at least 50%	
Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%	
Physical structure: drainage	Areas showing signs of drainage as a result of drainage ditches or heavy trampling not more than 10%	
Physical structure: tufa formations	Disturbed proportion of vegetation cover where tufa is present is less than 1%	
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	There will be no declines in distribution or population sizes of rare, threatened or scarce species associated with the habitat. The works are located entirely outside the site boundary. Pathways that could result in indirect effects were considered in the design of the development and a range of measures, outlined in Section 5.2.1 and Section 3.2.2 above, are in place to avoid all water pollution during construction and operation.

Petrifying springs with tufa formation (Cratoneurion)

The conservation objective for this QI is:

'To maintain the favourable conservation condition of Petrifying springs with tufa formation (Cratoneurion) in Lough Corrib SAC.'*

An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.12 below.

Table 6-12 Targets and attributes associated with the site-specific conservation objectives for Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation.

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes	There will be no decrease in habitat area or decline in habitat distribution. The works are located entirely outside the SAC boundary As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation.
Habitat distribution	No decline, subject to natural processes.	
Hydrological regime: height of water table, water flow	Maintain appropriate hydrological regimes	There will be no changes to ecosystem function. There will be no abstractions or alterations to the water table or water flow. There will be no decline in water quality. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation
Water quality - nitrate level	No increase from baseline nitrate level and less than 10mg/l	There will be no decline in water quality or changes to nutrient levels. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation
Water quality - phosphate level	No increase from baseline phosphate level and less than 15µg/l	
Vegetation composition: positive indicator species	At least three positive/high quality indicator species as listed in Lyons and Kelly (2016) and no loss from baseline number	There will be no changes to vegetation composition. The works are located entirely outside the SAC boundary. There will be no decline in water quality or changes to nutrient levels which could affect species composition. As outlined in Section 5.2.1 and Section 3.2.2 above, a range of measures are in place to avoid all water pollution during construction and operation
Vegetation composition: negative indicator species	Potentially negative indicator species should not be Dominant or Abundant; invasive species should be absent	

Attribute	Target	Assessment
Vegetation structure: sward height	Field layer height between 10cm and 50cm (except for bryophyte-dominated ground)	There will be no changes to vegetation structure or physical structure of this habitat. The works are located entirely outside the SAC boundary.
Physical structure: trampling/dung	Cover should not be Dominant or Abundant	

6.2 Lough Corrib SPA

6.2.1 Wetland and Waterbirds [A999]

The conservation objective for this SCI is:

‘To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it’.

Detailed conservation objectives are not available for this site, therefore the target and attributes for this wetland habitat, as described in other SPA Site-specific Conservation Objectives documents including Inner Galway Bay SPA (2013) and River Shannon and River Fergus Estuaries SPA (2012), were reviewed and considered in this assessment. An assessment of the proposed development against the attributes and targets for this habitat is provided in Table 6.10 below.

Table 6-11 Targets and attributes associated with the site-specific conservation objectives for Wetland and Waterbirds [A999].

Attribute	Target	Assessment
Wetland Habitat Area	The permanent area occupied by the wetland habitat should be stable.	<p>There will be no direct loss or decrease in wetland habitat associated with the proposed development as the footprint of the development is entirely outside of the boundary of the SPA.</p> <p>Indirect habitat loss as a result of deterioration in water quality was considered.</p> <p>A range of measures, outlined in Section 3.2.2, are in place to avoid all water pollution during construction. There will be no deterioration in the condition of downstream wetland habitat and therefore no reduction in habitat area as a result of the proposed development.</p>

6.3 Conclusion of Residual Impact Assessment

Based on the above, in view of best scientific knowledge and on the basis of objective information, the proposed project will not have any adverse effect on the integrity of Lough Corrib SAC or Lough Corrib SPA in light of their conservation objectives. Where pathways for potential effects were identified, i.e. deterioration of surface and/or groundwater quality during construction and operation and disturbance, displacement and collision mortality to otter, these pathways have been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures

into the project design. Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the project design which are considered in the preceding section, there will be no adverse effects on any of the identified QIs/SCIs or their associated attributes and targets.

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the Proposed Development will not have an adverse effect on the conservation objectives of Lough Corrib SAC or Lough Corrib SPA or the integrity of these European Sites.

7. CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified at the screening stage (Appendix 1). This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects. The Drum stream, Carrownageeha Stream and River Clare have undergone Arterial drainage works in the 1960's by the OPW and are maintained channels. These watercourses are heavily modified watercourses with maintenance works currently carried out on the Carrownageeha typically every 5 to 7 years, including sediment and vegetation removal and vegetation cutback using an excavator. These maintenance works have been taken into account cumulatively with the proposed development.

7.1.1 Plans

The following development plans been reviewed and taken into consideration as part of this assessment:

- Galway County Development Plan 2015-2021

The review focused on policies and objectives that relate to Natura 2000 sites and natural heritage. Policies and objectives relating to sustainable land use were also reviewed.

Table 7-1 Review of plans

Plans	Key Policies/Issues/Objectives Directly Related to European Sites In The Zone of Influence	Assessment of Potential Impact on European Sites
Land Use and Spatial Plans		
Galway County Development Plan 2015 - 2021	<p>Policy NHB 1 – Natural Heritage and Biodiversity It is the policy of Galway County Council to support the protection, conservation and enhancement of natural heritage and biodiversity, including the protection of the integrity of European sites, that form part of the Natura 2000 network, the protection of Natural Heritage Areas, proposed Natural Heritage Areas Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries and Connemara National Park (and other designated sites including any future designations) and the promotion of the development of a green/ecological network within the plan area, in order to support ecological functioning and connectivity, create opportunities in suitable locations for active and passive recreation and to structure and provide visual relief from the built environment.</p> <p>Objective NHB 1 – Protected Habitats and Species Support the protection of habitats and species listed in the Annexes to and/or covered by the EU Habitats Directive (92/43/EEC) (as amended) and the Birds Directive (2009/147/EC), and regularly occurring-migratory birds and their habitats and species protected under the Wildlife Acts 1976-2000 and the Flora Protection Order.</p> <p>Objective NHB 2 – Biodiversity and Ecological Networks Support the protection and enhancement of biodiversity and ecological connectivity within the plan area, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, stonewalls, geological and geo-morphological systems, other landscape features and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones in the context of Article 10 of the Habitats Directive.</p>	<p>The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified.</p> <p>There will be no impact on designated sites as a result of deterioration in water quality. Best practice preventative measures will be implemented to avoid effects on water quality, as outlined in Section 5.2.1 and Section 3.2.2 of this report. There will be no adverse effects on sensitive aquatic receptors listed as QIs/SCIs of European Sites, as a result of deterioration in water quality.</p>
Variation No.1 to the County Development Plan 2015 - 2021	<p>Objective DS 6 – Natura 2000 Network and Habitats Directive Assessment Protect European sites that form part of the Natura 2000 network (Including Special Protection Areas and Special Areas of Conservation) in accordance with the requirements in the EU Habitats Directive</p>	<p>The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura</p>

Plans	Key Policies/Issues/Objectives Directly Related to European Sites In The Zone of Influence	Assessment of Potential Impact on European Sites
	<p>(92/43/EEC), EU Birds Directive (2009/147/EC), the Planning and Development (Amendment) Act 2010, the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No.477 of 2011) (and any subsequent amendments or updated legislation) and having due regard to the guidance in the Appropriate Assessment Guidelines 2010 (and any updated or subsequent guidance). A plan or project (e.g. proposed development) within the plan area will only be authorised after the competent authority (Galway County Council) has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and/or a Habitats Directive Assessment where necessary, that:</p> <p>a) The plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or</p> <p>b) The plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or</p> <p>c) The plan or project will have a significant adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000.</p>	<p>2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified.</p> <p>There will be no impact on designated sites as a result of deterioration in water quality. Best practice preventative measures will be implemented to avoid effects on water quality, as outlined in Section 5.2.1 and Section 3.2.2 of this report. There will be no adverse effects on sensitive aquatic receptors listed as QIs/SCIs of European Sites, as a result of deterioration in water quality. There will be no impact on nationally designated sites as a result of the proposed development.</p>
	<p>Objective DS 10 – Impacts of Developments on Protected Sites</p> <p>Have regard to any impacts of development on or near existing and proposed Natural Heritage Areas, Special Protection Areas and Special Areas of Conservation, Nature Reserves, Ramsar Sites, Wildfowl Sanctuaries, Salmonoid Waters, Refuges for Flora and Fauna, Connemara National Park, shellfish waters, freshwater pearl mussel catchments and any other designated sites including future designations.</p>	<p>The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered</p>

Plans	Key Policies/Issues/Objectives Directly Related to European Sites In The Zone of Influence	Assessment of Potential Impact on European Sites
		<p>in conjunction with the current proposal were identified.</p> <p>There will be no impact on designated sites as a result of the proposed development. Best practice preventative measures will be implemented to avoid effects on water quality, as outlined in Section 5.2.1 and Section 3.2.2 of this report. There will be no adverse effects on sensitive aquatic receptors listed as QIs/SCIs of European Sites, as a result of deterioration in water quality. There will be no impact on nationally designated sites as a result of the proposed development.</p>

7.1.2 Other Projects

The potential for the proposed development to contribute to a cumulative impact on European Sites was considered. The online planning system for Galway County Council was consulted on the 01/11/2021 Additional projects identified in the area include;

- Permission for a) Retention of commercial kitchen over open basement to rear of existing restaurant b) Retention of ground floor residential extension to rear of existing dwelling (Previously exempted development) c) Permission to construct single storey residential extension to side of existing dwelling d) permission to construct first floor residential extension to rear of existing dwelling e) Re-positioning & Widening of existing vehicular entrance to rear garden to accommodate c) above f) Permission to construct canopy/covered smoking area to front of existing bar/Restaurant. Gross floor space of proposed works Residential 71sqm, Gross floor space of work to be retained Commercial 57sqm, Residential 33sqm (planning reference: 171196).
- Permission for development at the Bar/Retail & residential premises and adjacent yard formerly known as Glynn's Milltown. The development will consist of: The renovation and alteration of the existing building and yard such that they will provide 7 no. 2 bed town houses, parking for 7 cars along with all necessary siteworks and services. (Gross floor space of existing buildings: 772 sqm., gross floor space of demolition works: 144 sqm.) (planning reference: 17552).
- Permission to demolish existing dwelling house, and permission to construct a dwelling house and a garage with treatment plant and percolation area (gross floor space demolish 58.2sqm house 253.2sqm garage 60sqm) (Planning reference: 1123).
- Permission to construct a dwellinghouse, domestic garage and all ancillary site works and services (gross floor space 271.1sqm; garage 47.4sqm) (Planning reference:1566).
- Permission for the construction of 4 two-storey detached dwelling houses and associated domestic garages and a nursing home development, comprised as follows: (1) The provision of a two-storey residential nursing home to HIQA standards containing 55 en-suite bedrooms (Planning reference: 151268).
- Permission to (a) construct new spectator stand with storage to the rear and (b) construct a new gym (gross floor space (a) 201sqm; (b) 80sqm) (planning reference: 121188).
- Permission for the construction of a serviced dwelling with domestic garage and effluent treatment system (375sqm house, 60sqm garage) (planning reference: 121035).
- Permission for the construction of a dwelling house, domestic garage and for all ancillary site works and services. Gross floor space of proposed works 138.3sqm (planning reference: 171566).
- Permission to construct a workshop repair garage including office accommodation & pump house, together with all ancillary site works and services (gross floor space 900.1sqm) (planning reference: 16610).
- Permission to construct serviced dwelling house. Gross floor space of proposed works: 230 sqm. (Planning reference: 191078).
- Permission to construct domestic garage with all necessary site works (gross floor space 97.21sqm) (planning reference: 151402).
- Permission to construct a new serviced dwellinghouse with proprietary treatment plant and domestic garage together with all ancillary site development works (previous planning reference number 08/1881) (Gross floor area House 270 sqm Garage 53 sqm). (Planning reference: 1434)
- Permission for an private house changes include a) garage converted to gym &/boiler house with chimney, garage door replaced with sliding glass doors and larger window to the front elevation of the garage also additional window on side wall of garage, b) conversion of attic to storage/study space with velux roof window on rear of roof also walk in attic space, c) porch to front of house, d) additional internal ensuite bathroom, e) some windows style and sizes changed, f) retention also for outbuildings including garden tool store, garage, closed fuel store and open fuel store (Planning reference: 19792).

- Retention permission for sub division of commercial unit (1 unit into 2 units) as previously granted planning permission under 06/508, all as per drawing documentation submitted together with all ancillary site works and services. (Planning reference 2081)
- Permission for the construction of a dwelling house, garage, wastewater treatment system and all ancillary works. Gross floor space of proposed works: House - 236.7 sqm, Garage - 41.25 sqm (Planning reference: 191652)
- Permission to n: to construct a private dwelling house, proprietary effluent treatment system, percolation area and domestic garage along with all associated services. Gross floor space of proposed works: 263.29 msq (Planning ref: 201969)
- Permission for sub division of commercial unit (1 unit into 2 units) as previously granted planning permission under 06/508, all as per drawing documentation submitted together with all ancillary site works and services. Gross floor space of work to be retained: 1804.15 sqm (Planning ref: 2081)
- Retention permission of a) a Maintenance Shed, b) For the erection of 8 No. 20m high Pitch floodlighting Columns to the Main Pitch and c) For the erection of 8 No. 18m high Pitch floodlighting Columns to the Second Pitch and all associated works. Gross floor space of work to be retained: 32 sqm (Planning reference: 21104)
- Permission to a); demolish sub-standard vacant dwelling house, and b) construct a new dwelling house, domestic garage, effluent treatment system, percolation area, and all associated works. Gross floor space of proposed works: House: 261 sqm, Garage: 60 sqm. Gross floor space of any demolition: 95.5 sqm (Planning reference: 21370)
- Permission for works to existing dwelling house including construction of a new roof with higher ridge and eaves levels, a single-story extension to the side and rear and associated works. Gross floor space of proposed works: 236 sqm. Gross floor space of any demolition: 10 sqm (Planning reference: 21372)
- Extension of duration permission for the construction of 4 two-storey detached dwelling houses and associated domestic garages and a nursing home development, comprised as follows: (1) The provision of a two-storey residential nursing home to HIQA standards containing 55 ensuite bedrooms. The building will also have all ancillary dayrooms, dining areas, kitchen, staff facilities, circulation, nurse's stations, sluice rooms and all ancillary rooms associated with a nursing home. The building encloses a secure open space amenity area. (2) The construction of a separate plant room to service the proposed nursing home. (3) An access junction, internal roads, footpaths, car-parking, public open spaces and all ancillary hard and soft landscaping. The development will be connected to the public sewer (gross floor space 3883.6sqm) (Planning reference: 21617)
- Permission for Change of Use of a vacant shop unit to a one-bedroom apartment and all associated works (Planning reference: 21968)

Following the implementation of the best practice measures outlined in Section 5.2.1 and Section 3.2.2 of this report and in the Outline Erosion and Sediment Control Plan (OESC), all potential impact pathways have been blocked. There is therefore no potential for impact on EU Designated Sites in combination with other plans and projects.

7.1.3 Conclusion of Cumulative Assessment

Following the detailed assessment provided in the preceding sections, it is concluded that, the proposed development will not result in any residual adverse effects on any of the European Sites, their integrity or their conservation objectives when considered on its own. There is therefore no potential for the proposed development to contribute to any cumulative adverse effects on any European Site when considered in-combination with other plans and projects.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts

resulting from the combination of the various projects and plans in association with the proposed development.

Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to any European Site.

8. **CONCLUDING STATEMENT**

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites

Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction, and operation of the proposed development does not adversely affect the integrity of European sites.

Therefore, it can be objectively concluded that the proposed development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.

BIBLIOGRAPHY

Bailey, M. and Rochford J. (2006) Otter Survey of Ireland 2004/2005. Irish Wildlife Manuals, No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. and Fuller, R.J., 2013. *Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland*. Thetford: BTO.

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

Bowers Marriott, B. (1997) Practical Guide to Environmental Impact Assessment: A Practical Guide. Published by McGraw-Hill Professional, 1997, 320 pp.

Chandler, J.R. (1970) A Biological Approach to water Quality Management. Water Poll. Cont. 69:415-421.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

CIEEM (2019) Chartered Institute of Ecology and Environmental Management. Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine. September 2018 Version 1.1- updated September 2019.

Crowe, O. (2005) Ireland's Wetlands and their Waterbirds: Status and Distribution. BirdWatch Ireland, Rockingham, Co. Wicklow.

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin.

DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.

EC (2007a) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2007b) Interpretation Manual of European Union Habitats. Version EUR 27. European Commission, DG Environment.

EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements. Environmental Protection Agency.

EPA (2003) Advice Notes on current practice in the preparation of Environmental Impact Statements. Environmental Protection Agency.

EPA website: <http://www.epa.ie>.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – <http://www.irishstatutebook.ie>.

European Communities (Environmental Impact Assessment) Regulations, 1989 to 2001.

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – <http://www.irishstatutebook.ie>.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.

Gibbons, D.W., Reid, J.B. & Chapman, R.A. (1993) The new atlas of breeding birds in Britain and Ireland: 1988-1991. T. & A.D. Poyser

Habitats Directive (92/43/EEC).

Hydrological and Environmental Engineering Consultants (September 2020) N17 Milltown to Gortnagunne Road Improvement Project

Maitland, P.S., Winfield, I.J., McCarthy, I.D. and Igoe, F., 2007. The status of Arctic charr *Salvelinus alpinus* in Britain and Ireland. *Ecology of Freshwater Fish*, 16(1), pp.6-19.

Murphy, D.F. (2004) Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites. Eastern Regional Fisheries Board, Dublin.

NPWS (2008) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2008) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NPWS (2013) The Status of EU Protected Habitats and Species in Ireland. Habitat Assessments Volume 2. Version 1.1. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2013) The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 3. Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O’Neill.

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O’Neill

NPWS Protected Areas Site Synopses and maps available on <http://www.npws.ie/en/ProtectedSites/>.

Outline Erosion and Sediment Control Plan (OESC), N17 Milltown to Gortnagunne (June 2019). Galway County Council.

TII (2004) Environmental Impact Assessment of National Road Schemes – A Practical Guide, National Roads Authority, Dublin.

TII (2004) Guidelines for the Treatment of Noise and Vibration in National Road Schemes (1 ed.). Dublin: National Roads Authority.

