ATKINS

Member of the SNC-Lavalin Group

Carrigtwohill URDF Initiative

Public Realm Infrastructure Bundle - Ecological Impact Assessment

Cork County Council

14/12/2021

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This document has 64 pages including the cover.

Document history

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1. Introduction

Atkins Ireland have been commissioned by Cork County Council to prepare an Ecological Impact Assessment report for the proposed project at Carrigtwohill, Co. Cork. The proposed project is part of the Carrigtwohill Urban Regeneration Development Fund (URDF) Initiative with the purpose of providing infrastructure works to support the regeneration, compact growth and sustainable development in Carrigtwohill.

1.1. Project Context

Carrigtwohill has been identified as a regional growth centre by the Cobh Municipal District Local Area Plan[1]. Carrigtwohill's target population for 2022 is 11,618. The Central Statistics Office figures detail a population of 5080 in 2016.

Due to the increasing population and significant demand for housing development in Carrigtwohill, infrastructure upgrades are required to facilitate future population and economic growth of the area. In order to provide capacity for increasing demands within Carrigtwohill, the proposed project will provide additional and upgraded infrastructure within Carrigtwohill public realm to facilitate further plans.

1.2. Proposed Project

The components which comprise the Carrigtwohill URDF Initiative Public Realm Infrastructure Bundle are described below. The location of the proposed project is illustrated in Figure 1-1.

1.2.1. Main Street and Station Road Public Realm Works

1.2.1.1. Works Components

a. Upgrade of Main Street and Station Road junction including footpath widening, road re-alignment and widening, re-surfacing, signalisation, provision of pedestrian crossings and removal of existing structures/buildings;
b. Provision of three new public spaces as follows:

    i. At junction of Station Road and Main Street;
    ii. At and north of the Community Centre on Main Street;
    iii. At and west of St. Mary's Church on Station Road.

c. Public realm upgrade of Station Road from the junction with Main Street to the junction at Carrigtwohill Train Station including:

    i. Road widening with footpaths / off-road cycle tracks on both sides of the road, raising of existing roads levels where required, and re-location of the existing Grotto;
    ii. Removal of existing boundary walls, re-building of boundary walls, re-location of entrances and local realignment of the stream channel;
    iii. Two number 'Biodiversity Areas';
    iv. New street lighting, undergrounding of overhead lines, new underground services and drainage, and diversion of existing services where required;
    v. Traffic calming measures including re-surfacing, road narrowing, tree planting and raised tables, signalised and unsignalised raised pedestrian crossings;
    vi. Removal of on-street carparking and provision of a new car park (46 no. spaces);
    vii. Upgrade of existing car park at Patrick Pearse Place;
    viii. New shared use pedestrian and cyclist path between Station Road and recreation areas south of Main Street via Patrick Pearse Place and the existing Centra car park;

[1] http://corklocalareaplans.com/wp-content/uploads/2017/08/Cobh-MD-LAP.pdf

ix. New footpaths connecting the following housing developments:
- Cluain Cairn and An Fána;
- Cluain Cairn and Castle Close/Castle Avenue.

d. Public realm upgrade of Main Street from the junction with Castlelake Avenue to the junction with Carrigane Road including:

i. Footpath widening on both sides of the road with varying surface treatments;
ii. Shared cycle/pedestrian path on north side of the road from junction with Castlelake Avenue to Bán Na Gréine;
iii. Removal of existing boundary walls, re-building of boundary walls, and re-location of entrances;
iv. Street lighting, undergrounding of overhead lines and diversion of existing services as required;
v. Traffic calming measures including re-surfacing, road narrowing, tree planting, raised tables, signalised and unsignalised raised pedestrian crossings;
vi. Re-location of on-street car parking to three new car parks (45 no. spaces);
vii. New road running south from Main Street including underground services, and public lighting;
viii. New school drop off area accessed from Carrigane Road and ambulant accessible parking.

1.2.1.2. Works Methods

The works will commence with site clearance/ accommodation works. Temporary traffic management including measures for pedestrians and cyclists will be put in place. Pre-construction demolition surveys of buildings/ boundary walls necessary for the construction of the works will be undertaken followed by the demolition of these structures. The site will be cleared of redundant road signage and fencing, street lighting to be replaced, kerbside vegetation to be removed.

Underground utilities which conflict with the main works will be uncovered using mechanical excavators and hand digging. A utility survey, including slit trenches for verification, will be carried out during the detail design stage to determine the location of services to the most accurate extent possible. Any service diversions or protection works that are required will be commenced at this stage. This will include the diversion of all overhead lines to underground ducts and chambers in Main Street and Station Road.

The Woodstock stream will be diverted for a length of approximately 60 metres towards the northern end of Station Road, as outlined in the design drawings (Appendix A). This will require a new channel to be constructed to the west of the existing channel. The stream will continue to flow in the existing channel while the new channel is being constructed. Once the new channel has been constructed, a connection will be made to the downstream channel and water will be diverted from the upstream culvert into the new channel.

Where suitable, existing pavement layers will be retained or just re-surfaced. Elsewhere, to construct the new carriageways, cycle tracks, footpaths, car parks and public squares excavation to formation/ sub-formation level will be undertaken. This will include the excavation and removal of the existing stone, soil, concrete and bitumen materials along the route followed by the installation of new path and track base materials including new concrete kerbs. Any excavations will be largely undertaken by mechanical means, with any soil arisings to be removed off site for disposal to an appropriately licensed/ permitted waste disposal/ recovery facility following appropriate testing, or reused onsite where testing confirms its suitability. The base layers of the pavement and cycle lane/track are to be made of compacted stone materials. Footpaths will be a mixture of concrete and natural stone finishes. The roads and cycle tracks will have asphalt surfacing. Public square areas will have a mix of concrete and natural stone materials as well as landscaping.

On Station Road where there is no existing surface water drainage system, drainage works will run in tandem with the pavement construction. This will include the installation of gullies along new kerb lines. These gullies will be connected to a new surface water drainage sewer to be installed below the new alignment. The sewer will discharge to an attenuation tank to be constructed below the

proposed Station Road car park from where its discharge will be limited to greenfield run-off/ 5l/s and will be to the existing sewer at the southern end of Station Road. By-pass separators will be installed in any new elements of the surface water drainage system. Attenuation tanks will be provided to allow the discharge to receiving waters to be limited to greenfield run-off rates through the use of hydro-brakes. Catch pits will be provided upstream of attenuation tanks to collect silt and debris.

On Main Street drainage works will involve the re-location of existing gullies to the new kerb lines and re-connection to the existing surface water sewer. Underground utility diversions and the installation of new underground utilities will also be completed at this stage. For the new car parks, drainage will be a mixture of porous paving with infiltration to ground and attenuation tanks discharging to the existing surface water sewers.

New road signs, road markings, public lighting columns, traffic signals and bollards will be installed and commissioned where required. Areas of soft landscaping will be top-soiled, seeded and planted. Permanent accommodation works will be completed, including the erection of permanent fencing and boundary walls. Temporary traffic management measures will be removed when appropriate.

1.2.2. Wises Road Junction Upgrades

1.2.2.1. Works Components

a. Upgrade of junction of Wises Road and Main Street including provision of traffic signals, pedestrian crossings, road re-alignment and footpath widening;
b. Upgrade of junction of Wises Road and Oakbrook Link Road/ IDA Industrial Estate Access Road including provision of traffic signals, road re-alignment and footpath widening.

1.2.2.2. Works Methods

The works will commence with site clearance/ accommodation works. Temporary traffic management including measures for pedestrians and cyclists will be put in places. The site will be cleared of redundant road signage and fencing, kerbs, street lighting to be replaced, vegetation to be removed.

Underground utilities which conflict with the main works will be uncovered using mechanical excavators and hand digging where appropriate. A utility survey, including slit trenches for verification, will be carried out during the detail design stage to determine the location of services to the most accurate extent possible. Any service diversions or protection works that are required will be commenced at this stage.

Where suitable, existing pavement layers will be retained or just re-surfaced. Elsewhere, to construct the new carriageways and shared paths excavation to formation/ sub-formation level will be undertaken. This will include the excavation and removal of the existing stone, soil, concrete and bitumen materials along the route followed by the installation of new path and track base materials including new concrete kerbs. Any excavations will be largely undertaken by mechanical means, with any soil arisings to be removed off site for disposal to an appropriately licensed/ permitted waste disposal/ recovery facility following appropriate testing, or reused onsite where testing confirms its suitability. The base layers of the pavement and cycle lane/track are to be made of compacted stone materials. Footpaths will have concrete finishes. The road will have asphalt surfacing.

Drainage works will run in tandem with the pavement construction phase and will be relatively minor. They will involve the re-location of existing gullies to the new kerb lines where required and re-connection to the existing surface water sewer. No new works to the existing surface water drainage system is required. Underground utility diversions and the installation of new underground utilities will also be completed at this stage.

New road signs, road markings, public lighting columns, traffic signals, will be installed and commissioned where required. Areas of soft landscaping will be top-soiled, seeded and planted. Temporary traffic management measures will be removed when appropriate.

1.3. N25 Junction 3 (Cobh Cross) Additional Capacity Interim Measures

1.3.1.1. Works Components

Work components comprise an increase in the size of the existing northern roundabout, 2 no. pedestrian/ cyclist crossings, widening and re-alignment of approach roads to the roundabout. The crossings will be connected to the Dunkettle to Carrigtwohill Inter-Urban Cycle Route on the north side of the roundabout and to the proposed pedestrian and cyclist path which will cross the N25 on the existing bridge over the N25.

1.3.1.2. Works Methods

The works will commence with site clearance/ accommodation works. Significant temporary traffic management including measures for pedestrians and cyclists will be put in place following consultation with Transport Infrastructure Ireland (TII). The site will be cleared of redundant road signage and fencing, street lighting to be replaced, kerbs, vegetation to be removed.

Underground utilities which conflict with the main works will be uncovered using mechanical excavators and hand digging where appropriate. A utility survey, including slit trenches for verification, will be carried out during the detail design stage to determine the location of services to the most accurate extent possible. Any service diversions or protection works that are required will be commenced at this stage.

Where suitable, existing pavement layers will be retained or just re-surfaced. Elsewhere, to construct the new carriageways, excavation to formation/ sub-formation level will be undertaken. This will include the excavation and removal of the existing stone, soil, concrete and bitumen materials along the route followed by the installation of new path and track base materials including new concrete kerbs. Any excavations will be largely undertaken by mechanical means, with any soil arisings to be removed off site for disposal to an appropriately licensed/ permitted waste disposal/ recovery facility following appropriate testing, or reused onsite where testing confirms its suitability. Reinforced concrete retaining walls will be constructed to the north of the existing roundabout where required. The base layers of the pavement and cycle lane/track are to be made of compacted stone materials. New road surfaces will be surfaced with asphalt surfacing.

Drainage works are likely to run in tandem with the pavement construction phase. This will involve the re-location of existing gullies to the new kerb lines as well as the provision of new gullies to match the new layout. Gullies will be connected to the existing surface water sewer, which will be fitted with by-pass separators and/ or filter drains will be installed. No new outfalls for the existing surface water drainage system are proposed. Underground utility diversions and the installation of new underground utilities will also be completed at this stage.

New road signs, road markings including the pedestrian/ cyclist crossings, public lighting columns, traffic signals, bollards and vehicle restraint systems (safety barriers) will be installed and commissioned where required. Areas of soft landscaping will be top-soiled, seeded and planted. The shared paths connective the crossings with the existing and proposed shared paths will be constructed. Permanent accommodation works will be completed including the erection of permanent fencing/ boundary walls. Temporary traffic management measures will be removed when appropriate.

In general, across the scheme, excavations for road widening will be a maximum of 1.5m in depth. Excavations required for the installation of the new drainage system along Station Road will have an approximate maximum depth of 2.0m for the drainage runs and a maximum depth of 4m for the attenuation tanks situated under the car parks.

1.3.2. Flood Risk Assessment

A Flood Risk Assessment (FRA) was carried out by JBA Consulting (JBA, 2021) for the proposed project. Based on historic data and predictive mapping, areas within Carrigtwohill have been identified as at risk of flooding during a 1% Annual Exceedance Probability (AEP) and 0.1% AEP flood event. JBA Consulting (2021) have reviewed *'the available sources of flooding sections of the Public Realm Works which are located in Flood Zone A & B along Station Road. Ideally, road infrastructure would be located in Flood Zone B or C. Therefore, an aim of the Public Realm Works is to remove sections of the road network from Flood Zone A. Various mitigation measures have been denied and assessment to alleviate the flood risk to Station Road post development. The existing flood risk is caused by an undersized culvert along the Woodstock Stream'*. Two mitigation options for Station Road were assessed and based on the analysis Option 2 is the preferred method to manage flood risk along Station Road. Option 2 involves '*the complete removal and replacement of the Woodstock culvert to ensure it has the capacity to convey flows up to the 0.1% AEP flood event. The works will also minimise the risk of blockage and collapse of the culvert in the long term. Review of the results confirm that the upgrade works will completely remove Station Road from the 1% AEP event and significantly reduce the flood extents during the 0.1% AEP event. Downstream of the site, due to the increase conveyance of the culvert flood levels do show a minor increase but remain in bank. Furthermore, an assessment has been undertaken on the proposed project development and mitigation measures to ensure that they are not negatively impacted. Review of the results confirm that the mitigation within the proposed project will continue to prevent inundation during a 1% and 0.1% AEP event'* (JBA, 2021).

'Considering the wider Public Realm development, the proposed works are within Flood Zone C. To ensure no increased risk of pluvial flooding it is recommended that all existing road levels are maintained where possible so as not to impact on potential flow pathways. A stormwater system has been incorporated within the Public Realm Scheme to manage surface water flows. This will ensure that the works will not negatively impact on potential pluvial flooding across the scheme area' (JBA, 2021).

Please note that the undersized culvert referred to in the JBA Consulting's FRA report (JBA, 2021) is not part of the proposed project.

1.3.3. Hydrogeological Characterisation Report

A groundwater baseline assessment report was prepared by JBA Consulting (JBA, 2020) in order to provide a preliminary, desk-based assessment of hydrogeological baseline conditions in the vicinity of Carrigtwohill. The assessment developed a conceptual hydrogeological model for the area in order to identify modes of groundwater movement, depth of groundwater, groundwater flow paths, areas of shallow water table and/ or emergence.

The conclusions of the preliminary assessment were that the underlying layer of superficial deposits comprised glacial till, the composition and thickness of which will vary. Bedrock deposits which underly the superficial geology comprise a sequence of strata which form the northern limb of a trough structure known as a syncline. Based upon desk-based information it can be reasonably anticipated that regional flow of groundwater within bedrock will be broadly to the south. Flow of groundwater within the overlying superficial deposits is likely to follow local topographic variations. In relation to future development in the area of Carrigtwohill, considerations will be required regarding drainage solutions with respect to karst aquifers and the potential for groundwater flooding.

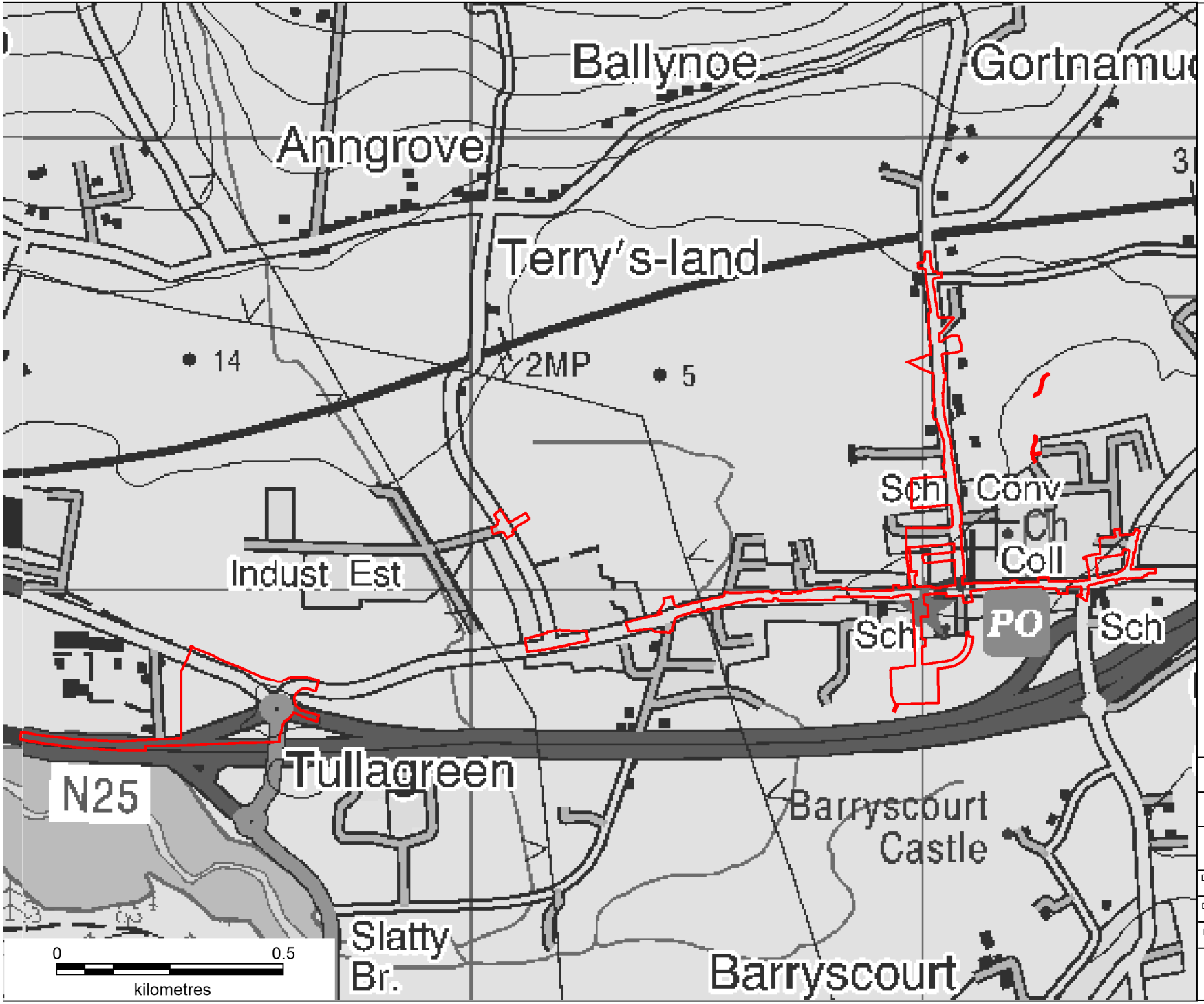
1.3.4. Archaeological Assessment

John Cronin & Associates (Cronin & Associates, 2020) prepared an Archaeological and Built Heritage Constraint Study Report for the proposed study area. Cronin & Associates (2020) concluded that *'any proposed excavation works to be undertaken during the scheme should, therefore, be subject to archaeological review during the design process which should also include consultation with the Heritage Unit, Cork County Council.'*

1.3.5. Environmental Impact Assessment Screening Statement

An Environmental Impact Assessment (EIA) screening report was prepared for the proposed infrastructure project. Given the scale and nature of the proposed project and taking account of all available information, the overall probability of impacts on the receiving environment is considered to be low. No significant environmental impacts are anticipated, once standard industry environmental management systems are in place.

The EIA Screening report concluded that '*based on all available information, and taking account of the scale, nature and location of the proposed project it is our opinion that the preparation of an EIAR is not a mandatory requirement (under Section 50 of the Roads Acts 1993-2021). The project is deemed a sub-threshold development; hence the potential for significant environmental effects arising as a result of the proposed project has been evaluated, in accordance with the requirements of Schedule 7A and Schedule 7 of the Planning and Development Acts 2001-2021'*.



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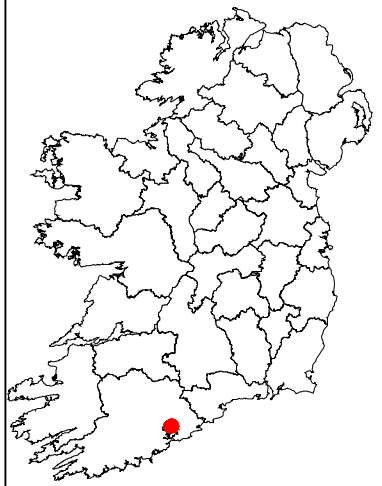
Legend

Red Line Boundary



Client:	Cork County Council
Project:	Carrigtwohill URDF Initiative Public Realm Infrastructure Bundle
Title:	Red Line Boundary

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2. Scope of Study

2.1. Aims of the Report

This report aims to identify, quantify and evaluate potential effects of the proposed infrastructure project on habitats species and ecosystems in the surrounding environment. The report considers impacts to ecological receptors and proposes mitigation measures to offset or reduce the identified impacts.

2.2. Relevant Legislation, Policy and Guidelines

This report has been prepared with regard to the legislation, policy documents, and guidelines outlined below.

National and International Legislation

- *Planning and Development Act 2000,* as *amended, as associated Regulations;* hereafter collectively referred to as the Planning Acts;
- *Wildlife Act, 1976* and *Wildlife (Amendment) Act (2000)* (as amended); hereafter collectively referred to as the Wildlife Acts;
- *European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011* (as amended); hereafter referred to as the Birds and Habitats Regulations;
- *EU Birds Directive 2009/147/EEC;*
- *EU Habitats Directive 92/43/EEC* (as amended); and,
- *Flora (Protection) Order, 2015.*

Relevant Guidelines

- EPA Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2017);
- EPA Advice Notes of Current Practice (in the Preparation of Environmental Impact Statements (EPA, 2003) (and revised advice notes 2015);
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1 (CIEEM, 2018);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009);
- Guidelines for Ecological Report Writing, 2nd Edition. (CIEEM, 2017);
- Guidelines for Preliminary Ecological Appraisal, 2nd Edition (CIEEM, 2017)
- Best Practice Guidance for Habitat Survey and Mapping (Smith *et al.*, 2011);
- A Guide to Habitats in Ireland (Fossitt, 2000);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016);
- Planning for Watercourses in the Urban Environment (IFI, 2020);

- Bats and Lighting: Guidance notes for Planners, Engineers, Architects, and Developers (BCI, 2010);
- Bats and artificial lighting in the UK. Bats and the Built Environment Series. Guidance Note 08/18. (BCT, 2018);
- Bat Surveys for Professional Ecologists: Good Practice Guidelines. Third Edition. (Collins, J. (ed.) 2016); and
- Environmental Planning and Construction Guidelines Series (National Roads Authority, 2005 – 2011).

Relevant Plans and Policy

- National Biodiversity Action Plan 2017 – 2021. Department of Culture, Heritage and the Gaeltacht (https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf).
- All Ireland Pollinator Plan 2021 – 2025. National Biodiversity Data Centre and Heritage Council (https://pollinators.ie/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf).
- Cork County Development Plan 2022-2028. Cork County Council (https://www.corkcoco.ie/en/cork-county-development-plan-2022-2028).
- Cobh Municipal District Local Area Plan 2017 (updated 2019). Cork County Council (http://corklocalareaplans.com/cobh-municipal-district/).
- Environmental Awareness Strategy 2016 - 2020. Cork County Council (https://www.corkcoco.ie/sites/default/files/2018-08/CCC%20Environmental%20Awareness%20Strategy%202016-2020.pdf).
- County Cork Biodiversity Action Plan 2009 – 2014. Cork County Council (https://www.corkcoco.ie/sites/default/files/2017-04/County%20Cork%20Biodiversity%20Plan.pdf).

3. Methods

3.1. Desk Study

A desk study was carried out to collate information available on ecological receptors and designated sites in the vicinity of the proposed project. These areas were viewed using Google Earth, Google maps[2] and Bing maps[3] (last accessed on 14/07/2021).

The databases of National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), Botanical Society of Britain and Ireland (BSBI), Inland Fisheries Ireland (IFI) and Birdwatch Ireland online databases were consulted concerning ecological receptors, designated sites and their features of interest in the vicinity of the proposed project. The Geohive mapviewer was also consulted. Published and unpublished reports with respect to ecological receptors were reviewed to collate and collect data and information.

The Environmental Protection Agency (EPA) mapping[4] system and Geological Survey of Ireland (GSI) mapviewer[5] were used to identify any waterbodies, hydrogeology and hydrological connection between the proposed project and ecological receptors.

Locations and boundaries of all European and nationally designated sites within the zone of influence of the proposed project were identified and reviewed using the National Parks and Wildlife Service (NPWS) online map viewer. Boundary shapefiles were also downloaded from this site to facilitate the preparation of project graphics.

Desktop information on relevant European sites were reviewed on the NPWS website, including the site synopsis for each SAC/SPA, the conservation objectives, the site boundaries as shown on the NPWS online map viewer, the standard Natura 2000 Data Form for the SAC/SPA which details conditions and threats of the sites, and published information and unpublished reports on the relevant European sites.

Planning information from the surrounding area, dated within the last 5 years, was reviewed using the planning enquiry systems of Cork County Council. Search criteria were implemented to screen out such projects or plans that would not be relevant to this study. This was used to determine potential cumulative impacts from other plans / projects near the proposed works.

3.2. Ecological Study Area

The ecological study area is illustrated in Figure 3-1. For the purposes of this study, direct impacts such as loss of habitat and direct mortalities of species were confined to ecological resources contained within the study area boundary. Due to the nature, scale and extent of the proposed project and the nature of the receiving environment, the ecological study area illustrated in Figure 3-1 was established by placing a 50m buffer on the outer extent of the proposed red line boundary (NRA, 2005a; NRA, 2006a; NRA, 2009).

For the consideration of indirect impacts, such as impacts to the water quality of waterbodies or the alteration of flow regime, the zone of influence was extended to incorporate the presence of European and nationally designated sites with hydrological connectivity to the proposed project, as the zone of influence will vary for different ecological features depending on their sensitivity to environmental change (Scott Wilson *et al*., 2006; CIEEM, 2018). With respect to mobile species, and the possibility of ex situ effects, potential zone of influence is considered to be 500m[6] for wintering birds and other

[2] https://www.google.ie/maps
[3] http://www.bing.com/maps/
[4] https://gis.epa.ie/EPAMaps/
[5] https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx
[6] Compilation of data from Madsen (1985), Smit and Visser (1993) and Rees *et al*., (2005).

mobile species such as otter. Connectivity via linear landscape features to ecological resources within the wider landscape were considered with respect to bats.

3.3. Field Survey

An initial preliminary walkover survey of the proposed project area was conducted by an Atkins ecologist, Niamh Sweeney, in February 2020. Ecology surveys were undertaken by Greenleaf Ecology between 30th June 2020 and 3rd July 2020. Further site visits were conducted by an Atkins ecologist, Emma Nickelsen, in June 2021.

3.3.1. Habitats and Flora Survey

All habitats within the survey area were classified using the *Guide to Habitats in Ireland* (Fossitt, 2000), recording dominant species, indicator species and/or species of conservation interest; with the Fossitt category codes given in parentheses. Plant nomenclature follows the *Botanical Society of Britain and Ireland's List of Accepted Plant Names* (Botanical Society of Britain and Ireland, 2007). This survey also included the recording of non-native invasive species within the survey area.

3.3.2. Fauna Surveys

Fauna were surveyed on site through direct observation, but as most Irish mammal species are nocturnal and/or secretive in habit survey methods relied on finding signs such as evidence of breeding or resting places, tracks, feeding signs and droppings. All field boundaries within the study area were investigated from both sides to ensure all areas were investigated.

3.3.2.1. Bat Surveys

Bat activity surveys were conducted by Green Leaf Ecology across the proposed site using an Anabat Walkabout detector. These surveys enable a determination of the approximate numbers and species of bats present within the site, areas used for foraging and commuting routes to and from roosts. The approximate flying height and direction taken by bats were estimated and detailed where possible. Assessment of bat activity was undertaken in July and August 2020. A total of 2 dusk activity surveys were completed and were undertaken on 21st July 2020 and 5th August 2020. Both surveys were conducted in good weather conditions (avoiding periods of very heavy rain, strong winds (> Beaufort Force 5), mists and dusk temperatures below (10°C).

Dusk surveys of structures identified as being of moderate or high potential for bats during the roost inspection surveys were undertaken in July and August 2020. The purpose of the surveys was to watch and listen for bats exiting from bat roosts to determine the presence or absence of bats at the time of survey. The dusk emergence surveys commenced approximately 15 minutes before sunset and ended approximately 90 minutes after sunset. The surveys were undertaken in suitable weather conditions (avoiding periods of very heavy rain, strong winds (> Beaufort Force 5), mists and dusk temperatures below (10°C)).

A detailed inspection of the exterior of trees was undertaken to look for features that bats could use for roosting (Potential Roost Features, or PRFs) from ground level. The aim of the survey was to determine the actual or potential presence of bats and the need for further survey and/or mitigation. A detailed inspection of each potential tree roost within the site was undertaken. The inspection was carried out in daylight hours from ground level, and information was compiled on the tree, PRFs and evidence of bats. All trees surveyed were numbered and marked on a map and a description of each PRF observed was recorded. PRFs that may be used by bats include:

- Rot holes;
- Hazard beams;
- Other horizontal or vertical cracks or splits (e.g. frost cracks) in stems or branches;
- Lifting bark;

- Knotholes arising from naturally shed branches or branches previously pruned back to the branch collar;
- Man-made holes (e.g. flush cuts) or cavities created by branches tearing out from parent stems;
- Cankers in which cavities have developed;
- Other hollows or cavities;
- Double leaders forming compression forks with included bark and potential cavities;
- Gaps between overlapping stems or branches;
- Partially detached ivy with stem diameters in excess of 50mm; and
- Bat or bird boxes.

Signs of a bat roost (excluding the actual presence of bats), include:

- Bat droppings in, around or below a PRF;
- Odour emanating from a PRF;
- Audible squeaking at dusk or in warm weather;
- and Staining below the PRF.

It should be noted that bats or bat droppings are the only conclusive evidence of a roost and many roosts have no external signs. Therefore, this survey and evaluation was relatively basic as only those PRFs at ground level could be inspected closely to ascertain their true potential to support roosting bats. Trees were categorised according to the highest suitability PRF present.

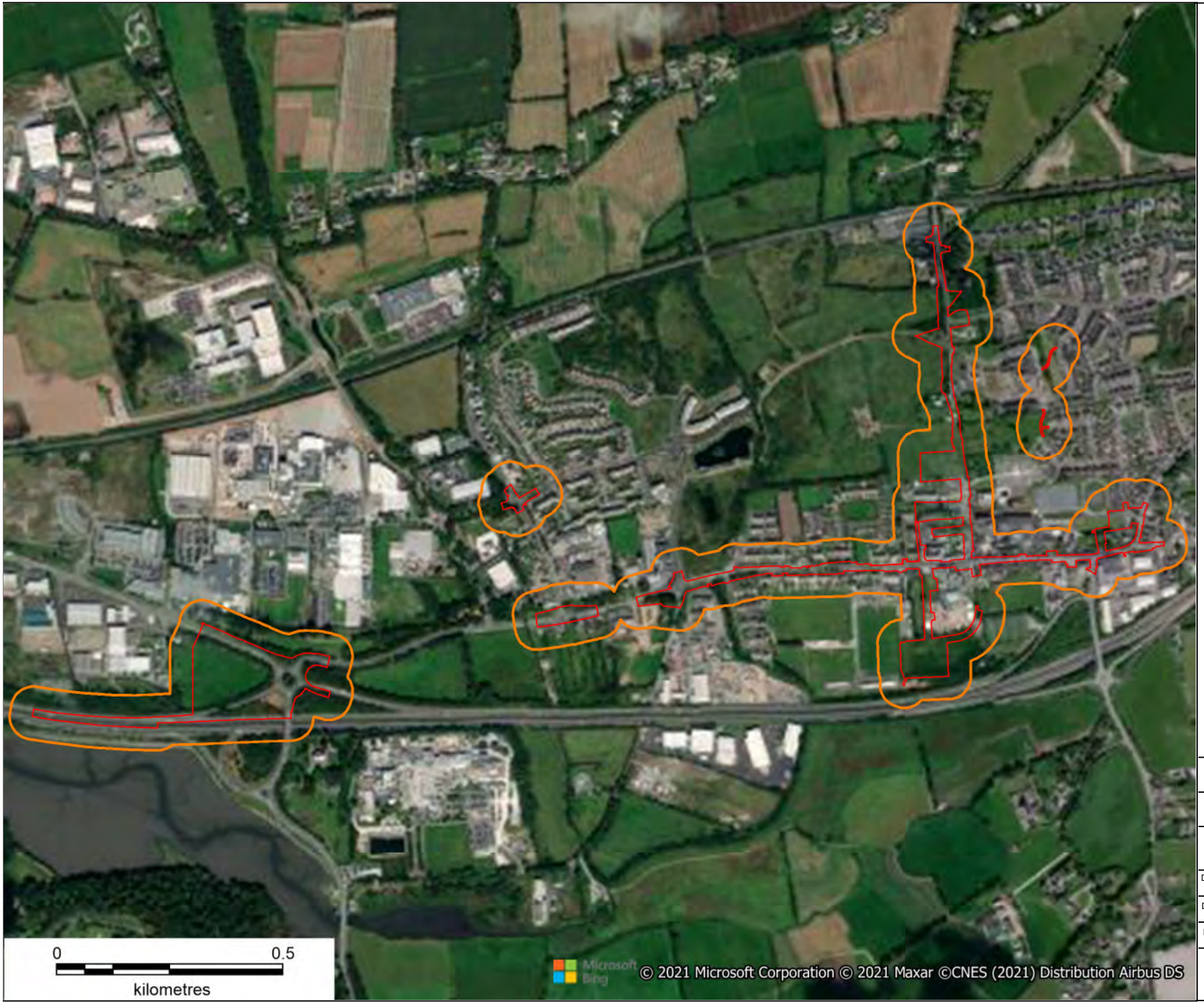
Derelict and disused structures and structures of high suitability for bats adjacent to the proposed site were surveyed for potential roost sites and signs of bats. The survey utilised close focussing binoculars, a high powered torch and an endoscope (Explorer Premium 8803 with 9mm camera) where required. The external inspection involved looking for bat droppings on the ground, stuck to walls, windowsills or in crevices in the stone work and recording suitable entry and exit points.

Where accessible, an internal inspection of the structure was undertaken. The internal inspection involved looking for features that may be suitable for roosting bats, such as joints and crevices in wood, holes or crevices between stonework in the walls and searching for bat droppings, urine stains and feeding signs on the floor.

3.3.3. Survey Limitations

The ecological walkover survey conducted in February 2020 did not observe any wintering waterbirds foraging or roosting within the study area. Additional wintering bird surveys were not undertaken as part of the proposed project.

The bat surveys were undertaken in July 2020. As such, the survey results provide a representation of bat activity within the study area during the summer season and do not provide information on bat activity during the spring and autumn months.



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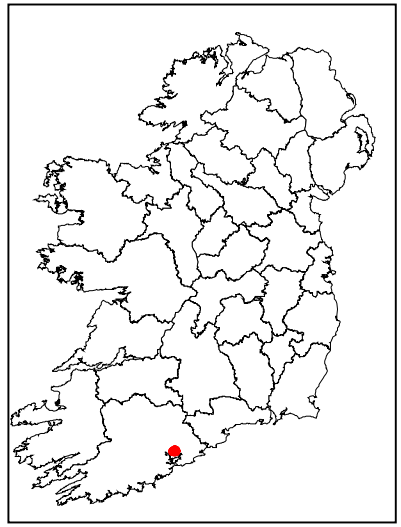
Legend

Ecological Study Area

Red Line Boundary



Client: Cork County Council		
Project: Carrigtwohill URDF Initiative Public Realm Infrastructure Bundle		
Title: Ecological Study Area		
Drawn: EN	Checked: NS	Authorised: PO'D
Date: 08/07/2021	Date: 08/07/2021	Date: 08/07/2021
Drawing No: 3.1		Rev: 1.0

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3.4. Assessment Methods

Ecological receptors were evaluated and assessed in accordance with Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018) and with reference to Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009). The evaluation, impact and significance criteria in the assessment are detailed below.

3.4.1. Evaluation of Ecological Receptors

One of the key challenges in ecological impact assessment (EcIA) is to decide which ecological features (habitats, species, ecosystems and their functions/processes) are important and should be subject to detailed assessment. Such ecological features will be those that are important and potentially affected by the project. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable. This does not mean that efforts should not be made to safeguard biodiversity in its entirety, as emphasised in the EU Biodiversity Strategy 2020. The EU Strategy and national policy documents emphasise the need to achieve no net loss of biodiversity and enhancement of biodiversity.

Ecological features can be important for a variety of reasons and the rationale used should be explained to demonstrate a robust selection process. Importance may relate, for example, to the quality or extent of designated sites or habitats, to habitat/species rarity, to the extent to which they are threatened throughout their range, or to their rate of decline.

The following geographic frame of reference was used when determining the value of ecological receptors (NRA, 2009):

- International importance;
- National importance;
- County importance;
- Local importance (higher value);
- Local importance (lower value).

Determining the potential for impacts and the zone of influence is based on the source-pathway-receptor chain principle and involves assessing likely significant effects on ecological receptors within the zone of influence in relation to three pathways:

- Surface water;
- Groundwater;
- Land & Air.

Two European designated sites are located within the zone of influence of the project. These will be assessed under the requirements of the Habitats Directive, articles 6(3) and 6(4), which has been transposed into Irish legislation by means of the EC (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011), as amended. Therefore, a Screening for Appropriate Assessment accompanies this EcIA to address the potential for likely significant effects on Cork Harbour SPA and Great Island Channel SAC.

3.4.2. Determining Ecologically Significant Effects

CIEEM (2018) define an ecologically significant impact as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographic area.

The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified (CIEEM, 2018). Best scientific professional judgement has been used in some cases, to assess the significance of predicted effects.

3.4.3. Precautionary Principle

The evaluation of significant effects should always be based on the best available scientific evidence. If sufficient information is not available, further survey or additional research may be required. In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect should be assumed. Where uncertainty exists, it must be acknowledged in the EcIA.

3.5. Statement of Authority

The report was prepared by Niamh Sweeney and Emma Nickelsen. Paul O'Donoghue provided peer review support.

Emma Nickelsen has a BSc (Hons) in Environmental Biology and an MSc in Marine Biology. Emma has worked in ecological and environmental consultancy since 2017, working on a wide range of projects including bridge works, road construction, local amenity development and renewable energy. A focus of Emma's work to date has been on conducting Appropriate Assessment screenings, ecological appraisals and supporting the preparation of Natura Impact Statements and Ecological Impact Statements. Emma assisted in the preparation of this report.

Niamh Sweeney (BSc, MSc(Res)) is a freshwater ecologist with over 10 years' experience in ecological consultancy, with specialisms in macroinvertebrate and diatom taxonomy. Niamh has worked on numerous Screenings for Appropriate Assessment, Natura Impact Statements and Ecological Impact Assessments for private architect firms, waste companies, numerous County Councils, the OPW and Inland Fisheries Ireland. Niamh carried out the preparation of this report.

