TRALEE FLOOD RELIEF STUDY

Constraints Study

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Tralee Flood Relief Study
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OPW Oifig na nOibreacha Poiblí Office of Public Works

Comhairle Contae Chiarraí
Kerry County Council

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GLOSSARY

Term	Meaning
Annex I habitat	Habitat types listed on Annex I of the EU Habitats Directive whose conservation requires the designation of Special Areas of Conservation.
Annex II species	Species listed on Annex II of the EU Habitats Directive whose conservation requires the designation of Special Areas of Conservation.
Annex IV species	Species listed on Annex IV of the EU Habitats Directive which are afforded strict protection under EU and national legislation.
Catchment	An area of land contributing to a river, lake or other waterbody.
Designated sites	Sites which have special status as protected areas because of their natural and cultural importance.
Effect	The consequence of the impact on the environment.
Effluent	Any liquid discharged from a source into the environment.
European site	Collective term used in national legislation when referring to nature conservation sites protected under the Habitats or Birds Directives (i.e. SAC or SPA sites).
Impact	Changes to the environment resulting from the implementation of project.
Imperceptible Effect	An impact capable of measurement but without significant consequences.
Indirect Impact	Impacts on the environment, which are not a direct result of the project, often produced away from (the site) or as a result of a complex pathway.
Landscape Capacity	The capacity of a particular type of landscape to absorb change without unacceptable adverse effects on its character.
Landscape Character Area	Distinct types of landscape which are generic in character in that they may occur in different parts of the country, but wherever they are they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern.
Landscape Fabric	The physical pattern of elements and features such as vegetation, landform and land use that combine to create landscape character.
Landscape Quality (or Condition)	The quality or condition of the landscape based on judgements about the physical state of the landscape, and about its intactness, from visual, functional, and ecological perspectives.
Landscape Resource	The combination of elements that contribute to landscape context, character and value.
Landscape Value	The importance attached to a landscape (often as a basis for designation or recognition) that expresses national or local consensus because of its quality, cultural associations, scenic or aesthetic characteristics.
Magnitude	The size, extent and duration of an impact.
Mitigation Measures	Measures designed to avoid, reduce, remedy or offset impacts. These measures can mitigate impacts.
Moderate Effect	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Monitoring	The observation, measurement and evaluation of environmental data over a period of time, to assess the efficiency of control measures. This is typically a repetitive and continued process carried out during construction, operation or decommissioning of a project.

Term	Meaning
Not Significant Effect	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Operational phase	The period of time in which the proposed road is in use.
Pathway	The route by which an effect is conveyed between a source and a receptor.
Priority Annex I habitat	Annex I habitat types which are in danger of disappearance, and for which the European Community has particular responsibility in view of the proportion of their natural range which falls within the territory
Residual Impacts/Risks	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Sensitive Receptor	A receptor (e.g. physical or natural resource, special interest or viewer group) that will experience a significant impact.
Sensitivity	Vulnerability of a sensitive receptor to change.
Significant Effect	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Visual Amenity	The value of a particular area or view in terms of what is seen.
Visual Character	When a viewer experiences the visual environment, it is not observed as one aspect at a time, but rather as an integrated whole. The viewer's visual understanding of an area is based on the visual character of visible features and aspects and the relationships between them. The visual character is descriptive and not evaluative.
Visual Effect	A visual effect is a change to an existing view as a result of development or the loss of particular landscape elements or features already present in the view.
Visual Quality	Although the interpretation of viewers' experience can have preferential and subjective components, there is generally clear public agreement that the visual resources of certain landscapes have high visual quality. The visual quality of a landscape will reflect the physical state of individual features or elements.
Visual Resources	The visual resources of the landscape are the stimuli upon which actual visual experience is based. They are a combination of visual character and visual quality.

EXECUTIVE SUMMARY

Introduction

RPS Consulting Engineers have been commissioned by Kerry County Council (KCC) and Office of Public Works (OPW) to assist in the delivery of the Tralee Flood Relief Study (FRS), hereafter referred to as the proposed scheme. The objective of this project is the identification, design and submission (for planning consent) of a flood scheme, that is technically, socially, environmentally and economically acceptable, to alleviate the risk of flooding to the community of Tralee to a determined standard of protection, and to procure, manage and oversee the construction of that scheme. The purpose of this Constraints Study is to identify all constraints that will influence the selection of alternatives, with the early consideration and avoidance of significant adverse environmental impacts.

Scope of Environmental Constraints Study

The constraints study has been compiled with reference to the environmental factors provided in Article 3 of the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) as transposed into Irish legislation by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, S.I. No. 296 of 2018. The environmental factors identified in the EIA Directive and other factors assessed in this constraints study are as follows: Population and Human Health, Biodiversity, Land, Soils, Geology and Hydrogeology, Water, Air, Climate and Noise, Material Assets: Agriculture, Material Assets: Non-Agriculture, Cultural Heritage, Landscape, Other Constraints, Interaction between the Environmental Factors and Constraints Summary.

Potential Environmental Constraints

The purpose of identifying the constraints within the proposed scheme area is to ensure the integration of environmental considerations into the selection and development of potential flood relief options. Consideration of relevant policy and legal issues at EU, national, regional, county and local level may influence the progression of the proposed Flood Relief Scheme. This may influence future design and construction processes. It is prudent to consider issues at as early a stage as possible so as not to delay the timely completion of the project. On this basis a list of relevant legal, planning and policy related requirements relative to the proposed Flood Relief Scheme are set out in the report.

In November 2021, a number of the key stakeholders to the project were identified and contacted in writing to inform them that the proposed study was being undertaken. The stakeholders were each invited to contribute observations and comments on environmental elements of the project regarding the proposed study.

Population and Human Health

The population and human health constraints in the region, such as population or employment rates, will not for the most part be affected by the proposed flood relief works. Socio-economic and community facilities have been identified in the scheme area. Considerations of the location of these facilities will be taken into account as part of the development flood relief options.

Properties represent a constraint which should, where practicable, be avoided during the development of design and scheduling works. Residential houses generally represent a considerable constraint and avoidance of residential properties, where possible, is generally considered best. Commercial properties also represent a considerable constraint and in most cases are best avoided. However, extensive properties may be able to absorb a degree of land take and ultimately benefit from the flood relief infrastructure.

It is not expected that there will be any changes to land use zoning within the scheme area, due to the largely residential and mixed use town centre of Tralee. However, future FRS proposals should be cognisant of the Recreational/ Leisure zoned lands dispersed throughout the city, in particular the few adjacent to the River Lee, to ensure access to these areas is maintained. Access to the River for recreational activities will need to be maintained. There is potential for air and noise impacts during the construction stage.

The current CFRAM preferred option for Tralee Area of Further Assessment (AFA) would have a direct impact on a number of existing routes such as Canal Walk and River Lee Greenway and the following three proposed routes; Ballymullen to Ballyseedy Greenway (Part 8 in place) – Greenway planned along section of proposed embankment near Hunters wood area; The Big River Amenity Trail (Pre-Part 8) – Greenway planned along the banks of the Big River; and Ballyard to Blennerville – Greenway planned along Kearney road.

As part of the Tralee Regeneration Project there are a number of public realm projects at various stages of development which may be impacted by the proposed flood relief study for Tralee, such as, Tralee Town Centre Shared Space Phase 2, Tralee Town Centre Shared Space Phase 3, Tralee Town Centre West and Island of Geese Masterplan, Greenway/Blueway Link with Cycle and Skatepark, Tralee Canal Blueway, Casement Railway Plaza, Austin Stacks GAA Plaza, John Joe Sheehy Rd Masterplan, Market Quarter and The Square.

As the proposed study will take place adjacent to watercourses, such as the River Lee, in the absence of best practice construction measures there is potential for impacts to water quality to occur. Overall, the proposed study will have a positive impact by protecting properties and the health and well-being of the population of Tralee as it will reduce significant negative impacts resulting from severe flooding events within the town.

Biodiversity

The proximity of European sites is a significant constraint to the proposed scheme, i.e. Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA. There is potential for ex-situ impacts to SCI of the Castlemaine Harbour SPA and Magharee Islands SPA. Cormorants and Light bellied brent geese are SCI of the Castlemaine Harbour SPA and they were found within the section of this SPA within the scheme area during the preliminary site walkovers. Common Gull are SCI of the Magharee Islands SPA and were found within the section of this SPA within the scheme area during the preliminary site walkovers. With these species foraging distances from Castlemaine Harbour SPA and Magharee Islands SPA overlap with scheme area. Appropriate mitigation measures should be implemented to avoid or minimise disturbance.

There is potential for hydrogeological connectivity between the scheme area and the Tralee Bay and Magharees Peninsula, West To Cloghane SAC and Tralee Bay Complex SPA. These protected areas lie across the Tralee GWB which the scheme area also intersects.

Air pollution from construction activities may affect the sensitive habitats in the vicinity of the works. Due to the largely urban scheme area, construction sites will be limited in size and the amount of plant and machinery that can be used will be limited. Therefore, potential impacts from air pollution will be to sensitive ecological receptors within 200m of the works, which includes Tralee Bay And Magharees Peninsula, West to Cloghane SAC, Tralee Complex SPA, Tralee Bay and Magharees Peninsula, West to Cloghane pNHA, Tralee Bay and Mount Brandon Nature Reserves and Tralee Bay which is a Ramsar site.

In addition to the habitats and species protected under designated sites, there are numerous records for rare and protected species which will require further assessments for habitats and protected flora species, Wildlife Act species or species listed in Annex II, Annex IV, and Annex V of the EU Habitats Directive, as well as protected bird species under the Birds Directive and important bird assemblages that are likely to be found within the scheme area.

All designated sites and other features of ecological interest should be considered in full when identifying suitable options for the flood relief scheme. Avoidance of all designated sites and important ecological features should be prioritised where possible. In the event where works located within or in proximity to designated sites and ecological features appropriate mitigation measures should be implemented to avoid or minimise disturbance. Areas of woodland, including riparian woodland along the banks of the rivers within the scheme area, are likely to be of high ecological value, including supporting protected species such as bats, badgers and birds, and should be avoided where possible.

Non-native invasive species listed on the Third Schedule to the EC Birds and Natural Habitats Regulations 2011, as amended, were recorded within the scheme area. From field surveys it is found that multiple embankments across the scheme area are heavily infested with Himalayan Balsam and Japanese knotweed. A management plan will need to be prepared to ensure compliance with Regulation 49 of the 2011 Regulations.

Otter prints were found along the Clahane embankments. Detailed otter surveys will need to occur across the study as the presence of otter is assumed. Badger sightings from the desktop study (NBDC) and badger records are prevalent within Ballyseedy Woods which is 300m from the Manor Village East flood relief measures. The closest approximate sett location (Record is a 1km grid square) to the Manor Village East is 300m west. No distinct badger signs or sightings were found during general ecological walkover surveys but there is potential that they are present in proximity to the works. Dedicated badger surveys will be required to detail if these setts are currently active and if any other setts have since been formed within proximity of the works. When designing the study it will be necessary to ensure that movement of species between identified ecological sites are not impaired by the provision of the flood relief study (i.e. fish, mammal, invertebrates etc.).

Water quality impacts to receiving waters such as the River Lee and Big river have the potential to significantly impact protected species/habitats which may be present. Where works within important waterbodies cannot be avoided; the timing of works and best site practice should be incorporated into the physical design and construction of the flood relief study to minimise pollution risk and alteration of hydrology. The NPWS and IFI should be consulted when determining viable options for flood relief at further stages of study development and appropriate mitigation should be determined.

The following requirements of the IFI should be considered in the design of the proposed scheme:

- Strong emphasis given to natural flood management techniques.
- An assessment of the impact of the existing drainage schemes should be carried out to enhance natural flood management.
- In-stream works should be avoided where necessary.
- Invasive Species must not be spread as a result of works of the project. If invasive species are found within the site an invasive species management plan should be produced and followed.
- Follow ‘Guidelines on protection of fisheries during construction works in and adjacent to waters’ IFI 2016.
- Ensure that the impact the project may have on a riparian zone is adequately assessed as there are many important species of invertebrate and it’s essential to optimal salmonid production rely on this habitat.

Land, Soils, Geology and Hydrogeology

The scheme area is primarily comprised of the Tralee Municipal district and is therefore dominated by Made ground. Outside of the urban area the soils comprise low permeability marine estuarine silts/clays and tills composed of a mixture of deep well drained mineral soil and poorly drained soils derived from the Namurian rocks, limestones and Devonian sandstones. The subsoils comprise chiefly Urban deposits (Made ground) estuarine silts and clays, and Limestone Till (Carboniferous), Sandstone Till (Devonian) and sandstone and shale Till (Namurian).

Construction associated with soft and made ground soil types will require adherences to best practice and construction standards to avoid any potential negative impacts. Interaction with potential contaminated ground must also be considered as part of the study development.

The bedrock geology of the scheme area is composed chiefly of reef limestones with cherty and argillaceous limestones present at the centre of the scheme area. The vast majority of the scheme area is located within a Regionally Important Aquifer (Rkd) with the cherty and clays limestones and Namurian shales and sandstones classified as a Locally Important Bedrock Aquifer (Ll). The scheme area is dominated by Moderate groundwater vulnerability (M) with the vulnerability rating increasing away from Tralee Town Centre in particular to the southeast where High to Extreme Vulnerability dominates. There are patches of Extreme vulnerability (E) and Extreme (X) scattered throughout the scheme area and more significant areas in the vicinity Blennerville and Manor West at the southeast of the scheme area. There is potential for drawdown of groundwater where excavations are required and there is a risk of impacts to groundwater abstraction where private groundwater wells are present. Two sites of geological heritage interest were identified within a 5km ZoI of the scheme area.

Cognisance must be given to the constraints posed by the presence of the varied groundwater vulnerability areas, karstified nature of the landscape and poorly drained mineral soils of the northern and western scheme area in particular, of which will require further assessments. Due consideration is to be given to any design and option selection process to avoid any negative adverse impacts to these receptors.

Geotechnical investigation will be carried out once the potential flood relief measures are developed in order to identify local geology and ground conditions.

Water

The main surface waterbody within the scheme area is the River Lee and its tributaries. These will require the application of design standards and construction best practice in order to avoid degrading any surface or groundwater quality rating for the scheme area.

The River Lee waterbody, Pinure river waterbody, Annagh river waterbody, Blennerville Lake East transitional waterbody, Blennerville Lake West transitional waterbody and Lee K Estuary transitional waterbody are all a part of Tralee Bay and Magharees Peninsula, West to Cloghane SAC while River Lee river waterbody, Pinure river waterbody, Annagh river waterbody, Blennerville Lake East transitional waterbody, Blennerville Lake West transitional waterbody and Lee K Estuary transitional waterbody are all part of the Tralee Bay Complex SPA.

The Lee (Tralee)_030 has a ‘Moderate’ WFD status and the Annagh (Kerry)_010 has a ‘Good’ status. The Lee (Tralee)_040, Big River (Tralee)_010 and Pinure_010 all have a WFD status of ‘Unassigned’. Blennerville Lake West and Blennerville Lake East are currently at ‘Unassigned’ status with the Lee K Estuary at ‘Moderate’ WFD status. Biological water quality baseline studies will be carried out during the option selection stage at locations where works are likely to be carried out.

These are located within the scheme area therefore the potential for likely significant effects to these European sites must be assessed and demonstrated that significant adverse effects will not occur as a result of any proposed flood relief solution.

The scheme area is within three drinking water (groundwater) areas, Tralee (IE_SH_G_226), Spa (IE_SH_G_223) and Brandon (IE_SH_G_044). Measures will need to be taken to ensure that construction work does not impact upon the integrity of these groundwater source.

Flood relief works have the potential impact on the biology, water quality, hydrology, and morphology of watercourses. Where required, suitable mitigation measures must be developed for the project in line with best practice measures in order to avoid negative impacts to water quality.

Air, Climate and Noise

The construction phase poses the greatest potential impact to air quality within the scheme area. However, these impacts will be short term in nature and with the adherence of best practice construction measures will create minimal impact. Due to the nature of the works it is not envisaged that the operational phase will impact upon the surrounding air quality. As the proposed study will be taking place in an urban environment which is already subjected to noise and vibration from passing traffic, it is not anticipated that the proposed project will greatly impact on the existing levels, therefore, not deemed a significant constraint.

The potential impacts to biodiversity from noise, vibration and air pollution will be assessed further as the study progresses. However, impacts to ecological receptors from these pollution sources are thought to be short term and localised. The FRS assessment and the draft SCCAP should determine the most robust strategy and design for short-term investment in flood risk management measures, taking account of the range of mid- to-long-term future investments that may be necessary. This will help ensure that future flood relief works are sustainable and resilient to climate change.

Material Assets: Non – Agricultural

The primary constraints within the scheme area are the existing utilities and existing transport infrastructure. Early consideration of how options can integrate or avoid with the existing material assets in the area is essential and will require engagement with service providers to ensure that utilities can be avoided and/ or modified to mitigate impacts. In terms of water and wastewater, infrastructure should be identified and upgraded/replaced or diverted if necessary to facilitate construction, as well as assessing the preferred location for the defence infrastructure. Identifying the location of the outfalls and the overflow pipes is also crucial for the planning and construction phases of the scheme.

The design of the study will need to take into consideration the proximity of proposed works to the main road routes for the Tralee area. A Traffic Management Plan will be implemented prior to the construction work. This will include procedures for keeping the working site(s) and transport routes clean. This may be implemented by various methods but will depend on the appointed contractor e.g. wheel wash facilities and road sweeping.

Regard must also be had to future changes that are likely to take place in the scheme area e.g. through the Water Services Investment Programme, investment by Transport Infrastructure Ireland, various Broadband/internet providers, EirGrid etc It is not anticipated that the proposed scheme will interact or result in any negative impacts caused to the Material Assets – Non-Agricultural receptors in proximity of the scheme area. Early consideration of how options can integrate with the existing material assets in the area is essential and will require engagement with service providers to ensure that utilities can be avoided and/ or modified to mitigate impacts. It is not anticipated that the proposed study will interact or result in any negative impacts caused to the Material Assets – Non-Agricultural receptors in proximity of the scheme area.

Material Assets: Agriculture

It is evident from the desk study that intensive agricultural practices are not common within the scheme area. “Google Earth” was used with maps spanning 2014-2018 and “Bing Maps” with imagery dating 2021. It can be noted that based on the lack of intensive agricultural practices in the proposed study site, impacts to soils will not be discussed in more detail on an agricultural basis. At this stage of assessment, it is not anticipated that the proposed study will interact or result in any negative impacts caused to the agriculture receptors in proximity of the scheme area.

Cultural Heritage

There are two National Monuments within the scheme area. There are 186 archaeological sites and monuments listed in the Sites and Monuments Record (SMR) for the scheme area. However, eight of these are redundant records. No definitive Mesolithic or Neolithic sites are recorded from the scheme area. However, there is a possibility that a prehistoric house and a megalithic structure recorded from the scheme area could date to these periods, however, no specific dating is provided in the HEV inventory detail for both of these monuments. 30 sites are recorded within the scheme area that likely date to the Bronze Age.

There are 31 medieval sites in the scheme area. The constraints study also includes a miscellaneous series of archaeological sites and monuments, some of which are of uncertain chronology. The Wreck Inventory of Ireland Database was checked but there are no wrecks recorded within the scheme area. It is worth noting that the sites included are known sites and monuments. Unknown sites are inevitably present and could be revealed through further desktop research (e.g. LiDAR, cartographic analysis, aerial and satellite imagery), and field surveys, as well as archaeological testing and monitoring. All known archaeological sites should be avoided in the development proposals wherever possible.

There are 359 Protected Structures within the scheme area, of which 21 have a numbering sequence which differs from the NIAH Registration number. The current Record of Protected Structures (RPS) includes structures dating from the medieval period, through to late eighteenth and nineteenth centuries as well as other civic, commercial and residential structures in the town. 6 Architectural Conservation Areas (ACAs) are listed in the County Development Plan for Tralee. The draft Kerry County Development Plan 2022-2028 includes an updated RPS for County Kerry which also considers country houses, vernacular structures, religious buildings, bridges and railway infrastructure. The draft RPS includes 265 structures for inclusion on the RPS in the draft County Development Plan 2022-2028.

The National Inventory of Architectural Heritage (NIAH) lists 292 buildings and structures from the scheme area. Three historic gardens are recorded from the scheme area in the Survey of Historic Gardens and Designed Landscapes, which was also undertaken by the NIAH. All grid coordinates given in this report are in Irish Transverse Mercator (ITM).

Landscape and Visual

The Rural Area types have been identified in the Core Strategy in the County Development Plan 2015-2021. According to the Tralee Municipal District Local Area Plan 2018-2024, the Municipal District Area is generally characterised by both rural areas under strong urban influence and stronger rural areas. The eastern part of the district is a structurally weak area. The environs and rural areas surrounding Tralee are under strong urban influence. The current level and pattern of development in these rural areas is unsustainable. The cumulative impact of development in the countryside has the potential to reduce its value as a regional asset by damaging the landscape, water quality, biodiversity interests and to create additional and unnecessary problems for the supply of infrastructure and services and to increase car dependency and high energy use.

According to the Draft Kerry County Development Plan 2022- 2028, in the preparation of landscape designations for the County, the Planning Authority has had regard to the Landscape Review of County Kerry which outlines the quality of a landscape itself, but also the level of existing development and the ability of the landscape to absorb further development without altering it to an unacceptable degree.

Cognisance of the sensitive landscape areas present within the scheme area will be required during the option selection process in order not to significantly impact the characteristic features of the landscape character areas present.

Other Constraints

The nature of the wastes generated from site clearance and earthworks will generally be vegetation, topsoil, subsoil and stone. Where this material is to be stored on-site and reused it is important that it is not stored close to any watercourses or lakes. Any excavated material which is deemed unacceptable for re-use in the works will have to be removed off-site for disposal or for processing and as such may be required to be removed or disposed of under a waste permit or certificate of registration from the local authority. It is important to ensure that correct procedures for storage and disposal of such wastes and excess materials are noted and implemented.

An outline Construction Environmental Management Plan (oCEMP) will be prepared during preferred option assessment. The oCEMP consolidates all the environmental mitigation measures identified within the EIAR. It also includes procedures for monitoring the effectiveness of the environmental protection measures. This will be updated (CEMP) by the Contractor following their appointment, and in advance of the commencement of construction.

1 INTRODUCTION

1.1 The Constraints Study

RPS Consulting Engineers have been commissioned by Kerry County Council (KCC) and Office of Public Works (OPW) to assist in the delivery of the Tralee Flood Relief Study (FRS), hereafter referred to as the proposed scheme. The objective of this project is the identification, design and submission (for planning consent) of a flood study, that is technically, socially, environmentally and economically acceptable, to alleviate the risk of flooding to the town of Tralee to a determined standard of protection, and to procure, manage and oversee the construction of that study. The overall project is divided into five stages which are as follows:

- Stage I: Identification and Development of a Preferred Scheme
- Stage II: Planning process
- Stage III: Detailed Construction Design, Compilation of Work Packages and the Preparation of Tenders for Contracts
- Stage IV: Construction Supervision and Project Management Services
- Stage V: Handover of Works

The purpose of the proposed study is to identify all constraints that will influence the selection of alternatives, with the early consideration and avoidance of significant adverse environmental impacts. It can be focused mainly on environmental issues but may also include detail on engineering, physical constraints, cost, and legal constraints. This study identifies the key environmental issues associated with the development of the Scheme which may be impacted upon by possible flood alleviation measures and/or which may impose constraints on the viability and/or design of these measures. The scope of the issues considered shall at a minimum reflect the scope of an Environmental Impact Assessment (EIA), in accordance with the requirements of the EIA Directive 2014/52/EU:

a) Population & Human Health

b) Biodiversity

c) Land, Soil, Water, Air and Climate

d) Material Assets, Cultural Heritage and the Landscape

e) The interaction between the factors referred to in points a) to d)

The first step in the environmental assessment process is the identification of environmental constraints. The Constraints Study (this report) will be primarily delivered via desk-top work and targeted field assessments by various experts. The Study will identify environmental constraints that might be relevant to, or impose restrictions on, the design and construction of the proposed flood relief scheme. The Constraints Study will be informed through consultation with statutory and non-statutory bodies, collation of background information, relevant national datasets & mapping, public information days (including feedback) and relevant information from the Engineering team & Steering Group. Previously commissioned reports and surveys for the flood relief area will be reviewed and their findings incorporated into the constraints process. Consultation will seek to request comment, observations and relevant information regarding the scheme and likely sensitive receptors.

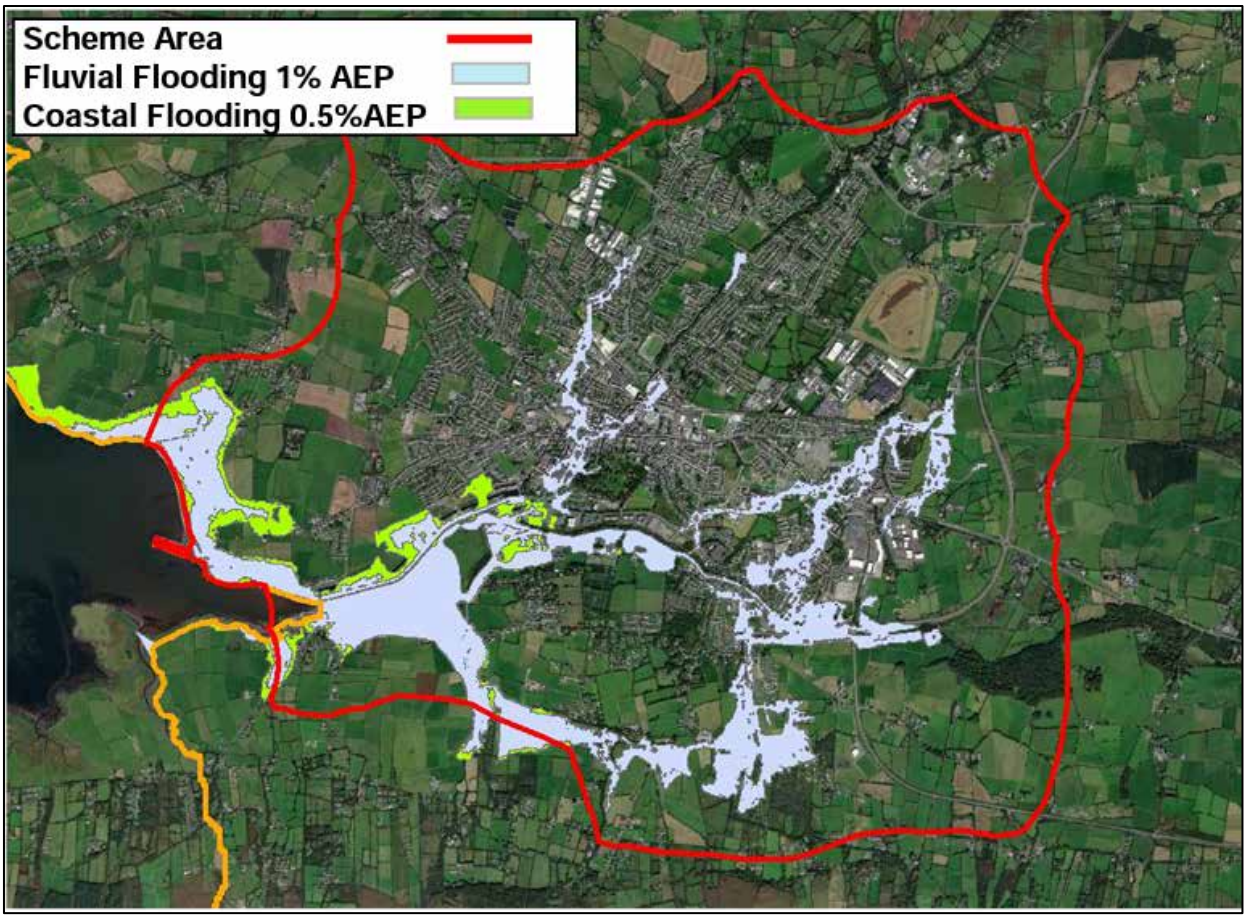
1.2 Background

Historically, flood risk in Ireland has been addressed using structural or engineered solutions (arterial drainage schemes and / or flood relief schemes). In line with internationally changing perspectives, the Government adopted a new policy[1] in 2004 that shifted the emphasis in addressing flood risk towards:

- A catchment-based context for managing risk,
- More proactive flood hazard and risk assessment and management, with a view to avoiding or minimising future increases in risk, such as that which might arise from development in floodplains,
- Increased use of non-structural and flood impact mitigation measures.

Notwithstanding this shift, engineered solutions to manage existing risks are likely to continue to form a key component of the overall national flood risk management programme and strategy. A further influence on the management of flood risk in Ireland is the 'Floods' Directive[2] [2007/60/EC]. The aim of this Directive is to reduce the adverse consequences of flooding on human health, the environment, cultural heritage and economic activity. A map of CFRAM Present Day Flood Extents (excl Climate Change) is shown in **Figure 1-1**.

Figure 1-1: CFRAM Present Day Flood Extents (excl Climate Change)



The Shannon CFRAM Study Area (and the Shannon River Basin District) is made up of six hydrometric areas, these hydrometric areas were grouped into Units of Management (UoMs) as part of the CFRAM Study. Tralee Town and its environs is included in the Tralee Bay-Feale, Hydrometric Area 23 (UoM23).

[1] Report of the Flood Policy Review Group, OPW, 2004 (https://www.gov.ie/en/policy-information/aba306-flood-riskpolicy-and-co-ordination/#report-of-the-flood-policy-review-group-2004)

[2] Directive on the assessment and management of flood risks, 2007/60/EC

Tralee is a heavily urbanised town and there is interaction between the fluvial flows, coastal reaches and the drainage networks. There is historic evidence of flooding from the drainage network coinciding with tidal and fluvial events, as well as groundwater and sewer network issues. Flood risk from drainage network was not considered as part of the CFRAM process, nor was the potential detrimental impacts to the drainage network from the proposed CFRAM flood risk management options, for example, proposed flood walls may prevent fluvial, coastal and drainage risk for Tralee. Documented flood events in Tralee date back to the early 20th century. Records as early as 1916 describe serious flood events that inundated major roads and numerous houses. More recently, in September 2015 and December 2016 heavy rainfall in the region resulted in flood events which caused significant damage to properties and roads throughout Tralee.[3] Given the close interaction of the fluvial, coastal and drainage flood risk for Tralee, a fully integrated catchment model is required to be developed to understand all sources of flood risk as part of this project.

1.2.1 Study Area

The Study Area is the area that contains the:

- Lengths of river channel / watercourse/estuary that have hydraulic influence on the area intended to benefit from, and be protected by, any feasible scheme;
- Full hydrological catchment areas draining to the downstream ends of those river channels / watercourses;
- Areas that require environmental assessments as part of the development of any such scheme.

The primary focus for the Project is the town of Tralee. However, the Consultant shall include in their work such extents of catchment, watercourse and coastline as necessary to fulfil the requirements of the Project for the town of Tralee.

Within the Tralee Bay-Feale River Basin (UoM23) there are three subcatchments (Feale, Tyshe, and Lee). The Lee subcatchment is the primary distinct hydrological catchment in Tralee. The total catchment area is 98.6 km2 up to mouth of River Lee. The general topography ranges from mountainous in the north-east and south-west and more gentler slopes elsewhere. The Lee flows east to west along the southern edge of the town between Ballymullen and Ballyard before entering an extensive tidal estuary to the west. As it flows into the urban centre of Tralee it is joined by a number of tributaries including Balloonagh, Big River, Ballybeggan and Manor East from the north and Cloghers and Ballyvelly from the south before entering Tralee Bay.

The largest and most notable tributary of the Lee is the Big River. It flows south from the Stack Mountains through a steeply sloping catchment and parallel to the Oakpark Road within the town. There are many engineered sections in the Big River including storm diversions, weirs, bridges and culverts. There is a large storm diversion culvert at the junction of Bill Kinnerk Road and Oakpark Road, at the northern edge of Tralee, constructed in the early 1990s.

The Balloonagh River catchment includes roughly the western half of Tralee and a large area to the north of the town. The Balloonagh River flows into the north of the town at Sundays Well and is over ground as far as Monavalley Industrial estate. In the 1990s the river was culverted through the industrial estate by the occupants.

The Cloghers river flows from the townland of Ballyseedy to the southeast of town westerly toward the N70 at Skehanagh where it is joined by the Caherwesheen stream. It then flows parallel to the N70 northwards to the Lee at Ballymullen. The contributing catchment area of the Cloghers River at its confluence with the River Lee was estimated at approximately 13.9km2.

There are many culverts in Tralee. The most notable being the Princes Quay Culvert and the Ashe Street, Denny Street Culvert. Princes Quay culvert is over 560m long and was originally constructed, of limestone masonry and mortar with an arch roof. It was reinforced in the early 1990s with glass reinforced plastic liner and in some locations reconstruction of the culvert was necessary, with reinforced concrete box culvert with arch roof and centrally sloping inverts. The culvert ranges in width from 4m to 4.8m and from 1.65m to 2.05m in height.

[3] https://www.floodinfo.ie/frs/en/tralee/home/

1.2.2 Tralee Flood Relief Scheme

Flood Events in Tralee town centre used to occur more often before 1986. However, after a severe flood in August 1986 a major flood relief scheme was constructed to alleviate the problem.

During this time a study was commissioned by the Town Council to examine the sewer network, prepare a development plan for the Lee Valley and to review all sources of flooding in the town. The “Tralee Flood & Development Study” was prepared by M C O’Sullivan Consulting Engineers in October 1987. This study led to the development of the “Tralee Flood Relief Scheme” which was substantially completed in 1992. As part of these works the Princes Quay Culvert was upgraded, a diversion culvert was constructed to divert flood waters from the Big to the Ballybeggan river, flood embankments were built along sections of the Lee, in combination with channel improvements of the Lee and Ballybeggan rivers, sluices installed on sewer outfalls and a number of bridges and road culverts were built. In 1997 trunk sewers and culverts were constructed to extend the drainage network and aid with flooding, advised by the Tralee Flood Relief Scheme. In addition, Tralee UDC in 1988 cut off the worst meanders in the lower reaches of the River Lee as a flood alleviation measure. The bypassed meanders were retained for nature conservation purposes.

Whilst the recurrence of flood event in the town centre has improved after the Flood relief works, areas outside the town centre flood regularly most notably in Ballinorig and Caherweesheen.

2 SCOPE OF ENVIRONMENTAL CONSTRAINTS STUDY

The constraints study has been compiled with reference to the environmental factors provided in Article 3 of the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) as transposed into Irish legislation by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, S.I. No. 296 of 2018. The environmental factors identified in the EIA Directive and where they are assessed in this constraints study, in addition to other factors are summarised **Table 2-1**.

Table 2-1: Constraints Study Factors

Constraints Study Section	Environmental Topics as per the EIA Directive (2011/92/EU) as amended (2014/52 EU)
Section 4 Population and Human Health	a) Population and Human Health
Section 5 Biodiversity	b) Biodiversity (with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive)
Section 6 Land, Soils, Geology and Hydrogeology	c) Land, Soils, Water, Air and Climate
Section 7 Water	
Section 8 Air, Climate and Noise	
Section 9 Material Assets: Agriculture	d) Material Assets, Cultural Heritage and the Landscape
Section 10 Material Assets: Non-Agriculture	
Section 11 Cultural Heritage	
Section 12 Landscape	
Section 13 Other Constraints	
Section 14 Interaction between the Environmental Factors and Constraints Summary	The interaction between the factors referred to in points (a) to (d)

The scope of this report is to identify and map environmental constraints within the scheme area of the proposed Tralee and Environs FRS that may be impacted by the flood relief measures proposed for the scheme including the CFRAM proposed measures described in Section 2.1.1 below. A description of what is contained within the scheme area are set out below in section 2.1.2.

The scheme area is within which the proposed flood relief measures will be undertaken, see **Figure 2-1.**

2.1.1 Proposed Measures

The Shannon CFRAM Study Area included Tralee as an Area for further Assessment (AFA) and concluded that a flood relief study would be viable and effective for the community. The potentially viable Study option for Tralee, as identified at the CFRAM level of assessment, can be summarised as follows:

- Increase capacity of the diversion channel between Mackies River (Ballonagh) and the River Big (Big River).
- Provide a wall on the right bank of the open channel of the flood diversion between the Mackies River (Ballonagh) and the River Big (Big River).
- Improve inlet arrangement at the diversion channel diverting flow from the River Big (Big River) to the River Ratass (Rathass).
- Construct diversion channel from the River Ratass (Rathass) to the River Tralee (Ballybeggan).
- Construct diversion channel from the River Tralee (Ballybeggan) to the River Ballynabrennagh (Ballynorrig) replacing the River Tralee culvert (Ballybeggan).
- Improve the capacity of the River Ballynabrennagh (Ballinorrig & Ballybeggan) and provide embankments on the left bank (Ballybeggan).

- Construct walls along the River Big (Big River) downstream of Brewery Road.
- Embankment and flapped outfall to protect properties at Knockmoyle and Caheranne Village.
- Clean and maintain the Ratass (Rathass) watercourse as it flows through the industrial estate of Manor West.
- Embankment and raise the road to protect the Pier 17 business centre.
- Upgrade of walls adjacent to Windmill lane including the provision of floodgates at the carpark entrance.
- Construct wall to protect properties adjacent to the canal at Blennerville.
- Construct wall along Kearney's Road.
- Clean and maintain the Caherweesheen, Cloghers, Ballydunlea and Ballyvelly watercourses. Only cleaning is required where channel maintenance has been identified as part of the measure, changes in channel geometry in the form of deepening or widening of the channel area is required.
- Construct embankments along the right bank of the River Lee and Lower Ballynabrennagh (Ballybeggan) to protect properties in Manor Village, Castlemorris Mews.
- Construct embankments along the left bank of the River Lee to protect properties in the Ballymullen area including, Hunters Wood, Cois Abhann, LIDL, Topaz, Aspen Grove, Castlemaine, Glencastle.
- Construct walls along the lower Caherweesheen (Cloghers) watercourse. Construct embankments and raise the N70 road further upstream on the Caherweesheen and Cloghers Stream.
- Construct two embankments to provide protection from the Ballyvelly and Ballydunlea watercourses (area to the south of Tralee Rugby Club).

2.1.2 Identifying and Mapping Constraints

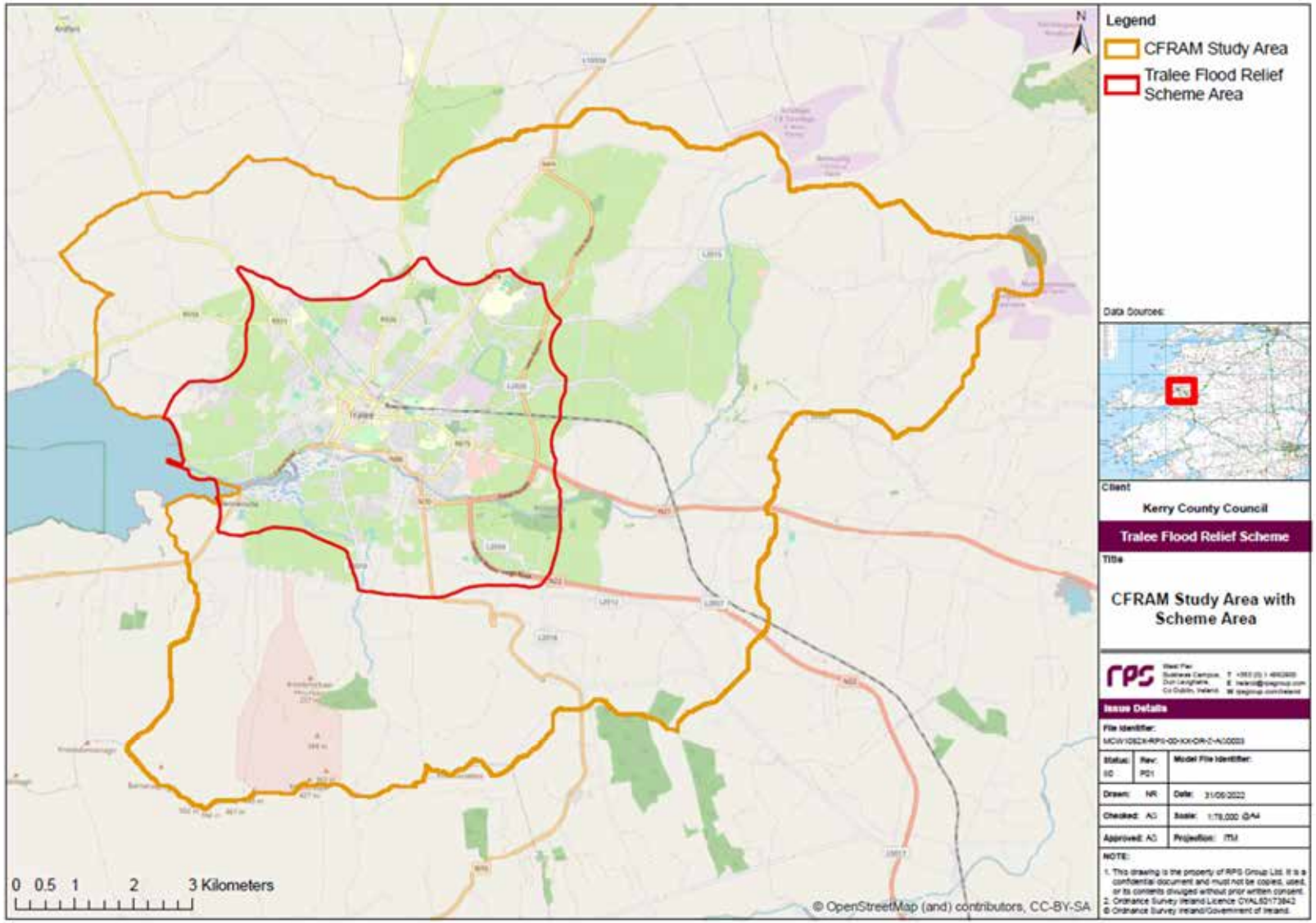
Constraints are divided into three principal categories:

- Natural constraints (naturally occurring landscapes and features);
- Artificial constraints (forming part of the built environment); and
- External parameters (design standards, policy, procedural and legal issues).

This constraints study is comprised of a desktop study (which includes the review of various documentation, including mapping resources), site walkover, windshield surveys and consultation with key stakeholders. The available mapping for this study consisted of 1:50,000 Ordnance Survey Ireland (OSI) Discovery Series mapping and aerial photography which provides information on the physical features of the scheme area. A Geographic Information System (GIS) has been used to map and present the available data within the scheme area. Additionally, a number of datasets from national agencies such as the National Parks and Wildlife Service (NPWS), Geological Survey Ireland (GSI) database and Environmental Protection Agency (EPA) have been utilised.

The constraints identified for the proposed study are described in Sections 4 to 13.

Figure 2-1: Tralee and Environs Flood Relief Scheme Area



3 POTENTIAL ENVIRONMENTAL CONSTRAINTS

3.1 Purpose of Identifying Constraints

The purpose of identifying the constraints within the proposed scheme area is to ensure the integration of environmental considerations into the selection and development of potential flood relief options. The environmental desktop assessment of constraints includes the following:

- A scope of the environmental disciplines to be assessed;
- Description of the receiving environment; and
- Identification of the constraints within the scheme area as applicable.

A constraints analysis for each of the environmental disciplines addressed is presented in the following sections.

3.2 Legislative, Planning and Policy Constraints

Consideration of relevant policy and legal issues at EU, national, regional, county and local level may influence the progression of the proposed Flood Relief Scheme. This may influence future design and construction processes. It is prudent to consider issues at as early a stage as possible so as not to delay the timely completion of the project. On this basis a list of relevant legal, planning and policy related requirements relative to the proposed Flood Relief Scheme are set out in the report.

In determining if a flood relief scheme is to be implemented the regard must be had to the following broad criteria:

a. the scheme must be technically feasible;

b. the scheme must generally be cost beneficial (a cost benefit analysis is undertaken to determine the economic merits of the project); and

c. the scheme must also be environmentally compatible (an Environmental Impact Assessment is normally undertaken for each scheme).