TII (2005) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. Dublin: National Roads Authority.

TII (2006) A Guide to Landscape Treatments for National Road Schemes in Ireland. Dublin: National Roads Authority.

TII (2006) Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post-Construction of National Road Schemes. Dublin: National Roads Authority.

TII (2009). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority.

OPW (2006). Series of Ecological Assessments Onarterial Drainage Maintenance No 5. Ecological Impact Assessment (EcIA) of the Effects of Statutory Arterial Drainage Maintenance Activities on Water Courses of Plain to Montane Levels with Aquatic Vegetation (Floating River Vegetation).

Shannon Regional Fisheries Board (2009). Protection and Conservation of Fisheries Habitat with Particular reference to Road Construction (2009)

Therivel R. (2009) Workshop Material on the Habitats Directive Assessment of Plans Levett-Therivel Sustainability Consultants on behalf of the Heritage Council, Kilkenny.

Water status data available on <http://www.epa.ie> and <http://www.wfdireland.ie>

Wildlife Act 1976 and Wildlife (Amendment) Act 2000.



APPENDIX 1

APPROPRIATE ASSESSMENT SCREENING REPORT

Appropriate Assessment Screening Report

N17 Milltown to
Gortnagunne
Realignment, County
Galway





DOCUMENT DETAILS

Client: **Galway County Council**

Project title: **N17 Milltown to Gortnagunned
Realignment, County Galway**

Project Number: **190540**

Document Title: **Appropriate Assessment Screening Report**

Doc. File Name: **AASR – F – 2021.12.08 – 190540**

Prepared By: **MKO
Tuam Road
Galway
Ireland
H91 VW84**



Planning and
Environmental
Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	08/12/2020	JOS	JH
02	Draft	08/11/2021	JOS/SM	PR
03	Final	08/12/2021	JOS/SM	PR

Table of Contents

1.	INTRODUCTION.....	1
1.1	Appropriate Assessment	1
1.1.1	Screening for Appropriate Assessment.....	1
1.1.2	Statement of Authority.....	2
2.	DESCRIPTION OF THE PROPOSED DEVELOPMENT.....	3
2.1	Site Location.....	3
2.2	Characteristics of the Proposed Development	5
2.2.1	Description of the project	5
3.	IDENTIFICATION OF RELEVANT EUROPEAN SITES.....	7
3.1	Identification of the European Sites within the Likely Zone of Impact.....	7
3.2	Likely Cumulative Impact of the Proposed Works on European Sites, in-combination with other plans and projects.....	16
4.	ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING STATEMENT AND CONCLUSIONS.....	17
4.1	Data Collected to Carry Out Assessment	17
4.2	Concluding Statement.....	17
5.	BIBLIOGRAPHY	18
	 TABLE OF FIGURES	
	<i>Figure 2-1 Site location.....</i>	<i>4</i>
	<i>Figure 3-1 EU sites within 15km.....</i>	<i>8</i>
	 TABLE OF TABLES	
	<i>Table 3-1 Identification of Designated sites within the Likely Zone of Impact.....</i>	<i>9</i>
	 APPENDICES	
	Appendix 1	Site Layout Drawings

1. INTRODUCTION

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment of the proposed N17 Milltown to Gortnagun road realignment in Co. Galway.

Screening for Appropriate Assessment is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The current project is not directly connected with, or necessary for, the management of any European Site consequently the project has been subject to the Appropriate Assessment Screening process.

The assessment in this report is based on a desk study and field surveys undertaken in 2019 and 2021. It specifically assesses the potential for the proposed development to result in significant effects on European sites in the absence of any best practice, mitigation or preventative measures.

This Appropriate Assessment Screening Report has been prepared in accordance with the European Commission's *Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC* (EC, 2001) and *Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (EC, 2018) as well as the Department of the Environment's *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (DoEHLG, 2010).

In addition to the guidelines referenced above, the following relevant documents were also considered in the preparation of this report:

1. *Council of the European Commission (1992) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal of the European Communities. Series L 20, pp. 7-49.*
2. *EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.*
3. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence. Opinion of the commission.*
4. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.*
5. *EC 2021., Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*

1.1 Appropriate Assessment

1.1.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority. As per Section 177U of the Planning and Development Act, 2000, as amended 'A screening for appropriate assessment shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually

or in combination with another plan or project is likely to have a significant effect on the European site'. The Competent Authority's determination as to whether an Appropriate Assessment is required must be made on the basis of objective information and should be recorded. The Competent Authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may provide for the competent authority, the information necessary for them to determine whether an Appropriate Assessment is required and provide advice to assist them in the Article 6(3) Appropriate Assessment Screening decision.

Where it cannot be excluded beyond reasonable scientific doubt at the Screening stage, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment is required.

Where an Appropriate Assessment is required, the Competent Authority may require the applicant to prepare a Natura Impact Statement.

The term Natura Impact Statement (NIS) is defined in legislation¹. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

This Article 6(3) Appropriate Assessment Screening Report has been prepared in compliance with the provision of section 177U of the Planning & Development Act 2010 as amended.

1.1.2 Statement of Authority

A field assessment was undertaken by Julie O'Sullivan (B.Sc., M.Sc.) and Aoife Joyce on the 11th of July 2019. Aoife is an experienced ecologist with three years' experience. This report has been prepared by Julie O'Sullivan. Julie is an experienced ecologist with over four years professional experience. This report has been reviewed by John Hynes (B.Sc., M.Sc., MCIEEM) who has over nine years' experience in ecological consultancy.

¹ As defined in Section 177T of the Planning and Development Act, 2000 as amended, an NIS means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own and in combination with other plans and projects, for a European site in view of its conservation objectives. It is required to include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for the European site in view of its conservation objectives

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location

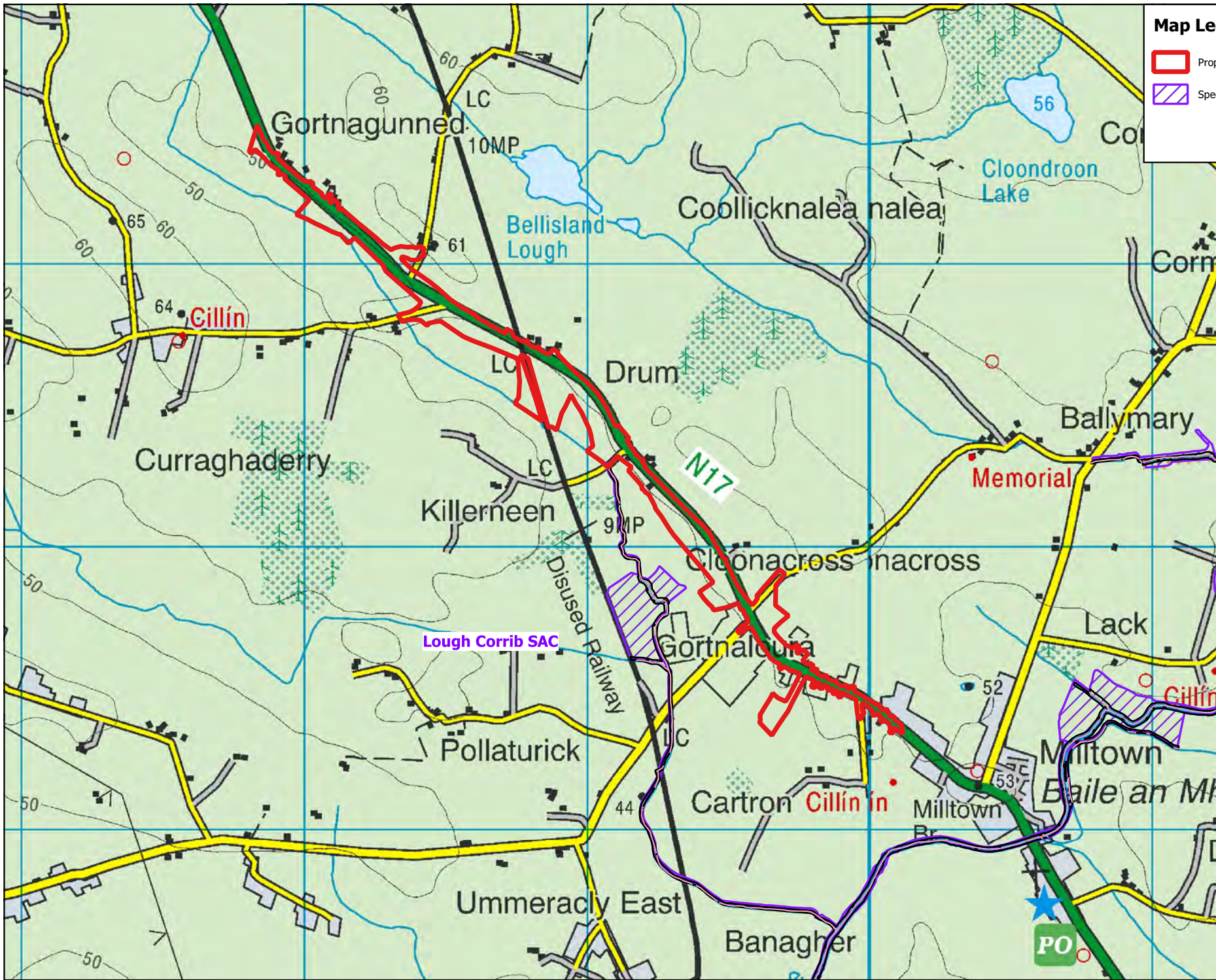
Galway County Council is currently planning a 3km (approx.) upgrade of the N17 National Primary Route, between the townlands of Milltown and Gortnagunned, located immediately north-west of Milltown, Co. Galway (grid reference: M 40235 63265).

The project is located along N17 from Milltown to Gortnagunned and consists of both online and offline realignment of the existing road. The scheme commences north at Gortnagunned and extends approximately 3.0km south where it ties in at Milltown.

The realignment will take place in the townlands of Milltown, Cartron, Gortnaloura, Cloonnacross, Drum and Gortnagunned. The project will remove a number of substantially deficient bends on this section of the route and in so doing, will improve aspects such as safety, sight distance, cross sectional width and drainage.

The proposed scheme will tie-in on the Northern end with an existing section of the N17 that has already been upgraded and is of a higher standard and on the Southern end will tie in with the town of Milltown.

The project location is provided in Figure 2.1.



Map Legend

- Proposed Development Site
- Special Area of Conservation (SAC)



Drawing Title	
Site Location	
Project Title	
GCC N17 Milltown to Gortnagunned	
Drawn By	Checked By
CS	SM
Project No.	Drawing No.
190540	Figure 2.1
Scale: 1:7500	Date
	2021-11-02

MKO
 Planning and
 Environmental
 Consultants
 Tuam Road, Galway
 Ireland, H91 VW84
 +353 (0) 91 735611
 email: info@mkofireland.ie
 Website: www.mkofireland.ie

Microsoft product screen shots reprinted with permission from Microsoft Corporation
 Ordnance Survey Ireland Licence No. AR 0021821 © Ordnance Survey Ireland/Government of Ireland

2.2 Characteristics of the Proposed Development

2.2.1 Description of the project

The project will remove a number of substantially deficient bends on this section of the route and in so doing, will improve aspects such as safety, sight distance, cross sectional width and drainage. The road type proposed for the project corresponds to a Type 1 Single Carriageway arrangement. The site layout is shown in Drawings SE01-SE04 in Appendix 1.

The scheme includes the upgrade of 3km of the N17 North of Milltown, Co Galway. The realignment consists of both online on offline construction. The route consists of a Type 1 single carriageway and is designed in accordance with TII TD9. The road will consist of two lanes of 3.65m, a hard shoulder for each carriageway of 2.5m and verges of 3m, this cross section shall extend from Ch + 0 to Ch 2 + 560 of the scheme. Ch 2 + 560 to the end of the scheme is a Single Carriageway Urban Road with footway and cycleway on both sides of the carriageway. The design speeds for the proposed scheme are listed below, which is consistent and designed in accordance with TII DMRB's and DMURS.

- The design speed is 100km CH +0 to CH 2+180
- The design speed is 85km CH 2+180 to CH 2+560
- The design speed is 60km CH 2+560 to CH 2+945

The project will entail:

- Circa 3km of Realignment to the existing N17 National Primary Route (c. 1550m online and c.1450m offline);
- Junction Improvements including:
 - 7 no. Simple T Junctions, including one Right/Left Staggered T Junction;
 - Circa 0.775km of realignment to the existing local road network (tie-in works);
 - 34 no. Direct Access connections to the National Primary network (including 17 no. agricultural and 17 no. residential); Where the new road has been realigned away from the original N17, the number of local access points have been rationalised to provide one access point onto the main carriageway from a number of access points. This will improve the safety of the route by reducing the number of possible conflicts.
 - Where direct vehicular access to local properties and farmland has to be provided to the realigned road and cannot be mitigated, the minimum SSD will be maintained at all access points, particularly those that agricultural machinery will use.
- It is proposed to provide a footway/cycleway on the Left Hand Side (LHS) from Ch + 0 to Ch 2 + 560, 3m wide with a 2% slope falling towards the carriageway, with a reduced width of 2m from Ch 0 + 120 to Ch 0 + 200. The footway/cycleway is designed in accordance with DN – GEO – 03047 Rural Cycleway Design (Offline). Also, it is proposed to extend the footway/cycleway on both sides of the alignment from an approximate chainage of Ch 2 + 560 to Ch 2 + 945. The footway/cycleway is proposed to be 4.5m wide. This footway/cycleway is then extended on the western side of the alignment and goes offline from Ch 2 + 560 to Ch 2 + 310 utilising the old road corridor providing connectivity to the N17 Store. The footway/cycleway is designed in accordance with TD300/14 of the TII DMRBs.
- The proposed road drainage system will replace the current one where the road run-off is discharging directly to the receiving water courses and groundwater without any pollution control or attenuation. The proposed system will be designed to ensure the speedy removal of surface water in order to provide safe driving conditions and to minimise the impact of runoff on the receiving environment. The preliminary drainage proposals will be developed in accordance with the TII Design Manual for Roads and Bridges. The drainage system discharges to a local drainage network which flows south before eventually connecting into the River Clare approximately 1.5 km downstream. The River Clare is included within the Lough Corrib SAC.

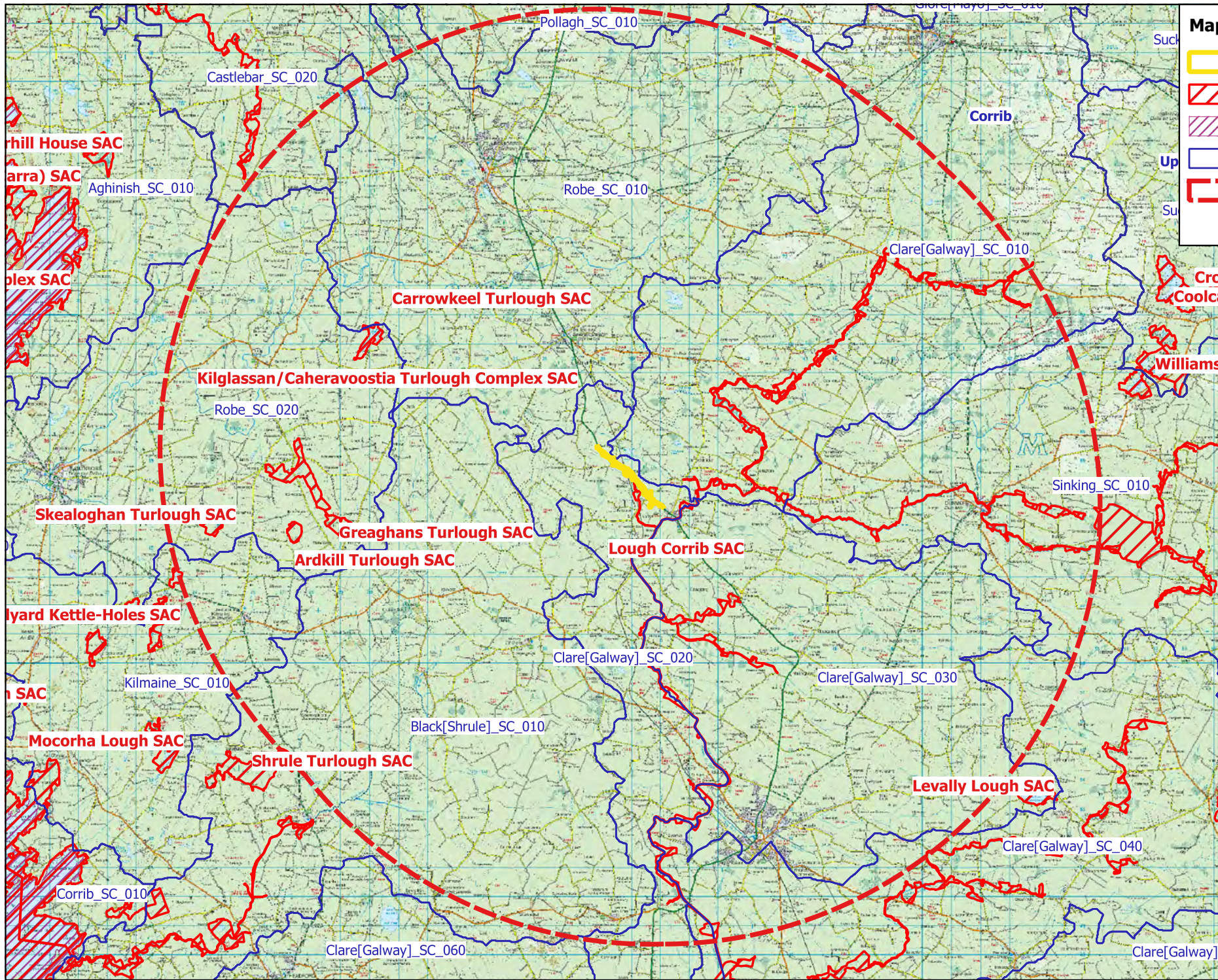
- > The new scheme intercepts various utility services along its mainline, link roads and side roads. The works required to protect/divert existing services shall be developed further during detailed design. Affected utilities include the following:
 - Low and Medium Voltage Electricity Lines
 - Water Supply
 - Telecommunications
 - Irish Rail
- > Earthworks operations; Data gained from the ground investigation will be interpreted and utilized during detailed design for the design of the earthworks required in the construction of the scheme. It is expected that the majority of materials required in construction will be imported as it is expected from that there are low volumes of acceptable material available within the site extents. 2 no. Spoil Repository/Borrow Pits
- > As the scheme has sections of work that are both on-line and offline and as such the Contractor shall be responsible to undertake the works in a manner that will cause the least amount of traffic disruption. The haulage of materials to and from the site will create a significant temporary impact to both road users and to residents living this section of the N17. To minimize these impacts, it is important that only authorized site access roads, as directed by the Local Authority, are used by construction vehicles. The construction process will be planned to accommodate existing traffic flows and the daily construction operations adjacent to the scheme. The overall traffic management strategy for the scheme will be developed further during the detailed design stage through development of the preliminary Traffic Management Plan.