Paul O'Donoghue has a BSc (Zoology), MSc (Behavioural Ecology) and a PhD in avian ecology and genetics. Paul is a chartered member of the Society for the Environment (CEnv) and a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Paul has over 18 years' experience in ecology; including extensive experience in the preparation of Habitat Directive Assessments / Natura Impact Statements (i.e. Appropriate Assessment under Article 6(3) of the EU Habitats Directive). Paul carried out the technical review of this report.

The bat surveys were undertaken by **Karen Banks**, MCIEEM. Karen is an ecologist with 13 years' experience in the field of ecological assessment. She holds a BSc in Environment and Development from Durham University, and is a full member of the Chartered Institute of Ecology and Environmental Management. Karen is an experienced and skilled bat surveyor, first gaining a scientific licence to disturb bats from Natural England, UK in 2008. Karen is trained in bat handling and capture methods and currently holds a bat disturbance licence granted by the NPWS. Karen has undertaken bat survey and assessment for numerous projects, including bridge repair and replacement works, domestic dwelling repair and demolition works, wind farm developments and large-scale infrastructure projects such as flood relief schemes, road developments and pipeline schemes. Karen has also represented Cork County Council as an expert witness for bats at an Oral Hearing.

4. Existing Environment

The sections below detail a desktop review of the existing environment within the zone of influence of the proposed project. This information was updated and supplemented by the project-specific habitat and species surveys that were conducted during February, June and July 2020 and June 2021. The results of these surveys are detailed under 'Field Survey Results'.

4.1. Statutory Nature Conservation Sites

4.1.1. European Designated Sites

European designated sites comprise Special Areas of Conservation (SAC) and Special Areas of Protection (SPAs). This network of European designated sites is referred to as the *Natura 2000* network. SACs are designated for their biodiversity value based on the presence of Annex I habitats and Annex II species listed under the EU Habitats Directive (92/43/EEC). SPAs are designated for the protection of bird species listed on Annex I of the Bird Directive (2009/147/EC).

There are three European sites located within 15km of the proposed project (Table 4-1). Of these three European sites, only two have connectivity with the proposed project; Great Island Channel SAC (001058) and Cork Harbour SPA (004030). Both European sites encompass Slatty Water, which is located immediately south of Carrigtwohill town. Two watercourses are present within the ecological study area; the Anngrove stream and the Woodstock stream. These streams merge and discharge into Slatty Water. Therefore, the study area has surface water connectivity to both the SAC and SPA. The Tibbotstown stream lies to the west of the Anngrove and Woodstock streams, but it does not intersect the ecological study area.

The study area lies within the Midletown_1-IE_SW_G_056 groundwater body and on predominantly karst and limestone bedrock. Groundwater vulnerability across the study area varies from Moderate to Extreme and with exposed rock in areas. Thus, interactions between groundwater and surface water are likely and therefore the study area has groundwater linkage to the SAC and SPA.

4.1.2. Natural Heritage Areas

Natural Heritage Areas (NHAs) are nationally designated sites, which are considered important for the habitats present or which support species of plants and animals whose habitat requires protection. NHAs are legally protected under the Wildlife Amendment Act 2000. Proposed Natural Heritage Areas (pNHAs) are sites that are of significance for wildlife and habitats. pNHAs are not statutorily designated, however their ecological value is recognised by Planning and Licencing Authorities.

There are no NHAs and 20 pNHAs located within 15km of the proposed project (Figure 4-1). Of these 20 pNHAs, 8 have connectivity to the proposed project. Great Island Channel pNHA has connectivity with the proposed project via hydrological pathways and overlaps with the red line boundary at the western extent of the works to Cobh Cross. This pNHA is also encompassed within the Great Island Channel SAC and Cork Harbour SPA site boundaries. The remaining pNHAs are located within Lough Mahon and Cork Harbour, which are also encompassed within the Cork Harbour SPA site boundary. These pNHA sites only have connectivity via surface water pathways, given their distance from the proposed project.

4.1.3. Nature Reserves

There are no nature reserves located within 15km of the proposed project.

4.1.4. Other non-statutory designated site of ecological value

4.1.4.1. Wildfowl Sanctuaries

Lough Aderry is a wildfowl sanctuary that supports nationally important numbers of Gadwall (*Anas strepera*). In addition, the lake also supports a variety of other waterfowl such as Mute Swan (*Cygnus olor*), Wigeon (*Anas penelope*), Teal (*Anas Crecca*), Mallard (*Anas platyrhynchos*), Shoveler (*Anas clypeata*), Pochard (*Aythya ferina*), Coot (*Fulica atra*) and Lapwing (*Vanellus vanellus*). Lough Aderry is included in the Loughs Aderry and Ballybutler pNHA (Table 4-2) and is located approximately 9.5km from the proposed project. Lough Aderry does not have connectivity via land and air pathways or hydrological connectivity as the lake is located on a tributary of the Dungourney River, to the east of the proposed project. Thus, Lough Aderry wildfowl sanctuary is not considered to be within the zone of influence of the proposed project and is not considered further in this report.

Although not designated as a wildfowl sanctuary on the NPWS website[7], a new reserve has been established at Harper's Island Wetlands, located west of Carrigtwohill.

[7] https://www.npws.ie/protected-sites/wildfowl-sanctuaries.

Table 4-1 - European sites within 15km of the proposed project.

Site Name	Site Code	Approximate distance	Features of Interest	Connectivity
Great Island Channel SAC	001058	ca. 1km hydrological distance; ca. 20m by land	• Mudflats and sandflats not covered by seawater at low tide [1140] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]	**Yes** – hydrological connectivity exists via surface water and groundwater pathways. The Anngrove and Woodstock streams flows through the study area. Both watercourses flow into the Slatty Water.
Cork Harbour SPA	004030	ca. 1.25km hydrological distance; ca. 20m by land	• Little Grebe (*Tachybaptus ruficollis*) [A004] • Great Crested Grebe (*Podiceps cristatus*) [A005] • Cormorant (*Phalacrocorax carbo*) [A017] • Grey Heron (*Ardea cinerea*) [A028] • Shelduck (*Tadorna tadorna*) [A048] • Wigeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Pintail (*Anas acuta*) [A054] • Shoveler (*Anas clypeata*) [A056] • Red-breasted Merganser (*Mergus serrator*) [A069] • Oystercatcher (*Haematopus ostralegus*) [A130] • Golden Plover (*Pluvialis apricaria*) [A140] • Grey Plover (*Pluvialis squatarola*) [A141] • Lapwing (*Vanellus vanellus*) [A142] • Dunlin (*Calidris alpina*) [A149] • Black-tailed Godwit (*Limosa limosa*) [A156] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182]	**Yes** – hydrological connectivity exists via surface water and groundwater pathways. The Anngrove and Woodstock streams flows through the study area. Both watercourses flow into the Slatty Water.

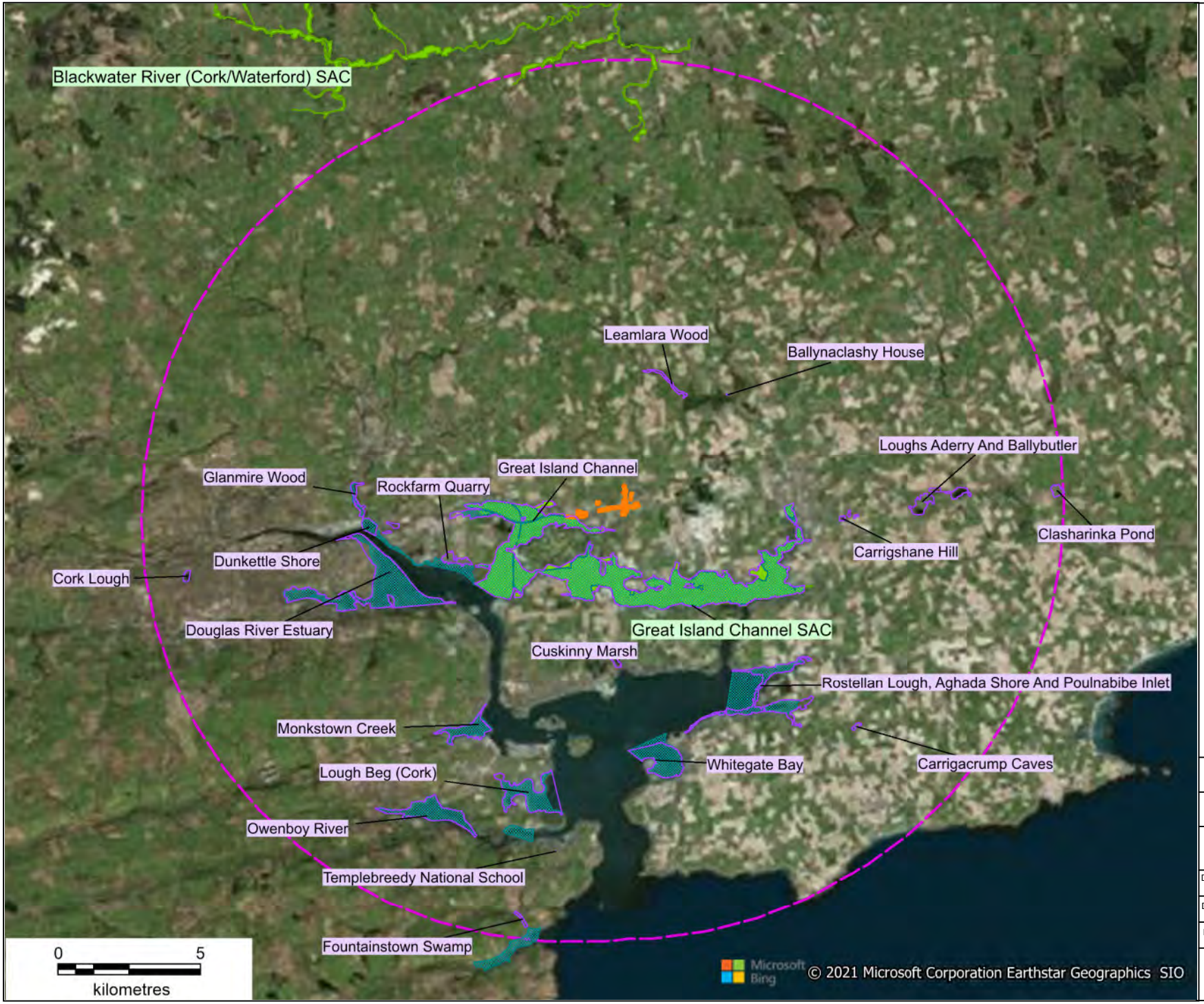
Site Name	Site Code	Approximate distance	Features of Interest	Connectivity
			• Lesser Black-backed Gull (*Larus fuscus*) [A183] • Common Tern (*Sterna hirundo*) [A193] • Wetland and Waterbirds [A999]	
Blackwater River (Cork/Waterford) SAC	002170	ca. 12km by land	• Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Perennial vegetation of stony banks [1220] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] • *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] • *Austropotamobius pallipes* (White-clawed Crayfish) [1092] • *Petromyzon marinus* (Sea Lamprey) [1095] • *Lampetra planeri* (Brook Lamprey) [1096] • *Lampetra fluviatilis* (River Lamprey) [1099] • *Alosa fallax fallax* (Twaite Shad) [1103] • *Salmo salar* (Salmon) [1106] • *Lutra lutra* (Otter) [1355] • *Trichomanes speciosum* (Killarney Fern) [1421]	No – hydrological connectivity absent. Given the distance between the SAC and the proposed project, impacts via land and air pathways are not anticipated.

Table 4-2 - pNHAs within 15km of the proposed project.

Site Name	Site Code	Approximate distance	Features of Interest	Connectivity
Ballynaclashy House, North of Midleton	000099	5km	Ballynaclashy House is a nursery colony for Whiskered Bat. The colony is of national importance.	No hydrological connectivity or connectivity via land and air pathways.
Templebreedy National School, Crosshaven	000107	12km	Templebreedy National School is a nursery roost for Leisler's Bat, which roost in the attic. Although the Leisler's Bat is considered common in Ireland, the number of safe nursery roosts is small. Therefore, the site is of international importance.	No hydrological connectivity or connectivity via land and air pathways.
Fountainstown Swamp	000371	14km	Fountainstown Swamp is a swamp located to the north of the beach.	No hydrological connectivity or connectivity via land and air pathways.
Loughs Aderry and Ballybutler	000446	9.5km	Limestone valley containing two rich lowland lakes. Two rare plant species are present at the site; Orange Foxtail (*Alopercurus aequalis*) and Musk Thistle (*Carduus nutans*). The lakes support nationally important numbers of birds.	No hydrological connectivity or connectivity via land and air pathways. The lakes are located on a tributary of the Dungourney River, to the east of Midleton town.
Carrigshane Hill	001042	7km	Hill with outcropping limestone that contains a rich flora that grows best in calcareous soil.	No hydrological connectivity or connectivity via land and air pathways.
Douglas River Estuary	001046	5km	Encompassed within Cork Harbour SPA (see Table 4-1).	**Yes** – remote hydrological connectivity present. Given the distance between the site and the proposed project, impacts via land and air pathways are not anticipated.
Glanmire Wood	001054	7.25km	Encompassed by Cork Harbour SPA (see Table 4-1). Mixed broad-leaved woodland on the east bank of the Glashaboy River, immediately south of Glanmire.	No hydrological connectivity or connectivity via land and air pathways.
Great Island Channel	001058	Within – Cobh Cross works located within the pNHA	Encompassed within Great Island Channel SAC and Cork Harbour SPA (see Table 4-1).	**Yes** – connectivity via hydrological and land and air pathways.
Leamlara Wood	001064	3.7km	Oak woodland in the Leamlara River valley. Presence of Hay-scented Buckler-fern (*Dryopteris aemula*), which is a vulnerable European species.	No hydrological connectivity or connectivity via land and air pathways.

Site Name	Site Code	Approximate distance	Features of Interest	Connectivity
				The Leamlara River is a tributary of the Owenacurra, which is situated to the east of the study area at Midleton. The pNHA is situated to the north-east of the proposed project.
Lough Beg (Cork)	001066	9km	Encompassed within Cork Harbour SPA (see Table 4-1).	**Yes** – remote hydrological connectivity present. Given the distance between the site and the proposed project, impacts via land and air pathways are not anticipated.
Rockfarm Quarry, Little Island	001074	3.7km	Limestone quarry located on the southern shore of Little Island. Site contains a calcareous rich flora and many orchids are present within the site. The area is of considerable interest botanically due to its species diversity and presence of regional rarities.	No hydrological connectivity or connectivity via land and air pathways.
Rostellan Lough, Aghada Shore and Poulnabibe Inlet	001076	6.7km	Encompassed within Cork Harbour SPA (see Table 4-1).	**Yes** – remote hydrological connectivity present. Given the distance between the site and the proposed project, impacts via land and air pathways are not anticipated.
Cork Lough	001081	13.4km	This small lake is situated in the north-west of Cork City. The site is of local importance for its bird community.	No hydrological connectivity or connectivity via land and air pathways.
Dunkettle Shore	001082	5.9km	Encompassed within Cork Harbour SPA (see Table 4-1).	**Yes** – remote hydrological connectivity present. Given the distance between the site and the proposed project, impacts via land and air pathways are not anticipated.
Whitegate Bay	001084	8km	Encompassed within Cork Harbour SPA (see Table 4-1).	**Yes** – remote hydrological connectivity present. Given the distance between the site and the proposed project, impacts via land and air pathways are not anticipated.

Site Name	Site Code	Approximate distance	Features of Interest	Connectivity
Clasharinka Pond	001183	14.5km	Pond surrounded by areas of rough grazing grassland. Orange Foxtail, a plant protected under the Flora Protection Order 2015, is found on the peaty mud pond margins during summer.	No hydrological connectivity or connectivity via land and air pathways.
Carrigacrump Caves	001408	10.8km	Caves in an area of outcropping limestone south-west of Cloyne. Contains areas of undisturbed limestone grassland that includes locally rare plants. The cave has local scientific importance.	No hydrological connectivity or connectivity via land and air pathways.
Monkstown Creek	001979	7.2km	Encompassed within Cork Harbour SPA (see Table 4-1).	**Yes** – remote hydrological connectivity present. Given the distance between the site and the proposed project, impacts via land and air pathways are not anticipated.
Cuskinny Marsh	001987	4.7km	Brackish lake that supports locally important numbers of ducks and Mute Swans 2.5km east of Cobh.	No hydrological connectivity or connectivity via land and air pathways. The lake is joined to Cork Harbour via a sluice gate and is fed by streams flowing from the west and north.
Owenboy River	001990	10.8km	Encompassed within Cork Harbour SPA (see Table 4-1).	**Yes** – remote hydrological connectivity present. Given the distance between the site and the proposed project, impacts via land and air pathways are not anticipated.



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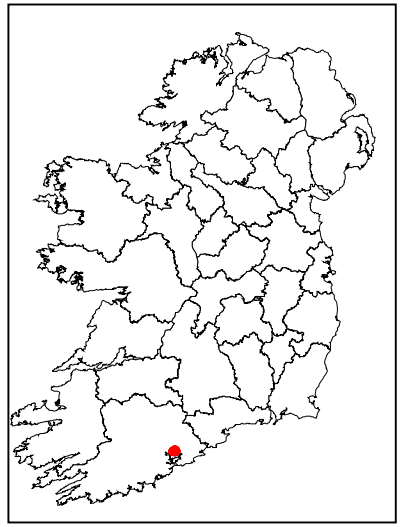
Legend

- Ecological Study Area
- Cork Harbour SPA
- Special Areas of Conservation
- Proposed Natural Heritage Areas
- 15km Buffer



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4.2. Habitats of Ecological Value

There are no Article 17 habitats located within the study area.

There are article 17 habitats with downstream connectivity to the study area. These habitats are features of interests of the Great Island Channel SAC:

- Mudflats and sandflats not covered by seawater at low tide [1140];
- Atlantic salt meadows [1330].

Limosa Environmental (2015) classified habitats according to Fossitt (2000) in the vicinity of Carrigtwohill. Fossitt habitat classification of Carrigtwohill village and the wider surrounding area are also available on the NBDC Mapviewer, under the 'Fossitt Habitats' layer. The habitats present within the study area of the proposed project are dominated by buildings and artificial surfaces, neutral grassland, scrub, immature woodland, treelines, hedgerows and streams. Of the latter listed habitats, scrub, immature woodland, treelines and hedgerows, and streams are the habitats that are of most ecological value that may potentially offer suitable supporting habitats to species. The results of the habitat survey, conducted in 2020 and 2021, describe these habitats in greater detail in later sections.

4.2.1. Terrestrial

The proposed route predominantly comprises the local road infrastructure. However, small areas of scrub habitat, broadleaved woodland and neutral grassland habitat are present within the study area. These habitats may provide areas in which species can forage, shelter and breed.

There are several treelines and hedgerows within the study area. Treelines and hedgerows form linear features in the landscape, which contribute to biodiversity in the landscape. They also support species during their foraging, nesting, breeding and commuting activities.

4.2.2. Aquatic

4.2.2.1. Surface water

The proposed project lies in the Tibbotstown Water Framework Directive (WFD) subcatchment (SC_010). There are three 1st order streams that lie within the Tibbotstown subcatchment that are within the vicinity of the proposed project; Woodstock stream, Anngrove stream and Tibbotstown stream. These streams are situated in the lands north of Carrigtwohill main street and flow in a general south-westerly and southerly direction. Only the Woodstock stream and Anngrove stream are within the ecological study area of the proposed project. Woodstock stream is culverted under Station Road and flows in a south-westerly direction to where it joins the Anngrove stream within Terry's Land. The Anngrove stream then flows in a southerly direction (under the L3680 and N25) for approximately 1.6km to Slatty Water. The Tibbotstown stream flows in a southerly direction along the eastern side of the IDA Industrial Estate of Carrigtwohill, under the L3680 and the N25, and into Slatty Water adjacent to the Merck site.

Due to the overall length and size of the three streams (Woodstock stream, Anngrove stream and Tibbotstown stream), they are not sampled by the EPA and therefore are not assigned a status under the WFD. The transitional waterbody of Slatty Water, which is included in the larger Lough Mahon waterbody by the EPA, is categorised as Moderate status under the WFD.

4.2.2.2. Groundwater

The proposed project is situated within the Midleton groundwater body (GWB). Tournaisian limestone bedrock, where present is classified as a regionally important karstified aquifer. There is 1 no. karst feature within the study area; a cave located adjacent to Carrigtwohill Convent. Groundwater vulnerability varies between 'moderate', 'high', 'extreme' and 'rock at or near surface or karst'. Groundwater quality for the GWB is deemed to be 'Good' for the monitoring period 2013-2018, according to data on EPAMaps.

Karstification is widespread within the Midleton GWB and diffuse recharge will occur via rainfall percolating through the subsoil. Shallow groundwater is expected within less than 10 metres below the surface according to the GSI mapviewer.

Groundwater quality beneath the study area is deemed to be '*Good*' for the monitoring period 2013-2018, according to the EPA.

4.2.3. Flora

4.2.3.1. Species of conservation importance

There are no Flora Protection Order (FPO) species recorded in the 2km grid squares W87G and W87B. Round-leaved Crane's-bill (*Geranium rotundifolium*) has been recorded as recently as 2020 within a grassy verge in the IDA Business Park, south of the roundabout. This plant is listed on Ireland's vascular plant Red List as a species of *Least Concern* and categorised as *Vulnerable* under the Irish Red Data Book (Wyse Jackson *et al.*, 2016). Bee orchid (*Ophrys apifera)*, a species of *Least Concern*, has also been recorded south of the main street in the vicinity of the GAA pitches. The proposed project does not contain works within the vicinity of these records and therefore will not impact on the Round-leaved Crane's-bill and Bee Orchid at these recorded locations.

4.2.4. Fauna

4.2.4.1. Birds

All birds are afforded protection under the Wildlife Act 1976 and 2000 Amendment. A sub-set of these are also afforded varying levels of protection under the Birds Directive. Amber and Red listed Birds of Conservation Concern (BoCC) (Gilbert *et al*., 2021) recorded within grid squares within which the study area is located are listed in Table 4-3. Although Barn Owl has not been recorded within these grid squares, there is potential for Barn Owl to be present in the area and records are present for Barn Owl in the wider area.

Table 4-3 - Amber and Red listed Birds of Conservation Concern.

Common Name	Scientific Name	Grid Square	Conservation Concern
Barn Swallow	*Hirundo rustica*	W87B	Amber
Bar-tailed Godwit	*Limosa lapponica*	W87B	Red
Black-headed Gull	*Larus ridibundus*	W87B	Amber
Black-tailed Godwit	*Limosa limosa*	W87B	Red
Common Kestrel	*Falco tinnunculus*	W87B	Red
Common Linnet	*Carduelis cannabina*	W87B	Amber
Common Redshank	*Tringa totanus*	W87B	Red
Common Shelduck	*Tadorna tadorna*	W87B	Amber
Common Snipe	*Gallinago gallinago*	W87B	Red

Common Name	Scientific Name	Grid Square	Conservation Concern
Common Starling	*Sturnus vulgaris*	W87B; W87G	Amber
Eurasian Curlew	*Numenius arquata*	W87B	Red
Eurasian Oystercatcher	*Haematopus ostralegus*	W87B	Red
Eurasian Teal	*Anas crecca*	W87B	Amber
Eurasian Wigeon	*Anas penelope*	W87B	Amber
Eurasian Woodcock	*Scolopax rusticola*	W87B	Red
Great Cormorant	*Phalacrocorax carbo*	W87B	Amber
Great Crested Grebe	*Podiceps cristatus*	W87B	Amber
Herring Gull	*Larus argentatus*	W87G	Amber
House Martin	*Delichon urbicum*	W87B	Amber
House Sparrow	*Passer domesticus*	W87B	Amber
Mute Swan	*Cygnus olor*	W87B; W87G	Amber
Northern Lapwing	*Vanellus vanellus*	W87B	Red
Red Knot	*Calidris canutus*	W87B	Red
Ringed Plover	*Charadrius hiaticula*	W87G	Amber
Sand Martin	*Riparia riparia*	W87B	Amber
Sky Lark	*Alauda arvensis*	W87B; W87G	Amber
Stock Dove	*Columba oenas*	W87B	Red
Tufted Duck	*Aythya fuligula*	W87B; W87G	Amber

Waterbird data recorded during the 2010/2011 survey programme at Cork Harbour is detailed in the supporting document of the SPA (NPWS, 2014). This document shows the distribution of special conservation interest species recorded during low tide and high tide surveys. The area of Slatty Water in the vicinity of the proposed project is encompassed within sub-sites OL590 Brown Island East and OL595 Slatty's Pool. Waterbirds recorded using these subsites comprised shelduck (*Tadorna tadorna*), wigeon (*Anas penelope*), teal (*Anas crecca*), cormorant (*Phalacrocorax carbo*), grey heron (*Ardea cinerea*), oystercatcher (*Haematopus ostralegus*), lapwing (*Vanellus vanellus*), dunlin (*Calidris alpina*), black-tailed godwit (*Limosa limosa*), curlew (*Numenius arquata*), redshank (*Tringa totanus*), black-headed gull (*Chroicocephalus ridibundus*) and common gull (*Larus canus*). These waterbirds were recorded foraging and roosting, predominantly with sub-site OL590 adjacent to the R624 and slip-road to the N25, with a roost size range of 50-99 birds. Slatty Water is an important roosting area and can support internationally important numbers of black-tailed godwit with interchange to Harper's Island (O'Donoghue, P., *pers.comm.*). NPWS (2014) also identify sub-site specific activities and events that have potential to cause disturbance to waterbirds. The activities identified for sub-sites OL590 and OL595 are non-marina moorings, birdwatching and fishing.

4.2.5. Terrestrial Mammals

4.2.5.1. Otter

Otter are protected under Annex IV of the Habitats Directive, Birds and Habitats Regulations and Wildlife Acts. Numerous broadscale records (10km grid square) for otter (*Lutra lutra*) have been recorded in proximity to the study area on the NBDC database. However, there are no precise individual records for otter within the study area. Given the nature of the first order streams in the vicinity of the proposed project and urban and suburban nature of the existing environment, the study area do not offer suitable foraging, commuting and holting habitat for otter. Therefore, otter is unlikely to occur within the study area.

4.2.5.2. Badger

Badger (*Meles meles*) and their setts are protected under the Wildlife Acts. Badger has been recorded at multiple locations along the N25, south of Carrigtwohill. Therefore, there is potential for badger to occur within the study area.

4.2.5.3. Bats

All bat species occurring in Ireland are protected under Annex IV of the Habitats Directive, Birds and Habitats Regulations and Wildlife Acts. Bat roosting sites are also protected under legislation. Landscape association models have been constructed to provide a landscape conservation guide for Irish bats, values of which range from 68.4% to 94% for different species (Lundy *et al*., 2011). The eastern section of the study area scored a bat suitability score of 26.89. The remainder of the study area, i.e. west of Station Road, was assigned a suitability score of 33. Both areas have the highest suitability for lesser noctule (*Nyctalus leisleri*), soprano pipistrelle (*Pipistrellus pygmaeus*), common pipistrelle (*Pipistrellus pipistrellus*) and brown long-eared bat (*Plecotus auratus*). Therefore, bats are likely to use the landscape within the study area for foraging and commuting purposes. Mature trees with roost potential features such as cracks and crevices may also offer roosting potential to bats within the study area.

4.2.5.4. Red Squirrel

Red squirrel (*Sciurus vulgaris*) is protected under the Wildlife Acts. Records for Red squirrel are confined to the wooded areas to the northeast along the Leamlara River, and on Fota Island. Given their habitat preference for woodland areas, red squirrel is unlikely to occur within the study area.

4.2.5.5. Pine Marten

Pine Marten (*Martes martes*) is protected under the Annex V of the Habitats Directive and the Wildlife Act 1976 and 2000 Amendment. Records for Pine Martin from the National Biodiversity Data Centre date from 1994 and are confined to an area occupied by fields between the Carrigane Road and the N25, to the west of the study area. However, given their habitat preference for woodland areas, pine marten is unlikely to occur within the study area.

4.2.6. Other Fauna (Insects/ Non-marine molluscs)

The following species were recorded within the 2km squares and are listed in the red list series for Ireland (NBDC, 2013[8]); Wall brown (*Lasiommata megera*), Small Heath (*Coenonympha pamphilus*), Dark Green Fritillary (*Argynnis aglaja*) and Moss Carder-bee (Bombus (*Thoracombus) muscorum*). Given the agricultural nature of the study area, there is limited potential to support the latter listed bees. However, they may be present along areas where floral diversity is greater within the site, e.g. field margins, hedgerows, wet grassland and scrub areas.

4.2.7. Amphibians and Reptiles

There is one record of Common frog (*Rana temporaria*) along a road between the N25 and Carrigane Road, east of the study area. Large areas of the land within the study area are dominated by built areas, with underlying calcareous bedrock. However, streams do intersect the study area and standing areas of water may occur in close proximity to these. These areas have the potential to support Common frog *Rana temporaria* and Smooth newt (*Lissotriton vulgaris*).

Hedgerows and scrub areas may also offer hibernacula and basking areas for Common lizard *Lacerta vivipara*.

4.2.8. Fisheries

As detailed above, the streams within the Tibbotstown sub-catchment have not been evaluated for water quality. Thus, their status to support a diverse aquatic community is unknown. However, this may be limited by the scale of these streams within the catchment. There are no records for eel (*Anguilla anguilla*), lamprey (*Lampetra sp.*) or salmonids in any of the streams which intersect the study area.

The Slatty Water has an ecological fish status of Moderate, with records of fish including cod (*Gadus morhua*), European eel, European sea bass (*Dicentrarchus labrax*), five-bearded rockling (*Ciliata mustela*), flounder (*Platichthys flesus*), greater pipefish (*Syngnathus acus*), sand goby (*Pomatoschistus minutus*), sand smelt (*Atherina presbyter*), sprat (*Sprattus sprattus*) and two-spot goby (*Gobiusculus flavescens*) recorded by Inland Fisheries Ireland in 2010 (Kelly *et al*., 2010).

4.2.9. Invasive species

Non-native invasive species are not an ecological receptor of value; however, they need to be considered during an ecological impact assessment regarding implications on the proposed project and as a negative indicator for ecological receptors and general biodiversity of the study area.

The European Communities (Birds and Natural Habitats) Regulations 2011 S.I. 477 detail the legal context regarding the introduction and dispersal of certain non-native invasive plants and animals. Section 49 and 50 of the Regulations specify that it is an offence to disperse or spread any plant species or associated vector material listed on the Third Schedule of the Regulations.

Two species listed under the 2011 Regulations have been recorded within the 2k grid squares on the National Biodiversity Data Centre database; Common cord-grass (*Spartina anglica*), *Rhododendron ponticum* and Himalayan balsam (*Impatiens glandulifera*).

There are no records for Japanese knotweed (*Reynoutria japonica*), Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*), or giant rhubarb (*Gunnera tinctoria*) within the study area listed on the NBDC database.

[8] National Biodiversity Data Centre (2013). Ireland's Red Lists – A National Standard. National Biodiversity Data Centre Series No 1. Waterford, Ireland.

4.3. Field Survey Results

4.3.1. Habitats

The habitat types listed in Table 4-4 were identified within the survey area and are presented in Figure 4-2. A short description of each habitat is provided below.

Table 4-4 - Habitats identified within the survey area.

Habitat Name	Fossitt Code (Fossitt, 2000)
Flower Beds and Borders	BC4
Stone Walls and Other Stonework	BL1
Earth Banks	BL2
Buildings and Artificial Surfaces	BL3
Recolonising Bare Ground	ED3
Eroding River	FW1
Improved Agricultural Grassland	GA1
Amenity Grassland	GA2
Neutral Grassland	GS1
Grassy Verges	GS2
Mixed Broadleaved Woodland	WD1
Hedgerow	WL1
Treeline	WL2
Scrub	WS1

Nearly all the habitats detailed in Table 4-4 are common at a local and county scale and are species-poor variants of relatively low ecological value (*i.e.* of local importance (lower to higher value).

4.3.1.1. Flower Beds and Borders (BC4), Amenity Grassland (GA2), Grassy Verges (GS2) and Improved Agricultural Grassland (GA1)

Flower beds (BC4) and amenity grassland (GA2) line the roadways in several areas within the study area. Cultivated ornamental plants are present within these areas, with some interspersed trees including sycamore (*Acer pseudoplatanus*) and birch (*Betula* sp.). Winter heliotrope (*Petasites fragrans*) was common along road verges. Grasslands are classed as amenity grassland where it forms amenity space or gardens, or intensively mown verges.

Unimproved grassy verges (GS2) which are occasionally mowed are present along some road verges. Species present include oxeye daisy (*Leucanthemum vulgare*), speedwell (*Veronica* sp.), creeping buttercup (*Ranunculus repens*), knapweed (*Centaurea nigra*), cuckooflower (*Cardamine pratensis*) and black medick (*Medicago lupulina*).

Improved agricultural grassland is present in the townlands of Terry's-Land, Gortnamucky and Poulaniska, surrounding the study area. A small portion is located within the study area at Cobh Cross. Species present within the sward are typical of improved grasslands and include perennial rye-grass (*Lolium perenne*), timothy (*Phleum pratense*) and Yorkshire-fog (*Holcus lanatus*), with herbs including dandelion (*Taraxacum* agg.), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), creeping buttercup (*Ranunculus repens*) and ribwort plantain (*Plantago lanceolata*).

All of the aforementioned habitat types are considered to be very common and species-poor. They are considered to be of some, albeit limited value to local fauna and are of local importance (lower value).

4.3.1.2. Dry Calcareous and Neutral Grassland (GS1)

Large areas of neutral grasslands (GS1) are present at the northeast side of the Castlelake Avenue junction, the fields to the west of station road, the field to the east of the Well Lane, and a portion of the field to the east of the GAA pitches. Species in the sward include sweet vernal-grass (*Anthoxanthum odoratum*), timothy (*Phleum pratense*), Yorkshire-fog (*Holcus lanatus*), creeping bent (*Agrostis stolonifera*), rough meadow-grass (*Poa trivialis*), glaucus dedge (*Carex flacca*) and locally frequent sharp-flowered rush (*Juncus acutiflorus*) and soft rush (*Juncus effusus*) in wet depressions. Herbs present include creeping buttercup (*Ranunculus repens*), greater bird's-foot-trefoil (*Lotus pedunculatus*), curled dock (*Rumex crispus*), ragwort (*Senecio jacobea*), common mouse-ear (*Cerastium fontanum*) and white clover (*Trifolium repens*); with locally frequent common knapweed (*Centaurea nigra*), common bird's-foot-trefoil (*Lotus corniculatus*) and oxeye Daisy (*Leucanthemum vulgare*).

Neutral grasslands present within the study area, is generally considered to be of local importance (higher value) in light of its relatively higher species-diversity than the surrounding habitats, and the fact that it is a common habitat.

4.3.1.3. Recolonising bare ground (ED3)

Recolonising bare ground (ED3) habitat was noted within an area of recent scrub clearance, at the south of the study area east of the GAA pitches. Species present include horsetails (*Equisetum* sp.) and willow (*Salix* sp.). Large stands of Japanese knotweed are present throughout this area of recolonising land, in addition to stands along the adjacent hedgerow to the south. The location of Japanese knotweed is situated outside, but adjacent to, the perimeter of the red line boundary of the proposed project.

The habitat recolonising bare ground, within the survey area, is generally considered to be of local importance (lower value) in light of its relatively low species-diversity, and the fact that it is a common habitat.

4.3.1.4. Stone Walls and Other Stonework (BL1) and Earth Banks (BL2)

Stone walls with hawthorn hedgerows are present along the Well Lane south of the main street. Field boundaries along the Station Road are lined by earth banks vegetated by grass species, nettle and occasional bramble. Stonewalls supporting hedgerows and earth banks are considered to be of local importance (lower value) given their importance for commuting and foraging species within the landscape, their complex structure and their role in supporting invertebrate communities.

4.3.1.5. Eroding Rivers (FW1)

Watercourses in the survey area comprise small eroding streams (FW1) including the Anngrove and Woodstock streams. These are generally associated with field boundaries and are often heavily shaded by adjacent hedgerows. Generally, they do not contain riparian or aquatic species. The Woodstock stream is culverted under the railway line and Station Road and enters a field to the west of Station Road. The stream flows southwards along the western side of a treeline comprising ash, alder and sycamore. It then turns 90 degrees and flows west along the northern boundary of a construction site. The banks of the stream have been heavily modified during construction works and remain unvegetated, with earth mounds lining both sides of the watercourse. The stream is approximately 20cm deep and flows over a bed of gravel on mud. Small streams are considered to be of local importance (higher value), as they are linear features and are likely to be of some value for local fauna.

4.3.1.6. Hedgerows (WL1) and Treelines (WL2)

The hedgerows and treelines within the survey area are tall and often heavily managed. The hedgerows and treelines typically comprise bramble (*Rubus fructicosus* agg.), ivy (*Hedera hibernica*), bindweed (*Calystegia* sp.), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), elder (*Sambucus*

nigra), sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), alder (*Alnus glutinosa*), birch (*Betula* sp.) and willow (*Salix* sp.).

Hedgerows within the survey area are not considered to be of high value, as they are heavily managed and species poor. Hedgerows and treelines within the study area are considered to be of local importance (higher value), as they are linear features and are likely to be of some value for local fauna.

4.3.1.7. (Mixed) Broadleaved Woodland (WD1)

An area of broadleaved woodland comprising sycamore (*Acer pseudoplatanus*), oak (*Quercus* spp.), ash (*Fraxinus excelsior*), elm (*Ulmus glabra*), cherry (*Prunus* spp.), blackthorn (*Prunus spinosa*), hazel (*Corylus avellana*) and bramble (*Rubus fruticosus* agg.) are present around Cobh Cross junction and verges of junctions in Carrigtwohill. The woodland is likely to be of some importance to local fauna species but are located adjacent to busy roads which may prevent access.

Overall, the mixed broadleaf woodland habitats within the study area are considered to be of some local importance. The habitat provides refuge for local fauna. Woodland is relatively scarce in the local landscape and therefore it has been assessed as being of local importance (higher value).