The Office of Public Work's Tralee Bay – Feale River Basin Flood Risk Management Plan (FRMP) identified a strategy and a set of measures for cost-effective and sustainable, long-term management of flood risk in Tralee. An Environmental Impact Assessment will inform the engineering design. Engineering Development and Design will be advanced in parallel with the environmental assessment of the Flood Relief Scheme. The Engineering team will ensure the preferred option accounts for all existing and new information emerging since the publication of the FRMP. It is prudent to consider issues at as early a stage as possible so as not to delay the timely completion of the project. On this basis a list of relevant legal, planning and policy related requirements relative to the proposed flood relief study are set out in **Table 3-1.**

Table 3-1: Legislation, Planning and Policy Requirements with Potential to Influence the Proposed Tralee and Environs Flood Relief Study

Legislation/Plan/Policy	Content Relative to the Proposed Flood Relief Study
EU Level	
EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU)	• Environmental Impact Assessment (EIA) is a very significant instrument in the implementation of EU environmental policy. The EIA Directive 2011/92/EU as amended by Directive 2014/52/EU, on the assessment of the effects of certain public and private projects on the environment and is designed to ensure that projects likely to have significant effects on the environment are subject to a comprehensive assessment of environmental effects prior to development consent being given.

Legislation/Plan/Policy	Content Relative to the Proposed Flood Relief Study
EU Flood Directive (2007/60/EC)	• Aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. • Establish a framework for the assessment and management of flood risks.
Water Framework Directive (2000/60/EC)	• Establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater.
Habitats Directive (92/43/EEC)	• All works during the development and operation of the project must aim to maintain/restore habitats and species of community interest within the scheme area. These habitats and species of community interest are identified as; Special Areas of Conservation (SACs), designated under the Habitats Directive and Special Protection Areas (SPAs), designated under the Birds Directive 2009/147/EC. The project will be screened for Appropriate Assessment in accordance with Article 6(3) of the Directive. • The habitats Directive contributes towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States to which the Treaty applies. • Measures taken pursuant to this Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest.
Birds Directive (2009/147/EC)	• All works during the development and operation of the project must aim to maintain/conserve wild bird species occurring in the scheme area.
National Level	
EC (Assessment and Management of Flood Risks) Regulations (SI 495 2015) as amended	• Transposes and gives effect to the EU Flood Directive 2007/60/EC into Irish legislation.
European Communities (Birds and Natural Habitats) Regulations 2015 (S.I. No. 355/2015) (as amended)	• Gives effect to the Habitats Directive (92/43/EEC) and the Birds Directive 2009/147/EC, as well as addressing transposition failures identified in CJEU judgments. • Regulation 42 enforces the requirement for all public authorities to conduct a screening for Appropriate Assessment and, if necessary, an Appropriate Assessment on any plan or project for which it receives an application for consent, or which the local authority itself wishes to undertake or adopt. This obligation derives from Article 6(3) of the Habitats Directive. • Regulation 42 of the Regulations of 2011 is amended by the insertion of the following paragraph after paragraph “Notwithstanding the provisions of paragraphs (1), (3), (6), (21) and (25) in relation to an application for a safety permit, the Commission for Energy Regulation shall not be required to carry out an appropriate assessment in respect of the construction of the infrastructure, in existence at the commencement of the Petroleum (Exploration and Extraction) Safety Act 2010 , of an established designated petroleum activity if, following the carrying out of a screening, it is concluded that there are no significant effects or that there are not likely to be significant effects on a European site arising from the construction of the infrastructure of the designated petroleum activity.”
European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2019 as amended	• EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) transposed into Irish legislation by S.I. No. 418 of 2019.

Legislation/Plan/Policy	Content Relative to the Proposed Flood Relief Study
Planning and Development (P&D) Act 2000 (as amended)	• Requirements for an Environmental Impact Assessment are outlined under Section 172 of the P&D Act.
Planning and Development Regulations 2001 as amended	• The thresholds for prescribed classes of development requiring Environmental Impact Assessment are set out under the Planning and Development Regulations 2001 Schedule 5. The thresholds for flood relief works are provided under Schedule 5 Part II, Section 10(f)(ii) • "Canalisation and flood relief works, where the immediate contributing sub-catchment of the proposed study (i.e. the difference between the contributing catchments at the upper and lower extent of the works) would exceed 1,000 hectares or where more than 20 hectares of wetland would be affected or where the length of river channel on which works are proposed would be greater than 2 kilometres."
Wildlife Act 1976 (as amended)	• The Wildlife Act, 1976 as amended, is the principal national legislation providing for the protection of wildlife and the control of some activities that may adversely affect wildlife. • The aims of the Wildlife Act is to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims.
Fisheries Acts 1959 to 2010	• Provides a wide range of measures to protect fish and the conservation of fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems
European Communities (Quality of Salmonid Waters) Regulations 1988.	• All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems and protect spawning salmon and trout.
European Communities (Quality of Shellfish Waters) (Amendment) Regulations, 2009	• These regulations give effect to the Shellfish Water Directive 2006/113/EC. The purpose of these designations is to protect or improve the quality of the waters at the sites in question in order to support shellfish (bivalve and gastropod molluscs) life and growth, thereby contributing to the high quality of shellfish products directly edible by man.
The National Monuments Acts 1930-2004. ***The Heritage Act 1995.*** ***Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999.*** ***Planning and Development Acts 2000 as amended***	• All works during development and operation of the project must aim to ensure the satisfactory protection of archaeological remains, which are held to include all man-made structures and to protect and where possible preserve architectural heritage.

Legislation/Plan/Policy	Content Relative to the Proposed Flood Relief Study
Ireland 2040 Our Plan National Planning Framework and National Development Plan 2018 – 2027	• Project Ireland 2040 is the governments overarching strategy for Ireland. The National Development Plan (NDP) and the National Planning Framework (NPF) combine to form Project Ireland 2040. The NPF sets the vision and strategy for the development of our country to 2040 and the National Development Plan (NDP) provides enabling investment to implement the strategy to 2027. The National Planning Framework is a long-term, 20 year strategy for the spatial development of Ireland that will promote a better quality of life for all, with sustainable economic growth and an environment of the highest quality as key underlying principles.
Climate Action Plan 2021	• The Climate Action Plan follows the Climate Act 2021, which commits Ireland to a legally binding target of net-zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030. These targets are a key pillar of the Programme for Government.
Climate Action and Low Carbon Development (Amendment) Act 2021	• The Bill places on a statutory basis a 'national climate objective', which commits to pursue and achieve no later than 2050, the transition to a climate resilient, biodiversity-rich, environmentally-sustainable and climate-neutral economy • Places on a statutory basis a 'national climate objective', which commits to pursue and achieve no later than 2050, the transition to a climate resilient, biodiversity-rich, environmentally-sustainable and climate-neutral economy
Report of the Flood Policy Review Group, 2004	• National Policy on flooding: 'to minimise the national level of flood risk to people, businesses, infrastructure and the environment, through the identification and management of existing, and particularly potential future, flood risks in an integrated, proactive and catchment-based manner' • In determining if a flood relief study is to be implemented the regard must be had to the following broad criteria: a) the study must be technically feasible; b) the study must generally be cost beneficial (a cost benefit analysis is undertaken to determine the economic merits of the project); and c) (c) the study must also be environmentally compatible (an Environmental Impact Study is normally undertaken for each study and the study must satisfy the requirements of the EIS).
Planning System and Flood Risk Management – Guidelines for Local Authorities	The core objectives of the Guidelines are to: • Avoid inappropriate development in areas at risk of flooding; • Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off; • Ensure effective management of residual risks for development permitted in floodplains; • Avoid unnecessary restriction of national, regional or local economic and social growth; • Improve the understanding of flood risk among relevant stakeholders; • Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.
River Basin Management Plan for Ireland 2022 – 2027	• Ireland's third River Basin Management Plan is due to be published in December 2021. River Basin Management Plans (RBMPs) are key tools for implementation of the EU Water Framework Directive (WFD), key European legislation which requires our rivers, lakes, groundwater and coastal water to achieve a healthy state, or what's known as 'good ecological status', by 2021. Ireland's first River Basin Management Plan (RBMP) was published in 2009, the second in 2018, and the third RBMP is due to be published by the end of 2021 and will run for six years to 2027.

Legislation/Plan/Policy	Content Relative to the Proposed Flood Relief Study
	• A key commitment in the Programme for Government, launching a new strengthened River Basin Management Plan will help Ireland protect, improve and sustainably manage our water environment to 2027. Achieving good water quality in our rivers, lakes, estuaries and seas is essential for protecting Ireland's drinking water sources, environment and people's quality of life. The plan is produced in implementation of the EU Water Framework Directive (WFD).
Arterial drainage Act 1945 (As amended)	• Arterial drainage act outlines legislation regarding arterial drainage works that are mainly used for improvement of agricultural land throughout Ireland.
Climate Change Sectoral Adaptation Plan for Flood Risk Management (2019 - 2024)	• This Plan considers the impacts of climate change on flooding and flood risk, as well as on flood risk management and identifies 21 adaptation actions needed to ensure effective and sustainable management of flood risk into the future. These actions include ongoing research and assessment of the potential impacts of climate change for flooding and flood risk, the consideration of these impacts in the development and implementation of ongoing and future flood risk management measures, and coordination with other sectors and local authorities as part of a whole of Government approach to sustainable and effective flood risk management. The objectives of the Plan are as follows: • **Objective1:** Enhancing our knowledge and understanding of the potential impacts of climate change for flooding and flood risk management through research and assessment. • **Objective 2:** Adapting flood risk management practice to effectively manage the potential impact of climate change on future flood risk • **Objective 3:** Aligning adaptation to the impact of climate change on flood risk and flood risk management across sectors and wider Government policy
National Adaptation Framework (2018)	• The National Adaptation Framework outlines a dual approach of the people and the government to tackle climate change adaptation in Ireland.
Regional Level	
Regional Planning Guidelines for the Mid-West 2010 – 2022	• **Policy SPP11:** Development of catchment management strategies and design of flood management works will be informed by the Habitats Directive Assessment process and/or other relevant environmental assessment. • **Objective SPO31:** To ensure that where flood alleviation works take place the natural heritage and landscape character of rivers, streams and watercourses are protected and enhanced to the greatest extent possible, and that there are no negative impacts on the Conservation Objectives of Natura 2000 sites through Habitats Directive Assessment.
Regional Spatial and Economic Strategy 2020-2032- Northern and Western Regional Assembly	• **RPO 3.10** Ensure flood risk management informs development by avoiding inappropriate development in areas at risk of flooding and integrate sustainable water management solutions (such as SUDS, non-porous surfacing and green roofs) to create safe places. Development plans should assess flood risk by implementing the recommendations of the Planning System and Flood Risk Assessment Guidelines for Planning Authorities (2009) and Circular PL02/2014 (August 2014).

Legislation/Plan/Policy	Content Relative to the Proposed Flood Relief Study
	• **RPO 8.22** Prioritising investment to improve stormwater infrastructure to improve sustainable drainage and reduce the risk of flooding in the urban and rural environment.
Draft River Basin Management Plan for Ireland 2022-2027	• The Minister for Housing, Local Government and Heritage, Darragh O'Brien, TD, has published the draft River Basin Management Plan for Ireland 2022-2027 for public consultation. The Minister now invites submissions, observations and comments on the proposed plan.
County Level	
Kerry County Development Plan (2022-2028)	• The purpose of the Core Strategy is to articulate a medium to longer term quantitatively based strategy for the spatial development of the area of the County and in so doing to demonstrate that the Development Plan and its objectives are consistent with national and regional development objectives set out in the National Planning Framework and Regional Spatial & Economic Strategy.
Strategic Flood Risk Assessment to the Kerry County Development Plan 2022 - 2028	• The Tralee, Killarney, and Listowel Town Development Plans 2009-2015 (as extended and varied) are being incorporated into this plan and they are contained in Volume 2. This CDP is the first consolidated County Development Plan for the entire County of Kerry, (including the former Town Council areas of Tralee, Killarney, and Listowel).
Biodiversity Action Plan 2022-2028 Co. Kerry	• This BAP forms part of the Kerry County Development Plan (KCDP) and will run from 2022-2028. As part of the KCDP the BAP is subject to environmental assessments under the SEA and Habitats Directive which includes climate proofing of plans/programmes/policies. This BAP plan therefore acknowledges the key role of biodiversity in meeting the challenges faced by climate change. In particular, the dual strategies of Mitigation and Adaptation will allow for nature-based solutions in seeking to achieve the "national 2050 climate objective" as set out in the Climate Action and Low Carbon Development (Amendment) Act of 2021. This core acknowledgment underpins this plan.
Kerry County Council Noise Action Plan 2019	• Kerry County Council being the designated Action Planning Authority under Statutory Instrument 549 of 2018 European Communities (Environmental Noise) Regulations 2018 has prepared a Noise Action Plan to address noise from major roads in the county with traffic flows greater than 3 million vehicles per annum. The five year strategic plan does not apply to noise from domestic activities, noise created by neighbours, noise at workplaces or noise inside a means of transport or due to military activities in military areas.
Kerry County Council Climate Change Adaption Strategy 2019-2024	• This document outlines the proposed Adaptation Strategy that Kerry County Council will implement to manage the existing or anticipated risks and impacts associated with climate change.
Local Level	
Tralee Municipal District Local Area Plan (2018-2024	• A Local Area Plan has been prepared for the Tralee Municipal District in accordance with the requirements and provisions of the Planning and Development Act 2000, as amended. The purpose of the plan is to set out a comprehensive local planning framework with clear policies and objectives including land use zoning in the interests of the common good for the towns and villages of the Municipal District, with the exception of Tralee town.

3.3 Stakeholder Consultation and Constraints

On 26th November 2021, a number of the key stakeholders to the project were identified and contacted in writing to inform them that the proposed study was being undertaken. The stakeholders were each invited to contribute observations and comments on environmental elements of the project regarding the proposed study.

Table 3-2 lists the stakeholders who provided a response following contact as part of this stage in the project. Appendix A (see Appendix C of Appendix A) lists all the stakeholders contacted. All constraints, observations and comments received from these stakeholders are being considered as part of the environmental assessment of the proposed study. A copy of the letter is provided in Appendix A (see Appendix C of Appendix A).

Table 3-2: Responses from Stakeholders Consulted during Environmental Constraints Study

Stakeholders	Responses Received
Development of Housing, Local Government and Heritage 13/12/2021 & 14/01/2022	DAU acknowledged receipt of correspondence and request for extension or submission of observations/recommendations at alter date (13/12/2021). **Archaeology (Underwater Unit)** • It is recommended that the services of a qualified and experienced archaeological team are engaged in order to carry out a detailed assessment, at the earliest opportunity, of the proposed Tralee FRS in accordance with the Archaeological Guidelines for Flood Relief Schemes (DHLGH and OPW 2021). It is essential that the methodologies and processes outlined in the Archaeological Guidelines for Flood Relief Schemes (DHLGH and OPW 2021) are consulted and adhered to in the design and undertaking of all archaeological assessments for the project. • In the Record of Monuments and Places (RMP) extensive records for archaeological sites are to be found within the areas addressed for the proposed Tralee flood relief scheme. The RMP is a non-extensive list, the National Monuments Service would like to draw the applicant's attention to the Department's published policy in relation to the archaeological assessment of large-scale developments on sites where there are no previously recorded monuments (Framework and Principles for the Protection of the Archaeological Heritage – Published by Dúchas The Heritage Service). • Numerous wrecks are recorded from the Tralee Bay. All wrecks over 100-years old are protected under the 1987 and 1994 (Amendment) Acts of the National Monuments Acts. Over 18,000 wrecks have been recorded to date. Previously unrecorded wreck sites may await discovery in the waterways under consideration here. • Assessment of the FRS shall include all proposed or potential impacts/effects within the terrestrial environment and within the underwater environment, including any given watercourse and structures/features associated with waterways. It should also include a full inventory and mapping (using a user-friendly identifier system) of the known and predicted extent of all archaeological/built/cultural heritage features and structures (including those identified underwater) and areas of potential and shall also include maps/drawings that clearly indicate any proposed impacts on these assets arising from the FRS project. • Potential archaeological impacts from Site Investigation works and potential secondary or indirect impacts such as access roads or construction works to facilitate access to the waterways, for example, shall also be considered in any assessments undertaken. • If the works result in a change in water levels or the hydrology near or adjacent to recorded monuments or wrecks or underwater cultural heritage,

Stakeholders	Responses Received
	there may be an indirect resultant deterioration of water-logged archaeological material and this should be addressed in detail in any future assessments. • This Department would welcome inclusion in all future consultations relating to the Tralee flood relief scheme and we would also me most grateful for an opportunity to meet with you and/or your archaeological consultants to discuss the archaeological aspects of the scheme. **Nature Conservation** • The Department is not in a position to make specific comment on this particular referral at this time. No inference should be drawn from this that the Department is satisfied or otherwise with the proposed activity. The Department may submit observations/recommendations at a later stage in the process. • The above observations/recommendations are based on the papers submitted to this Department on a pre-planning basis and are made without prejudice to any observations that the Minister may make in the context of any consultation arising on foot of any development application referred to the Minister, by the planning authority/ies, in the role as statutory consultee under the Planning and Development Act, 2000, as amended.
Transport Infrastructure Ireland 22/12/2021	The Flood Relief Scheme Area includes a number of national roads, including the N21 and N22, national primary roads, and the N69, N70 and N86, national secondary roads. The N21 and N22, national primary roads, form part of the EU TEN-T Comprehensive Network. With respect to EIAR/Constraints Scoping issues, the recommendations indicated below provide only general guidance for the preparation of an EIAR, which may affect the national road network. The developer should have regard, inter alia, to the following. • Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to locations of existing and future national road schemes in the area. • TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in the proximity of the proposed development, the N21 and N22, national primary roads, and the N69, N70 and N86, national secondary road, are all within the Flood Relief Scheme and Scheme area. • The developer should assess visual impacts from existing national roads, • The developer should have regard to any Environmental Impact Assessment Report/Statement and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area. The developer should in particular have regard to any potential cumulative impacts. • The developer, in conducting Environmental Impact Assessment, should have regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works). • The developer, in conducting Environmental Impact Assessment, should have regard to TII's Environmental Assessment and Construction Guidelines, including the Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (National Roads Authority, 2006). • The EIAR should consider the Environmental Noise Regulations 2006 (SI 140 of 2006).

Stakeholders	Responses Received
	• Where new structures may be proposed on national roads, the developer is reminded of the requirements of TII publications DN-STR-03001 - Technical Acceptance of Road Structures on Motorways and Other National Roads. • The developer should also be aware that there is Technical Acceptance requirements relating to the assessment, alteration, modification, strengthening and repair of all existing road structures (national roads) and same shall be agreed with the Bridge Management Section of TII. TII notes there are a number of national road structures on the N20 and N21, national primary roads, and the N69, N70 and N86, national secondary roads, located within the Flood Relief Scheme area. • A hydraulic analysis should be undertaken to identify the impact of proposed flood alleviation works on the hydraulic capacity of any TII Structures impacted and the potential for scour at the structure. • An assessment of scour and other hydraulic actions on national road structures in accordance with UK BD 97/12 should be undertaken where necessary. • The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required. • In the interests of maintaining the safety and standard of the national road network, the EIAR should identify the methods/techniques proposed for any works traversing/in proximity to the national road network. • In relation to haul route identification, the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed.

Additional meetings will be held with some of the stakeholders from the list above to discuss specific aspects of the project. Public consultation event's will be utilised and are important as expectations of residents and concerns may pose a constraint on the overall acceptance of a new flood relief scheme.

Public and Stakeholder Engagement can be found at the following website:
https://www.floodinfo.ie/frs/en/tralee/project-info/public-engagement/

4 POPULATION AND HUMAN HEALTH

4.1 Introduction

This section identifies the constraints of the proposed study in relation to population and human health considerations. A desktop study was conducted which included a review of the Kerry County Development Plan (2022-2028)[4], the Tralee Municipal District Local Area Plan (2018-2024)[5] and a review of aerial photography, Ordnance Survey and Discovery Series mapping to identify potential constraints.

4.2 Population Profile and Settlement Patterns

The Kerry County Development Plan (2022 – 2028) states that according to the 2016 Census, the population increased by 1.5% or 2,205 people between 2011 and 2016 - bringing the total population of the county to 147,707, with 17% of the population aged over 65. The Regional Economic & Spatial Strategy for the Southern Region (RSES) has designated Tralee and Killarney as "Key Towns". These settlements are defined in the RSES as large population scale urban centres functioning as self-sustaining regional drivers or strategically located urban centres with accessibility and significant influence in a sub-regional context. The RSES have presented an estimated population growth for 2022 – 2028 for Co. Kerry, which is summarised in **Table 4-1**.

Table 4-1: Population Projections 2022-2028[6]

2011 Census	2016 Census	2022 Population Estimate	2028 Population Estimate	Total Growth 2022- 2028	
145,502	147,707	155,458	163,178	7,720	Low
		156,902	166,265	9,363	High

The 2016 Census recorded a population of 23,691 for Tralee town (& environs), which based on changes to the census boundary of the town, reflects a static population. According to the Central Statistics Office (CSO) the Electoral Division of Tralee Urban had an average age of 42.0 in 2016 compared with 41.6 in 2011 which is reflective of the ageing population of the County overall. Tralee had the highest rate of 18–24-year-olds in the county which was mainly attributed to the Institute of Technology. Tralee is the second largest town in Munster and the largest town in the county, with over 9,000 more people living in Tralee than the next largest town in the county, Killarney.

Ireland is currently divided into 3,440 separate Electoral Divisions. The Tralee Urban Division is the only blackspot od unemployment identified in Kerry, which the CSO refers to as an area with at least 200 people in the labour force where the unemployment rate is 27 per cent or higher. According to the Census Figures the unemployment rate in the Tralee Urban area stands at 27.2 per cent compared with an average of just 12.4 per cent across the rest of the county.

The scheme area is predominantly composed of residential and commercial buildings, with some mixed-use buildings. In the CFRAM Study completed in 2018[7], Tralee was identified as an area of significant flood risk and concluded that a flood relief study would be viable and effective for the community, due to Tralee being at risk of pluvial flooding and the interaction between the fluvial flows, coastal reaches and the drainage networks.

[4] http://kerryppn.ie/wp-content/uploads/2020/06/IssuesPaperKerryCDP.pdf

[5] https://www.kerrycoco.ie/planning/planning-policy/tralee-m-d-lap-2018-2024/

[6] 2022 & 2028 extrapolated from 'Transitional Local Authority Population Projections to 2031', RSES

[7] https://www.floodinfo.ie/frs/en/tralee/home/

Tralee is at risk of both fluvial (river/stream) and coastal flooding:

- Sources of coastal flooding are extreme storm surges and wave overtopping of coastal defences inundating the areas inland.
- Sources of fluvial flooding are heavy rainfall events that cause rivers within the catchment area to overtop their banks.

Documented flood events in Tralee date back to the early 20th century. Records as early as 1916 describe serious flood events that inundated major roads and numerous houses. More recently, in September 2015 and December 2016 heavy rainfall in the region resulted in flood events which caused significant damage to properties and roads throughout Tralee.

Historical flood events are discussed in greater detail in Section 7.2.6 and the locations of historical flood events are shown in **Figure 7.3**.

4.3 Flooding

The 'Floods' Directive [2007/60/EC] states that flood risk management plans should focus on prevention, protection and preparedness. With a view to giving rivers more space, they should consider where possible the maintenance and/or restoration of floodplains, as well as measures to prevent and reduce damage to human health, the environment, cultural heritage and economic activity. The elements of flood risk management plans should be periodically reviewed and if necessary updated, taking into account the likely impacts of climate change on the occurrence of floods. Floods impact on both individuals and communities, and have social, economic, and environmental consequences. The consequences of floods, both negative and positive, vary greatly depending on the location and extent of flooding, and the vulnerability and value of the natural and constructed environments they affect.

Flooding can cause damage, loss or harm in a number of ways, including:

- Impacts to people and society, including physical injury, illness, stress and even loss of life;
- Damage to property, such as homes and businesses;
- Damage to, and loss of service from, Infrastructure (such as water supply or roads);
- Impacts on the environment, such as damage or pollution of habitats; and
- Damage to our cultural heritage, such as monuments and historic buildings.

Similarly, disruption to industry can lead to loss of livelihoods. Damage to infrastructure also causes long-term impacts, such as disruptions to supplies of clean water, wastewater treatment, electricity, transport, communication, education and health care. Loss of livelihoods, reduction in purchasing power and loss of land value in the floodplains can leave communities economically vulnerable.

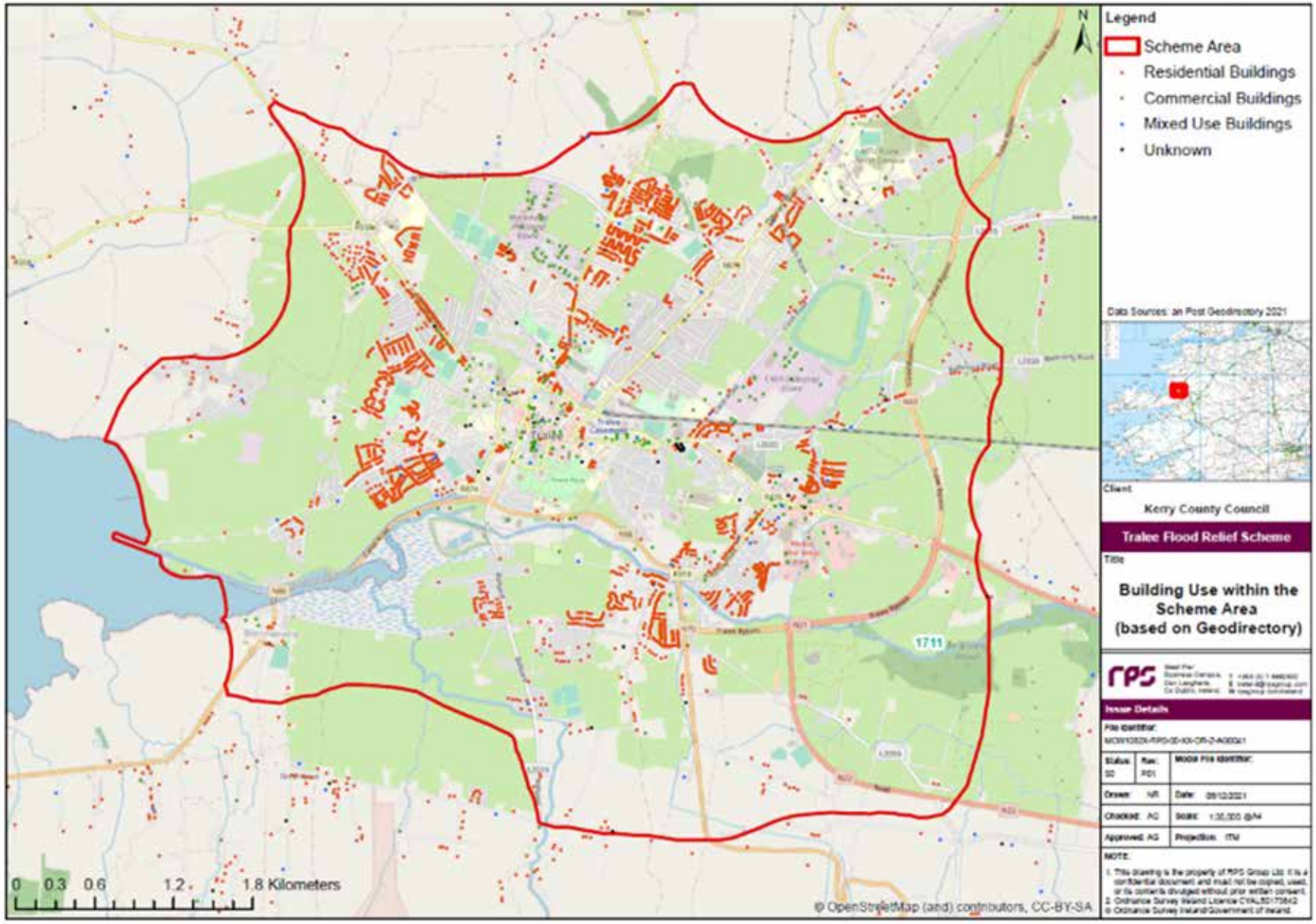
Floods can also traumatise victims and their families for long periods of time. The loss of loved ones has deep impacts, especially on children. Displacement from one's home, loss of property and disruption to business and social affairs can cause continuing stress. For some people the psychological impacts can be long lasting.

4.4 Properties

The property types within the scheme area were identified through the An Post Geodirectory[8] database. Residential development is concentrated within the outer boundary of the scheme area with clusters of Commercial properties, mainly concentrated in the city centre, as shown in **Figure 4-1** below. There are fewer mixed-use buildings which are scattered throughout the scheme area.

[8] https://www.geodirectory.ie/

Figure 4-1: Property Use within Scheme Area (Property information from Geodirectory)



4.5 Land Use and Zoning

4.5.1 Land Use Zoning

The land use zoning within the scheme area is provided in **Figure 4-2**. It is not expected that there will be any changes to land use zoning within the scheme area, due to the largely residential and mixed use town centre of Tralee, with agriculture and open space areas in the outskirts of the town.

The DoEHLG guidelines on Sustainable Residential Development in Urban Areas (2009); promotes a plan led approach to residential development. A principal tenant of this is the need to adopt a sequential approach to zoning of residential lands, extending outwards from the centre of an urban area, in line with the provision of infrastructure. Additional headroom is included in the land requirements to allow for the provision of competition, the avoidance of market monopoly and the non-availability of zoned lands.

The total area of lands now zoned for residential use is 90.5ha. The majority of lands are centrally located, within walking distance to the town centre. The National Planning Framework, Ireland 2040 targets a significant proportion of future urban development on infill and brownfield development sites within the built envelope of existing urban areas. It is envisaged that 30% of new housing in Tralee will be on infill and brownfield sites.

Coastal flooding 0.5% MRFS would have a significant impact on the town core centre which can be seen to be largely residential. Thus, the Tralee Flood Relief Study should be cognisant of the Recreational/ Leisure zoned lands dispersed throughout the city, in particular the few adjacent to the River Lee, to ensure access to these areas is maintained. Access to the River for recreational activities will need to be maintained.

Figure 4-2: Land Use Zoning in Tralee Town[9]

[9] https://www.kerrycoco.ie/planning/planning-policy/town-development-plans/tralee-town-development-plan-2009-2015/maps/

4.5.2 Land Cover

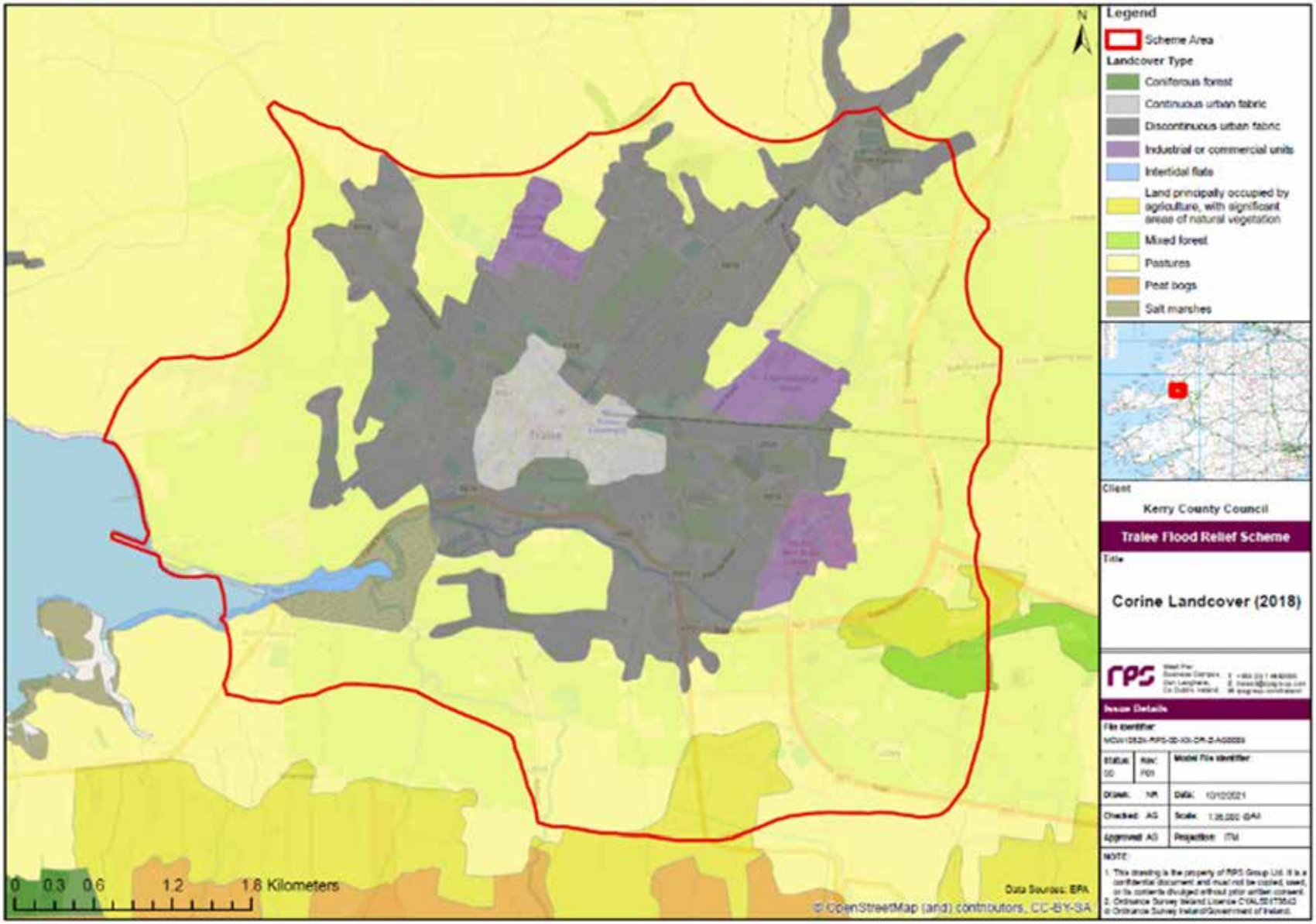
The scheme area is characterised by a variety of landcover types which were extracted from the CORINE 2018 dataset. The landcover for the scheme area is dominated by a combination of Discontinuous urban fabric (112) focused mainly around the town centre, and also Pastures (231) which is focused surrounding the outer boundary of the scheme area. Within the town centre there is Continuous urban fabric (111). To the north and east of the scheme area and just outside the Discontinuous urban fabric resides three areas of Industrial or commercial units (121). Southeast of the scheme area are two areas of Land principally occupied by agriculture, with significant areas of natural vegetation (243) and Mixed Forest (313). Southwest of the scheme area there is Intertidal Flats (423) with Salt Marshes (421).

The CORINE 2018 landcover map for the scheme area is provided in **Figure 4-3**.

Properties represent a constraint which should, where practicable, be avoided during the development of options. Residential houses generally represent a considerable constraint and avoidance of residential properties, where possible, is generally the considered best approach. Commercial properties also represent a considerable constraint and in most cases are best avoided. However, extensive properties may be able to absorb a degree of land take and ultimately benefit from improved flood relief infrastructure.

Another primary constraint within the scheme area are the utilities and existing transport infrastructure. Early consideration of how options can integrate with the existing material assets in the area is essential and will require engagement with service providers to ensure that utilities can be avoided and/ or modified to mitigate impacts.

Figure 4-3: CORINE 2018 Land Cover Types



4.6 Tourism and Recreational Activities

Tourism is one of Ireland's largest and fastest growing indigenous industries. County Kerry, with its wealth of heritage, natural assets and recreational infrastructure has enormous potential to benefit from tourism. In terms of economic structure, employment statistics show that, at the end of 2019, Kerry had 18% of its work force employed in tourism and related sectors compared to 8% for the state. The total value of the tourist industry to Kerry in terms of income, including direct and indirect effects, was circa €550 million in 2019.

Tralee is the Southern Region's fourth largest urban settlement outside the cities. It balances protection of exceptional natural environment, ecology and heritage with inherent strengths as an administrative capital, a strong performing centre of commerce, health, higher education, tourism and high order retail. It is an economic driver on the strategic road network and Atlantic Economic Corridor. It is a key settlement in the Kerry Hub Knowledge Triangle with Killarney and Killorglin.

The Tralee Municipal District has a number of high quality facilities and attractions such as Siamsa Tíre, The Aquadome, Tralee golf course, The International Rose of Tralee festival, historic sites, vibrant towns and villages, quality food, superb accommodation and good transport infrastructure links including the rail line, public bus network and Kerry International Airport. Continued investments over recent years in infrastructure, people and attractions have added to the competitiveness of the region internationally for tourists. Future major infrastructural projects committed to by the Local Authority include the development of recreational pathways on the Tralee-Fenit and North Kerry Railway lines, Ballyseedy wood to Riverwalk pathway, extension of the walk and cycle way from the upgraded canal path out towards The Spa, to eventually link up with the Tralee-Fenit railway line. When these pathways are developed they will introduce significant year round benefits to the Municipal District area.

Numerous attractive walking routes and recreational areas exist in the area, such as, Canal walk, North Kerry Way, Dingle Way and Glanageenty wood for example. In addition, the Tralee MD area is fortunate to have a number of spectacular beaches which are very popular recreational walking destinations all year round.

The top tourism attractions and recreational activities are illustrated in **Figure 4-4** and **Table 4-2**, with examples presented below:

- Blennerville Windmill;
- Kerry County Museum;
- Tralee Farmers Market;
- Kerry Archaeological and Historical Society; and
- Waterworld Tralee.

The Kerry County Development Plan (2022-2028) has set the following objectives:

- To sustainably strengthen the role of Tralee as a self- sustaining regional economic driver, a key settlement in the Kerry Hub Knowledge Triangle and on the Atlantic Economic Corridor and build on inherent strengths as an administrative capital, centre of skills and education, innovation, enterprise growth, culture and tourism accessible to regional airport, port, rail and strategic road network assets.
- To develop Tralee as a University Town, a major retail and administrative centre and as an important employment, residential and social centre.
- To achieve sustainable growth in line with the Regional Spatial & Economic Strategy for the Southern Region, as Key Towns identified to grow by at least 30% by 2040.
- Aim to ensure that the towns are attractive, liveable, vibrant, well designed urban places that have diverse and integrated communities enjoying a high quality of life and which promote a sense of place and personal wellbeing.
- Aim to ensure that the towns have diverse economic sectors.

Figure 4-4: Tourism Attractions within the Scheme Area

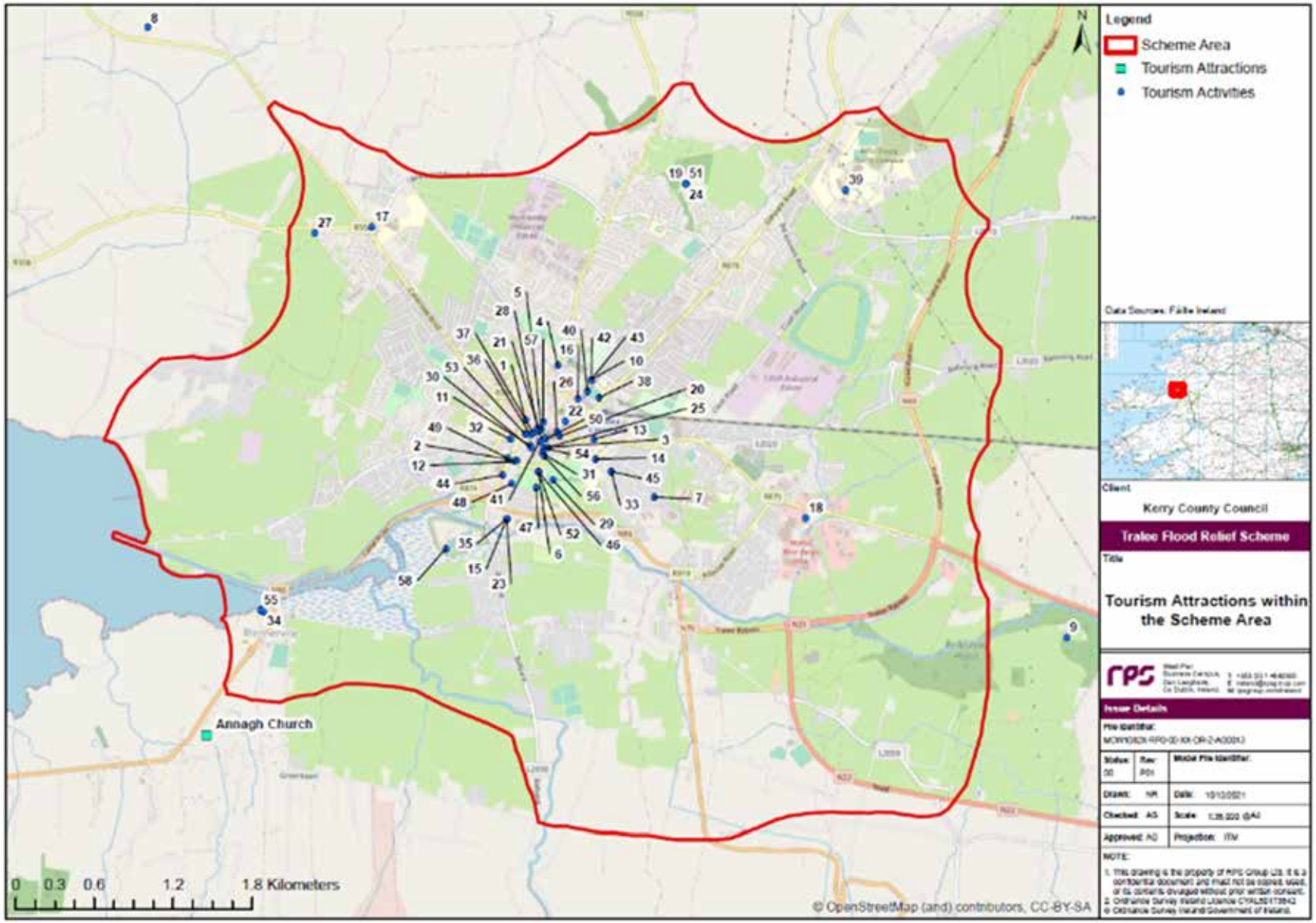


Table 4-2: Full List of Tourist Attractions with Map Reference Number

Tourist Attraction	Reference Number
Dish Cafe	1
Bella Bia	2
Sean Sugrue	3
Waterworld Tralee	4
Der O'Sullivan's	5
The Kerry Head Cycleway	6
Michael Fox O'Connor Tours	7
Ballyroe Heights Hotel Bar & Restaurant	8
O'Connell Restaurant, Ballyseede Castle Hotel	9
Old Country Golf & Tours	10
La Scala	11
Ristorante Uno	12
O'Halloran's	13
Vintage Vendors	14
Tralee Aqua Dome	15
The Abbey Inn Bar & Restaurant	16
O'Donnell's Bar & Restaurant	17
Manor West Bar & Bistro	18
Tralee Bike Rental from Ireland Walk Hike Bike	19
Baily's Corner	20
Quinlans Fresh Fish and Seafood Bar	21
Chopin's Cafe	22
Aqua Golf	23
Tralee Bike Rental from Ireland Walk Hike Bike	24
Imperial Hotel, Bar and Restaurant	25
Mozart's Restaurant	26
Ireland Golf	27
The Snackery	28
Garden of the Senses	29
Brudair's Bakery & Coffee Shop	30
Finnegan's Basement Restaurant & Wine Cellar	31
Tralee Gas, Cycle & Nursery Supplies	32
Kerry Library	33
Blennerville Farmers Market	34
Aqua Golf	35
Yummy Cafe Market	36
Irish Experience Tours	37
Stoker's Lodge	38
Castel International [Education)	39
Bike2ireland	40
Pizza Time Tralee	41
Lakeside Cafe & Bistro	42
Lakeside Cafe & Bistro	43
Tralee Farmers Market	44
Kerry Archaeological And Historical Society	45
The North Kerry Way	46
Siamsa Tíre, The National Folk Theatre & Arts Centre	47

Tourist Attraction	Reference Number
The Dingle Way - IrelandWays.com	48
il Pomo D'oro	49
John Hurley Gallery	50
Ireland Walk Hike Bike	51
Kerry County Museum	52
Jane Hilliard Gallery	53
Swing South West Ireland Golf	54
Blennerville Windmill	55
Denny Lane Bistro	56
Maddens Coffee	57
Tralee Bay Wetlands Eco & Activity Park	58

A possible constraint would be the potential negative effects that the construction of potential flood relief defences would have on the local tourism during the construction stage of the scheme. The design of the FRS must ensure that minimum disturbances occur, particularly to areas situated around the River Lee such as, for example, The Aqua Dome and Golf and Tralee Bay Wetlands Eco & Activity Park. This may take more time to plan, get approved, and executed, which may add to the overall costs of the project, if mitigation measures are needed.

4.7 Human Health

The Kerry County Development Plan outlines the following policy on health and community facilities within the county:

- **Access to Quality Childcare, Education and Health Services.** Good access to a range of quality education and health services, relative to the scale of a region, city, town, neighbourhood or community is a defining characteristic of attractive, successful and competitive places. Compact, smart growth in urban areas and strong and stable rural communities will enable the enhanced and effective provision of a range of accessible services.