3. IDENTIFICATION OF RELEVANT EUROPEAN SITES






3.1 Identification of the European Sites within the Likely Zone of Impact

The following methodology was used to establish which European Sites are within the Likely Zone of Impact of the proposed development:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 08/12/2021. The datasets were utilized to identify European Sites which could feasibly be affected by the proposed development.
- All European Sites within a distance of 15km surrounding the development site were identified and are shown on Figure 3.1. Whilst all sites within 15km of the proposed development are shown in Figure 3.1, sites outside this 15km buffer were also considered in this initial assessment and the potential for connectivity with European Sites at distances of greater than 15km from the proposed development was taken into account. In this case, potential connectivity with sites located at a distance of over 15km from the proposed development was identified, i.e. Lough Corrib SPA, and this site is considered in Table 3.1 below.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed development and any European Sites. The hydrological catchments are also shown in Figure 3.1.
- Table 3.1 provides details of all relevant European Sites as identified in the preceding steps and assesses which are within the likely Zone of Impact. The assessment considers any likely direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this screening assessment.
- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report. Figure 3.1 shows the location of the proposed development in relation to all European sites within 15km of the proposed development.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and further assessment is required.



Map Legend

-  Site Location
-  Special Area of Conservation (SAC)
-  Special Protection Area (SPA)
-  WFD Hydrological Sub-catchment
-  15km Buffer



Drawing Title
European Designated Sites within 15km

Project Title
 N17 Milltown to Gortnagunned

Drawn By CS	Checked By SM
Project No. 190540	Drawing No. Figure 3-1
Scale 1:170000	Date 2021-11-08

MKO
 Planning and Environmental Consultants
 Tuam Road, Galway
 Ireland, H91 VW84
 +353 (0) 91 735611
 email: info@mkofireland.ie
 Website: www.mkofireland.ie

Table 3-1 Identification of Designated sites within the Likely Zone of Impact

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 08/12/2021)	Conservation Objectives	Likely Zone of Impact Determination
Special Area of Conservation (SAC)			
<p>Lough Corrib SAC (000297)</p> <p>Distance: 0m</p> <p>(Works are adjacent to the SAC boundary)</p>	<ul style="list-style-type: none"> ➤ Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] ➤ Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] ➤ Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i> [3140] ➤ Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] ➤ Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] ➤ <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] ➤ Active raised bogs [7110] ➤ Degraded raised bogs still capable of natural regeneration [7120] ➤ Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] 	<p>Detailed conservation objectives for this site (Version 1, April 2017) were reviewed as part of the assessment and are available at www.npws.ie</p>	<p>There is no potential for direct impact as the proposed development is outside of the site boundary.</p> <p>Indirect impacts on the following QIs can be ruled out due to the terrestrial nature of the habitats/species, the distance from the proposed development and the absence of a complete source-pathway-receptor chain for impact:</p> <ul style="list-style-type: none"> ▪ Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) ▪ <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) ▪ Active raised bogs* ▪ Degraded raised bogs still capable of natural regeneration Depressions on peat substrates of the <i>Rhynchosporion</i> ▪ Limestone pavements* ▪ Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles ▪ Bog Woodland ▪ Slender Green Feather-moss (<i>Drepanocladus vernicosus</i>)

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 08/12/2021)	Conservation Objectives	Likely Zone of Impact Determination
	<ul style="list-style-type: none"> ➤ Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] ➤ Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] ➤ Alkaline fens [7230] ➤ Limestone pavements [8240] ➤ Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] ➤ Bog woodland [91D0] ➤ <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] ➤ <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] ➤ <i>Petromyzon marinus</i> (Sea Lamprey) [1095] ➤ <i>Lampetra planeri</i> (Brook Lamprey) [1096] ➤ <i>Salmo salar</i> (Salmon) [1106] ➤ <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] ➤ <i>Lutra lutra</i> (Otter) [1355] ➤ <i>Drepanocladus vernicosus</i> (Slender Green Feather-moss) [1393] ➤ <i>Najas flexilis</i> (Slender Naiad) [1833] 		<p>According to Map 11 of the site-specific conservation objects document, Lough Corrib SAC has been selected for lesser horseshoe bats because of the presence of one important summer roost, located on the northern shores of Lough Corrib, more than 26km north-west of the proposed development site. The development site is outside the foraging range of the lesser horseshoe bat population for which the SAC is designated (i.e., 2.5km as per Map 11 of the SSCO document). There is no pathway for significant effect on the population of lesser horseshoe bat as a result of the development.</p> <p>This SAC is designated for the Owenriff freshwater pearl mussel population, which occurs in separate hydrological catchment to the works area. There is no pathway for significant effect on this population as a result of the development.</p> <p>A network of drainage ditches, that have surface water connectivity with Lough Corrib SAC, occur within the works area. Therefore, the proposed development has the potential to cause deterioration in surface water quality during construction and operation, potentially affecting the following aquatic habitats and supporting habitats for the aquatic fauna where they occur downstream of the proposed development:</p>

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 08/12/2021)	Conservation Objectives	Likely Zone of Impact Determination
			<ul style="list-style-type: none"> ▪ White-clawed Crayfish (<i>Austropotamobius pallipes</i>) ▪ Brook Lamprey (<i>Lampetra planeri</i>) ▪ Sea Lamprey (<i>Petromyzon marinus</i>) ▪ Salmon (<i>Salmo salar</i>) ▪ Otter (<i>Lutra lutra</i>) ▪ Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) ▪ Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> ▪ Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. ▪ Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation ▪ Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>* ▪ Petrifying springs with tufa formation (<i>Cratoneurion</i>)* ▪ Alkaline fens ▪ Slender Naiad (<i>Najas flexilis</i>) <p>Taking a precautionary approach there is also potential for percolation of pollutants to groundwater during construction activities, potentially affecting the above listed aquatic QIs.</p>

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 08/12/2021)	Conservation Objectives	Likely Zone of Impact Determination
			<p>There is also potential for disturbance, displacement and collision mortality related impacts to <i>Otter</i> during the construction and operational phase of the proposed development.</p> <p>This site is within the zone of likely impact, and further assessment is required.</p>
<p>Carrowkeel Turlough SAC (000475)</p> <p>8.3km</p>	<p>➤ Turloughs</p>	<p>Detailed conservation objectives for this site (Version 1, January 2021) were reviewed as part of the assessment and are available at www.npws.ie</p>	<p>This European Site is located 8.3km north-west of the proposed works area and is in a separate hydrological and groundwater catchment. Based on the lack of connectivity between the site and this SAC, potential for indirect impact on the European Site can be excluded.</p> <p>This site is not in the zone of likely impact, and no further assessment is required.</p>
<p>Greaghans Turlough SAC (000503)</p> <p>8.8km</p>	<p>➤ Turloughs [3180]</p>	<p>Detailed conservation objectives for this site (Version 1, January 2021) were reviewed as part of the assessment and are available at www.npws.ie</p>	<p>This European Site is located 8.8km west of the proposed works area and is in a separate hydrological and groundwater catchment. Based on the lack of connectivity between the site and this SAC, potential for indirect impact on the European Site can be excluded.</p> <p>This site is not in the zone of likely impact, and no further assessment is required.</p>

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 08/12/2021)	Conservation Objectives	Likely Zone of Impact Determination
Kilglassan/Caheravoostia Turlough Complex SAC (000504) 9.5km	> Turloughs [3180]	Detailed conservation objectives for this site (Version 1, January 2021) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located 9.5km west of the proposed works area and is in a separate hydrological and groundwater catchment. Based on the lack of connectivity between the site and this SAC, potential for indirect impact on the European Site can be excluded. This site is not in the zone of likely impact, and no further assessment is required.
Ardkill Turlough SAC (000461) 10.5km	> Turloughs [3180]	Detailed conservation objectives for this site (Version 1, December 2020) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located 10.5km west of the proposed works area and is in a separate hydrological and groundwater catchment. Based on the lack of connectivity between the site and this SAC, potential for indirect impact on the European Site can be excluded. This site is not in the zone of likely impact, and no further assessment is required.
Skealaghan Turlough SAC (000541) 13.1km	> Turloughs [3180]	Detailed conservation objectives for this site (Version 1, January 2021) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located 13.1km west of the proposed works area and is in a separate hydrological and groundwater catchment. Based on the lack of connectivity between the site and this SAC, potential for indirect impact on the European Site can be excluded.

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 08/12/2021)	Conservation Objectives	Likely Zone of Impact Determination
			This site is not in the zone of likely impact, and no further assessment is required.
Shrle Turlough SAC (000525) 14.6km	<ul style="list-style-type: none"> ➤ Turloughs [3180] 	Detailed conservation objectives for this site (Version 1, January 2021) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located 14.6km south-west of the proposed works area and is in a separate hydrological and groundwater catchment. Based on the lack of connectivity between the site and this SAC, potential for indirect impact on the European Site can be excluded. This site is not in the zone of likely impact, and no further assessment is required.
Clyard Kettle-Holes SAC (000480) 14.9km	<ul style="list-style-type: none"> ➤ Turloughs [3180] ➤ Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] 	Detailed conservation objectives for this site (Version 1, October 2021) were reviewed as part of the assessment and are available at www.npws.ie	This European Site is located 14.9km west of the proposed works area and is in a separate hydrological and groundwater catchment. Based on the lack of connectivity between the site and this SAC, potential for indirect impact on the European Site can be excluded. This site is not in the zone of likely impact, and no further assessment is required.
Special Protection Area (SPA)			
Lough Corrib SPA	<ul style="list-style-type: none"> ➤ Gadwall (<i>Anas strepera</i>) 	This site has the generic conservation objective:	This site is 56.3km south of the proposed works via surface water connectivity.

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 08/12/2021)	Conservation Objectives	Likely Zone of Impact Determination
56.3km via surface water connectivity.	<ul style="list-style-type: none"> ➤ Shoveler (<i>Anas clypeata</i>) ➤ Pochard (<i>Aythya ferina</i>) ➤ Tufted Duck (<i>Aythya fuligula</i>) ➤ Common Scoter (<i>Melanitta nigra</i>) ➤ Hen Harrier (<i>Circus cyaneus</i>) ➤ Coot (<i>Fulica atra</i>) ➤ Golden Plover (<i>Pluvialis apricaria</i>) ➤ Black-headed Gull (<i>Chroicocephalus ridibundus</i>) ➤ Common Gull (<i>Larus canus</i>) ➤ Common Tern (<i>Sterna hirundo</i>) ➤ Arctic Tern (<i>Sterna paradisaea</i>) ➤ Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) ➤ Wetland and Waterbirds 	<p><i>‘To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA’</i></p> <p>This site has a second conservation objective:</p> <p><i>‘To maintain or restore the favourable conservation condition of the wetland habitat at Lough Corrib SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.’</i> (NPWS Generic version 8.0, 2021)</p>	<p>Based on the nature and scale of works and the distance from this SPA potential for indirect impact on the SCI species in terms of disturbance/displacement can be excluded.</p> <p>This SPA is located hydrologically downgradient of the proposed works and has hydrological connectivity via drainage ditches and watercourses that discharge to the River Clare. Taking a precautionary approach there is a potential pathway for indirect effects on the SCI species via impact to their supporting habitat, Wetland and Waterbirds [A999], through deterioration of water quality during the construction and operational phases of the development.</p> <p>Following the precautionary principle and based on surface water connectivity, the site is considered to be within the Likely Zone of Impact and further assessment is required.</p>

3.2 **Likely Cumulative Impact of the Proposed Works on European Sites, in-combination with other plans and projects**

Where potential pathways for effect are identified in Table 3.1 above, further assessment is required and the potential for the proposed works to contribute to a cumulative impact on Lough Corrib SAC and Lough Corrib SPA requires further assessment at the Appropriate Assessment stage.

4. ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

4.1 Data Collected to Carry Out Assessment

In preparation of the report, the following sources were used to gather information:

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), EPA, Water Framework Directive (WFD),
- Review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area.
- Inland Fisheries Ireland (IFI) Reports
- Review of OS maps and aerial photographs of the site of the proposed project.
- Review of relevant databases including National Biodiversity Ireland Database and available literature of previous surveys conducted in the area.
- Review of other plans and projects within the area.
- Site visits carried out by Julie O'Sullivan Aoife Joyce and Claire Stephens.

4.2 Concluding Statement

It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information, in light of the conservation objectives of the relevant European sites, and in the absence of mitigation measures, that the proposed development, individually or in combination with other plans and projects, would have a likely significant effect on Lough Corrib SAC and Lough Corrib SPA.

As a result, it is recommended to the competent authority that an Appropriate Assessment is required and that a Natura Impact Statement be prepared in respect of the proposed development.

5. BIBLIOGRAPHY

Bailey, M. and Rochford J. (2006) Otter Survey of Ireland 2004/2005. Irish Wildlife Manuals, No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. and Fuller, R.J. (2013). Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland. BTO Books, Thetford, UK.

Barbour, M.T. and J.B. Stribling. (1991) Use of Habitat Assessment in Evaluating the Biological Integrity of Stream Communities. Biological Criteria: Research and Regulation: 25-38. EPA-440/5-91-005. Washington, DC: Office of Water, US EPA.

Birds Directive (2009/47/EC) – http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

CIEEM, 2018, Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive 79/409/EEC as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011).

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin.

DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February, 2010. Department of the Environment, Heritage and Local Government.

EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.

EC (2007a) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg. European Commission.

EC (2007b) Interpretation Manual of European Union Habitats. Version EUR 27. European Commission, DG Environment.

European Communities (Conservation of Wild Birds) Regulations, 1985, SI 291/1985 & amendments – <http://www.irishstatutebook.ie>.

European Communities (Natural Habitats) Regulations, SI 94/1997, SI 233/1998 & SI 378/2005 – <http://www.irishstatutebook.ie>.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council.

Habitats Directive (92/43/EEC).

Murphy, D.F. (2004) Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites. Eastern Regional Fisheries Board, Dublin.

NPWS (2008) The Status of EU Protected Habitats and Species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.

NPWS of the DEHLG (2008) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NPWS Protected Site Synopses and maps available on <http://www.npws.ie/en/ProtectedSites/>.

NRA (2004) Environmental Impact Assessment of National Road Schemes – A Practical Guide, National Roads Authority, Dublin.

NRA (2004) Guidelines for the Treatment of Noise and Vibration in National Road Schemes (1 ed.). Dublin: National Roads Authority.

NRA (2005) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2006) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes. Dublin: National Roads Authority.

NRA (2009). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. Dublin: National Roads Authority.

NRA (2008). The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads. Dublin: National Roads Authority.

Scottish Natural Heritage (SNH) (July 2013) Assessing Connectivity with Special Protection Areas (SPA)

Stace, C. A. (1997). New Flora of the British Isles. Cambridge: Cambridge University Press.

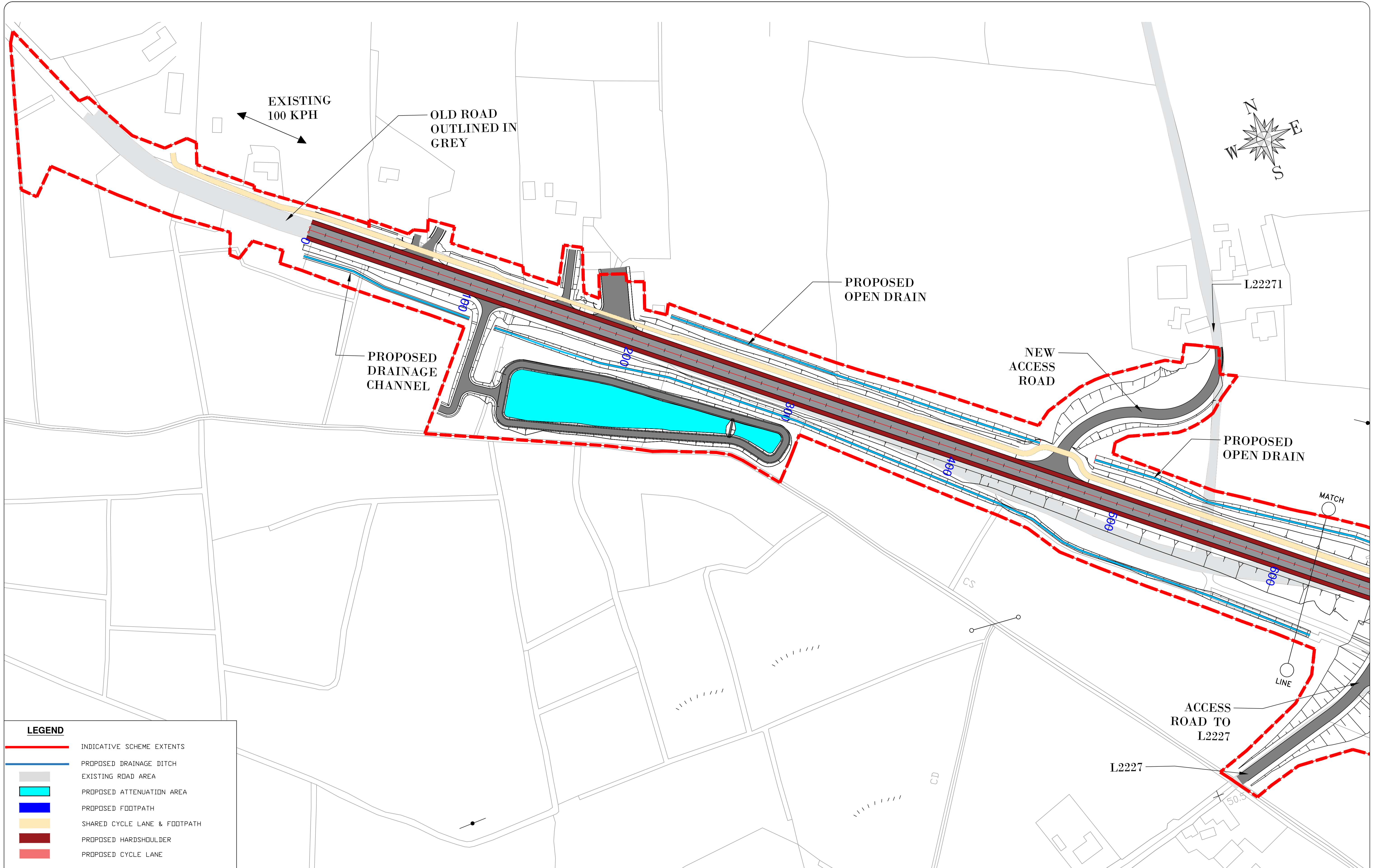
Therivel R. (2009) Workshop Material on the Habitats Directive Assessment of Plans Levett-Therivel Sustainability Consultants on behalf of the Heritage Council, Kilkenny.