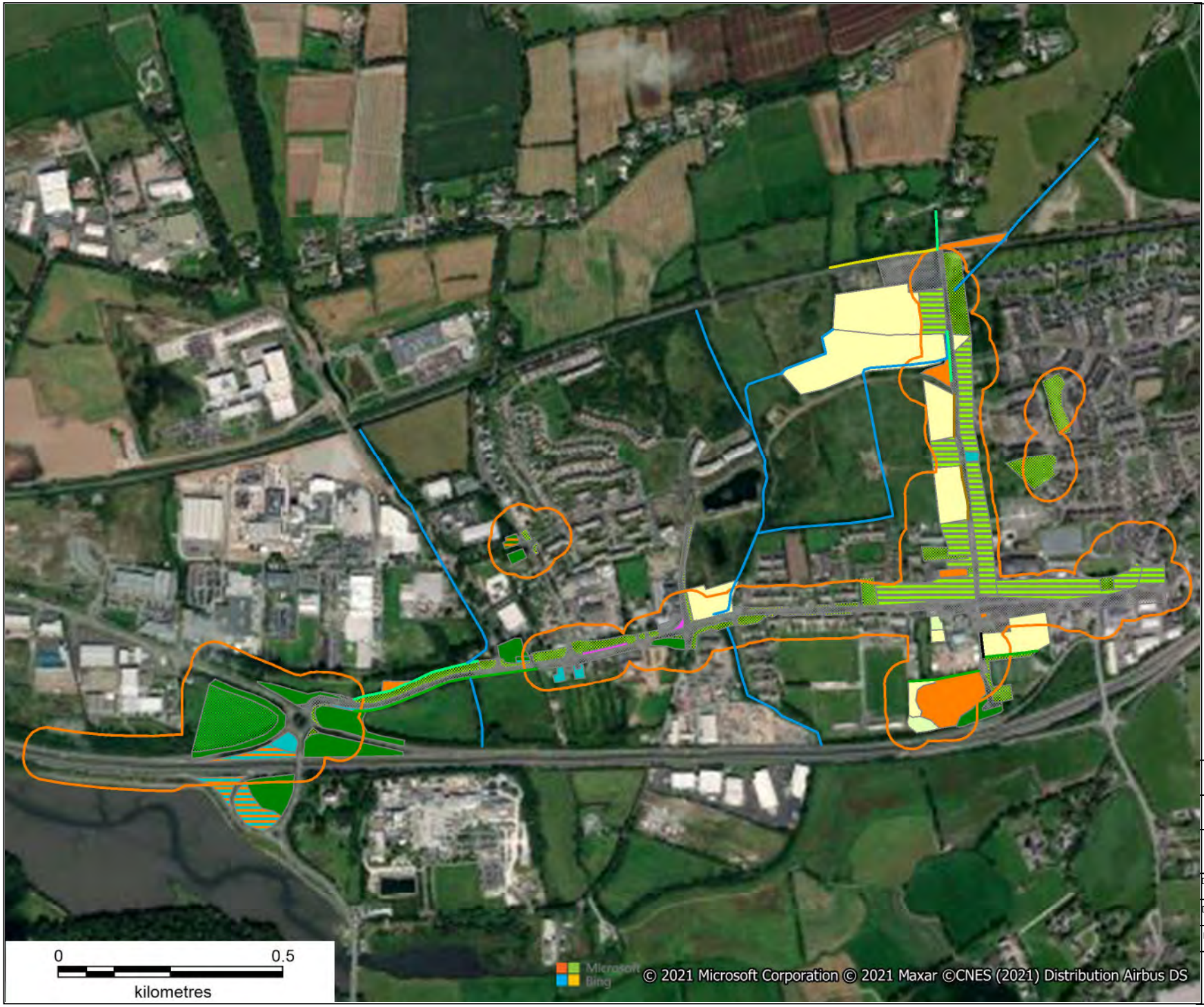
4.3.1.8. Scrub (WS1)

A large area of willow scrub (WS1) is present in the field to the east of the GAA pitches. The trees are approximately 3m tall and densely fill the area. Species richness is low in this area, but it is likely that is provides refuge for local fauna. Tall grasses continue throughout. Large stands of Japanese knotweed are present to the south of this scrub. The location of Japanese knotweed is situated outside, but adjacent to, the perimeter of the red line boundary of the proposed project. The habitat is not considered to be species-rich but likely provides refuge to local fauna and is considered to be of local importance (higher value).

4.3.1.9. Non-native invasive species

As detailed in the habitat descriptions above, Japanese knotweed, which is listed on the third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/ 2011 was recorded within the survey area.

Butterfly bush, traveller's joy and winter heliotrope are non-native invasive plants present in hedgerows and road verges, however are not listed on the third schedule of the 2011 Regulations. However, these are medium – high impact species (O'Flynn *et al.*, 2014) that may negatively affect the local biodiversity of the area.



N

Legend

- Ecological Study Area

Habitats (Fossit 2000)

- BC4 - Flower beds and borders
- BL3 - Buildings and artificial surfaces
- BL3 / GA2 - Buildings and artificial surfaces / Amenity grassland
- ED3 - Recolonising bare ground
- GA1 - Improved Agricultural Grassland
- GA2 - Amenity grassland
- GS1 - Dry calcareous and neutral grassland
- GS2 - Dry Meadows and Grassy Verges
- GS2 / WS1 - Dry Meadows and Grassy Verges / Scrub
- WD1 - Mixed Broadleaved Woodland
- WD1 / GS2 - Mixed Broadleaved Woodland / Dry Meadows and Grassy Verges
- WD1 / WS1 - Mixed broadleaved woodland / scrub
- WS1 - Scrub

- FW1 - Eroding/ upland rivers
- WL1 - Hedgerow
- WL2 - Treeline
- WL2 / WS1 - Treeline / scrub
- BL1 / WL1 - Stone wall / Hedgerows
- BL2 - Earth bank

Client:	Cork County Council
Project:	Carrigtwohill URDF Initiative Public Realm Infrastructure Bundle
Title:	Habitats within Ecological Study Area

Drawn:	Checked:	Authorised:
EN	NS	PO'D
Date: 08/07/2021	Date: 08/07/2021	Date: 08/07/2021
Drawing No: 4.2		Rev: 1.0

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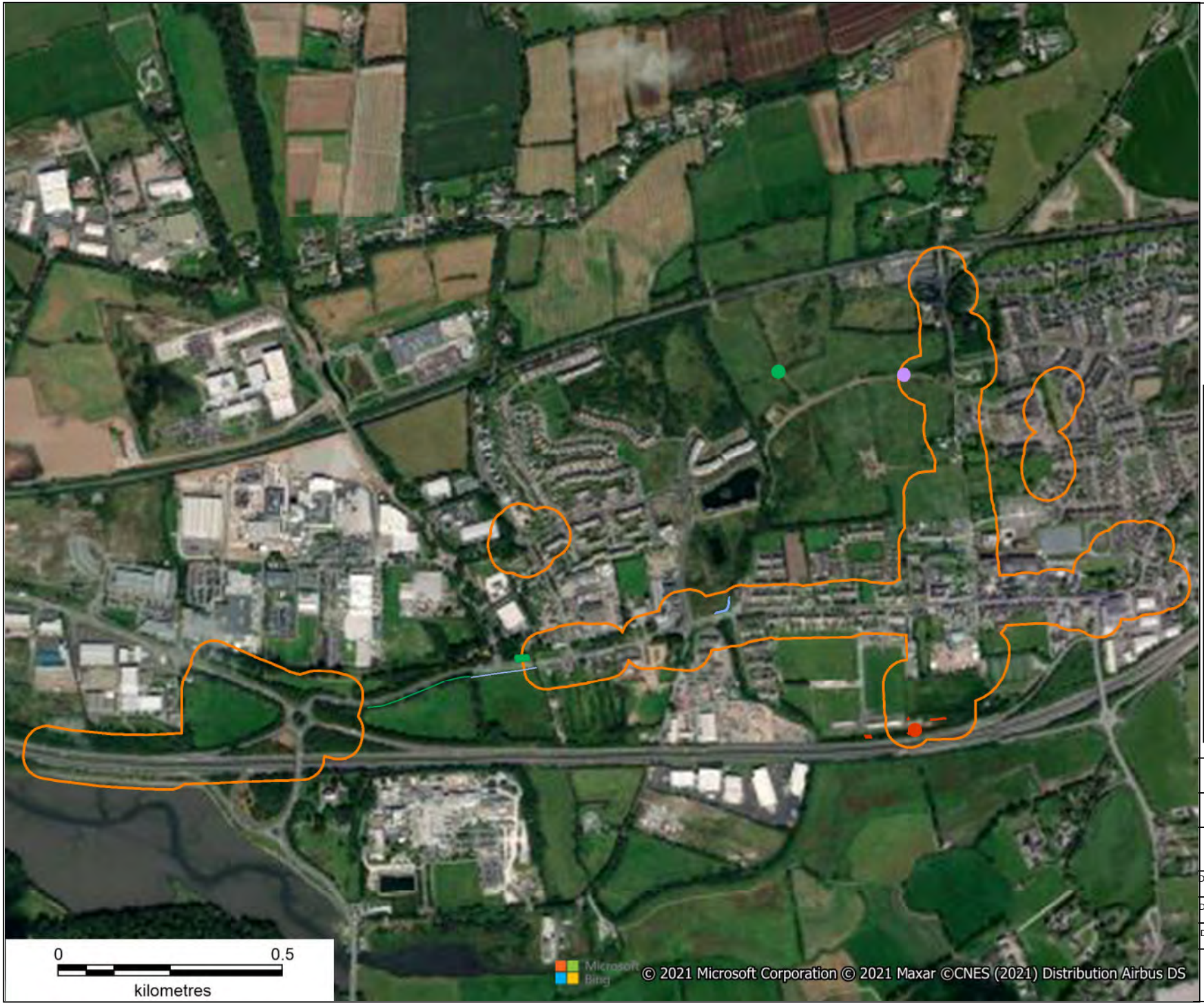


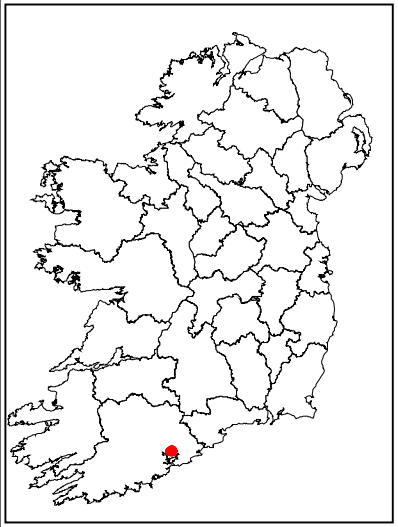
N

Legend

- Ecological Study Area

Invasive Alien Species

- Butterfly bush
- Japanese knotweed
- Old man's beard
- Winter Heliotrope



Client:	Cork County Council
Project:	Carrigtwohill URDF Initiative Public Realm Infrastructure Bundle
Title:	Non-native invasive species within Ecological Study Area

Drawn:	Checked:	Authorised:
EN	NS	PO'D
Date: 08/07/2021	Date: 08/07/2021	Date: 08/07/2021
Drawing No: 4.3		Rev: 1.0

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4.3.2. Fauna

4.3.2.1. Amphibians

No signs of newt or frog were observed within the study area during the course of the site walkover. There is potential habitat for amphibians in wet depressions within fields and areas of standing/ very slow flowing water associated with streams across the study area. As frogs are associated with a large variety of habitats in Ireland and are widespread and frequent in their distribution (Reid *et al.*, 2013), their absence cannot be ruled out. No common lizard (*Zootoca vivipara*) were recorded during the course of the site surveys. There is potential for this species to utilise areas of woodland and grassland at field margins. The survey area is therefore considered to be of local ecological importance (lower value) for amphibians.

4.3.2.2. Avifauna

A total of twenty-two species of bird were recorded during the breeding bird survey within the study area (as listed in Table 4.5). In accordance with BTO categories, one species was identified as 'confirmed breeding' within the study area, two species were identified as 'probably breeding', seventeen species were identified as 'possible breeders' and the remaining two species were identified as 'non-breeders'.

No Annex I or BoCCI Red listed birds were recorded within the study area during the course of surveys undertaken in 2020. One BoCCI Amber listed bird species was recorded as a possible breeder within the study area during the course of the breeding bird survey; House Sparrow were both recorded singing within the study area. No direct evidence was recorded that these species breed within the study area, however there is suitable nesting habitat within treelines, hedgerows and woodland. Swallows were observed nesting within a disused house located outside the red line boundary of the proposed project and it is likely that this species breeds in agricultural barns throughout the study area.

The remaining nineteen bird species recorded during the breeding bird surveys are Green listed and comprise a range of relatively common species typically associated with the hedgerow, garden and agricultural habitats present within the study area.

Table 4-5 - Breeding birds recorded within the study area.

Species	Breeding Evidence*	BoCCI Status	EU Birds Directive	Nest location within the study area
Blackbird (*Turdus merula*)	Probable (P)	Green		-
Blackcap (*Sylvia atricapilla*)	Possible (H)	Green		-
Blue Tit (*Parus caeruleus*)	Possible (H)	Green		-
Buzzard (*Buteo buteo*)	Non-breeding (F)	Green		-
Chaffinch (*Fringilla coelebs*)	Possible (H)	Green		-
Chiffchaff (*Phylloscopus collybita*)	Possible (S)	Green		
Collared Dove (*Streptopelia decaocto*)	Possible (H)	Green		-
Dunnock (*Prunella modularis*)	Possible (H)	Green		-
Garden Warbler (*Sylvia borin*)	Possible (H)	Green		-
Goldfinch (*Carduelis carduelis*)	Possible (H)	Green		-
Grey Heron (*Ardea cinerea*)	Non-breeding (F)	Green		-
Hooded Crow (*Corvus corone cornix*)	Possible (H)	Green		-
House Sparrow (*Passer domesticus*)	Possible (H)	Amber		-

Species	Breeding Evidence*	BoCCI Status	EU Birds Directive	Nest location within the study area
Long-tailed Tit (*Aegithalos caudatus*)	Possible (H)	Green		-
Magpie (*Pica pica*)	Possible (H)	Green		-
Pheasant (*Phasianus colchicus*)	Possible (H)	Green		-
Robin (*Erithacus rubecula*)	Possible (H)	Green		-
Rook (*Corvus frugilegus*)	Possible (H)	Green		-
Song Thrush (*Turdus philomelos*)	Possible (S)	Green		-
Swallow (*Hirundo rustica*)	Confirmed (ON)	Amber		Disused house outside the red line boundary of the proposed project.
Woodpigeon (*Columba palumbus*)	Possible (H)	Green		-
Wren (*Troglodytes troglodytes*)	Probable (A)	Green		-

4.3.3. Terrestrial Mammals

No evidence of otter was recorded within the study area during the course of the site walkovers. The watercourses present in the study area are small, highly modified and extensively culverted. As such, the study area provides limited foraging and commuting habitat for otter.

No badger setts or signs of badger activity were recorded within the study area. There is suitable habitat for badgers in the field boundaries and mammal tracks were occasionally recorded at field boundaries.

No signs of European hedgehog, red squirrel or Eurasian pygmy shrew were noted within the survey area.

The survey area is considered to be of local ecological importance (lower value) for terrestrial mammals.

4.3.3.1. Bat Activity Surveys

Mature trees within the survey area were checked for evidence of bats and features that could be used as potential bat roosts. A number of beech trees located at the parochial house on Station Road contained suitable bat roosting features.

Two disused/ derelict structures were identified within the proposed study area along the main street during the preliminary ecological appraisal. The suitability of these structures to provide roosting habitat for bats is described below. Figure 4.4 displays the structures and trees with bat roost potential. Appendix B details the approximate extent of hedge/treelines that will be removed during the proposed project within Carrigtwohill village. Please note that trees no. 54 and 55 and those within the grounds of the Parochial House will not be removed as part of the proposed project.

“Structure 4” is a single storey disused cottage with rendered stone walls and a slate tile roof. There are potential access points for bats via roof tiles, broken soffits and gaps around window boards. Potential roosting features include the soffits and, potentially, the internal roof space (the building was not accessible for internal inspection). This structure is located adjacent to Cork Road in Carrigtwohill, which is a busy road lit by street lights. The structure does have some connectivity to the wider landscape via hedgerows to the south. The building does not appear to provide appropriate conditions for roosts of high conservation value and, as such, is considered to be of moderate suitability as a roosting habitat. No evidence of bats was recorded during the course of the external inspection of the building. An emergence roost survey of Structure 4 was undertaken on 27th July 2020. No bats were recorded emerging from Structure 4.

"Structure 5" is a single storey disused cottage with rendered stone walls and a slate tile roof and a small outbuilding to the south with a corrugated roof. There are potential access points for bats via roof tiles, broken soffits and edges of window boards. Potential roosting features include the soffits and, potentially, the internal roof space (the building was not accessible for internal inspection). This structure is located adjacent Cork Road in Carrigtwohill, which is a busy road lit by street lights. The structure does have some connectivity to the wider landscape via hedgerows to the south. The building does not appear to provide appropriate conditions for roosts of high conservation value and, as such, is considered to be of moderate suitability as a roosting habitat. No evidence of bats was recorded during the course of the external inspection of the building. An emergence roost survey of Structure 5 was undertaken on 27th July 2020. No bats were recorded emerging from Structure 5.

The bat activity transects undertaken on 21st July 2020 and 5th August 2020 recorded three species of bat within the study area: soprano pipistrelle, common pipistrelle and Leisler's bat. Soprano pipistrelle was the most frequently recorded species, followed by Leisler's bat, then common pipistrelle. All three species of bat were recorded foraging and commuting along hedgerows and treelines across the study area. Figure 4.5 displays the results of the bat activity survey.

Features in the study area of potential use by foraging and commuting bats include linear features such as scrub, hedgerows and treelines and associated watercourses/drainage ditches, which provide connectivity between the study area and other foraging areas in the wider landscape.

Results from bat surveys undertaken in July and August 2020 indicate that there is a minor soprano pipistrelle roost in Parochial House, Station Road. In accordance with Bat Mitigation Guidelines for Ireland, this roost is considered to be of low conservation significance. Please note that no works to the Parochial House are required as part of the proposed project. No bat roosts were recorded in mature trees and structures within the study area that were identified during the preliminary roost surveys as supporting potential roosting features.

In relation to the foraging and commuting bat species recorded at the site, the bat populations are considered to be of local importance (higher value).

Figure 4-4 - Buildings and trees within the survey area and potential for roosting bats.

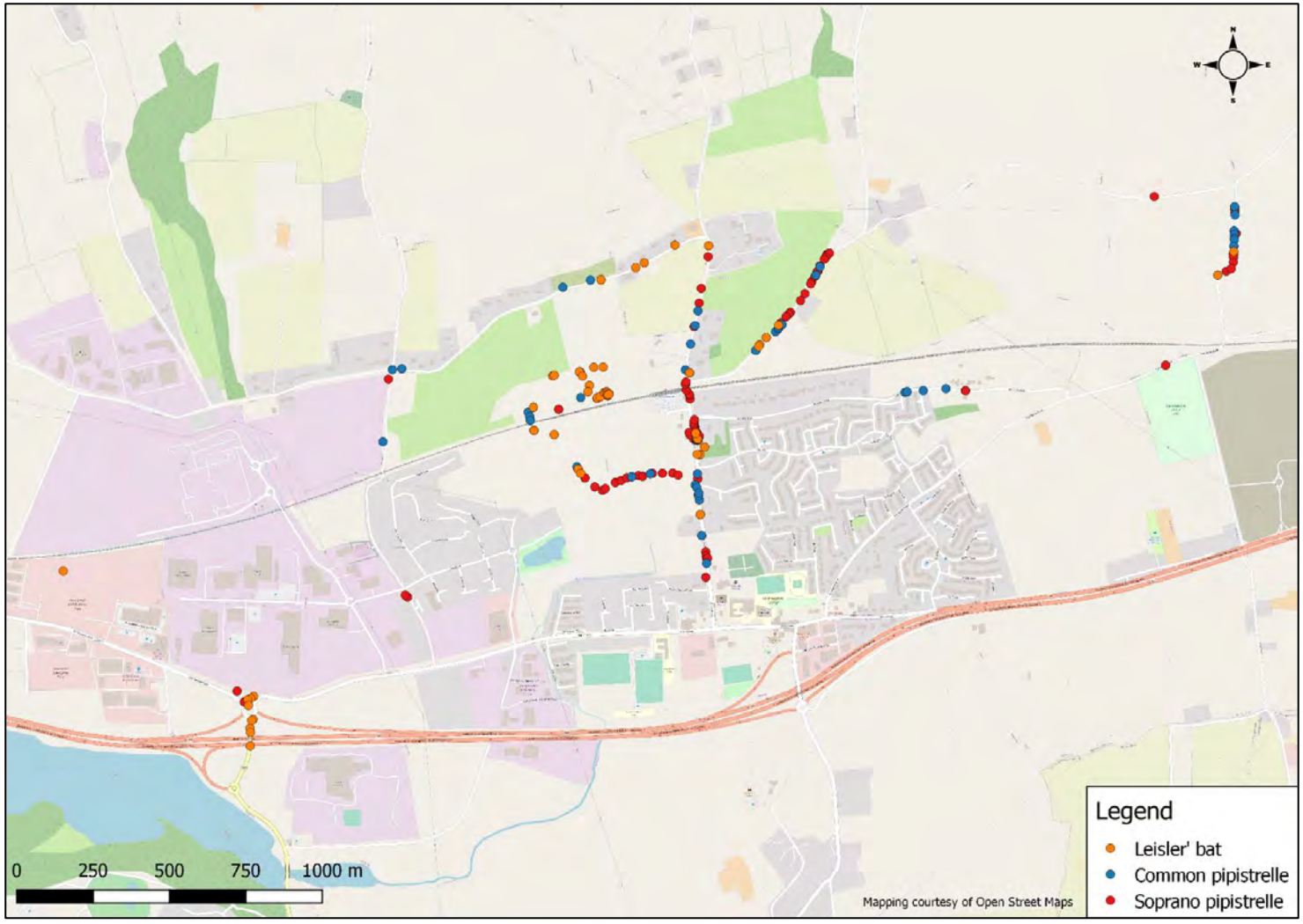

Figure 4-5 - Bat activity survey results.

4.4. Ecological Evaluation Summary

Table 4-6 below, summarises all ecological features identified based on the data collated and collected from the desk study and field survey results.

Table 4-6 - Ecological Evaluation.

Habitat / Species	Ecological Valuation
Designated Sites	National-International
Spoil and bare ground (ED2) and Recolonising bare ground (ED3)	Local importance (lower value)
Flower Beds and Borders (BC4), Amenity Grassland (GA2), Grassy Verges (GS2) and Improved Agricultural Grassland (GA1)	Local importance (lower value)
Dry Calcareous and Neutral Grassland (GS1)	Local importance (higher value)
Recolonising bare ground (ED3)	Local importance (lower value)
Stone Walls and Other Stonework (BL1) and Earth Banks (BL2)	Local importance (lower value)
Eroding Rivers (FW1)	Local importance (higher value)
Hedgerows (WL1) and Treelines (WL2)	Local importance (higher value)
(Mixed) Broadleaved Woodland (WD1)	Local importance (higher value)
Scrub (WS1)	Local importance (higher value)
Bats	Local importance (higher value)
Other terrestrial mammals	Local importance (lower value)
Amphibians	Local importance (lower value)
Birds	Local importance (higher value)

5. Impact Assessment and Mitigation

This section examines the potential sources of impact that could potentially result in adverse impacts arising on biodiversity, and protected habitats and species, that occur within the zone of influence of the proposed project, as identified by the desk study and field surveys detailed in Section 4. This section should be read in conjunction with the assessment methodology detailed in Section 3.

5.1. Do Nothing Scenario

In the absence of the proposed infrastructure project, hedgerows and treelines would remain intact with some of the trees potentially maturing further. This could provide additional suitable habitat for nesting birds and roosting bats in trees. Existing trees with bat roost features would also remain *in-situ*. The existing road verges and neutral grassland areas along the carriageways would also remain in situ and at the existing extent within Carrigtwohill village.

The potential value of the footprint of the proposed project to species such as nesting birds and bats would continue, provided that the linear landscape features (hedgerows and treelines) and areas of natural grasslands, scrub and woodland would not be lost due to other forms of development.

5.2. Identification of Potential Sources of Impact

In the absence of mitigation measures the proposed project could have a range of potential impacts on the ecological receptors within the zone of influence of the proposed project during the construction and operation phases.

5.2.1. Physical Damage/ Habitat Loss

Physical damage includes the degradation to, modification, fragmentation or loss of habitats. Direct physical damage of habitats could occur within working areas of the proposed project and along access routes where construction works are undertaken. Physical damage of habitats can also be an indirect impact and could occur, for example, through the introduction of fine sediments into an aquatic system, causing changes to the particle composition of the benthic habitats. Physical damage may be temporary or permanent in nature.

5.2.2. Changes in Physical and Hydrological Regime

Changes in the physical and hydrological regime of waterbodies such as rivers and estuaries can alter characteristics such as geomorphological processes (sediment transport, erosion and deposition), salinity levels and tidal regimes. Changes in hydrological regimes can affect the timing and rate of flow of waterbodies, which can cause effects such as a reduction in aquifer recharge and evapotranspiration, and a reduction or increase in the frequency, extent and duration of storm flow, which can affect the length of time habitats and species are exposed to base or storm flow conditions. Changes in physical and hydrological regime can be both direct and indirect impacts and can be temporary or permanent in nature, for example the temporary fluming of a river during construction or the permanent nature of a surface water drainage system during the operation of a project.

5.2.3. Disturbance

Disturbance can cause sensitive species to deviate from their normal and preferred behaviour, resulting in stress and increased energy expenditure. Disturbance can result in species being displaced from suitable habitat areas that provide areas for feeding and foraging, commuting routes, and resting and breeding sites. Physical disturbance of species can also result in direct mortalities of species and thus, disturbance impacts can be both direct and indirect and may be temporary or permanent in nature. Examples of direct disturbance includes activities such as damage to a breeding or resting site of a protected species, e.g. an active bird nest, bat roost, badger sett or otter holt.

Indirect disturbance may result from the presence of works crews and personnel on site during construction, noise emanating from a construction site or artificial lighting of a bat foraging area, causing bats to avoid the area.

5.2.4. Changes in Water Quality

The release of pollutants to water can impact upon the relevant waterbodies and the species they support. This can result in impacts such as increased turbidity of the water column, a reduction in photosynthesis, contribution to eutrophication and changes to the species composition of the system as a result. The degree of impact depends on the type of pollutant released and the nature of the receiving receptor. For example, the release of fine sediments to a stream or river is likely to cause siltation of the river bed and interrupt the functioning of species, from aquatic plants to macroinvertebrates to fish, and larger predators that depend on these biotic groups as a food supply, e.g. otter and kingfisher. Impacts to water quality could be temporary in the form of surface water run-off during construction, or permanent in the form of a continued discharge impacting negatively on the receiving environment during the operation of the project.

5.2.5. Dispersal of Invasive Species

Non-native invasive species can have negative impacts on biodiversity. Negative impacts of non-native invasive species on native biota occur through competition, predation, herbivory, habitat alteration, disease and genetic effects such as hybridisation. In the cases of non-native invasive species such as three-cornered garlic, Himalayan balsam, Japanese knotweed and Nuttall's waterweed, the main impacts are a reduction in species diversity due to dense plant growth, heavy shading and disruption of trophic levels. These species can potentially be spread via plant fragments and soil containing plant material, and by vectors such as machinery and personnel.

5.3. Project Design

It is important to note that the proposed infrastructure project was developed with reference to the National Roads Authority (NRA) and Transport Infrastructure Ireland (TII) project management guidance (NRA, 2010; TII, 2017), as although this is not a national roads project, it is making changes and amendments to existing road infrastructure and must be cognisant of the design and traffic management standards. Therefore, the project has been progressed through the design stage, which involves the examination of alternative options to determine a preferred option, and the development of the project design based on both technical and environmental inputs.

A Constraints Report was prepared during the development of the proposed project for the selection of the preferred scheme option. Thus, during the development of the project certain design measures were incorporated into the project to reduce the impact of the proposed project on the environment.

As outlined in Section 1, project specific plans and supporting assessments have been prepared in support of the concept and design phases of the proposed project to ensure the design of a technically sound and sustainable project; surface water drainage plan, flood risk assessment, hydrological assessment and archaeological assessment.

5.4. Impacts during Construction

5.4.1. Designated Sites

The proposed project is hydrologically connected to Cork Harbour SPA and the Great Channel Island SAC. The likelihood of significant effects on both European sites are assessed in the accompanying Screening for Appropriate Assessment report and are discussed below. The report concludes that '*it can be excluded, on the basis of objective information, that the proposed project, individually or in-combination with other plans and projects, will have likely significant effects on the Great Island Channel SAC and Cork Harbour SPA in view of their conservation objectives. Thus, it is concluded that the proposed project does not need to proceed to Appropriate Assessment*'.

As detailed in Table 4-2, seven pNHAs are hydrologically connected to the proposed project, however they are located at a remove from the proposed project and either within the Great Island Channel or Cork Harbour. Due to the nature, scale, extent and location of the proposed project, direct impacts will not occur as a result of the proposed project. The proposed project is hydrologically connected to Slatty Water estuary, however the only element of the proposed project that interacts any of the watercourses in the study area is the re-alignment of ca. 60m of the Woodstock stream. The realignment of the Woodstock stream will be conducted by open trenching a new channel alongside the existing stream. The new channel will be created off-line from the live channel and therefore will be created in the dry. Once this channel has been excavated to dimensions that reflect those of the existing stream, the downstream end of the new channel will be joined to the existing stream. The upstream end will then be connected to the culvert and the stream diverted. The Woodstock Stream is a highly modified channel and currently runs through a large area of open land and an operational construction site in the lands west of Station Road. The commissioning of the new channel will likely result in a minor and localised plume of suspended soils as the stream flows over the newly excavated soils, however this will be temporary and localised in nature.

Along a localised area of Station Road, a new section of surface water drainage system will be installed, due to the fact that there is no existing surface water drainage system in place, and will tie in with the existing drainage system. There are no watercourses or open drains adjacent to this works area. The remainder of excavations, clearance works, laying of new pavements, road infrastructure and associated services shall all be conducted with the existing road networks and the adjoining verges. It should be noted that there will be no works to the existing drainage system and only minor works, such as the re-location of gullies is required. Thus, any runoff from works will enter the existing drainage system, which is equipped with petrol interceptors and catch pits. Given the depth of the excavations required to facilitate these works, it is not anticipated that groundwater will be encountered. Given the nature, extent and scale of works, it is not anticipated that the aforementioned work types will incur a deterioration in water quality of waterbodies or, in turn, cause a negative impact on the SAC, SPA or the pNHA sites which they encompass.

The proposed works at Cobh Cross is the closest element of the proposed project to the SPA. The activities and events identified to have potential to cause disturbance to waterbirds within sub-sites OL590 and OL595 are non-marina moorings, birdwatching and fishing (NPWS, 2014). Given the surrounding environment of the proposed works at Cobh Cross, and the presence of ambient noise from high volumes of road traffic in the area, the use of machinery and presence of personnel at this proximity to the SPA is not anticipated to cause disturbance to the waterbirds of the SPA. Please note that the red line boundary of the proposed project at Cobh Cross is ca. 20m from the SPA and on the opposite side of the N25 dual carriageway (Appendix A). The works at Cobh Cross will involve works such as open excavations, earth works and re-surfacing of surfaces, which will be carried out within the red line boundary of the project. These works fall into the categories of 'moderate to low' and 'low' disturbance categories, as detailed in the TIDE toolbox[9]. These works are not activities that create sudden bursts of noise, such as piling or blasting. These works will create low to moderate levels of constant noise, which are less disruptive to waterbirds. It is not anticipated that these activities will significantly increase the ambient noise levels at the estuary. Due to the nature, scale and location of the proposed works at Cobh Cross, it is not anticipated that level of noise during the construction

[9] TIDE toolbox - TIDE tools (tide-toolbox.eu).

phase of the project will result in noise levels that would cause disturbance to or displacement of waterbirds of the SPA.

The remainder of the proposed project is located throughout Carrigtwohill village. The lands in which the proposed project is situated do not offer suitable foraging or nesting habitat for bird species of the SPA. Built lands such as commercial business parks and housing estates, roads and agricultural lands are situated between the European sites and the proposed project. Thus, due to the nature and location of the proposed project, indirect impacts to bird species of the SPA are not anticipated during the construction phase of the proposed project.

Potential impacts to Ballynaclashy House pNHA, which contains a nursery colony of Whiskered bat, are scoped out due to the results of the bat surveys. Although the proposed project is within the bats' foraging range of the pNHA, it is unlikely that bats commute southward due to the preferential woodland foraging habitat (Buckley *et al.*, 2012) in the immediate vicinity of Ballynaclashy House. No whiskered bats were recorded foraging within the study area. Therefore, no impact to Ballynaclashy House pNHA is anticipated as a result of the proposed project.

5.4.2. Habitats and Flora

5.4.2.1. Habitat Loss

The proposed project will result in the localised loss of features such as agricultural grassland, amenity grassland and road verges, neutral grassland, scrub, linear woodland and individual trees and hedgerows. All these habitats are either of lower or higher local importance. The loss of habitats such as agricultural and amenity grassland within the study area is a neutral effect that is not significant. Neutral grassland is of local importance (higher level) and offers natural diversity in the landscape. The loss of this habitat is a slight negative impact.

Linear woodland, scrub, hedgerows and treelines are of local importance (higher level). Habitat fragmentation will occur where the proposed project removes or intersects these habitats within the study area. However, it should be noted that many sections of hedgerow that will be removed along the Main Street of Carrigtwohill are isolated and fragmented sections of hedgerow that are either heavily managed ornamental features or patchy and sparse at the base. It should also be noted that the habitat survey (Section 4.3.1.6) considered the hedgerows within the survey area not to be of high value, as they are heavily managed and species poor.

Appendix B details the approximate extent of hedgerow and trees that will be removed during the proposed project within Carrigtwohill village. The main area of loss of hedgerow will be along the western side of Station Road. The drawings in Appendix B do not detail the element of the proposed project at Cobh Cross. Localised areas of linear woodland habitat at Cobh Cross will be lost, which is screening planting of the N25 and adjoining roads, due to the expansion of the intersection, re-alignment of the slip roads and provision of the pedestrian/ cycle path. The areas of habitat loss are small and very localised in nature therefore this loss is a negative effect that is minor in significance. Habitat loss, as a result of the proposed project, will be permanent in nature.

As detailed in Section 5.4.1 above, the proposed project will only interact with the Woodstock stream due to the re-alignment of the channel, which will be carried out off-line. The Woodstock stream is a highly modified channel. The Woodstock stream is a highly modified channel and currently runs through a large area of open land and an operational construction site in the lands west of Station Road. The commissioning of the new channel will likely result in a minor and localised plume of suspended soils as the stream flows over the newly excavated soils, however this will be temporary and localised in nature and is a slight negative impact.

In terms of groundwater resources, no significant impacts are anticipated as a result of the proposed project, due to the nature, scale, extent and design of the proposed project. Given the depth of the excavations required to facilitate these works, it is not anticipated that groundwater will be encountered.

5.4.2.2. Rare and Protected Flora

There are no FPO species or red-listed species within the zone of influence of the proposed project and therefore, no impact is anticipated to such species as a result of the proposed project.

5.4.2.3. Invasive species

The proposed project will not directly disturb any invasive species listed on the third schedule of the Birds and Habitats Regulations 2011. Japanese knotweed is located adjacent to, but outside the red line boundary of the proposed project. It is also not adjacent to any watercourse. There is risk that this Japanese knotweed stand could spread in the intervening time between the granting of consent and the construction phase of the proposed project. This is dealt with further in Section 5.7 'Avoidance and Mitigation Measures'.

Although, invasive species are not an ecological feature that is evaluated, they could potentially be spread within the study area or off-site during the construction phase. Given the potentially large range of geographic scales that could be a receptor to the spread and establishment of invasive species, in particular off-site, (e.g. local to international scale), their spread would result in a negative and significant effect.

5.4.3. Fauna

5.4.3.1. Bats (foraging populations)

Foraging bats could potentially be negatively impacted during the construction phase of the proposed project due to habitat loss of treelines and hedgerows. Please note that the areas of the proposed project are predominantly present in areas that are currently lit by existing street lighting. The impact of localised habitat loss will be permanent in nature and a negative effect that is minor in significance.

Disturbance during construction will be a temporary and occasional effect, as the standard working hours will apply; 08:00-18:00 Monday to Friday and 08:00-13:00 on Saturday when bats are not foraging. However, there is a possibility that occasional night-time works may be required. Inappropriate lighting of treelines and hedgerows could disturb foraging bats along linear foraging and commuting routes. The effect of foraging bats is likely to be a temporary and slight effect.

5.4.3.2. Bats (potential roosting populations)

There are no bat roosts in buildings or structures within the study area of the proposed project.

A number of trees with PRFs have been identified within the footprint of the proposed project, however these will not be removed during the construction phase of the proposed project, as detailed in Appendix B. Therefore, direct impacts to roosting bats will not occur.

However, tree roosts can be transient in nature and trees or buildings may develop features suitable for roosting bats in the intervening time between the granting of consent and the construction phase of the proposed project. This is dealt with further in Section 5.7 'Avoidance and Mitigation Measures'.

5.4.3.3. Breeding birds

During the construction of the proposed project, activities and works such as vegetation clearance could result in the disturbance and / or mortality of birds and their eggs or chicks. Amber and Red listed birds were recorded in the study area during the desktop study and the field surveys. Breeding birds are evaluated at local importance (higher level) and potential impacts during construction would result in a negative significant effect, that is short-term in nature.

5.4.3.4. Amphibians

The drainage ditches and lands within the study area, e.g. are potentially suitable spawning and refuge sites for frogs. The activities of the construction phase could damage or injure spawn, tadpoles, froglets, frogs and result in the localised loss of suitable supporting habitat. As the surveys were conducted late in the survey season regarding frogs, the precautionary principle is applied, and it is presumed that frogs use the suitable habitat features within the study area. Thus, the potential impact on frogs could be significant and short-term in nature.

5.4.3.5. Terrestrial Mammals

The field survey results did not record resting places or activity signs or terrestrial mammals such as otter, badger, hedgehog, red squirrel or pygmy shrew. However, the construction phase could result in the disturbance of small and more discrete animals within the works area, such as hedgehog, stoat and pygmy shrew. The population and distribution of these within the study area is unknown and therefore, a precautionary effect is assumed that is a significant short-term effect.

5.5. Impacts during Operation

5.5.1. Designated Sites

As detailed above, the proposed project is hydrologically connected to Cork Harbour SPA, the Great Channel Island SAC and the seven pNHAs that are encompassed within either the Great Island Channel or Cork Harbour.

The operation of the proposed project will not result in an impact to the physical and hydrological regime of the watercourses with the study area or waterbodies downstream, as determined by the FRA and the design of the surface water drainage system. The discharges from the surface water drainage system will not impact upon the water quality of the receiving waterbodies due to the design of the system and incorporation of petrol interceptors, catch pits and attenuation tanks fitted with hydro brakes to filter and control the release of water to receiving water bodies at greenfield rates, ensuring that all road runoff will flow to the existing drainage system. Thus, a neutral imperceptible effect is anticipated.

5.5.2. Habitats and Flora

As outlined above regarding designated sites hydrologically connected to the proposed project, all road runoff will flow to the existing drainage system. Changes in water quality are not anticipated due to the design of the drainage system. Thus, a neutral imperceptible effect is anticipated.