Healthy Kerry Framework (2021-2027)[10] states that the vision for a Healthy Kerry, is in line with the national vision, that everyone in the county can enjoy physical and mental health and wellbeing to their full potential, where wellbeing is valued and supported at every level of society and is everyone's responsibility. It was agreed that the primary focus of the Healthy Kerry Framework should be to highlight the existing support for community health and wellbeing in Kerry and encourage a partnership approach to further promote wellbeing across the lifecycle. In general, community health and wellbeing can be promoted by collaborating with key stakeholders, maximising funding, strengthening and adding value to existing programmes and projects.

The Healthy Kerry Framework states that there is a link between socio-economic status and health status. The documented below average socio-economic status of Kerry highlights the need for health and wellbeing supports in the county. It is expected that the 2022 census will show that the COVID-19 crisis had a negative impact on the socio-economic status in Kerry, as nationally, the Central Statistics Office found 37.5% of adults have been negatively financially impacted by COVID-19 in 2020. According to the 2016 census, significant areas of deprivation that warrant attention and support are in the Iveragh peninsula, rural areas of north Kerry and parts of Tralee. Initiatives and funding should be allocated to support communities living in the most deprived areas of Kerry.

The main objectives from the Health Kerry Framework are:

- Build strong networks of relationships in the community (e.g. family, friends, colleagues, neighbours) to reduce the prevalence of loneliness and social isolation, particularly in rural areas;
- Enhance the relationships in neighbourhoods and the wider community through supporting intergenerational and intercultural health and wellbeing initiatives that stimulate positive emotions, engagement, meaning and accomplishment;

[10] https://www.healthykerry.ie/wp-content/uploads/2021/04/Healthy-Kerry-Framework-FINAL.pdf

- Target funding and projects to support the health and wellbeing of key target groups in Kerry;
- Supporting local organisations to develop healthy workplaces and workplace wellbeing programmes in a variety of settings e.g. remote working;
- Ensure local health and wellbeing strategies and policies are inclusive;
- Develop policies whereby the healthier choice becomes the easier choice; and
- Ensure the potential consequences of local policies and plans on public health and wellbeing is considered in their development and adoption.

The area profile for County Kerry based on the Census 2016 results indicated that 86.3% of the total people in County Kerry stated they were in 'very good' or 'good' health. In Country Kerry 1.6% said they were in 'bad' or 'very bad' health. 13.5% of the county's total population has a disability and a considerable portion of the people in Kerry undertake the role of a Carer.

The Tralee FRS will not result in any risk to health, it will ensure the future protection of properties and therefore improve the quality of life to those regularly impacted by the current flood levels.

4.7.1 Built Environment

There are fifteen primary schools, thirteen post primary schools, one university and five parks/playgrounds within the proposed scheme area. There are also one fire station, one Garda stations and eighteen health services. Facilities, in close proximity to the River Lee are Blennerville Windmill, Tralee Bay Wetlands Eco & Activity Park, Aqua Dome, Woodlands Caravan & Camping Park and Tralee School of Martial Arts.

4.7.2 Noise and Vibration

Noise is recognised as affecting health and wellbeing. Exposure to noise is recognised as being both an environmental pressure to wildlife as well as human beings and can affect human health and general well-being by causing stress, anxiety and disruption of activities such as sleep. Noise and vibration are discussed in more detail in Section 8 Air, Climate and Noise.

Noise from traffic and construction activity is, by its nature, concentrated in urban areas. Some construction activity and road works (emergency and planned) are undertaken at night-time to reduce disruption to daytime traffic and utility service provision, particularly in city centres and other traffic-sensitive locations such as major roads. The Tralee FRS will take into account the nearest noise sensitive receptors in proximity to the proposed scheme, which would include residential properties, amenity areas, public facilities and public spaces. Other building types such as commercial and mixed use tend to be excluded as they are not deemed to be noise sensitive.

Amenity areas and public facilities that would be included as noise sensitive receptors would include, Kerry Library, University Hospital Kerry, MTU Kerry, Our Lady of Fatima Home, Bluebird Care Kerry/West Cork St. John's Parish Centre, Church of Our Lady and St Brendan, Immaculate Conception Catholic Church, and public parks including Park of Tralee, Christus Rex Park and the Woodlands Caravan & Camping Park.

4.7.3 Air Quality

Air pollution is also recognised as a significant public health burden in terms of illness and premature death associated with air pollution generally. Continued use of solid fossil fuels for domestic usage and the increasing vehicle fleet leading to emissions of particulate matter and nitrous oxides are significant issues. It should be noted that the National Clean Air Strategy is currently being prepared by the Department of Environment, Climate and Communications, with the intention of developing the necessary policies and measures to comply with new and emerging EU legislation, in addition to supporting climate change mitigation.

The EPA releases an annual report titled 'Air quality in Ireland'. The most recent revision of the report provides a synopsis of air quality in the country during 2020. The report was published in November 2021. The air quality for the scheme area is classified as "Good". Potentially, air quality impacts would only be during Site Investigation & the Construction Stage. However, these impacts will be short term in nature and with the adherence of best practice construction measures will create minimal impact. Due to the nature of the works it is not envisaged that the operational phase will impact upon the surrounding air quality.

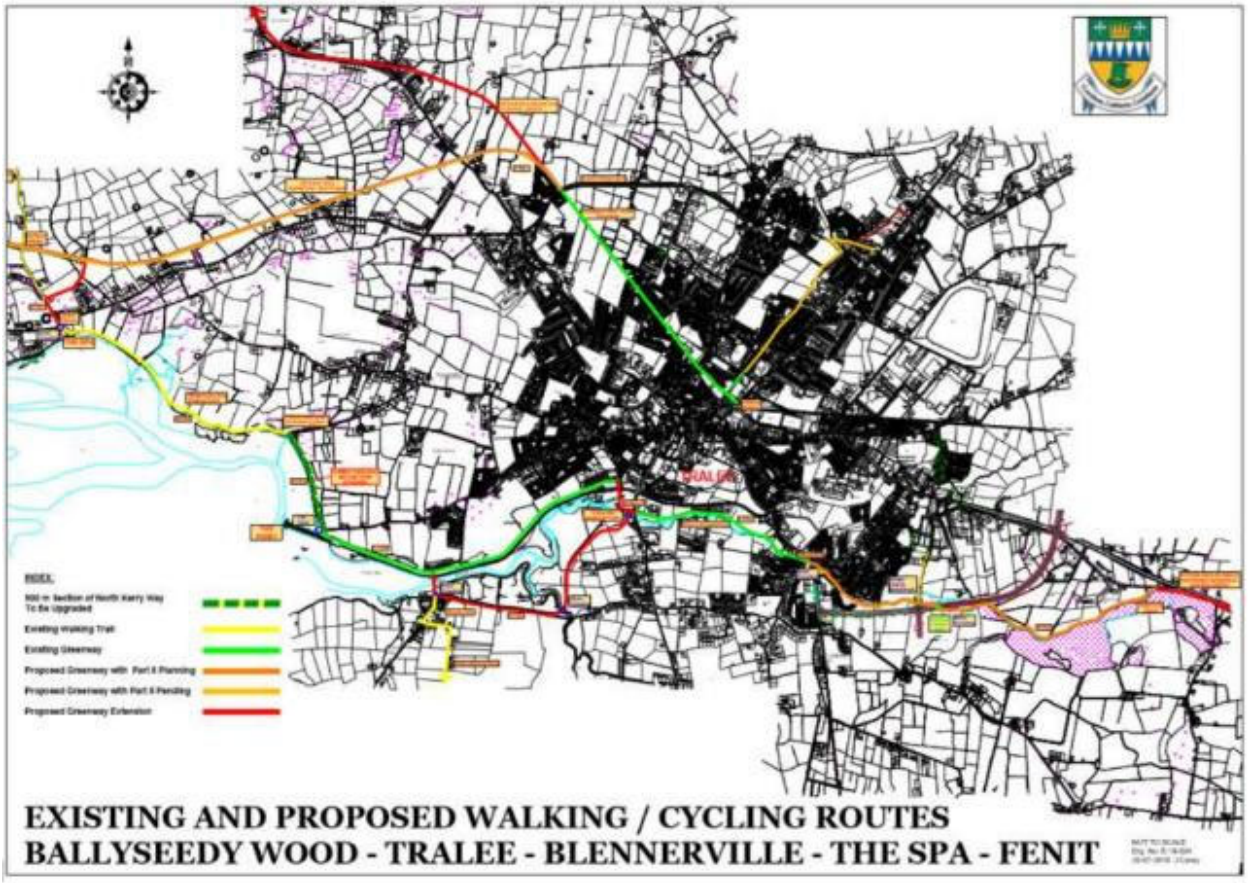
The EPA has published a national map of radon risk[11] potential, classified on a 10km grid square basis. The scheme area falls within a grid square which is classed as an estimation of more than twenty per cent of the homes in this 10km grid square are estimated to be above the reference level of 200 Becquerel per cubic metre (Bq/m^3). This is a High Radon Area. Air Quality is discussed in greater details in Section 8.

4.8 Greenways

There are a number of existing and proposed walking and cycling amenity trails within the Tralee area as indicated in **Figure 4-5** below. The current CFRAM preferred option for Tralee AFA would have a direct impact on a number of existing routes such as Canal Walk and River Lee Greenway and the following three proposed routes:

- Ballymullen to Ballyseedy Greenway (Part 8 in place) – Greenway planned along section of proposed embankment near Hunters wood area;
- The Big River Amenity Trail (Pre-Part 8) – Greenway planned along the banks of the Big River; and
- Ballyard to Blennerville – Greenway planned along Kearney road.

Figure 4-5: Outline Map of Existing and Proposed Amenity Trails



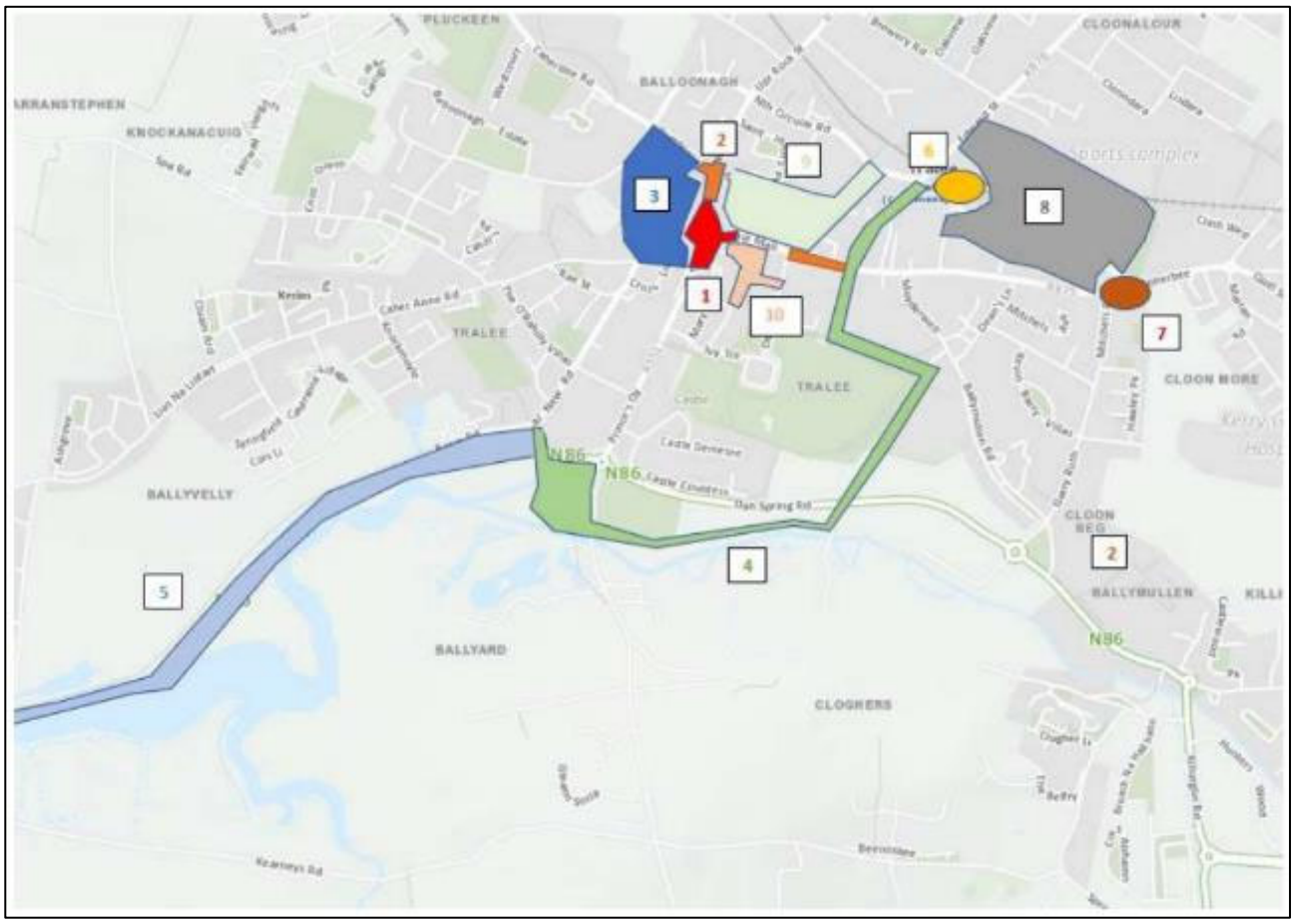
[11] https://www.epa.ie/environment-and-you/radon/radon-map/

4.9 Public Realm Projects

As part of the Tralee Regeneration Project there are a number of public realm projects at various stages of development which may be impacted by the proposed flood relief study for Tralee. An outline Map of the areas impacted are shown in **Figure 4-6** below with individual projects numbered. The two current projects at an advanced stage are the Tralee Town Centre Shared Space Phase 2 (1) which is currently at design Stage and the Island of Geese Regeneration Project (3).
Other projects include:

- Tralee Town Centre Shared Space Phase 3 (2)
- Tralee Town Centre West and Island of Geese Masterplan (3)
- Greenway/Blueway Link with Cycle and Skatepark (4)
- Tralee Canal Blueway (5)
- Casement Railway Plaza (6)
- Austin Stacks GAA Plaza (7)
- John Joe Sheehy Rd Masterplan (8)
- Market Quarter (9)
- The Square (10)

Figure 4-6: Map of Existing and Proposed Public Realm Projects



4.10 Summary of Population and Human Health Constraints

The population and human health constraints in the region, such as population or employment rates, will not for the most part be affected by the proposed flood relief works. Socio-economic and community facilities have been identified in the scheme area. Considerations of the location of these facilities will be taken into account as part of the development flood relief options.

Properties represent a constraint which should, where practicable, be avoided during the development of design and scheduling works. Residential houses generally represent a considerable constraint and avoidance of residential properties, where possible, is generally considered best. Commercial properties also represent a considerable constraint and in most cases are best avoided. However, extensive properties may be able to absorb a degree of land take and ultimately benefit from the flood relief infrastructure.

It is not expected that there will be any changes to land use zoning within the scheme area, due to the largely residential and mixed use town centre of Tralee. However, future FRS proposals should be cognisant of the Recreational/ Leisure zoned lands dispersed throughout the city, in particular the few adjacent to the River Lee, to ensure access to these areas is maintained. Access to the River for recreational activities will need to be maintained. There is potential for air and noise impacts during the construction stage, refer to Section 8.

As the proposed study will take place adjacent to watercourses, such as the River Lee, in the absence of best practice construction measures there is potential for impacts to water quality to occur. Overall, the proposed study will have a positive impact by protecting properties and the health and well-being of the population of Tralee as it will reduce significant negative impacts resulting from severe flooding events, as previously discussed in Section 4.3, within the town.

5 BIODIVERSITY

5.1 Introduction

This section provides an overview of the ecological (including terrestrial and aquatic) constraints within the scheme area. The overall aim was to identify areas of ecological significance within the scheme area which may form a constraint to the design and construction of the flood relief scheme.

5.2 Policy and Legislation

Ireland has obligations under EU law to protect and conserve biodiversity. This relates to habitats and species both within and outside designated sites. Nationally, Ireland has developed a Biodiversity Plan which has been updated to cover the period 2017-2021 to address issues and halt the loss of biodiversity, in line with international commitments. In accordance with Target 4.3 “Optimised benefits for biodiversity in Flood Risk Management Planning and Drainage Schemes” of Ireland’s National Biodiversity Action Plan 2017-2021, the proposed Scheme will ensure that Flood Risk Management (FRM) planning and associated SEA, EIA and AA, minimises the loss of biodiversity and ecosystem services through policies to promote more catchment-wide and non-structural flood risk management measures.

The overall target for Ireland’s National Biodiversity Plan is that biodiversity loss and degradation are reduced and progress is made towards substantial recovery by 2021. This follows on to the European Commission EU Biodiversity Strategy to 2030 which has a headline target to halt the loss of biodiversity and ecosystem services by 2030, to restore ecosystems in so far as is feasible and to step up the EU contribution to averting global biodiversity loss. This implements EU commitments under the Convention on Biological Diversity (1992).

Relevant legislative protections for biodiversity include EU Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) – (commonly referred to as the Habitats Directive) - and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (commonly referred to as the Birds Directive). These Directives are transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011, as amended by S.I. No. 499 of 2013 and S.I. No. 355 of 2015) and requires that any plan or project not directly connected with or necessary to the management of a European Site but likely to have a significant effect on such a site must undergo an Appropriate Assessment in view of best scientific knowledge and in view of the conservation objectives of the site.

5.3 Methodology

5.3.1 Desktop

The methodology comprised a detailed desktop assessment, walkover surveys and consultation with key stakeholders (including the NPWS). These elements are used to identify, describe and map areas of known or potential ecological value. The material sources consulted as part of the desktop assessment are as follows:

- A review of the National Parks & Wildlife Service (NPWS) natural heritage database for designated areas of ecological interest and sites of nature conservation importance within and adjacent to the scheme area (https://www.npws.ie/protected-sites);
- A review of the NPWS rare and threatened species database for records of species of conservation interest within the scheme area;
- Literature review to identify and collate relevant published information on both ecological aspects of the scheme area and relevant ecological studies conducted in other areas, including the following:
  - New Atlas of the British and Irish Flora (CD-ROM);
  - The National Biodiversity Data Centre (NBDC) database (http://maps.biodiversityireland.ie) consulted for records of rare, protected and invasive species for Irish National Grid 10km square, accessed online October 2021;

- Boundaries for catchments with confirmed or potential Freshwater Pearl Mussel (FPM) *Margaritifera* populations in GIS format available online from the NPWS;
- Bat Conservation Ireland's website (http://www.batconservationireland.org);
- Water Framework Directive website (www.wfdireland.ie);
- Botanical Society of Britain & Ireland Distribution Database accessed online October 2021 (https://database.bsbi.org/;
- GeoHive online mapping (http://map.geohive.ie/mapviewer.html);
- Department of Housing, Planning, Community and Local Government – online land-use mapping www.myplan.ie/en/index.html;
- Environmental Protection Agency (EPA) online interactive mapping tools (https://gis.epa.ie/EPAMaps) and (https://www.catchments.ie/maps/) for water quality data including surface and ground water quality status, and river catchment boundaries;
- Information on ranges of mobile Qualifying Interest (QI) populations in Volume 1 of NPWS' Status of EU Protected Habitats and Species in Ireland (NPWS, 2019a), and associated digital shapefiles obtained from the NPWS Research Branch;
- Environmental Protection Agency – water bodies and water quality (www.epa.ie);
- Environmental Protection Agency Catchments resource (https://www.catchments.ie/maps/);
- Geological Survey of Ireland – geology, soils and hydrogeology (www.gsi.ie);
- WFD website (www.wfdireland.ie);
- Inland Fisheries Ireland (www.fisheriesireland.ie) and (http://wfdfish.ie/);
- BirdWatch Ireland (https://birdwatchireland.ie/)
- Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation Concern in Ireland 2020-2026. Irish Birds 9:523-544
- Any local surveys of flora, fauna and habitat available using the Heritage Councils mapping website (https://heritagemaps.ie/WebApps/HeritageMaps/index.html);
- River Basin Management Plan 2018 – 2021 - https://www.housing.gov.ie/sites/default/files/publications/files/rbmp_full_reportweb.pdf;
- Review of Ordnance Survey maps and of orthophotography.

A review of orthophotography resources of the scheme area was also carried out. The objective of this review was to identify areas of low ecological value, such as urban areas and areas under arable cultivation or under intensive pasture. Conversely, the review of aerial photographs was also used to identify areas of potentially high ecological value such as woodlands and wetlands.

5.3.2 Specialist Surveys

Specialist detailed protected species or vegetation surveys cannot be prescribed, measured or quantified at this stage, nor is it required under the project brief. However this preliminary work will inform the need for further protected species surveys or specialist vegetation surveys that might be required for option appraisal, EIAR preparation or Stage 2 of Appropriate Assessment as is required by the brief. RPS will advise if further detailed specialist ecology surveys are required at the appropriate time of year (e.g. bats, birds, newts, otter holt monitoring, etc.).

5.3.3 Ecological Walkover Survey

Preliminary Ecological Walkover Surveys took place on the 30th September and 1st October. These surveys included collection of mammal signs, invasive plant species and bird sightings.

5.4 Existing Environment and Key Constraints

5.4.1 Designated Sites of Conservation Importance

The site synopses produced by NPWS are a source of information used when investigating important habitats or species likely to be found within areas that have been officially designated because of their conservation importance.

The main types of designation are:

- Special Area of Conservation (SAC);
- Special Protection Area (SPA);
- Natural Heritage Area (NHA); and
- Proposed Natural Heritage Area (pNHA).

In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SACs, including candidate SACs), and Special Protection Areas (SPAs, including proposed SPAs). SACs are selected for conservation under the Habitats Directive 92/43/EEC and include habitats listed on Annex I (including priority types which are in danger of disappearance) and Annex II listed species. SPAs are selected for the conservation under the EU Birds Directive 2009/147/EC protecting birds listed on Annex I and other regularly occurring migratory birds and their habitats. The EU Habitats Directive and EU Birds Directive are both transposed into Irish Law through the European Communities (Birds and Natural Habitats) Regulations 2011 (Statutory Instrument No. 477/2011 (2011, as amended).

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) comprise nationally protected sites. NHAs are protected under the Wildlife Amendment Act 2000 (as amended), many of which overlap with European Sites. The pNHAs were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated, however they do have some protection under schemes such as Rural Environment Protection Scheme (REPS), Agri-Environmental Options Scheme (AEOS) and County Development Plans and Licensing Authorities.

5.4.1.1 Zone of Influence

The identification of relevant European sites to be included in this report was based on the criteria provided in OPR (2021), namely:

- Any European site within or adjacent to the project area; and
- Identification of the Zone of Influence (ZoI) using the Source-Pathway-Receptor model (S-P-R).

Determination of the project's ZoI is achieved by assessing the project's requirements and deliverables against the ecological receptors within the project footprint, in addition to all ecological receptors that could be connected to and subsequently impacted by the project through abiotic and biotic vectors.

The proximity of the proposed project to European sites, and more importantly QIs/SCIs of the European sites, is of importance when identifying potentially likely significant effects. In accordance with the OPR AA Screening Guidelines (2021)[12], the S-P-R model has been used to identify the ZoI to ensure that relevant European sites are identified. The S-P-R model minimises the risk of overlooking distant or obscure effect pathways, while also avoiding an over reliance on buffer zones (e.g. 15 km), within which all European sites should be considered. This approach follows the DoEHLG 2010 guidance on AA which states that:

"*For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the*

[12] https://www.opr.ie/wp-content/uploads/2021/03/9729-Office-of-the-Planning-Regulator-Appropriate-Assessment-Screening-booklet-15.pdf

sensitivities of the ecological receptors, and the potential for in combination effects" (DoEHLG, 2010; p.32, para 1).

The ZoI of the proposed project on mobile species (e.g., birds, mammals, and fish) and static species and habitats (e.g., saltmarshes, woodlands, and flora) is considered differently. Mobile species have a 'range' outside of the European site in which they are QI/SCI. The range of mobile QI/SCI species varies considerably, from several metres (e.g., in the case of whorl snails *Vertigo* spp.), to hundreds of kilometres (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have a ZoI within close proximity of the proposed project, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source.

Hydrological linkages between the scheme area and protected sites can occur over significant distances; however, any effect will be site specific depending on the receiving water environment, nature of the linkage and consequent nature of the potential impact. In this case the ZoI identified extends to the Tralee Bay-Feale Water Framework Directive (WFD) Catchment (Catchment ID: 23) and sensitive receptors downstream in transitional waters including the Lee K Estuary and Coastal waterbody Inner Tralee Bay.

Hydrogeological linkages between a proposed scheme area and European sites (and their QIs/SCIs) are highly variable based on the characteristics of the groundwater body, construction methodologies, operational practices, and the presence of groundwater dependant habitats and species. As a precautionary measure, a reasonable worst-case ZoI for water pollution from the scheme area in this instance is considered to comprise the entirety of each groundwater body the scheme area overlies.

5.4.2 Designated Sites of Within the ZoI

Connectivity between the designated sites and the scheme area has been reviewed (refer to Table B-1 in Appendix B).

A total of 13 European sites and 13 NHA/pNHA sites lie within the ZoI of the proposed scheme, see **Figure 5-1** and **Figure 5-2**.

There are two Nature Reserves within the ZoI of the proposed scheme; Tralee Bay and Mount Brandon.

Tralee Bay is the only Ramsar sites within the ZoI of the proposed scheme.

Figure 5-1: European Designated Sites (SACs and SPAs) within the ZoI

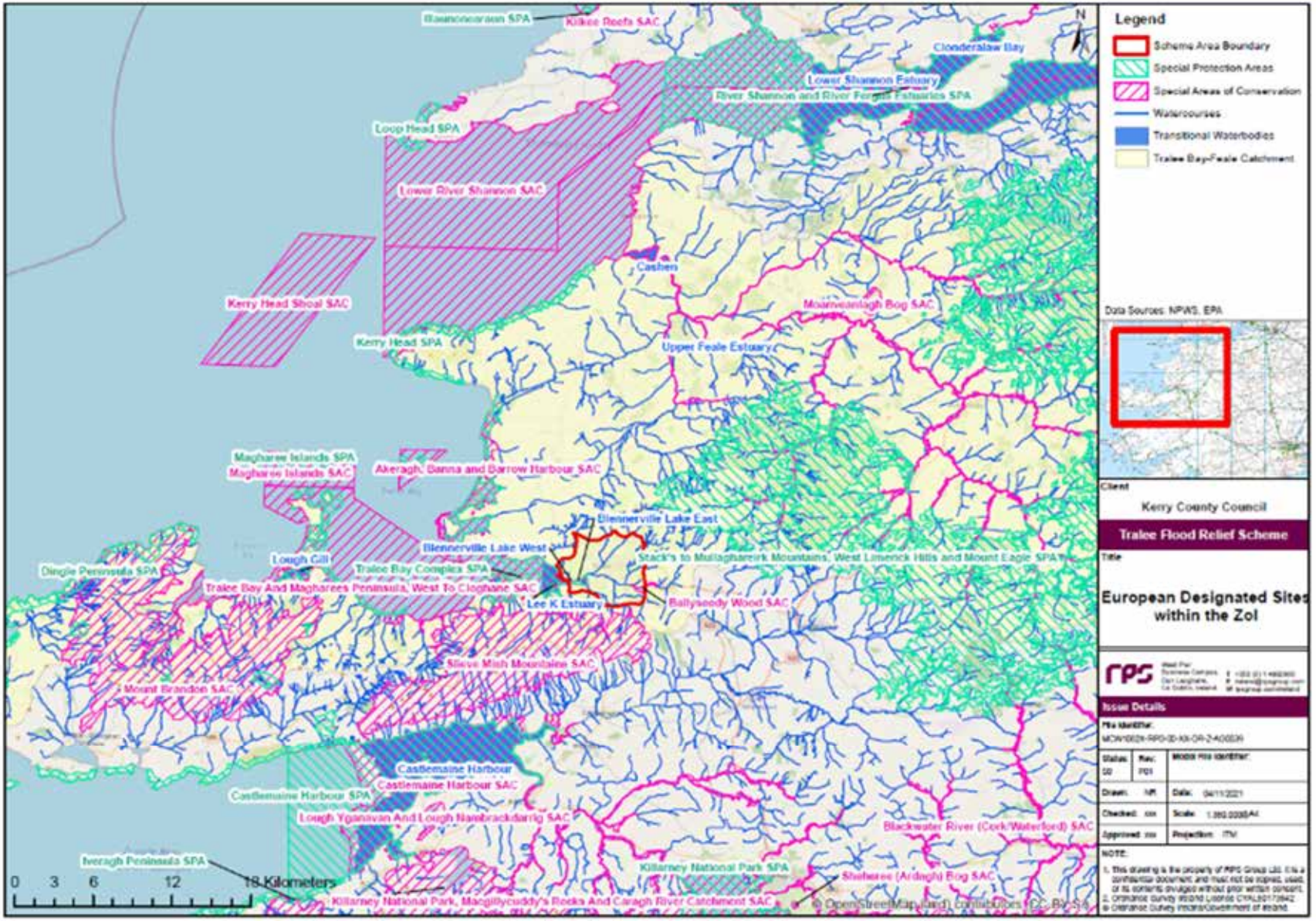
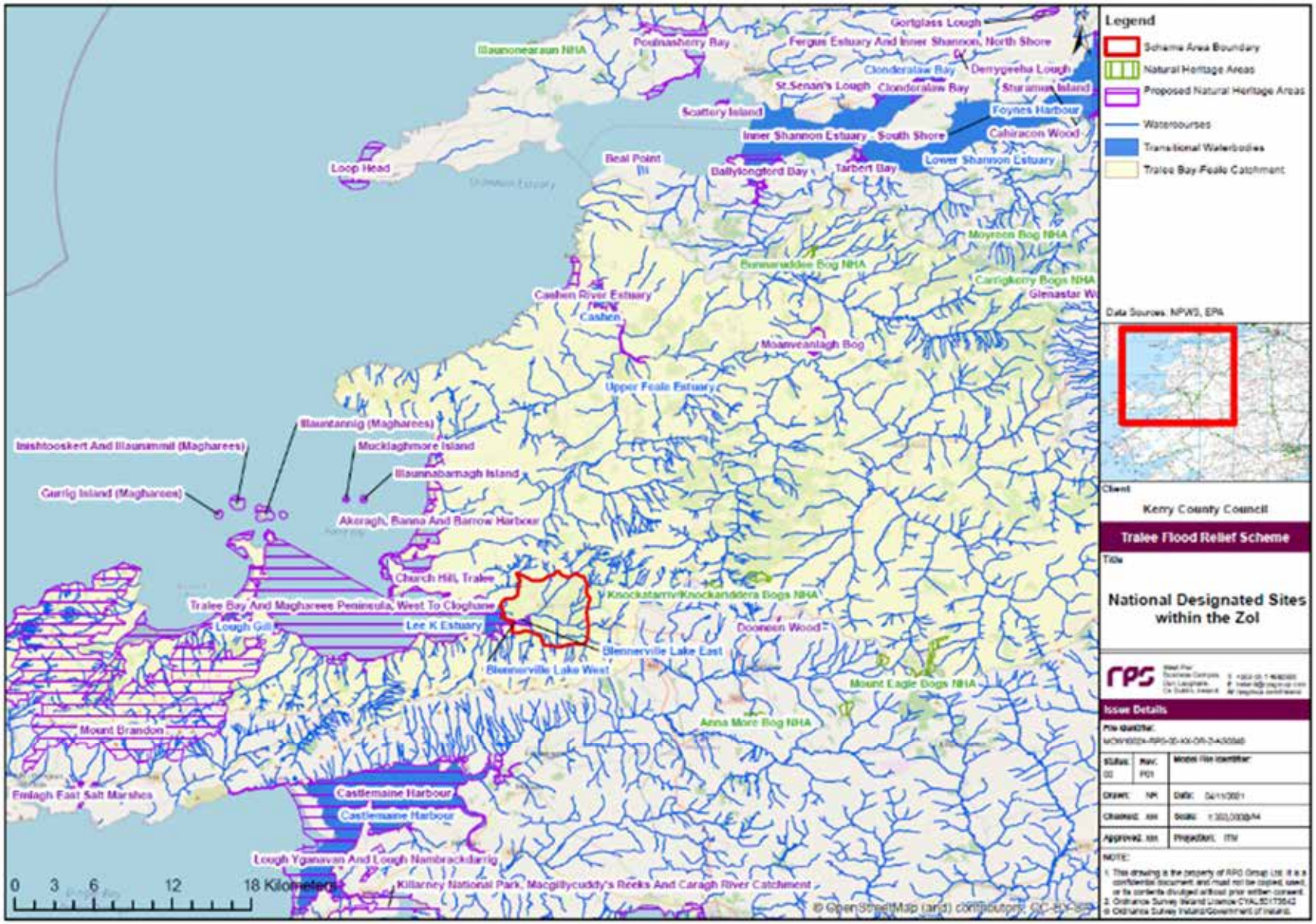


Figure 5-2: Designated National Sites (NHA and pNHA) within the ZoI



5.4.3 Protected Flora

The principal source of information regarding the distribution of flora in Ireland is the New Atlas of the British & Irish Flora (Preston *et al*., 2002). The data included in this atlas is from the 1987-1999 atlas survey as well as the National Biodiversity Data Centre. This atlas shows data for vascular plants in individual hectads (10 km by 10 km squares). The records for the grid squares Q81 and Q71 were consulted and a search was carried out to investigate if any rare or protected plant species had been recorded in the square, during the 1987-1999 atlas survey (and previous surveys) carried out by the Botanical Society of the British Isles (BSBI). The search included the vascular plants listed in Annex II of the EU Habitats Directive, Flora Protection Order (FPO) of 2015 and the Irish Red Data Book (IRDB). The results were also compared with species listed in the Site Synopses for the designated sites in the area and records for these hectads from the NPWS Rare and Protected Species database. The records of protected flora are provided in Appendix B.

The Flora atlas lists Penny Royal (*Mentha pulegium*) within 10km gird square Q71 and Q81 and Opposite-leaved Pondweed (*Groenlandia densa*) within Q81. The BSBI lists Wood small reed (*Calamagrostis epigejos*) within grid square Q81. Both the NBDC and Flora Atlas lists Salt marsh thread moss (*Bryum salinum*) as being present in grid square Q71 and Q81 respectively. The NBDC record for salt marsh thread lists the location as SW. of Derrymore Island which is 6km west of the scheme area and unlikely to be affected by the scheme. Petalwort (*Petalophyllum ralfsii*) an Annex II plant species that is Q.I. of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and mapped occurrences of this species are found SW of Lough Naparka; Magherabeg and Kilshannig all of which are 6km west of the scheme area and will not be affected by the proposed development.

Rare and protected flora are a potential constraint to the project. Potential impacts to these species where they are found within the scheme area through field surveys or where there is potential to support these species will be assessed in the biodiversity impact assessments for the project.

5.4.4 Habitats

Preliminary site walkover surveys were conducted on the 30th September and 1st October 2021, and aerial photography was examined in order to identify areas of particular ecological interest. Using the preliminary site walkover surveys and analysis of aerial imagery, habitats were classified according to the Guidelines set out in 'A Guide to Habitats in Ireland' (Fossitt, 2000) which classifies habitats based on the vegetation present and management history. The classification is a standard system for identifying, describing and classifying wildlife habitats in Ireland. The habitats found within the scheme area and their potential correspondence with Annex I habitats have also been identified. The habitats were recorded within the scheme area or identified from aerial imagery and preliminary walk over surveys are detailed in **Table 5-1**.

Table 5-1: Habitat Types Present within the Scheme Area

Fossitt Habitat Code	Habitat Type
BL3	Buildings and artificial surfaces
CM2	Lower Salt Marsh
CW1	Lagoons and saline lakes
ED3	Recolonising bare ground
FS1	Reed and large sedge swamps
FW2	Depositing/lowland rivers
FW3	Canals
FW4	Drainage ditches
GA1	Improved agricultural grassland
GA2	Amenity grassland (improved)
GS4	Wet grassland
LR4	Mixed substrata shores
MW4	Estuaries
WD1	(Mixed) broadleaved woodland
WD5	Scattered trees and parkland
WL1	Hedgerows

Fossitt Habitat Code	Habitat Type
WL2	Treelines
WN4	Wet pedunculate oak-ash woodland
WN5	Riparian woodland
WN6	Wet willow-alder-ash woodland
WS1	Scrub

The proposed works are across an expansive area within Tralee Town.

To the west of the scheme area habitats along Cockleshell Beach embankment, Tralee Canal Embankment West, Tralee Canal Embankment East and Lohercannon Embankment consist of improved agricultural grassland (GA1), buildings and artificial surfaces (BL3), Lagoons and saline lakes (CW1), Reed and large sedge swamps (FS1), Canals (FW3), Drainage ditches (FW4), Amenity grassland (improved) (GA2) and Wet grassland (GS4). Estuaries (MW4), Hedgerows (WL1), Scrub (WS1).

Habitats along Blennerville West consist of improved agricultural grassland (GA1), buildings and artificial surfaces (BL3), Amenity grassland (improved) (GA2), Mixed sediment shores (LS5), Estuaries (MW4), Scrub (WS1).

Habitats along Blennerville East consist of Buildings and artificial surfaces (BL3), Lower Salt Marsh (CM2), Depositing/lowland rivers (FW2), Improved agricultural grassland (GA1), and Reed and large sedge swamps (FS1), Hedgerows (WL1).

Habitats along Clahane embankment include Reed and large sedge swamps (FS1), Depositing/lowland rivers (FW2), Drainage ditches (FW4), Improved agricultural grassland (GA1), Hedgerows (WL1) and Treelines (WL2), Wet pedunculate oak-ash woodland (WN4) and Riparian woodland (WN5).

Habitat along the Tralee Bay Wetlands embankment consist of Tidal river (CW2), Reed and large sedge swamps (FS1), Depositing/lowland rivers (FW2) and Scrub (WS1).

Habitats along the River Lee Walkway embankment and Manor Village Embankment improved agricultural grassland (GA1), buildings and artificial surfaces (BL3), Tidal river (CW2), Recolonising bare ground (ED3), Reed and large sedge swamps (FS1), Depositing/lowland rivers (FW2), Drainage ditches (FW4), Amenity grassland (improved) (GA2) and Wet grassland (GS4). Riparian woodland (WN4) and Scrub (WS1).

Habitats along the Castlemaine Road include buildings and artificial surfaces (BL3), Depositing/lowland rivers (FW2), Scrub (WS1) and Riparian woodland (WN4).

Habitats along the Railway embankment include buildings and artificial surfaces (BL3), Treelines (WL2), recolonising bare ground (ED3) and Scrub (WS1).

Habitats along the Historic Landfill embankment include buildings and artificial surfaces (BL3) and Scrub (WS1).

Habitats along the Manor Retail Park embankment include buildings and artificial surfaces (BL3), Recolonising bare ground (ED3), Depositing/lowland rivers (FW2), Scrub (WS1) and Riparian woodland (WN4).

To the north of the scheme area habitats along the Casement Avenue embankment including Depositing/lowland rivers (FW2), Scattered trees and parkland (WD5) and buildings and artificial surfaces (BL3) while habitats along the Ballinorig Road include buildings and artificial surfaces (BL3), Recolonising bare ground (ED3), Depositing/lowland rivers (FW2), Hedgerows (WL1), and Scrub (WS1).

To the south of the scheme area habitats along the Aperee Living embankment consist of buildings and artificial surfaces (BL3), Depositing/lowland rivers (FW2), Scrub (WS1), Hedgerows (WL1), and Riparian woodland (WN4).

5.4.5 Invasive plant species

A search of National Biodiversity Data Centre (NBDC) online database was conducted for records of invasive species listed on the Third Schedule to the EC Birds and Natural Habitats Regulations 2011, as amended. Under Regulation 49(2) of the 2011 Regulations, it is an offence to plant, disperse, allow or cause to disperse, spread or otherwise cause to grow in any place, any plant included in Part 1 of the Third Schedule without a licence from the Minister for Arts, Heritage and the Gaeltacht.

Invasive species recorded on NBDC for grid squares Q71 and Q81 are displayed in **Table 5-2** below. Invasive species found within the scheme area during the site walkover surveys are mapped and found in Appendix C.

In summary, heavy infestations of Himalayan Balsam (Impatiens glandulifera) are found on the stream edge at the Manor Village embankment and Manor Village East. Heavy infestations of Himalayan balsam are found towards the eastern half of the Rose embankment with two large Japanese knotweed infestations also found near this embankment. The true size of one of these Japanese knotweed infestations could not be assessed due to the presence of a large concrete wall blocking the view of the infestation. An estimation of the potential size of the infestation was made from a combination of field notes and aerial mapping. Himalayan balsam infestations are found along the stream edge at the Castlemaine road. A singular Japanese knotweed stand is found at the Aperee Living Tralee Embankments. Himalayan balsam infestations are found along the stream edge at the Ballinorig Road. Heavy infestations Himalayan balsam and Japanese knotweed along the Tralee town embankments.

Invasive plant species will be treated using chemical treatment (e.g. foliar application or stem injection treatment) on its own or in combination with physical treatment (e.g. excavation and deep burial or disposal to landfill). The most cost-effective method of treatment is chemical treatment, however it can take five years to fully eradicate Japanese knotweed via this method while it can take two years to eradicate Himalayan balsam (provided re-infestation does not occur form upstream) adding considerable time to project completion.

Table 5-2: Invasive Species records from NBDC

Common Name	Scientific Name	Grid Square	Designation
Black Currant	*Ribes nigrum*	Q81	Medium Impact Invasive Species
Brazilian Giant-rhubarb	*Gunnera manicata*	Q81	Medium Impact Invasive Species, Regulation S.I. 477
Butterfly-bush	*Buddleja davidii*	Q81	Medium Impact Invasive Species
Cherry Laurel	Prunus laurocerasus	Q81	High Impact Invasive Species
Common Broomrape	*Orobanche minor*	Q71	Medium Impact Invasive Species
Common Cord-grass	*Spartina anglica*	Q71	High Impact Invasive Species, Regulation S.I. 477
Giant Hogweed	*Heracleum mantegazzianum*	Q81	High Impact Invasive Species, Regulation S.I. 477
Giant-rhubarb	*Gunnera tinctoria*	Q81	High Impact Invasive Species, Regulation S.I. 477
Himalayan Honeysuckle	*Leycesteria formosa*	Q81	Medium Impact Invasive Species
Indian Balsam	*Impatiens glandulifera*	Q81	High Impact Invasive Species, Regulation S.I. 477
Japanese Knotweed	*Fallopia japonica*	Q71, Q81	High Impact Invasive Species, Regulation S.I. 477
Japanese Rose	*Rosa rugosa*	Q81	Medium Impact Invasive Species
Parrot's-feather	*Myriophyllum aquaticum*	Q81	High Impact Invasive Species, Regulation S.I. 477
Rhododendron ponticum	*Rhododendron ponticum*	Q81	High Impact Invasive Species, Regulation S.I. 477
Spanish Bluebell	*Hyacinthoides hispanica*	Q81	Regulation S.I. 477
Sycamore	*Acer pseudoplatanus*	Q71	Medium Impact Invasive Species
Three-cornered Garlic	*Allium triquetrum*	Q81	Medium Impact Invasive Species, Regulation S.I. 477
Traveller's-joy	*Clematis vitalba*	Q81	Medium Impact Invasive Species

5.4.6 Fauna

5.4.6.1 Legislation

Species which are afforded statutory protection, whether under International, European or National legislation, are considered in detail in this section. Relevant legislation is as follows:

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive (79/409/EEC) as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 and 2013 (SI 477/2011 and 499/2013), and
- Wildlife Act 1976 and Wildlife (Amendment) Act 2000, as amended.

5.4.6.2 EU Habitats Directive (as transposed)

Species protected under the EU Habitats Directive can be separated into three categories: Annex II of the directive lists species that require protection of their habitats, for which SACs are designated, while Annex IV of the directive lists species which are afforded strict protection, wherever they occur in the country (inside or outside of SACs), and Annex V species whose taking from the wild can be restricted by European law.

5.4.6.3 EU Birds Directive (as transposed)

The EU Birds Directive 2009/147/EC requires member states to identify and classify SPAs for rare or vulnerable species listed in Annex I of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance (Article 4).