Therivel, R. (2009) ‘Appropriate assessment of plans in England’, Environmental Impact Assessment Review 29(4), pp. 261-272.



APPENDIX 1

SITE LAYOUT DRAWINGS



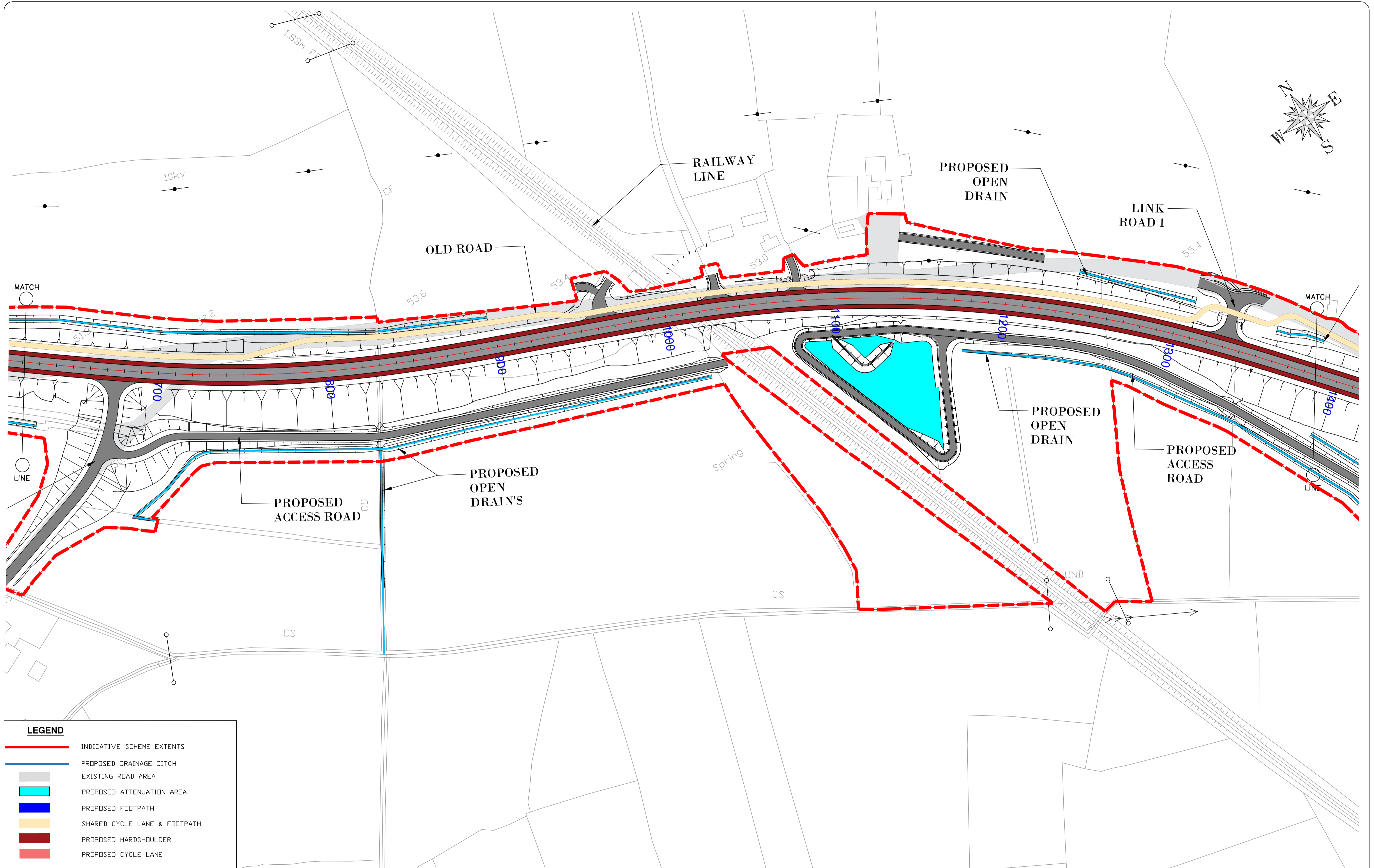
LEGEND

	INDICATIVE SCHEME EXTENTS
	PROPOSED DRAINAGE DITCH
	EXISTING ROAD AREA
	PROPOSED ATTENUATION AREA
	PROPOSED FOOTPATH
	SHARED CYCLE LANE & FOOTPATH
	PROPOSED HARDSHOULDER
	PROPOSED CYCLE LANE



REVISION:	MADE BY:	DATE:

PROJECT:	N17 Milltown to Gortnagunned		
COMPONENT:	Design Drawings		
TITLE:	Site Extents Part 1		
DESIGNED BY:	S.B.	FILE NO.:	
DRAWN BY:	A.M.	SCALES:	1:1000 @ A1
CHECKED BY:	S.B.	DATE:	September 2021
DRAWING NO.:			SE-01



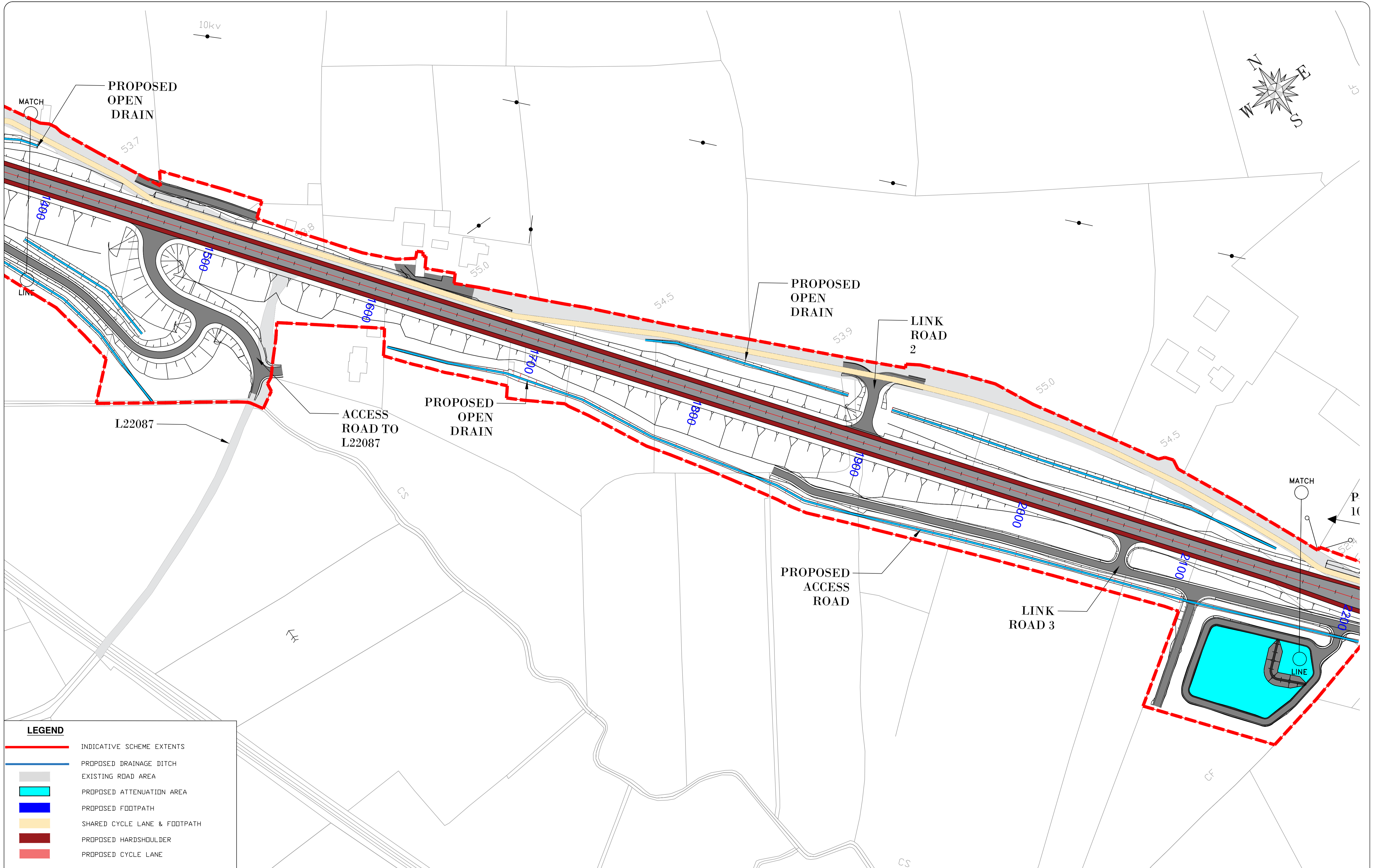
LEGEND

- INDICATIVE SCHEME EXTENTS
- PROPOSED DRAINAGE DITCH
- EXISTING ROAD AREA
- PROPOSED ATTENUATION AREA
- PROPOSED FOOTPATH
- SHARED CYCLE LANE & FOOTPATH
- PROPOSED HARDSHOULDER
- PROPOSED CYCLE LANE

National Roads Design Office,
Galway County Council,
Corporate House,
Ballybrit Business Park,
Galway.

REVISION:	MADE BY:	DATE:

PROJECT: N17 Milltown to Gortnagunned	
COMPONENT: Design Drawings	
TITLE: Site Extents Part 2	
DESIGNED BY: S.B.	FILE NO.:
DRAWN BY: A.M.	SCALES: 1:1000 @ A1
CHECKED BY: S.B.	DATE: September 2021
DRAWING NO.: SE-02	



LEGEND

- INDICATIVE SCHEME EXTENTS
- PROPOSED DRAINAGE DITCH
- EXISTING ROAD AREA
- PROPOSED ATTENUATION AREA
- PROPOSED FOOTPATH
- SHARED CYCLE LANE & FOOTPATH
- PROPOSED HARDSHOULDER
- PROPOSED CYCLE LANE



Bonnasgar Iompair Éireann
Transport Infrastructure Ireland



Project Ireland 2040
Building Ireland's Future



GALWAY
NATIONAL ROADS
PROJECT OFFICE

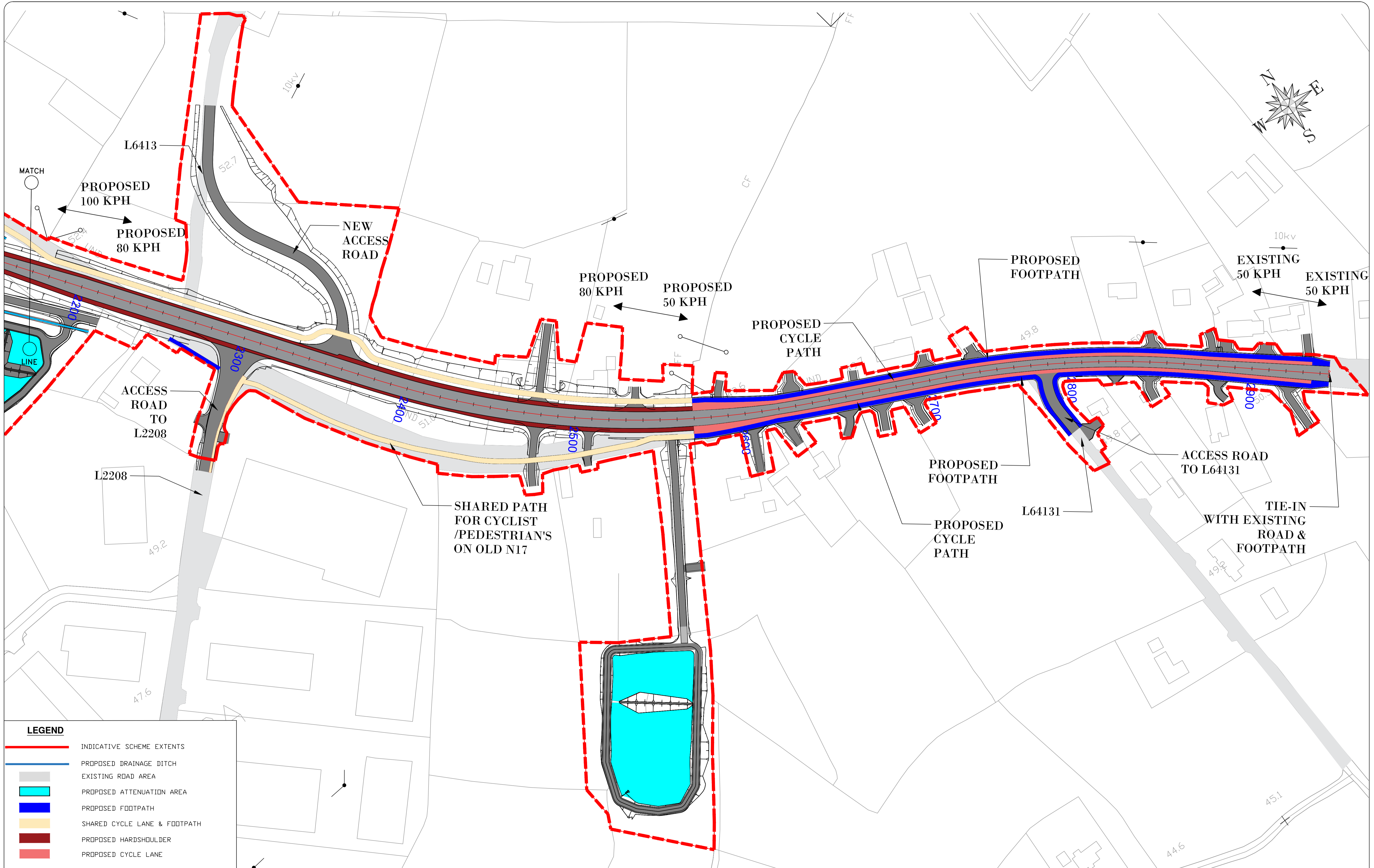


Comhairle Chontae na Gaillimhe
Galway County Council

National Roads Design Office,
Galway County Council,
Corporate House,
Ballybrit Business Park,
Galway.

REVISION:	MADE BY:	DATE:

PROJECT:	N17 Milltown to Gortnagunned		
COMPONENT:	Design Drawings		
TITLE:	Site Extents Part 3		
DESIGNED BY:	S.B.	FILE NO.:	
DRAWN BY:	A.M.	SCALE:	1:1000 @ A1
CHECKED BY:	S.B.	DATE:	September 2021
DRAWING NO.:			SE-03



LEGEND

- INDICATIVE SCHEME EXTENTS
- PROPOSED DRAINAGE DITCH
- EXISTING ROAD AREA
- PROPOSED ATTENUATION AREA
- PROPOSED FOOTPATH
- SHARED CYCLE LANE & FOOTPATH
- PROPOSED HARDSHOULDER
- PROPOSED CYCLE LANE



TIIV
Bonnaiagar Iompair Éireann
Transport Infrastructure Ireland



Project Ireland 2040
Building Ireland's Future



GALWAY
NATIONAL ROADS
PROJECT OFFICE



Comhairle Chontae na Gaillimhe
Galway County Council

National Roads Design Office,
Galway County Council,
Corporate House,
Ballybrit Business Park,
Galway.