During the maintenance of the newly installed / upgraded infrastructure, including roads, car parking and set down areas, utilities and surface water drainage system, small quantities of lubricant oils, fuel and chemicals may be brought to site. In the unlikely event of a spill, this would result in a slight adverse effect directly to groundwater and indirectly to surface water via groundwater migration. This effect would be localised and temporary in duration.

Two Biodiversity Areas will be created at the east and west of Station Road. It is intended that these will comprise soft landscaped areas of native planting, with planted trees and a footpath to provide access to the areas for local residents. The establishment of such areas is a long-term positive impact.

The design drawings of the completed project (Appendix A) illustrate soft landscaped areas and verges, proposed locations for tree planting and proposed re-instatement of hedgerow planting and thus, the proposed project will not result in an overall net loss. The implementation of this landscaping and planting is dealt with further in Section 5.7 ‘Avoidance and Mitigation Measures’. The element of the proposed project at Cobh Cross junction will remove approximately 2,802m² of trees and hedgerows and will re-plant approximately 2,202m² of trees and hedgerows. Along Main Street and

Station Road the length of hedgerow that will be removed is approximately 430m and 66 trees will be removed. The proposed project will plant approximately 187m of new hedgerow and plant 203 trees within soft landscaped areas and verges (Appendix A). Although the re-planted length of hedgerow is less than that removed, the number of re-planted trees within soft landscaped areas and verges is significantly greater than that being removed. Given the ornamental nature, poor quality and fragmented nature of many hedgerows within the study area, the planting of new good quality hedgerows and creation of soft landscaped areas and verges planted with trees will not result in an overall net loss.

During the operation of the proposed project, there are no other potentially significant impacts anticipated for habitats or flora in the vicinity of the project.

5.5.3. Fauna

During the operation of the proposed project, the only ecological receptor likely to be impacted are foraging bats. Foraging bats could be impacted by the breaks created in the treelines and hedgerows used for foraging and commuting, where the proposed project has removed such habitats or where it intersects these linear landscape features. The creation of open space in these linear features may cause bats to alter their flight height, which would increase the risk of vehicle collisions, and can act as barriers of movement (Fensome & Mathews, 2016). Section 5.7 details the implementation of landscaping features, particularly along Station Road on which bat commuting/foraging activity was recorded.

The direct and indirect disturbance impacts to foraging bats outlined above would be long-term in nature and result in a significant negative effect. Please note that the areas of the proposed project are predominantly presently in areas that are currently lit by existing street lighting and therefore, indirect disturbance due to the presence of artificial lighting is not anticipated. For health and safety, it would not be feasible to remove existing street lighting from the urban/sub-urban areas of Carrigtwohill village under the remit of the proposed project.

5.6. Cumulative Impacts

Cumulative impacts with the following plans and projects were considered during the preparation of this report. The search of Cork County Council's planning database was map-based.

The Cork County Development Plan 2022-2028 sets out policies and objectives for the development of the County during the period of the Plan. The Plan seeks to secure the sustainable development and improvement of the economic, environmental, cultural and social assets of Cork County. The Plan has outlined objectives for biodiversity within the county. These include:

- Providing protection to all designated sites, national and European, and to maintain or develop linkages between these,
- Providing protection to protected plants and animals in accordance with legal requirements, and
- Retain areas of local biodiversity value, ecological corridors and habitats which contribute to the county ecological network, to protect them from inappropriate development.

A NIS was prepared for the Cork County Development Plan which assessed the Plan and its potential to adversely affect the integrity of European sites. The findings of the NIS were integrated into the Plan, ensuring that potential impacts were avoided, reduced or offset. Thus, an AA determination was made by Cork County Council that the Plan will not adversely affect the integrity of European sites due to the incorporation of mitigation measures into the Plan as a result of the AA process.

Three schools (Planning Application: 195707) and associated internal infrastructure is currently undergoing construction to the west of Station Road. This development is located on both sides of the Woodstock Stream for about 700m from the end of the extent to be realigned in this proposed public realm infrastructure project. The development of the school will be completed prior to the

commencement of the Public Realm Project. The school development has implemented a Construction and Environmental Management Plan detailing protective measures for the Woodstock stream, thus mitigating the effects of pollution events during the construction of the project. The Public Realm project proposes to realign 60m of the Woodstock stream. The realignment of the Woodstock Stream will be conducted by open trenching a new channel alongside the existing stream. The new channel will be created off-line from the live channel and therefore will be created in the dry. Once this channel has been excavated to dimensions that reflect those of the existing stream, the downstream end of the new channel will be joined to the existing stream. The upstream end will then be connected to the culvert and the stream diverted. Therefore, due to the construction methods employed and the nature and scale of the proposed re-alignment of the Woodstock stream, in-combination effects due to pollution events are not anticipated. Thus, it is not anticipated that effects of the two projects will act in combination and therefore, potential risk of impacts to the habitats of the SAC and waterbirds of the SPA is not anticipated.

Committed developments, which have not yet been built or are currently under construction, are presented in Table 5-1.

Given the nature, extent and scale of the proposed project, it is not anticipated that it will act in-combination with the plans or projects outlined above, or other plans or projects, to give rise to cumulative impacts on the surrounding environment and ecological receptors.

Table 5-1 - Committed development in the vicinity of the proposed project.

Planning Ref.	Decision Date	Applicant Name	Location	Description
195707	28/04/2020	The Minister for Education and Skills	Castlelake, Terrysland, Carrigtohill, Co. Cork	Demolition of 1no. derelict two story dwelling and 1no. derelict single story agricultural storage building. Construction of 3 no. new school buildings.
176934	08/11/2018	Petrogas Group Ltd	Castlelake, Terrysland, Carrigtohill, Co. Cork	Development of 6no. pump islands with canopy.
175399	16/04/2018	BAM Property Ltd.	Castlelake, Terrysland, Carrigtohill, Co. Cork	Construction of 277 no. residential units consisting of 43 no. detached houses, 94 no. semi-detached houses, 40 no. three storey terraced houses, 9 no. duplex houses, 9 no. duplex apartments and 82 no. 2 & 3 bedroom apartments arranged in three blocks of three stories and one block of four stories and associated site development works. The proposed development represents a change of layout and house types on part of the lands previously permitted under the overall 'Castlelake' development Ref:00/7674 (An Bord Pleanála Ref: PL.04.131129) extended under 12/5005 and Ref: 00/7607 (An Bord Pleanála Ref: PL.04/125446) extended under 11/4857.
184693	14/05/2018	BAM Property Ltd.	Castlelake, Terrysland, Carrigtohill, Co. Cork.	Construction of a crèche of 581sq.m over one and two storeys, new entrance, carparking and boundaries, and all associated site development works.
165091	30/06/2016	Mary Barry	Cluan Cairn, Station Road, Carrigtohill, Co. Cork.	Extension to existing "All Aboard" Creche facility comprising 90sq.m building, relocation of outdoor play area, and ancillary roads and services connection works. Development is within the cartilage of Rockville House (Protected Structure RPS ID 1317).

Planning Ref.	Decision Date	Applicant Name	Location	Description
174498	16/06/2017	Murnane & O'Shea Ltd.	Church Road, Carrigtohill, Co. Cork	Residential development of 25 no. residential units and all ancillary site development works. The proposed development consists of 20 no. 3 bed semi-detached dwellings, 4 no. 2 bed semi-detached dwellings and 1 no. 3 bedroom detached dwelling. The development will be accessed via an upgraded entrance from Church Road.
195836	13/09/2019	IDA Ireland	IDA Business Park, Anngrove & Terry's Land, Carrigtwohill, Co Cork.	Internal road upgrades. The proposed development will involve the upgrade of existing internal access roads to provide a dedicated shared use cycleway and footpath, pedestrian and cycle crossing point, bus lane, bus shelter and traffic safety barrier. The proposed development will also include for the provision of a cycleway and footpath adjacent to the L-3616 public road to connect into the L-3615 at the north eastern corner of the IDA Business Park.

5.7. Avoidance and Mitigation Measures

This section outlines avoidance and mitigation measures to offset the impacts of the proposed works on the identified ecological receptors.

5.7.1. Pre-Construction Surveys

At least one month in advance of construction, and within the appropriate season, the following surveys must be carried out:

- Invasive species survey in order to update the findings of the field survey results contained in this EcIA report;
- Bat survey in order to ascertain if any trees or buildings within the zone of influence of the proposed project have developed features suitable for roosting bats.

If the programme of the proposed project cannot avoid works during sensitive times of the year with respect to a number of receptors, e.g. breeding birds, then a pre-construction survey shall be carried out where necessary.

All surveys shall be conducted by suitably qualified and experienced ecologists.

5.7.2. Mitigation During Construction

5.7.2.1. Invasive Species

An invasive species management plan shall be produced by the appointed Contractor to prevent the further spread of invasive species within the site, prevent their spread off site, and prevent the additional introduction of invasive species to the site. The Plan will be based on best practice guidance documentation, including recommendation for treatment from the following sources:

- Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road Schemes (NRA, 2010);
- The Management of Invasive Alien Plant Species on National Roads – Standard (TII, 2020);

- Code of Practice. Managing Japanese Knotweed (INNSA, 2017);
- IFI Biosecurity Protocol for Field Survey Work (IFI, 2010).

The rhizomes of Japanese knotweed can extend up to 7-10m underground from the parent plant and as such disturbance of soil should be avoided within this area. The area of Japanese located to the south of railway line shall be fenced off and defined as an exclusion zone, including any other areas that are identified during the pre-construction surveys. All site workers will be made aware of the fenced off areas and the importance of maintaining the cordon around Japanese knotweed and not disturbing it.

Due to their negative effect on native biodiversity, biosecurity protocols shall be taken not to spread all non-native invasive species during the proposed project.

Biosecurity protocols will be implemented during the construction phase of the proposed project to prevent the introduction of invasive species listed on the third schedule of the EC (Birds and Natural Habitats) Regulations 2011, as amended, to site.

All equipment intended to be used at the site shall be dry, clean and free from debris prior to being brought to site.

If drying out of equipment is not feasible, equipment will be either:

i. power steam washed at a suitably high temperature or at least 65 degrees, or

ii. disinfected with an approved disinfectant, e.g. Virkon or an iodine-based product. It is important that the manufacturer's instructions are followed and if required, the correct contact times are allowed for during the disinfection process. Items that are difficult to soak should be sprayed or wiped down with disinfectant.

During the duration of the proposed project, if equipment is removed off-site to be used elsewhere, the said equipment shall be cleaned and disinfected prior to being brought back to the works area of the proposed project.

Appropriate facilities shall be used for the containment, collection and disposal of material and/or water resulting from washing facilities of vehicles, equipment and personnel.

Importation of materials shall comply with Regulation 49 of the EC (Birds and Natural Habitats) Regulations 2011. In relation to 3rd Schedule species, but notably Japanese knotweed, the following general biosecurity and containment measures shall be undertaken during the construction phase of the project:

- Identify and mark out areas of infestation;
- Fence off areas of infestation in advance of and during construction works;
- Erect signage identifying restricted areas;
- Avoid, where possible, using plant and machinery in areas of invasive species infestation;
- Plant and equipment used within areas if invasive species infestation should be inspected post works and washed down in a contained area;
- Site staff should be aware that root zones / control zones for knotweed species extend a minimum of 7m from the extent of the invasive species' surface vegetation.

If the treatment of invasive species is required, the treatment method will be dependent on the size and location of the non-native invasive species being treated. If on-site containment is to be used this must be clearly identified, with items such as biosecurity, transport and licencing all clearly addressed, as appropriate. Impact on surrounding vegetation and the surrounding environment, in particular the aquatic environment, will also need to be considered, as will full compliance with existing environmental legislation.

5.7.2.2. Treelines and Hedgerows

No trees, hedgerows or vegetation located outside the red line boundary of the proposed project will be removed.

The removal of hedgerows and trees will not exceed the extents detailed in the drawings included in Appendix A, i.e. 430m of hedgerow and 66 trees along Main Street and Station Road. The area of trees and hedgerow removed in the vicinity of Cobh Cross will not exceed 2,802m². The implementation of landscaping and planting will be in accordance with the principles set out in Section 5.7.3 'Compensation'.

5.7.2.3. Woodstock Stream

The riverbed of the new re-aligned channel of the Woodstock stream will be reinstated with clean gravels prior to its commissioning as a live channel.

The riverbanks of the new channel will be battered back to a finished angle of not greater than 45 degrees on one bank and nor greater than 30 degrees on the opposite bank, which allows for different flow levels within the channel.

Riverbanks shall be top-soiled and seeded with a native semi-natural grassland seed mix to ensure the growth and development of local grasses. If practical, riparian vegetation should be included in the planting plan for the proposed project in order to facilitate the development of stable bank root structures.

5.7.2.4. Breeding Birds

Vegetation clearance shall be conducted outside the breeding bird season (March 1st to August 31st inclusive), where possible. If this is not possible, a breeding bird survey will be undertaken in advance of the works to ensure that there will be no impacts on nesting birds. If active nests are found, they will be safeguarded with an appropriate buffer, until the chicks have successfully fledged. Nesting will be deemed inactive by an ecologist.

5.7.2.5. Bats

It is acknowledged that the results of the field surveys conducted in 2020 did not record any bat roosts within the study area of the proposed project. However, a pre-construction survey will be carried out in order to ascertain if any trees or buildings within the zone of influence of the proposed project have developed features suitable for roosting bats.

Where surveys confirm the presence of roosting bats in trees to be felled or buildings where bats could be potentially directly or indirectly impacted by the proposed project, a licence from National Parks and Wildlife Service shall be obtained. The conditions of the licence and felling procedure will be subject to the species of bat and numbers using the roost. All conditions and mitigation measures of the licence will be implemented.

5.7.2.6. Amphibians

The breeding season of common frog is January - March inclusive. In areas of suitable habitat, site clearance or soil stripping works should be conducted outside the frog breeding season, where possible. If such works are proposed during January - March, a search of suitable spawning and refuge areas shall be conducted by an ecologist prior to the works. If frog spawn/tadpoles are found,

a licence from NPWS will be obtained by the Contractor to translocate the frog spawn to receptor area(s). All conditions and mitigation measures of the licence will be implemented.

5.7.2.7. Lighting

If lighting is required for night-time work, it shall be kept to a minimum where possible. The provision of lighting shall be designed in such a way that it is directional, thus preventing any additional light spill and illumination of adjacent natural features, such as hedgerows, treelines, linear woodland and scrub. Any temporary lighting during the construction phase of the proposed project should be in line with '*Bats & Lighting: Guidance Notes for planners, engineers, architects and developers*' (BCI, 2010) and '*Bats and artificial lighting in the UK*' (BCT, 2018).

5.7.3. Compensation

Compensation will be required for habitats that are directly impacted by the proposed project. Compensation is required for the loss of hedgerows and trees as a result of the proposed project. The planting will be implemented as part of the Contractor's landscape plan, in line with '*A Guide to Landscape Treatments for National Road Schemes in Ireland* (NRA, 2006b).

Two Biodiversity Areas will be created at the east and west of Station Road. These areas will consist of native semi-natural grassland plant communities, native trees and a footpath to provide access to the areas for local residents.

A landscape architect and ecologist will be involved in the design of the detailed landscape plan for the proposed project.

The landscaping and planting for the proposed project will be implemented based on the principles outlined below.

- The selection of treatments for soft landscaped area and road verges will be implemented following the methods of implementation, in order of preference:
    - Natural recolonization from the soil's existing seed bank;
    - Treatment of semi-natural grassland mix, for example, bent grasses (*Agrostis sp.*) and fescue grasses (*Festuca sp.*);
    - Hay strewing with hay gathered from local semi-natural grasslands;
    - Commercial seed mixes from locally sourced indigenous semi-natural grasslands;
    - Commercial seed mixes from indigenous seed sources.
- Semi-natural grassland treatments will be selected based on the suitability of the soils and local site conditions within the red line boundary of the proposed project, requirements for preparation and implementation within the specific areas and with future management requirements in mind.
- Seed mixes will be sourced from recognised suppliers who can supply a list of constituent species within the seed mix, percentage composition and seed sources. The seed mix will contain locally appropriate species that will germinate easily over a wide range of conditions and which are widespread. Seeds of rare or protected species will be avoided, unless guaranteed that the proposed project is within their natural range. Mixes with dominant legumes, such as white clover (*Trifolium repens*), will not be used.
- Hedgerows will be planted to re-instate areas where hedgerow removal has taken place. As detailed in Appendix A, a minimum of 187m of new hedgerow will be planted.

- Trees will be planted to re-instate locations where tree removal has occurred. As detailed in Appendix A, a minimum of 203 trees will be planted. These trees will replace the 66 trees removed along Main Street and Station Road and also augment soft landscaped areas and verges along Main Street and Station Road.

- Trees shall be planted in the eastern verges of Station Road to establish a linear feature in a southwards direction from the existing mature trees within the grounds of the Parochial House.

- 2,802m² of hedgerow and semi-natural woodland mix at Cobh Cross Junction will be planted, to replace the 2,802m² removed during the construction phase of the proposed project. Planting will achieve a mix of canopy heights. Natural recolonization of soils, with the addition of semi-natural grassland treatments if required, will be implemented at the perimeter of canopy areas and in small open glade areas within the canopy.

- Species for hedgerow planting will aim to provide dense growth, especially that the base of the treatment, and selection of species will be based on species composition of existing hedgerows in the general vicinity of the wider Carrigtwohill and Midleton areas.

- Hedgerow treatments provide the opportunity to enhance the local hedgerow diversity and thus, selected mixes, while remaining sensitive to the local character, will be as diverse as possible. Hedgerow planting will be dispersed with native tree species.

- The following principle species will be considered for inclusion in hedgerow treatments and the planting of trees (non-exhaustive list):

    - Hawthorn (*Crataegus monogyna*)
    - Blackthorn (*Prunus spinosa*)
    - Holly (*Ilex aquifolium*)
    - Dog-rose (*Rosa canina*)
    - Elder (*Sambucus nigra*)
    - Guelder Rose (*Viburnum opulus*)
    - Hazel (*Corylus avellana*)
    - Spindle (*Euonymus europaeus*)
    - Alder (*Alnus glutinosa*)
    - Silver birch (*Betula pendula*)
    - Oaks (*Quercus robus* & *Q. petraea*)
    - Rowan (*Sorbus aucuparia*)
    - Scots Pine (*Pinus sylvestris*)
    - Willows (*Salix* spp.), and
    - Wild cherry (*Prunus avium*).

6. Residual Impacts

Residual ecological impacts are those that remain once the development proposals have been implemented. The main aim of ecological mitigation and compensation is to minimise or eliminate residual impacts. The works at the proposed site are not expected to have a residual impact on the surrounding environment, including statutory designated sites.

In the absence of mitigation and compensation detailed, significant effects to ecological features were realised. However, consideration of the measures outlined above has resulted in residual effects being reduced to 'not significant'. In essence, this can be described as having no perceivable impacts on ecological features (habitat or species). Impacts may be beneath levels of perception, within normal bounds of variation.

7. Monitoring

Monitoring of the environmental measures will be required during the construction phase of the proposed project.

If licences are required, for example frogs and bats, the conditions attached to these licences shall determine the degree of supervision and monitoring required for the respective ecological features.

Monitoring of measures detailed in the invasive species management plan will be required to ensure the prevention of spread and introduction to site of invasive plant species.

References

Aughney, T., Langton, S. and Roche, N. (2012). All Ireland Daubenton's Bat Waterway Monitoring Scheme 2006-2011. *Irish Wildlife Manuals*, No. 61. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

Bat Conservation Ireland, (2010). *Bats and Lighting: Guidance notes for Planners, Engineers, Architects, and Developers*. Available online at: - www.batconservationireland.org/.

BCI (2010). *Bats & Lighting: Guidance Notes for planners, engineers, architects and developers* [ONLINE] Available at: - http://www.noticenature.ie/files/BCIrelandGuidelines_Lighting.pdf. Accessed on: 09/10/2018.

BCT (2018). Bats and artificial lighting in the UK. *Bats and the Built Environment Series*. Guidance Note 08/18. Bat Conservation Trust, London.

Botanical Society of Britain and Ireland (2007). BSBI's List of Accepted Plant Names. Revised in 2007. Available online from the BSBI website: - www.bsbi.org/resources (Downloaded 17/07/2018).

Buckley, D.J., Lundy, M.G., Boston E., Scott, D.D., Gager, Y., Prodohl, P., Marnell, F., Montgomery, W.I. and Teeling, E.C (2012). The spatial ecology of the whiskered bat (*Myotis mystacinus*) at the western extreme of its range provides evidence of regional adaptation. *Mammal. Biol.* , http://dx.doi.org/10.1016/j.mambio.2012.06.007.

CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal*, Second Edition. Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (2017). *Guidelines on Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management, Winchester.

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

Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd Edn). The Bat Conservation Trust, London. ISBN 13 978 1 872745 96 1.

Cork County Council (2009). *County Cork Biodiversity Action Plan 2009-2014.*

Cork County Council (2021). *Cork County Development Plan 2022-2028.*

Council of the European Communities (1992). Council Directive of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC). O. J. L 206/35, 22 July 1992.

Cronin, J. & Associates (2020). Urban Regeneration and Development Fund (URDF) Initiative, Carrigtwohill, County Cork – Archaeological and Built Heritage Constraints Report. John Cronin & Associates. Cork, Ireland. Unpublished report.

Department of Culture, Heritage and the Gaeltacht (2017). *National Biodiversity Action Plan 2017-2021*.

Elmeros, M., Moller, J.J., Dekker, J., Garin, I., Christensen, M., Baagow H.J. (2016). Bat mitigation measures on roads, a guideline. CEDR Transitional Road Research Programme Call 2013: Roads and Wildlife.

EPA (2002 and updated Draft 2015). *Guidelines on the information to be contained in Environmental Impact Statements*. Environmental Protection Agency. Wexford.

EPA (2003 and updated Draft 2015). *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements).* Environmental Protection Agency. Wexford.

EPA (2017). *Revised Guidelines on the Information to be contained in Environmental Impact Assessment Reports – Draft.* Environmental Protection Agency. Wexford.

Fensome, A. & Mathews, F. (2016). Roads and bats: A meta-analysis and review of the evidence on vehicle collisions and barrier effects. *Mammal Review* 46. 10.1111/mam.12072.

Fitzpatrick, U., Murray, T.E., Byrne, A., Paxton, R.J., Brown, M.J.F. (2006) Regional Red List of Irish Bees [ONLINE] Available at: - https://www.npws.ie/sites/default/files/publications/pdf/Fitzpatrick_et_al_2006_Bee_Red_List.pdf. Accessed on 14/07/2021.

Fossitt, J.A. (2000). *A Guide to Habitats in Ireland*. The Heritage Council. Published October 2000.

Gilbert, G., Stanbury, A. and Lewis, L. (2021) Birds of Conservation Concern in Ireland 4: 2020 – 2026. *Irish Birds*. 43: 1 – 22.

IFI (2010). *IFI Biosecurity Protocols for Field Survey Work*. Inland Fisheries Ireland. Dublin, Ireland.

INNSA (2017). *Code of Practice. Managing Japanese Knotweed*. Invasive Non-Native Specialists Association. Thornby, England.

JBA (2020). *Urban Expansion Area, Carrigtwohill – Groundwater Baseline Assessment*. JBA Consulting. Shipley, England. Unpublished report.

JBA (2021). *Carrigtwohill Public Realm Flood Risk Assessment*. JBA Consulting. Rathcoole, Ireland. Unpublished report.

Kelly, F., Harrison, A., Matson, R., Connor, L., O'Callaghan, R., Feeney, R., Morrissey, E., Wogerbauer, C., Rocks, K., Hanna, G. and Gallagher, K. (2010). *Sampling Fish for the Water Framework Directive Transitional Waters 2010, Greater Cork Harbour*. Inland Fisheries Ireland.

Limosa Environmental (2015). *Preliminary Ecological Appraisal. Carrigtwohill North Masterplan Site Carrigtwohill, Co. Cork*. Limosa Environmental Ecological and Environmental Consultancy. Unpublished report.

Lundy MG, Aughney T, Montgomery WI, Roche N (2011). *Landscape conservation for Irish bats & species specific roosting characteristics*. Bat Conservation Ireland.

Mathews F, Roche N, Aughney T, Jones N, Day J, Baker J, Langton S. (2015) Barriers and benefits: implications of artificial night-lighting for the distribution of common bats in Britain and Ireland. *Phil. Trans. R. Soc. B* 370: 20140124. http://dx.doi.org/10.1098/rstb.2014.0124.

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

NPWS (2014). *Cork Harbour Special Protection Area (Site Code 4030) Conservation Objectives Support Document Version 1.* National Parks and Wildlife Service. Ireland.

NRA (2005a) Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes. [ONLINE] Available at: https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Badgers-prior-to-the-Construction-of-a-National-Road-Scheme.pdf. Accessed on 14/07/2021.

NRA (2005b). Guidelines for the Treatment of Bats during the Construction of National Road Schemes [ONLINE] Available at: http://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Bats-during-the-Construction-of-National-Road-Schemes.pdf. Accessed on 14/07/2021.

NRA (2006a) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes. [ONLINE] Available at: https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Otters-prior-to-the-Construction-of-National-Road-Schemes.pdf. Accessed on 14/07/2021.

NRA (2006b). A Guide to Landscape Treatments for National Road Schemes in Ireland. National Roads Authority. [ONLINE] Available at: https://www.tii.ie/technical-services/environment/planning/A_Guide_to_Landscape_Treatments_for_National_Road_Schemes_in_Ireland.pdf. Accessed on 14/07/2021.

NRA (2010). NRA Project Management Guidelines. Version 1.0. [ONLINE] Available at: http://www.tii.ie/tii-library/strategic-planning/project-appraisal-guidelines/Project%20Mangement%20Guidelines%202010. Accessed on 14/07/2021.

NRA (2010). *Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road Schemes*. National Roads Authority. Dublin, Ireland.

O'Flynn, C., Kelly, J. and Lysaght, L. (2014). Ireland's invasive and non-native species – trends in introductions. *National Biodiversity Data Centre Series* No. 2. Ireland.

Reid, N., Dingerkus, S.K., Stone, R.E., Pietravalle, S., Kelly, R., Buckley, J., Beebee, T.J.C., and Wilkinson, J.W. (2013). National Frog Survey of Ireland 2010/11. *Irish Wildlife Manuals*, No. 58. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Roche, N., Aughney, T., Marnell, F., and Lundy, M. (2014). *Irish Bats of the 21st Century*. Bat Conservation, Ulex House, Lisduff, Virginia, Co. Cavan, Ireland. ISBN 978 0 9930672 0 4.

Rowse E.G., Lewanzik D., Stone E.L., Harris S., Jones G. (2016). Dark Matters: The Effects of Artificial Lighting on Bats. In: Voigt C., Kingston T. (eds) *Bats in the Anthropocene: Conservation of Bats in a Changing World*. Springer, Cham.

Smith, G.F., O'Donoghue, P., O'Hora, K., and Delaney, E. (2011). *Best practice guidance for habitat survey and mapping*. The Heritage Council, Church Lane, Kilkenny, Ireland.

TII (2017) Project Management Guidelines PE-PMG-02041 [ONLINE] Available at: http://www.tiipublications.ie/library/PE-PMG-02041-01.pdf. Accessed on 09/10/2018.

TII (2020). *The Management of Invasive Alien Plant Species on National Roads – Standard*. GE-ENV-01104. Transport Infrastructure Ireland. Dublin, Ireland.

Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M., and Wright, M. (2016). *Ireland Red List No. 10: Vascular Plants*. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

Appendices

Appendix A. Design Drawings

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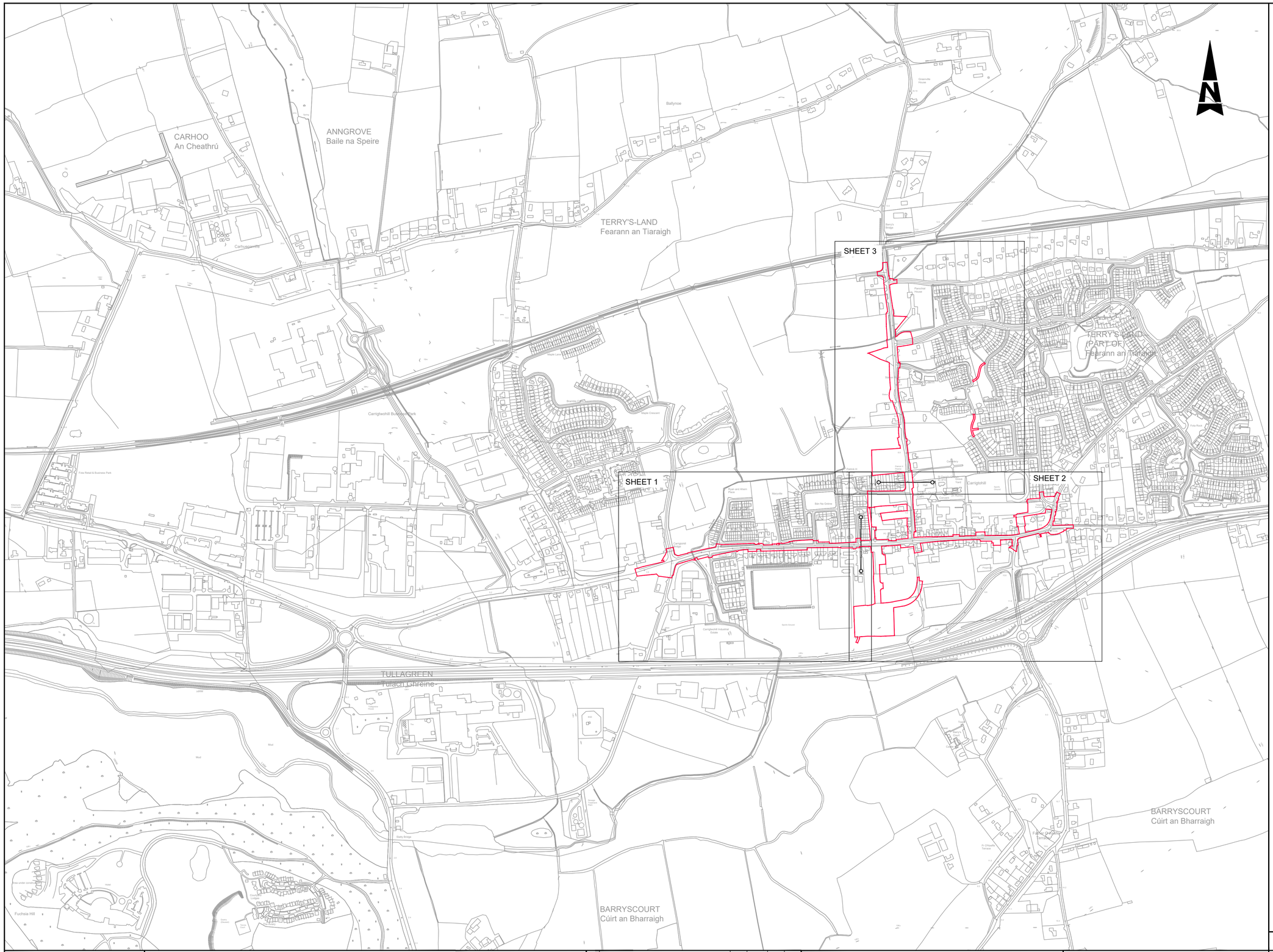

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: MAIN STREET AND STATION ROAD
PUBLIC REALM WORKS
SITE LOCATION MAP
KEY PLAN

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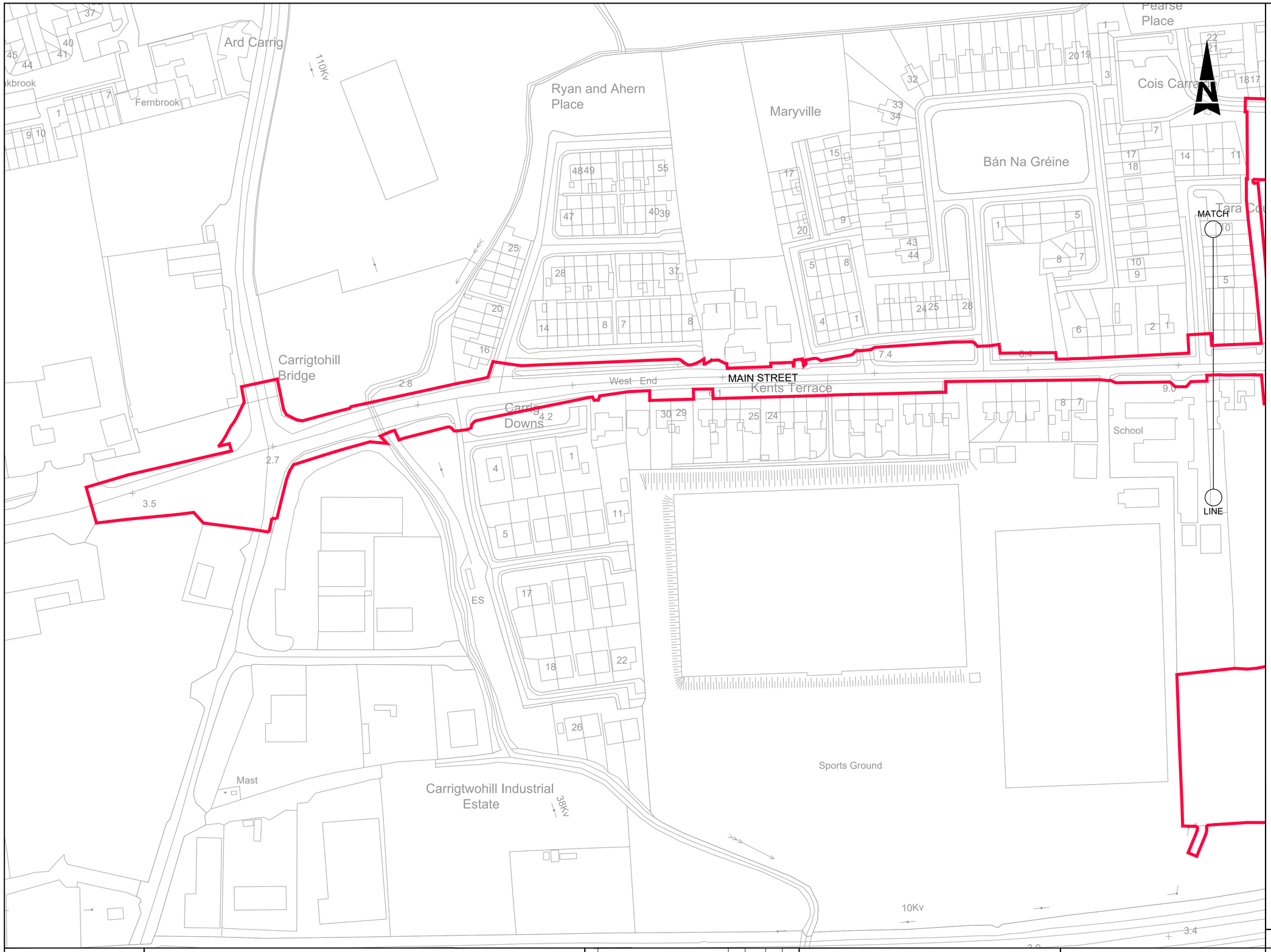

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SHEET 1 OF 3

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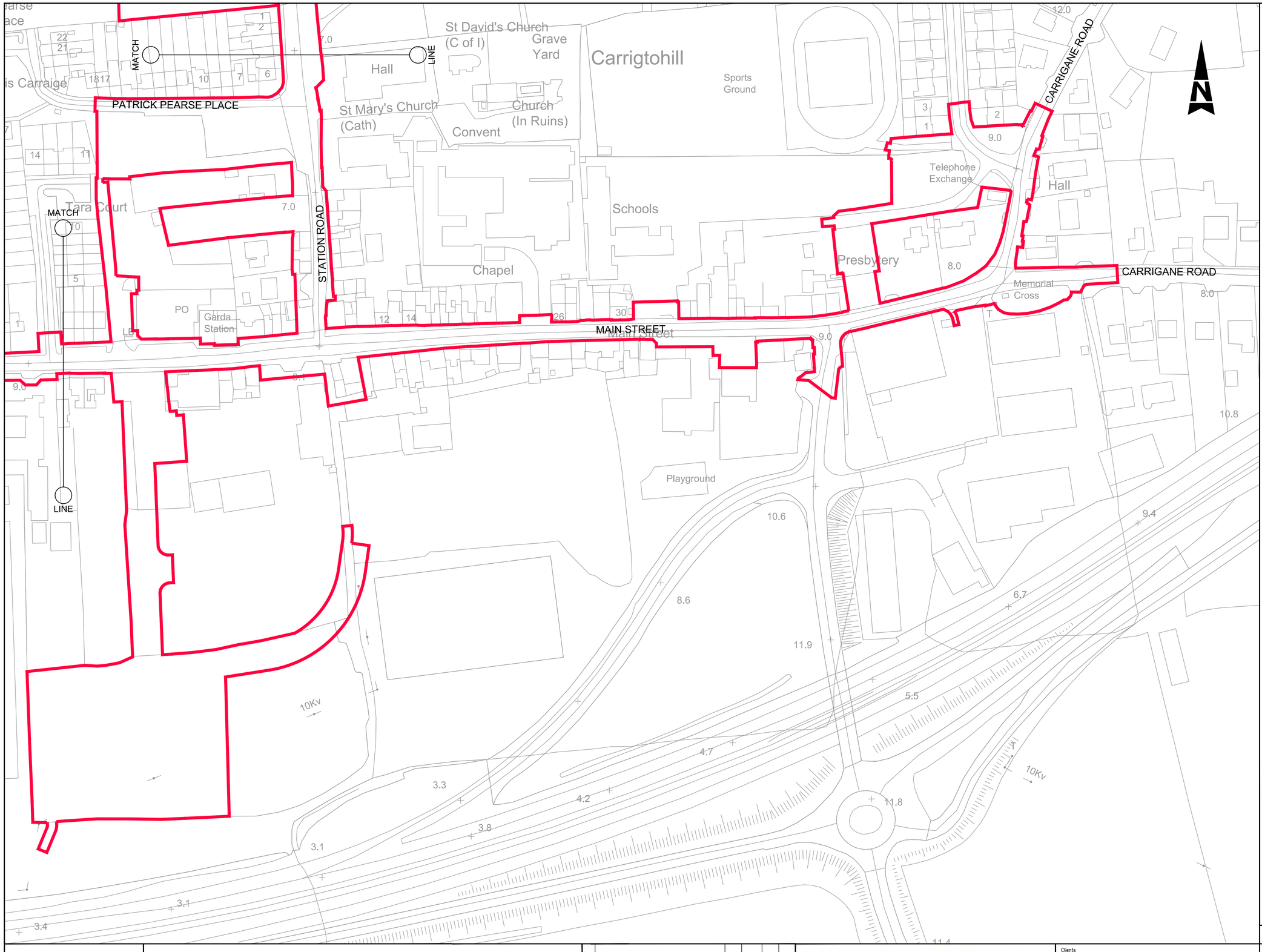

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SITE LOCATION MAP
SHEET 2 OF 3