5.4.6.4 Irish Wildlife Act

Under the Wildlife Act 1976 (as amended), species listed under the Fifth Schedule are afforded statutory protection and are therefore subject to the provisions of Section 23, which make it an offence to:

- Kill, injure or take any wild animal listed;
- Damage or destroy, or obstruct access to, any structure or place which any wild animal uses for shelter or protection;
- Damage or destroy anything which conceals or protects any such structure; or
- Disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.

There is a requirement that any proposed development assesses the likelihood of impacting on such species. Surveys will be undertaken to identify those species listed under Schedule 5 of the Wildlife Act 1976 (as amended). All surveys will meet with standard recommended methodologies.

5.4.7 Fauna in the Scheme Area

5.4.7.1 Mammals

A search of National Biodiversity Data Centre (NBDC) online database was conducted for records of Annex II, IV and V species protected under the EU Habitats Directive and other species protected under the Wildlife Act 1976 (as amended.) The following species were recorded within the grid square Q71 and Q81 from the NBDC and have potential to be found within the scheme area:

- Otter (*Lutra lutra*) [1355] are protected under both Annex II and Annex IV of the EU Habitats Directive and are QI species of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC. The habitats in close proximity to the embankments/ proposed flood relief measures provide suitable foraging and commuting habitat for otter. Otter prints were found along the Clahane embankments.
- Pine Marten (*Martes martes*) is protected under Annex V of the EU Habitats Directive. Pine martens generally inhabit forested ecosystems or landscapes with substantial woodland or scrub which is found across within the scheme area. There is potential that this species is present within the scheme area.

- Eurasian Pygmy Shrew (*Sorex minutus*) is protected under the Wildlife Act (1976) as amended. The pygmy shrew is common throughout mainland Ireland. It has a preference for habitat rich in ground cover, which offers ideal foraging grounds and protection from predators (mainly birds of prey). These habitats include hedgerows, grasslands, woodlands and peatlands. There is potential for the species to be present within the scheme area.
- Eurasian Red Squirrel (*Sciurus vulgaris*) is protected under the Wildlife Act (1976) as amended. This species can be found in woodland habitats which are found within the scheme area. There is potential for the species to be present within the scheme area. There is potential that thus species is found within the scheme area.
- West European Hedgehog (*Erinaceus europaeus*) is protected under the Wildlife Act (1976) as amended. West European Hedgehog are associated with edge habitat and pasture, with coniferous woodland, marsh and arable land being the least preferred habitats[13]. There is potential that thus species is found within the scheme area.
- Badger (*Meles meles*) is protected under the Wildlife Act (1976) as amended. Badger sightings from desktop scheme (NBDC) badger records are numerous within Ballyseedy Wood which is 350m from the proposed embankments and is the closest record to any embankments across the scheme. This record is a 1km grid square and notes the presence of a badger sett with no exact location given due to the sensitive nature of this data. These majority of records are Ballyseedy Wood are badger sett locations with a few live sightings of badgers also found here. Badger presence is assumed within the scheme area. Badgers are protected under the Wildlife Act. No badger signs were noted during the ecological walkover.

5.4.7.2 Birds

All bird species are protected under the Wildlife Act 1976 (as amended). Some bird species are afforded protected status under the Birds Directive. BirdWatch Ireland and the RSPB Northern Ireland have produced a list of Birds of Conservation Concern in Ireland (BoCCI). A number of bird species are also categorised as Red or Amber listed Birds of Conservation Concern.

There were a number of bird species recorded for grid square Q71 and Q81 on the NBDC, see Appendix B.

Bird species listed on Annex I of the Birds Directive 2009/147/EC recorded within these grid squares Include Common Kingfisher (*Alcedo atthis*), Greater White-fronted Goose (*Anser albifrons*), Short-eared Owl (*Asio flammeus*), Dunlin (*Calidris alpina*), Black Tern (*Chlidonias niger*), Hen Harrier (*Circus cyaneus*), Bewick's Swan (*Cygnus columbianus bewickii*), Whooper Swan (*Cygnus cygnus*), Little Egret (*Egretta garzetta*), Merlin (*Falco columbarius*), Peregrine Falcon (*Falco peregrinus*), Black-throated Diver (*Gavia arctica*), Great Northern Diver (*Gavia immer*), Red-throated Diver (*Gavia stellata*), Mediterranean Gull (*Larus melanocephalus*), Little Gull (*Larus minutus*), Bar-tailed Godwit (*Limosa lapponica*), Red-necked Phalarope (*Phalaropus lobatus*), Ruff (*Philomachus pugnax*), Red-billed Chough (*Pyrrhocorax pyrrhocorax*), Little Tern (*Sterna albifrons*), Common Tern (Sterna hirundo) and Sandwich Tern (*Sterna sandvicensis*).

These species will be critical receptors to the proposed scheme where they are found within the scheme area through field surveys or where there is habitat potential to support these species. Potential impacts to these species will be assessed in the Appropriate Assessment (AA) reporting and biodiversity impact assessments for the project.

Large colonies of Oystercatcher (*Haematopus ostralegus*), Turnstone (*Arenaria interpres*), Common gull (*Larus canus*), Light bellied brent geese (*Branta bernicla hrota*), Black headed gull (*Larus ridibundus*) and Lapwing (*Vanellus vanellus*) were found during the preliminary site walkovers.

[13] https://www.vincentwildlife.ie/species/hedgehog

5.4.7.3 Aquatic species

European eel was recorded by the EPA within the River Lee in our scheme area. European eel are a threatened species under OSPAR convention. Aquatic species will be critical receptors to the proposed scheme. Potential impacts to these species will be assessed in the AA reporting and biodiversity impact assessments for the project.

5.4.7.4 Amphibians and Invertebrates

- Common Frog (*Rana temporaria*) is protected under Annex V of the EU Habitats Directive and the Wildlife Act 1976 (Amended). Frogs can be found in pond habitats and wet grassland, the latter of which is plentiful across the scheme area. No frog signs were noted during the ecological walkover.
- Marsh Fritillary (*Euphydryas aurinia*) is protected under Annex II of the EU Habitats Directive and the Wildlife Act 1976 (Amended). The NBDC holds a few records that span the entirety of 10km gird square Q71 within no specific site mentioned. Marsh fritillary requires a low, open sward with abundant *Succisa pratensis*. Colonies in Ireland have been recorded on sand dunes, fens, cutover raised bogs, blanket bogs, wet heaths, unimproved wet, neutral or calcareous grasslands, calcareous and coastal heaths, sometimes in exposed conditions. NBDC records show that Devil's bit scabious is found in proximity to the western end of the scheme area. This plant is the main food source for the Marsh Fritillary and therefore there is potential that Marsh fritillary are present within suitable habitats within the scheme area.
- Smooth Newt (*Lissotriton vulgaris*) is protected under the Wildlife Act 1976 (Amended). The NBDC holds six smooth newt records have been found within the confines of Tralee Bay Wetlands Centre. Native to Ireland. Like the common frog, smooth newts may colonise garden ponds during the breeding season. Outside of the breeding season, newts come onto land and are often found in damp places, frequently underneath logs and debris in the summer months. No smooth newt signs were noted during the ecological walkover.

5.4.7.5 Bats

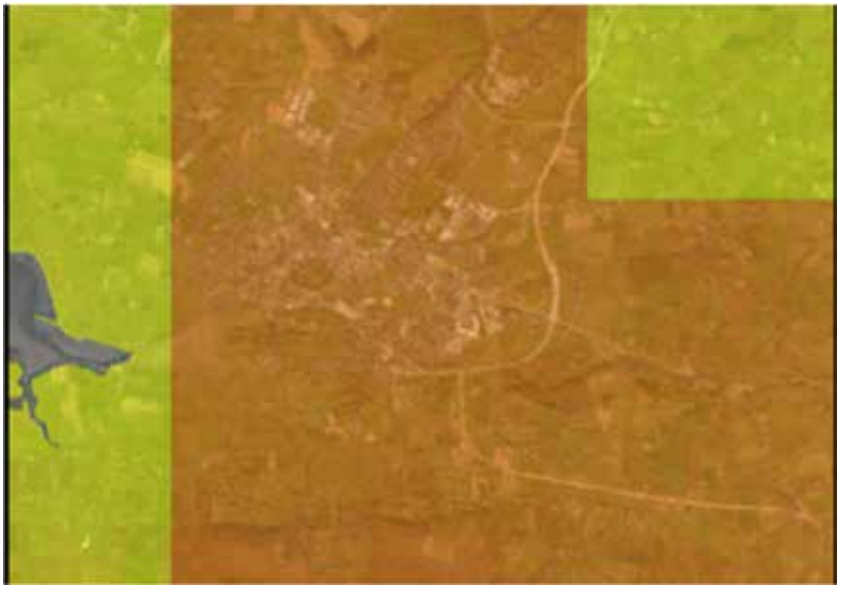
All Irish bat species are protected under the Wildlife Act (1976) as amended and the Habitats Directive 92/43/EEC, as transposed, seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. Lesser Horseshoe bats (*Rhinolophus hipposideros)* are listed under Annex II and Annex IV of the Habitats Directive and all other bat species are listed in Annex IV.

Potential treelines and hedgerows that could be used as foraging or feeding habitat for these bats' species have been identified across the scheme area and these species may be present within these areas. Potential roosting habitats including old buildings and trees have also been identified across the scheme area.

Bat Conservation Ireland were contacted for existing records of bat species within 10km of a rough centre point for the scheme Q 84184, 14267). This information showed that nine of the ten known Irish bat species have been observed within 10km of the scheme centre point (Q 84184, 14267). These are Lesser horseshoe bat (*Rhinolophus hipposideros*), common pipistrelle *(Pipistrellus sensu lato),* soprano pipistrelle *(Pipistrellus pygmaeus)*, Leisler's (*Nyctalus leisleri)*, Brown long-eared (*Plecotus auritus)*, Daubenton's (*Myotis daubentonii),* Whiskered *(Myotis mystacinus),* Brandts *Bat* (Myotis brandtii) and Natterer's (*Myotis Nattereri) along with a number of unidentified bat specimens.* The roosts and bat activity recorded within 10km of a scheme centre point (Q 84184, 14267) are provided in Appendix B.

Figure 5-3: Bat Habitat Suitability Index for Q71[14]

Figure 5-4: Bat Habitat Suitability Index for Q81[15]



The five-point scale bat habitat suitability index[16] available from NBDC online mapping was utilised to assess the importance of the scheme area for bat species. This index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for bats.[17] Bat Habitat Suitability Index scores are shown below in **Table 5-3** for all embankment areas across the scheme.

[14] Map from: https://maps.biodiversityireland.ie/Map

[15] Map from: https://maps.biodiversityireland.ie/Map

[16] Lundy, M.G., Aughney, T., Montgomery, W.I., & Roche, N., (2011) Landscape conservation for Irish bats & species specific roosting characteristics. Bat Conservation Ireland.

[17] http://maps.biodiversityireland.ie/metadata/Landscape_Conservation_for_Irish_Bats_metadata(v.3).pdf

Table 5-3: Bat Habitat Suitability Index across the scheme.

Bat Habitat Suitability Index	Embankment/Flood Relief Area	Grid Square
25.22	Cockleshell Beach Embankment, Tralee Marina Embankment West, Lohercannon Embankment, Tralee Canal Embankment East, Blennerville West, Blennerville East	Q81
34.11	Tralee Canal Embankment East, Blennerville East, Clahane Embankment, Tralee Bay Wetlands Embankment, River Lee Walkway Embankment, Railway Embankment, Historic Landfill Embankment, Manor Village Embankment, Castlemaine Road, Manor Retail Park Embankment, Ballinorig Road, Casement Avenue Embankment, Aperee Living Embankment	Q81

The bat habitat suitability for grid square Q71 and Q81 is shown in **Figure 5-3** and **Figure 5-4**.

There may be potential impacts to foraging and commuting habitat in relation to bat species, the extent of these impacts will be examined through further survey and assessment.

5.5 Summary of Key Biodiversity Constraints

The proximity of European sites is a significant constraint to the proposed scheme, i.e. Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA.

There is potential for ex-situ impacts to SCI of the Castlemaine Harbour SPA and Magharee Islands SPA.

Cormorants and Light bellied brent geese are SCI of the Castlemaine Harbour SPA and they were found within the section of this SPA within the scheme area site during the preliminary site walkovers. Common Gull are SCI of the Magharee Islands SPA and were found within the section of this SPA within the scheme area site during the preliminary site walkovers.

With these species foraging distances from Castlemaine Harbour SPA and Magharee Islands SPA overlap with the scheme area. Appropriate mitigation measures should be implemented to avoid or minimise disturbance.

There is potential for hydrogeological connectivity between the scheme area and the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA. These protected areas lie across the Tralee GWB which the scheme area also intersects.

Air pollution from construction activities may affect the sensitive habitats in the vicinity of the works. Due to the largely urban scheme area, construction sites will be limited in size and the amount of plant and machinery that can be used will be limited. Therefore, potential impacts from air pollution will be to sensitive ecological receptors within 200m[18] of the works, which includes Tralee Bay and Magharees Peninsula, West to Cloghane SAC, Tralee Complex SPA, Tralee Bay And Magharees Peninsula, West To Cloghane pNHA, Tralee Bay and Mount Brandon Nature Reserves and Tralee Bay which is a Ramsar site.

In addition to the habitats and species protected under designated sites, there are numerous records for rare and protected species which will require further assessments for habitats and protected flora species, Wildlife Act species or species listed in Annex II, Annex IV, and Annex V of the EU Habitats Directive, as well as protected bird species under the Birds Directive and important bird assemblages that are likely to be found within the scheme area.

[18] Guidance for the treatment of Air Quality during the Planning and Construction of National Road Schemes' (NRA 2011)

All designated sites and other features of ecological interest should be considered in full when identifying suitable options for the flood relief scheme. Avoidance of all designated sites and important ecological features should be prioritised where possible. In the event where works located within or in proximity to designated sites and ecological features appropriate mitigation measures should be implemented to avoid or minimise disturbance.

Areas of woodland, including riparian woodland along the banks of the rivers within the scheme area,

are likely to be of high ecological value, including supporting protected species such as bats, badgers and birds, and should be avoided where possible.

Non-native invasive species listed on the Third Schedule to the EC Birds and Natural Habitats Regulations 2011, as amended, were recorded within the scheme area. From field surveys it is found that multiple embankments across the scheme area are heavily infested with Himalayan Balsam and Japanese knotweed A management plan will need to be prepared to ensure compliance with Regulation 49 of the 2011 Regulations.

Otter prints were found along the Clahane embankments. Detailed otter surveys will need to occur across the scheme as the presence of otter is assumed.

Badger sightings from the desktop scheme (NBDC) badger records are prevalent within Ballyseedy Woods which is 300m from the Manor Village East flood relief measures. The closest approximate sett location (Record is a 1km grid square) to the Manor Village East is 300m west. No distinct badger signs or sightings were found during general ecological walkover surveys but there is potential that they are present in proximity to the works. Dedicated badger surveys will be required to detail if these setts are currently active and if any other setts have since been formed within proximity of the works.

When designing the scheme it will be necessary to ensure that movement of species between identified ecological sites are not impaired by the provision of the flood relief scheme (i.e. fish, mammal, invertebrates etc.).

Water quality impacts to receiving waters such as the River Lee and Big river have the potential to significantly impact protected species/habitats which may be present.

Where works within important waterbodies cannot be avoided; the timing of works and best site practice should be incorporated into the physical design and construction of the flood relief scheme to minimise pollution risk and alteration of hydrology.

The NPWS and IFI should be consulted when determining viable options for flood relief at further stages of scheme development and appropriate mitigation should be determined.

The following requirements of the IFI should be considered in the design of the proposed scheme:

- Strong emphasis given to natural flood management techniques.
- An assessment of the impact of the existing drainage schemes should be carried out to enhance natural flood management.
- In-stream works should be avoided where necessary.
- Invasive Species must not be spread as a result of works of the project. If invasive species are found within the site an invasive species management plan should be produced and followed.
- Follow “Guidelines on protection of fisheries during construction works in and adjacent to waters’ IFI 2016.”
- Ensure that the impact the scheme may have on a riparian zone is adequately assessed, as many important species of invertebrate essential to optimal salmonid production rely on this habitat.

6 LAND, SOILS, GEOLOGY AND HYDROGEOLOGY

6.1 Methodology

A detailed desktop assessment was undertaken to identify areas of constraint in relation to land, soils, geology and hydrogeology within the scheme area. Geological constraints will be considered further when defining the suite of viable options for flood relief.

The European Commission, in February 2012 published the Soil Thematic Strategy which was a proposal for European Law for the protection of soil. In May 2014, the Commission withdrew the proposal for a Soil Framework Directive. Thus, other than geological heritage sites (which include proposed Geological Natural Heritage Areas and County Geological Sites and are identified in County Development Plans and County Heritage Plans), geological features (soils and bedrock) in Ireland are not afforded legal protection. There is a statutory requirement placed on Local Authorities to have due regard for conservation of geological heritage features such as under the following legislation:

- The Planning and Development Act 2000, as amended;
- Planning and Development Regulations 2001, as amended; and
- Wildlife (Amendment) Act 2000 [enabling Natural Heritage Areas].

Since 2000, water management in the EU has been directed by the Water Framework Directive 2000/60/EC (WFD). It requires that all member states implement the necessary measures to prevent a deterioration of the status of all waters, these being surface, ground, estuarine and coastal, and to protect, enhance and restore all waters with the aim of achieving 'good status' by 2015. River Basin Management Plans are required to be produced under the WFD. The first cycle RBMP covered the period 2009–2015. Due to delays in developing a second cycle, this second cycle covers the period 2018–2021. A third-cycle Plan will be required for 2022–2027. In terms of hydrogeology WFD objectives were set for the effective management of Groundwater Bodies (GWB), which are the management units for groundwater under the WFD. The main Irish and EU protection for groundwater is established under the following legislation:

- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010); and
- Groundwater Directive (2006/1118/EC).

The constraints scheme has been prepared in accordance with Chapter 3 of the NRA publication *Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes* (NRA, 2009).

The following publicly available data sources were reviewed to obtain information on the land, soils, geology, hydrology and hydrogeology of the Scheme Area:

- Geological Survey of Ireland Spatial Viewer (https://dcenr.maps.arcgis.com);
- Geological Survey of Ireland (GSI) 1;100,000 Geology of the Shannon Estuary (Sheet 17);
- Groundwater Flooding Data Viewer (https://dcenr.maps.arcgis.com);
- Environmental Protection Agency (EPA) (http://gis.epa.ie/Envision);
- EPA Catchments (https://www.catchments.ie/);
- GeoHive (https://www.map.geohive.ie);
- National Parks & Wildlife Service (http://www.npws.ie/);
- Teagasc – (http://gis.teagasc.ie/soils/); and
- Census of Agriculture 2010 (https://www.cso.ie/en/statistics/agriculture/censusofagriculture2010/)

Previous GI carried out in the area was reviewed to supplement baseline descriptions of soils, subsoils and bedrock[119]. Aerial photography was searched for any identifiable farming practices, such as, dairy paddock systems and internal roadways, circular collecting yards, large, galvanised sheds, horse facilities and pig and poultry housing. At this stage of the project there are no details on the extent of land ownership and therefore the size of any farms is not known.

6.2 Existing Environment and Key Constraints

6.2.1 Land

Apart from the environs of Tralee Town, the scheme area is an urban area and as such the principal land cover is primarily Artificial Surfaces with Pastures outside the main urban centre; see **Figure 4-3** in section 4 above for the CORINE 2018 land cover map. The principal land cover types as classed by CORINE are mainly urban fabric (continuous at Tralee Town centre and discontinuous urban fabric away from the centre), industrial, commercial and transport units at Monavalley and Clash Industrial estates and Manor West Retail Park with Pasture land (agricultural areas) at the periphery of the scheme area. There are areas of land classified as coastal wetland (salt marshes) in the vicinity of the River Lee/ Tralee Bay at the southwest of the scheme area and areas classified as heterogenous agricultural areas with significant areas of natural vegetation cultivation at the southeast of the scheme area. There is some wooded areas and forestry at the southeast of the scheme area, at Ballyseedy Wood which is classified as mixed forest. Overall, forestry in the scheme area amounts to only approximately 25 ha.

The scheme area is bounded at the west by Tralee Bay, while its southern boundary is defined by the gradually rising ground which leads into the Slieve Mish Mountains. The presence of the River Lee is the defining features of the scheme area and the ground gradient and soil type here is reflective of the floodplain (alluvium) while at the west of the scheme area the soil type is reflective of the influence of the bay (low permeability marine estuarine silts and clays and poorly draining tills).

The lands within the scheme area are relatively flat and the GSI has mapped the physiography of the area as flat to gently undulating (coastal plain) over the majority of the scheme area with the north classified as rolling ice-moulded topography. The Glacial deposits of till at Tralee Bay have been subjected to periglacial solifluction where it has been subjected to freeze/ thaw processes.

For the majority of the scheme area the soils are also reflective of the land use and comprise mainly Made Ground within the Tralee urban area with a mixture of poorly drained tills (surface and groundwater gleys) and deep well-drained acid brown earths and podzols outside the paved area of Tralee's urban centre.

In terms of agriculture, field sizes vary throughout the scheme area, however, the field sizes would be considered average in size from a national perspective and are reflective of the quality of the lands and the farm size in the area. Many of the fields are irregular and bordered by low hedgerows, low stone walls and scattered trees or linear treelines. According to the Census of Agriculture 2010 there are 8,412 farms in Co. Kerry utilising approximately 286,436 hectares. The most popular type of farming in Kerry is beef production which represents 46.6% of farms, respectively, compared, to a national average of 55.6%. In addition, in 2010 there were 181 farms with 3,681 horses and ponies (443 of which are thoroughbred horses and ponies) recorded in Kerry, representing approximately 5% of all farms with horse and ponies in the state. The average area farmed in Kerry is 35.2 hectares (CSO, 2020) compared to a national average of 32.7 hectares. To the north and west of the scheme area there are irregular field patterns that are potentially poorly draining with low permeability soil. Further investigations would need to occur in the options identification process to determine the exact nature of the agricultural enterprises and the extent that they occupy in order to determine if this is a constraint.

The other principal land uses in and around the scheme area include the residential, industrial and commercial properties of Tralee Town and these are dealt with in Section 4 Population and Human Health.

[1]IGSL Ground Investigation, Kerry County Council Dev. Project No.11473, 2006

[2]Tralee Sewerage Scheme Pipeline Route

6.2.2 Soils & Subsoils

National soils mapping has been carried out by Teagasc and the most recent soils map was published in 2014 as part of the Irish Soils Information System (SIS) which was cofounded by the EPA and Teagasc in 2008.

The scheme area is dominated by Made Ground (Urban): The built land of Tralee's municipal district where urbanisation has replaced the natural undisturbed soils. Made Ground encountered in previous GI[1] near Ratass is described as comprising tarmac, hardcore fill, ash and clay. The other soil types present within the scheme area include:

- Marine/ estuarine silts and clays (Mesc); Low permeability silts and clays are present at the west of the scheme area adjacent to the inner area of Tralee Bay. Previous GI[2] describes very soft to soft dark grey mottled black sandy silt or sandy clay with pockets of soft grey clay or silt partings and occasional amorphous organic material. SIS mapping classifies this soil as Tidal Marsh.
- Till derived chiefly from Namurian rock (TNSSs): poorly drained surface and groundwater gleys (AminPD) – occur predominantly at the northern periphery of the scheme area outside the urban area of Tralee Town. These subsoils are classified as being of low to moderate permeability. SIS mapping classifies this soil as Fine loamy drift with siliceous stones.
- Till derived chiefly from limestone (TLs): Deep well drained mineral soil comprised of grey, brown earth and brown podzolics at the west of the scheme area between Tralee's urban centre and the Tralee Bay. SIS mapping classifies this soil as Coarse loamy drift with sileceous stone.
- Till derived chiefly from Devonian sandstones (TDSs): Deep well drained soil comprised of acid brown earths and brown podzolics at the south of the scheme area in the vicinity of Cloghers. These subsoils are classified as being of moderate permeability. SIS mapping classifies this soil as Coarse loamy drift with sileceous stone.
- Alluvium (A): Areas of Alluvium are present along the River Lee and Tullygarran Stream.
- Bedrock at Surface (RckCa); Shallow poorly drained mineral soil (mainly basic) derived from mainly calcareous parent materials (BminSP);- small areas at the southeast in the vicinity of Manor West where mapped outcrops are present.
- Blanket Peat (BkPt): At the southeast of the scheme area there is a small area of blanket peat in the vicinity of Kilfeighny North.

Figure 6-1 illustrates the distribution of soil types within the scheme area.

Underlying the soils the vast majority of the subsoils are also classified as Urban deposits (Made ground), Till derived from Limestones (TLs) and Till derived from Devonian sandstones (TDSs). **Figure 6-2** illustrates the distribution of subsoil types within the scheme area. The other subsoil types present within the scheme area include;

- Till derived from Namurian sandstones and shales (TNSSs).
- Estuarine silts and clays (Mesc).
- Alluvium (A).
- Bedrock outcrop or subcrop (Rck).
- Landfill (Landfill).
- Blanket Peat (BkPt).

Based on this information it is unlikely that there would be any negative implications due to the nature of Made ground being so prominent, the area is already urban, there would however exist the potential for encountering waste material in the form of demolition rubble and/or exposure to contaminated material in the Landfill and Urban deposits and the potential for the presence of soft ground where soils and subsoils are classified as Marine Estuarine silts and clays and peat. The presence of karstified outcropping bedrock in particular at the southeast of the scheme area is a consideration due to the potential for irregular ground surface and near surface anomalies being a common subsoil type, no constraints are identified in terms of Tills.

Figure 6-1: Soil Distribution across the Scheme Area

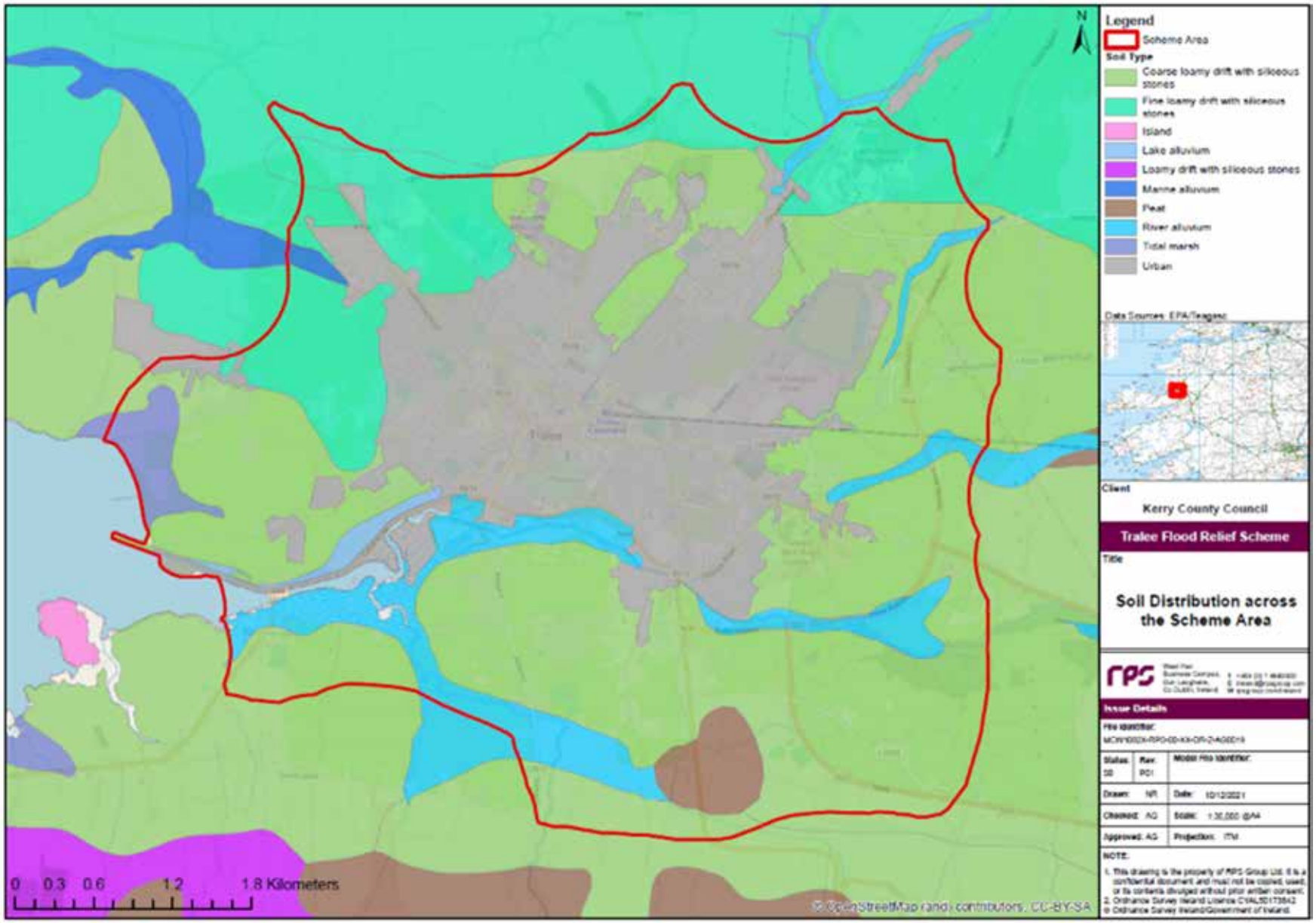
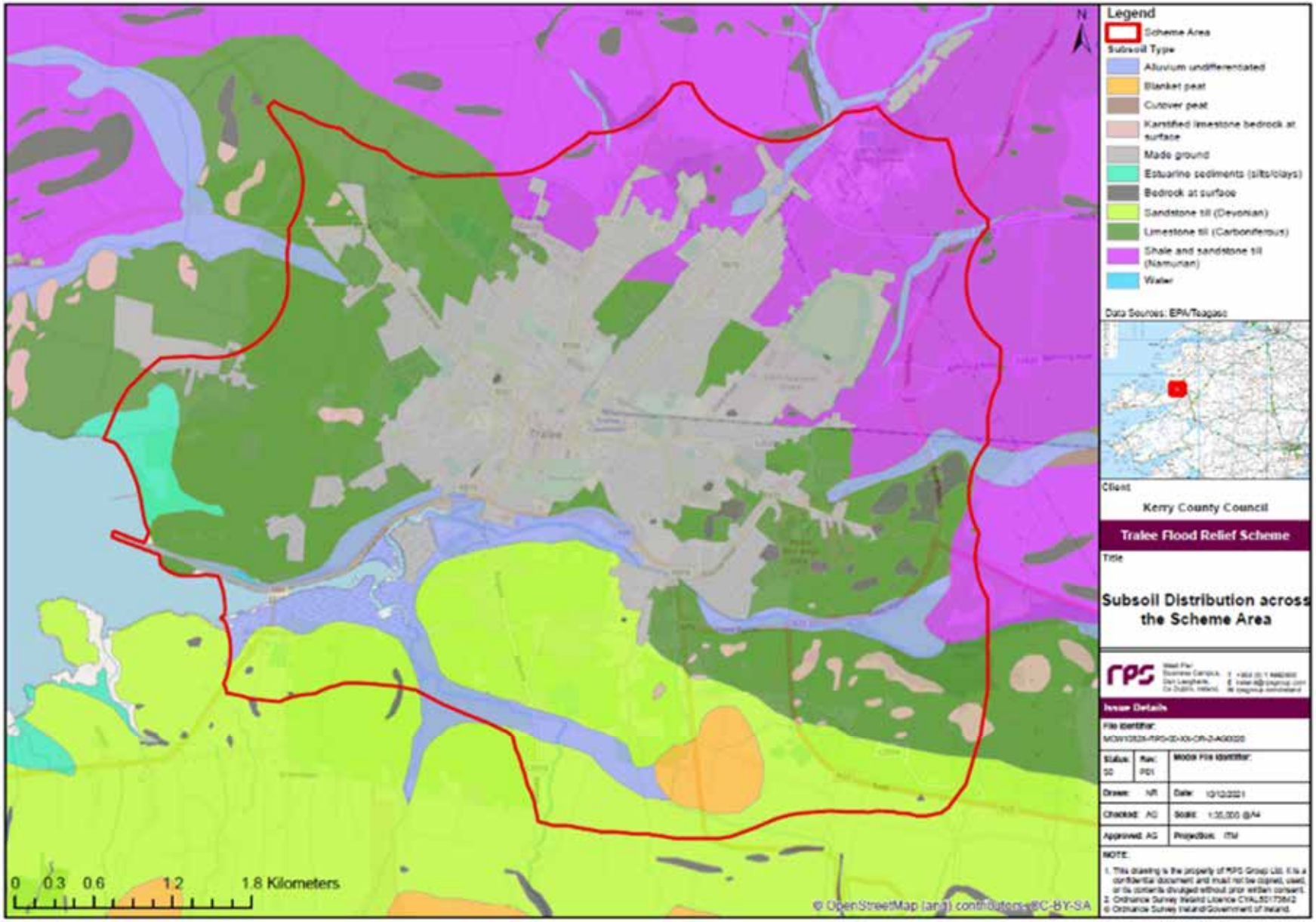


Figure 6-2: Subsoil Distribution across the Scheme Area



6.2.2.1 Contaminated Land

Due to the urban nature of the vast majority of the Scheme Area there are a number of EPA licenced facilities identified within the scheme area (Industrial Emissions (IE)/Industrial Pollution Control (IPC)/Waste facilities), including:

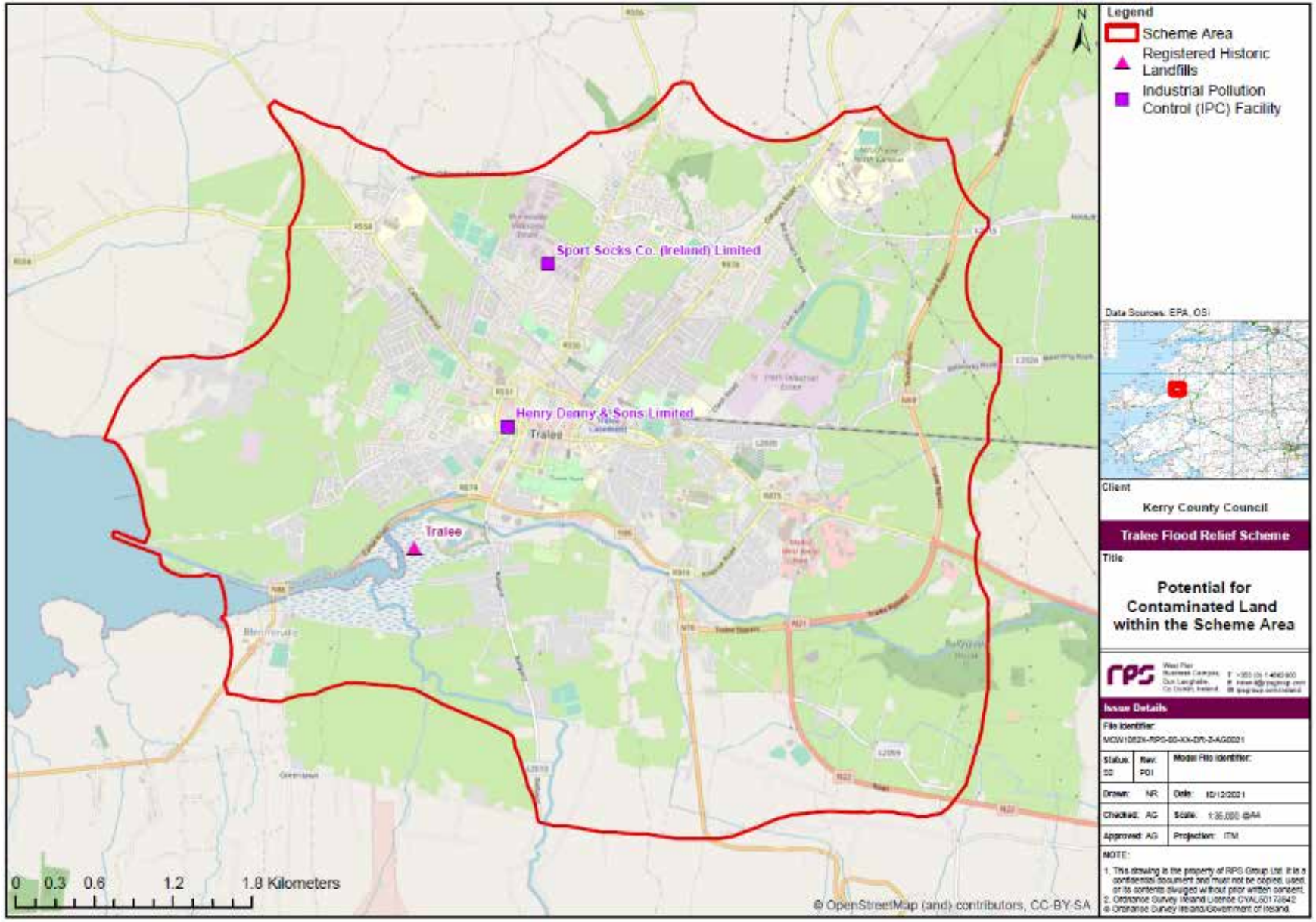
- Henry Denny & Sons Ltd.
- Sport Socks Co. (Ireland) Ltd.
- Heiton Buckley Ltd.
- Amann Industries Ltd.

There are no registered historic landfills identified within the scheme area. The old landfill site for Tralee, capped since 1992 is located at Tralee Bay at the southwest of the scheme area. The landfill is currently under the ownership of Kerry County Council. Kerry County Council have engaged consultants to carry out a detailed risk assessment in accordance with the EPA Code of Practice for unregulated landfills of the Environment impact that this waste body poses. When this risk assessment is completed remediation works may be required. If remediation works are required, then there will be ongoing maintenance for the foreseeable future.

There are no Seveso Sites identified in the scheme area. Interaction with potential contaminated ground must be considered as part of the scheme development.

A contaminated land map for the scheme area is provided in **Figure 6.3**.

Figure 6-3: Potential for Contaminated Land within the Scheme Area



6.2.3 Bedrock Geology

The Geological Survey of Ireland (GSI) online database (www.gsi.ie) was consulted for available edaphic, geological and hydrological information of the site and its environs.

The bedrock geology map for the scheme area is provided in **Figure 6.4**. The vast majority of the scheme area is comprised of the Cracoean Reef Member (CLcr) of the Cloonagh Limestone, described as unbedded calcilutite limestone and the masive unbedded limestone of the Waulsortian Limestone Formation (WA). The poorly exposed Rockfield Limestone Formation (RF) occurs as a narrow band at the centre of the scheme area separating the Waulsortian from the Cloonagh Limestone. Cherty Limestones from the Dirtoge Formation (DF) the bedrock at the northern periphery, these rocks represent the highest preserved Visean rocks. The Clare Shale Formation (CS) is present at the east of the scheme area separated from the Dirtoge Limestone by an unconformity. The northern periphery of the scheme area is underlain by the undifferentiated Namurian shale and sandstone rocks, these rocks outcrop in the Stacks Mountain to the northwest of the scheme area. At the southern periphery of the scheme area the Ballysteen Limestone (BA) and Lack Sandstone (LK) form the bedrock. The bedrock formations occurring within the scheme area are detailed in **Table 6-1** below.

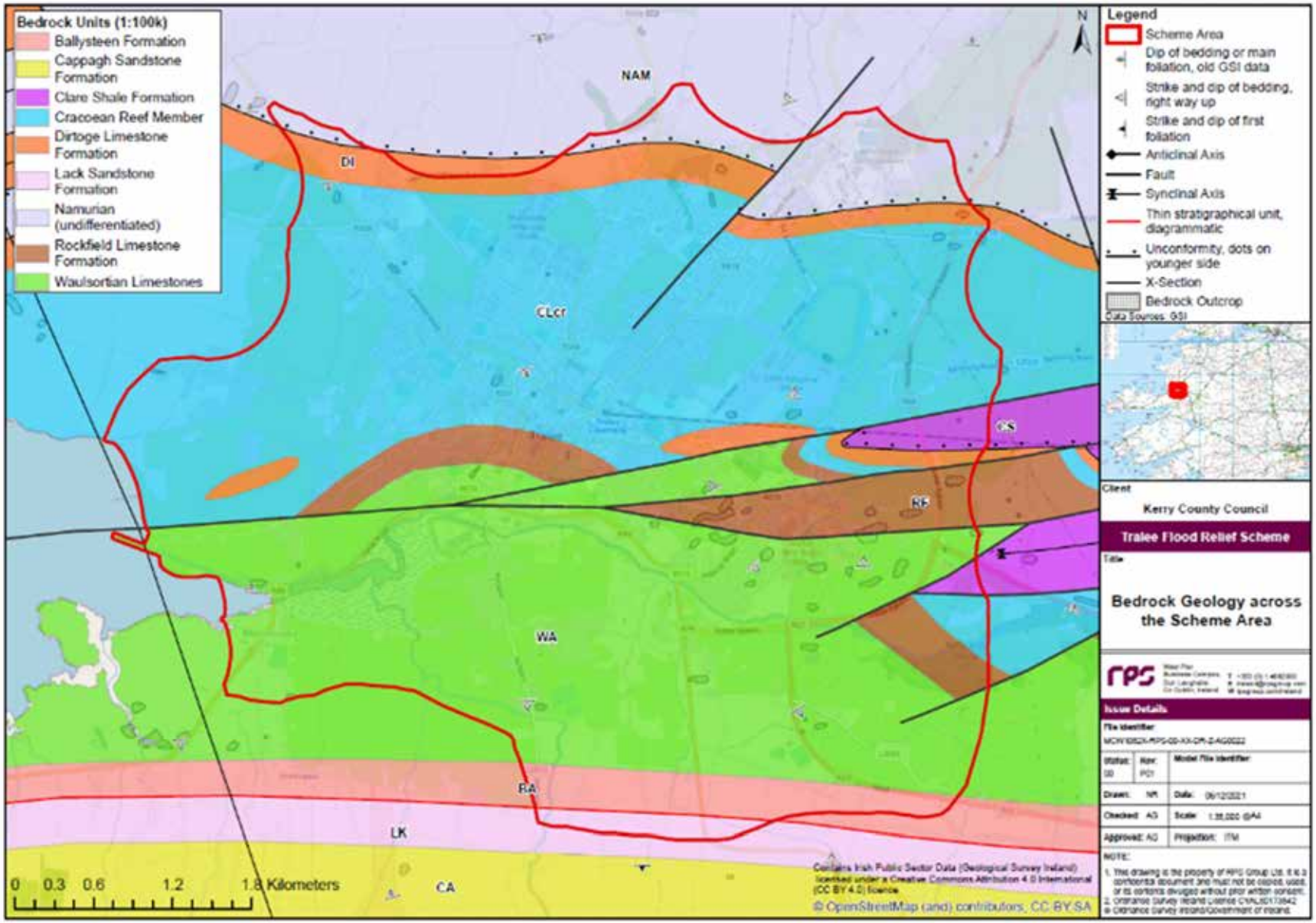
Table 6-1: Bedrock Geology Formations occurring within the Scheme Area

Bedrock Geology	Description	Lithological Description	System	Series
Clare Shale	Mudstone, cherty at base	In the type area the formation consists of a condensed sequence of black shales with closely spaced layers rich in goniatites, underlain by shales with many phosphatic horizons. Nodules and bands of clay ironstone occur near the top of the formation.	Carboniferous	Namurian
Namurian (undifferentiated)	Shale and sandstone	Pale sandstone and dark shale (Downfaulted blocks on Kilronan Mountain	Carboniferous	Namurian
Dirtoge Limestone	Bioclastic cherty grey limestone	The lower part of the formation contains chert nodules and channel structures. Above this are bedded dark siliceous micrites and calcilutites and laminated shales with occasional brecciation and slump features.	Carboniferous	Dinantian
Cloonagh Limestone (Cracoean Reef Member)	Unbedded calcilutite limestone	Unbedded calcilutite limestone	Carboniferous	Dinantian
Rockfield Formation	Well-bedded argillaceous limestone	This unit comprises fine-grained, dark grey, argillaceous, well-bedded limestones with some cross-stratification. Shale and chert horizons are rare.	Carboniferous	Dinantian
Waulsortian Limestone	Massive, unbedded lime-mudstone	Sometimes informally called "reef" limestones, although inaccurate. Dominantly pale-grey, crudely bedded or massive limestone.	Carboniferous	Dinantian
Ballysteen Limestone	Dark muddy limestone, shale	Irregularly bedded and nodular bedded argillaceous bioclastic limestones (wackestones and packstones), interbedded with fossiliferous calcareous shales.	Carboniferous	Dinantian

Bedrock Geology	Description	Lithological Description	System	Series
Lack Sandstone	Micaceous sandstone and siltstone	The formation consists of thinly bedded fine to medium grained micaceous green and purple sandstones and siltstones, containing burrows of Diplocraterion. Courceyan brachiopods have been recovered.	Carboniferous	Dinantian

A potential constraint in terms of bedrock for the scheme is the presence of shallow bedrock and outcropping bedrock which may be difficult to break out and will be a consideration for the geotechnical design of the project. The Dinantian calcilutite and reef limestones are susceptible to karstification and this constraint is discussed further in Section 6.2.6 Hydrogeology.