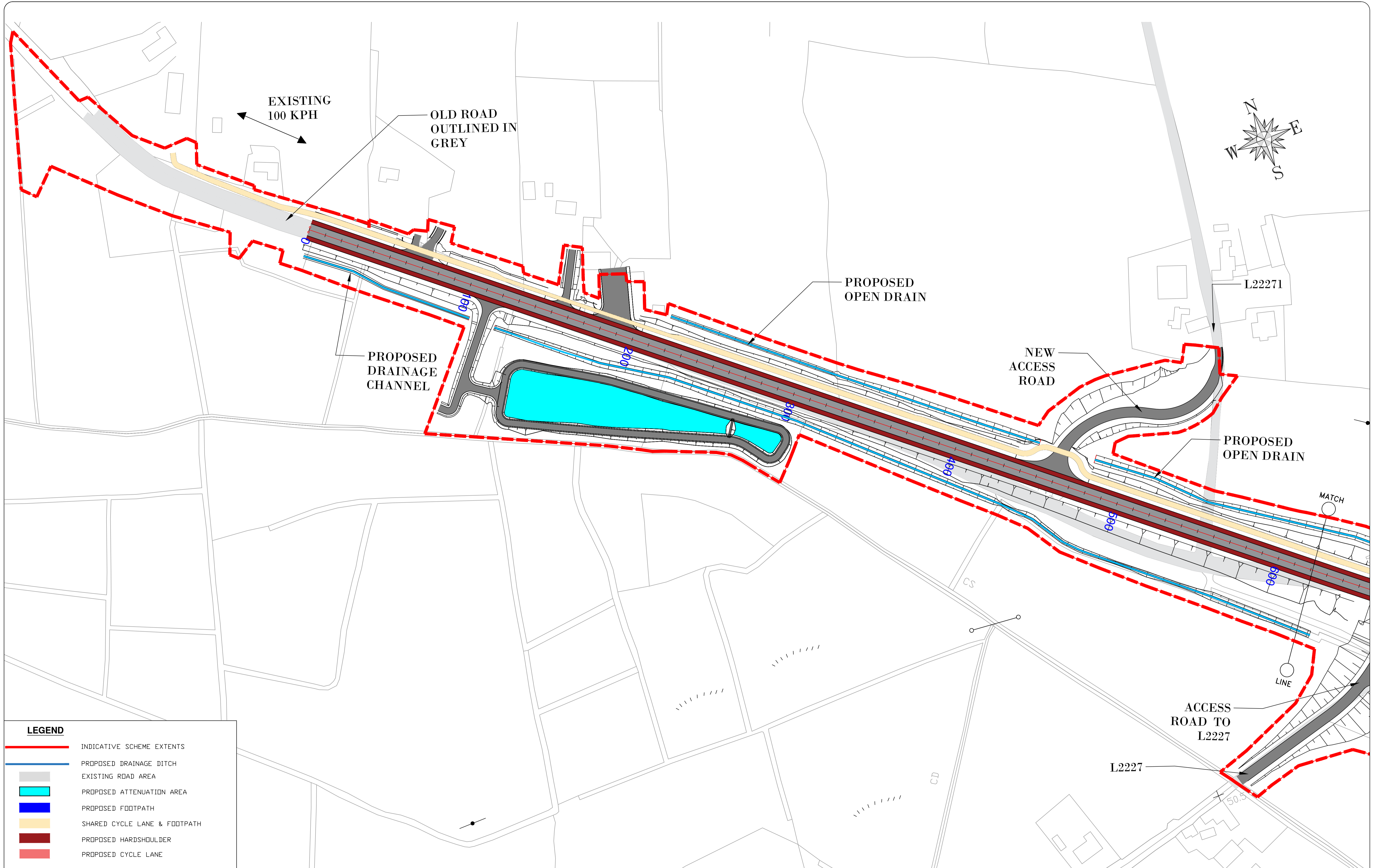
REVISION:	MADE BY:	DATE:

PROJECT N17 Milltown to Gortnagunned	
COMPONENT: Design Drawings	
TITLE: Site Extents Part 4	
DESIGNED BY: S.B.	FILE NO.:
DRAWN BY: A.M.	SCALE: 1:1000 @ A1
CHECKED BY: S.B.	DATE: September 2021
DRAWING NO.: SE-04	



APPENDIX 2

DESIGN DRAWINGS



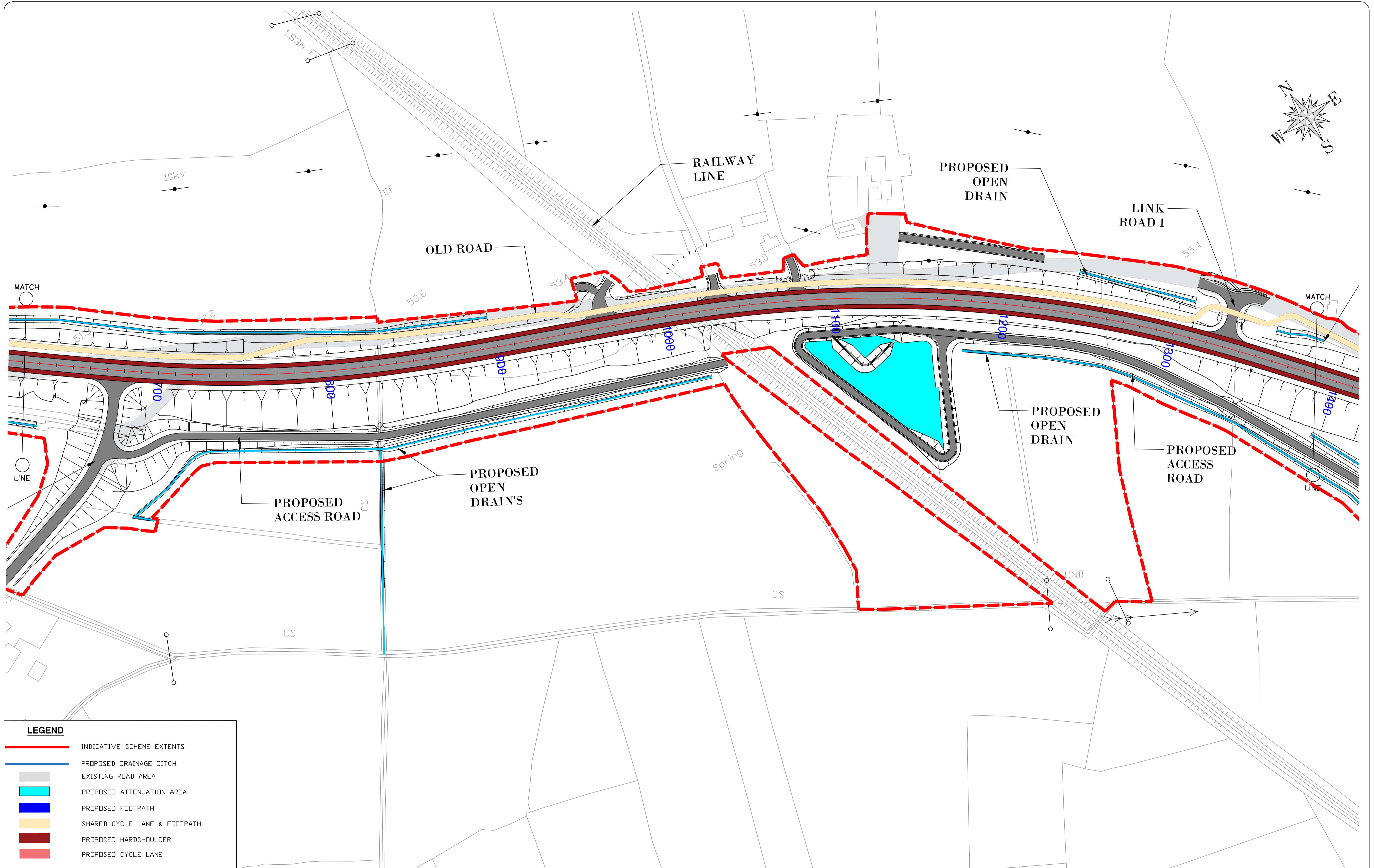
LEGEND

	INDICATIVE SCHEME EXTENTS
	PROPOSED DRAINAGE DITCH
	EXISTING ROAD AREA
	PROPOSED ATTENUATION AREA
	PROPOSED FOOTPATH
	SHARED CYCLE LANE & FOOTPATH
	PROPOSED HARDSHOULDER
	PROPOSED CYCLE LANE



REVISION	MADE BY	DATE

PROJECT	N17 Milltown to Gortnagunned		
COMPONENT	Design Drawings		
TITLE	Site Extents Part 1		
DESIGNED BY:	S.B.	FILE NO.:	
DRAWN BY:	A.M.	SCALES:	1:1000 @ A1
CHECKED BY:	S.B.	DATE:	September 2021
DRAWING NO.:			SE-01



LEGEND

- INDICATIVE SCHEME EXTENTS
- PROPOSED DRAINAGE DITCH
- EXISTING ROAD AREA
- PROPOSED ATTENUATION AREA
- PROPOSED FOOTPATH
- SHARED CYCLE LANE & FOOTPATH
- PROPOSED HARDSHOULDER
- PROPOSED CYCLE LANE



TII
Bonnagar Iompair Éireann
Transport Infrastructure Ireland



Project Ireland 2040
Building Ireland's Future



GALWAY
NATIONAL ROADS
PROJECT OFFICE

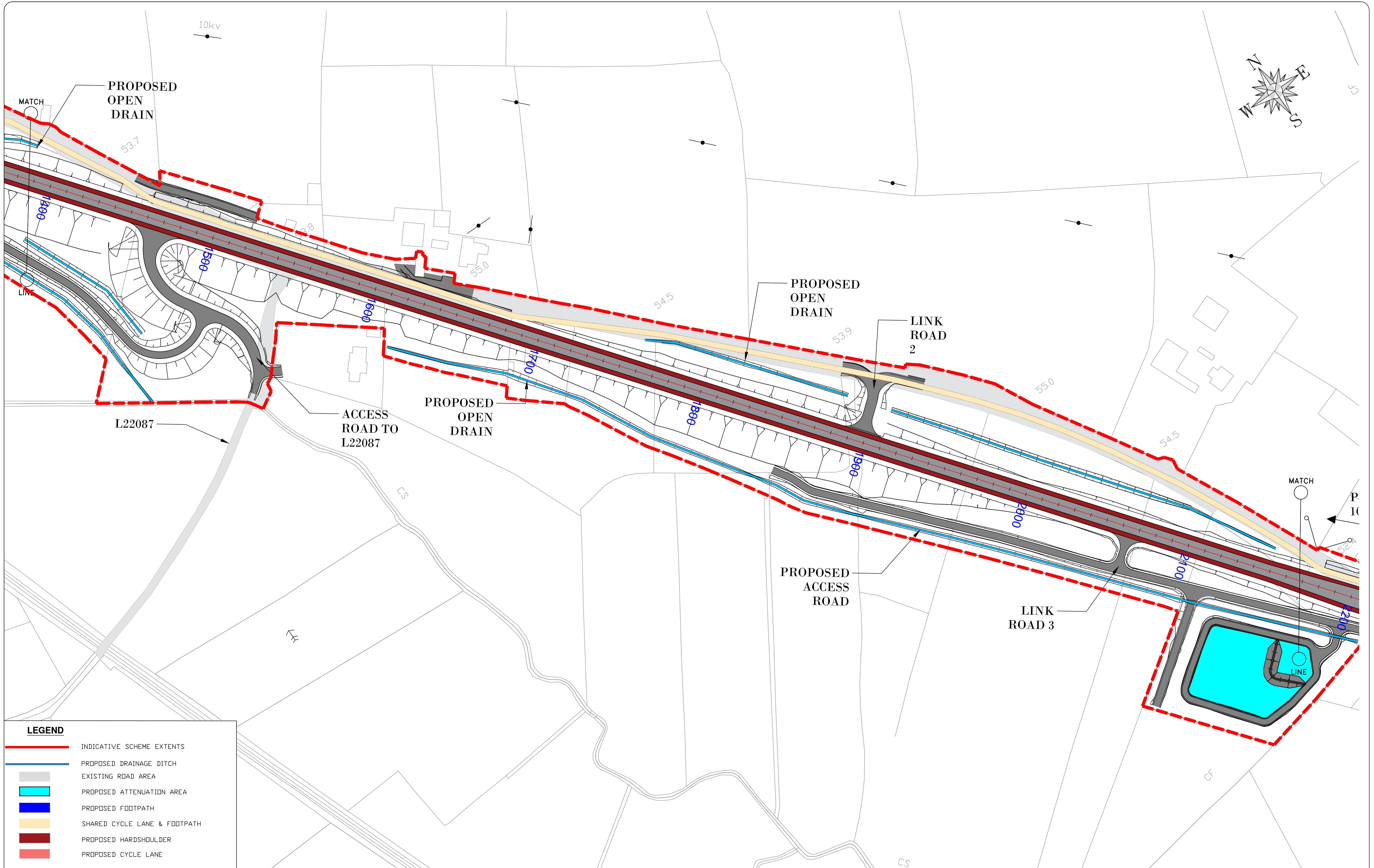


Comhairle Chontae na Gaillimhe
Galway County Council

National Roads Design Office,
Galway County Council,
Corporate House,
Ballybrit Business Park,
Galway.

REVISION:	MADE BY:	DATE:

PROJECT:	N17 Milltown to Gortnagunned		
COMPONENT:	Design Drawings		
TITLE:	Site Extents Part 2		
DESIGNED BY:	S.B.	FILE NO.:	
DRAWN BY:	A.M.	SCALES:	1:1000 @ A1
CHECKED BY:	S.B.	DATE:	September 2021
			DRAWING NO.: SE-02



LEGEND

- INDICATIVE SCHEME EXTENTS
- PROPOSED DRAINAGE DITCH
- EXISTING ROAD AREA
- PROPOSED ATTENUATION AREA
- PROPOSED FOOTPATH
- SHARED CYCLE LANE & FOOTPATH
- PROPOSED HARDSHOULDER
- PROPOSED CYCLE LANE



Bonnasgar Iompair Éireann
Transport Infrastructure Ireland



Project Ireland 2040
Building Ireland's Future



GALWAY
NATIONAL ROADS
PROJECT OFFICE

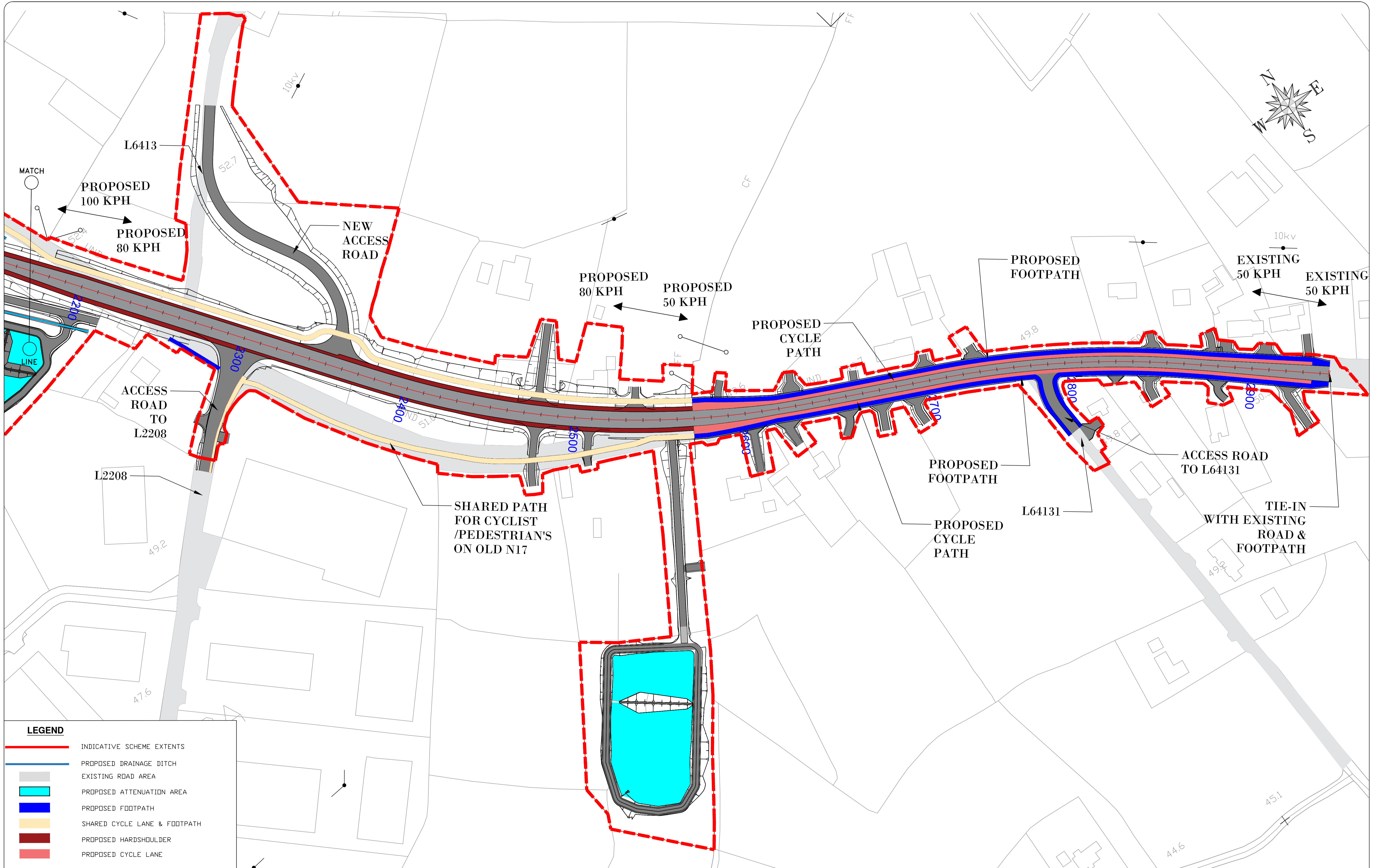


Comhairle Chontae na Gaillimhe
Galway County Council

National Roads Design Office,
Galway County Council,
Corporate House,
Ballybrit Business Park,
Galway.

REVISION:	MADE BY:	DATE:

PROJECT:	N17 Milltown to Gortnagunned		
COMPONENT:	Design Drawings		
TITLE:	Site Extents Part 3		
DESIGNED BY:	S.B.	FILE NO.:	
DRAWN BY:	A.M.	SCALE:	1:1000 @ A1
CHECKED BY:	S.B.	DATE:	September 2021
		DRAWING NO.:	SE-03



LEGEND

- INDICATIVE SCHEME EXTENTS
- PROPOSED DRAINAGE DITCH
- EXISTING ROAD AREA
- PROPOSED ATTENUATION AREA
- PROPOSED FOOTPATH
- SHARED CYCLE LANE & FOOTPATH
- PROPOSED HARDSHOULDER
- PROPOSED CYCLE LANE



TIIV
Bonneagair Iompair Éireann
Transport Infrastructure Ireland



Project Ireland 2040
Building Ireland's Future



GALWAY
NATIONAL ROADS
PROJECT OFFICE

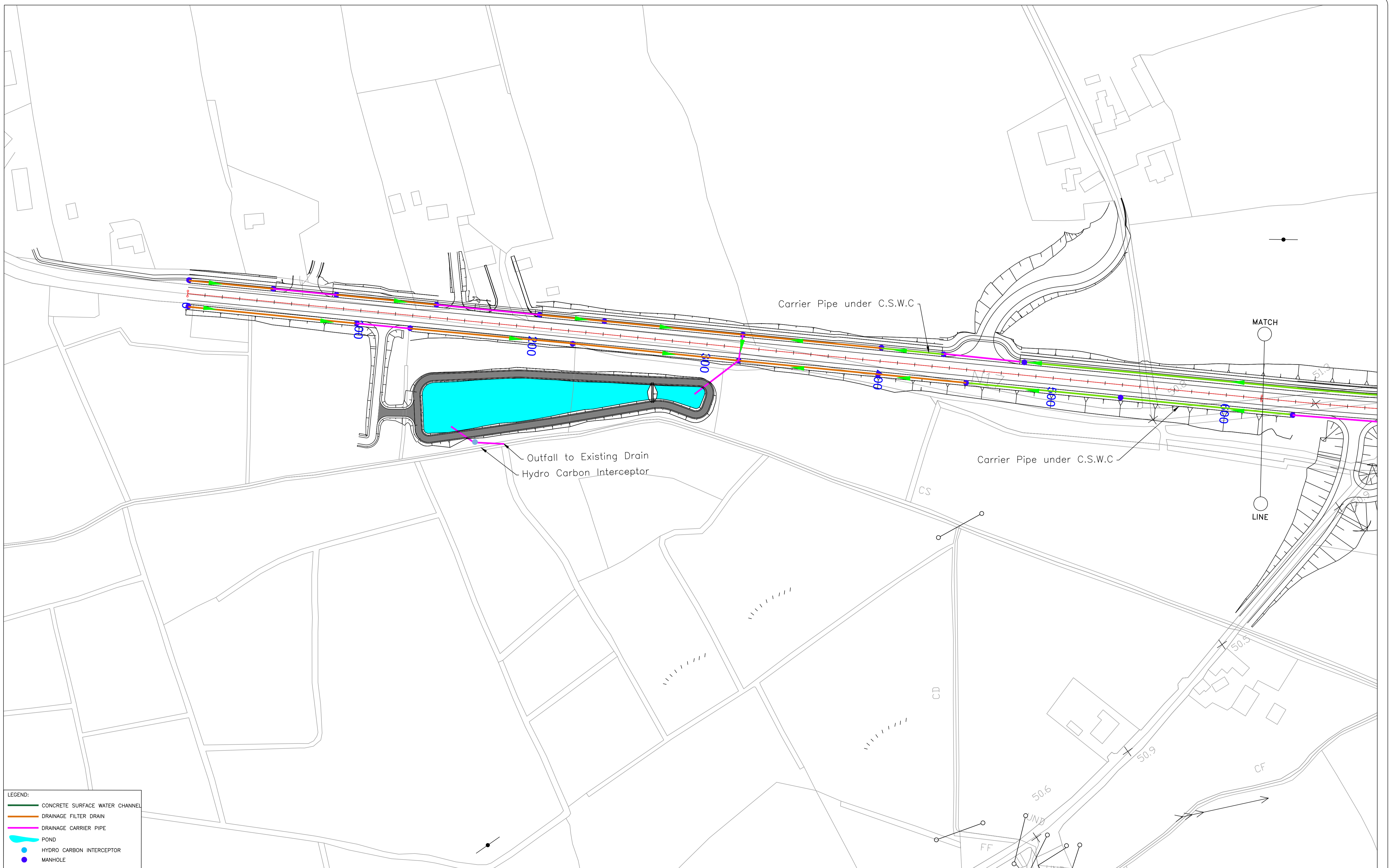


Comhairle Chontae na Gaillimhe
Galway County Council

National Roads Design Office,
Galway County Council,
Corporate House,
Ballybrit Business Park,
Galway.