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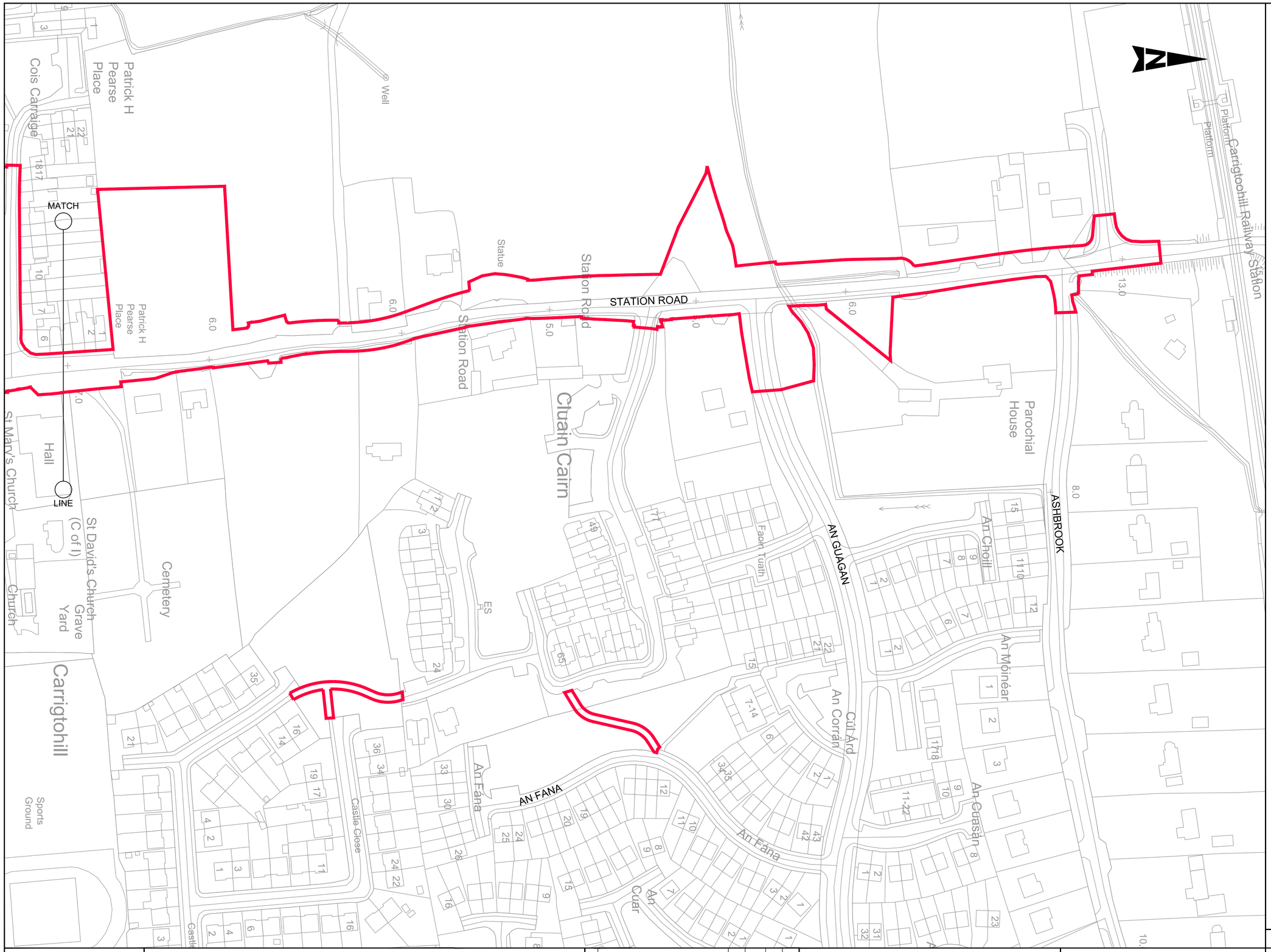

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SHEET 3 OF 3

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Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

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SITE LOCATION MAP
KEY PLAN

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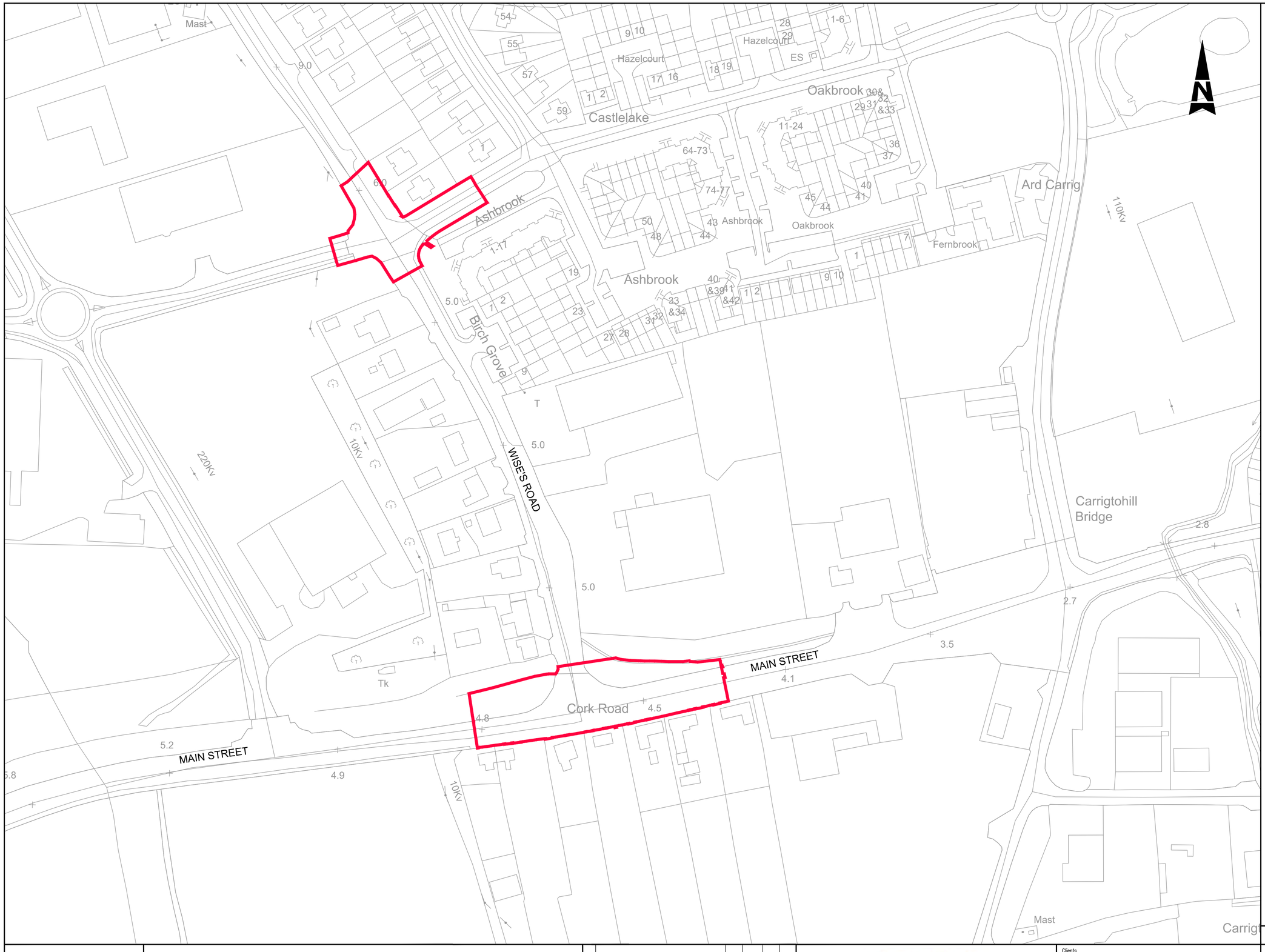

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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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2nd Floor Technology House Parkmore Technology Park, Galway
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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: WISE'S ROAD JUNCTION UPGRADES
SITE LOCATION MAP
SHEET 1 OF 1

Original Scale	Des/Drawn	Checked	Authorised
1:1000	KL	JOC	RAN
	Date 08/06/21	Date 08/06/21	Date 08/06/21

Status	Drawing Number	Rev
P	5194601 / HTR / PR / DR / 0008	A

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A1

0 10 100

DO NOT SCALE

LEGEND:

PART 8 SITE BOUNDARY

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE
2. ONLY WRITTEN DIMENSIONS SHALL BE USED. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS
3. ALL LEVELS ARE IN METRES AND ARE TO MALIN HEAD DATUM
4. ALL COORDINATES ARE IN METRES AND ARE TO IRISH TRANSVERSE MERCATOR
5. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION

Project Ireland 2040
Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
B	ISSUED FOR PART 8 PLANNING	FMD	01/22	JOC	RAN
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: N25 JUNCTION 3 (COBH CROSS)
ADDITIONAL CAPACITY INTERIM MEASURES
SITE LOCATION MAP
KEY PLAN

Original Scale	Des/Drawn	Checked	Authorised
1:5000	KL	JOC	RAN
	Date 08/06/21	Date 08/06/21	Date 08/06/21

Status	Drawing Number	Rev
P	5194601 / HTR / PR / DR / 0009	B

File: 5194601-HTR_PR_DR_0003 to 0010.dwg
Date: Jan 26, 2022 - 12:46pm Plotted by: FMendozaDiaz

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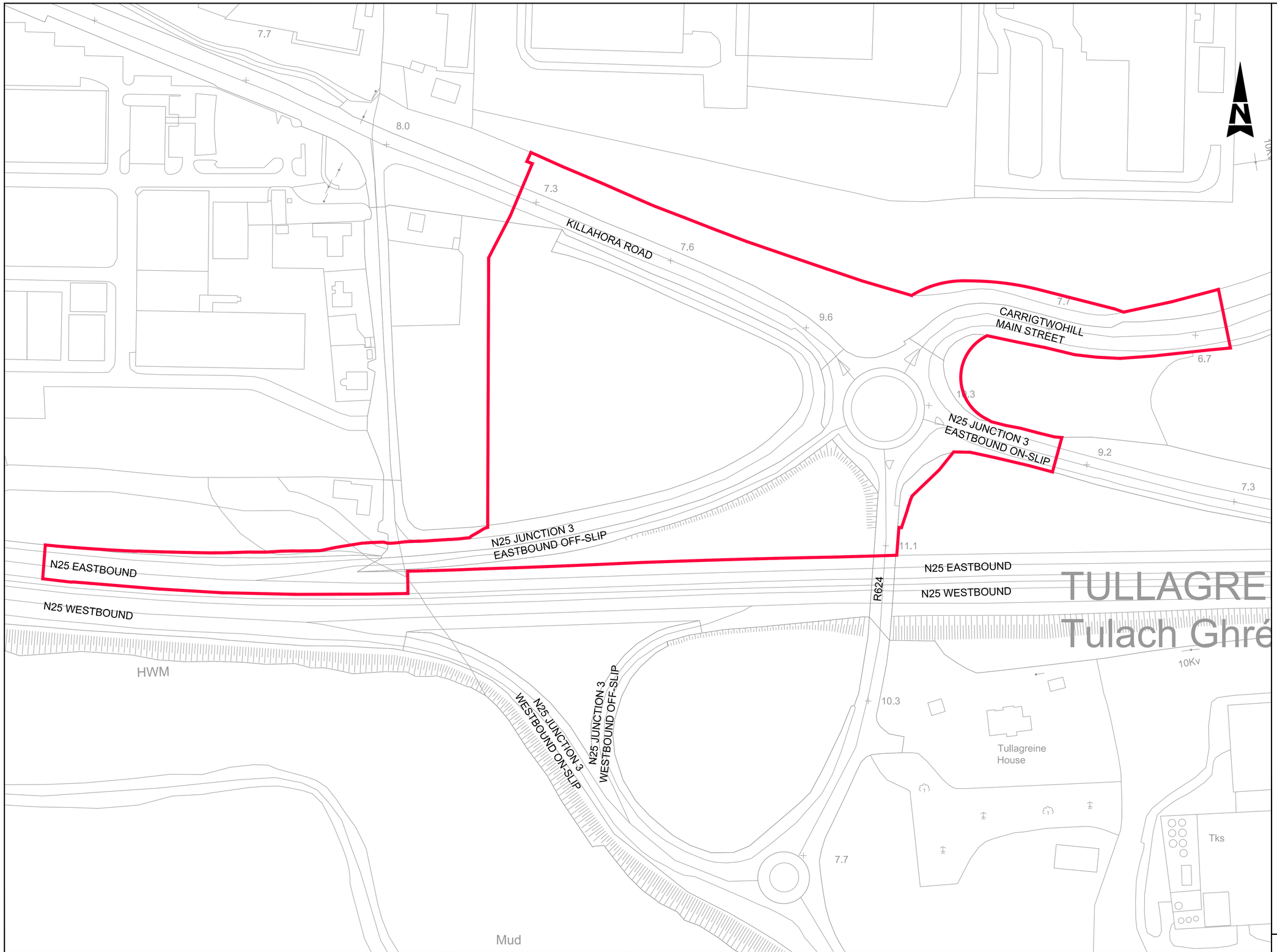

GENERAL NOTES

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LEGEND:

PART 8 SITE BOUNDARY

A1

0 10 100

DO NOT SCALE

File: 5194601-HTR_PR_DR_0003 to 0010.dwg
Date: Jan 26, 2022 - 12:46pm Plotted by: FMendozaDiaz

Project Ireland 2040
Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: N25 JUNCTION 3 (COBH CROSS)
ADDITIONAL CAPACITY INTERIM MEASURES
SITE LOCATION MAP
SHEET 1 OF 1

Original Scale	Des/Drawn	Checked	Authorised
1:1000	KL	JOC	RAN
	Date 08/06/21	Date 08/06/21	Date 06/06/21

Status	Drawing Number	Rev
P	5194601 / HTR / PR / DR / 0010	B

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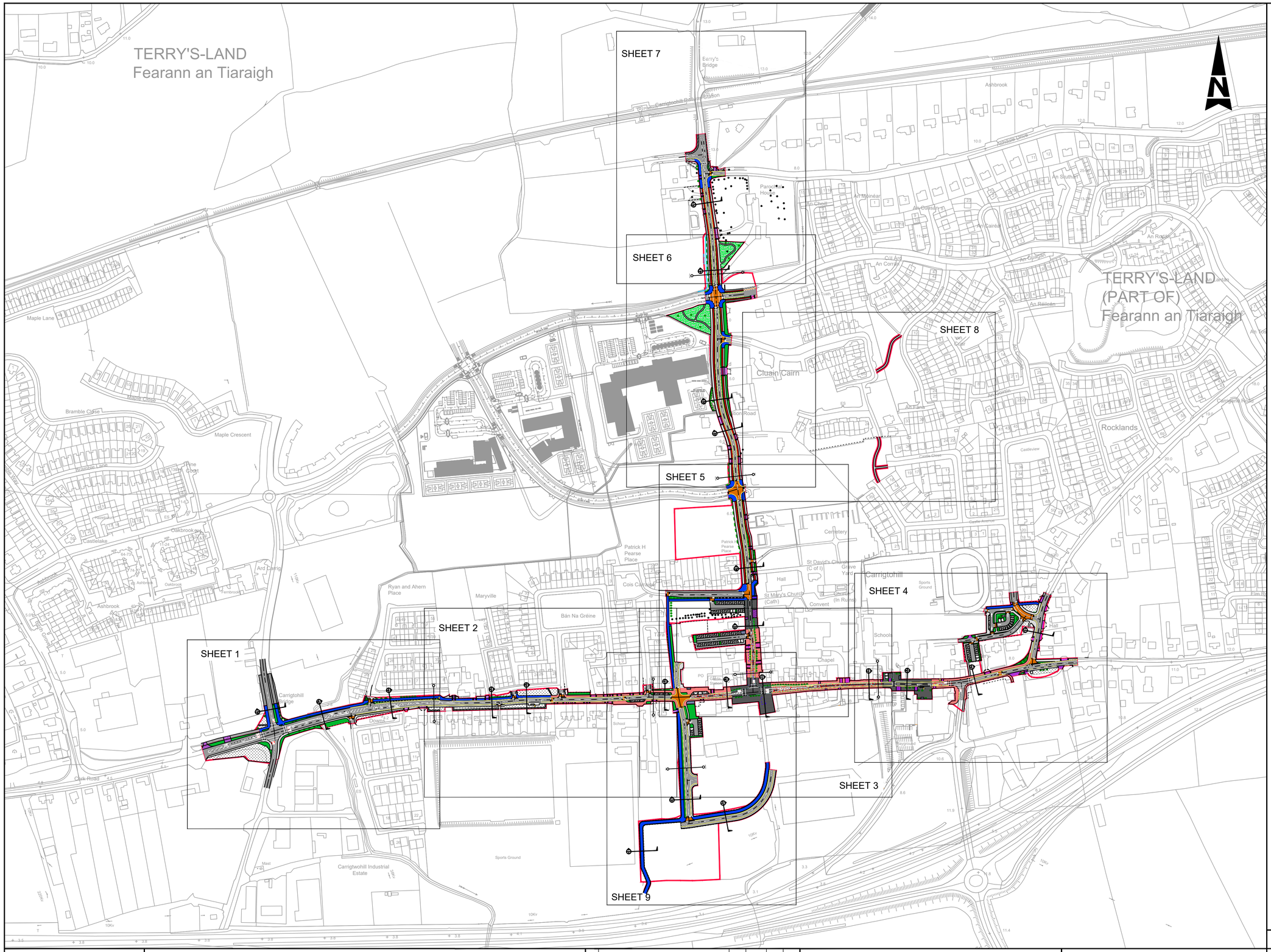
A1

0 10 100

DO NOT SCALE

File: 5194601-HTR-PR-DR-0020 to 0029.dwg
Date: Jul 23, 2021 - 7:03pm Plotted by: FMendozaDiaz



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Project Ireland 2040 Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: MAIN STREET AND STATION ROAD
PUBLIC REALM WORKS
PROPOSED LAYOUT KEY PLAN

Original Scale	Des/Drawn	Checked	Authorised
1:2500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0020	A

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A1

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DO NOT SCALE

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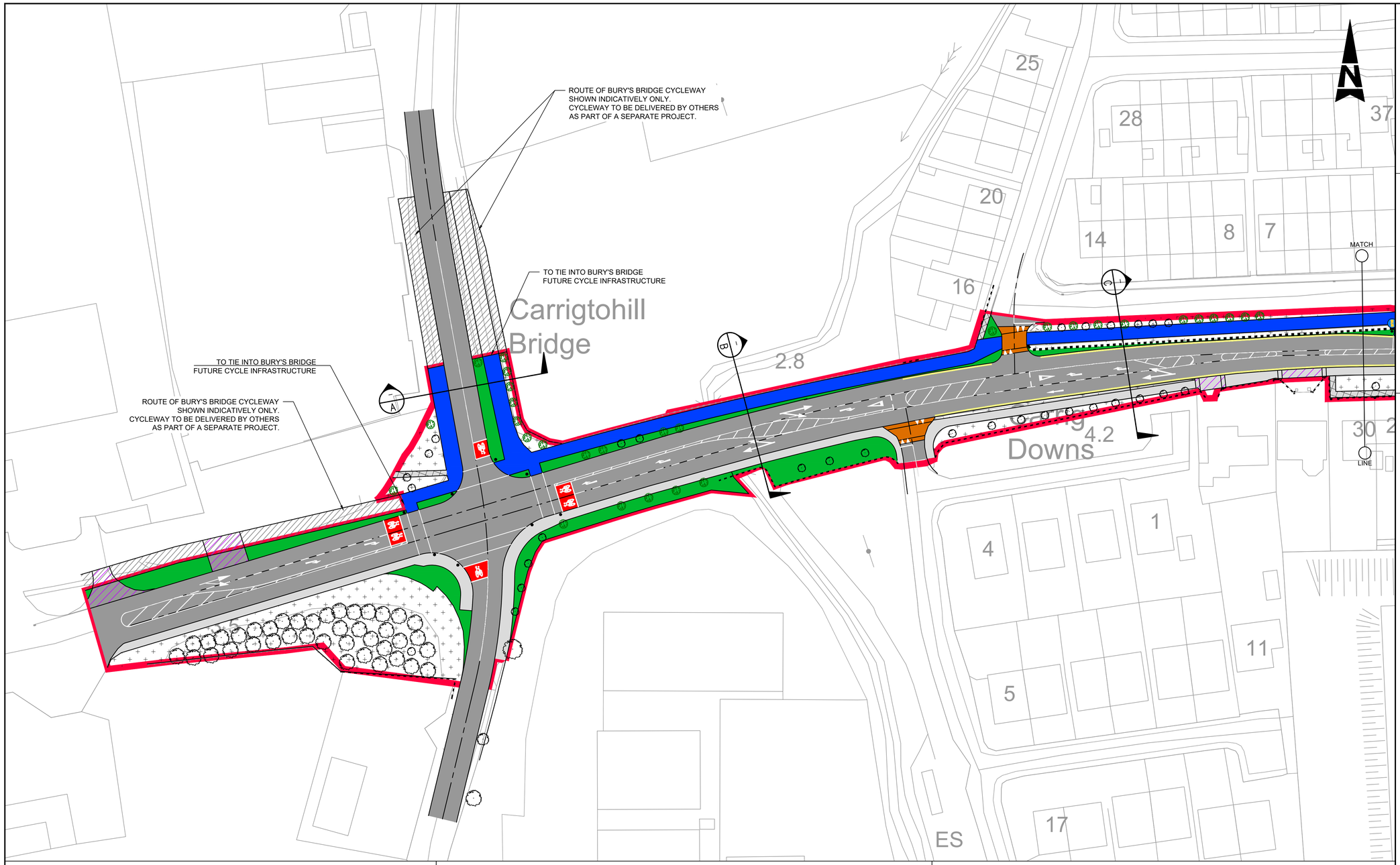
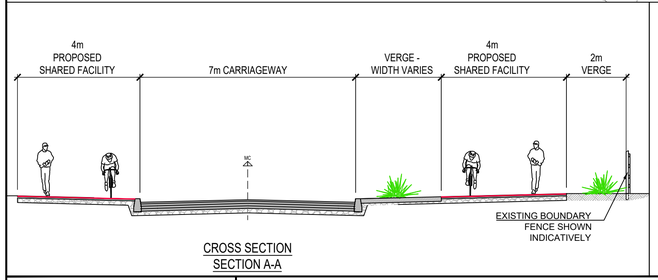
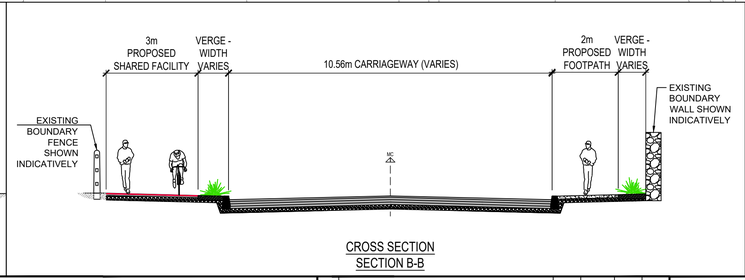
Date: Jul 23, 2021 - 7:03pm Plotted by: FMendozaDiaz

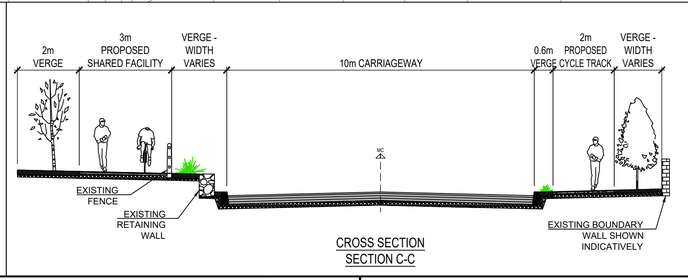




CROSS SECTION
SECTION A-A



CROSS SECTION
SECTION B-B



CROSS SECTION
SECTION C-C

GENERAL NOTES

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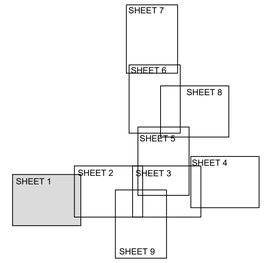

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED CARRIAGEWAY - COLOURED ASPHALT SURFACING
- PROPOSED SHARED CENTRAL SQUARE AREA - HIGH QUALITY FINISH
- PROPOSED FOOTPATH
- PROPOSED CYCLETRACK
- PROPOSED SHARED FOOTPATH / CYCLE TRACK
- HIGH QUALITY FINISH/ CENTRAL ZONE FOOTWAY
- PROPOSED RAISED TABLE
- PROPOSED PARKING BAY
- PROPOSED BICYCLE PARKING AREA
- PROPOSED VERGE/ SOFT LANDSCAPED AREA
- PROPOSED RE-LOCATED SHRINE AREA
- RELOCATED BOUNDARY WALL
- BURY'S BRIDGE CYCLEWAY - SHOWN INDICATIVELY ONLY TO BE PROVIDED AS PART OF A SEPARATE PROJECT
- PROPOSED FENCE
- PROPOSED TRAFFIC SIGNAL POST
- PROPOSED BOLLARDS
- PROPOSED TREE
- PROPOSED HEDGEROW
- PROPOSED WILD PLANTING
- EXISTING VEHICULAR ENTRANCE
- EXISTING FOOTPATH
- EXISTING VERGE/ PLANTING
- EXISTING WALL
- EXISTING TREE

Purpose: ISSUED FOR PLANNING

Project Ireland 2040 Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Title: MAIN STREET AND STATION ROAD
PUBLIC REALM WORKS
PROPOSED LAYOUT PLAN
SHEET 1 OF 9

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status: P
Drawing Number: 5194601-HTR-PR-DR-0021
Rev: A

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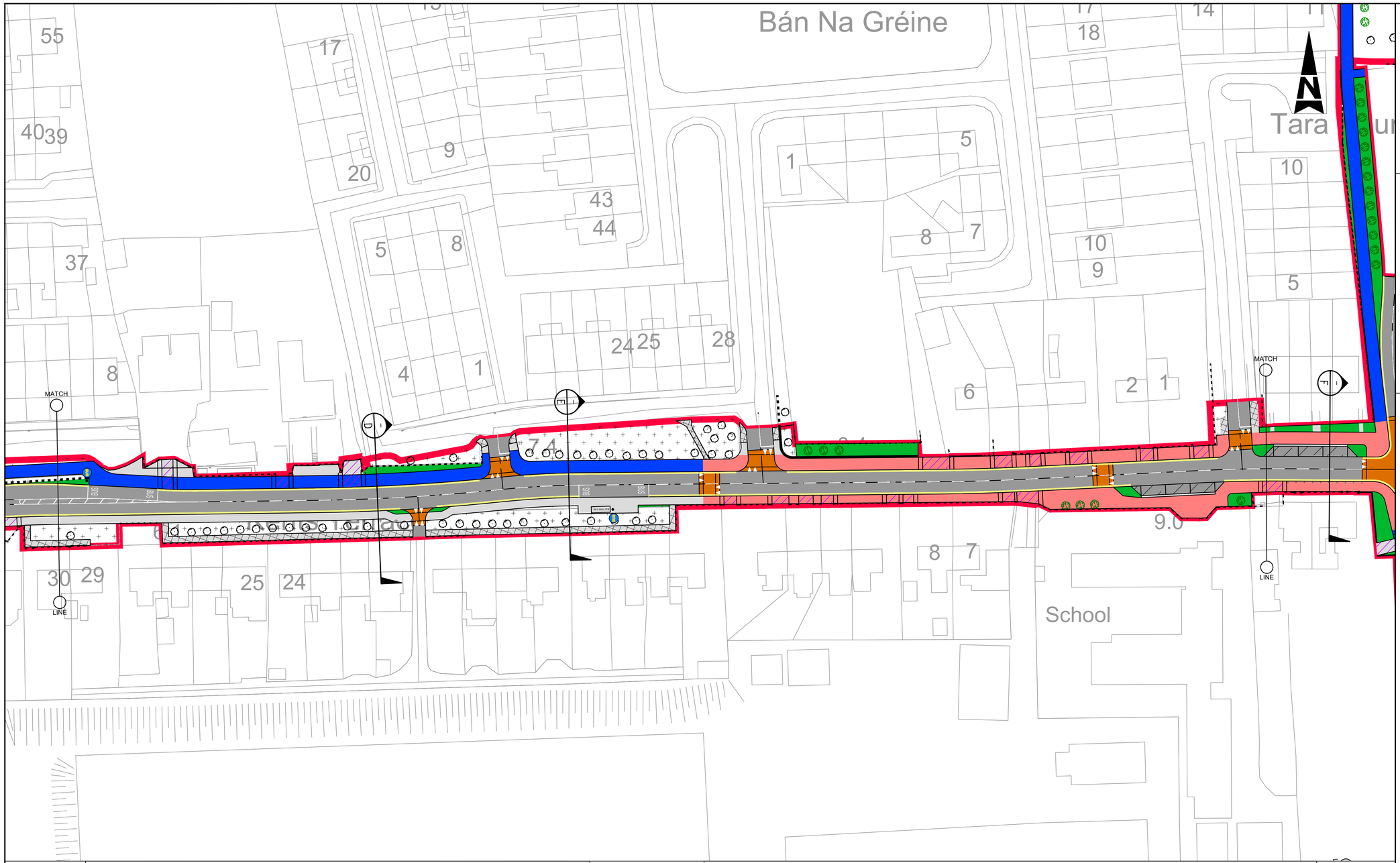
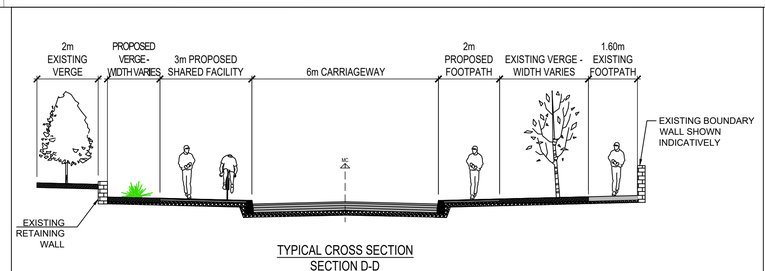
A1

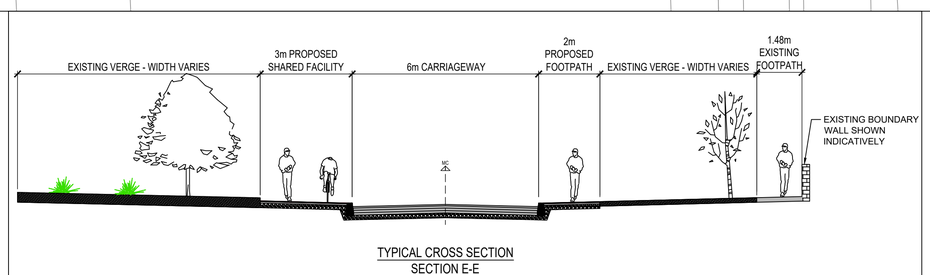
0 10 100

DO NOT SCALE





TYPICAL CROSS SECTION
SECTION D-D



TYPICAL CROSS SECTION
SECTION E-E

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE
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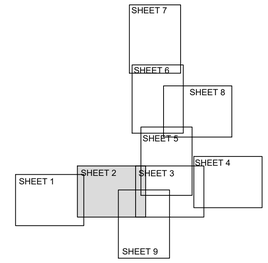
4. ALL COORDINATES ARE IN METRES AND ARE TO IRISH TRANSVERSE MERCATOR
5. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION



KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED CARRIAGEWAY - COLOURED ASPHALT SURFACING
- PROPOSED SHARED CENTRAL SQUARE AREA - HIGH QUALITY FINISH
- PROPOSED FOOTPATH
- PROPOSED CYCLETRACK
- PROPOSED SHARED FOOTPATH / CYCLE TRACK
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- PROPOSED BOLLARDS
- PROPOSED TREE
- PROPOSED HEDGEROW
- PROPOSED WILD PLANTING
- EXISTING VEHICULAR ENTRANCE
- EXISTING FOOTPATH
- EXISTING VERGE/ PLANTING
- EXISTING WALL
- EXISTING TREE

Purpose: ISSUED FOR PLANNING

Project Ireland 2040
Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Title: MAIN STREET AND STATION ROAD PUBLIC REALM WORKS PROPOSED LAYOUT PLAN SHEET 2 OF 9

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0022	A

File: 5194601-HTR-PR-DR-0020 to 0029.dwg
Date: Jul 23, 2021 - 7:04pm Plotted by: FMendozaDiaz

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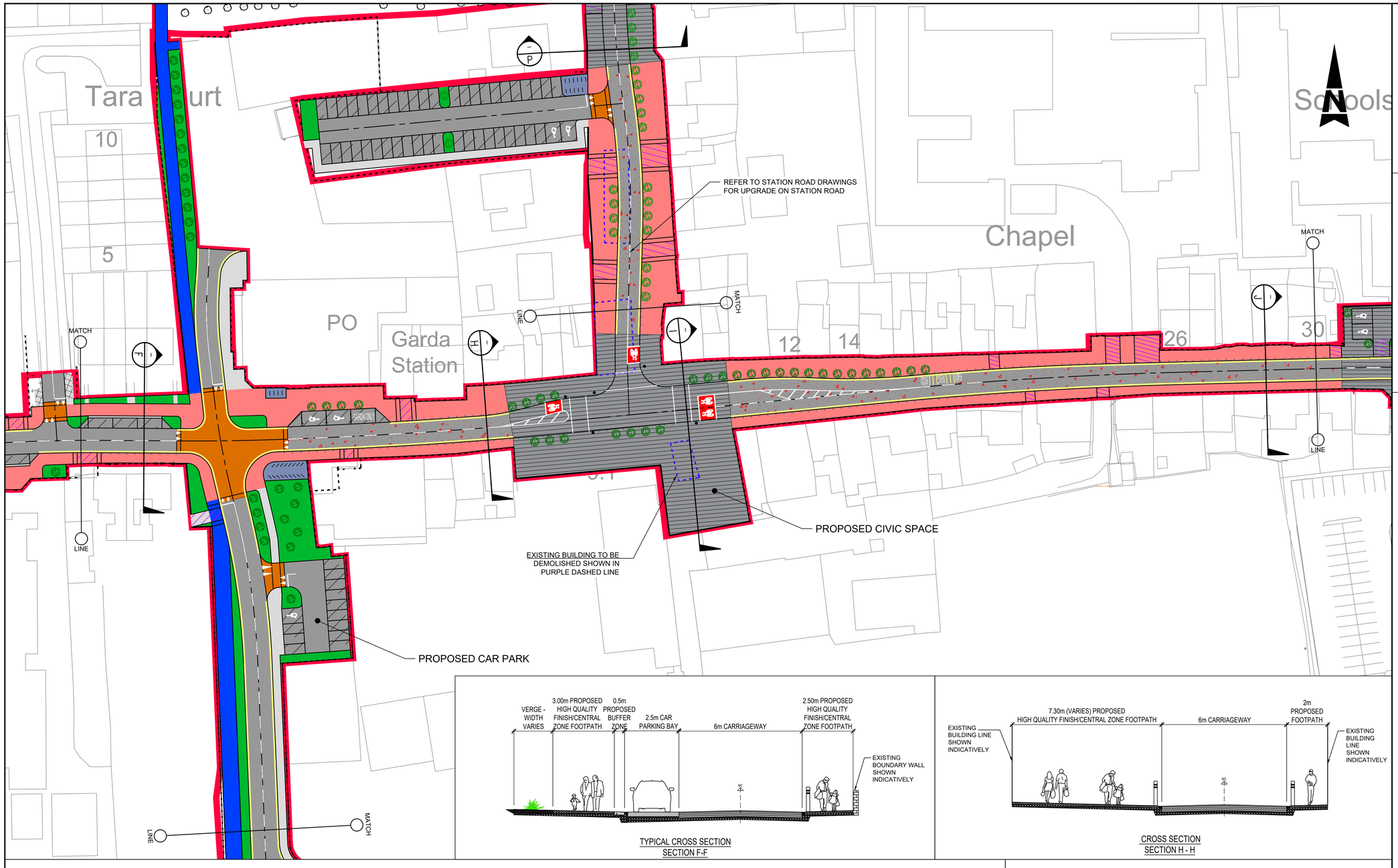
A1

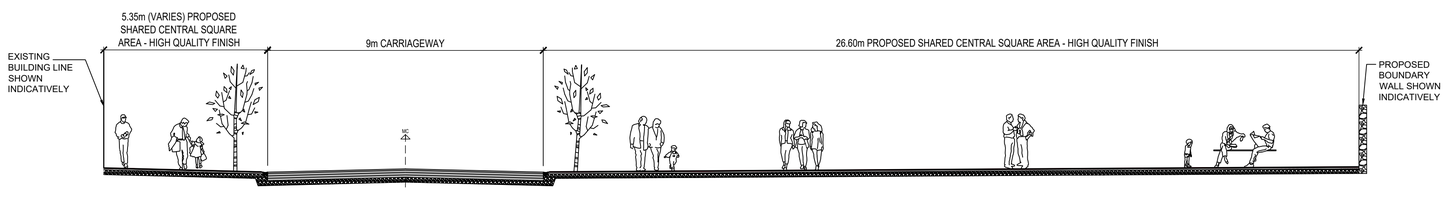
0 10 100

DO NOT SCALE

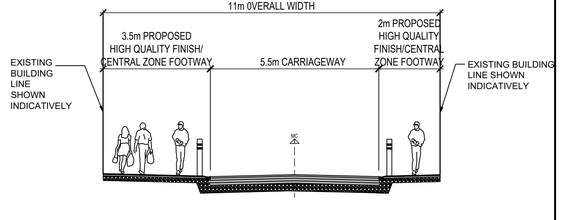


TYPICAL CROSS SECTION
SECTION F-F

CROSS SECTION
SECTION H - H



TYPICAL CROSS SECTION
SECTION I-I



TYPICAL CROSS SECTION
SECTION J-J

GENERAL NOTES

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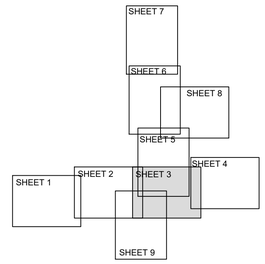

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
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- PROPOSED HEDGEROW
- PROPOSED WILD PLANTING
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- EXISTING FOOTPATH
- EXISTING VERGE/ PLANTING
- EXISTING WALL
- EXISTING TREE

Project Ireland 2040
Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Title: MAIN STREET AND STATION ROAD PUBLIC REALM WORKS PROPOSED LAYOUT PLAN SHEET 3 OF 9

Purpose: ISSUED FOR PLANNING

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL Date 15/06/21	JOC Date 15/06/21	RAN Date 15/06/21

Status: P

Drawing Number: 5194601-HTR-PR-DR-0023

Rev: A

File: 5194601-HTR-PR-DR-0020 to 0029.dwg
Date: Jul 23, 2021 - 7:04pm Plotted by: FMendozaDiaz