Figure 6-4: Bedrock Geology across the Scheme Area



6.2.4 Economic Geology

Based on a desktop review of the GSI Aggregate Potential Map and the EPA's Extractive Industries Register there are no active quarries identified within the scheme area.

Just outside the scheme area to the south of Ballyseedy there is registered quarry operated by Tommy Moynihan (Registration No. QS1256). No historic pit or quarry locations were identified in the scheme area.

There are however also a number of historic pits and quarry areas within the scheme area; predominantly early to mid-20th Century limestone quarry areas mapped within the reef limestones described under Section 6.2.3 Bedrock Geology.

Disused quarries and pits may be indicative of resources that have been fully removed or have been extracted as much as was feasible with available equipment and techniques.

Unlike most other forms of development, minerals can only be worked where they are found. This means that the spatial distribution of mineral resources and thus the potential for workings is dictated by geological considerations and not by the demands of human geography. The GSI has identified five mineral locations within the scheme area; three non-metallic deposits of cherty limestone, dimension stone and clay, brick and two metal deposits of lead and copper.

The GSI Minerals Section began a programme of mapping of "Aggregate Potential" on a county-by-county basis. This data is available to view on the GSI's online spatial resources viewer. The data is available nationwide and covers crushed rock aggregate potential as well as granular potential. The data indicates that there is predominantly a high crushed rock aggregate potential at the north of the scheme area increasing too very high at the south.

The quarry and mineral locations and crushed Rock Aggregate potential for the scheme area is illustrated in **Figure 6.5**.

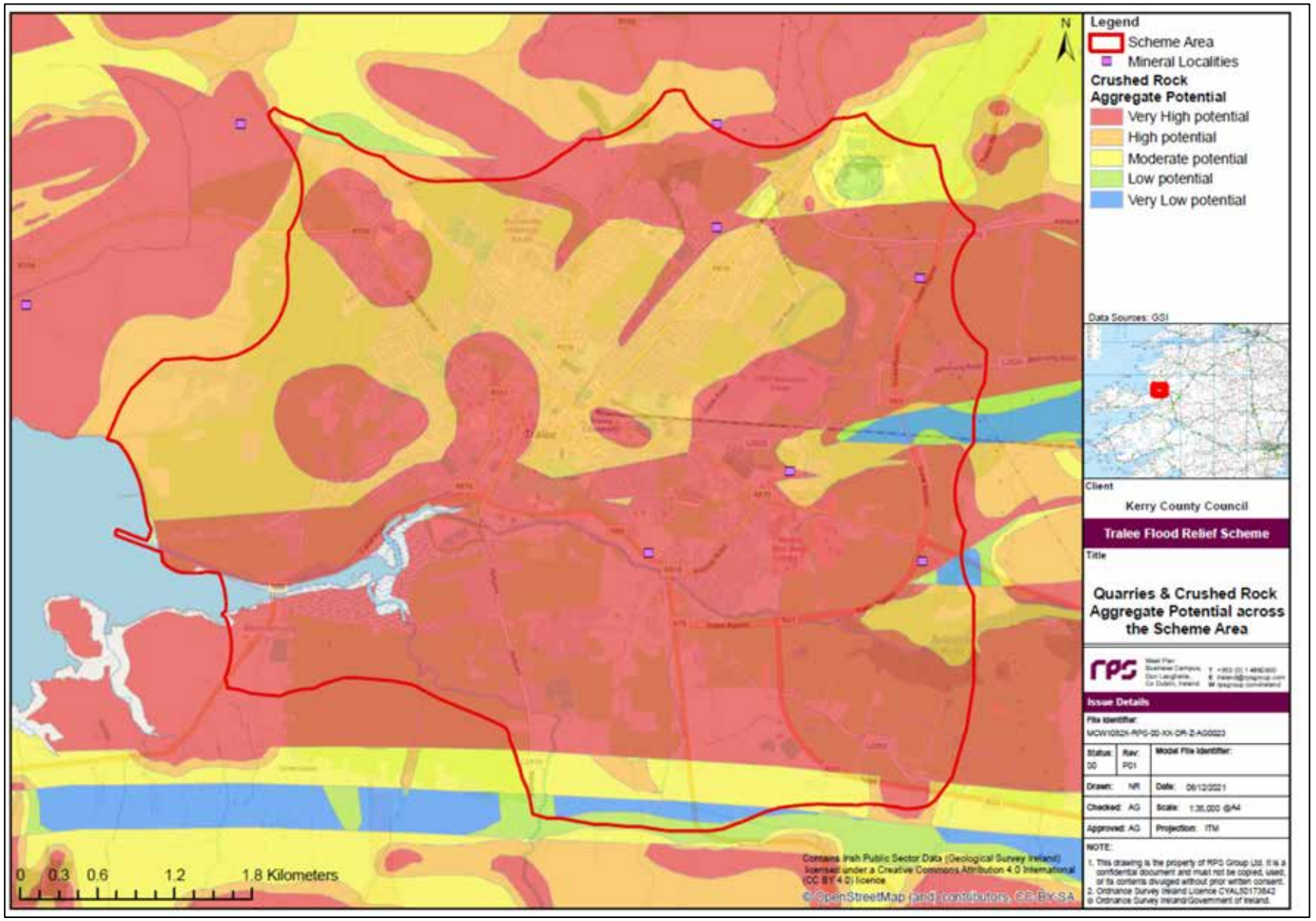
The mineral site location within the scheme area and within 5km of the scheme area are detailed in **Table 6-2** below.

Table 6-2: Mineral Site Locations

Mineral Location Number	Mineral Type	Mineral	Grid Reference	Townland	Distance from scheme area	Description	Notes
3114	PB	lead	484973, 616056	Killen	Within scheme area	Metallic	Griffith reported lead found here - in Oak Park Demesne
3113	CU	Copper	486561, 615653	Ballybeggan	Within scheme area	Metallic	Griffith reported copper and lead from this townland
3108	LS	limestone	485537, 614155	Ratass	Within scheme area	Non-metallic	Grey cherty limestone quarried for rough building stone
4615	DIST	Dimension stone	558926, 657279	Manor East	Within scheme area	Non-Metallic	A disused quarry and a small number if irregular outcrops. This is a possible site for production of block stone

Mineral Location Number	Mineral Type	Mineral	Grid Reference	Townland	Distance from scheme area	Description	Notes
3276	CLBR	Clay, Brick	484981, 616853	Garrane	Within scheme area	Non-metallic	Brick clay pits located from old GSI 6in. map.
3275	CLBR	Clay, Brick	484775, 618054	Curravogh south	1.2km north	Non-metallic	Brick clay pits located from old GSI 6in. map.
4219	DIST	Dimension stone	481278, 616855	Clogherbrien	0.2km west	Non-metallic	The quarry has been worked for aggregate in the past
3121	CALC	Calcite	479597,615454	Kerries West	2km west	Non-metallic	Veins of calcite and magnesian limestone in outcrop here
4617	LS	Limestone	489062, 611672	Ballymacthomas	2.17km east	Non-metallic	Pinnacle of grey limestone with rubbly type of jointing
4,934	DIST	Dimension stone	489664, 612435	Loughnacappagh	2.7km west	Non-metallic	Roadside quarry of grey sparry micrite.
3107	LS	Limestone	490630, 611859	Ballymacelligott	3.7km west	Non-metallic	Quarry in blue-grey limestone, exact location unknown
3,300	GALE	Galena	489548, 614080	Lissooleen	2.6km west	Metallic	Drilling in this townland revealed galena crystals in brown mud, contained in a cavity in the limestone at a depth of 17.4 to 19.4m

Figure 6-5: Quarry, Minerals and Crushed Rock Aggregate Potential within the Scheme Area



6.2.5 Geological Heritage

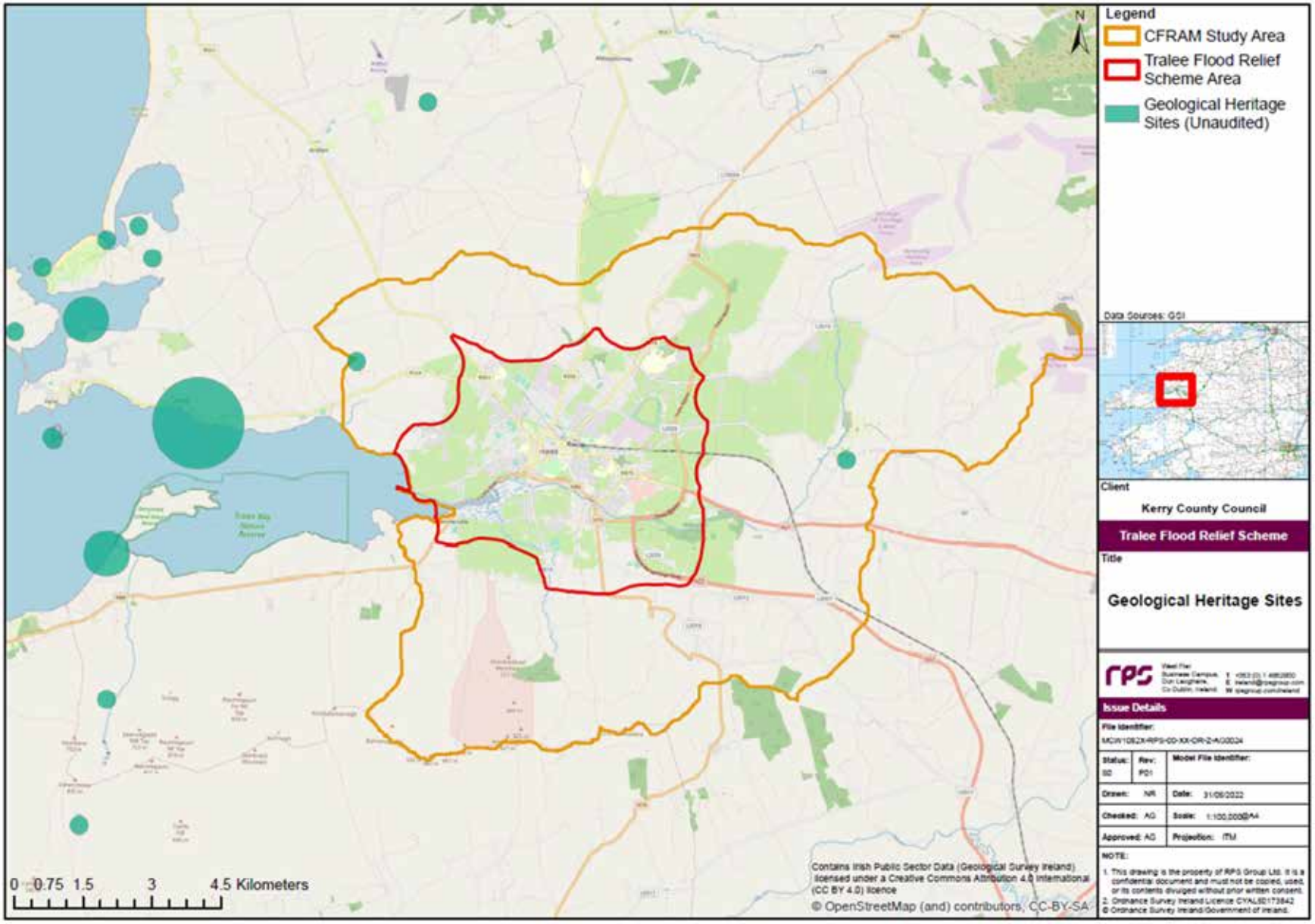
The GSI and the Irish Geological Heritage programme (IGH) are in partnership with the NPWS of the Department of Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media to identify and select important geological and geomorphological sites throughout the country for designation as NHAs (Natural Heritage Areas). The Geological Survey of Ireland (GSI) has identified some of these areas as County Geological Sites (CGS-surveyed and audited sites of national or local geological importance) as part of their Irish Geological Heritage Programme and this data is available to view on the GSI's online spatial resources viewer. CGS, though not protected under statutory conditions, are noted as the most significant sites which will be recommended for designation as NHAs in the future.

There are also areas of geological heritage interest that have not yet been surveyed, therefore their location is approximate and the GSI have a buffer applied to each (unaudited sites). There has been no audit completed for Co. Kerry to date, therefore the areas of geological heritage in Co. Kerry are currently classified as sites of geological heritage interest (GHI) and not yet as CGS.

In terms of areas of geological heritage interest, there are no sites of geological heritage interest within the scheme area. However, within a 5km ZoI of the scheme area there are two sites of geological heritage interest: at Plover Hill, 2km to the west, an example of an Asbian mound (Highest Visean rocks preserved in area) and approximately 3km to the east of the scheme area there is Ballymacelligot Caves System which is a classic example of a cave system with roof collapses separating different parts of the river cave.

These sites of geological heritage interest require protection and preservation from potential damage due to development. The unaudited sites of geological heritage interest in Co. Kerry which have been identified within the ZoI of the scheme are presented in **Figure 6.6**.

Figure 6-6: Geological Heritage Sites within the Scheme Area



6.2.6 Hydrogeology

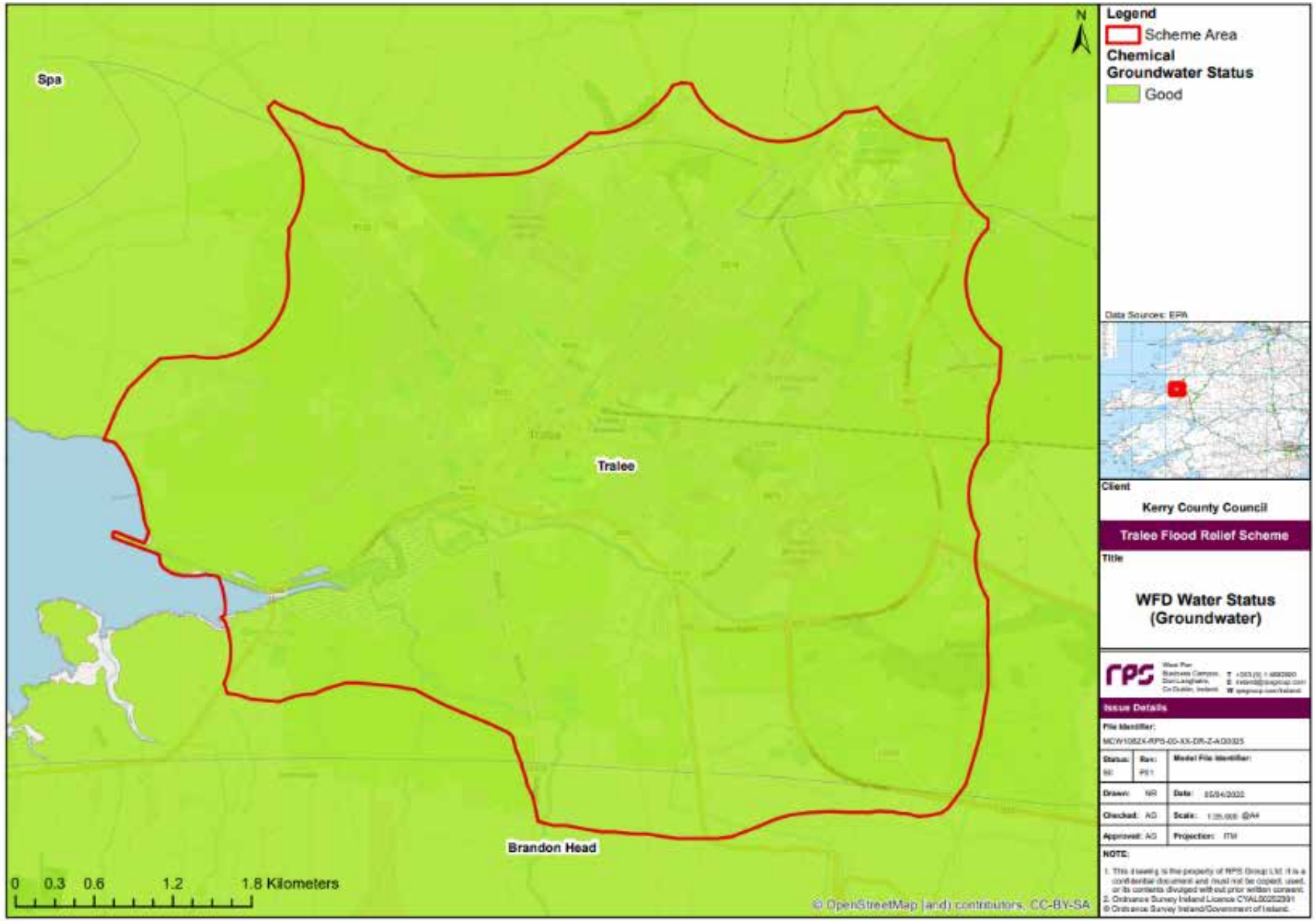
The scheme area lies within the Tralee bay -Feale WFD Catchment and the Lee (Tralee) WFD Subcatchment. The scheme area lies largely within the Tralee Groundwater Body (GWB). This GWB is classified as a karstic aquifer largely composed of the reef limestones. Groundwater flow will be diffuse with better potential for storage than karst dominated by conduit flow and springs will have a more regular flow with better potential for high yielding wells. Groundwater flow is expected to be towards the River Lee and ultimately towards Tralee Bay.

Tralee GWB was classified as being of Good in terms of the Water Framework Directive GWB Status for 2013-2018 period while the Risk status for failing to meet their WFD objectives by 2027 is 'Under Review'.

The Tralee Bay and Maghrees Peninsula, West to Cloghane SAC, a European site, bisects the Scheme Area at the west and supports Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] which is classified as an Annex I habitat that are Groundwater Dependent Terrestrial Ecosystems (GWDTE). Alterations to local hydrogeology can lead to contamination or drainage of groundwater, leading to pollution or loss of groundwater dependant habitats.

The groundwater WFD Status within the scheme area is illustrated in **Figure 6.7.**

Figure 6-7: Water Framework Directive Groundwater Status



6.2.6.1 Aquifer Classification and Aquifer Vulnerability

Groundwater Vulnerability: Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease at which groundwater may be contaminated by human activities.

The scheme area is dominated largely by Moderate (M) groundwater vulnerability increasing away from the Tralee Town to areas of High (H) and Extreme vulnerability (E)- where rock is less than 3m below the surface, at the periphery of the scheme area. Areas of Extreme (X) -where rock is <1m below the surface or at surface correspond to mapped outcrops and is dominant at the southeast of the scheme area in the vicinity of Blennerville and Manor West. There is also an area of Low (L) vulnerability at the west of the scheme area where low permeability marine/ estuarine silts and clays are present adjacent to the inner area of Tralee Bay.

A consideration is that the aquifer vulnerability at the south is classified predominantly as High (H) with large areas of Extreme (E) indicating that there is <3m of subsoil cover over the bedrock in this area. Areas of Extreme (X) coincide with mapped outcrops.

The groundwater vulnerability distribution within the scheme area is illustrated in **Figure 6.8**.

Aquifer Classification: The vast majority of the scheme area is located within a Regionally Important Aquifer (Rkd). These rocks comprise the reef limestones of the Waulsortian and Cloonagh Formations. Rkd aquifers are those in which flow is more diffuse, storage is higher, there are many high yielding wells, and development of bored wells is less difficult. These areas also have caves and large springs, but the springs have a more regular flow.

The Namurian shales and sandstones at the north of the scheme area and the cherty and clayey limestones of the Dirtoge and Rockfield Formations are not as productive and are classified as Locally Important bedrock aquifers (Ll)- bedrock which is generally moderately productive except in local zones. Ll bedrock aquifers are aquifers with a limited and relatively poorly connected network of fractures, fissures and joints giving a low fissure permeability which generally decreases with depth. Higher permeability exists in the upper bedrock weathered zone and along fault zones. The lack of connection between the limited fissures results in relatively poor aquifer storage and flow paths that may only extend a few hundred metres. In general, Locally Important Aquifers would be capable of having moderate well yields of 100-400m³/day.

At the west of the scheme area the Clare Shale Formation is classified as Poor Aquifer (Pu)- bedrock which is generally unproductive.

Although there are a number of groundwater wells mapped by the GSI within the scheme area, there are no groundwater public supply or group scheme source protection areas mapped within the scheme area. In general within the scheme area the underlying aquifer is considered productive but there are no excellent yielding wells or springs identified. The possibility of the presence of unmapped private groundwater wells must also be considered.

The Aquifer classification and distribution of the scheme area is illustrated in **Figure 6.9**.

Karst: Karstification frequently results in the uneven distribution of permeability through the rock and the development of distinctive karst landforms at the surface. The ‘reef’ limestones are classified as a karstified (diffuse) aquifer and comprise an upper weathered epikarst layer with a connected fracture layer below this. There are a number of known karst features mapped within the reef limestones of the Scheme Area, these comprise predominantly of enclosed depressions and a lesser number of caves which are concentrated largely in the northeast of the scheme area. These is a swallow hole mapped at Ballybegan north of Tralee racecourse and another just outside the scheme area boundary at Ballinorig. The known karst features mapped within and in the near vicinity of the scheme area are shown **in Figure 6.10**.

In terms of hydrogeological constraints the limestones of the scheme area are fissured and susceptible to karstification with groundwater flowing through an epikarst layer of dense and open fractures. Bedrock that is prone to extensive karstification may result in weaknesses below the ground surface and lead to fractures, faults and caves. These areas may cause subsidence if placed under pressure from the construction. Therefore the presence of karstification and/or karst features would be an issue in terms of geotechnical design and drainage.

Figure 6-8: Groundwater Vulnerability within the Scheme Area

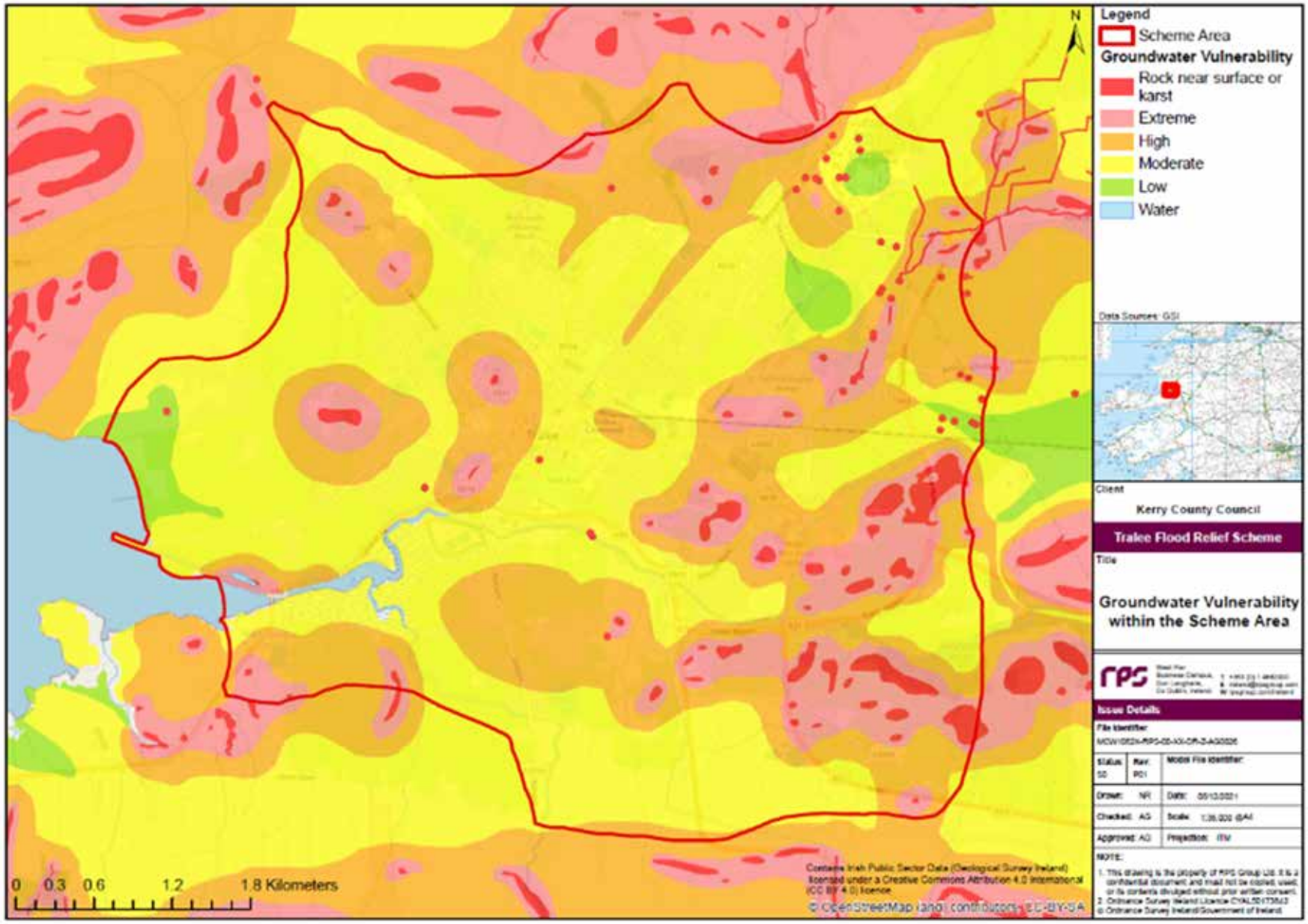


Figure 6-9: Aquifer Classification

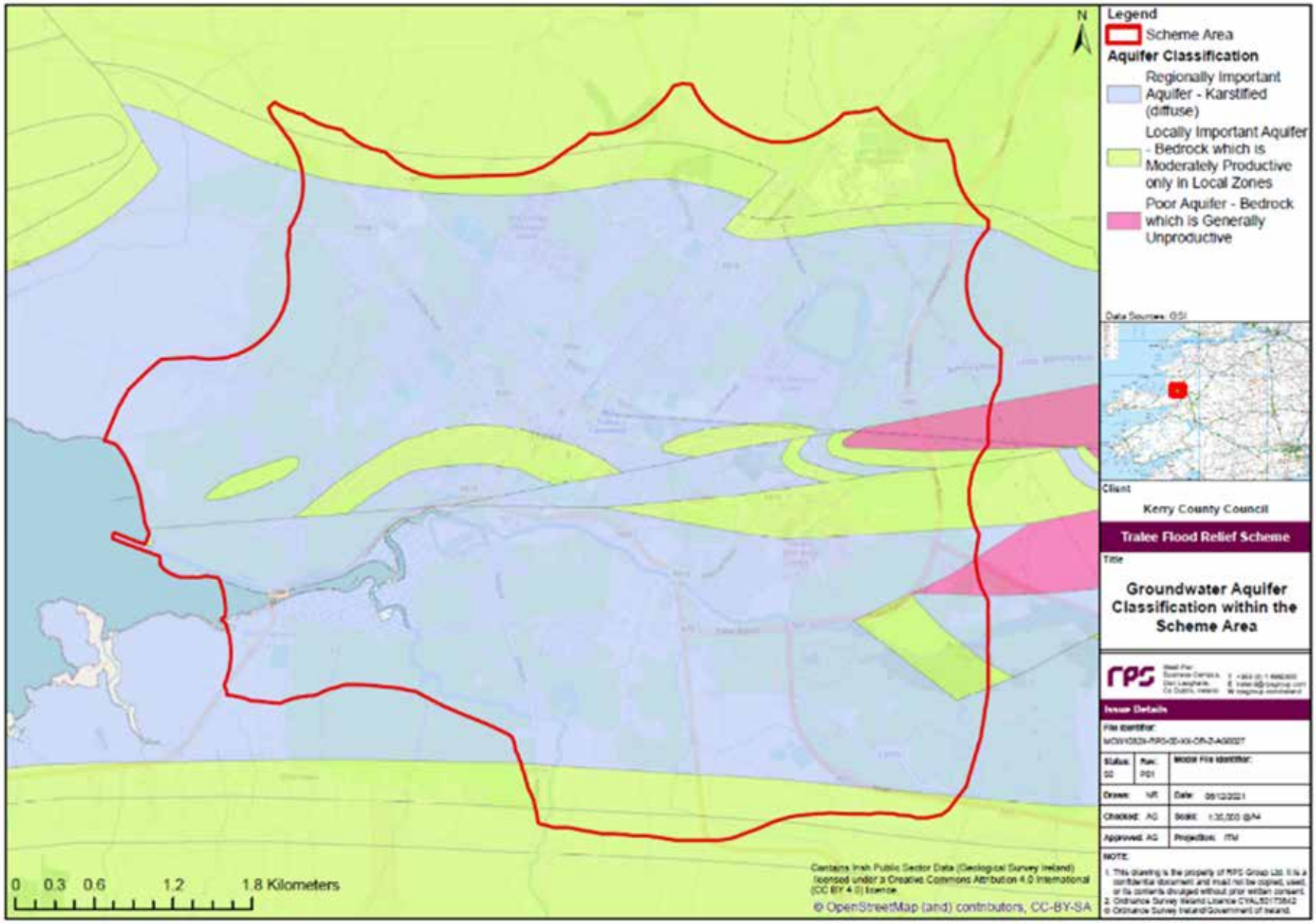
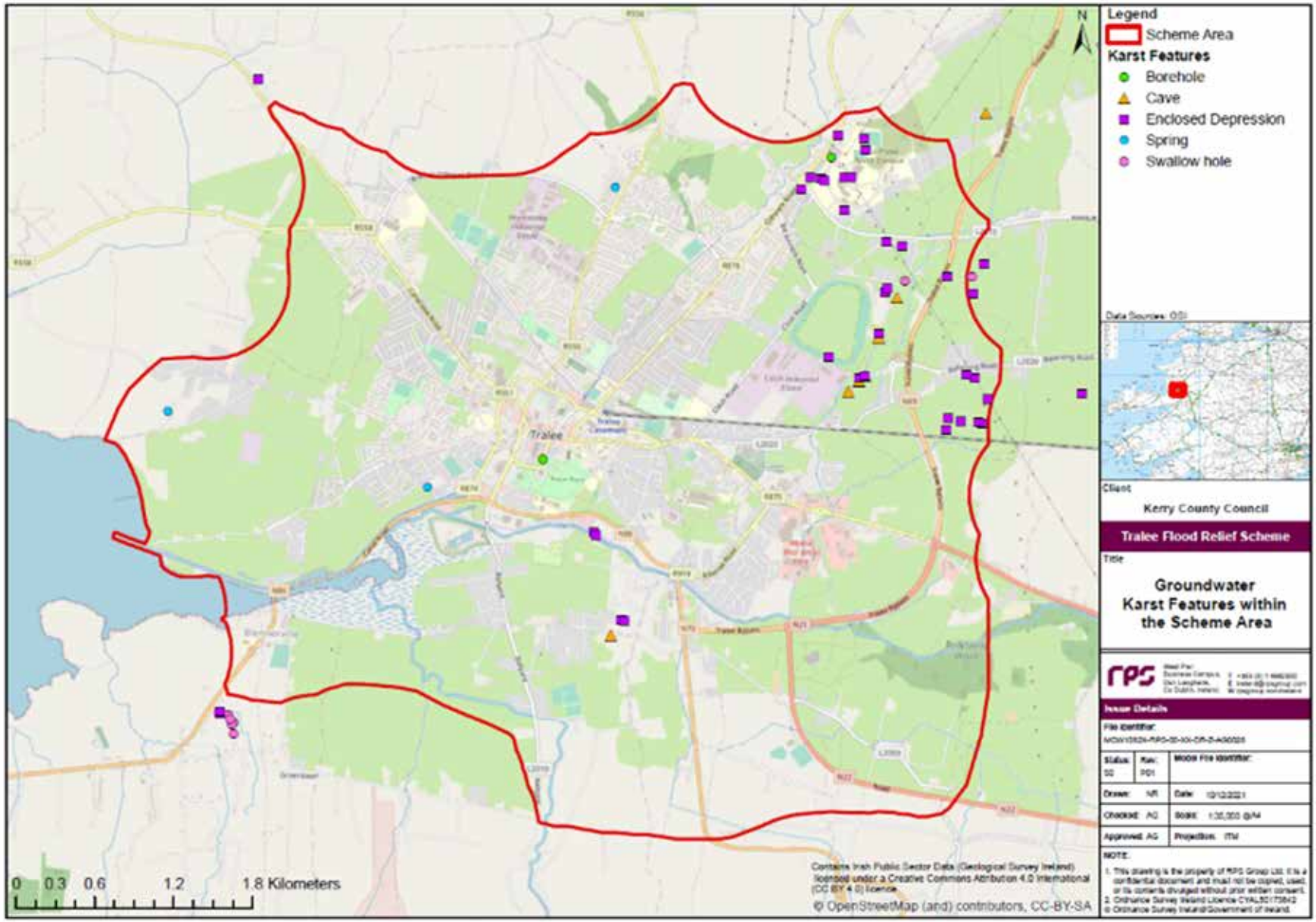


Figure 6-10: Groundwater Karst Features



6.2.7 Geohazards

Geohazards are natural earth processes that pose a risk to human life. They can range from geological hazards such as landslides, bog-bursts, coastal erosion and subsidence to hydrometeorological hazards like floods and high tides. Soft ground areas are also considered to be geo-hazards. Such hazards are identified as part of this constraints assessment and will be considered throughout each stage of the scheme development.

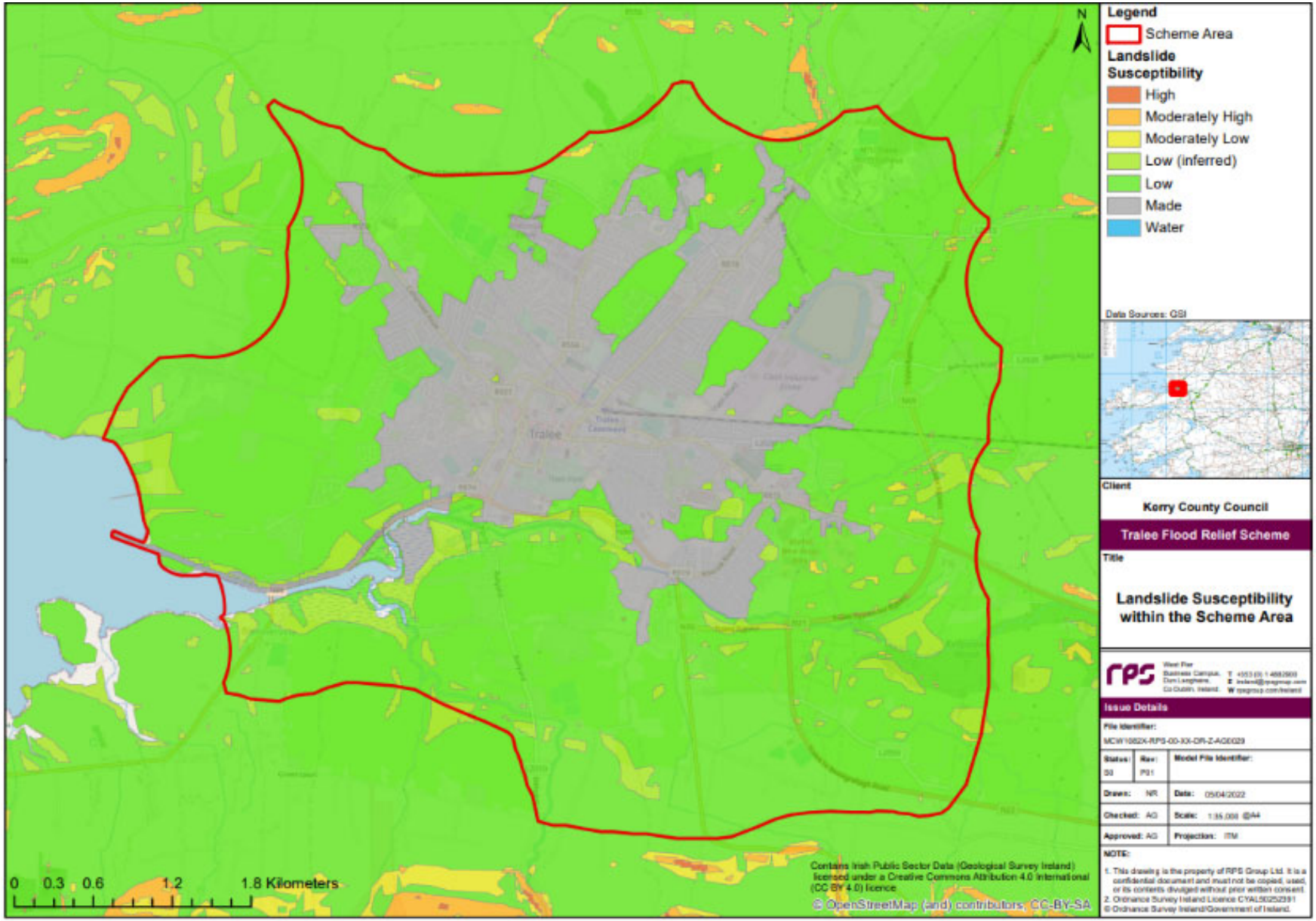
Landslide Susceptibility: There are no records of landslides held by the GSI within the scheme area, however approximately 1km to the south there is a shallow landslide recoded within blanket peat at Ballydunlea at the foothill of Knockmichael Mountain. According to the GSI's Landslide Susceptibility mapping, the majority of the scheme area and the wider area is rated as having 'Low' landslide susceptibility. The Landslide Susceptibility Map for the scheme area is presented in **Figure 6.11**.

Groundwater Flooding: The GSI's Groundwater Flooding Data Viewer was also queried and the scheme area is not defined as an area with potential for groundwater flooding.

Karst: The presence of karst within the scheme area is addressed in Section 6.2.3 Bedrock Geology and Section 6.2.6 Hydrogeology.

Soft ground: The presence of soft ground within the Scheme Area is addressed in Section 6.2.2 Soils & Subsoils.

Figure 6-11: Landslide Susceptibility within the Scheme Area



6.3 Summary of Key Constraint Land, Soils, Geology and Hydrogeology

The scheme area is primarily comprised of the Tralee Municipal district and is therefore dominated by Made ground. Outside of the urban area the soils comprise low permeability marine estuarine silts/clays and tills composed of a mixture of deep well drained mineral soil and poorly drained soils derived from the Namurian rocks, limestones and Devonian sandstones. The subsoils comprise chiefly Urban deposits (Made ground) estuarine silts and clays, and Limestone Till (Carboniferous), Sandstone Till (Devonian) and sandstone and shale Till (Namurian).

Construction associated with soft and made ground soil types will require adherences to best practice and construction standards to avoid any potential negative impacts. Interaction with potential contaminated ground must also be considered as part of the scheme development.

The bedrock geology of the scheme area is composed chiefly of reef limestones with cherty and argillaceous limestones present at the centre of the scheme area. The vast majority of the scheme area is located within a Regionally Important Aquifer (Rkd) with the cherty and clays limestones and Namurian shales and sandstones classified as a Locally Important Bedrock Aquifer (LI). The scheme area is dominated by Moderate groundwater vulnerability (M) with the vulnerability rating increasing away from Tralee Town Centre in particular to the southeast where High to Extreme Vulnerability dominates. There are patches of Extreme vulnerability (E) and Extreme (X) scattered throughout the scheme area and more significant areas in the vicinity Blennerville and Manor West at the southeast of the scheme area. There is potential for drawdown of groundwater where excavations are required and there is a risk of impacts to groundwater abstraction where private groundwater wells are present.

Two sites of geological heritage interest were identified within a 5km ZoI of the scheme area.

Cognisance must be given to the constraints posed by the presence of the varied groundwater vulnerability areas, karstified nature of the landscape and poorly drained mineral soils of the northern and western scheme area in particular, of which will require further assessments. Due consideration is to be given to any design and option selection process to avoid any negative adverse impacts to these receptors.

Geotechnical investigation will be carried out once the potential flood relief measures are developed in order to identify local geology and ground conditions. A summary of the identified constraints for Land, Soils, Geology and Hydrogeology is provided in **Table 6-3**.

Table 6-3: Summary of Key Constraints for Land, Soils, Geology & Hydrogeology

Attribute	Constraint
Land	Irregular field patterns with potentially poorly draining low permeability soil at the north and west of the Scheme Area. Further investigations would need to occur in the options identification process to determine the exact nature of the agricultural enterprises and the extent that they occupy.
Soils & Subsoils	The presence of marine esturine silts/clay and blanket peat - potential for soft ground and associated stability/slope related constraints. Geotechnical Investigations can determine the risks and feasibility associated with settlement and stability. Made Ground and Urban deposits – potential for encountering waste/contaminated material.
Contaminated Land	Due to the urban nature of the Scheme Area there are 4 no. number of EPA IPC/IEL licenced activities and 1 no. historic landfills.
Geology	Shallow bedrock and outcropping bedrock. Karstic bedrock - irregular ground surface.
Geological Heritage	2 no. site of geological heritage interest has been identified within a 5km ZoI of Scheme Area.
Hydrogeology	Some significant areas of Extreme (E) Aquifer Vulnerability indicating that there is <3m of subsoil cover over the bedrock. The ‘reef’ limestones forming the vast majority of the Scheme Area are susceptible to karstification. There is 1 no. known groundwater-dependent terrestrial ecosystems (GWDTE) within the Scheme Area.

7 WATER

7.1 Introduction

This section identifies the key constraints within the scheme area relating to water resources including hydrology and drainage. This section should be read in conjunction with the assessments presented within the Biodiversity Soils Geology and Hydrogeology sections of this report.

7.2 Methodology

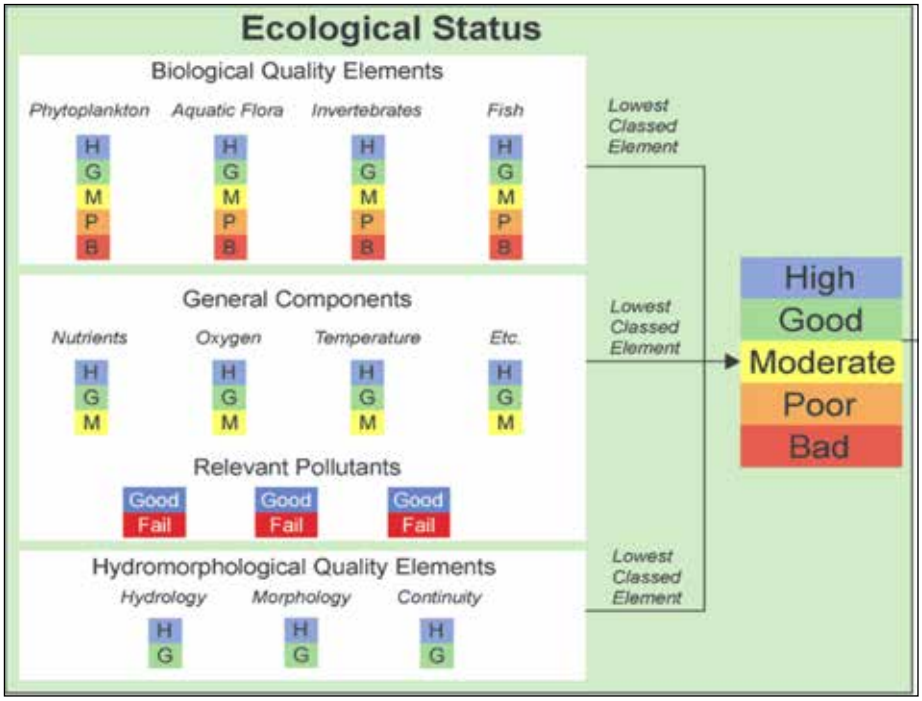
The hydrological and drainage features of the scheme area were determined by consulting the following data sources:

- OS survey vector, six inch and 'discovery' series mapping; Aerial photography;
- Kerry County Council Records;
- Irish Water Drainage Area Plan (DAP) (RPS);
- The Office of Public Works;
- River Basin Management Plan 2018-2021;
- Water Framework Directive (WFD) national website and Water Maps viewer;; and
- Environmental Protection Agency.

This section discusses the surface waterbodies that flow through the scheme area. Water quality data of the waterbodies associated with the scheme area is detailed in **Table 7-1**. The surface waterbodies found within the scheme area are shown in **Figure 7-1**. Details on infrastructure associated with the surface water bodies, i.e. water treatment and waste water treatment, are considered in Section 9 - Material Assets: Non-Agricultural.