REVISION:	MADE BY:	DATE:

PROJECT: N17 Milltown to Gortnagunned	
COMPONENT: Design Drawings	
TITLE: Site Extents Part 4	
DESIGNED BY: S.B.	FILE NO.:
DRAWN BY: A.M.	SCALE: 1:1000 @ A1
CHECKED BY: S.B.	DATE: September 2021
DRAWING NO.: SE-04	



LEGEND:

	CONCRETE SURFACE WATER CHANNEL
	DRAINAGE FILTER DRAIN
	DRAINAGE CARRIER PIPE
	POND
	HYDRO CARBON INTERCEPTOR
	MANHOLE

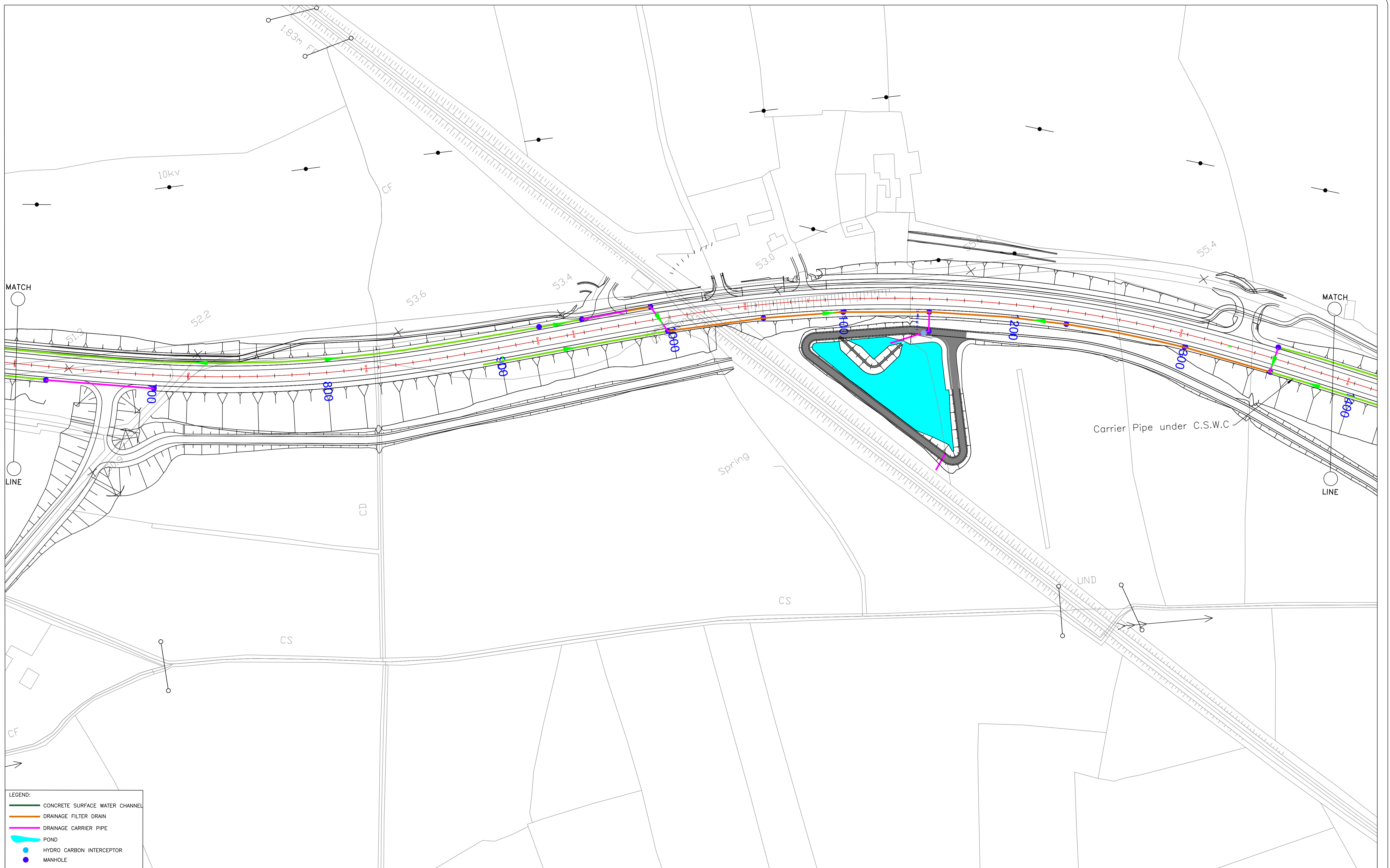
--	--	--

Comhairle Chontae na Gaillimhe
Galway County Council

National Roads Design Office,
Galway County Council,
Corporate House,
Ballybrit Business Park,
Galway.

REVISION:	MADE BY:	DATE:

PROJECT:	N17 Milton to Gortnagunne Realignment Scheme		
COMPONENT:	Design Drawings		
TITLE:	Drainage Pipe Layout Mainline CH0 - CH650		
DESIGNED BY:	M.K.	FILE NO.:	
DRAWN BY:	M.K.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	November 2021
		DRAWING NO.:	DR-01

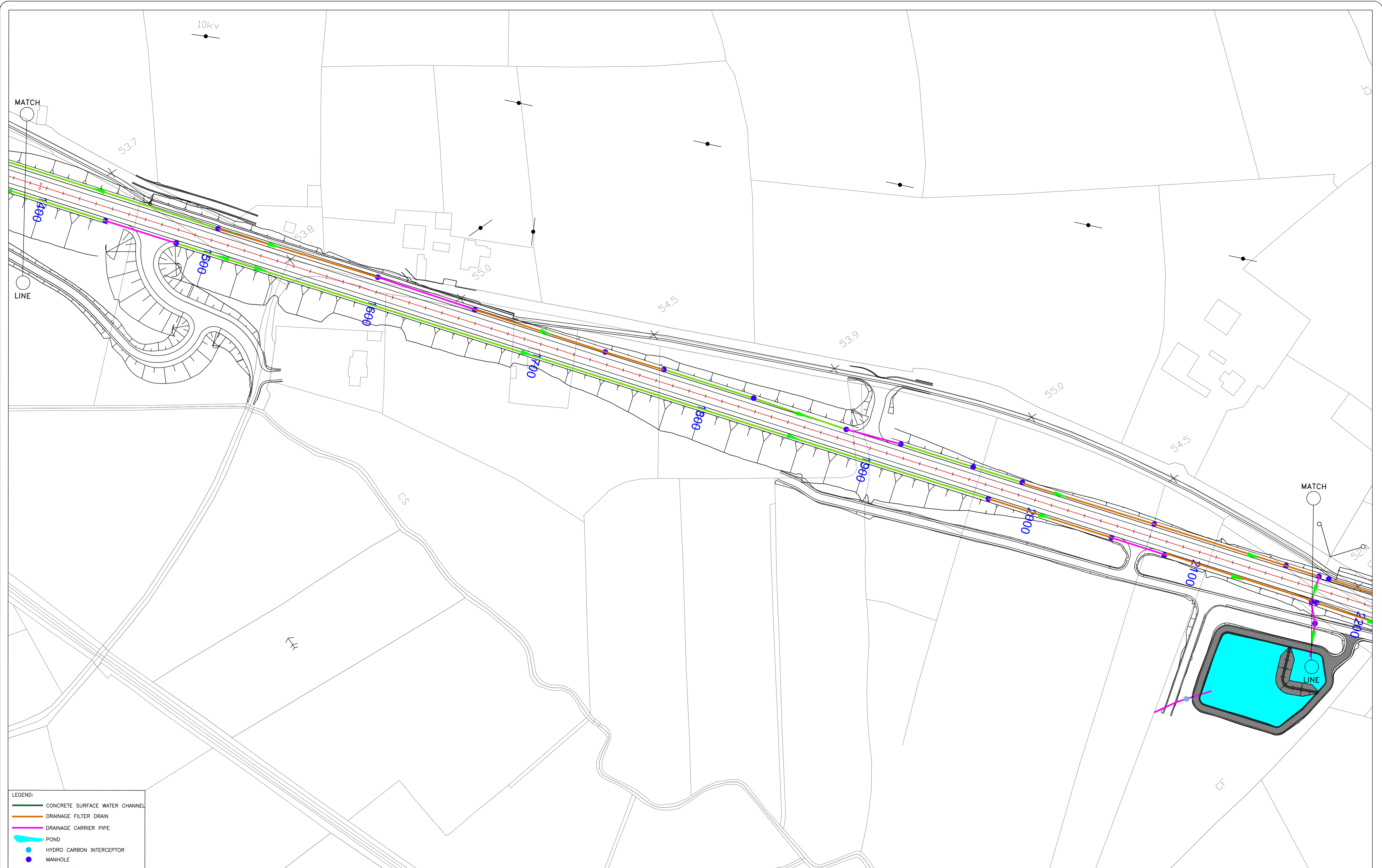


- LEGEND:
- CONCRETE SURFACE WATER CHANNEL
 - DRAINAGE FILTER DRAIN
 - DRAINAGE CARRIER PIPE
 - POND
 - HYDRO CARBON INTERCEPTOR
 - MANHOLE



REVISION:	MADE BY:	DATE:

PROJECT	N17 Miltown to Gortnagunnd Realignment Scheme		
COMPONENT:	Design Drawings		
TITLE:	Drainage Pipe Layout Mainline CH650 - CH1400		
DESIGNED BY:	M.K.	FILE NO.:	
DRAWN BY:	M.K.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	November 2021
		DRAWING NO.:	DR-02

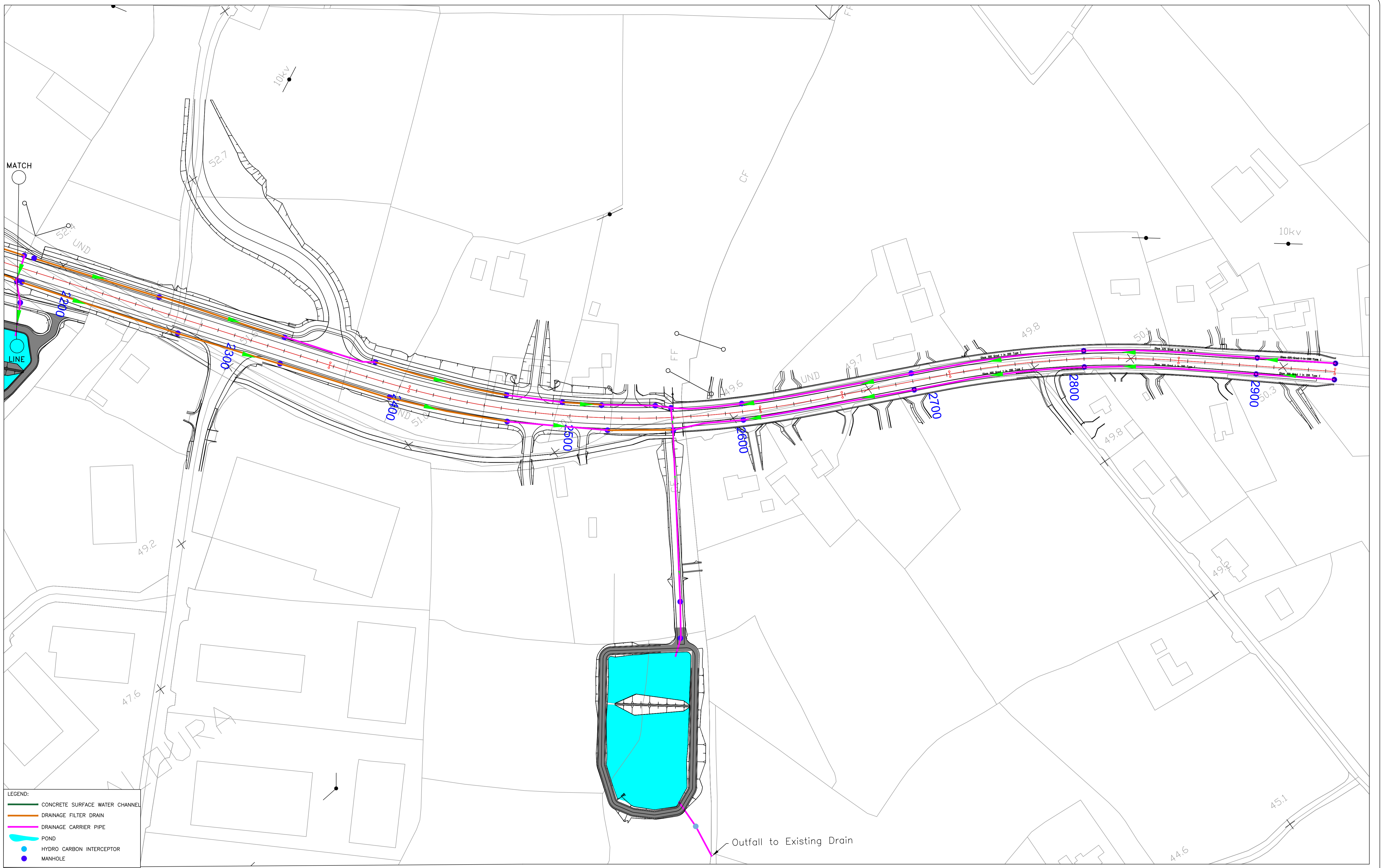


- LEGEND:
- CONCRETE SURFACE WATER CHANNEL
 - DRAINAGE FILTER DRAIN
 - DRAINAGE CARRIER PIPE
 - █ POND
 - HYDRO CARBON INTERCEPTOR
 - MANHOLE



REVISION:	MADE BY:	DATE:

PROJECT:	N17 Miltown to Gortnagunned Realignment Scheme		
COMPONENT:	Design Drawings		
TITLE:	Drainage Pipe Layout Mainline CH1400 - CH2200		
DESIGNED BY:	M.K.	FILE NO.:	
DRAWN BY:	M.K.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	November 2021
		DRAWING NO.:	DR-03

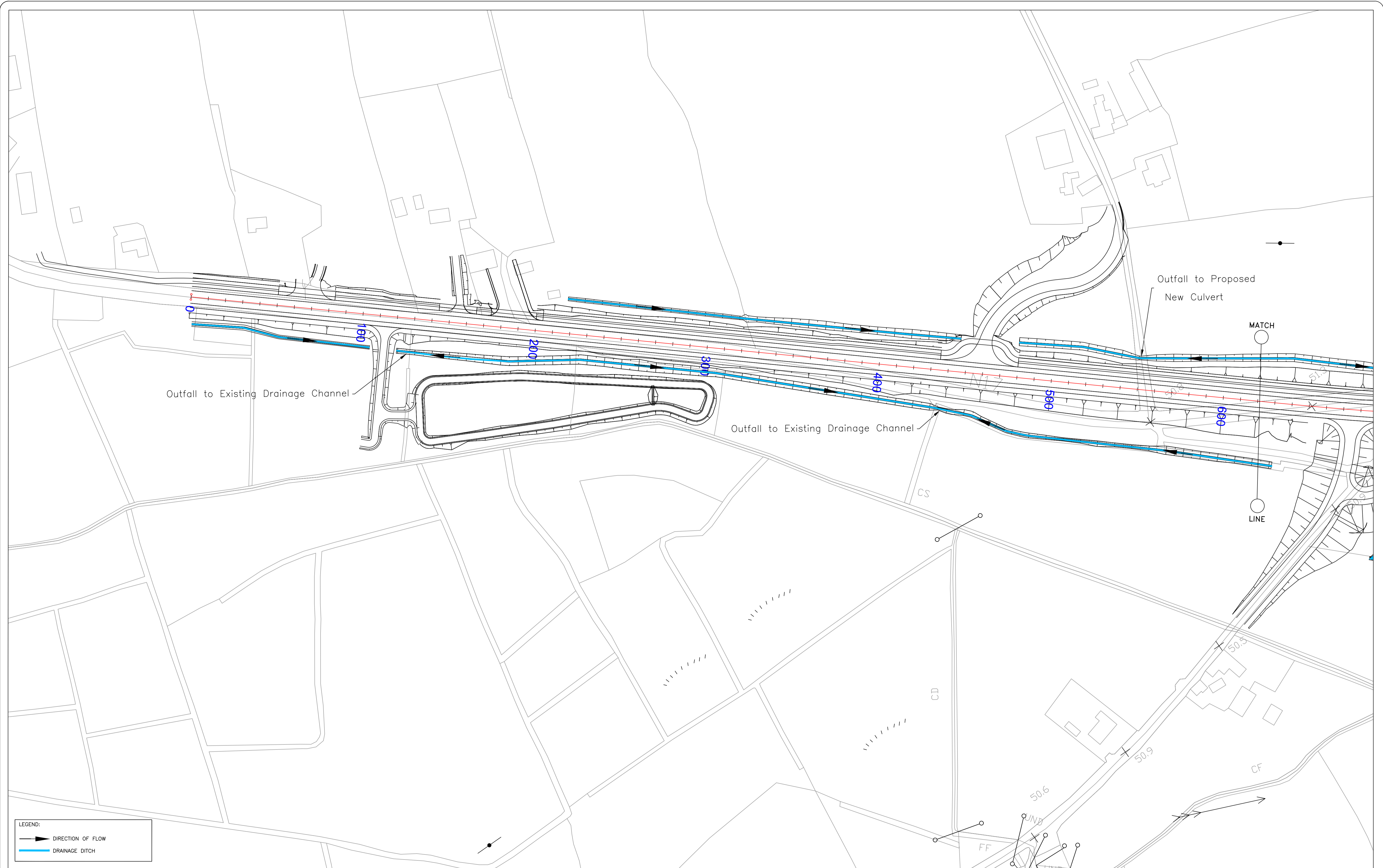


- LEGEND:
- CONCRETE SURFACE WATER CHANNEL
 - DRAINAGE FILTER DRAIN
 - DRAINAGE CARRIER PIPE
 - POND
 - HYDRO CARBON INTERCEPTOR
 - MANHOLE