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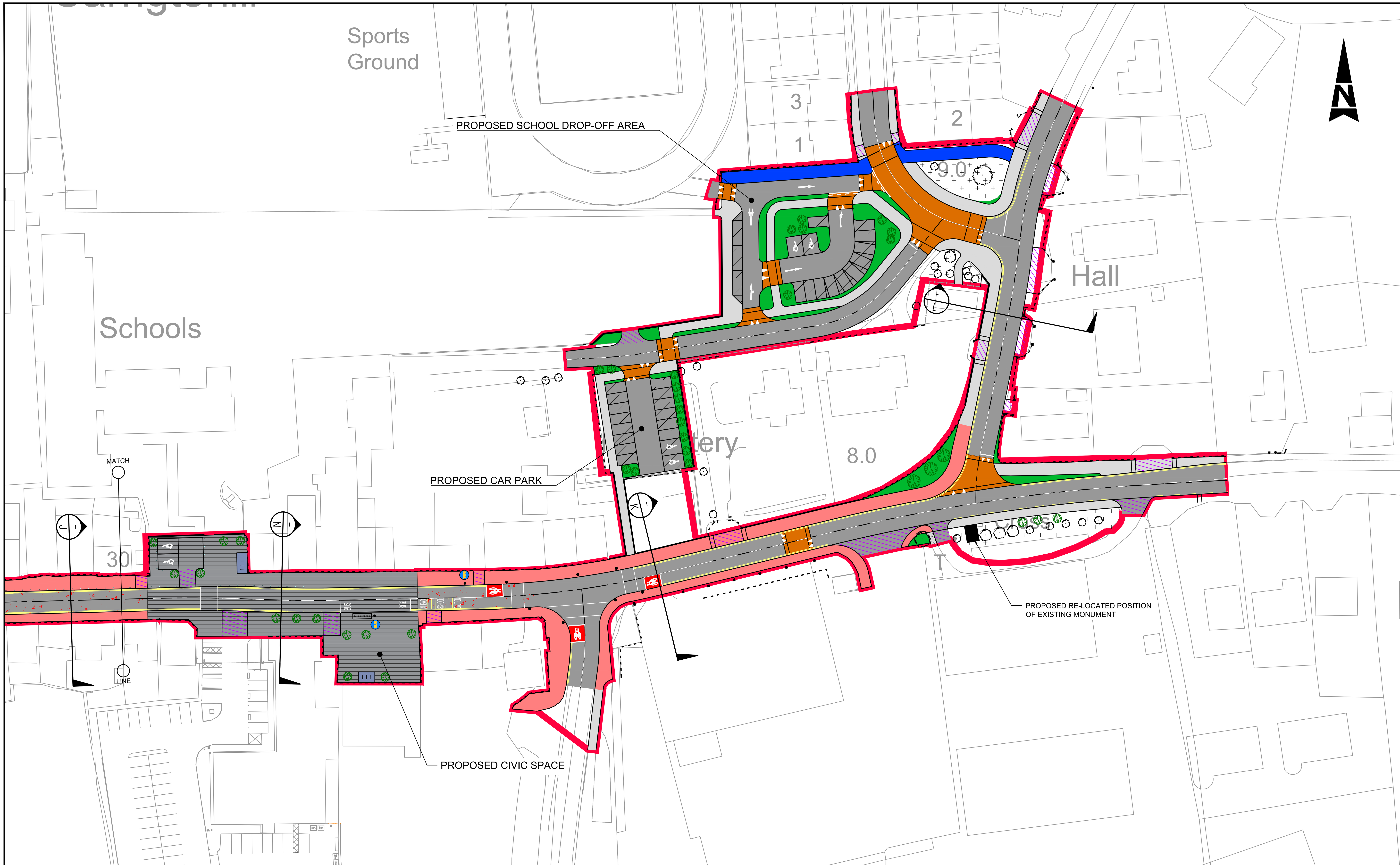
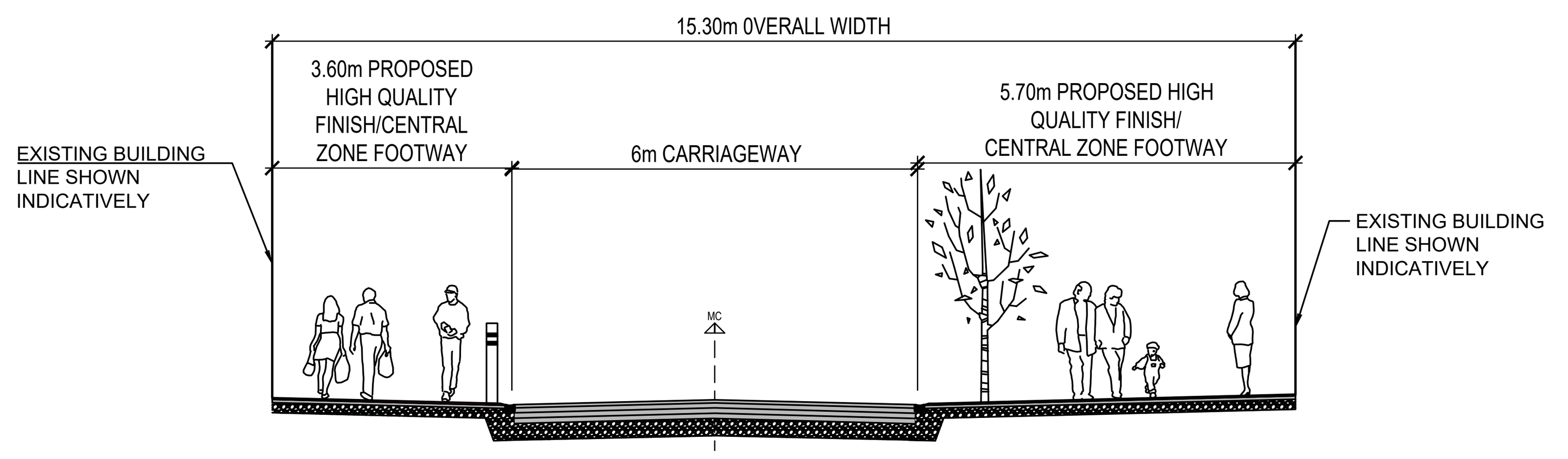
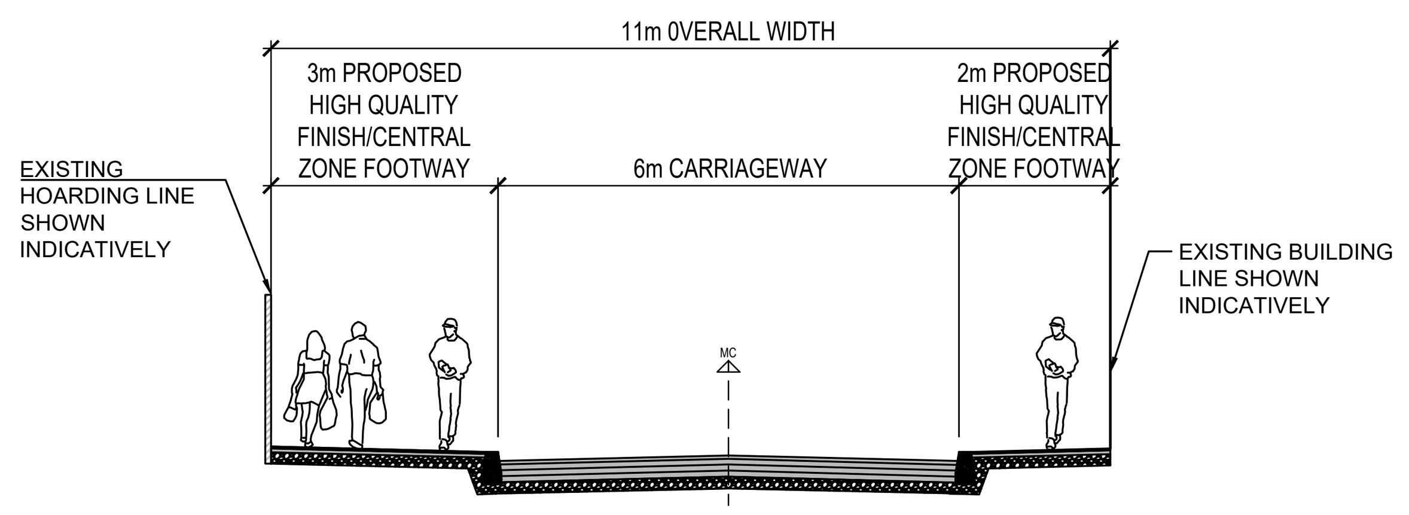
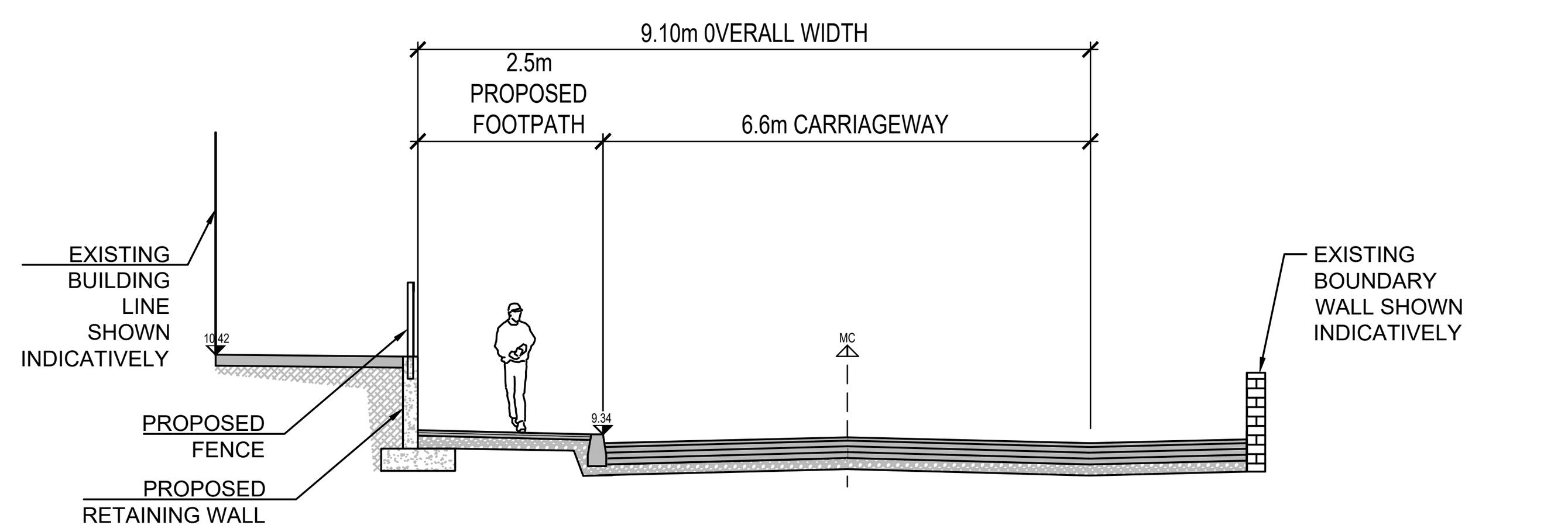




TYPICAL CROSS SECTION
SECTION N-N



TYPICAL CROSS SECTION
SECTION K-K



TYPICAL CROSS SECTION
SECTION L-L

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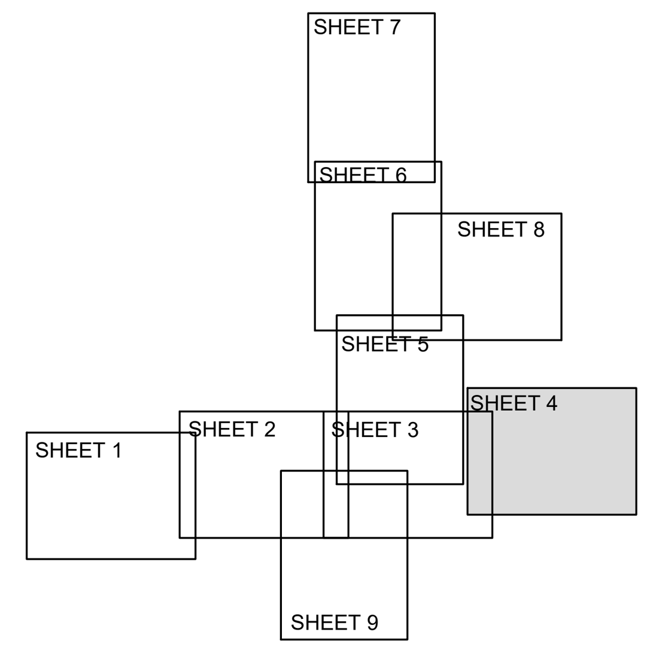

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED CARRIAGEWAY - COLOURED ASPHALT SURFACING
- PROPOSED SHARED CENTRAL SQUARE AREA - HIGH QUALITY FINISH
- PROPOSED FOOTPATH
- PROPOSED CYCLETRACK
- PROPOSED SHARED FOOTPATH / CYCLE TRACK
- HIGH QUALITY FINISH/ CENTRAL ZONE FOOTWAY
- PROPOSED RAISED TABLE
- PROPOSED PARKING BAY
- PROPOSED BICYCLE PARKING AREA
- PROPOSED VERGE/ SOFT LANDSCAPED AREA
- PROPOSED RE-LOCATED SHRINE AREA
- RELOCATED BOUNDARY WALL
- BURY'S BRIDGE CYCLEWAY - SHOWN INDICATIVELY ONLY TO BE PROVIDED AS PART OF A SEPARATE PROJECT
- PROPOSED FENCE
- PROPOSED TRAFFIC SIGNAL POST
- PROPOSED BOLLARDS
- PROPOSED TREE
- PROPOSED HEDGEROW
- PROPOSED WILD PLANTING
- EXISTING VEHICULAR ENTRANCE
- EXISTING FOOTPATH
- EXISTING VERGE/ PLANTING
- EXISTING WALL
- EXISTING TREE

A1

DO NOT SCALE

Project Ireland 2040
Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: MAIN STREET AND STATION ROAD PUBLIC REALM WORKS PROPOSED LAYOUT PLAN SHEET 4 OF 9

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL, Date 15/06/21	JOC, Date 15/06/21	RAN, Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0024	A

File: 5194601-HTR-PR-DR-0020 to 0029.dwg Plotted by: FMendozaDiaz
Date: Jul 23, 2021 - 7:05pm

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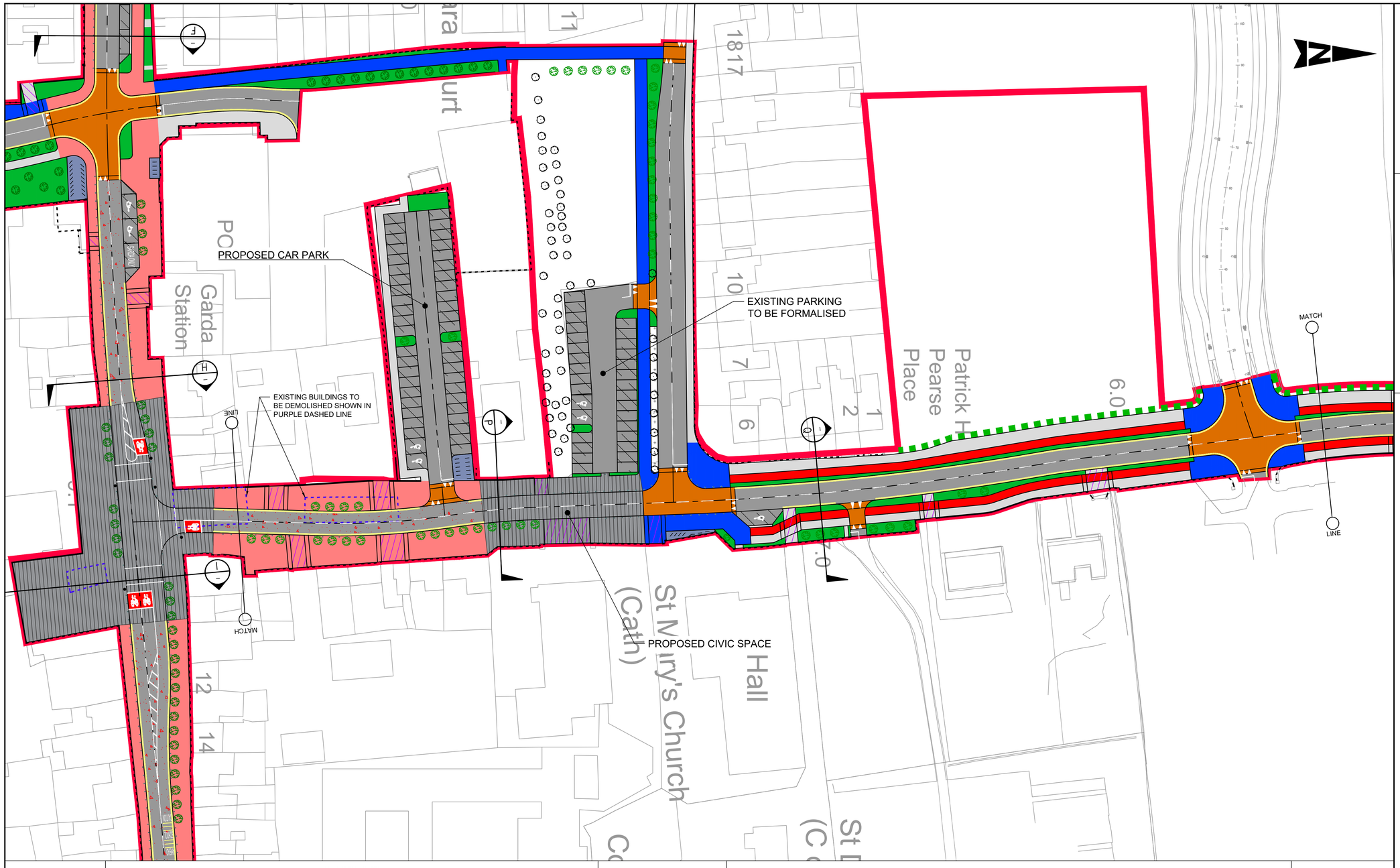
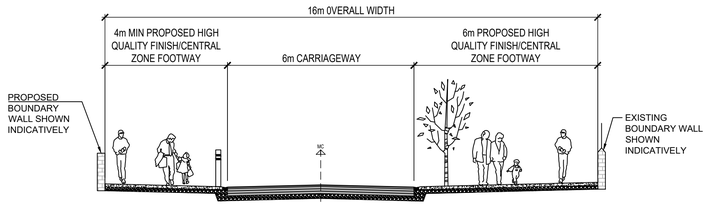
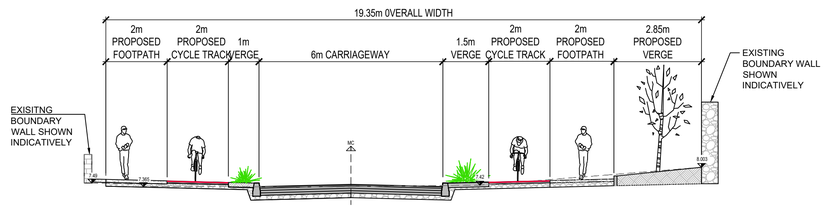




TYPICAL CROSS SECTION
SECTION P-P



TYPICAL CROSS SECTION
SECTION Q-Q

GENERAL NOTES

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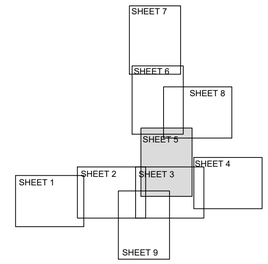
5. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION



KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED CARRIAGEWAY - COLOURED ASPHALT SURFACING
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- PROPOSED SHARED FOOTPATH / CYCLE TRACK
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- PROPOSED HEDGEROW
- PROPOSED WILD PLANTING
- EXISTING VEHICULAR ENTRANCE
- EXISTING FOOTPATH
- EXISTING VERGE/ PLANTING
- EXISTING WALL
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Purpose: ISSUED FOR PLANNING

Project Ireland 2040 Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Title: MAIN STREET AND STATION ROAD
PUBLIC REALM WORKS
PROPOSED LAYOUT PLAN
SHEET 5 OF 9

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0025	A

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DO NOT SCALE
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File: 5194601-HTR-PR-DR-0020 to 0029.dwg
Date: Jul 23, 2021 - 7:05pm Plotted by: FMendozaDiaz

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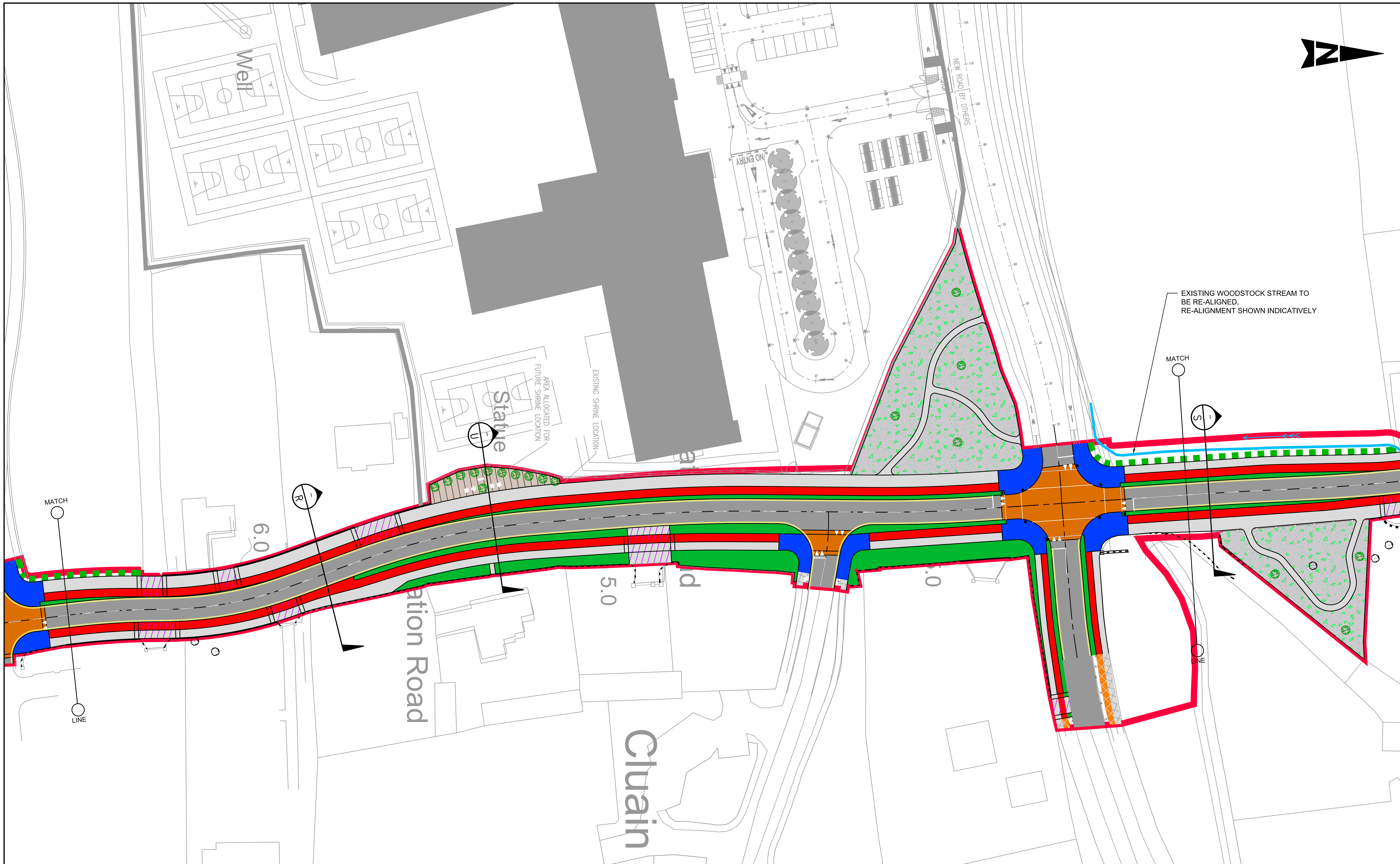

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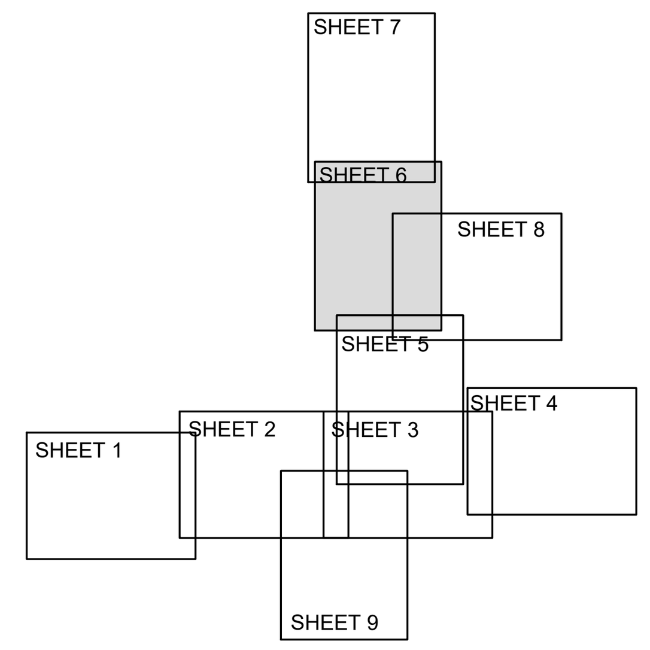

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
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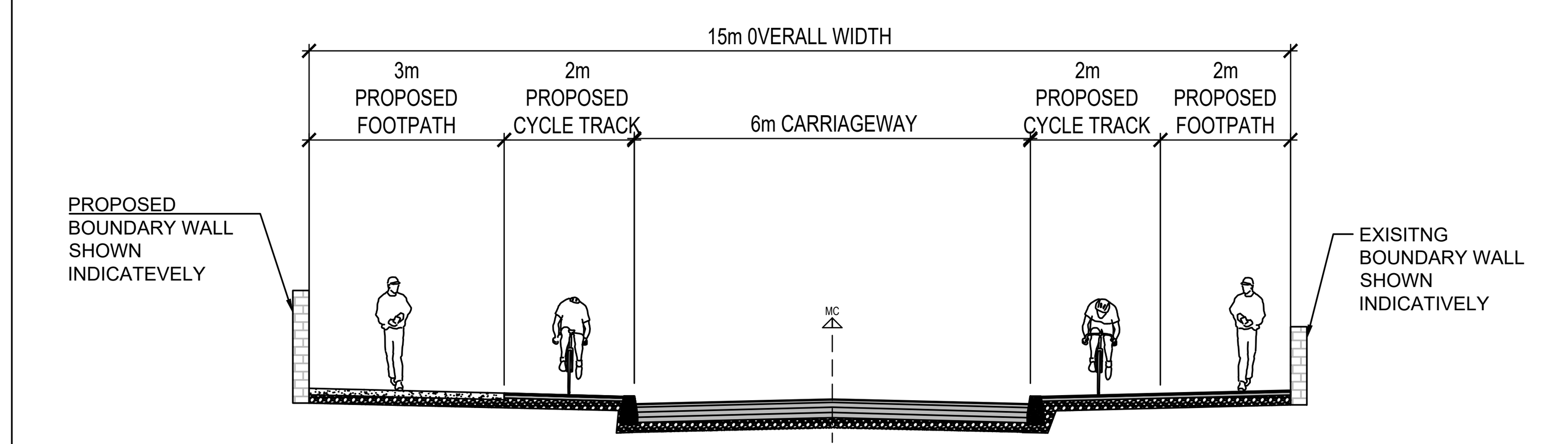
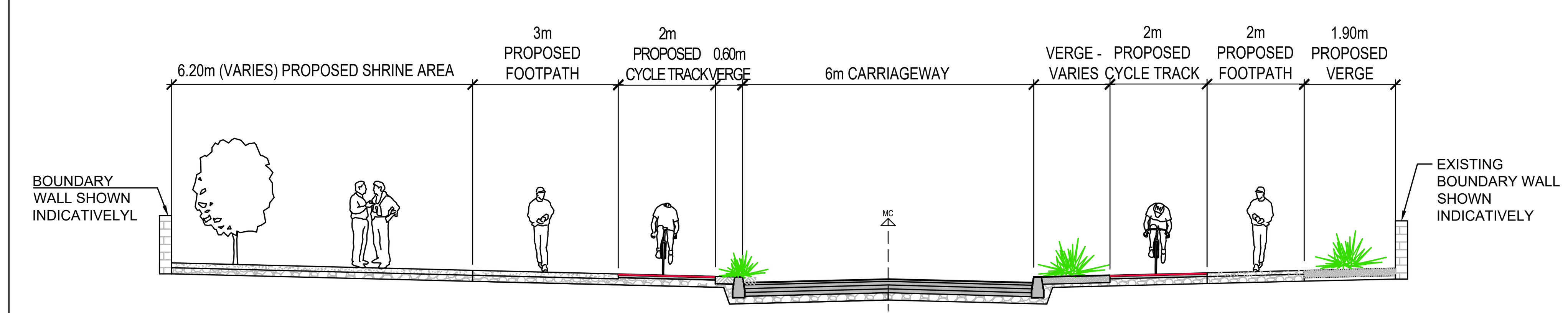
- EXISTING TREE



CROSS SECTION
SECTION R-R



TYPICAL CROSS SECTION
SECTION U-U

DO NOT SCALE

A1

Project Ireland 2040
Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: MAIN STREET AND STATION ROAD PUBLIC REALM WORKS PROPOSED LAYOUT PLAN SHEET 6 OF 9

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0026	A

File: 5194601-HTR-PR-DR-0020 to 0029.dwg   Plotted by: FMendozaDiaz
Date: Jul 23, 2021 - 7:06pm

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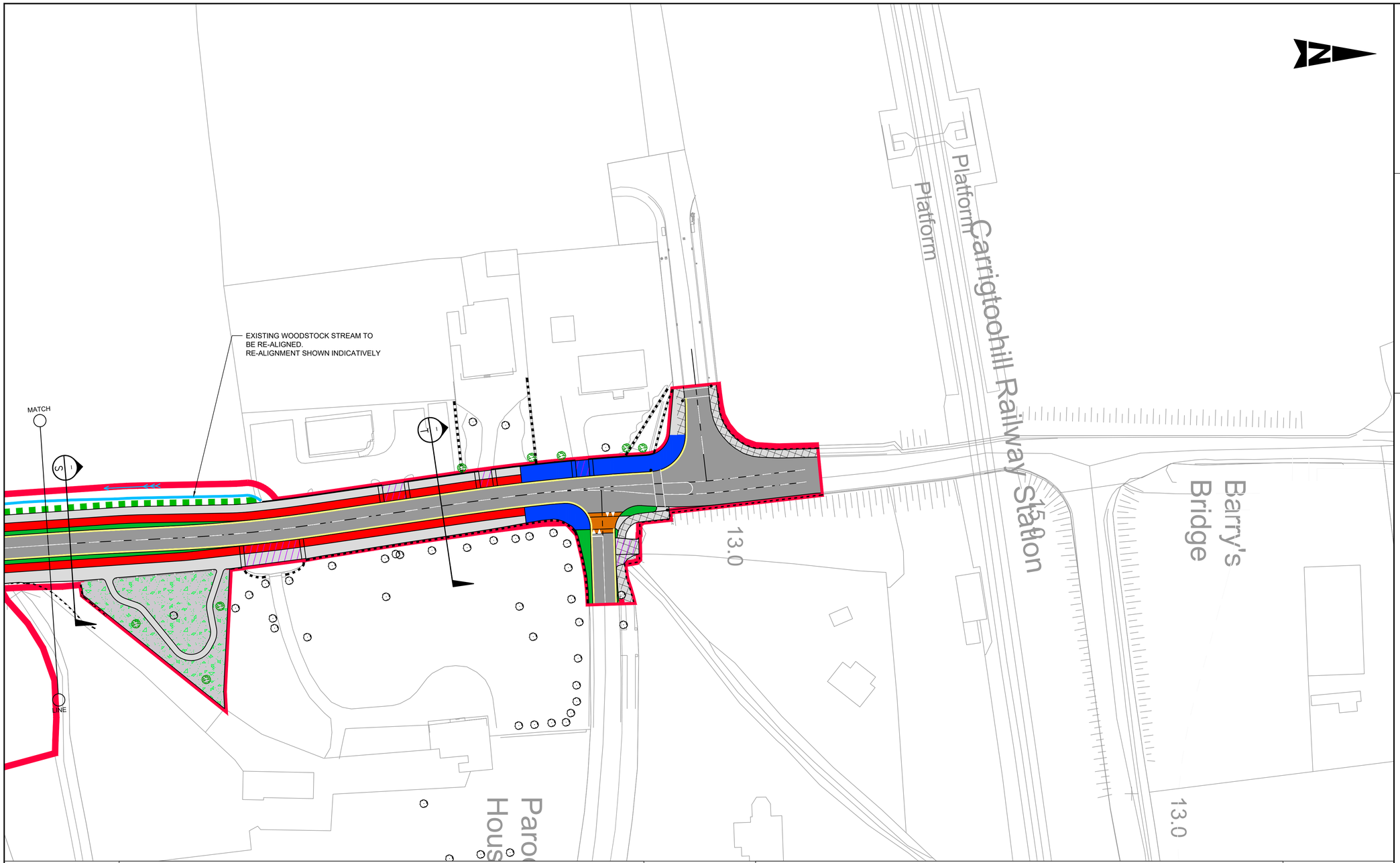
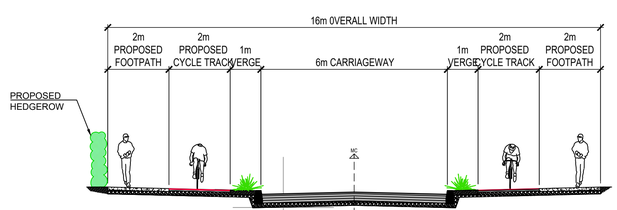
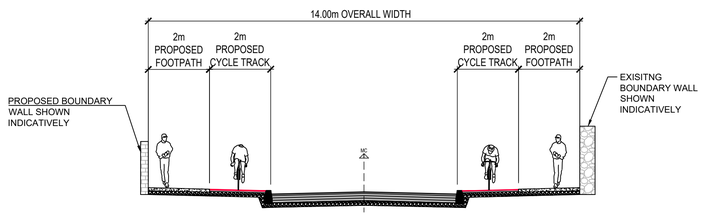
DO NOT SCALE





TYPICAL CROSS SECTION
SECTION S-S



TYPICAL CROSS SECTION
SECTION T-T

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE
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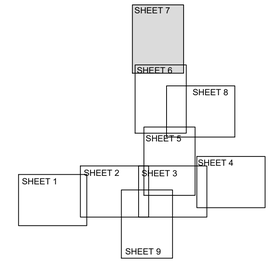

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED CARRIAGEWAY - COLOURED ASPHALT SURFACING
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Project Ireland 2040
Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: MAIN STREET AND STATION ROAD
PUBLIC REALM WORKS
PROPOSED LAYOUT PLAN
SHEET 7 OF 9

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0027	A

File: 5194601-HTR-PR-DR-0020 to 0029.dwg
Date: Jul 23, 2021 - 7:06pm Plotted by: FMendozaDiaz

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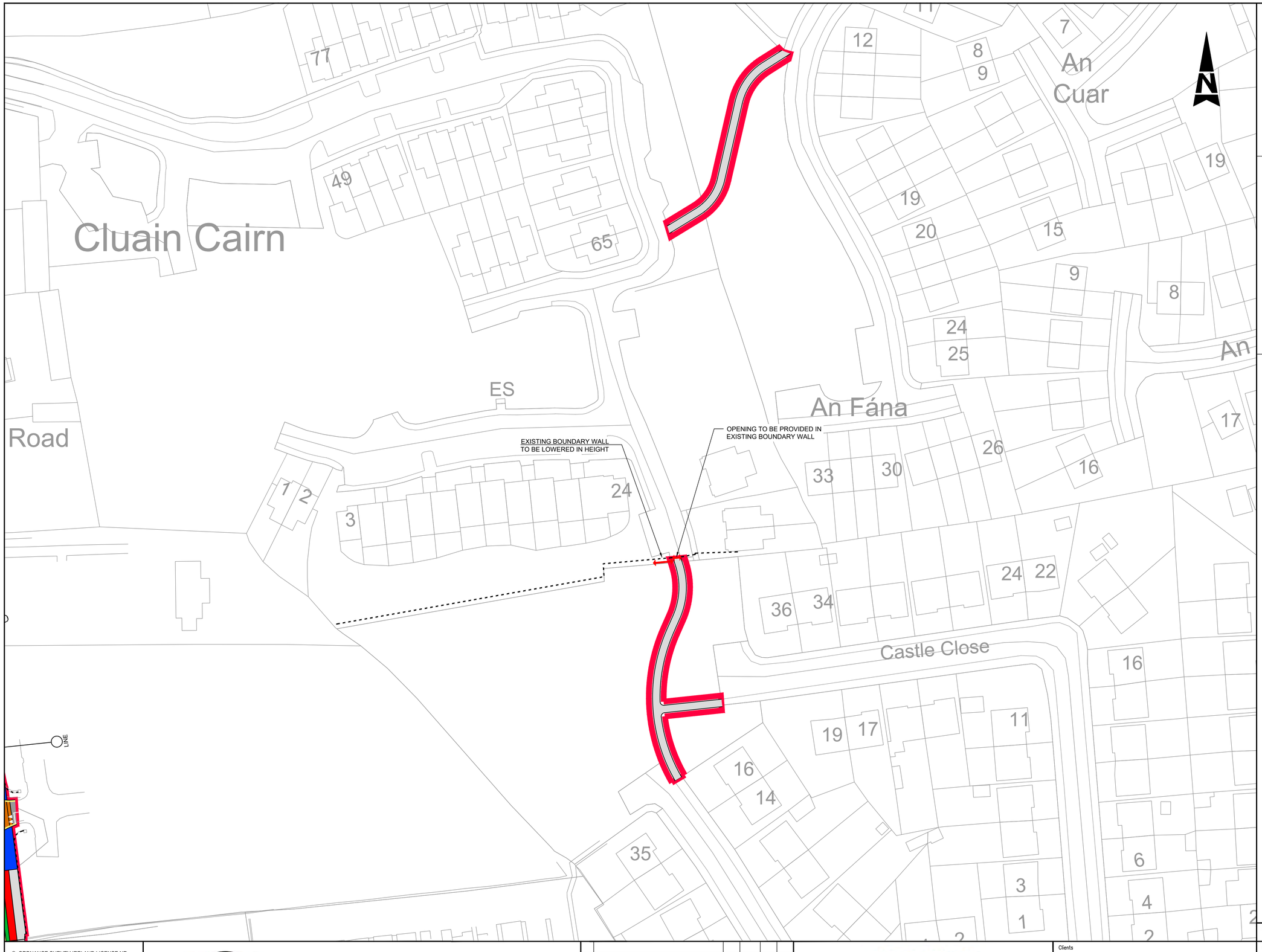