7.2.1 Water Quality and the Water Framework Directive

Directive 2000/60/EC (the Water Framework Directive) was adopted by the European Parliament and Council in 2000. The Water Framework Directive (WFD) establishes a legal framework for the protection, improvement and sustainable management of inland surface waters, transitional waters, coastal waters and groundwater. The aim of the WFD is to prevent the deterioration in the existing status of waters (including the maintenance of "High Status" where it exists) and to ensure that all waters, with some limited exceptions, achieve at least "Good Status", see graphic below.



The scheme area is located within the following WFD Catchments:

- **Tralee Bay-Feale WFD Catchment (ID 23)** - This catchment includes the area drained by the River Feale and all streams entering tidal water in Tralee Bay and between Clogher Head and Kilconly Point, Co. Kerry, draining a total area of 1,784km². The largest urban centre in the catchment is Tralee. The other main urban centres in this catchment are Listowel, Abbeyfeale and Ballybunnion. The total population of the catchment is approximately 77,832 with a population density of 44 people per km². The catchment is characterised by an inland upland area underlain by shales and sandstones with low-lying coastal area underlain by relatively pure karstified limestones and mountainous peninsular areas which are underlain by old red sandstone[20].

The Lee (Tralee)_030 has Poor (Q3) status and is “At risk” failing to achieve their WFD objectives while the Lee (Tralee)_040, Big River (Tralee)_010 and Pinure_010 all have a status of unassigned and their risk of failing to achieve their WFD objectives is currently under review.

Blennerville Lake East and Blennerville Lake West both have an Unassigned status, and their risk is currently under review while the Lee K Estuary has a Moderate status and is “At risk” of failing to achieve its WFD objectives.

Refer to **Figure 7-1** and **Table 7-1** for details on locations and status of watercourses within the scheme area. Water Framework Directive Status mapping can be seen in **Figure 7-2**.

There is an Urban Waste Water Treatment Plant (UWWTP), Tralee WWTP (Site ID: D0040) located in Lohercannan, Tralee.

[20] https://www.catchments.ie/data/#/catchment/23?_k=38r048

Table 7-1: Surface Watercourses and Waterbodies within the Scheme Area

Local/ EPA Name	EU_CD	River/ Transitional Waterbody WFD Status 2013-2018	WFD Risk Score	Transitional Water Quality 2018-2020	EPA Q-Value (Macroinvertebrate Quality)	Monitoring Location
Lee (Tralee)_030	IE_SH_23L010100	Moderate	At risk	-	Q 3 - Poor	2nd Br d/s Ballymullen Mills
Lee (Tralee)_040	IE_SH_23L010200	Unassigned	Review	-	No monitoring data	No monitoring data
Annagh (Kerry)_010	IE_SH_23A060890	Good	Review	-	No monitoring data	No monitoring data
Big River (Tralee)_010	IE_SH_23B040150	Unassigned	Review	-	No monitoring data	No monitoring data
Pinure_010	IE_SH_23P160880	Unassigned	Review	-	No monitoring data	No monitoring data
Blennerville Lake East	IE_SH_050_0200	Unassigned	Review	No monitoring data	-	No monitoring data
Blennerville Lake West	IE_SH_050_0300	Unassigned	Review	No monitoring data	-	No monitoring data
Lee K Estuary	IE_SH_050_0100	Moderate	At risk	Intermediate	-	LT160 - Tralee Bay Inner: Annagh

Figure 7-1: Surface Water within the Scheme Area

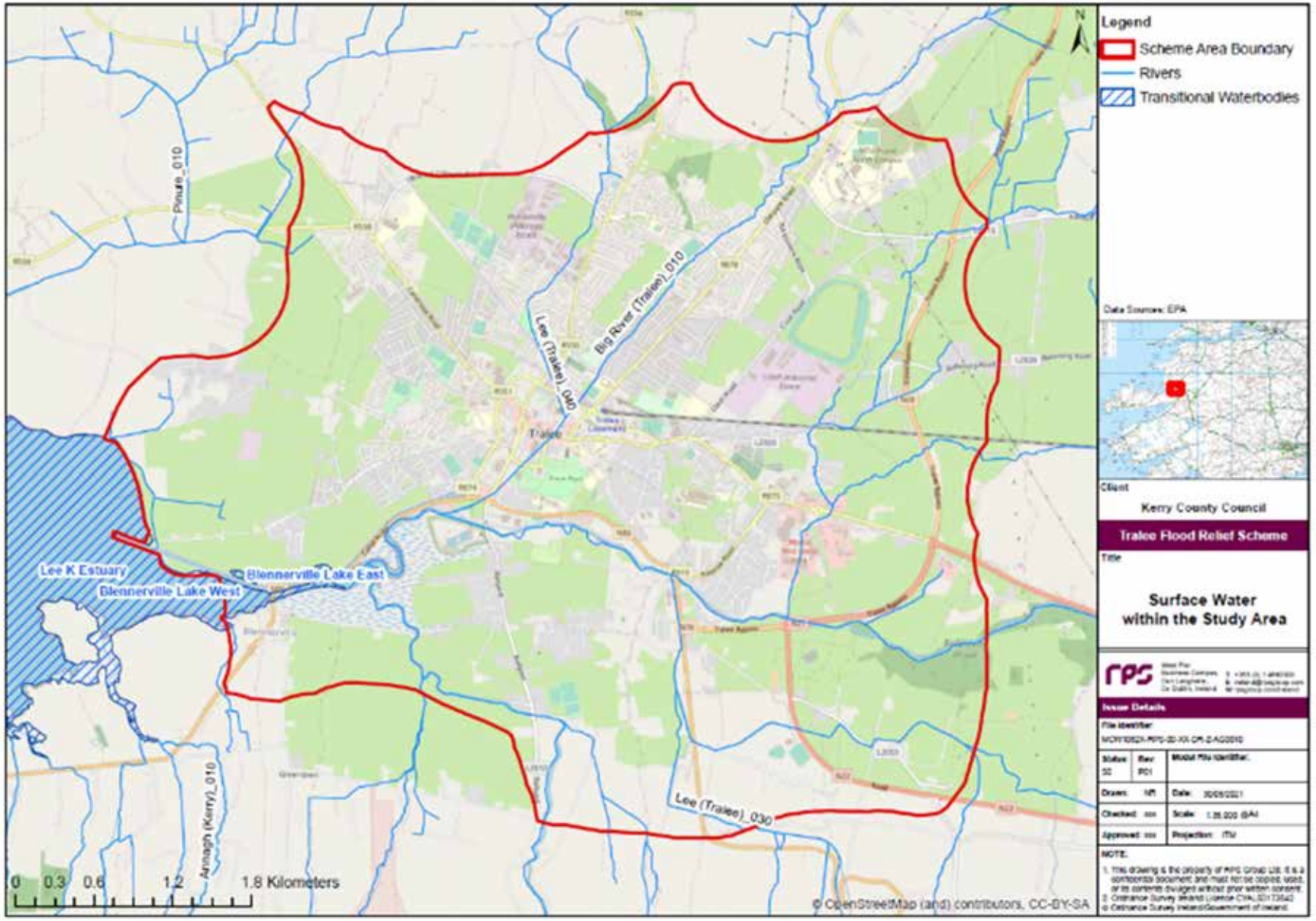
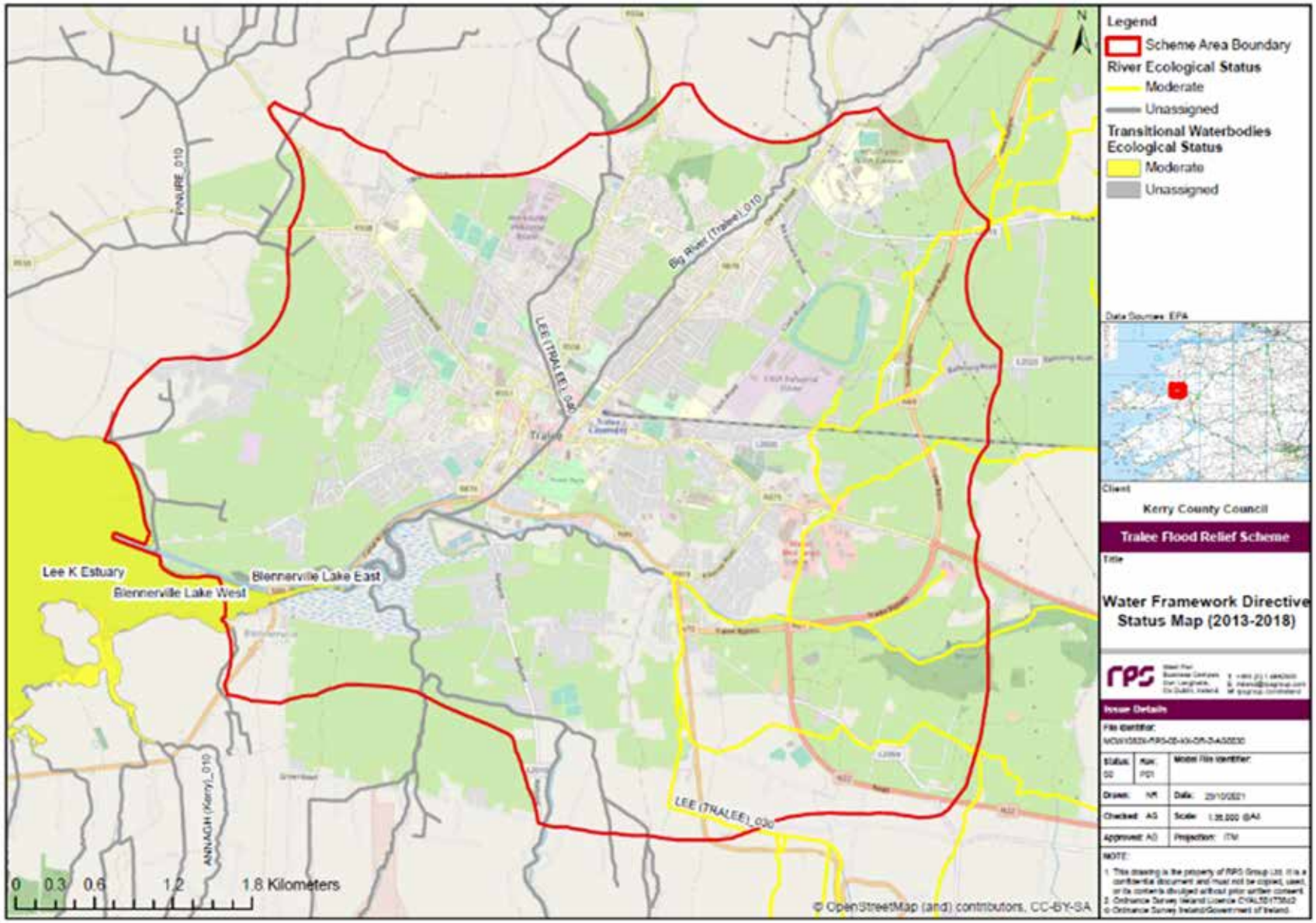


Figure 7-2: Water Framework Directive Status Map



7.2.2 Fisheries

Fishing for bass, flounder and thornback ray occurs along Blennerville in an area known as Lough Kay which is a popular sea angling area in Tralee. Further downstream within Tralee Bay at an area called the Spa, named after the townland, north west of Tralee town, is a popular sea angling area for bass, conger, dogfish, flounder, mullet, plaice, sting ray, thornback ray and trigger fish[21].

7.2.3 Surface Water Designations

There are no bathing waters in proximity to the scheme area. The closest bathing water area to the scheme area is Fenit which is 8km downstream via the Lee (Kerry) Estuary transitional waterbody. The closest shellfish area to the scheme area is Tralee Bay Shellfish area and is found 1km downstream via the main River Lee channel.

7.2.4 Nutrient Sensitive Water

The flood relief works are taking place in Lee Estuary Upper (Tralee) Nutrient Sensitive Area designated under Urban Waste Water Treatment Directive.

7.2.5 Aquatic Species

Otter is listed as the QI species for the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and rely on aquatic food sources to survive. European eel was recorded by the EPA within the River Lee in the scheme area. European eel is a threatened species under OSPAR convention.

7.2.6 Flooding

A search of the Office of Public Works website Past Floods Database on www.floodinfo.ie was carried out to obtain information on the flood history of the scheme area. The OPW indicative flood maps were used to identify areas that had the potential for significant flooding within the scheme area and to identify areas where hazards of flooding are likely due to historical flooding of those areas. The OSI Historical Mapping dataset was also consulted to investigate whether any areas are liable to flooding.

The CFRAM mapping illustrates the extents of the low (1 in 1000 yr), medium (1 in 100 yr) and high (1 in 10yr) probability flood extents. Medium Probability flood events have approximately a 1-in-a-100 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 1%.

As shown in **Figure 7-3**, Tralee has undergone numerous flood events of various degrees of severity over the years. **Table 7-2** describes historical flood events within Tralee.

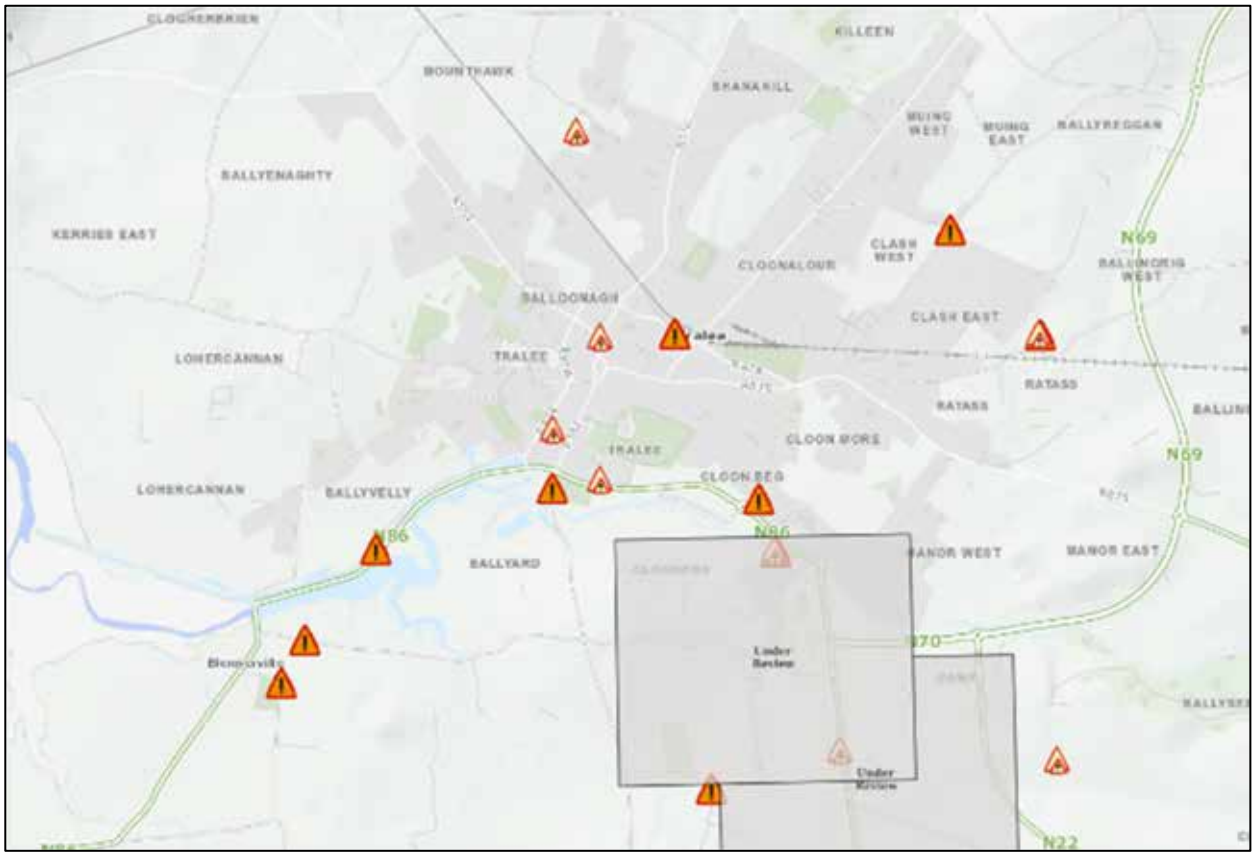
Table 7-2: Historical Flood Events within Tralee FRS Scheme area.

Flood Event	Flood Type	Flood Source
Curragraigue, Blennerville, Tralee	2009	-
Kearneys Road Blennerville, Tralee	2011	-
Ballyvelly, Tralee	2014	-
Ballymullen Road, Tralee Town	2009	-
James Street Tralee	Recuring	-
Castle Countess, Tralee	Recurring	-

[21] https://fishinginireland.info/sea/southwest/tralee/

Flood Event	Flood Type	Flood Source
Pembroke St Rock St Tralee	Recurring	-
Lee and Big Rivers	1986	River
Cahermoneen Gallows Field	Recurring	-
Clash Road, Tralee	Recurring	-
Ballinorig Tralee	Recurring	Runoff
Ballymullen, Tralee	2011, 1986	-
Caherleheen	Recurring	Runoff
Ballyseedy	Recurring	River
Caherweesheen, Ballyard, Tralee	2008	-

Figure 7-3: Historical Flood Events within the scheme area (source www.floodinfo.ie)



The OPW undertook a National CFRAM Programme to give a clear and comprehensive picture of flood risk in areas of potentially significant flood risk and to set out how to manage the flood risk effectively and sustainably.

The Programme focussed on 300 communities at potentially significant flood risk, referred to as Areas for Further Assessment (AFAs). These were identified through a national screening exercise and include in the order of 80% of properties at risk in Ireland from rivers and seas, the primary sources of flooding in Ireland.

In consultation with Local Authorities the OPW, assisted by engineering consultants, embarked on extensive and detailed analysis to assess and map the risk of flooding in the AFAs. These maps were informed by public consultation, including a statutory consultation in November 2015.

Flood Risk Management Plans were prepared for 29 Catchments[22] (including Tralee Bay-Feale which contains the scheme area) set out the proposed measures, both structural and non-structural, to manage the flood risk in each of the 300 AFAs.

7.3 Drinking Water

The scheme area for Tralee FRS is located within three drinking water (groundwater) areas, Tralee (IE_SH_G_226), Spa (IE_SH_G_223) and Brandon (IE_SH_G_044) shown in **Figure 7-4**. Steps will need to be taken to ensure that construction work does not impact upon the integrity and quality of this groundwater supply.

Groundwater recharge across the scheme area is variable with low recharge of 100mm to 200mm/yr found along most areas adjacent to the main River Lee channel and most of the scheme area. This is illustrated in **Figure 7-5**.

[22] https://www.floodinfo.ie/about_floodplans/

Figure 7-4: WFD Water Status (groundwater) within the Scheme Area

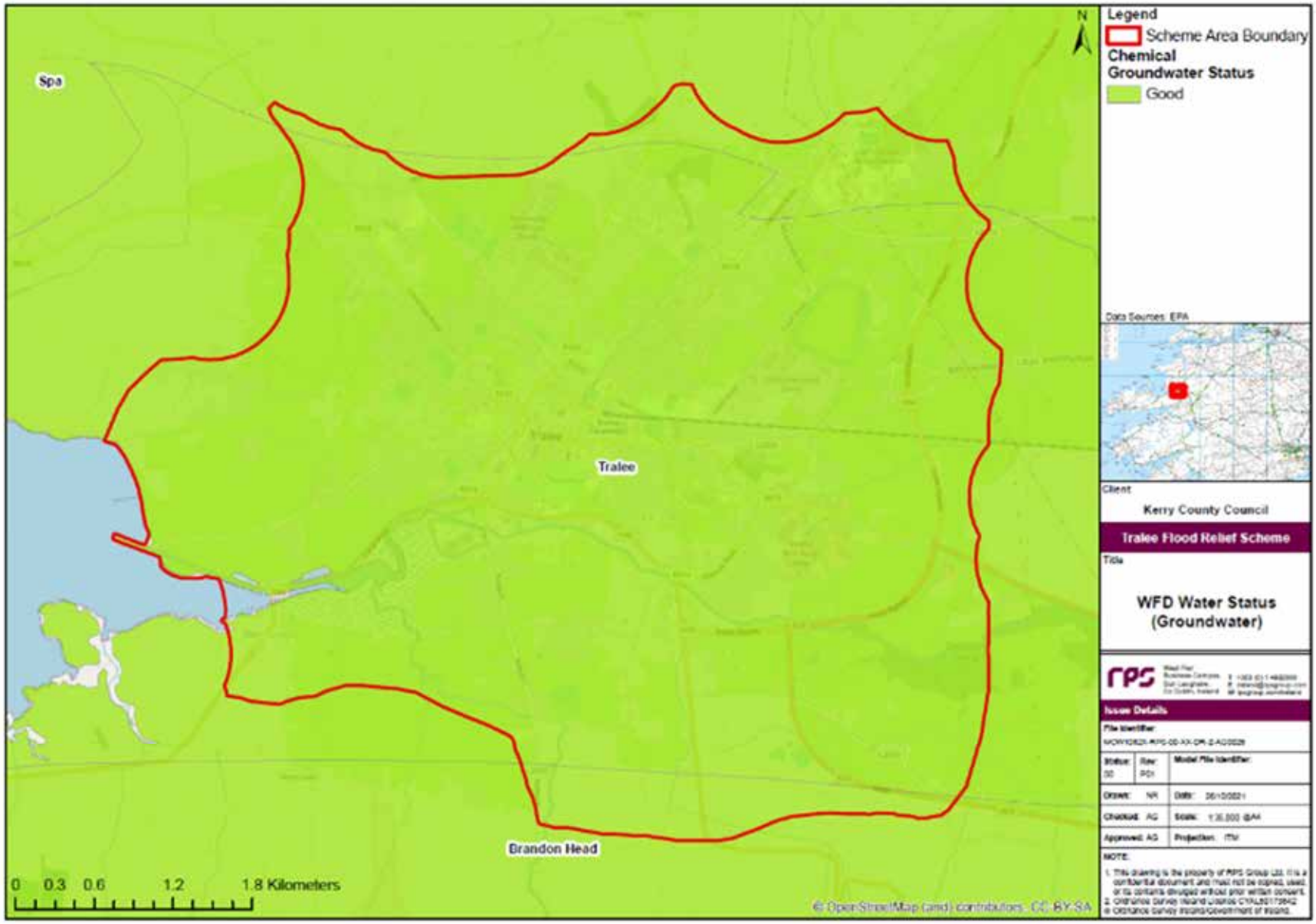
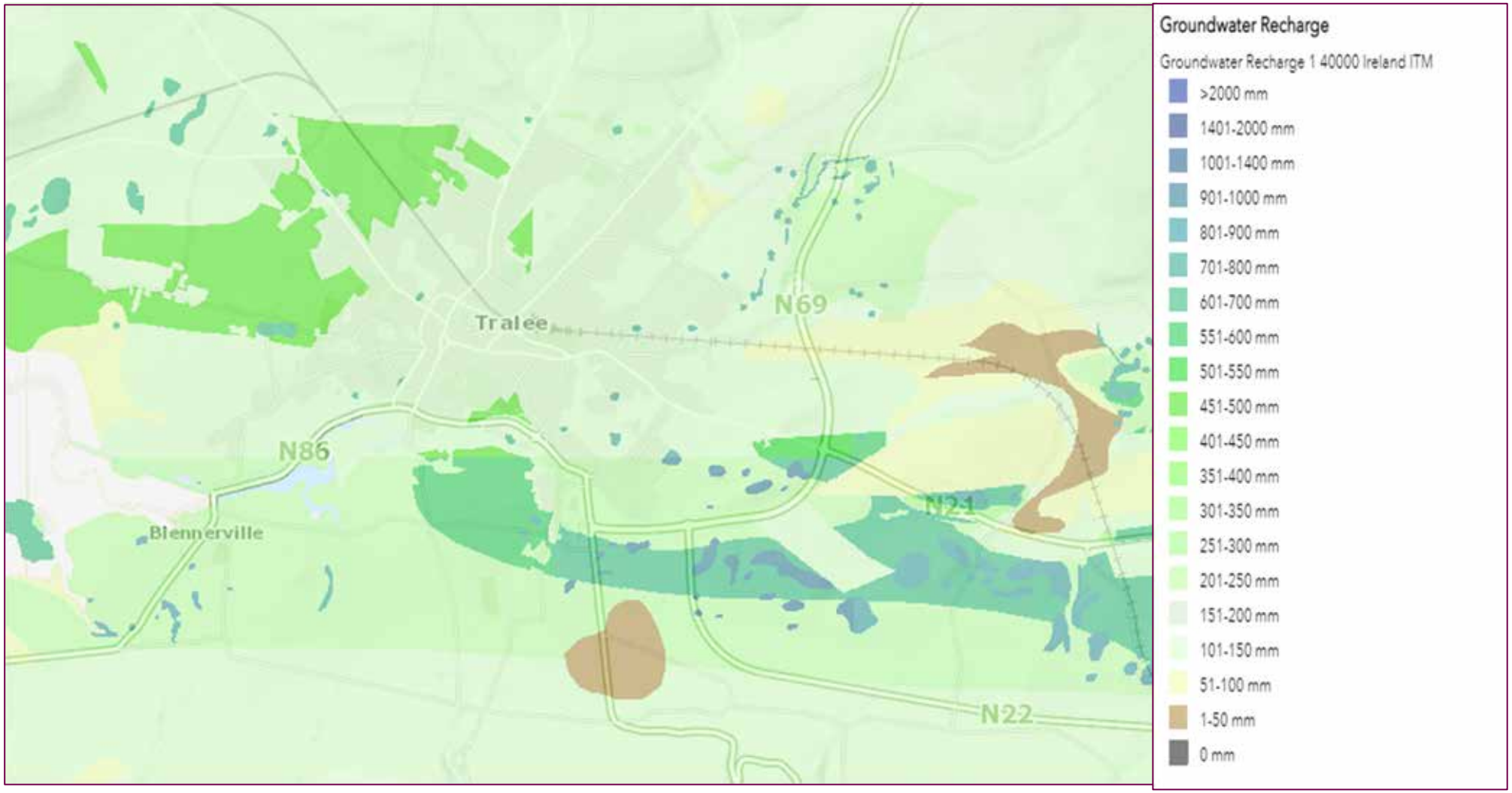


Figure 7-5: Groundwater Recharge in the Scheme Area



7.4 Summary of Water Constraints

The main surface waterbody within the scheme area is the River Lee and its tributaries, as shown in **Figure 7-1**.

These will require the application of design standards and construction best practice in order to avoid degrading any surface or groundwater quality rating for the scheme area.

The River Lee river waterbody, Pinure river waterbody, Annagh river waterbody, Blennerville Lake East transitional waterbody, Blennerville Lake West transitional waterbody and Lee K Estuary transitional waterbody are all a part of Tralee Bay and Magharees Peninsula, West to Cloghane SAC while River Lee river waterbody, Pinure river waterbody, Annagh river waterbody, Blennerville Lake East transitional waterbody, Blennerville Lake West transitional waterbody and Lee K Estuary transitional waterbody are all part of the Tralee Bay Complex SPA.

The Lee (Tralee)_030 has a 'Moderate' WFD status while the Lee (Tralee)_040, Annagh (Kerry)_010, Big River (Tralee)_010 and Pinure_010 all have a WFD status of 'Unassigned'. Blennerville Lake West and Blennerville Lake East are currently at 'Unassigned' status with the Lee K Estuary at 'Moderate' WFD status. Biological water quality baseline studies will be carried out during the option selection stage at locations where works are likely to be carried out.

These are located within the scheme area therefore the potential for likely significant effects to these European sites must be assessed and demonstrated that significant adverse effects will not occur as a result of any proposed flood relief solution.

The scheme area is within three drinking water (groundwater) areas, Tralee (IE_SH_G_226), Spa (IE_SH_G_223) and Brandon (IE_SH_G_044). Measures will need to be taken to ensure that construction work does not impact upon the integrity of these groundwater source.

Flood relief works have the potential impact on the biology, water quality, hydrology, and morphology of watercourses. Where required, suitable mitigation measures must be developed for the project in line with best practice measures in order to avoid negative impacts to water quality.

8 AIR, CLIMATE AND NOISE

8.1 Introduction

This section identifies the constraints associated with the proposed study in relation to Air, Climate and Noise. Identifying the potential sensitive receptors at this stage in the process allows them to be taken into account in the design process to avoid or minimise adverse impact on sensitive receptors.

8.2 Methodology

This assessment has been carried out by means of a desktop review of available mapping from the proposed study and the designated area of study with reference to potential constraints. Relevant heading criteria assessed were sourced from the guidance document, '*Guidelines on the information to be contained win Environmental Impact Assessment Reports* as published (Draft, 2017)[23]'.

8.3 Existing Environment and Key Constraints

8.3.1 Air Quality

8.3.1.1 Relevant Directives

Assessment of the significance of emissions to air is made with reference to limit values established in the latest EU legislation, the Clean Air for Europe (CAFE) Directive (2008/50/EC) (European Parliament, 2008) which was transposed into Irish law in 2011 (S.I. No. 180 of 2011). The Air Quality Standards (AQS) set out in Air Quality Directive (2008/50/EC) and S.I. No. 180 of 2011 are shown in **Table 8-1**. The AQS are based on the effects of pollutants on human health, although other factors such as effects on vegetation and ecosystems are also considered.

Table 8-1: Limits as Specified in Air Quality Standards Regulations 2011 (S.I. 180 of 2011)

Pollutant	Criteria	Value
Nitrogen Dioxide	Hourly limit for protection of human health – not to be exceeded more than 18 times/year	200 µg/m^3
	Annual protection of human health	40 µg/m^3
	Annual limit for protection of vegetation	30 µg/m^3
Benzene	Annual limit for protection of human health	5 µg/m^3
Carbon Monoxide	Minimum daily 8-hour running system	10 µg/m^3
Lead	Annual limit for protection of human health	0.5 µg/m^3
Sulphur Dioxide	Hourly limit for protection of human health – not to be exceeded more than 24 times/year	350 µg/m^3
	Daily limit for protection – not to be exceeded more than 3 times/year	125 µg/m3
	Annual limit for protection of vegetation	20 µg/m^3

[23] https://www.epa.ie/publications/monitoring--assessment/assessment/draft-guidelines-on-the-information-to-be-contained-in-environmental-impact-asse.php

Pollutant	Criteria	Value
Particulate Matter PM_{10}	Hourly limit for protection of human health – not to be exceeded more than 35 times/year	50 µg/m^3
	Annual limit for protection of human health	40 µg/m^3
Particulate Matter $PM_{2.5}$	Annual target value for the protection of human health	20 µg/m^3

In addition to the statutory limits for the protection of human health listed in Air Quality Standards Regulations (S.I. 180 of 2011), the World Health Organisation (WHO) has published a set of air quality guidelines for the protection of human health.

The key publication is the "WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulphur dioxide, Global update 2005 Summary of risk assessment". The WHO guidelines are based on reducing the risk to human health and in some cases the levels differ from the EU statutory limits as these limits are based on balancing health risks with technological feasibility, economic considerations and various other political and social factors in the EU.

The 2005 WHO guidelines are presented in **Table 8-2** and illustrate that while the NO_2 levels are analogous to those in S.I. 180 of 2011 (excluding the tolerance levels for the 1-hour averages), the annual average PM_{10} and $PM_{2.5}$ levels specified by the WHO are half those specified in the legislation. The WHO note that these are the lowest levels at which total, cardiopulmonary and lung cancer mortality have been shown to increase with more than 95% confidence in response to long-term exposure to $PM_{2.5}$. The EPA has called for movement towards the adoption of these stricter WHO guidelines as the legal standards across Europe and in Ireland.

Table 8-2: WHO 2005 Air Quality Guidelines

Pollutant	Criteria	Value
Nitrogen Dioxide (NO_2)	Hourly limit for protection of human health	200 µg/m^3
	Annual protection of human health	40 µg/m^3
Sulphur Dioxide (SO_2)	10 minute level for protection of human health	500 µg/m^3
	Daily level for protection of human health	20 µg/m^3
Particulate Matter (PM_{10})	24-hour level for protection of human health	50 µg/m^3
	Annual level for protection of human health	20 µg/m^3
Particulate Matter ($PM_{2.5}$)	24-hour level for protection of human health	25 µg/m^3
	Annual level for protection of human health	10 µg/m^3

8.3.1.2 Air Quality Zones

Constraints with regards to Air and Nosie from the proposed study are largely concerned with the potential for impacts to sensitive receptors. In the assessment of constraints, the sensitive receptor locations for Air Quality include areas of residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present.

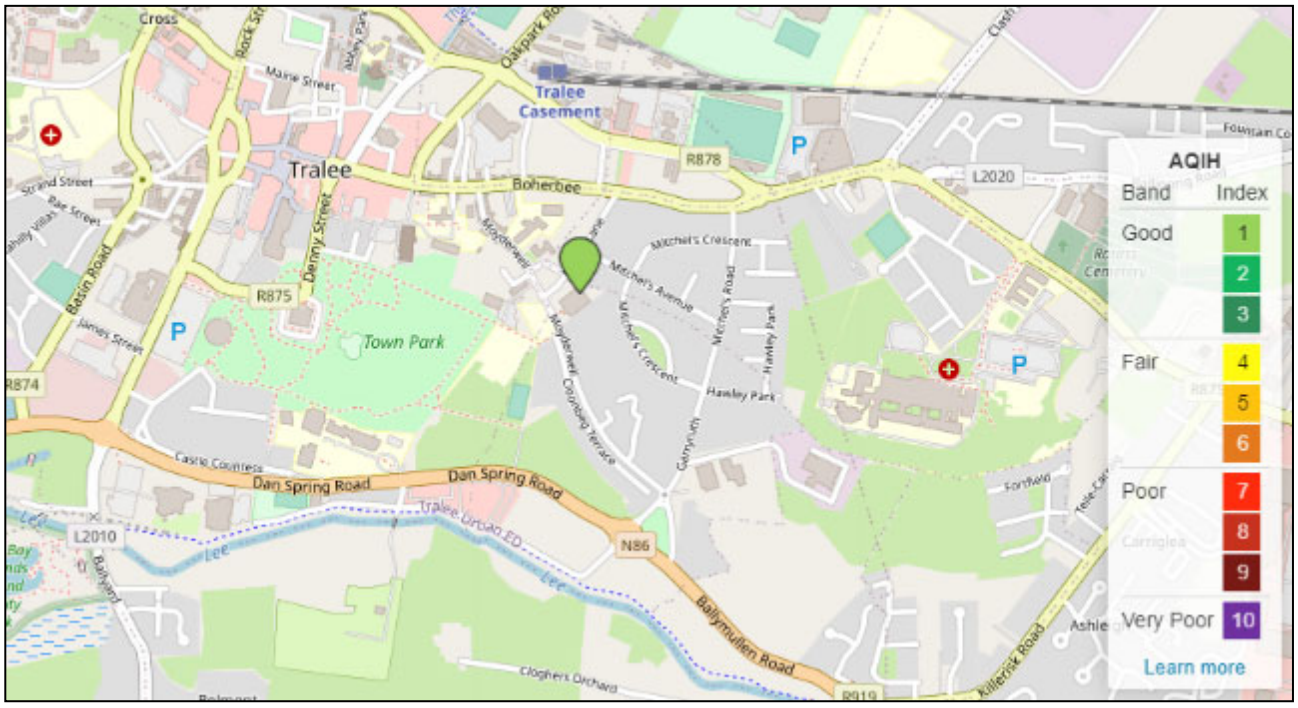
Under the Clean Air for Europe Directive (2008/50/EC) EU Member States must designate "Zones" for the purpose of managing air quality. For Ireland, four Zones have been defined in the Air Quality Standards Regulations (2011); A, B, C and D. These zones are largely categorised based on population counts derived from 2011 CSO Census as follows;

- **Zone A**: Dublin
- **Zone B**: Cork

- **Zone C**: Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, **Tralee**, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise.
- **Zone D**: Rural Ireland; i.e. the remainder of the State excluding Zones A, B and C.

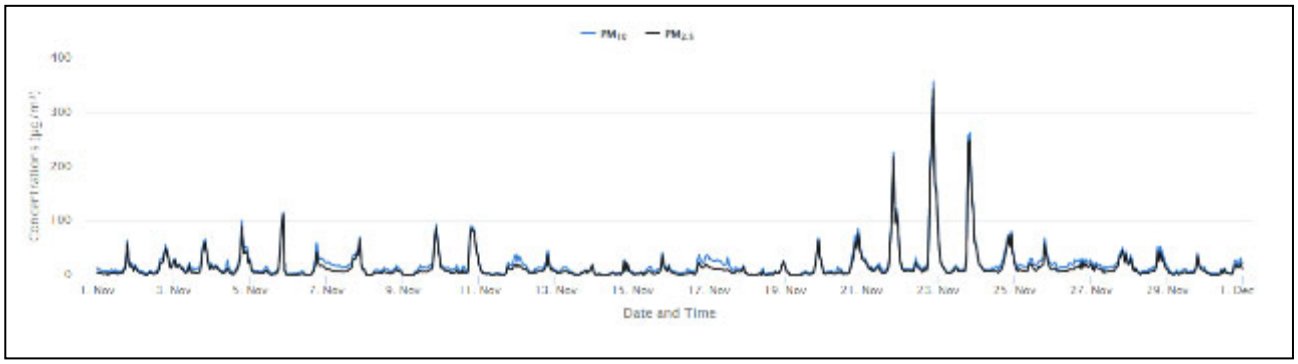
Air quality is classified using a four-band scale of; Good, Fair, Poor, and Very Poor. The scheme area is located in Zone C. There is one air quality monitoring location within the Scheme Area. National Station 71 is located at the Tralee Library. Monitoring is carried out using a continuous monitor for particulate matter. As shown in **Figure 8-1**, the air quality of the Tralee station (green label) is classified as "*Good*".[24]

Figure 8-1: Map of Tralee Air Quality Monitoring Station with Band Index



This air quality station is continuously monitoring throughout the year, with an example of the air quality readings for PM_{10} and $PM_{2.5}$ from Tralee Library during the month of November illustrated below in **Figure 8-2.**

Figure 8-2: Air Quality Levels at Tralee Library during November 2021



[24] https://airquality.ie/ (accessed 23th December 2021)

During the construction stage of the project the air quality of the area could be negatively impacted by dust particles that rise from works, this impact will be temporary and localised to the area of works.

Air pollution from construction activities may also affect the sensitive habitats in the vicinity of the works. Due to the largely urban scheme area, construction sites will be limited in size and the amount of plant and machinery that can be used will be limited. Therefore, potential impacts from air pollution will be to sensitive ecological receptors within 200m[25] of the works.

It is not envisaged that a flood relief study recommended by the engineering study will increase the volume of traffic within the scheme area in the long term. During the construction phase of the project, there will likely be impacts to traffic movement in proximity to the works. The contract documents will need to include constraints around timing and phasing of works to minimise the potential impacts on traffic flows through the city.

It is not envisaged that a flood relief study will have a long-term detrimental effect on air quality in the scheme area. Any impacts to air quality will be short term and temporary.

8.3.2 Climate

Climate is described as the average weather prevailing in an area over a period of time. The weather in Ireland is influenced by the Atlantic Ocean, resulting in mild, moist weather dominated by maritime air masses. The prevailing wind direction is from a quadrant centred on west-southwest. These are relatively warm winds from the Atlantic and frequently bring rain.

To counteract the effects of climate change, climate adaptation has been identified as a vital strategy. The Intergovernmental Panel on Climate Change (IPCC) defined climate adaptation as “the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.”

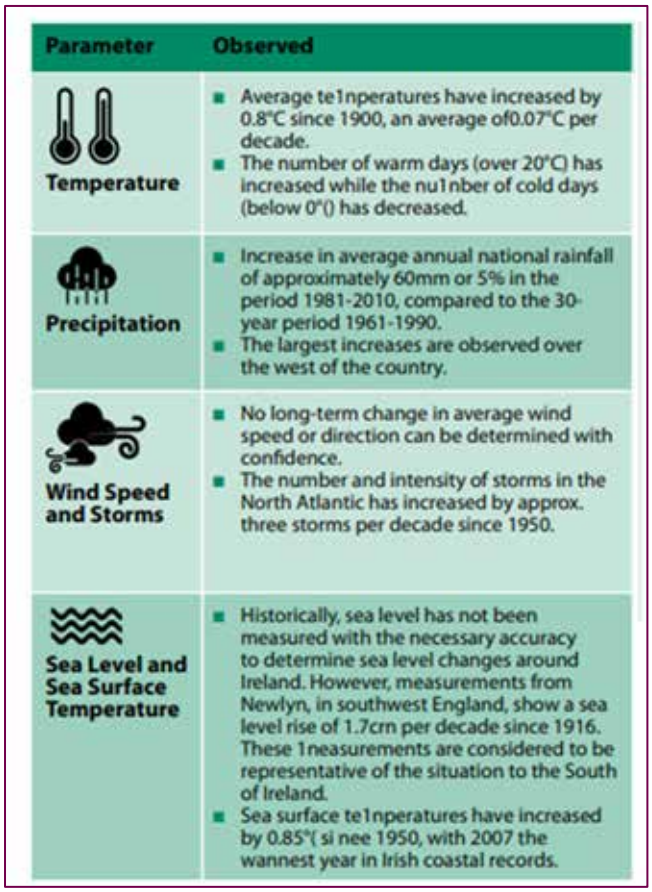
To address the forthcoming challenges associated with climate change, Ireland’s first National Adaptation Framework (NAF) was published in January 2018[26]. The NAF sets out the national strategy to reduce the vulnerability of the country to the potential negative effects of climate change and to avail of positive impacts. Under the NAF, all local authorities were required to prepare and adopt a five-year Climate Adaptation Strategy.

While Ireland has experienced colder than normal periods since 1900 there is an upwards trend in national temperature with higher temperatures experienced in the middle of the 20th century and from the 1980’s to the present day. While an increase in average annual rainfall has been observed, precise changes in spatial patterns of precipitation cannot by determined with further research required. The mean annual sea surface temperature has increased by one degree compared to the long term average over the end of the 20th century. An increase in annual mean rivers flows has also been observed including mean flow increases for both the summer and winter periods. **Figure 8-3** taken from the National Adaptation Framework highlights the main observations in Irelands changing climate.

[25] Guidance for the treatment of Air Quality during the Planning and Construction of National Road Studys’ (NRA 2011)

[26] https://www.gov.ie/en/publication/fbe331-national-adaptation-framework/ (accessed 14th December 2021)

Figure 8-3: Observed changes in Irelands Climate



Flooding is a natural process, but is a significant risk to people, the economy and our environment and cultural heritage. It is likely that climate change will have a significant impact on flood risk in Ireland.

Accelerated sea level rise is being observed and is projected to continue to rise into the future, increasing risk to our coastal communities and assets. It is projected that the number of heavy rainfall days per year will increase, which would lead to an increase in both fluvial and pluvial (urban storm water) flood risk.

Kerry County Council Physical Development Directorate (September 2019)

From the Kerry County Council - Climate Change Adaptation Strategy 2019-2024[27], climate change is a major challenge for County Kerry and poses a major risk to communities, businesses, environment and way of life.

Flooding is a largest source of climate related impact and loss around the County, particularly in Tralee, which has experienced severe flooding from extreme rainfall events causing both fluvial and pluvial flooding. There are also knock on effects to the environment, economy and social activities as a result of incremental changes to climate.

This adaptation strategy is based around six thematic areas that are developed further as High Levels Goals. These goals identify the desired outcomes anticipated through the effective implementation of the climate change adaptation strategy. They are supported by specific objectives and adaptation actions to achieve their desired outcomes, as illustrated in **Figure 8-4**.

[27] http://docstore.kerrycoco.ie/KCCWebsite/environment/climate.pdf

Figure 8-4: Thematic Areas and High-Level Goals

These include changes in the timing of seasonal life cycle events for animals and plants, agricultural shifts effecting food production process, longer term impacts of precipitation, temperature change and extreme events in infrastructure, clean water and human well-being.

The Adaptation Strategy will play a key role in promoting the transition from planning to implementation of adaptation and the mainstreaming of climate adaptation across Kerry County Council.

In 2019, the OPW published the *Climate Change Sectoral Adaptation Plan for Flood Risk Management (2019 - 2024)*. This plan was prepared under the Climate Action and Low Carbon Development Act, 2015, and the National Adaptation Framework, 2018, in line with the Sectoral Planning Guidelines for Climate Change Adaptation.