REVISION:	MADE BY:	DATE:

PROJECT:	N17 Miltown to Gortnagunned Realignment Scheme		
COMPONENT:	Design Drawings		
TITLE:	Drainage Pipe Layout Mainline CH2200 - CH2945		
DESIGNED BY:	M.K.	FILE NO.:	
DRAWN BY:	M.K.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	November 2021
		DRAWING NO.:	DR-04

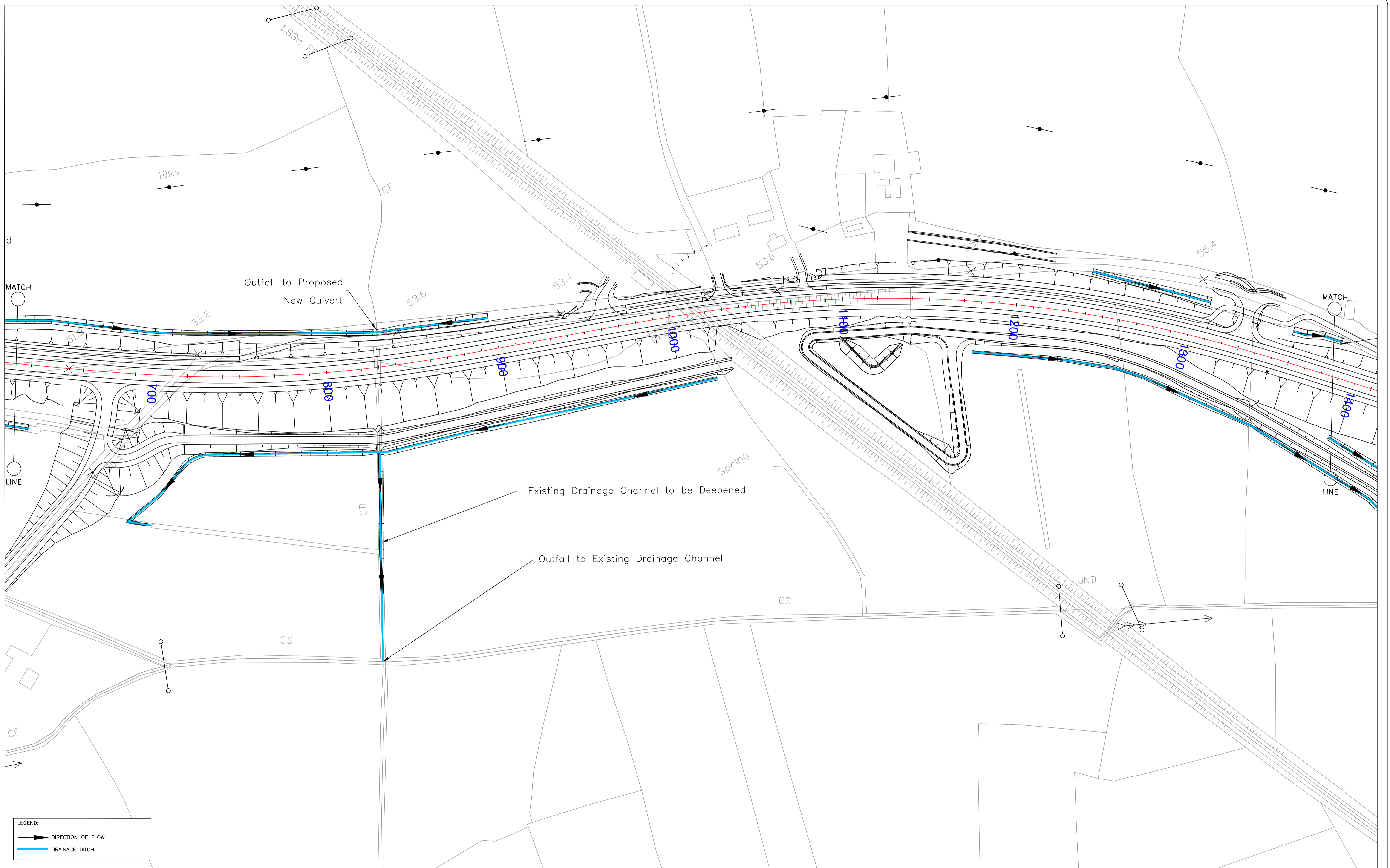


LEGEND:
 —▶— DIRECTION OF FLOW
 ——— DRAINAGE DITCH



REVISION:	MADE BY:	DATE:

PROJECT:	N17 Miltonown to Gortnagunne Realignment Scheme		
COMPONENT:	Design Drawings		
TITLE:	Open Drain Layout Mainline CH0 - CH650		
DESIGNED BY:	M.K.	FILE NO.:	
DRAWN BY:	M.K.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	September 2021
DRAWING NO.:			OD-01

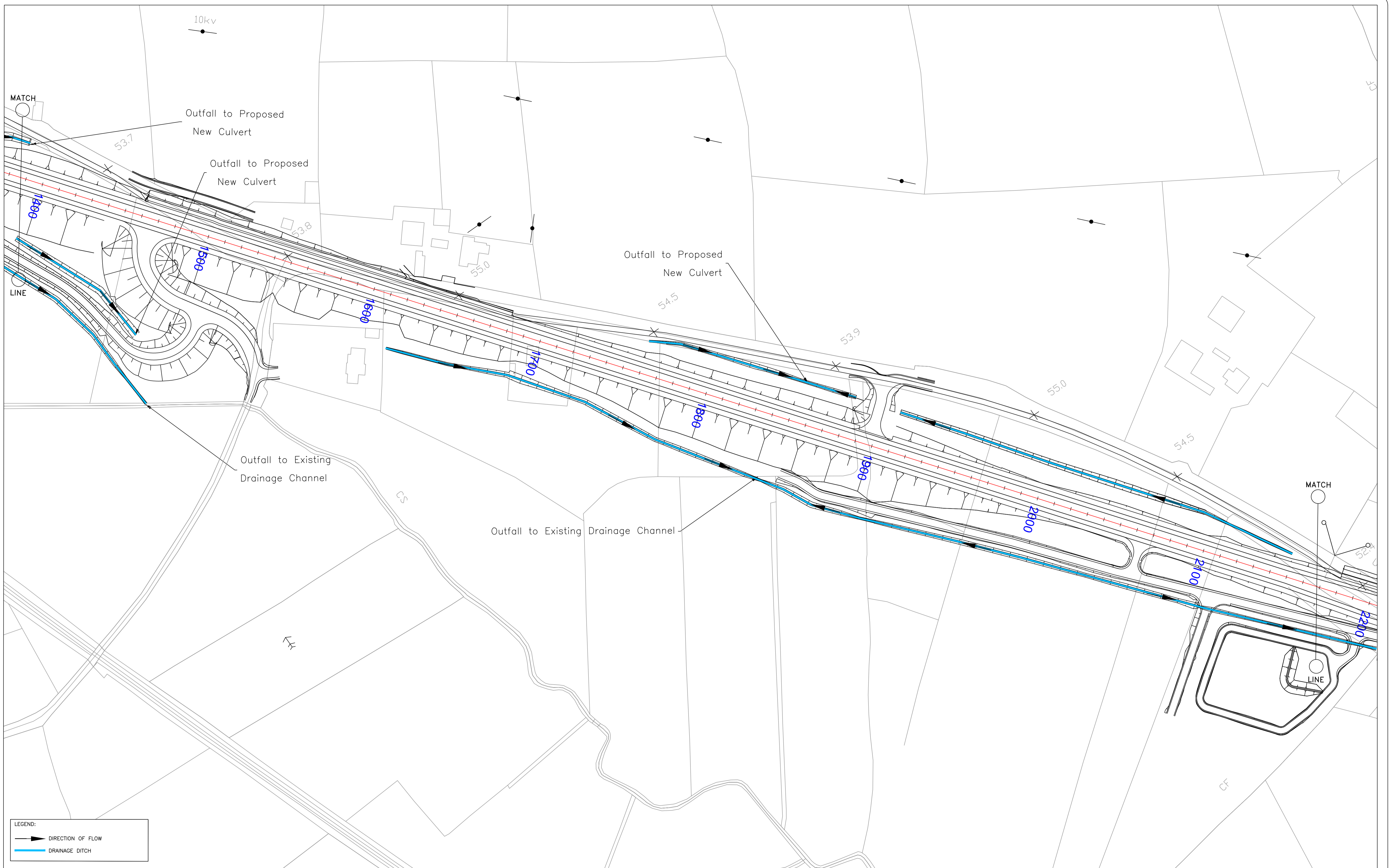


LEGEND:
 —▶— DIRECTION OF FLOW
 ——— DRAINAGE DITCH



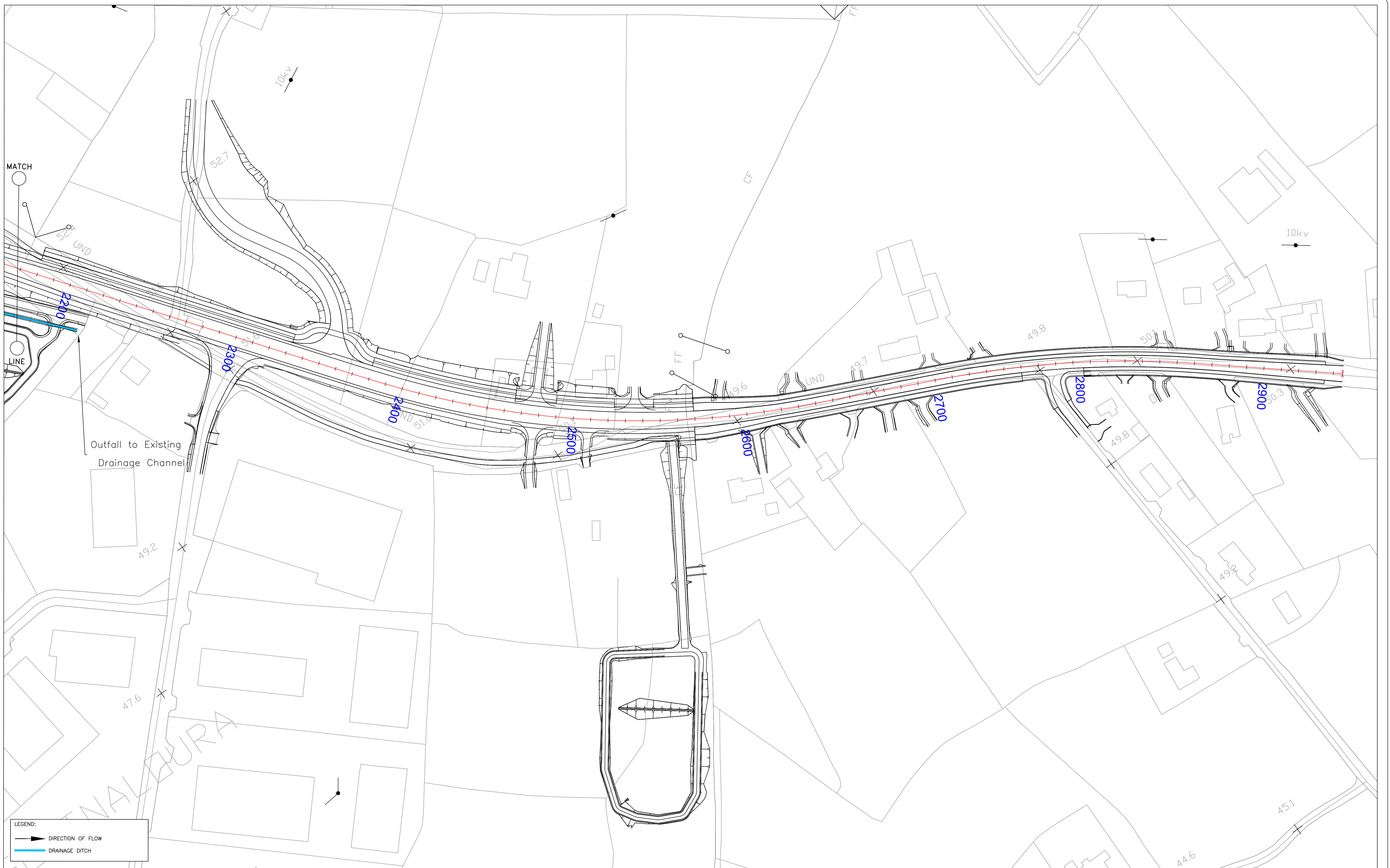
REVISION:	MADE BY:	DATE:

PROJECT:	N17 Miltown to Gortnagunnd Realignment Scheme		
COMPONENT:	Design Drawings		
TITLE:	Open Drain Layout Mainline CH650 - CH1400		
DESIGNED BY:	M.K.	FILE NO.:	
DRAWN BY:	M.K.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	September 2021
DRAWING NO.:			OD-02



REVISION:	MADE BY:	DATE:

PROJECT	N17 Miltown to Gortnagunned Realignment Scheme		
COMPONENT:	Design Drawings		
TITLE:	Open Drain Layout Mainline CH1400 - CH2200		
DESIGNED BY:	M.K.	FILE NO.:	
DRAWN BY:	M.K.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	September 2021
		DRAWING NO.:	OD-03

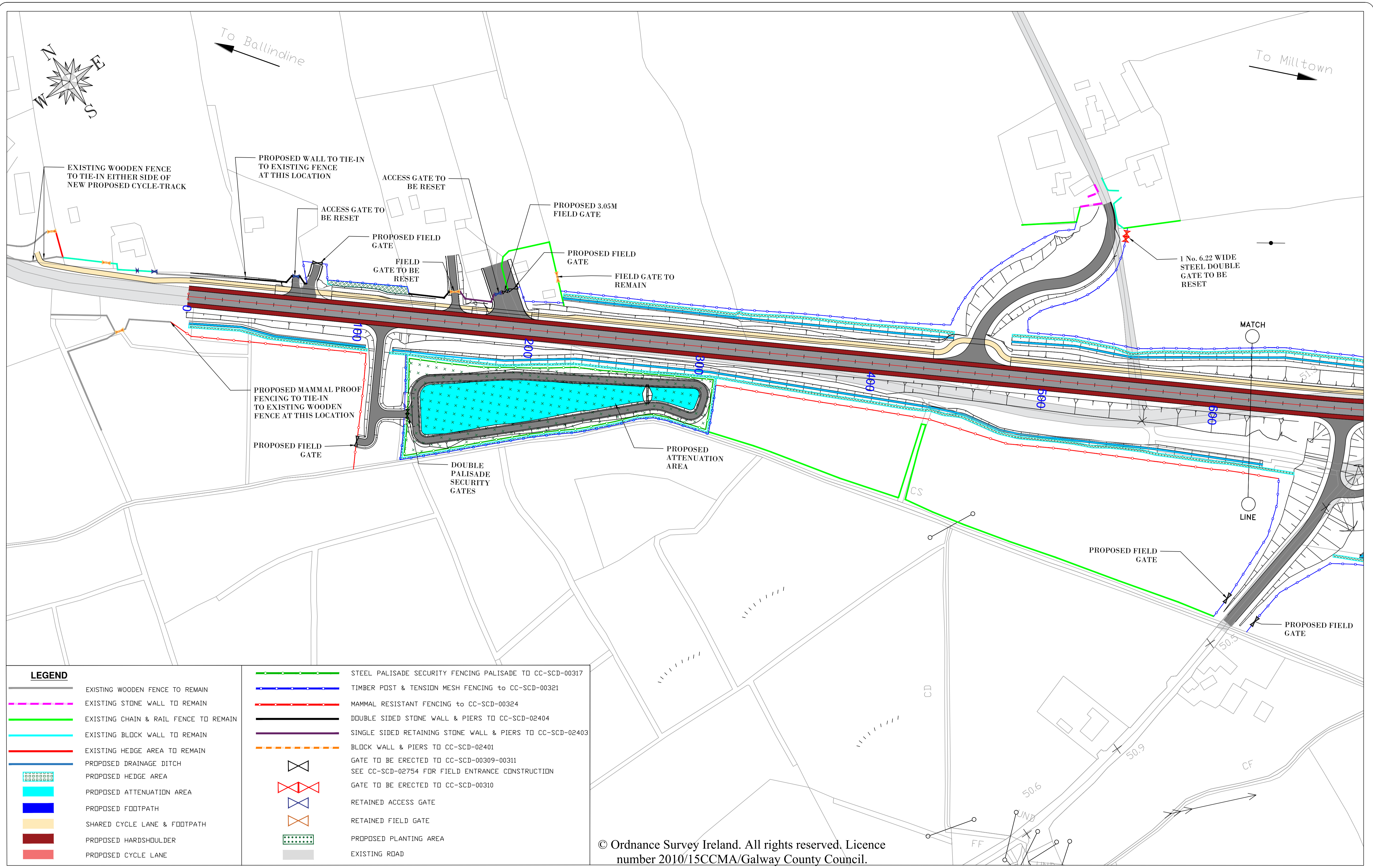


LEGEND:
 DIRECTION OF FLOW
 DRAINAGE DITCH

National Roads Design Office,
 Galway County Council,
 Corporate House,
 Ballybrit Business Park,
 Galway.