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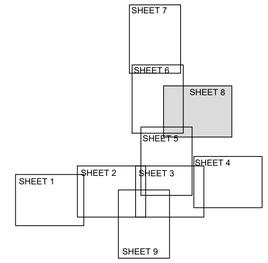

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
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DO NOT SCALE

File: 5194601-HTR-PR-DR-0020 to 0029.dwg
Date: Jul 23, 2021 - 7:06pm Plotted by: FMendozaDiaz

Project Ireland 2040 Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: MAIN STREET AND STATION ROAD
PUBLIC REALM WORKS
PROPOSED LAYOUT PLAN
SHEET 8 OF 9

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status: P

Drawing Number: 5194601-HTR-PR-DR-0028

Rev: A

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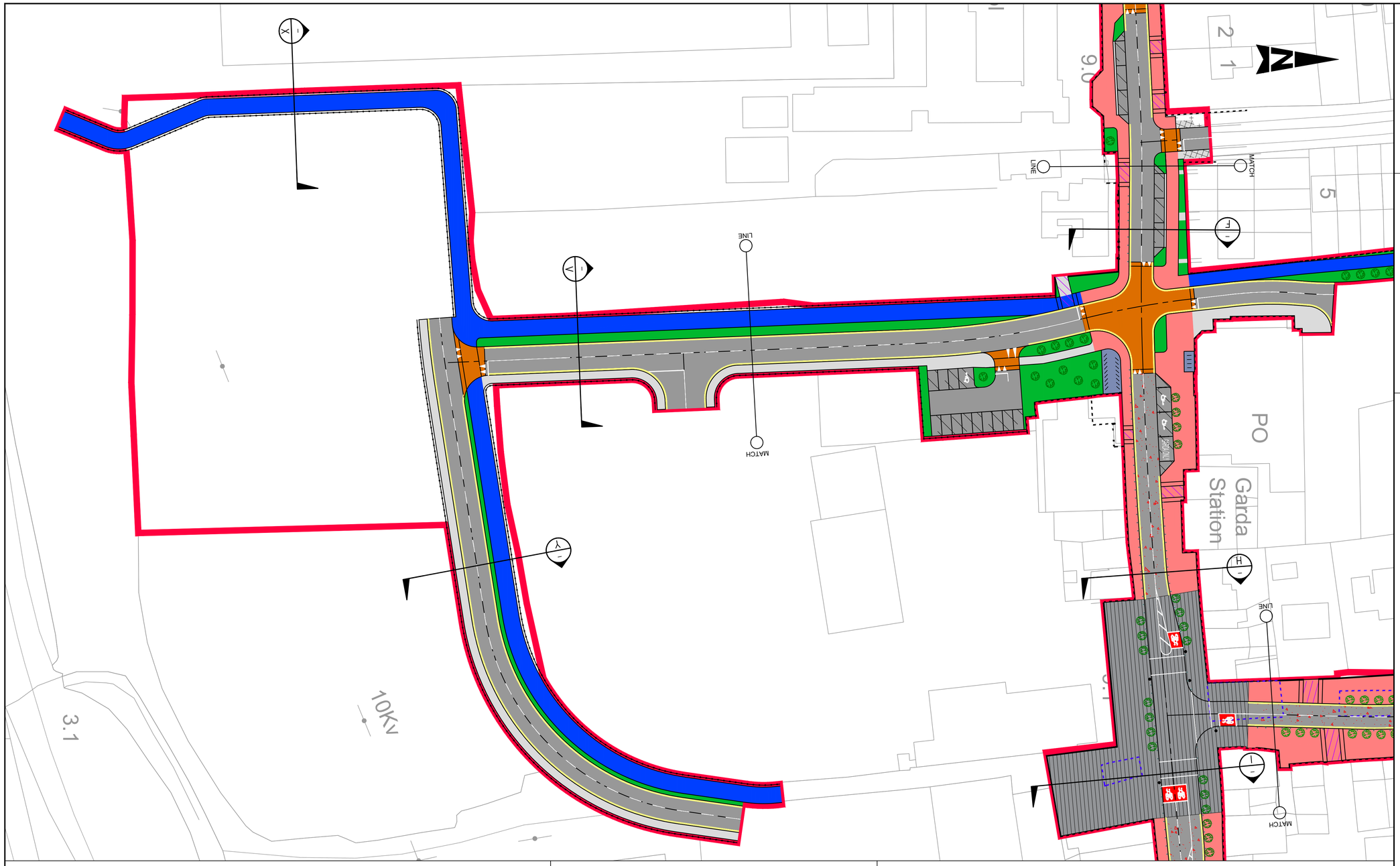
DO NOT SCALE



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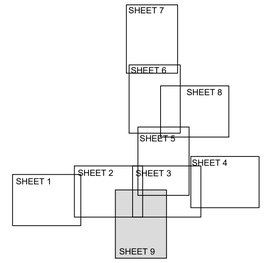

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
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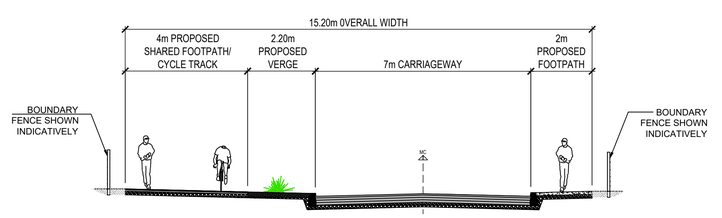
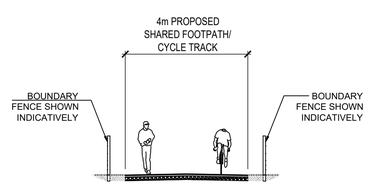
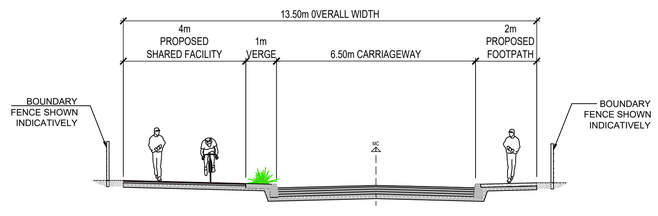


TYPICAL CROSS SECTION
SECTION V-V



TYPICAL CROSS SECTION
SECTION X-X



TYPICAL CROSS SECTION
SECTION Y-Y

Project Ireland 2040
Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: MAIN STREET AND STATION ROAD PUBLIC REALM WORKS PROPOSED LAYOUT PLAN SHEET 9 OF 9

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status: P

Drawing Number: 5194601-HTR-PR-DR-0029

Rev: A

File: 5194601-HTR-PR-DR-0020 to 0029.dwg
Date: Jul 23, 2021 - 7:07pm Plotted by: FMendozaDiaz

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A1

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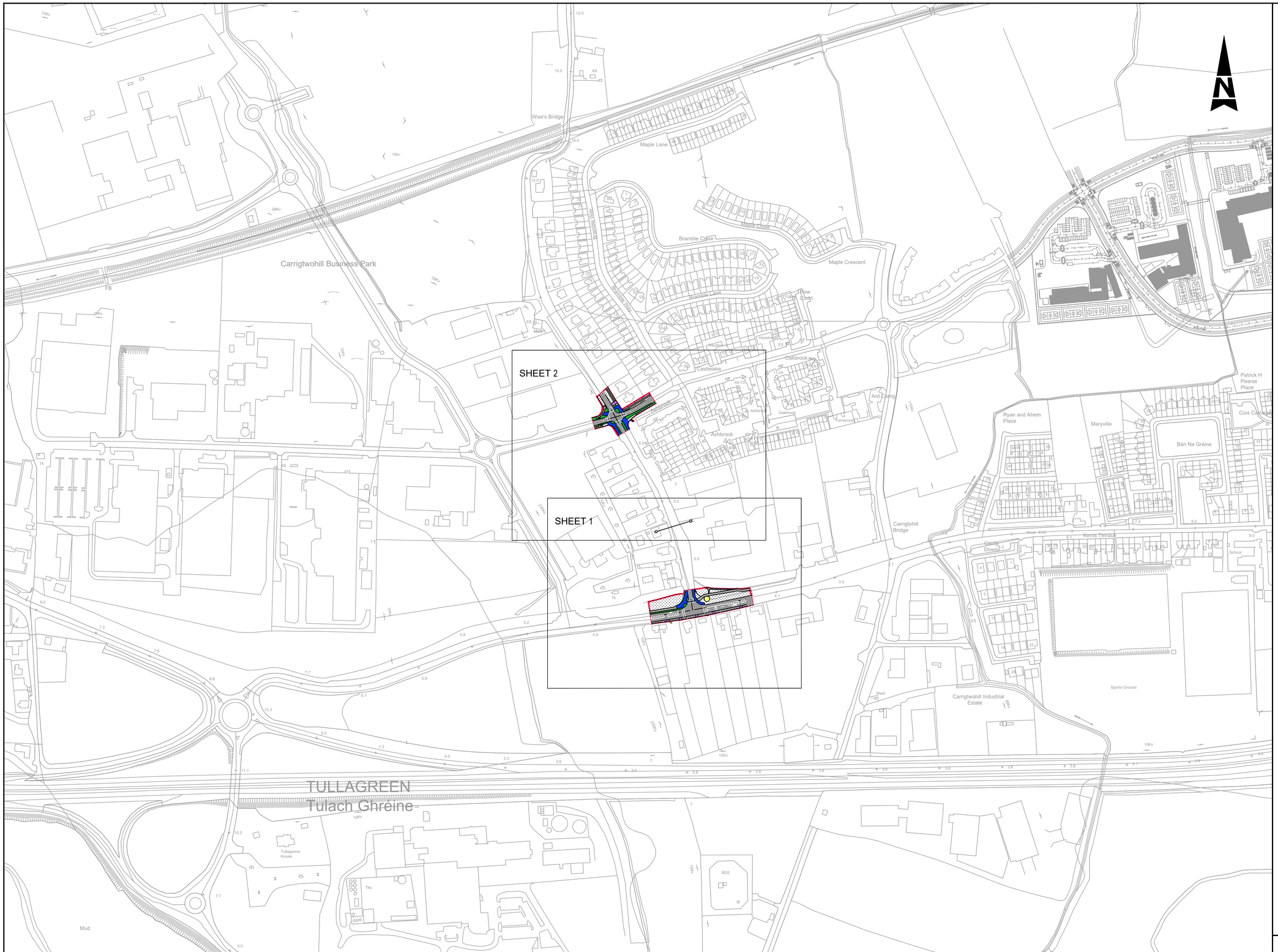
DO NOT SCALE



GENERAL NOTES

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4. ALL COORDINATES ARE IN METRES AND ARE TO IRISH TRANSVERSE MERCATOR
5. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION

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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: WISE'S ROAD JUNCTION UPGRADES
PROPOSED LAYOUT KEY PLAN

Original Scale	Des/Drawn	Checked	Authorised
1:2500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status: P

Drawing Number: 5194601-HTR-PR-DR-0030

Rev: A

File: 5194601-HTR-PR-DR-0030 to 0032.dwg
Date: Jul 22, 2021 - 5:48pm Plotted by: FMendozaDiaz

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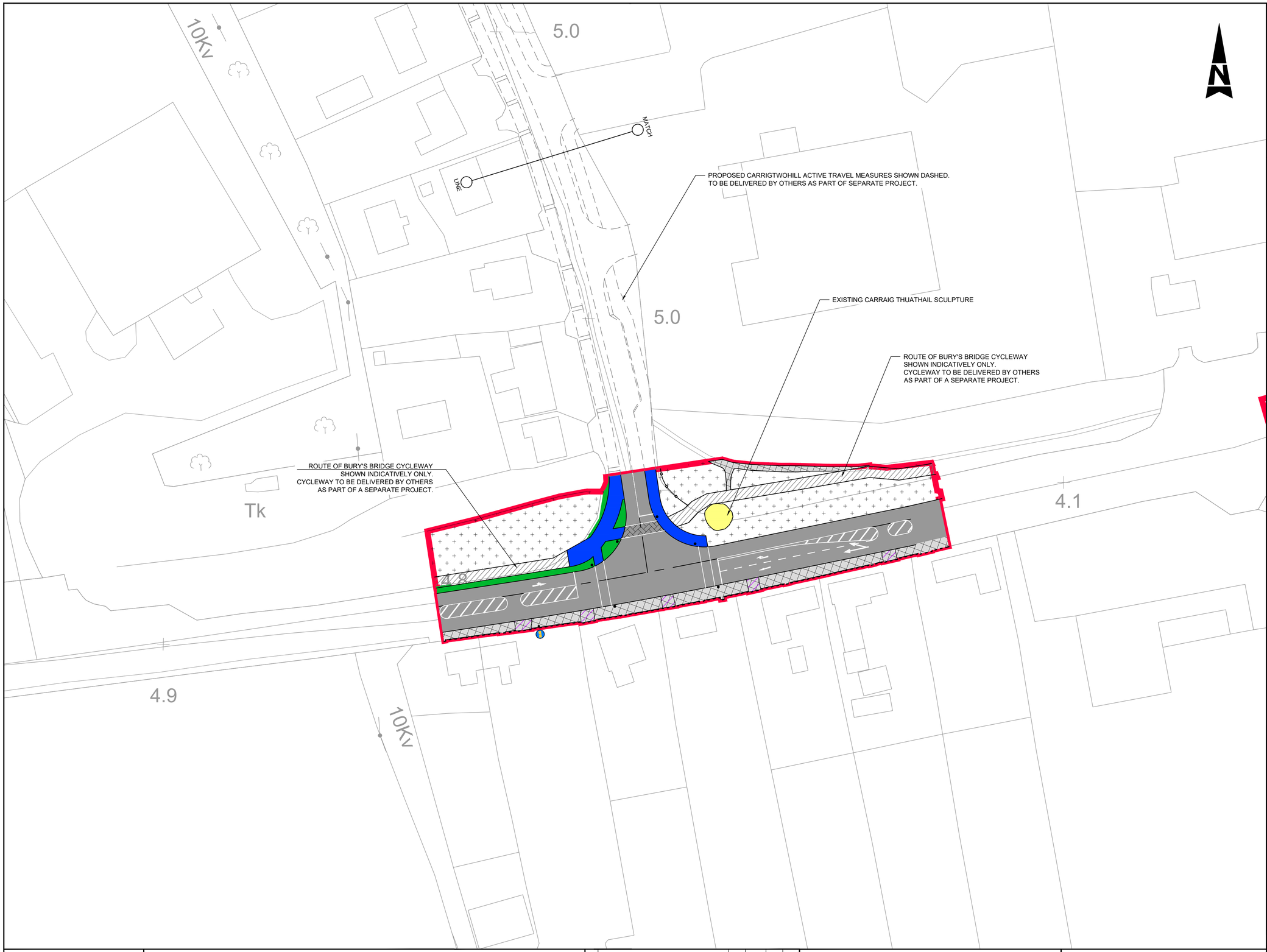

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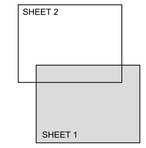

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED FOOTPATH
- PROPOSED SHARED FOOTPATH / CYCLE TRACK
- BURY'S BRIDGE CYCLEWAY - SHOWN INDICATIVELY ONLY TO BE PROVIDED AS PART OF A SEPARATE PROJECT
- PROPOSED TRAFFIC SIGNAL POST
- EXISTING VEHICULAR ENTRANCE
- EXISTING FOOTPATH
- EXISTING VERGE/ PLANTING
- EXISTING WALL
- EXISTING TREE

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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: WISE'S ROAD/ MAIN STREET JUNCTION UPGRADE
PROPOSED LAYOUT PLAN
SHEET 1 OF 2

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0031	A

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DO NOT SCALE

File: 5194601-HTR-PR-DR-0030 to 0032.dwg
Date: Jul 22, 2021 - 5:49pm Plotted by: FMendozaDiaz

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A1

DO NOT SCALE

File: 5194601-HTR-PR-DR-0030 to 0032.dwg
Date: Jul 22, 2021 - 5:49pm Plotted by: FMendozaDiaz

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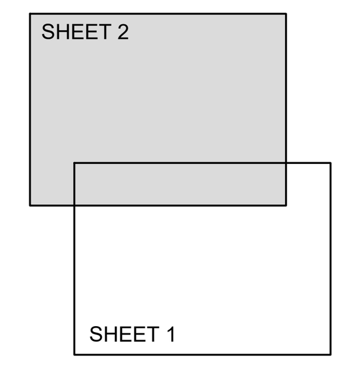

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED FOOTPATH
- PROPOSED SHARED FOOTPATH / CYCLE TRACK
- BURY'S BRIDGE CYCLEWAY - SHOWN INDICATIVELY ONLY TO BE PROVIDED AS PART OF A SEPARATE PROJECT
- PROPOSED TRAFFIC SIGNAL POST
- EXISTING VEHICULAR ENTRANCE
- EXISTING FOOTPATH
- EXISTING VERGE/ PLANTING
- EXISTING WALL
- EXISTING TREE

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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: WISE'S ROAD / OAKBROOK LINK
JUNCTION UPGRADE
PROPOSED LAYOUT PLAN
SHEET 2 OF 2

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0032	A

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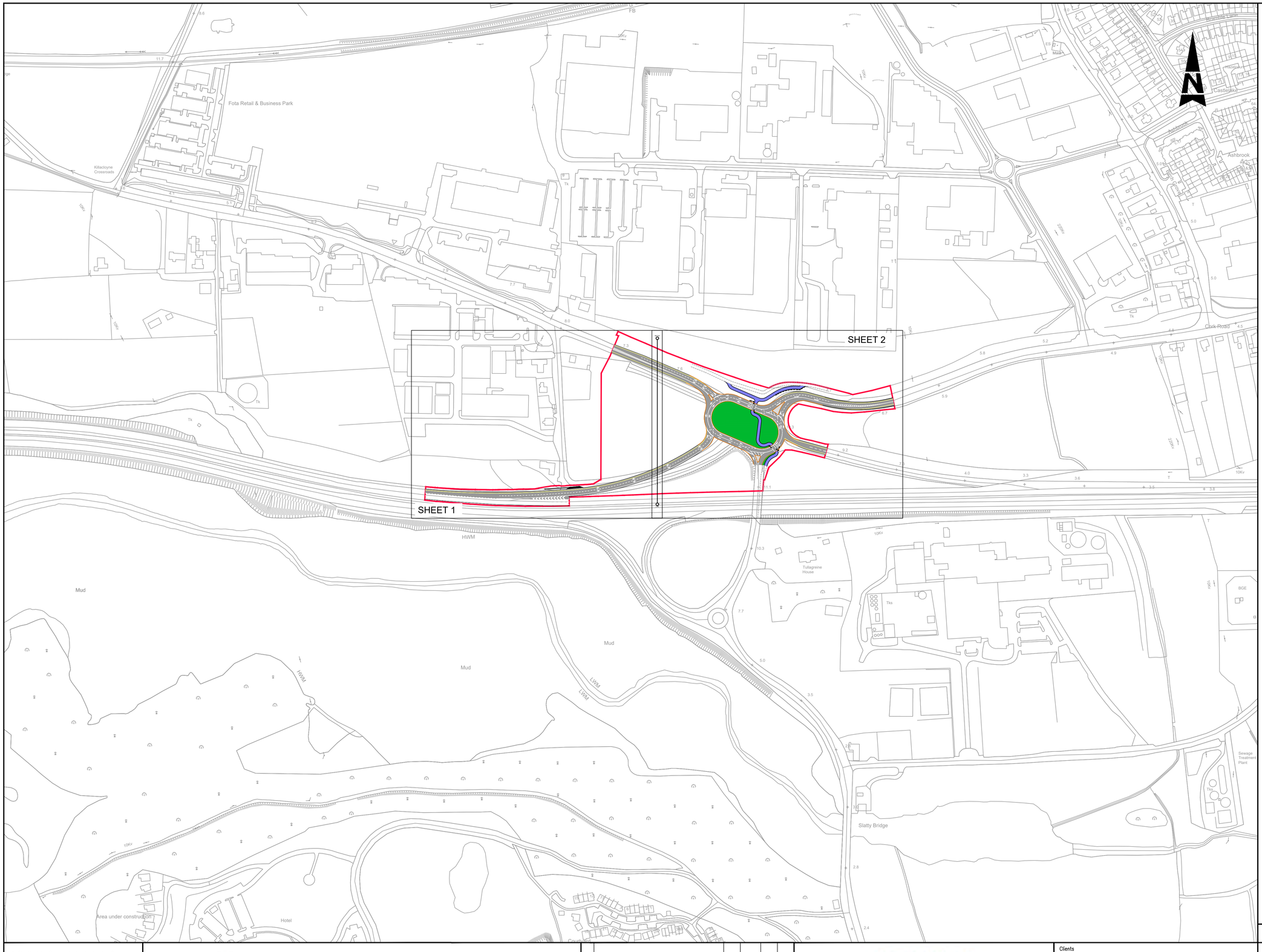
DO NOT SCALE



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LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED MAINTENANCE FOOTPATH
- PROPOSED TRAFFIC ISLAND
- PROPOSED VERGE/ SOFT LANDSCAPED AREA
- PROPOSED SHARED USE PATH
- INDICATIVE LOCATION OF INTER-URBAN CYCLE ROUTE BY OTHERS
- PROPOSED KERB
- PROPOSED RETAINING WALL

Purpose: ISSUED FOR PLANNING

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Rev	Description	By	Date	Chk'd	Auth
B	ISSUED FOR PART 8 PLANNING	FMD	01/22	JOC	RAN
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

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PUBLIC REALM INFRASTRUCTURE BUNDLE

Title: N25 JUNCTION 3 (COBH CROSS)
ADDITIONAL CAPACITY INTERIM MEASURES
PROPOSED LAYOUT KEY PLAN

Original Scale	Des/Drawn	Checked	Authorised
1:2500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status: P

Drawing Number: 5194601-HTR-PR-DR-0040

Rev: B

File: 5194601-HTR-PR-DR-0040 to 0042.dwg
Date: Jan 28, 2022 - 11:04am Plotted by: FMendozaDiaz

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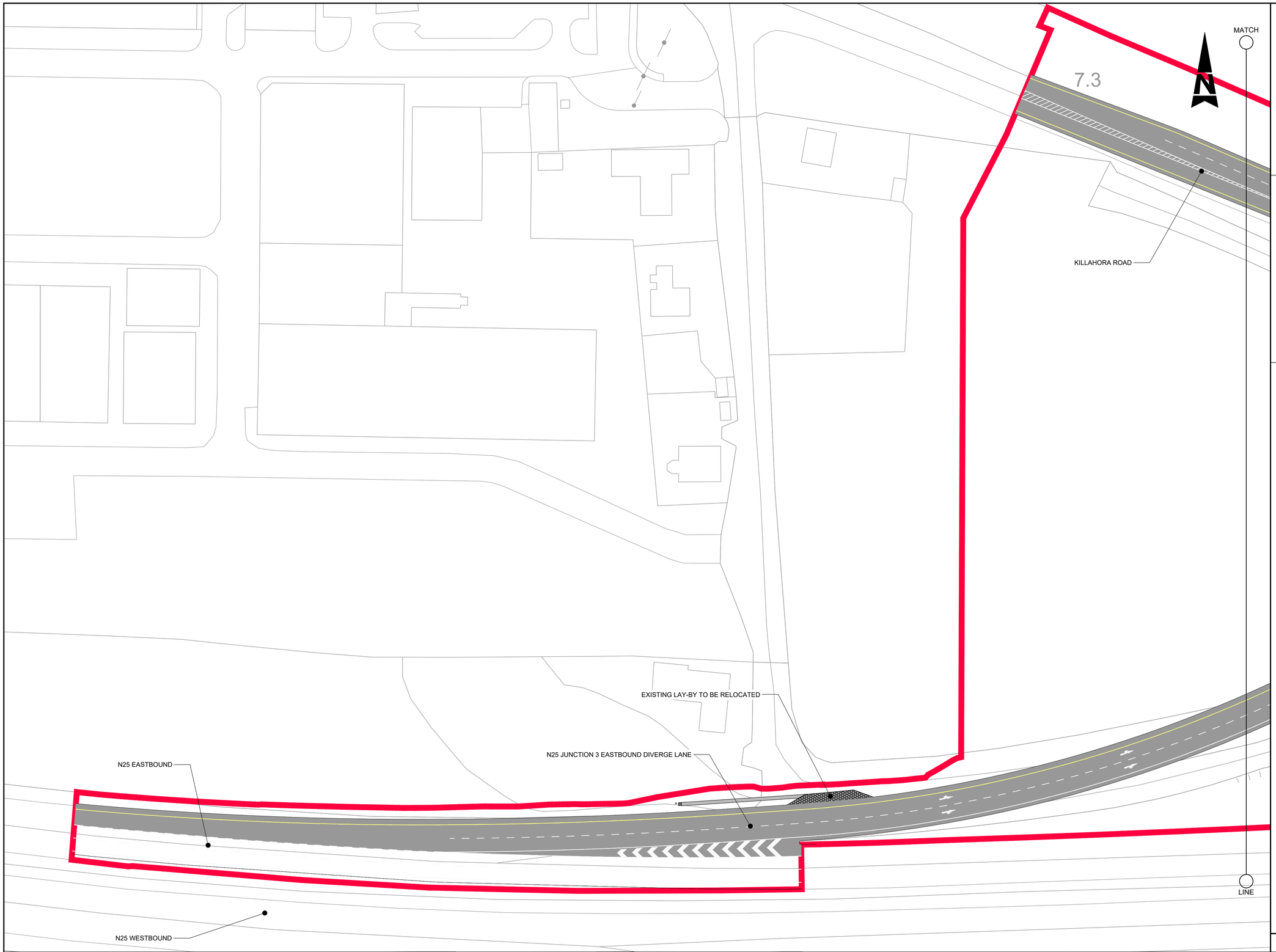

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SHEET 1 | SHEET 2

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED MAINTENANCE FOOTPATH
- PROPOSED TRAFFIC ISLAND
- PROPOSED VERGE/ SOFT LANDSCAPED AREA
- PROPOSED SHARED USE PATH
- INDICATIVE LOCATION OF INTER-URBAN CYCLE ROUTE BY OTHERS
- PROPOSED KERB
- PROPOSED RETAINING WALL

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Rev	Description	By	Date	Chk'd	Auth
B	ISSUED FOR PART 8 PLANNING	FMD	01/22	JOC	RAN
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-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: N25 JUNCTION 3 (COBH CROSS)
ADDITIONAL CAPACITY INTERIM MEASURES
PROPOSED LAYOUT PLAN
SHEET 1 OF 2

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0041	B

File: 5194601-HTR-PR-DR-0040 to 0042.dwg
Date: Jan 28, 2022 - 11:05am Plotted by: FMendozaDiaz

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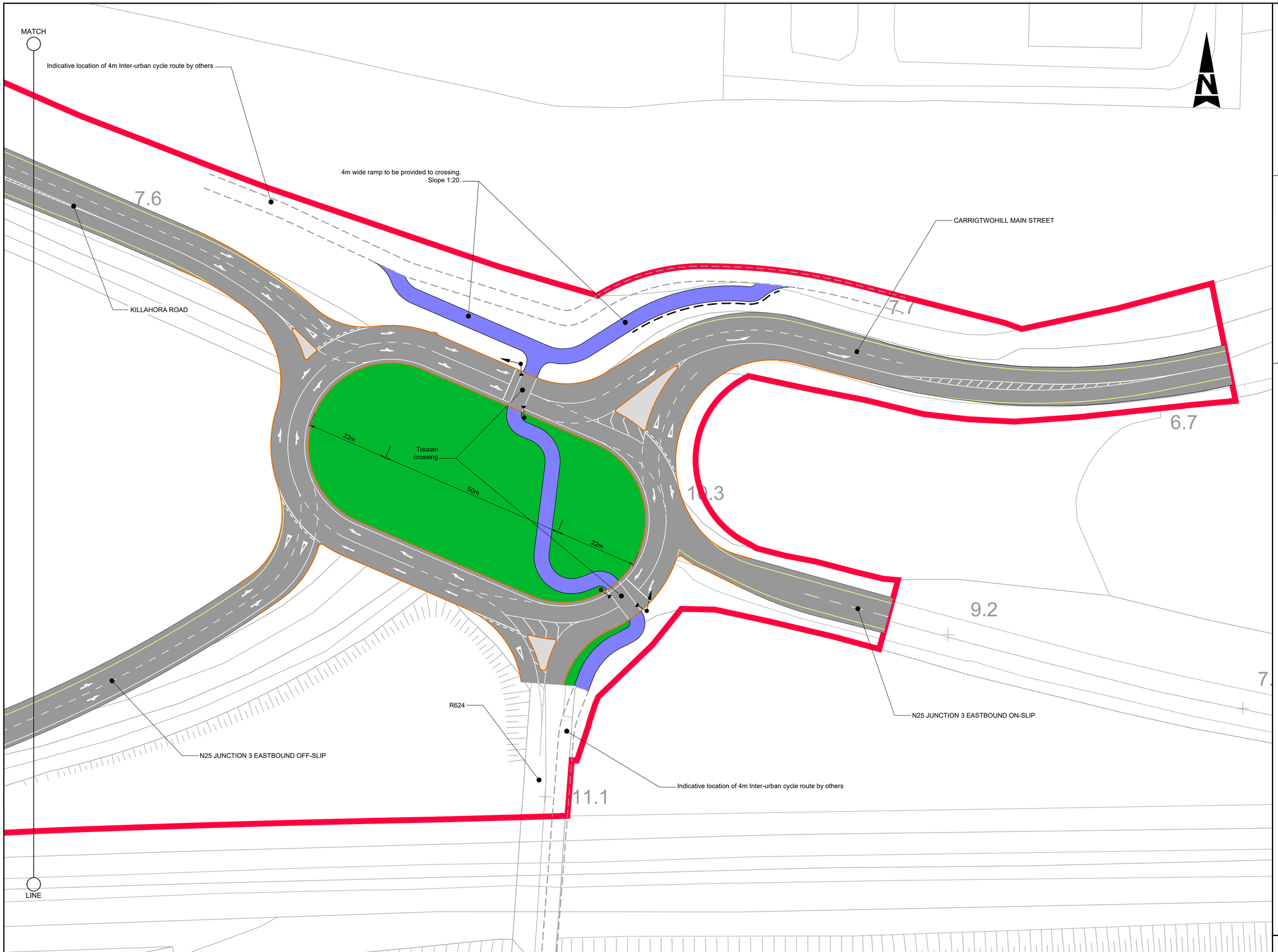

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SHEET 1 | SHEET 2

KEY PLAN

LEGEND:

- PART 8 SITE BOUNDARY
- CARRIAGEWAY - STANDARD ASPHALT SURFACING - EXISTING SURFACE TO BE MAINTAINED IF SUITABLE
- PROPOSED MAINTENANCE FOOTPATH
- PROPOSED TRAFFIC ISLAND
- PROPOSED VERGE/ SOFT LANDSCAPED AREA
- PROPOSED SHARED USE PATH
- INDICATIVE LOCATION OF INTER-URBAN CYCLE ROUTE BY OTHERS
- PROPOSED KERB
- PROPOSED RETAINING WALL

A1

DO NOT SCALE

File: 5194601-HTR-PR-DR-0040 to 0042.dwg
Date: Jan 28, 2022 - 11:05am Plotted by: FMendozaDiaz

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Rev	Description	By	Date	Chk'd	Auth
B	ISSUED FOR PART 8 PLANNING	FMD	01/22	JOC	RAN
A	ISSUED FOR PART 8 PLANNING	FMD	07/21	JOC	RAN
-	ISSUED FOR PART 8 PLANNING	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE
PUBLIC REALM INFRASTRUCTURE BUNDLE

Purpose: ISSUED FOR PLANNING

Title: N25 JUNCTION 3 (COBH CROSS)
ADDITIONAL CAPACITY INTERIM MEASURES
PROPOSED LAYOUT PLAN
SHEET 2 OF 2

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 15/06/21	Date 15/06/21	Date 15/06/21

Status	Drawing Number	Rev
P	5194601-HTR-PR-DR-0042	B

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Appendix B. Structures, Hedges and Walls to be Removed.

A1

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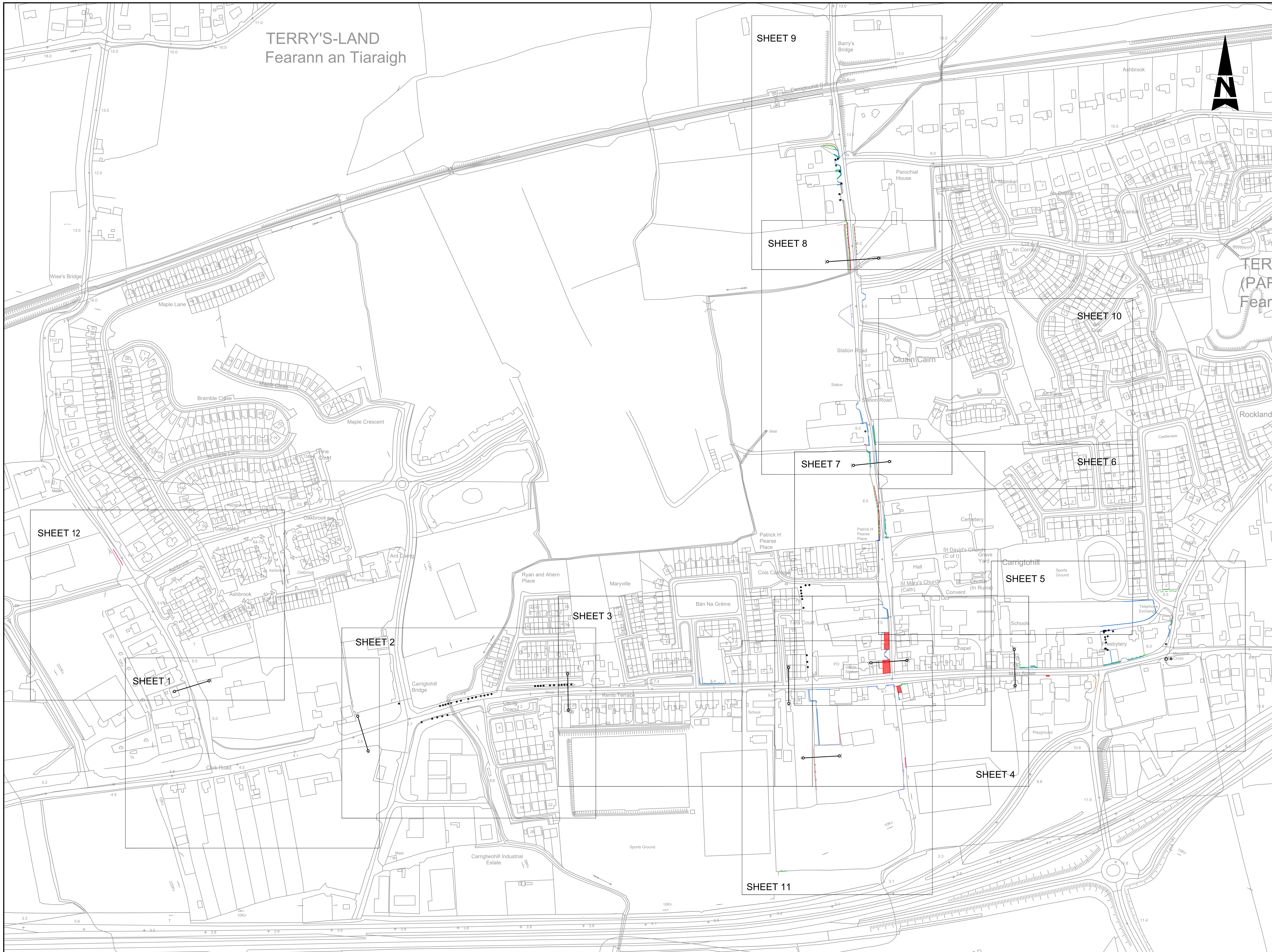

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LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

Purpose: ISSUED FOR REVIEW

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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
-	ISSUED FOR REVIEW	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED KEY PLAN

Original Scale	Des/Drawn	Checked	Authorised
1:2500	KL, Date 23/06/21	JOC, Date 23/06/21	RAN, Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0205	A

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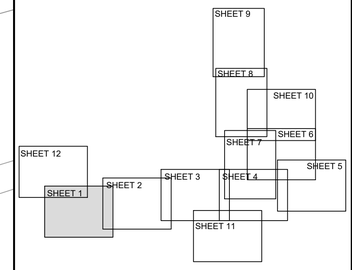

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

A1

DO NOT SCALE

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File: 5194601-HTR-SK-0205 to 0217.dwg
Date: Oct 01, 2021 - 11:46am Plotted by: FMendozaDiaz

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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
-	ISSUED FOR REVIEW	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 1 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0206	A

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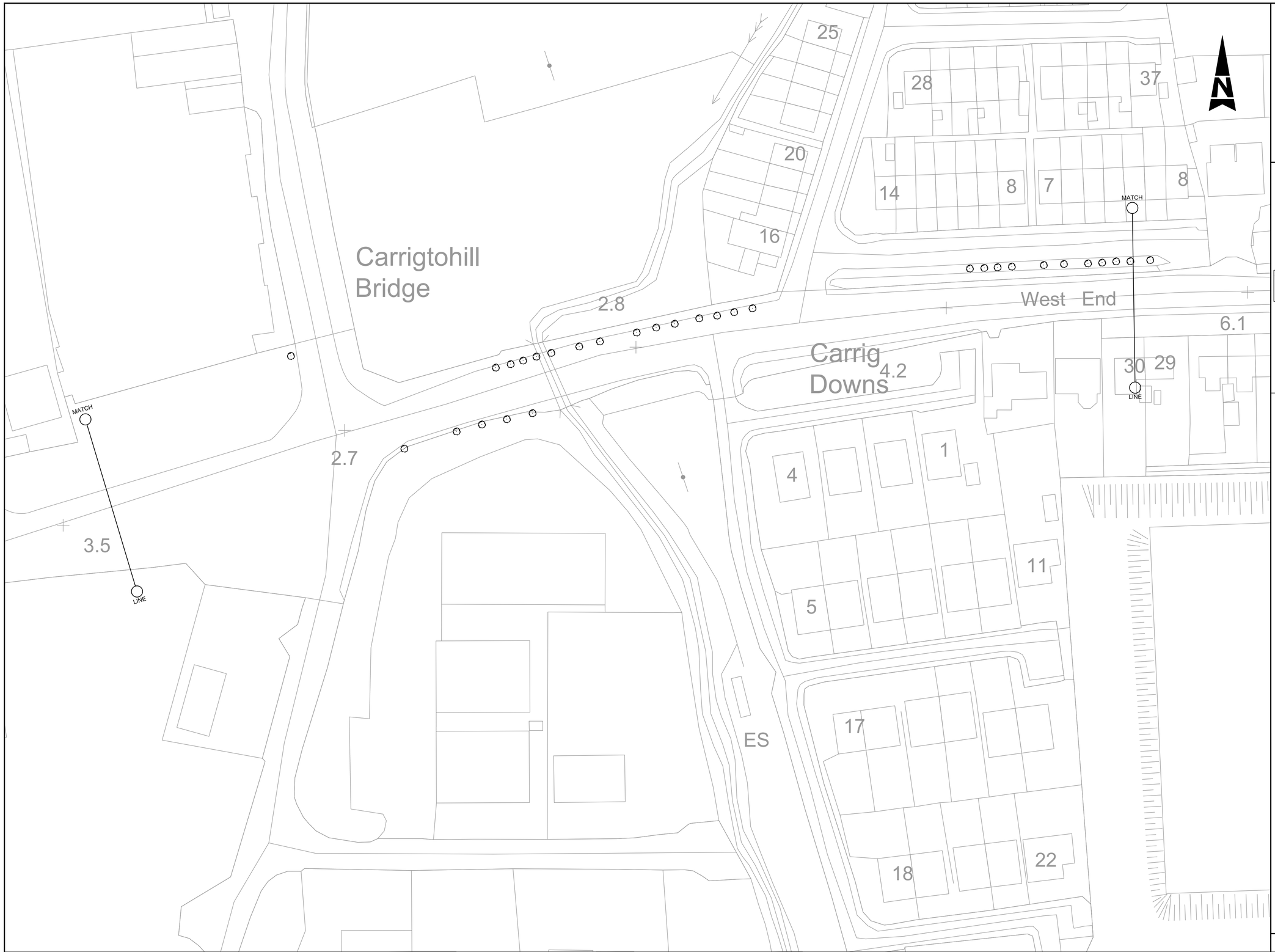