This Plan considers the impacts of climate change on flooding and flood risk, as well as on flood risk management and identifies 21 adaptation actions needed to ensure effective and sustainable management of flood risk into the future. These actions include ongoing research and assessment of the potential impacts of climate change for flooding and flood risk, the consideration of these impacts in the development and implementation of ongoing and future flood risk management measures, and coordination with other sectors and local authorities as part of a whole of Government approach to sustainable and effective flood risk management. The objectives of the Plan are as follows:

- **Objective 1:** Enhancing our knowledge and understanding of the potential impacts of climate change for flooding and flood risk management through research and assessment.
- **Objective 2:** Adapting flood risk management practice to effectively manage the potential impact of climate change on future flood risk
- **Objective 3:** Aligning adaptation to the impact of climate change on flood risk and flood risk management across sectors and wider Government policy

As part of the Tralee FRS detailed study development, design and implementation, there is a requirement to assess the adaptation options to the potential impacts of climate change and for a draft Study Climate Change Adaptation Plan (SCCAP) to be prepared on foot of these assessments The SCCAP is to be prepared in consultation with the Climate Action Regional offices.

The assessment and the draft SCCAP should determine the most robust strategy and design for short-term investment in flood risk management measures, taking account of the range of mid- to-long-term future investments that may be necessary. This will help ensure that future flood relief works are sustainable and resilient to climate change.

8.3.2.1 County Kerry Extreme Weather Events Baseline

To focus in on how the climate has changed in Kerry, a review of extreme weather events over the period 1986 to 2018 has been undertaken using published Met Éireann data, along with KCC own data, and has been categorised in **Figure 8-5**.

Figure 8-5: County Kerry Extreme Weather Events

Extreme weather events	Description	Event No.
Coastal storms	• **5th August 1986**: Gales and heavy rain.	1
	• **24th December 1997**: Windstorm.	2
	• **Dec 2013- Feb 2014**: Storms *(12 diff days)*	3
	• **16th Oct 2017**: Storm Ophelia RED level Wind Warning.	4
	• **21st Oct 2017**: Storm BRIAN: WIND	5
	• **2nd Jan 2018**: Storm ELEANOR: Wind: Coastal Damage	6
Extreme heat/drought	• **Summer 1995**: warmest weather since 1955	7
	• **Summer 2006**: warmest driest, sunniest summer since 1995	8
	• **Summer 2018**: high temperatures and drought conditions.	9
Extreme Rainfall /Fluvial Flooding	• **25th August 1986**: Hurricane Charley and storm/extreme rain	10
	• **18th/19th November 2009**: 119mm 1-day recorded Cloon Lake.	11
	• **4th, 5th December 2015**: Code RED Rainfall event.	12
	• **4th Dec 2015 – 13th Jan 2016**: Rainfall/ground saturation	13
Freezing conditions	• **Winter 2009/2010: Dec, Jan, Feb:** Coldest winter 13/18 years	14
	• **28th Nov/13th Dec 2010**: Extreme cold/ice event/snow event	15
Heavy snowfall	• **Dec 2009/Jan 2010**: Snow and ICE.	14
	• **Dec 2010**: Heavy Snow falls	15
	• **January 2013**: Heavy Snow	16
	• **December 2013**: Heavy Snow	17
	• **26th Feb to 4th Mar 2018:** Storm EMMA Snow (RED) Warning	18
Pluvial flooding	• **May 2015**: Flooding at Clievragh, Listowel	19
	• **4th ,5th December 2015**: Code RED Rainfall event.	12
	• **Sept 2015**: Flooding Clievragh, Listowel	20
	• **22nd Nov 2017**: Flooding Ballyduff, Ballyheigue, Causeway	21
Storm force winds/ windstorms	• **24th Dec 1997**: Windstorm	2
	• **Dec 2013- Feb 2014**: Winter Storms *(12 diff days)*	3
	• **12th Feb 2014**: Storm Darwin "RED"	3
	• **16th Oct 2017**: Ex Hurricane Ophelia RED level Wind Warning	5

8.3.2.2 Rainfall and Temperature

Ireland has a wet temperate oceanic climate. Met Eireann provides annual temperature and rainfall data which can be accessed on their website[28]. The nearest weather station which records both annual temperatures and precipitation amounts is located at Valentia Observatory approx. 71.9km southwest of the scheme area. The annual temperatures and precipitation amounts are set out in **Table 8-3** and **Table 8-4** below.

Table 8-3: Total Rainfall data in mm for Valentia Observatory

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2021	152.8	228.2	88.8	30.5	174.0	63.4	53.6	89.1	121.8	264.9	93.3	199.9	1480.3
2020	146.3	237.6	115.8	60.1	52.6	127.4	214.0	219.7	94.5	228.1	201.2	244.2	1941.5
2019	134.3	149.8	175.3	96.8	49.0	58.0	83.7	203.9	176.9	202.4	171.7	199.8	1701.6
2018	238.2	119.1	130.6	204.5	114.3	39.2	50.1	109.4	118.8	114.7	253.4	278.6	1770.9
*LTA**	173.8	123.7	123.8	96.7	93.5	95.3	99.0	114.9	125.4	177.1	169.3	164.9	1557.4

*** Long-Term-Average**

Table 8-4: Mean temperature in degrees Celsius for Valentia Observatory

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2021	6.3	7.7	8.4	9.1	10.0	13.1	16.6	15.7	15.4	12.4	9.9	8.3	11.2
2020	7.9	7.6	7.6	10.4	12.4	13.4	14.4	15.7	14.1	11.3	9.8	7.3	11.0
2019	8.2	9.2	8.1	10.4	11.3	13.3	15.9	15.5	14.2	11.1	8.1	8.2	11.1
2018	7.9	5.7	5.7	9.2	12.1	15.3	16.2	15.0	12.9	10.6	9.5	9.9	10.9
*LTA**	7.3	7.2	8.1	9.3	11.5	13.6	15.3	15.3	13.9	11.5	9.3	7.8	10.8

*** Long-Term-Average**

[28] https://www.met.ie/climate/available-data/monthly-data accessed 23rd December 2021

8.3.3 Noise

The Environmental Noise Directive (2002/29/EC) sets out the obligation of member states to assess and manage environmental noise and is the main EU instrument to identify noise pollution levels. The directive mandates that Member States must prepare and publish, every 5 years, noise maps and noise management action plans for:

- Agglomerations with more than 100,000 inhabitants;
- Major roads (more than 3 million vehicles a year);
- Major railways (more than 30,000 trains a year); and
- Major airports (more than 50,000 movements a year, including small aircrafts and helicopters).

Kerry County Council produced a Noise Action Plan in May 2019[29], which states that following the opening of the N22/N69 Tralee Bypass Scheme opened to traffic in 2013 and removed up to a third of through traffic from Tralee Town. Environmental mitigation measures implemented on the N22/N69 Tralee Bypass Scheme included the installation of approximately 3280m of noise barrier. As no airports or rail routes in Kerry County Council's functional area are above the threshold figures outlined and as County Kerry has no agglomerations with more than 100,000 inhabitants, only noise from major roads is considered in this Plan.

The noise environment in the scheme area arises from activities associated with an urban area and busy road network and quieter suburban residential areas. Using the EPA GIS Interactive mapping systems for noise modelling of the Tralee & Environs Flood Relief Scheme area, daytime and night time decibel values for road traffic noise were analysed. As shown in **Figure 8-6**, noise levels during the daytime displayed higher decibel levels on the major roads, particularly in the eastern region of the proposed scheme area. Within the city centre, smaller road networks were found to produce mainly between 60-64 dB and 55-59 dB. Night time data showed a significant decrease in the dispersal of road traffic noise, with higher levels shown in close proximity to the road networks, as illustrated in **Figure 8-7**.

[29] http://docstore.kerrycoco.ie/KCCWebsite/docs/noiseplan.pdf

Figure 8-6: Noise Modelling (February 2019) for Daytime (Source: https://gis.epa.ie/EPAMaps/)

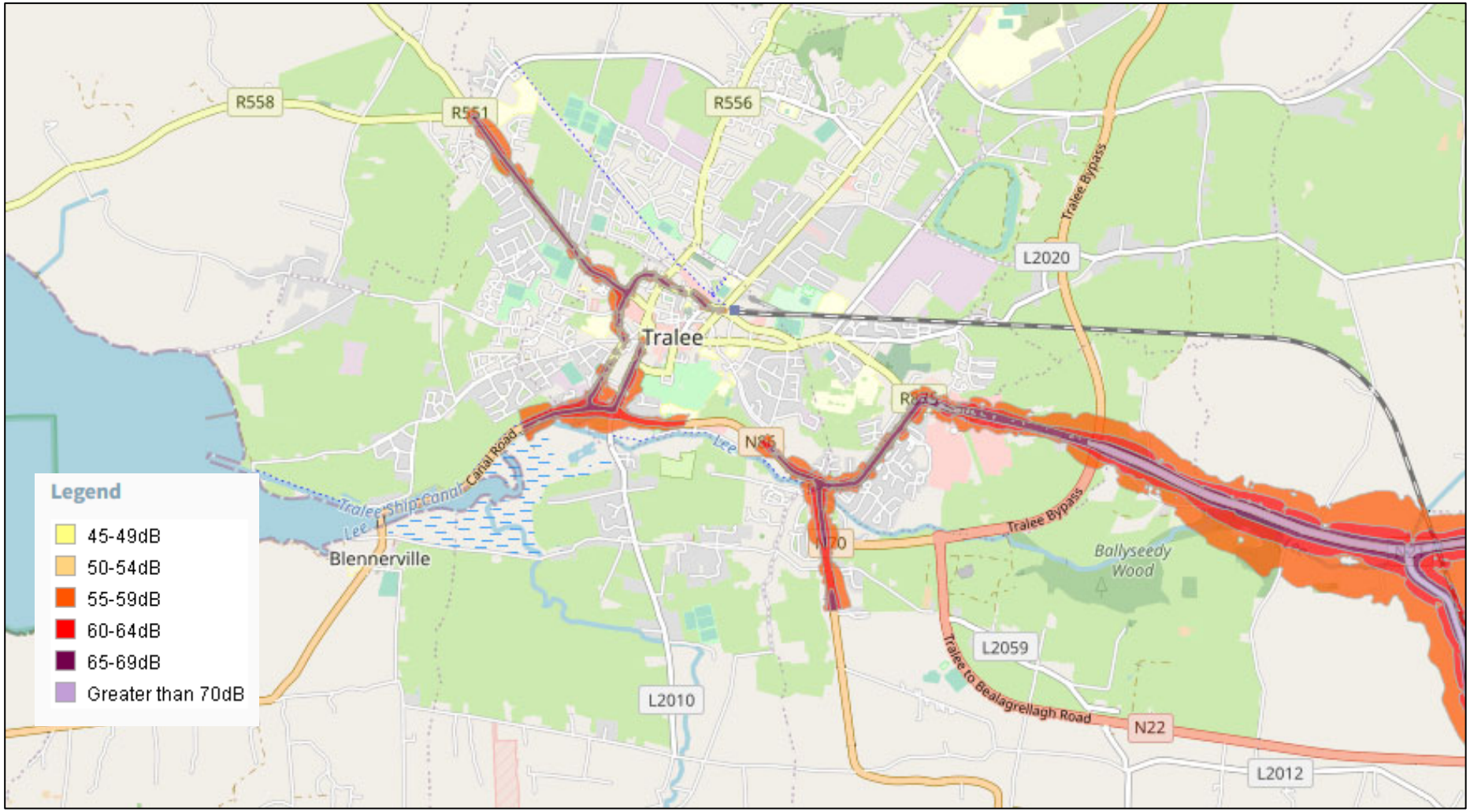
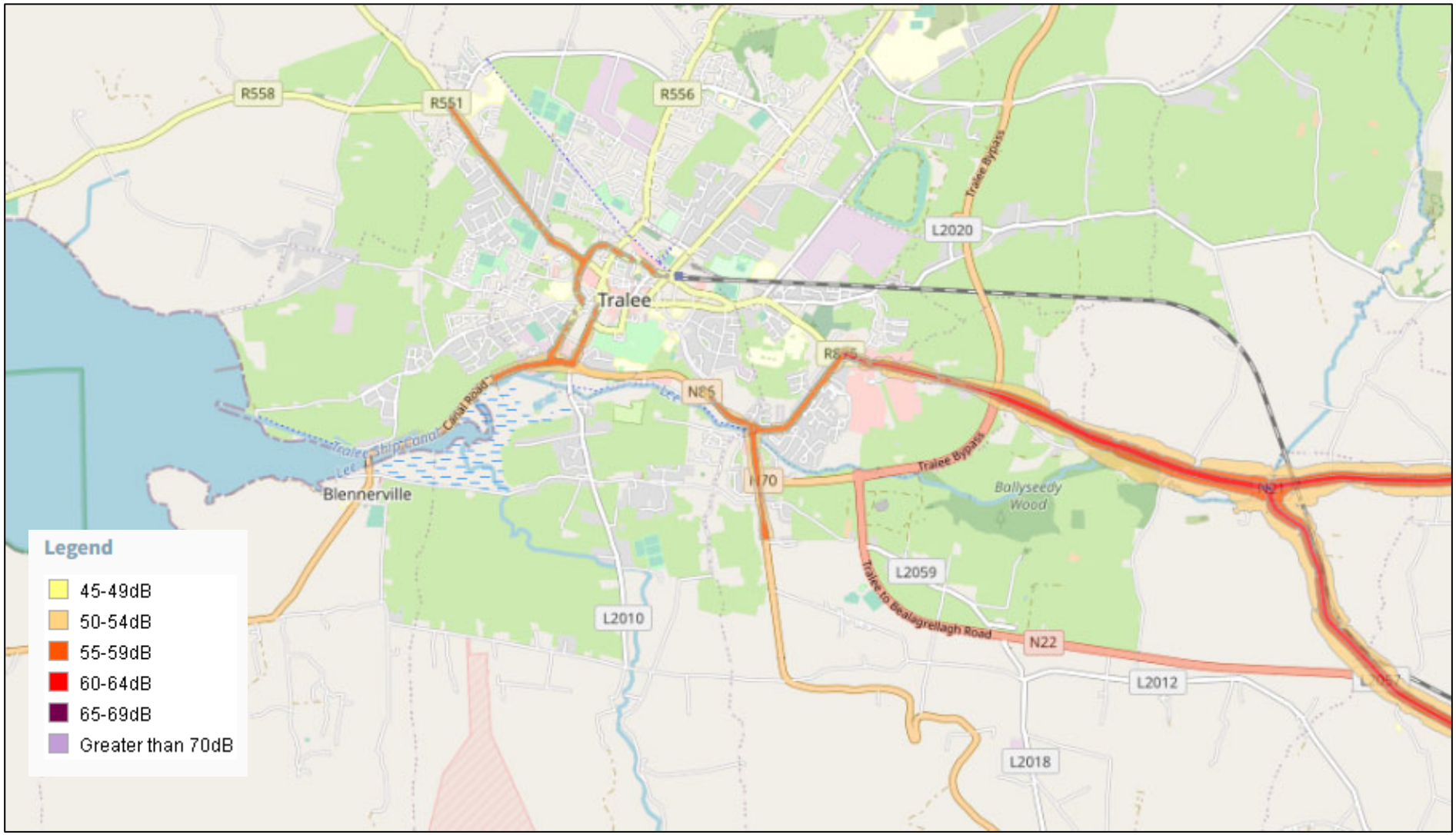


Figure 8-7: Noise Modelling (February 2019) for Night-time (Source: https://gis.epa.ie/EPAMaps/)



There will be no noise impacts associated with the operational stage. Significant noise levels will arise during construction (mainly caused by machinery) but they will be temporary and restricted to machinery operating in specific areas. Noise impacts will be temporary in nature and will be minimised using operating procedures in BS5228: Noise and vibration control on construction sites – Part 1 Noise.

The location of the proposed study within an urban environment with existing noise impacts, reduces the significance of the noise constraints of the works. Some vibration impacts may arise during construction. A pre-construction survey of vibration sensitive properties such as the Abbey and control measures outlined in BS5228: Part 2 Noise and vibration control on construction sites – Part 2 Vibration will be utilised to control any potential impacts.

The noise levels from construction shall not exceed noise limits outlined in **Table 8-5** below.

Table 8-5: Construction Noise Limits at any Residential Property

Day of Week	Time	L_{Aeq} 1hour	L_{Amax}
Monday to Friday	07:00 – 18:00	65dB Curtilage	-
	18:00 – 23:00	55dB Curtilage	-
	23:00 – 07:00	45dB Curtilage	60dB
Saturday	07:00 – 13:00	65dB Curtilage	-
	13:00 – 23:00	55dB Curtilage	-
	23:00 – 07;00	45dB Curtilage	60dB
Sunday	07:00 – 23:00	45dB Curtilage	-
	23:00 – 07:00	45dB Curtilage	60dB

The location of the proposed study within an urban environment with existing noise impacts, reduces the significance of the noise constraints of the works. Some vibration impacts may arise during construction. A pre-construction survey of vibration sensitive properties and control measures outlined in BS5228: Part 2 Noise and vibration control on construction sites – Part 2 Vibration will be utilised to control any potential impacts.

8.4 Noise, Vibration and Air Pollution on Biodiversity

The movement of plant and vehicles may cause disturbance to wildlife through noise pollution and vibration. Temporary disturbance of fauna, potentially causing them to abandon their habitat, can result from the increased noise and human activity levels associated with heavy machinery and the construction works. Vibration may also cause disturbance to aquatic species and habitats. However, due to the short duration, and nature and scale of the works, the effects from noise and vibration on the ecological receptors is thought to be minimal.

Air pollution from construction activities may affect the sensitive habitats in the vicinity of the works. The principal pollutants of concern which originate from construction plant and machinery are the nitrogen oxides (NOx), in terms of impact on sensitive ecosystems. Nitrogen oxides (NOx) may have a positive or negative impact by acting as a fertiliser or a phytotoxicant. Effects are mainly on vegetation growth, photosynthesis, and nitrogen assimilation/metabolism. Due to the largely urban scheme area, construction sites will be limited in size and the amount of plant and machinery that can be used at any one time will be limited. Therefore, potential impacts from air pollution will be to sensitive ecological receptors within 200m (NRA, 2011) of the works.

Dust or particles falling onto plants can physically smother the leaves affecting photosynthesis, respiration and transpiration. Due to the proximity of sensitive ecological receptors, air pollution from construction activities may affect the sensitive habitats in the vicinity of the works. The NRA's '*Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes'* (2011) sets out the assessment criteria for the impact of dust emissions from construction activities, with standard mitigation in place; this is shown in **Table 8-6**.

Table 8-6: Assessment Criteria for the Impact of Dust Emissions from Construction Activities, With Standard Mitigation in Place[30]

Source		Potential Distance for Significant Effects (Distance from source)		
Scale	**Description**	**Soiling**	**Pm_{10}**	**Vegetation Effects**
Major	Large construction sites, with high use of haul routes	100m	25m	25m
Moderate	Moderate sized construction sites, with moderate use of haul routes	50m	15m	15m
Minor	Minor construction sites, with limited use of haul routes	25m	10m	10m

Source: Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes - National Roads Authority (2011)

8.5 Summary of Air, Climate and Noise Constraints

The construction phase poses the greatest potential impact to air quality within the scheme area.

However, these impacts will be short term in nature and with the adherence of best practice construction measures will create minimal impact. Due to the nature of the works it is not envisaged that the operational phase will impact upon the surrounding air quality.

As the proposed study will be taking place in an urban environment which is already subjected to noise and vibration from passing traffic, it is not anticipated that the proposed study will greatly impact on the existing levels, therefore, not deemed a significant constraint.

The potential impacts to biodiversity from noise, vibration and air pollution will be assessed further as the study progresses. However, impacts to ecological receptors from these pollution sources are thought to be short term and localised.

The FRS assessment and the draft SCCAP should determine the most robust strategy and design for short-term investment in flood risk management measures, taking account of the range of mid- to-long-term future investments that may be necessary. This will help ensure that future flood relief works are sustainable and resilient to climate change.

[30] Source: Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Study - National Roads Authority (2011)

9 MATERIAL ASSETS: NON-AGRICULTURAL

9.1 Introduction

Material assets can be defined as economic assets of natural and human origin, or cultural assets of a physical and social type. This section identifies the constraints aspects of the proposed study in relation to material assets with particular reference to transport infrastructure, utilities and non-agricultural land use. It identifies the existing material assets and also aims to ascertain any key proposals for future development of material assets within the scheme area, i.e. new roads, water mains etc. that may pose a constraint to works associated with the flood relief study in the future.

Material assets within the scheme area include:

- Utilities;
- Roads and Transportation network;
- Waste water infrastructure;
- Waste management facilities;
- EPA facilities;
- Potable water infrastructure; and
- The build environment.

9.2 Methodology

The following sources of information were consulted in the assessment of material assets within the scheme area:

- EPA online mapped Licensed facilities (waste, IPPC);
- TII;
- Kerry County Council website; and
- EPA Waste Water Discharge License Applications for Waste Water Agglomerations within the scheme area.

9.3 Existing Environment and Key Constraints

9.3.1 Utilities

Utilities in the scheme area include water supply networks, telecommunications, storm and foul sewers, electricity supply and gas pipelines. The potential for conflict with such utilities will be investigated during assessment of viable options and scheme design.

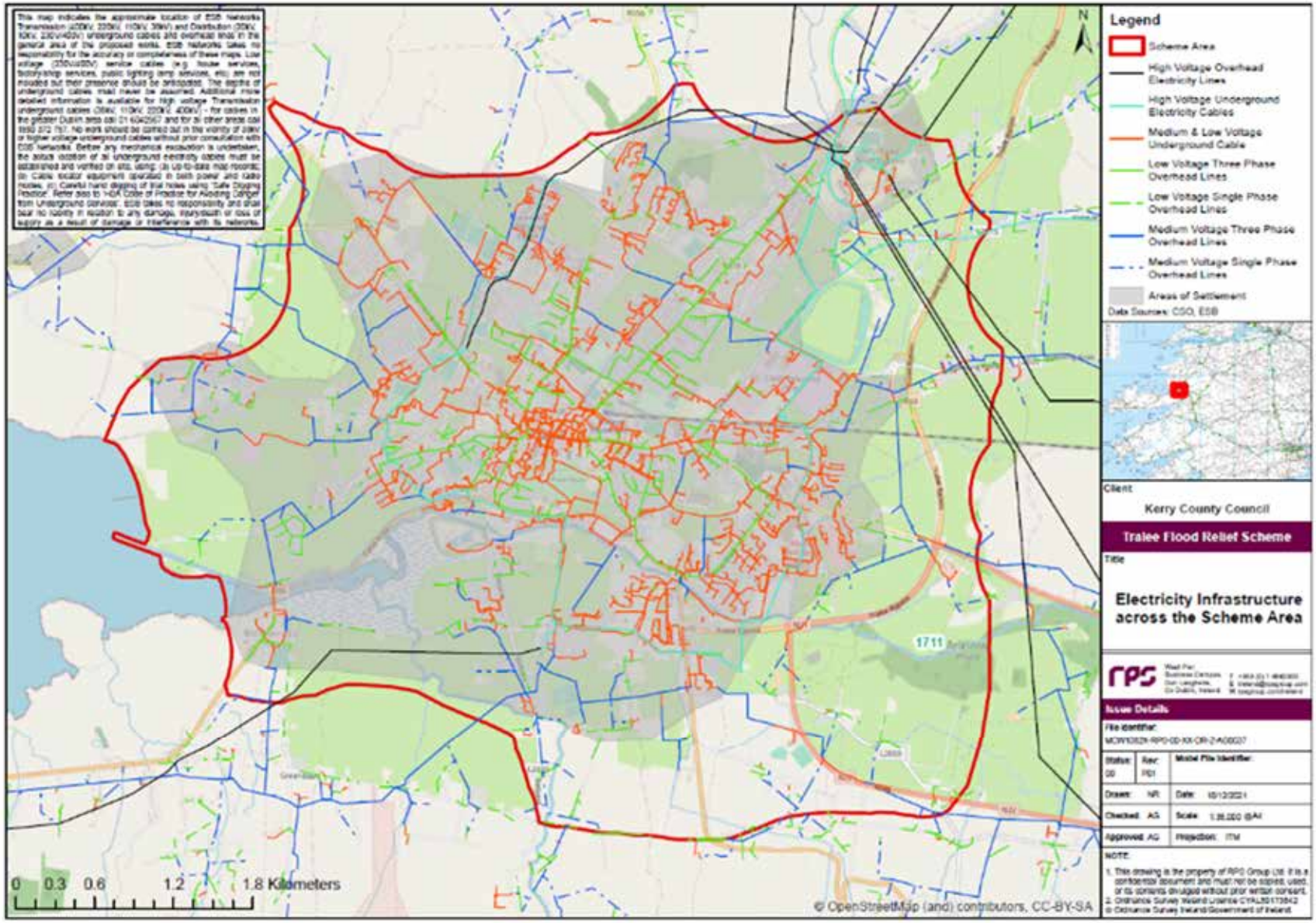
Enet operates fibre optic infrastructure known as the Metropolitan Area Networks (MANs) on behalf of the Irish government. Enet also aid in providing Core Backhaul Fibre and Nationwide Wireless. **Figure 9-1** provides an overview of the state owned MANs, Backhaul Fibre and Wireless connections throughout Tralee Town. The existing and proposed location of watermains and other underground services in the vicinity of any proposed flood relief scheme to be ascertained as part of the engineering study. Consultation with Kerry County Council and utility providers at the option selection stage is recommended.

Figure 9-1: Tralee Town Enet Coverage

9.3.1.1 Electricity

The electricity infrastructure across the scheme area was examined, which showed that within the town centre there is a high concentration of Medium & Low Voltage Underground Cables as well as Low Voltage Three Phase Overhead Lines spread evening from the town centre into the surrounding areas. From the town centre into the outer boundary of the scheme area lies Medium Voltage Three Phase Overhead Lines with some Medium Voltage Single Phase Overhead Lines, as illustrated in **Figure 9-2**. The presence of the underground and underwater cables should be clearly identified before any excavations on land or in-river works are commenced.

Figure 9-2: Electricity Infrastructure across the Scheme Area

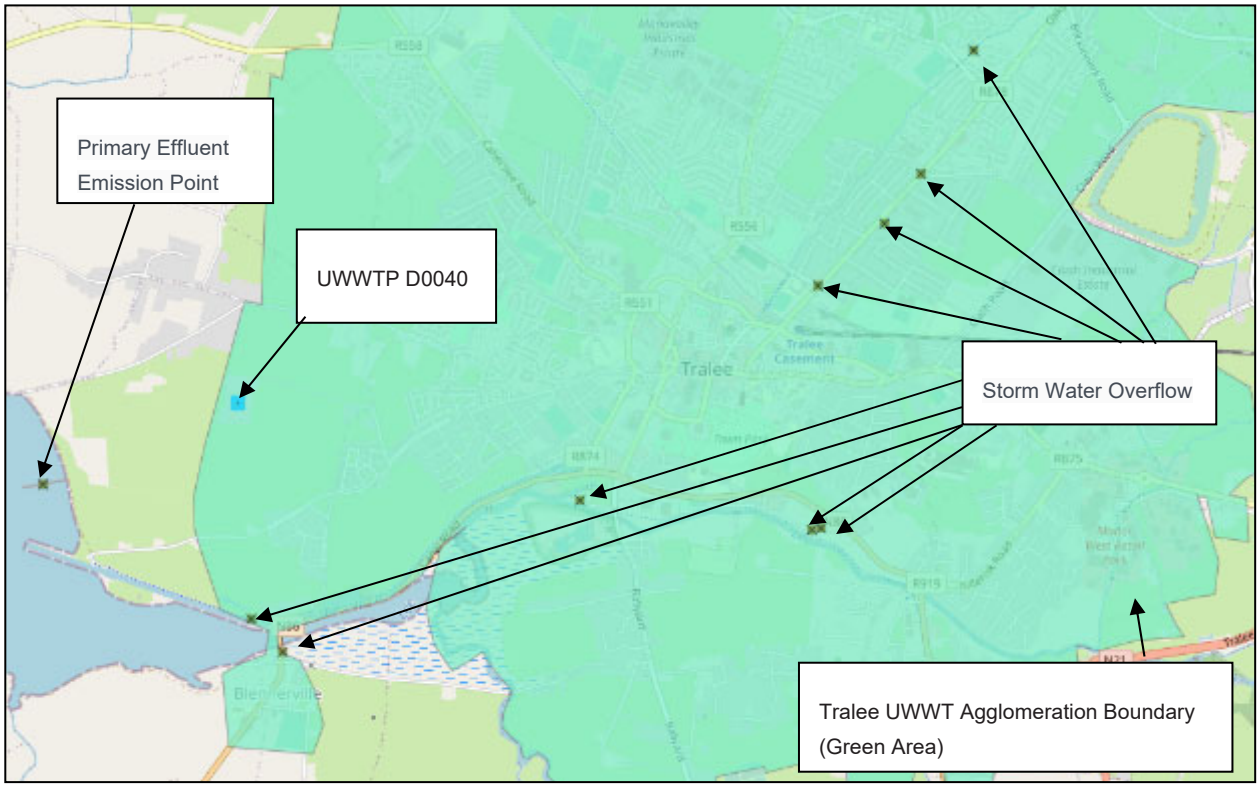


9.3.1.2 Wastewater Infrastructure and Storm Water Overflow Discharge Points

There is an Urban Waste Water Treatment Plant (UWWTP) [EPA reg no D0040-01] located near the western boundary of the proposed scheme area. This WwTP was assigned a “pass” grade by the EPAs Urban WWT 2014 assessment. There is two WW Pumping Stations within the agglomeration.

Ten storm water overflow discharge points are located within the scheme area as identified using the EPA Maps for Clean Water & Environment[31]. There is one primary effluent emission points (*from the WWTP) located at Irish grid reference E80427, N113906. Location of these emission points are detailed in **Figure 9-3**.

Figure 9-3: Effluent and Stormwater Emission Locations



9.3.1.3 Drinking Water

Over 62,000 people depend on the Kerry Central Regional Water Supply Study which serves one of the main tourist regions in Ireland including Tralee, Killarney, Castleisland, Castlemaine. The study abstracts raw water from Lough Guitane and, until the completion of this project, did not have an effective treatment system that incorporated a cryptosporidium barrier to treat the raw water. This meant that the areas supplied by the Kerry Central Regional Water Supply Study were at risk due to the lack of sufficient water treatment and were on the Environmental Protection Agency’s Remedial Action List (RAL).

9.3.2 Road and Transport Network

9.3.2.1 Rail Network

The current Tralee railway station is located within the town centre at John Joe Sheehy Rd, Cloonalour, Tralee, Co. Kerry, Ireland. A train service running Tralee – Killarney – Rathmore – Mallow – (Cork) – Dublin

[31] https://gis.epa.ie/EPAMaps/

operates here. From the Dublin-Cork line, there are connecting trains at Limerick Junction for Limerick, Clonmel and Waterford. Further links are available at Limerick to Ennis, Athenry, Oranmore and Galway.

CFRAM preferred option for Tralee calls for a new diversion channel and significant upgrading of an existing railway culvert at Ballinorrig. Any proposed works at or near railways will require early engagement with Iarnród Éireann and compliance with its requirements for third party works. This could lead to possible delays and/or redesign due to gaining permissions/consents.

9.3.2.2 Road Network

Tralee is served by National Primary and Secondary roads as well as local routes. A 13.5 km bypass of Tralee consisting of dual and single carriageway sections was opened on 16 August 2013. The bypass connects four of the five national routes — the N21, N22, N69 and N70 — which terminate in Tralee. Tralee is served by the Secondary road N86 which leads west to Dingle, and the Regional Roads R551, R556 and R558.

A series of traffic management measures may be included as part of the project, these include:

1. Temporary Signage
2. Operation of a Contra Flow
3. Temporary Road Closure
4. Temporary Traffic Signals
5. Arrangements for Local Access, Pedestrian and Cyclist Access

Pedestrian routes would be segregated and vehicular movement routes clearly identified and maintained with physical barriers. Traffic separators would be the method of choice in a temporary situation but for more permanent pedestrian routes, half height chain link fences would be adopted.

A Traffic Management Plan will be implemented prior to the construction work. This will include procedures for keeping the working site(s) and transport routes clean. This may be implemented by various methods but will depend on the appointed contractor e.g. wheel wash facilities and road sweeping. The other key features of the Traffic Management Plan will be:

- Keeping pedestrians and vehicles apart;
- Minimising vehicle movements;
- People on site – including suitability of drivers;
- Turning vehicles;
- Visibility;
- Signs and instructions.

The potential for conflict will be investigated during assessment of viable options and scheme design.

9.3.2.3 Airports and Ports

There are no airports/runways located within the scheme area. The closest airport is Kerry Airport, located 20km from Tralee in Farranfore, which provides air services to Dublin, London Luton, London Stansted, Frankfurt-Hahn and seasonally, Alicante and Faro. Ryanair now operates seasonal services to Berlin International Airport. Connecting trains run from Farranfore railway station to Tralee and Killarney Railway Station in Killarney.

There are no ports within the scheme area. The local port for Tralee is Fenit, about 10 km west of the town on the north side of the estuary. Catering for ships of up to 17,000 tonnes, the port is a picturesque mixed-use harbour with fishing boats and a thriving marina (136 berths). The 2-mile-long Tralee Ship Canal provides a navigable connection between Tralee itself and the sea.

9.4 Waste Management

North Kerry Landfill Site, Muingnaminnane, Tralee, Kerry (EPA reg no. W0001-04) is located north east of the scheme area and is a licensed landfill by the EPA for the management of waste.

Construction and Demolition Waste (CDW) will arise from the demolition works to be undertaken during the Proposed Development. A quantitative assessment of potential effects in relation to waste will be undertaken to support the application for the Proposed Development. The assessment will comprise the following stages:

- A review of applicable legislation and policy;
- A review of the Proposed Development design to estimate the waste generation during the various phases of construction;
- Determining waste arisings during construction; and from the development once operational;
- Consideration of potential interactions between proposals and the current site conditions;
- Identification of possible impacts;
- Assessment of impacts;
- Identification of measures and solutions to avoid, reduce or remedy potential impacts; and
- Assessment of residual impacts, taking account of mitigation measures.

A Main Works Contractor (MWC) will be appointed, KCC and its appointed MWC contractor will ensure that demolition wastes will be collected by an appropriately licensed waste management contractor and that all proposed management routes comply with the European Union waste hierarchy of prevention, preparing for reuse, recycling, and recovery with disposal being the last and final option and with other legal requirements. All waste materials leaving the site will be transported and disposed or recovered through licenced operators and in accordance with national waste legislation.

The storage and reuse of demolition or excavation wastes on site may be subject to a number of waste licensing requirements. If these wastes are to be stored on site, prior to potential reuse or recovery during construction, this activity will be subject to a Waste Management Licence Exemption with a limited tonnage of material permitted to be stored on site. Storage will take place in a secure area on-site and the contractor will monitor the amount of waste stored to ensure that the permitted limits of the Exemption are not exceeded. A carefully planned approach to waste management and adherence to a SWMP during the construction and installation phase will ensure that the waste effects on the environmental and on landfill void space capacity will not be significant.

9.4.1 EPA licenced Facilities

There are a number of EPA licenced facilities identified within the scheme area (Industrial Emissions (IE)/Industrial Pollution Control (IPC)/Waste facilities), including:

- Heiton Buckley Ltd t/a Heiton Buckley Builders Merchants
- Kerry Ingredients (Ireland) Limited
- Amann Industries Limited
- Kerry County Council

9.5 Summary of Key Material Assets: Non-agricultural Identified Constraints

The primary constraints within the scheme area are the existing utilities and existing transport infrastructure. Early consideration of how options can integrate or avoid with the existing material assets in the area is essential and will require engagement with service providers to ensure that utilities can be avoided and/ or modified to mitigate impacts. In terms of water and wastewater, infrastructure should be identified and upgraded/replaced or diverted if necessary to facilitate construction, as well as assessing the preferred location for the defence infrastructure. Identifying the location of the outfalls and the overflow pipes is also crucial for the planning and construction phases of the scheme.

The design of the study will need to take into consideration the proximity of proposed works to the main road routes for the Tralee area, for example, the N86 and R556 routes due to construction works associated with the construction of walls along the River Big (Big River) downstream of Brewery Road, and construct embankments along the left bank of the River Lee to protect properties in the Ballymullen area including, Hunters Wood, Cois Abhann, LIDL, Topaz, Aspen Grove, Castlemaine, Glencastle.

Regard must also be had to future changes that are likely to take place in the scheme area e.g. through the Water Services Investment Programme, investment by Transport Infrastructure Ireland, various Broadband/internet providers, EirGrid etc. Early consideration of how options can integrate with the existing material assets in the area is essential and will require engagement with service providers to ensure that utilities can be avoided and/ or modified to mitigate impacts.

It is not anticipated that the proposed scheme will interact or result in any negative impacts caused to the Material Assets – Non-Agricultural receptors in proximity of the scheme area.

10 MATERIAL ASSETS: AGRICULTURE

10.1 Introduction

This section presents the agricultural constraints associated with the study.

10.2 Methodology

The following information was considered during the assessment of agricultural constraints within the scheme area;

- Census of Agriculture, 2010;
- CORINE (Co-Ordinated Information on the Environment) 2018;
- 'Google Earth' 2014 to 2018;
- Property Registration Authority of Ireland website; and
- Teagasc EPA Soil & Subsoil Mapping, 2006.

10.3 Existing Environment and Key Constraints

The Census of Agriculture (2010) figures showed a total of 8,412 farms in Co. Kerry. The total area of farmed land including commonage was approximately 347,291 hectares with an average farm size of 34.0 hectares, which is above the national average of 32.5 hectares. Specialist Beef production continued to be the most common farm type or activity, accounting for over half of all farms in 2016 (78,300). The highest number of sheep was in the West with just over 1.4 million, representing more than one quarter of the total national flock (27.3%)[32]. Co. Kerry had a total of 6,457 farms that kept cattle with the total amount of 324,016. The total amount of sheep was 478,682 spread through 2,190 farms. Both pig and poultry farming continued to be an intensive activity carried out by a small number of specialised producers. This is evident in Co. Kerry with 2010 figures showing an amount of 37,681 pigs spread through 43 farms, and a total poultry of 24,800 spread through 456 farms. Farming practices in Kerry are outlined in **Table 10-1** below.

Table 10-1: Farming Practices in Kerry[33]

Enterprise Type	Number of Farms	Percentage of Total (%)
Specialist tillage	60	<1%
Specialist dairying	1,522	18.1%
Specialist beef production	3,921	46.6%
Specialist sheep	1,408	16.7%
Mixed grazing livestock	790	9.4%
Mixed crops and livestock	42	<1%
Mixed field crops	625	7.4%
Other	44	1.5%
Total	**8,412**	**100**

The CORINE (Co-Ordinated Information on the Environment) land cover mapping was generated and is maintained by the European Community (EC). The impetus for this mapping was to provide a comparable and standardised data source of geo-spatial information across the European environment, with the most

[32] https://www.cso.ie/en/releasesandpublications/ep/p-fss/farmstructuresurvey2016/
[33] Data sourced from the 2010 Census of Agriculture

recent iteration of the land use and habitat classification data series made available in 2018 (Referred to in this report as CORINE 2018). **Figure 4-3** illustrates the CORINE (2018) land cover distributions across the scheme area and it is described in Section 4.4.2.

Aerial photography was searched for any identifiable farming practices, such as, dairy paddock systems and internal roadways, circular collecting yards, large, galvanised sheds, horse facilities and pig and poultry housing.

At this stage of the project there are no details on the extent of land ownership and therefore the size of any farms is not known, however the scheme area is largely urban and impacts to agricultural lands and practices is thought to be minimal.

10.4 Key Constraints Material Assets: Agricultural Identified Constraints

It is evident from the desk study that intensive agricultural practices are not common within the scheme area. “Google Earth” was used with maps spanning 2014-2018 and “Bing Maps” with imagery dating 2021. It can be noted that based on the lack of intensive agricultural practices in the proposed study site, impacts to soils will not be discussed in more detail on an agricultural basis. See **Chapter 6** for any further information on soil types associated with the scheme area. At this stage of assessment, it is not anticipated that the proposed study will interact or result in any negative impacts caused to the agriculture receptors in proximity of the scheme area.

11 CULTURAL HERITAGE

11.1 Introduction

Cultural heritage comprises archaeology, architectural heritage, folklore and history.[34] Archaeology is the study of past societies through surviving structures, artefacts and environmental data, and is concerned with known archaeological sites and monuments, areas of archaeological potential and underwater archaeology. Architectural heritage comprises structures, buildings, traditional and designed, and groups of buildings including streetscapes and urban vistas, which are of architectural, historical, archaeological, artistic, engineering, scientific, social or technical interest, together with their setting, attendant grounds, fixtures, fittings and contents. Architectural heritage and archaeology together form 'built heritage' or 'tangible heritage'. Folklore and history are aspects of 'intangible heritage', which also includes language, musical traditions, traditional crafts and skills, townland names, poetry and so on. These forms of cultural heritage are "non-moveable, non-material and largely non-environmental although by their associations with certain sites and places, add to the character of an area".[35]

This section presents the cultural heritage constraints within the scheme area and should be read in conjunction with Appendix D: Cultural Heritage Findings.

11.2 Methodology

The main sources used in the preparation of this report were:

- The National Monuments Service (NMS) Historic Environment Viewer (HEV) [36] from which GIS datasets for the Sites and Monuments Record (SMR)/Record of Monuments and Places (RMP) and National Inventory of Architectural Heritage (NIAH) were downloaded and inputted into QGIS (version 3.16).
- Wreck Inventory of Ireland Database maintained by NMS;[37]
- RMP: statutory list of protected places and monuments, with accompanying constraints maps, published for Kerry in 1997;[38]
- Lists of National Monuments in State Care: Ownership and Guardianship for County Kerry, published in 2009;[39]
- List of Preservation Orders held by the NMS, published in 2019;[40]
- Kerry County Development Plan 2015 –2021[41] for current Record of Protected Structures, Architectural Conservation Areas etc;

[34] Available at https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/EPA_EIAR_Guidelines.pdf [accessed on 21/04/2022].

[35] EPA. 2015. *Advice Notes for Preparing Environmental Impact Statements DRAFT September 2015*. Environmental Protection Agency, Dublin.

[36] Available at https://maps.archaeology.ie/HistoricEnvironment/ [accessed on 09/12/2021].

[37] Available at https://www.archaeology.ie/underwater-archaeology/wreck-viewer [accessed on 08/12/2021].

[38] Available at https://www.archaeology.ie/sites/default/files/media/pdf/Archaeology-RMP-Kerry-Manual-(1998)-0018.pdf [accessed on 08/12/2021].

[39] Available at https://www.archaeology.ie/national-monuments/search-by-county [accessed on 08/12/2021].

[40] Available at https://www.archaeology.ie/sites/default/files/media/publications/po19v1-all-counties.pdf [accessed on 08/12/2021].

[41] Current *Kerry County Development Plan* (2015–2021) available at: http://docstore.kerrycoco.ie/KCCWebsite/planning/devplans/vol2/4RecordOfProtectedStructuresRevisionA.pdf

- Draft Kerry County Development Plan 2022–2028[42] for proposed Record of Protected Structures, Architectural Conservation Areas etc;
- Current list of UNESCO World Heritage Properties and Tentative List World Heritage Properties[43]; and
- List of historic walled towns of Ireland.[44]

The GIS detail for the Record of Protected Structures (RPS) was obtained from Kerry County Council; the GIS detail for the NIAH Garden Survey was downloaded from the Buildings of Ireland website[45]; and the Wreck Inventory of Ireland Database maintained by NMS was also consulted[46].

11.3 Notes on Methods

Work is ongoing with the National Monuments Service of the Department of Housing, Local Government and Heritage to review the statutory Record of Monuments and Places (RMP) for any major discrepancies with the SMR. Tables D.1– D.44 include a column entitled 'RMP Proposed', with the corresponding value entered being either 0 or 1. The entered value 0 represents no (will not be considered for inclusion in the next RMP revision), and 1 represents yes (will be included in the next RMP revision). It should be borne in mind that while a site may have a 0 value designation in the RMP Proposed column it is still currently considered as an RMP site in terms of its protection status. The RMP sites and constraints area are not digitised from the RMP maps available on the HEV; this will be undertaken in subsequent stage reports. Both RMP and SMR sites are considered to be of high importance for the purposes of this high-level assessment.

The categorisation of sites and site types by period should be considered preliminary in light of the high-level nature of this report; however, in certain instances and where possible, site types have been categorised according to the detail presented in the Inventory detail included on the NMS HEV for each site. For the next phase of assessment, a more comprehensive inventory of each site/receptor will be presented as the design detail for the proposed scheme is refined.

11.4 Summary of Findings

A summary of the identified recorded cultural heritage constraints pertaining to the scheme area and its immediate environs is presented below.

Figure 11-1 below details the areas of archaeological heritage within the scheme area and **Figure 11-2** details the architectural heritage sites within the scheme area.