REVISION:	MADE BY:	DATE:

PROJECT:	N17 Miltown to Gortnagunned Realignment Scheme		
COMPONENT:	Design Drawings		
TITLE:	Open Drain Layout Mainline CH2200 - CH2945		
DESIGNED BY:	M.K.	FILE NO.:	
DRAWN BY:	M.K.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	September 2021
		DRAWING NO.:	OD-04



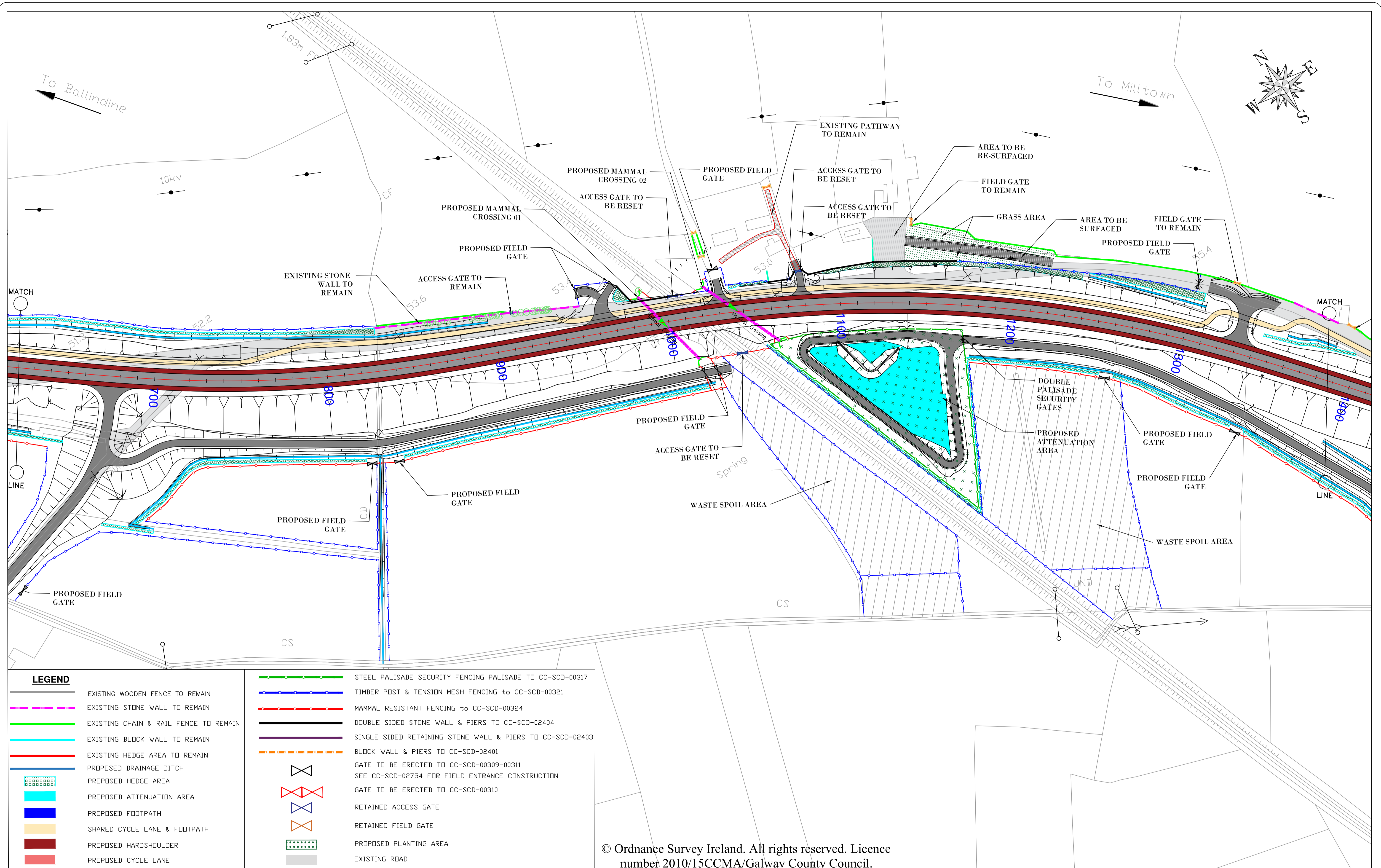
© Ordnance Survey Ireland. All rights reserved, Licence number 2010/15CCMA/Galway County Council.

LEGEND	
	EXISTING WOODEN FENCE TO REMAIN
	EXISTING STONE WALL TO REMAIN
	EXISTING CHAIN & RAIL FENCE TO REMAIN
	EXISTING BLOCK WALL TO REMAIN
	EXISTING HEDGE AREA TO REMAIN
	PROPOSED DRAINAGE DITCH
	PROPOSED HEDGE AREA
	PROPOSED ATTENUATION AREA
	PROPOSED FOOTPATH
	SHARED CYCLE LANE & FOOTPATH
	PROPOSED HARDSHOULDER
	PROPOSED CYCLE LANE
	STEEL PALISADE SECURITY FENCING PALISADE TO CC-SCD-00317
	TIMBER POST & TENSION MESH FENCING TO CC-SCD-00321
	MAMMAL RESISTANT FENCING TO CC-SCD-00324
	DOUBLE SIDED STONE WALL & PIERS TO CC-SCD-02404
	SINGLE SIDED RETAINING STONE WALL & PIERS TO CC-SCD-02403
	BLOCK WALL & PIERS TO CC-SCD-02401
	GATE TO BE ERECTED TO CC-SCD-00309-00311 SEE CC-SCD-02754 FOR FIELD ENTRANCE CONSTRUCTION
	GATE TO BE ERECTED TO CC-SCD-00310
	RETAINED ACCESS GATE
	RETAINED FIELD GATE
	PROPOSED PLANTING AREA
	EXISTING ROAD



REVISION:	MADE BY:	DATE:

PROJECT:	N17 Milltown to Gortnagunned		
COMPONENT:	Design Drawings		
TITLE:	Accommodation Drawings Layout CH0-CH650		
DESIGNED BY:	S.B.	FILE NO.:	
DRAWN BY:	A.M.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	November 2021
DRAWING NO.:			AC-01



LEGEND

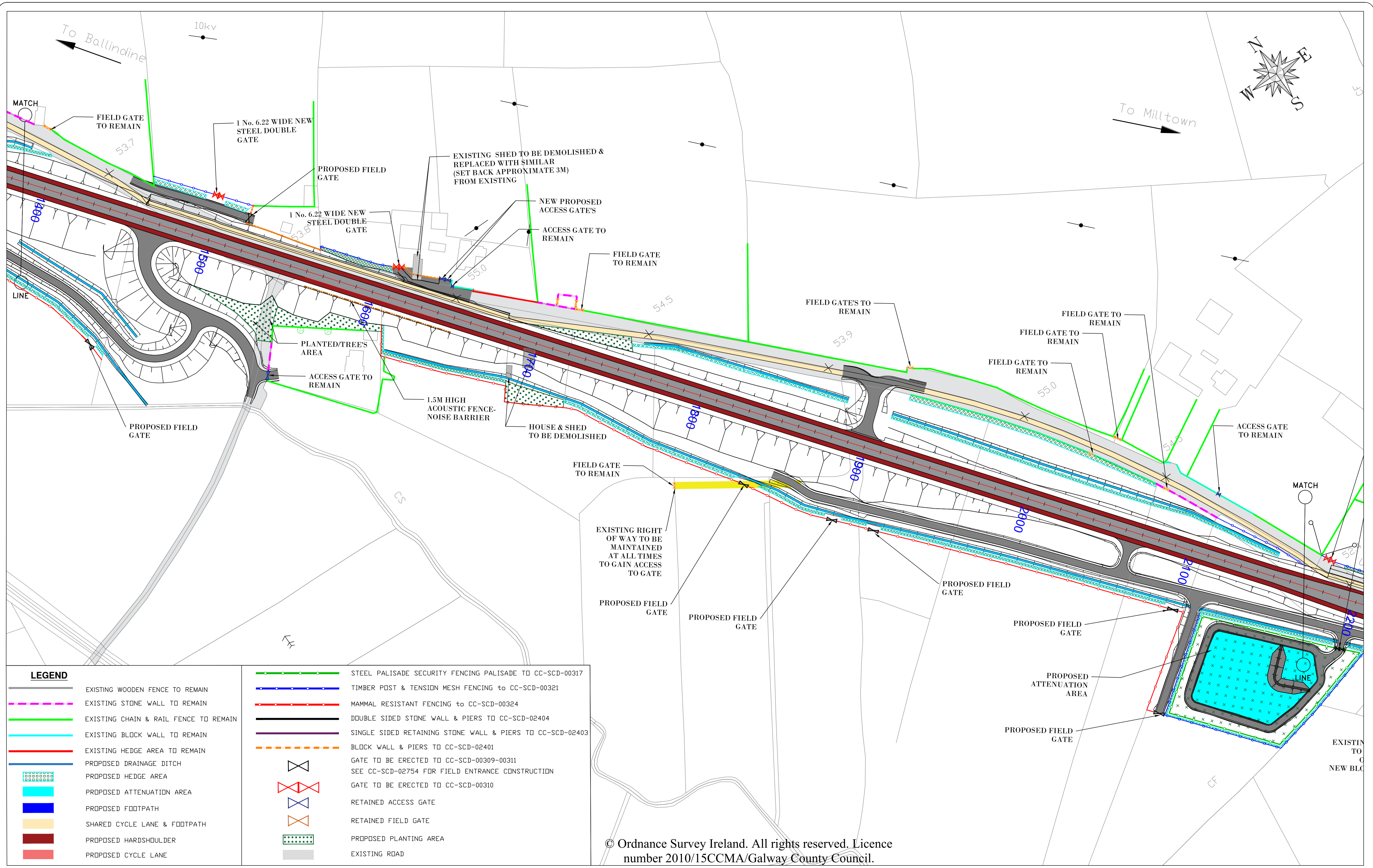
- | | |
|---|---|
| <ul style="list-style-type: none"> EXISTING WOODEN FENCE TO REMAIN EXISTING STONE WALL TO REMAIN EXISTING CHAIN & RAIL FENCE TO REMAIN EXISTING BLOCK WALL TO REMAIN EXISTING HEDGE AREA TO REMAIN PROPOSED DRAINAGE DITCH PROPOSED HEDGE AREA PROPOSED ATTENUATION AREA PROPOSED FOOTPATH SHARED CYCLE LANE & FOOTPATH PROPOSED HARDSHOULDER PROPOSED CYCLE LANE | <ul style="list-style-type: none"> STEEL PALISADE SECURITY FENCING PALISADE TO CC-SCD-00317 TIMBER POST & TENSION MESH FENCING TO CC-SCD-00321 MAMMAL RESISTANT FENCING TO CC-SCD-00324 DOUBLE SIDED STONE WALL & PIERS TO CC-SCD-02404 SINGLE SIDED RETAINING STONE WALL & PIERS TO CC-SCD-02403 BLOCK WALL & PIERS TO CC-SCD-02401 GATE TO BE ERECTED TO CC-SCD-00309-00311
SEE CC-SCD-02754 FOR FIELD ENTRANCE CONSTRUCTION GATE TO BE ERECTED TO CC-SCD-00310 RETAINED ACCESS GATE RETAINED FIELD GATE PROPOSED PLANTING AREA EXISTING ROAD |
|---|---|

© Ordnance Survey Ireland. All rights reserved. Licence number 2010/15CCMA/Galway County Council.



REVISION:	MADE BY:	DATE:

PROJECT:	N17 Milltown to Gortnagunned		
COMPONENT:	Design Drawings		
TITLE:	Accommodation Drawings Layout CH650-CH1400		
DESIGNED BY:	S.B.	FILE NO.:	
DRAWN BY:	A.M.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	November 2021
DRAWING NO.:			AC-02



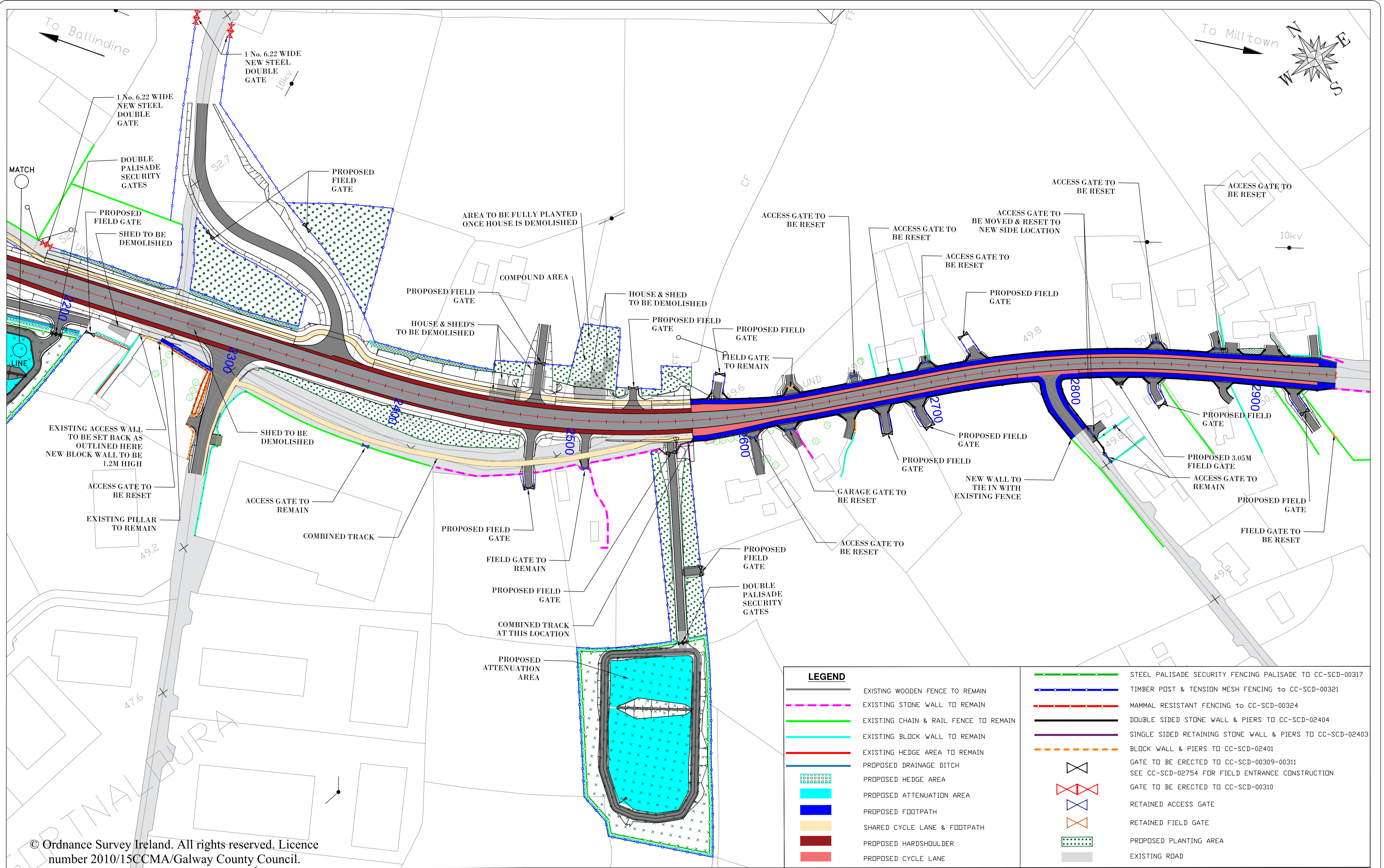
LEGEND	
	EXISTING WOODEN FENCE TO REMAIN
	EXISTING STONE WALL TO REMAIN
	EXISTING CHAIN & RAIL FENCE TO REMAIN
	EXISTING BLOCK WALL TO REMAIN
	EXISTING HEDGE AREA TO REMAIN
	PROPOSED DRAINAGE DITCH
	PROPOSED HEDGE AREA
	PROPOSED ATTENUATION AREA
	PROPOSED FOOTPATH
	SHARED CYCLE LANE & FOOTPATH
	PROPOSED HARDSHOULDER
	PROPOSED CYCLE LANE
	STEEL PALISADE SECURITY FENCING PALISADE TO CC-SCD-00317
	TIMBER POST & TENSION MESH FENCING TO CC-SCD-00321
	MAMMAL RESISTANT FENCING TO CC-SCD-00324
	DOUBLE SIDED STONE WALL & PIERS TO CC-SCD-02404
	SINGLE SIDED RETAINING STONE WALL & PIERS TO CC-SCD-02403
	BLOCK WALL & PIERS TO CC-SCD-02401
	GATE TO BE ERECTED TO CC-SCD-00309-00311 SEE CC-SCD-02754 FOR FIELD ENTRANCE CONSTRUCTION
	GATE TO BE ERECTED TO CC-SCD-00310
	RETAINED ACCESS GATE
	RETAINED FIELD GATE
	PROPOSED PLANTING AREA
	EXISTING ROAD

© Ordnance Survey Ireland. All rights reserved. Licence number 2010/15CCMA/Galway County Council.



REVISION:	MADE BY:	DATE:

PROJECT:	N17 Milltown to Gortnagunned		
COMPONENT:	Design Drawings		
TITLE:	Accommodation Drawings Layout CH1400-CH2200		
DESIGNED BY:	S.B.	FILE NO.:	
DRAWN BY:	A.M.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	November 2021
DRAWING NO.:			AC-03



© Ordnance Survey Ireland. All rights reserved. Licence number 2010/15CCMA/Galway County Council.



National Roads Design Office,
Galway County Council,
Corporate House,
Ballybrit Business Park,
Galway.

REVISION:	MADE BY:	DATE:

PROJECT:	N17 Milltown to Gortnagunned		
COMPONENT:	Design Drawings		
TITLE:	Accommodation Drawings Layout CH2200-CH2945		
DESIGNED BY:	S.B.	FILE NO.:	
DRAWN BY:	A.M.	SCALES:	1:1000 @ A1, 1:2000 @ A3
CHECKED BY:	S.B.	DATE:	November 2021
DRAWING NO.:			AC-04