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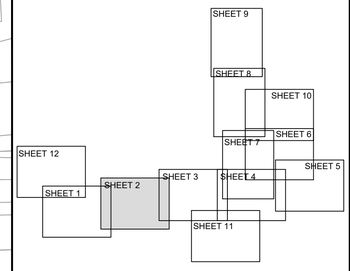

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

A1

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DO NOT SCALE

File: 5194601-HTR-SK-0205 to 0217.dwg
Date: Oct 01, 2021 - 11:46am Plotted by: FMendozaDiaz

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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
-	ISSUED FOR REVIEW	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 2 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0207	A

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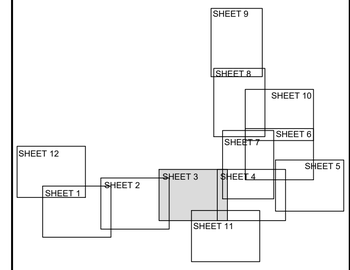
GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE
2. ONLY WRITTEN DIMENSIONS SHALL BE USED. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS
3. ALL LEVELS ARE IN METRES AND ARE TO MALIN HEAD DATUM
4. ALL COORDINATES ARE IN METRES AND ARE TO IRISH TRANSVERSE MERCATOR
5. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION



KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

A1

DO NOT SCALE

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Date: Oct 01, 2021 - 11:47am Plotted by: FMendozaDiaz

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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
-	ISSUED FOR REVIEW	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 3 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0208	A

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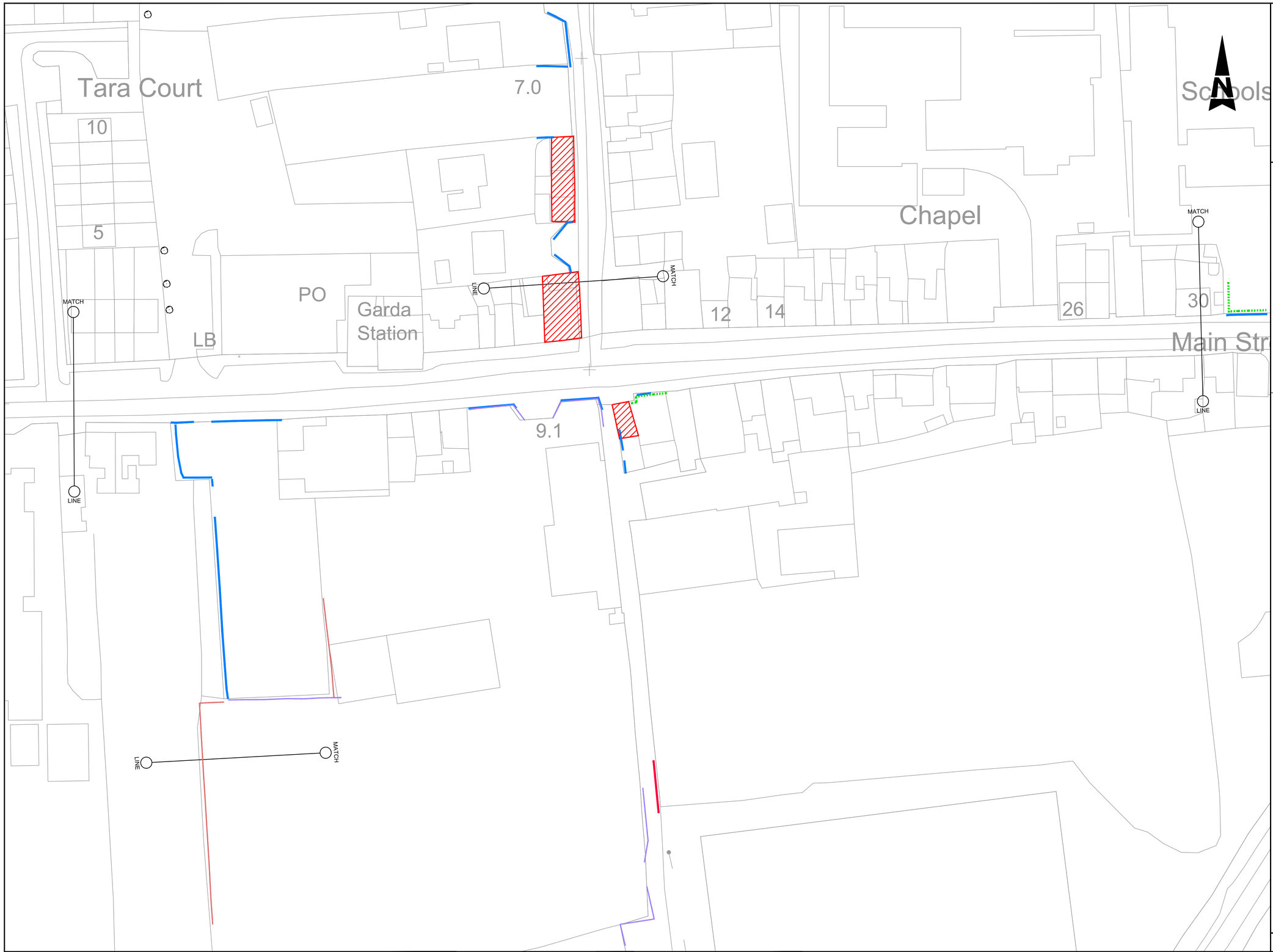
Date: Oct 01, 2021 - 11:47am Plotted by: FMendozaDiaz



GENERAL NOTES

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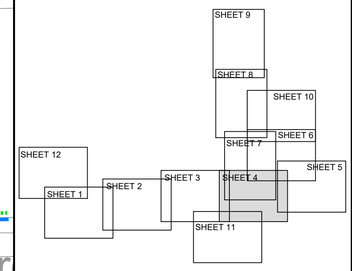

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

Project Ireland 2040
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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 4 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0209	A

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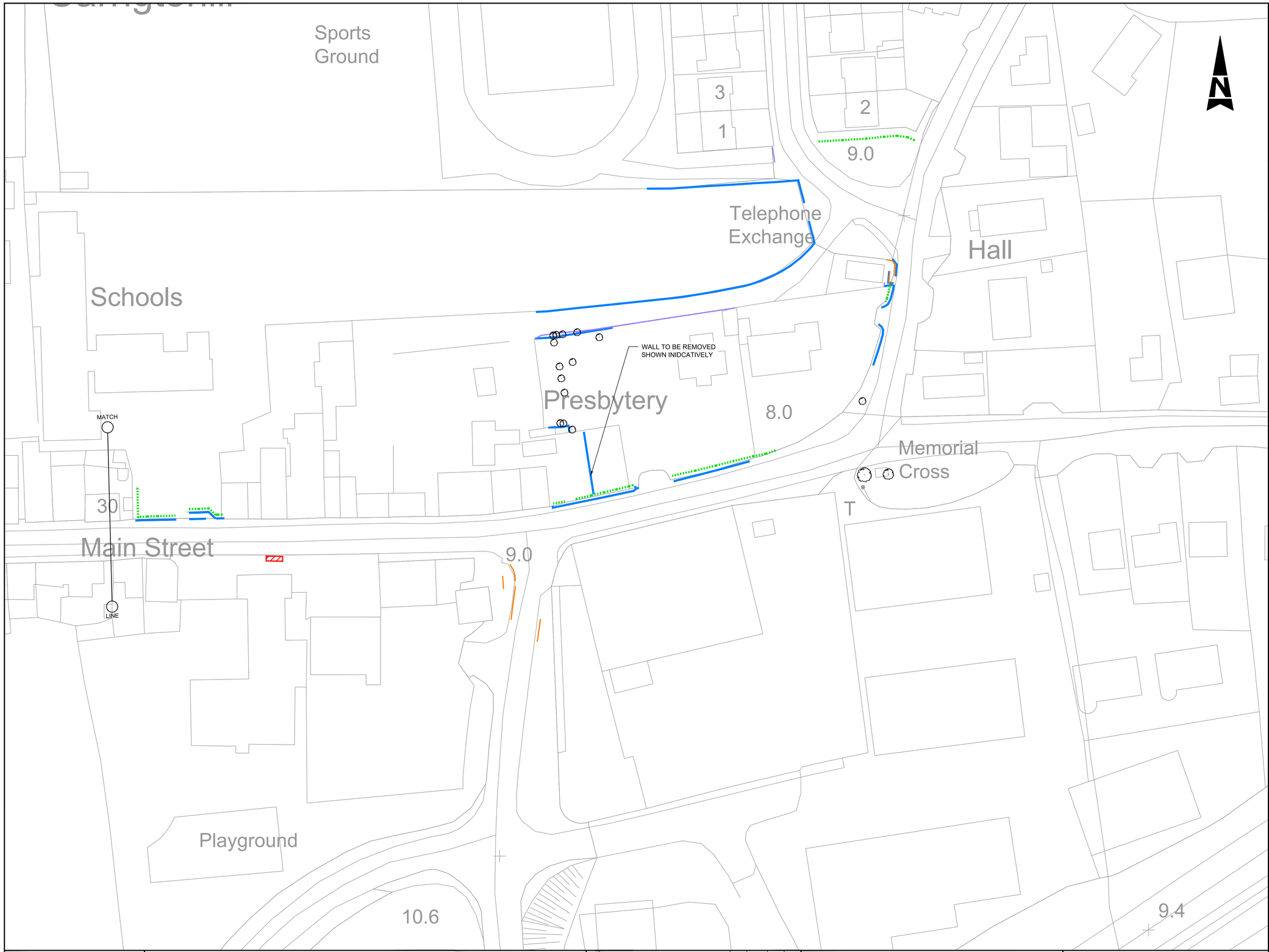

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DO NOT SCALE

File: 5194601-HTR-SK-0205 to 0217.dwg
Date: Oct 01, 2021 - 11:48am Plotted by: FMendozaDiaz

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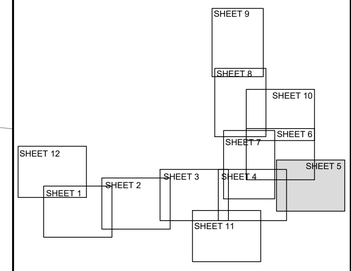

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

Project Ireland 2040 Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
-	ISSUED FOR REVIEW	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 5 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0210	A

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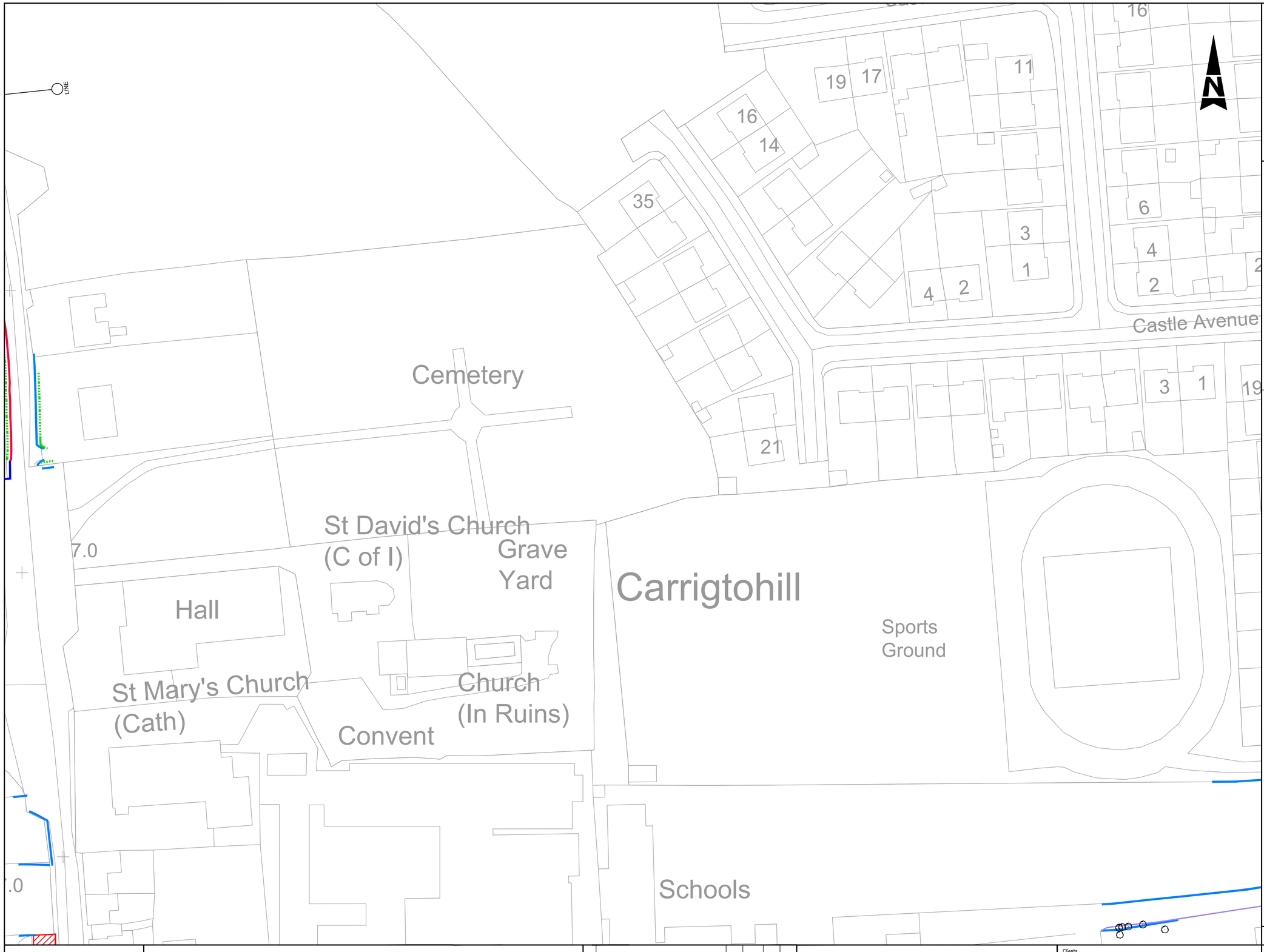

GENERAL NOTES

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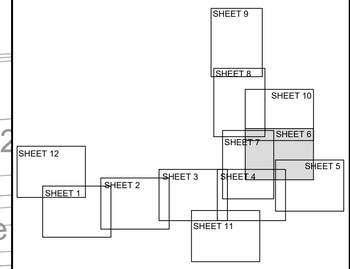

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
-	ISSUED FOR REVIEW	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 6 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0211	A

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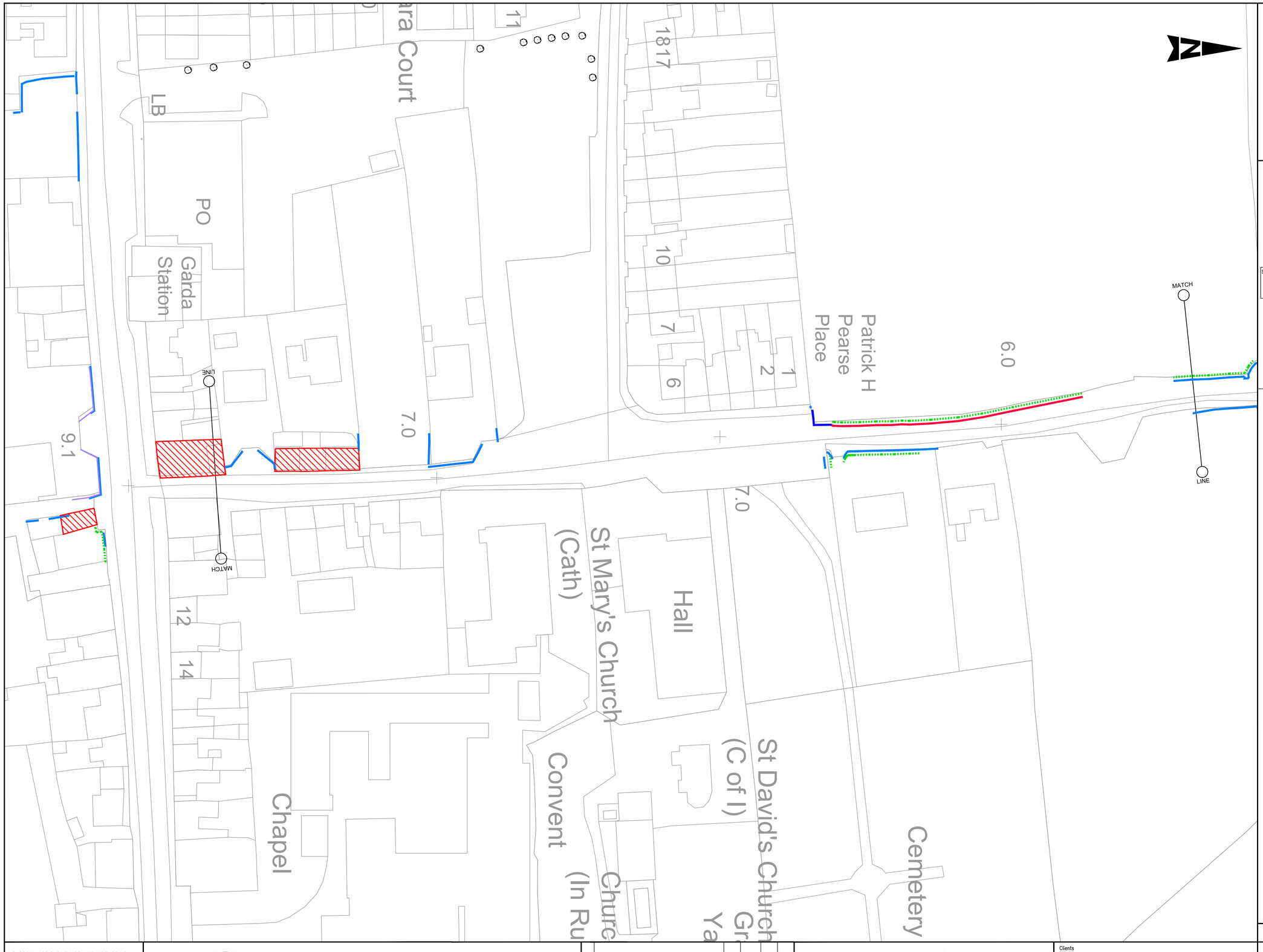

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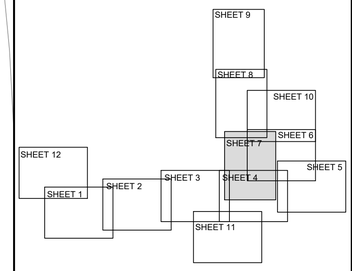

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

A1

DO NOT SCALE

0 10 100

File: 5194601-HTR-SK-0205 to 0217.dwg
Date: Oct 01, 2021 - 11:49am Plotted by: FMendozaDiaz

Project Ireland 2040 Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
-	ISSUED FOR REVIEW	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 7 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0212	A

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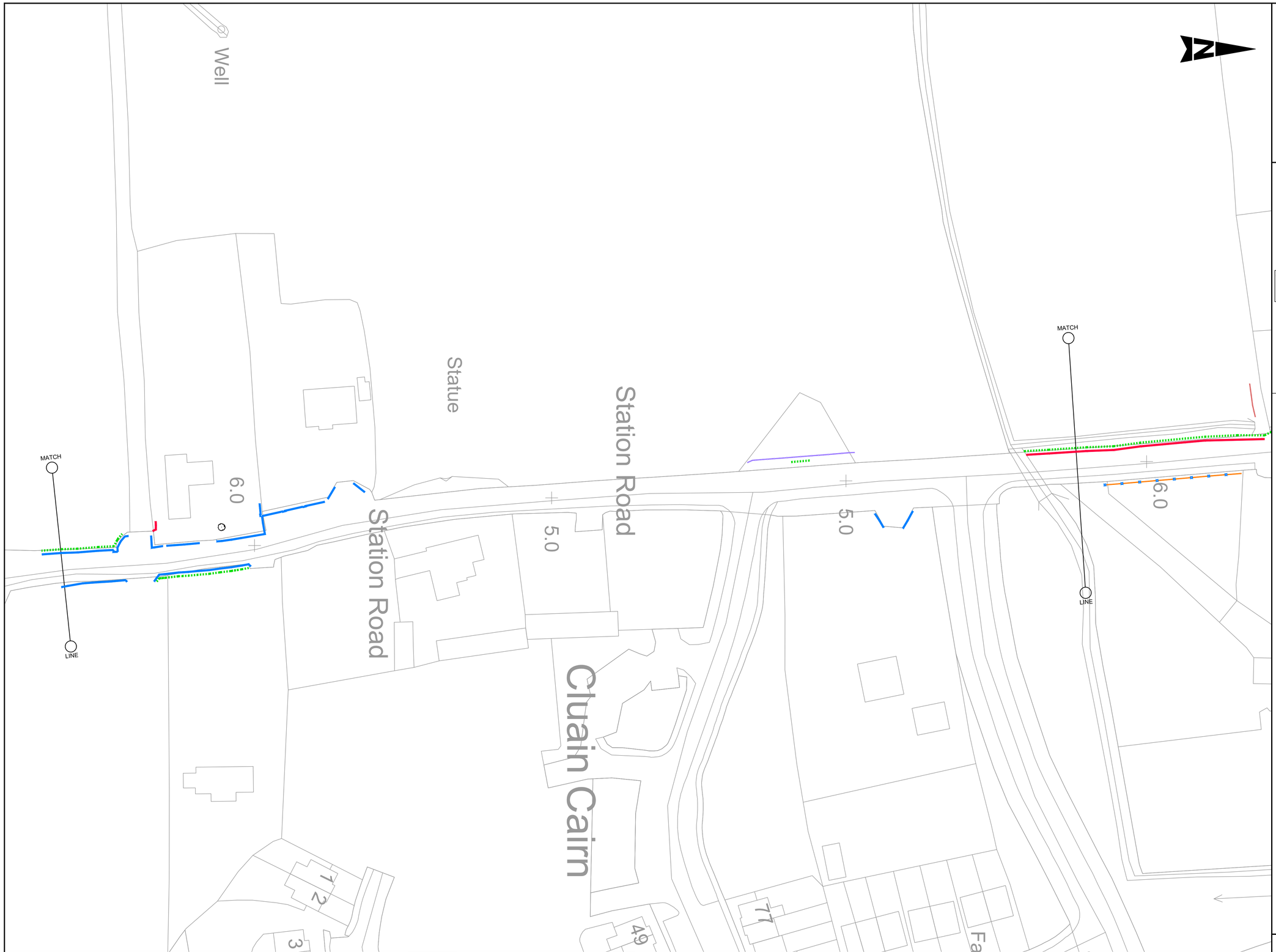

GENERAL NOTES

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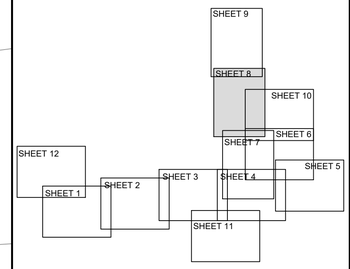

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

A1

0 10 100

DO NOT SCALE

File: 5194601-HTR-SK-0205 to 0217.dwg
Date: Oct 01, 2021 - 11:49am Plotted by: FMendozaDiaz

Project Ireland 2040 Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 8 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0213	A

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GENERAL NOTES

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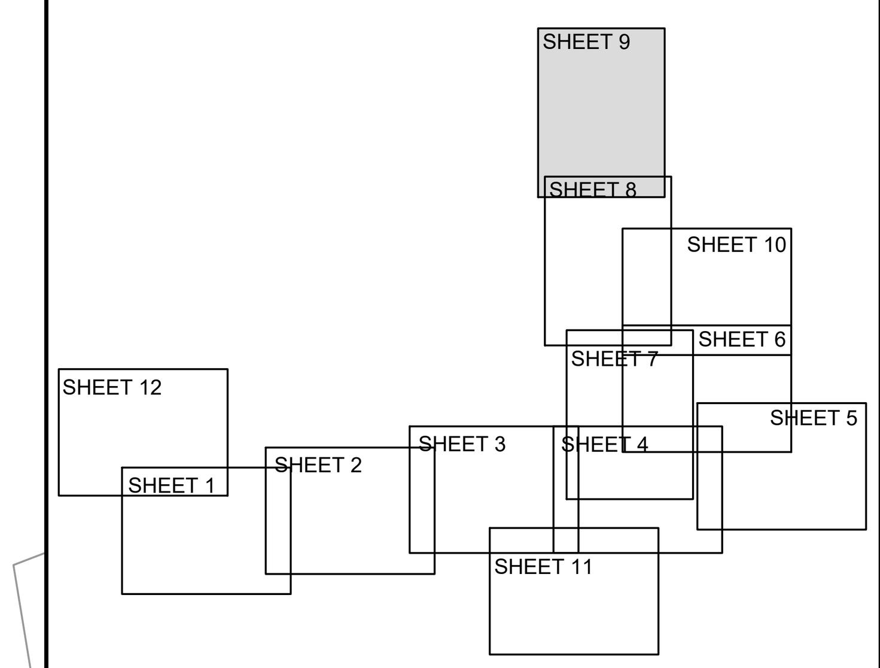

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
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- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

Project Ireland 2040
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Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
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Clients: CORK COUNTY COUNCIL

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Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 9 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL Date 23/06/21	JOC Date 23/06/21	RAN Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0214	A

File: 5194601-HTR-SK-0205 to 0217.dwg Plotted by: FMendozaDiaz
Date: Oct 01, 2021 - 11:50am

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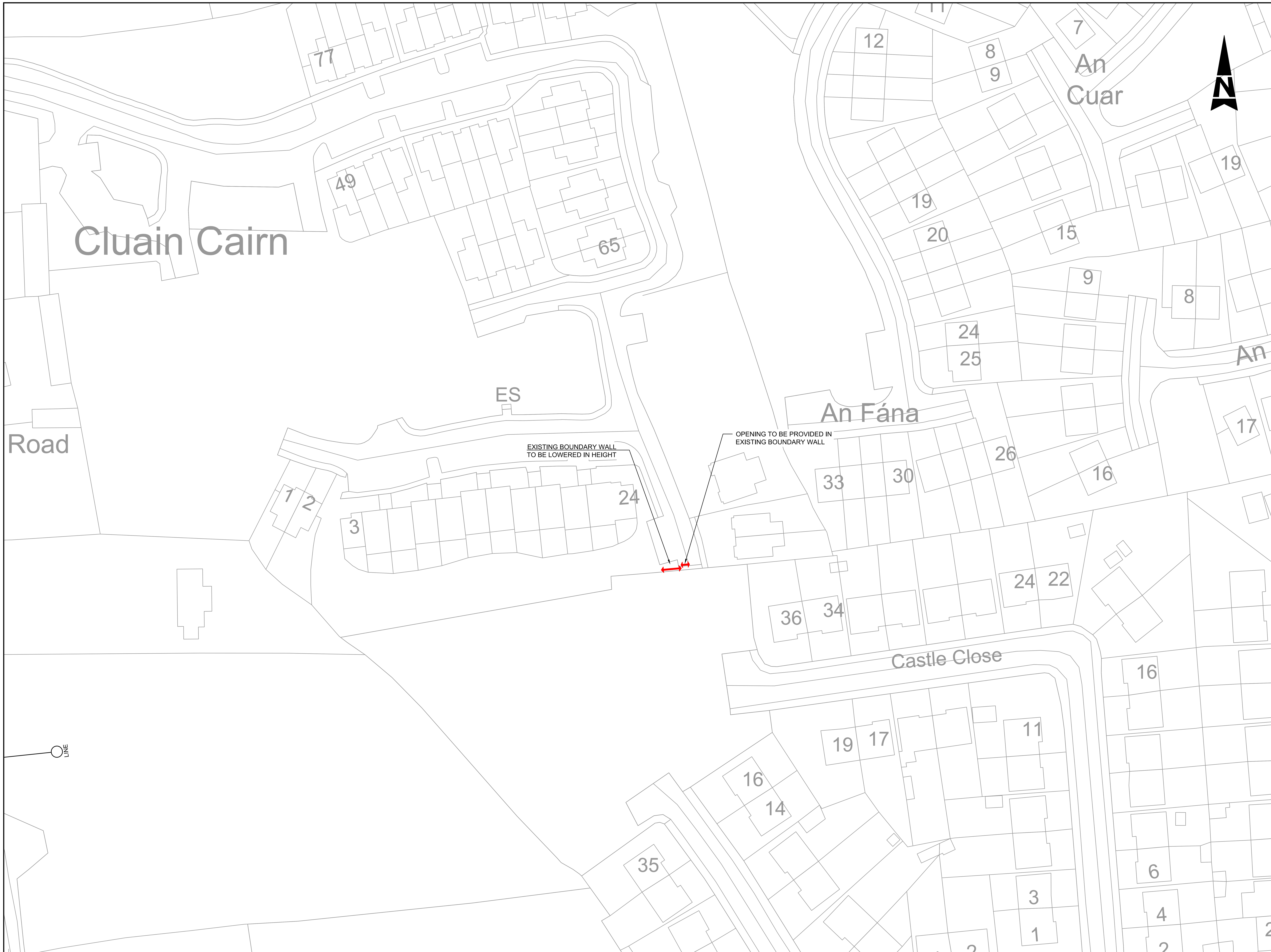

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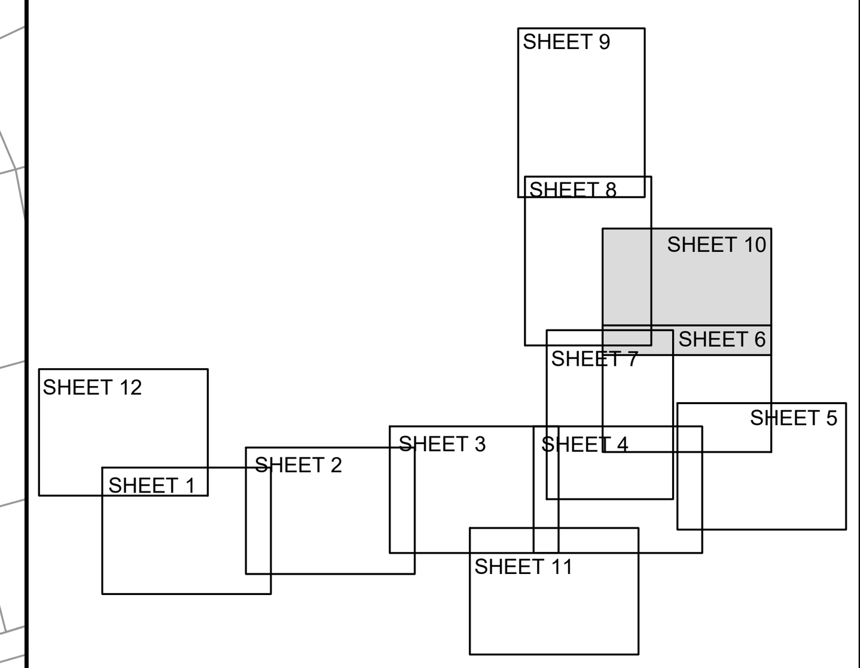

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
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- RAILING TO BE REMOVED
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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED
SHEET 10 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0215	A

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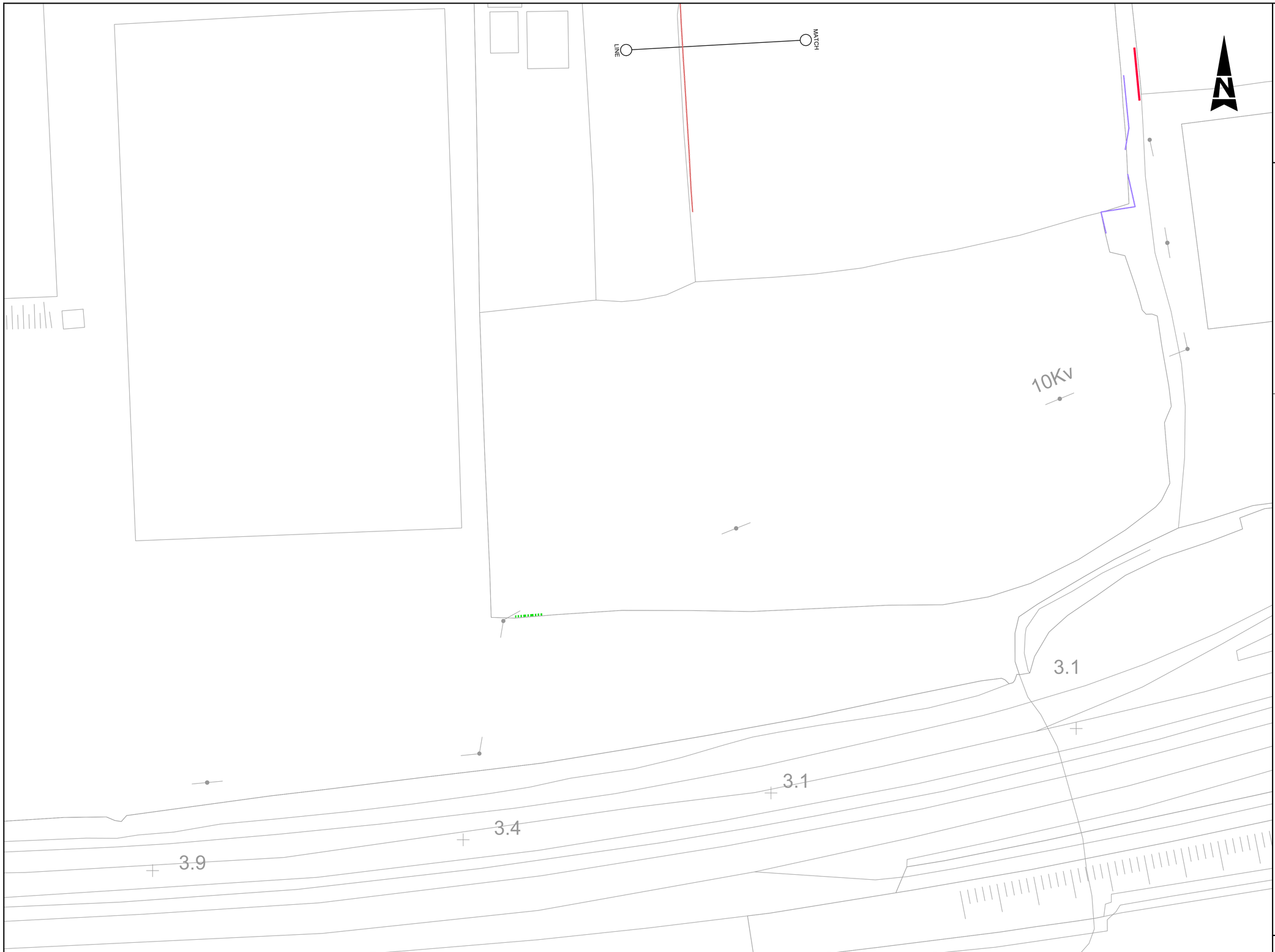

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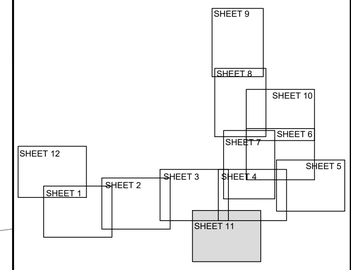

KEY PLAN

LEGEND:

- BUILDING TO BE REMOVED
- BUILDING TO BE REMOVED (SHOWN INDICATIVELY)
- WALL TO BE REMOVED
- CHAINLINK FENCE TO BE REMOVED
- PALISADE FENCE TO BE REMOVED
- HEDGE TO BE REMOVED (SHOWN INDICATIVELY)
- RAILING TO BE REMOVED
- SOD AND STONE WALL TO BE REMOVED
- EXISTING TREE TO BE REMOVED

Project Ireland 2040
Building Ireland's Future

Rev	Description	By	Date	Chk'd	Auth
A	ISSUED FOR REVIEW	FMD	10/21	JO'C	RAN
-	ISSUED FOR REVIEW	KL	06/21	JOC	RAN

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Clients: CORK COUNTY COUNCIL

Project: CARRIGTWOHILL URDF INITIATIVE

Purpose: ISSUED FOR REVIEW

Title: PUBLIC REALM INFRASTRUCTURE BUNDLE - STRUCTURES, HEDGES AND WALLS TO BE REMOVED SHEET 11 OF 12

Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0216	A

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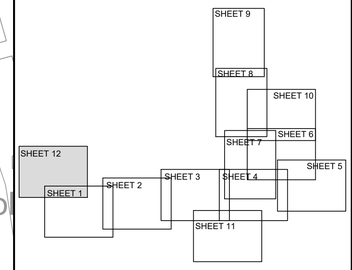
GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE
2. ONLY WRITTEN DIMENSIONS SHALL BE USED. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS
3. ALL LEVELS ARE IN METRES AND ARE TO MALIN HEAD DATUM
4. ALL COORDINATES ARE IN METRES AND ARE TO IRISH TRANSVERSE MERCATOR
5. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION



KEY PLAN

LEGEND:

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A1

0 10 100

DO NOT SCALE

File: 5194601-HTR-SK-0205 to 0217.dwg
Date: Oct 01, 2021 - 11:51am Plotted by: FMendozaDiaz

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Original Scale	Des/Drawn	Checked	Authorised
1:500	KL	JOC	RAN
	Date 23/06/21	Date 23/06/21	Date 23/06/21

Status	Drawing Number	Rev
P	5194601-HTR-SK-0217	A

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