Details on the consent requirements are provided in Appendix D.

[42] Draft Kerry County Development Plan 2022–2028 Available at: https://consult.kerrycoco.ie/sites/default/files/5%20Protected%20Structures.pdf [Accessed on 09/12/2021]

[43] Available at https://www.worldheritageireland.ie/home/ [accessed on 08/12/2021].

[44] Available at https://irishwalledtownsnetwork.ie [accessed on 08/12/2021].

[45] Available at http://www.buildingsofireland.ie/Surveys/Gardens/ [accessed on 08/12/2021].

[46] Available at https://www.archaeology.ie/underwater-archaeology/wreck-viewer [accessed on 08/12/2021].

Figure 11-1: SMR sites within the Scheme Area

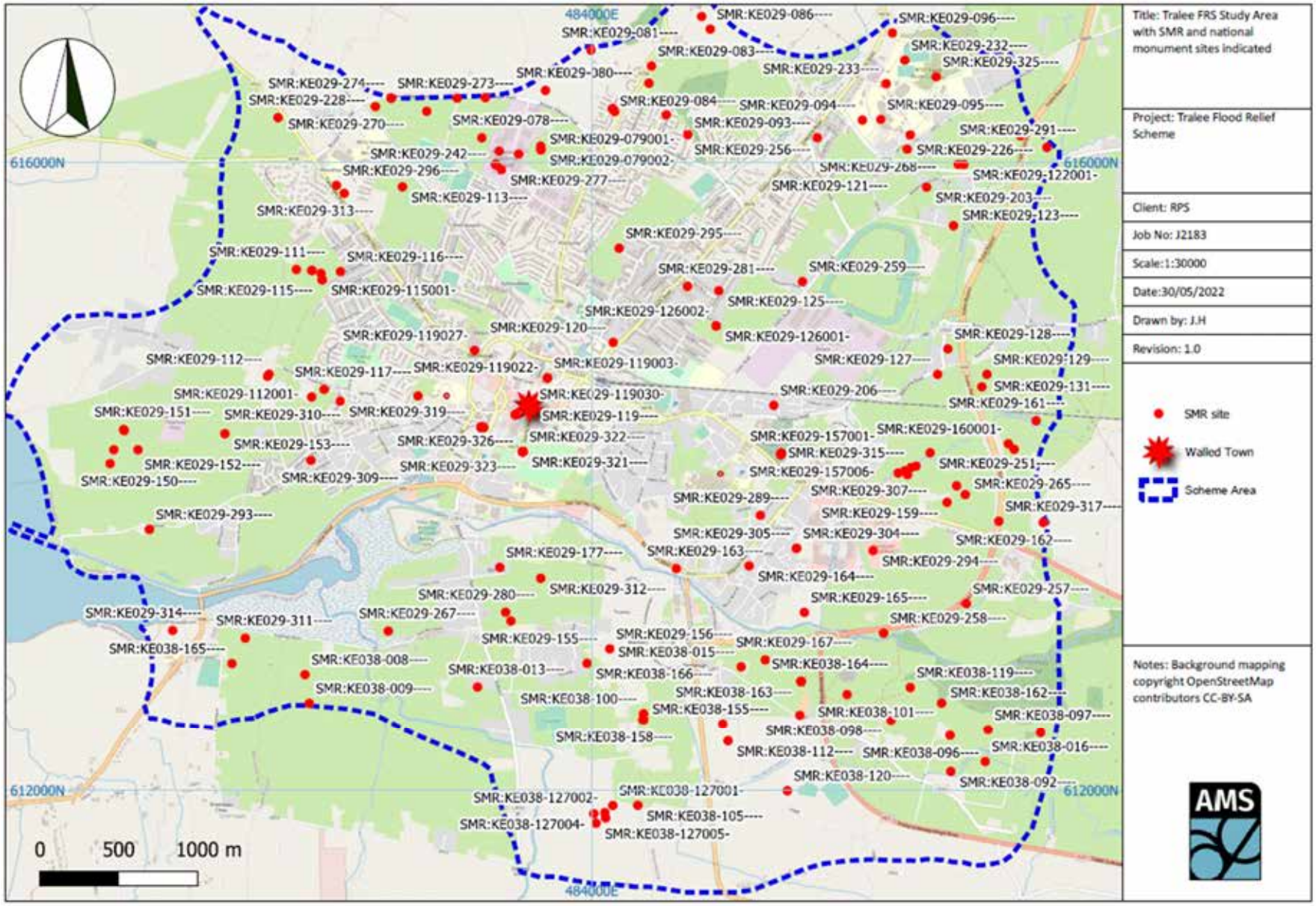


Figure 11-2: RPS sites within the Scheme Area

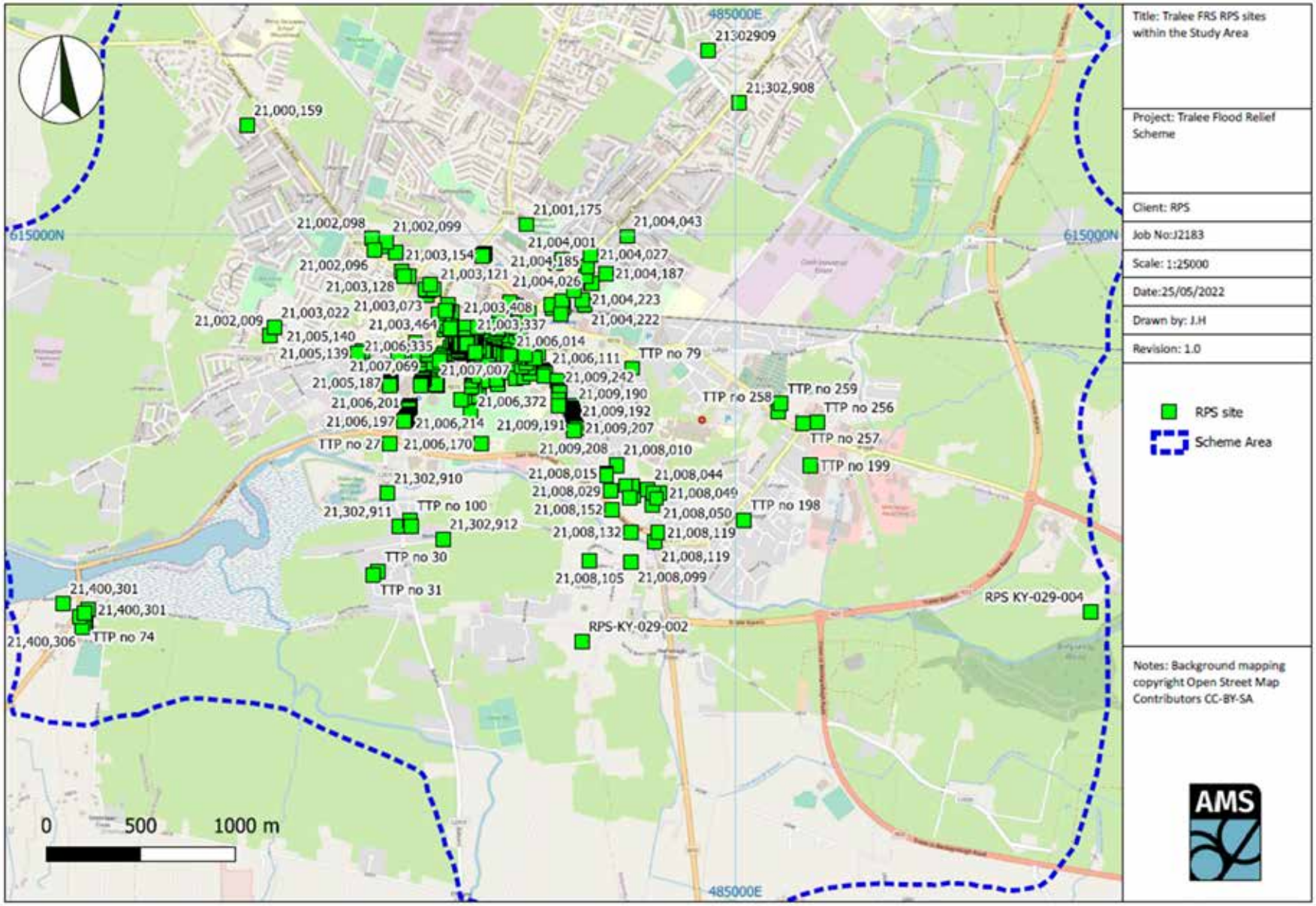


Figure 11-3: NIAH sites within the Scheme Area

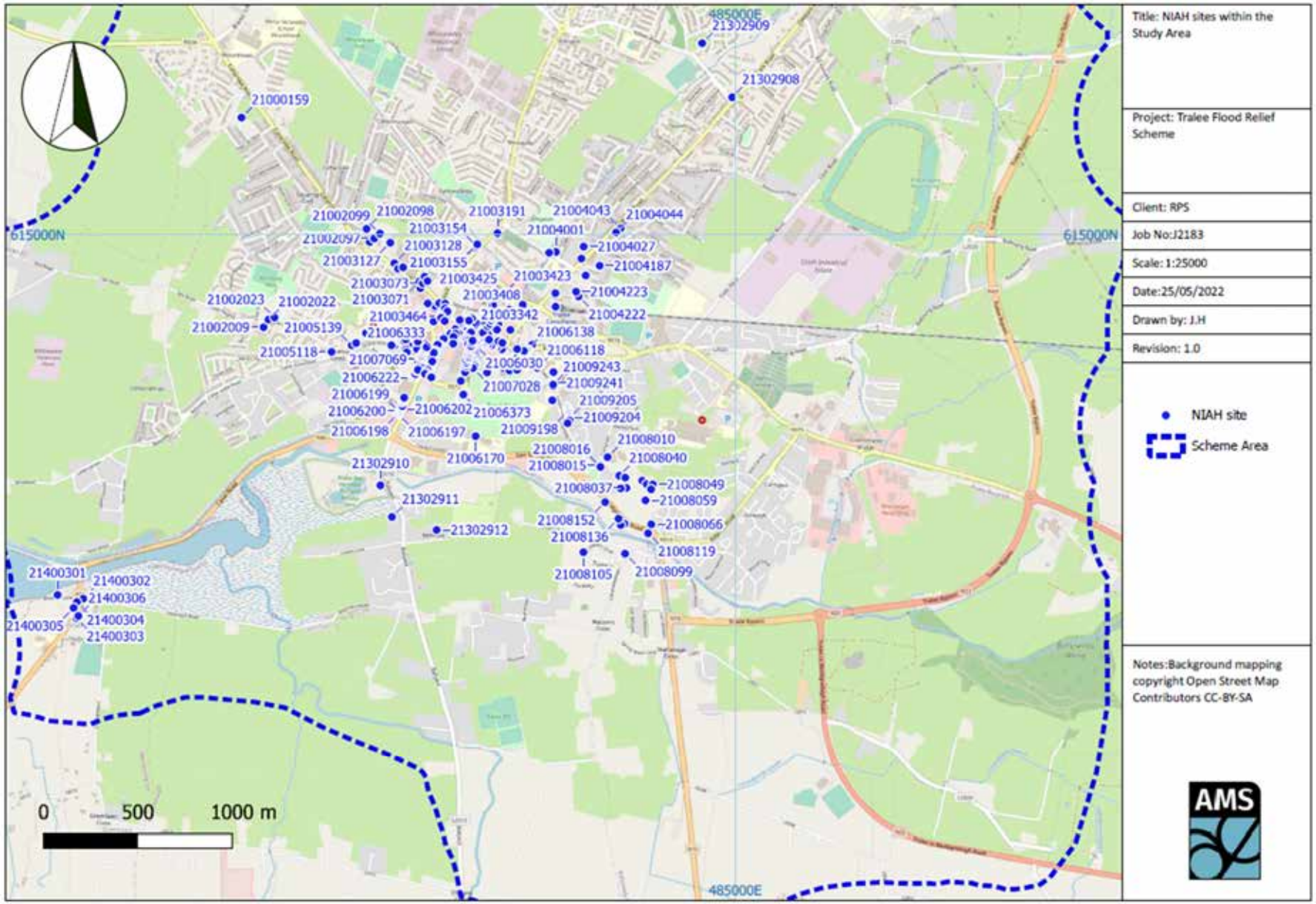
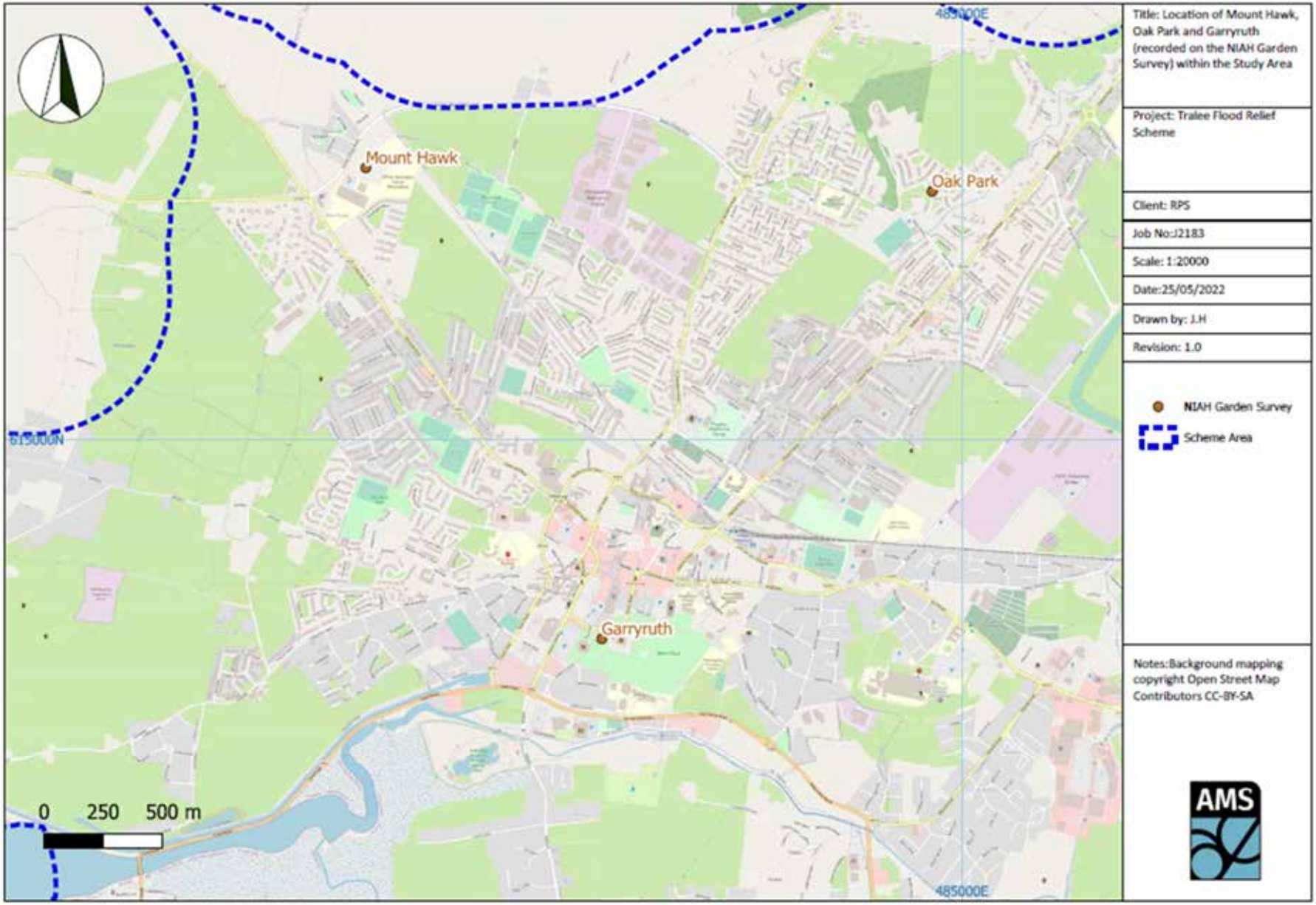


Figure 11-4: Location of Mount Hawk, Oak Park and Garryruth (recorded on the NIAH Garden Survey) within the Scheme Area



11.4.1 Archaeology

There are two National Monuments within the scheme area. These comprise National Monument No. 57, a church (KY029-157001-) and ogham stone (KY029-157002-) in Ratass townland, and Tralee Walled Town[47]. There are no sites subject to a Preservation Order, or Temporary Preservation Order within the scheme area.

There are 186 archaeological sites and monuments listed in the Sites and Monuments Record (SMR) for the scheme area, which are summarised in Table 11-1, below, that are included on the Historic Environment Viewer accessible online at https://maps.archaeology.ie/HistoricEnvironment/. However, eight of these are redundant records (Table D.44).

No definitive Mesolithic or Neolithic sites are recorded from the scheme area. However, there is a possibility that a prehistoric house (Table D.1) and a megalithic structure (Table D.2) recorded from the scheme area could date to these periods, however, no specific dating is provided in the HEV inventory detail for both of these monuments.

Thirty sites are recorded within the scheme area that likely date to the Bronze Age including eleven burnt mounds (Table D.3); three burnt spreads (Table D.4); one flat cemetery (Table D.5); eight fulachtaí fia (Table D.6); three ring ditches (Table D.7); two standing stones (Table D.8).

Three ring-barrows (Table D.9), two unclassified barrows (Table D.10), one hilltop enclosure (Table D.11) and one large enclosure (Table D.12) are also recorded from the scheme area, which could date from the Bronze Age to the Iron Age.

The known and dated/datable early medieval sites consist of one cross slab (Table D.13); one ecclesiastical site (Table D.14); nine ogham stones (Table D.15); eighteen ringfort – raths (Table D.16), and three souterrains (Table D.17).

There are thirty-one medieval sites from the scheme area, which include eighteen architectural fragments (Table D.18); two armorial plaques (Table D.19); two castle – tower houses (Table D.20); two unclassified castle sites (Table D.21); two churches (Table D.22); one cross-inscribed stone (Table D.23); one historic town (Table D.24); one religious house – Dominican Friars (Table D.25); one ritual site – holy well (Table D.26) and one wall monument (Table D.27).

The evidence for post-medieval activity within the scheme area includes one font (Table D.28); one graveslab (Table D.29) and one horizontal-wheeled water mill (Table D.30).

The constraints study also includes a miscellaneous series of archaeological sites and monuments, some of which are of uncertain chronology. This miscellaneous category includes one burial (Table D.31); one building (Table D.32); three unclassified cairns (Table D.33); forty-one enclosures (Table D.34); fourteen excavation sites (Table D.35); three field boundaries (Table D.36); one graveslab (Table D.37); two graveyards (Table D.38); two hut sites (Table D.39); one linear earthwork (Table D.40); four mounds (Table D.41); one pit alignment (Table D.42); one pit burial (Table D.43) and eight redundant records (Table D.44).

The Wreck Inventory of Ireland Database [48] was checked but there are no wrecks recorded within the scheme area for the scheme.

It is worth noting that the sites included above and in the tables below are known sites and monuments. Unknown sites are inevitably present and could be revealed through further desktop research (e.g. LiDAR, cartographic analysis, aerial and satellite imagery), and field surveys, as well as archaeological testing and monitoring.

All known archaeological sites should be avoided in the development proposals wherever possible.

[47] Although no physical evidence to confirm the presence of a town wall or town defences has been identified in Tralee Historic Town (KE029-119) to date, the historical evidence suggests the presence of town defences. Should evidence of defences be identified during the course of project works these would automatically be considered as a national monument under the National Policy on Town Defences (2008; untitled (archaeology.ie)). Town defences for Tralee have therefore been considered in this Constraints report as a national monument.

[48] Available at: https://www.archaeology.ie/underwater-archaeology/wreck-viewer [Accessed on 09/12/2021]

11.4.2 Built Heritage

The current RPS includes a list of three hundred and fifty-nine Protected Structures[49] within the scheme area (Table D.45), of which twenty-one have a numbering sequence which differs from the NIAH Registration number. The current RPS includes structures dating from the medieval period, through to late eighteenth and nineteenth centuries as well as other civic, commercial and residential structures in the town. Six Architectural Conservation Areas (ACAs) [50] are listed in the County Development Plan for Tralee (Table D.46). The draft Kerry County Development Plan 2022-2028 includes an updated Record of Protected Structures (RPS) for County Kerry which also considers country houses, vernacular structures, religious buildings, bridges and railway infrastructure. The draft RPS includes two hundred and sixty-five structures for inclusion on the RPS in the draft County Development Plan 2022-2028 (see **Figure 11.2**).

The National Inventory of Architectural Heritage (NIAH) lists two hundred and ninety-two buildings and structures from the scheme area (Table D.47) (see **Figure 11-3**).

Three historic gardens are recorded from the scheme area in the Survey of Historic Gardens and Designed Landscapes, which was also undertaken by the NIAH (Table D.48)(see **Figure 11-4**).

All grid coordinates given in this report are in Irish Transverse Mercator (ITM).

Table 11-1: Sites and Monuments Record (SMR)

Period (Provisional)	Site Type	*Total*
Prehistoric	House – prehistoric	*1*
	Megalithic structure	*1*
Bronze Age	Burnt mound	*11*
	Burnt Spread	*3*
	Flat cemetery	*1*
	Fulacht fia	*8*
	Ring ditch	*3*
	Standing stone	*2*
Bronze Age/Iron Age	Barrow – ring-barrow	*3*
	Barrow – unclassified	*2*
	Hilltop enclosure	*1*
	Enclosure – large enclosure	*1*
Early Medieval	Cross slab	*1*
	Ecclesiastical site	*1*
	Ogham stone	*9*
	Ringfort – rath	*18*
	Souterrain	*3*
Medieval	Architectural fragments	*18*

[49] Available at: https://consult.kerrycoco.ie/sites/default/files/5%20Protected%20Structures.pdf [Accessed on09/12/2021]

[50] Available at: https://consult.kerrycoco.ie/sites/default/files/7%20ACAs.pdf [Accessed on 09/12/2021]

Period (Provisional)	Site Type	Total
	Armorial plaque	2
	Castle – tower house	2
	Castle - unclassified	2
	Church	2
	Cross – cross inscribed stone	1
	Historic town	1
	Religious House – Dominican Friars	1
	Ritual site – holy well	1
	Wall monument	1
Post Medieval	Font	1
	Graveslab	1
	Water mill – horizontal-wheeled	1
Miscellaneous	Burial	1
	Building	1
	Cairn – unclassified	3
	Enclosure	41
	Excavation – miscellaneous	14
	Field boundary	3
	Graveslab	1
	Graveyard	2
	Hut sites	2
	Linear earthwork	1
	Mound	4
	Pit alignment	1
	Pit burial	1
	Redundant record	8
	Subtotal = 83	
	OVERALL TOTAL = 186	

The findings of the study are presented in Appendix D: Cultural Heritage Findings in tables D.1 – D.48.

12 LANDSCAPE AND VISUAL

12.1 Introduction

This chapter provides a review of constraints relating to landscape and townscape character alongside visual amenity. It includes a review of planning policy and guidance where relevant to the scheme area and the issues that may arise through construction and implementation of the scheme.

12.2 Methodology

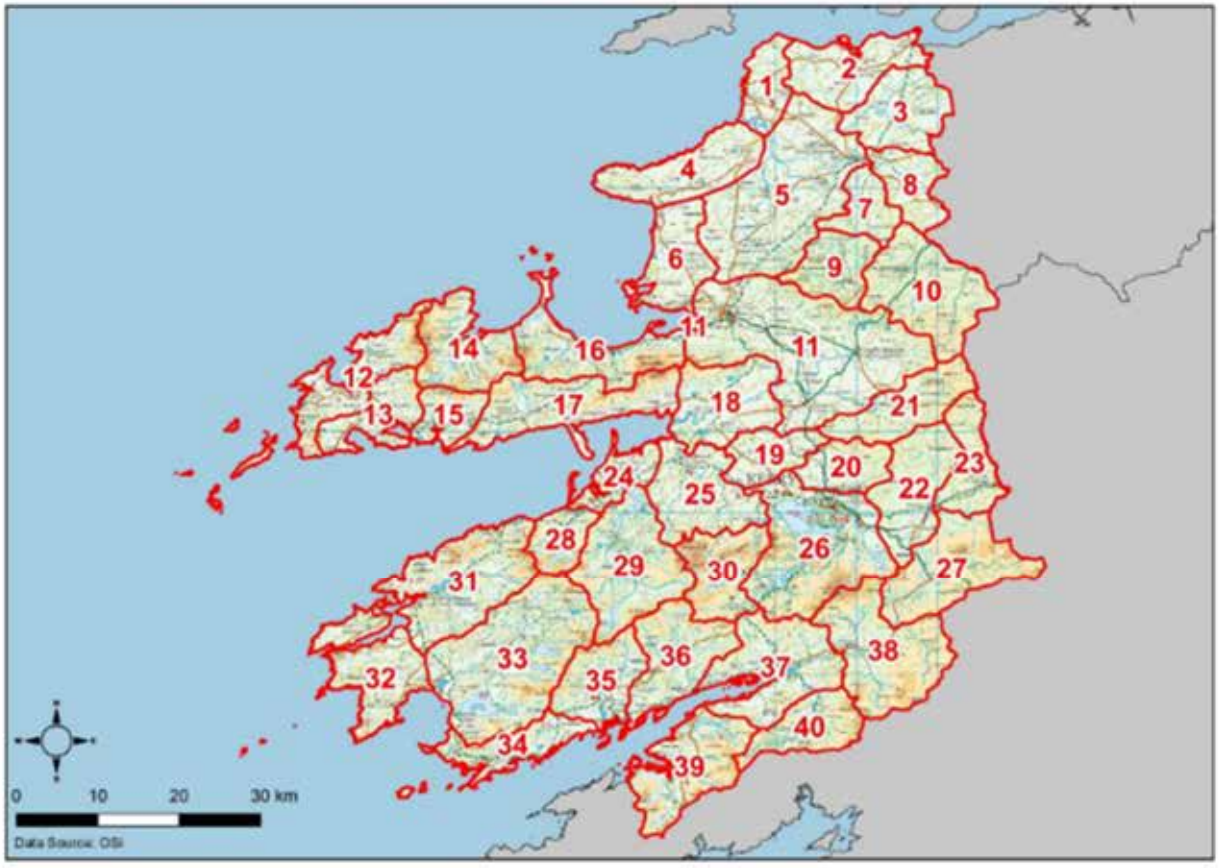
This Landscape and Visual Constraints Study includes an appraisal of international, national and local designated landscapes, county landscape character assessments and desktop analysis of topographical and other landscape mapping and datasets. This study identifies the significant features in the landscape which determine its character and includes an analysis of tourism and recreational use.

The baseline landscape and visual amenity presented below is informed by the following:

- Kerry County Development Plan 2015-2021;
- Draft Kerry County Development Plan 2022-2028;
- Tralee Municipal District Local Area Plan 2018-2024; and
- Google maps.

The Landscape Character Map of Kerry is shown in **Figure 12-1**, where the location of the scheme area is represented within character area number 11.

Figure 12-1: Landscape Character Areas identified in Draft Kerry County Development Plan 2022 - 2028



12.3 Existing Environment and Key Constraints

12.3.1 Landscape Policy at County and Local Level

The relevant landscape policies and objectives at both county and local level are proved in the following sections.

12.3.1.1 Kerry County Development Plan 2015 – 2021

12.3.1.1.1 Objectives

It is an objective of the Council to:

- ZL-1: Protect the landscape of the County as a major economic asset and an invaluable amenity which contributes to the quality of people's lives.
- ZL-2: Prepare a Landscape Character Assessment of the County following the publication of the proposed National Landscape Strategy. This assessment will include capacity studies for different forms of development and will involve consultation with adjoining local authorities.
- ZL-3: Determine the zoning of lands in rural areas having regard to the sensitivity of the landscape as well as its capacity to absorb further development.
- ZL-4: Regulate residential development in Rural Areas in accordance with the zoned designation of that area and the policies outlined in the Rural Settlement Strategy set out in Section 3.3 of the Kerry County Development Plan 2015 – 2021.
- ZL-5: Preserve the views and prospects as defined on Map Numbers 12.1, 12.1a – 12.1u. of the Kerry County Development Plan 2015 – 2021.
- ZL-6: Facilitate the sustainable development of existing viewing points as identified by Fáilte Ireland along the route of the Wild Atlantic Way, while ensuring the protection of environmental attributes in the area through the implementation of environmental protection objectives, standards and guidelines of the Kerry County Development Plan 2015 – 2021.

12.3.1.2 Draft Kerry County Development Plan 2022 - 2028

It should be noted that the Kerry County Development Plan 2022 - 2028 is currently only drafted at the time of writing and so may be subject to change.

12.3.1.2.1 Objectives

- KCDP 11-69 - Have regard to any future National Landscape Character Assessment, Regional Landscape Assessments and Landscape Character Map, and the publication of Section 28 Guidelines on Landscape Character Assessment.
- KCDP 11-70 - Protect the landscapes of the County as a major economic asset and an invaluable amenity which contributes to the quality of people's lives.
- KCDP 11-71 - Protect the landscapes of the County by ensuring that any new developments do not detrimentally impact on the character, integrity, distinctiveness or scenic value of their area. Any development which could unduly impact upon such landscapes will not be permitted.

12.3.1.3 Baseline Landscape Character Areas and Areas of High Landscape Sensitivity or Value

Figure 12-1 shows the overall landscape character types within County Mayo. The location of the scheme area is represented within character area number 11 – Tralee and Castleisland.

This character area is 341.52km² and includes:

- 28 Protected Structures;
- 16 National Inventory of Architectural Heritage (NIAH) Structures;
- 1,200 Record of Monuments and Places (RMP); and
- 6 Geological Heritage Sites.

Appendix 7 of the Draft Kerry County Development Plan 2022-2028 describes the area as follows:

Area Description:

The northern and eastern boundary is formed by the edge of the Stack's Mountains and includes Ballincollig Hill, Knight's Mountain, Crinny Mountain and Mount Eagle as you head further east. The western boundary is formed by the Slieve Mish Mountains and Tralee Bay.

Context:

This area because of its size forms borders with a number of other areas which it may affect the character of. There are similarities in terms of the landscape between these areas. Wind turbines in other areas are visible.

Sensitivity = Medium

Scale:

This area is surrounded by a ridge of mountains, but the remainder of the area is a very wide river valley. The landscape therefore is open as a result. As the area is large and mostly flat, it results in the landscape having a greater ability to relate to development.

Sensitivity = Low / Medium

Landform:

The Slieve Mish Mountains are a distinctive landmark in close proximity to Tralee Bay. The flat part of the area contains a number of rivers with the ridge of high ground surrounding the area enclosing the lower area.

Sensitivity = Medium

Landcover:

In general pasture covers most of the area. Around the edges other forms of landcover are found such as coniferous forestry on the northern and eastern edges. Peat bog is also found on these edges with some bog also found low lying in the centre of the area. Other landcover types of note include the airport, mineral extraction site and sports and leisure facilities. The field pattern is varied.

Sensitivity = Low / Medium

Built Environment:

This area contains the towns of Tralee and Castleisland. Outside of these towns rural housing is densely dispersed across the area. There are a number of quarries in the area. Both the 220kv and 110kv transmission lines cross the area. Wind turbines (24) can also be found in the northern part of the area.

Sensitivity = Medium / High

Perceptual Qualities:

This is a farming landscape which has been subject to long term modification.

Sensitivity = Low / Medium

Visual Amenity:

Surrounding most of the area is high ground from which there are views down into the area and across it. Similarly from the lower parts of the area there are views upwards.

Sensitivity = Medium / High

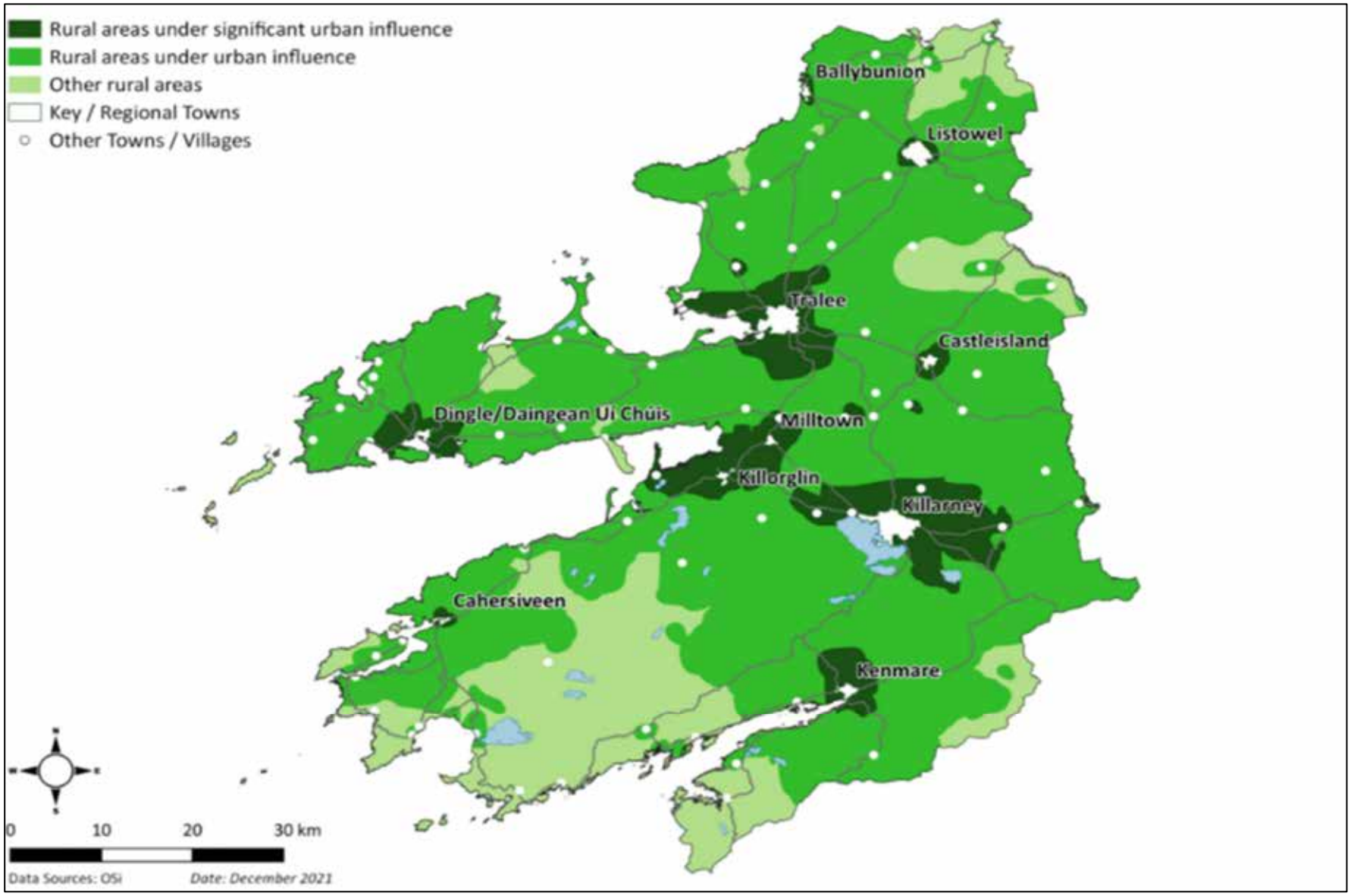
Landscape Values:

The Slieve Mish and Mount Eagle mountains are designated as Secondary Special Amenity in the Kerry County Development Plan 2015-2021. Views & prospects are found on the N21, N22 and in the Slieve Mish area. There are two archaeological landscapes listed in the Kerry County Development Plan 2015-2021 found in this area. The sides of the valley provide a setting for the area, a landscape designation could therefore be considered here. The Slieve Mish Mountains and their designation could also be considered. There are views across the area from the N70 and the R577 where views & prospects could be considered.

Sensitivity = Medium

Overall Sensitivity = Medium

Figure 12-2: Rural Area Types identified in the Draft Kerry County Development Plan 2022- 2028



The scheme area is a key / regional town, surrounded by rural areas under significant urban influence, as indicated in **Figure 12-2**.

The Rural Area types have been identified in the Core Strategy in the County Development Plan 2015-2021. According to the Tralee Municipal District Local Area Plan 2018-2024, the Municipal District Area is generally characterised by both rural areas under strong urban influence and stronger rural areas. The eastern part of the district is a structurally weak area. The environs and rural areas surrounding Tralee are under strong urban influence. The current level and pattern of development in these rural areas is unsustainable. The cumulative impact of development in the countryside has the potential to reduce its value as a regional asset by damaging the landscape, water quality, biodiversity interests and to create additional and unnecessary problems for the supply of infrastructure and services and to increase car dependency and high energy use.

The County Development Plan acknowledges that there is a need to maintain and strengthen rural communities throughout the county and to provide for the needs of local people to live in their own community and, where possible, on their own lands. The Council considers that by strengthening towns and villages, improving the services they provide and by making them more attractive places to live, that people will be attracted to these settlements. There are people who will still need to be accommodated in rural areas and therefore a distinction is made between housing, which is 'urban-generated' and housing, which is 'rural generated'. The Council will endeavour to accommodate genuine rural-generated housing in the area it arises and to accommodate urban generated housing within the development boundary of all towns and villages in accordance with Chapter 3, Settlement Strategy, of the Kerry County Development Plan 2015-2021.

12.3.1.4 Designations

According to the Draft Kerry County Development Plan 2022- 2028, in the preparation of landscape designations for the County, the Planning Authority has had regard to the Landscape Review of County Kerry which outlines the quality of a landscape itself, but also the level of existing development and the ability of the landscape to absorb further development without altering it to an unacceptable degree.

Designations are not wholly dependent on a hierarchy of the quality of landscapes. Designations also reflect the importance of a landscape to the overall amenity of a locality and its importance to communities within these areas.

There are two landscape designations for the county.

- Visually Sensitive Areas; and
- Rural General.

It is important that development in all areas be integrated into its surroundings in order to minimise the effect on the landscape and to maximise the potential for development. Development in areas outside of designated areas, should, in their designs take account of the topography, vegetation, existing boundaries and features of the area.

Permission will not be granted for development which cannot be integrated into its surroundings.

12.3.1.5 Views and Sensitive Receptors

At a county level, visually sensitive landscape areas comprise the outstanding landscapes throughout the County which are sensitive to alteration. Rugged mountain ranges, spectacular coastal vistas and unspoilt wilderness areas are some of the features within this designation.

These areas are particularly sensitive to development. In these areas, development will only be considered subject to satisfactory integration into the landscape and compliance with the proper planning and sustainable development of the area.

The County enjoys both a national and international reputation for its scenic beauty. It is imperative in order to maintain the natural beauty and character of the County, that these areas be protected.

Six Architectural Conservation Areas (ACAs) are listed in the County Development Plan for Tralee. The draft Kerry County Development Plan 2022-2028 includes an updated Record of Protected Structures (RPS) for County Kerry which also considers country houses, vernacular structures, religious buildings,

bridges and railway infrastructure. The draft RPS includes two hundred and sixty-five structures for inclusion on the RPS in the draft County Development Plan 2022-2028.

At a local level, there are six Architectural Conservation Area (ACA) within the Tralee town boundary with six protected structures. These are as follows:

- Catherina Cottages;
- Edward Street, Ashe Street, Castle Street;
- Holy Cross Dominican Church, Day Place, Godfrey Place, Prince's Quay;
- Rock Street, Ashe Street;
- Urban Terrace, Rock Street; and
- Town Park/Denny Street/ Saint John's Church Area, The Square & Precinct.

Any proposed development will have to take cognisance of the architectural context and address same sensitively.

Further information on ACAs is discussed in Section 11 and Appendix D.

12.3.1.6 NIAHs, Gardens, Tourist attractions

There are 292 NIAH Structures within the scheme area which are discussed in Section 11 and detailed in Table D.47 in Appendix D.

12.3.1.7 Townscape

Local Authorities must provide for the preservation of townscapes etc. through designation of ACAs. According to the Draft Kerry County Development Plan 2022-2028, there are six Tralee Architectural Conservation Areas. Any changes that materially affect the character of a protected structure will need further assessment and consideration.

Further information on ACAs is discussed in Section 11 and Appendix D.

12.4 Conclusion

Cognisance of the sensitive landscape areas present within the scheme area will be required during the option selection process in order not to significantly impact the characteristic features of the landscape character areas present.

Opportunities to enhance the amenity value of the area should be explored during detailed design.

13 OTHER CONSTRAINTS

13.1 Waste Management

13.1.1 Introduction

The main objectives of a preliminary Scheme Waste Management Plan (SWMP) are as follows:

- to ensure that a framework exists in the project to enable and audit the implementation of Irish Waste Management legislation;
- to ensure that a framework exists in the project to enable the auditing of the Irish Waste Management legislation;
- to promote an assimilated approach to waste management throughout the project;
- to set out responsibilities in regard to waste management throughout the project; and,
- to provide a framework for the designers and the Principal Contractor that they will build upon and implement within their SWMP.

13.1.2 Legislative Background

13.1.2.1 European

Waste framework legislation establishes the legal structure for the prevention and management of waste. Legislation also governs reporting on general waste, waste treatment and waste capacity as sets out mandatory waste targets which can be targets for diversion, collection or treatment. The European Commission has prepared waste framework legislation to govern the broad approach and principles for meeting waste across all member states. The principal European framework legislation is:

- European Directive (2008/98/EC) on Waste (Waste Framework Directive);
- Council Decision (200/532/EC) establishing a list of wastes; and,
- Regulation (1013/2006) on the shipments of waste.

13.1.2.2 Irish Waste Management Law

The Principal Contractor (when appointed for the FRS) will be required to ensure that Irish Waste Management Law is adhered to in relation to the transport and disposal of wastes. This includes adherence to the Environmental Protection Agency Act 1992, the Waste Management Acts 1996 – 2011. Compliance with the Waste Management (Movement of Hazardous Waste) Regulations for transport of hazardous wastes by road will also be required for asbestos containing materials or contaminated soil waste which may arise from the site.

The Waste Management Acts provide for a general duty on everyone not to hold, transport, recover or dispose of waste in a manner that causes or is likely to cause environmental pollution. The Waste Management Act defines waste as something the holder of it discards, intends to discard or is required to discard.

Article 27 of the European Communities (Waste Directive) Regulations, 2011 allows an economic operator to decide, under certain circumstances, that a material is a by-product and not a waste. Decisions made by economic operators under article 27 must be notified to the EPA. After consultation with the economic operator and the relevant local authority, the EPA may determine whether the notified material is waste.

13.1.3 Waste Minimisation

The following waste minimisation measures will be implemented during the course of the construction works;

1. Facilitate recycling and appropriate disposal by on site segregation of all waste materials generated during construction into appropriate categories, including:
   - Top soil, subsoil, gravel hard-core;
   - Concrete, bricks;
   - Asphalt, tar and tar products;
   - Metals; and
   - Dry Recyclables e.g. cardboard, plastic, timber.
2. All waste assessed by the Waste Manager as 'not suitable for reuse' will be stored in skips or other suitable receptacles in a designated area of the site, to prevent cross contamination between waste streams;
3. Wherever possible, leftover materials (e.g. timer off cuts) and any suitable demolition materials will be reused on-site;
4. Uncontaminated excavation material (top-soil, sub soil, etc) will be segregated, stockpile and re-used on site in preference to importation of clean fill, where possible; and
5. Where possible, the Waste Manager will ensure that all waste leaving site will be covered.

13.1.4 Re-Use, Recycle, Recovery and Management of Waste

It is required that a duty of care in relation to the disposal of waste is executed. Facilities that accept wastes for recovery and disposal require a waste management licence from the Environmental Protection Agency (EPA). The local authorities operate a permit system for certain waste disposal and recovery activities which do not require a licence from the EPA.

The collection of waste on a commercial basis requires a waste collection permit from the National Waste Collection Permit Office. The National Waste Collection Permit Office (NWCPO) maintains a register for waste facility permits and certificates of registration issued by local authorities. It will be the responsibility of the Waste Co-ordinator to obtain a copy of the waste collectors NWCPO permit and a copy of the waste management licence for the final disposal destination.

This NWCPO permit states which wastes the waste carrier has permission to carry. Various conditions may also be attached to the waste collection permit, e.g. the lighting at night of skips in public places or only allowing the collector to work in certain geographic areas. All relevant records shall be maintained and licences checked for validity and applicability to dates of operation and wastes.

The EU Waste Code System is used for the consistent identification, classification and reporting of all wastes generated in the EU and forms the basis of both national and international waste reporting obligations. Accordingly, it is reflected in EPA licences and in permits, in waste movement/tracking systems and in official documents such as the EPA's annual National Waste Reports.

Waste generated on this construction site will be identified as hazardous, non-hazardous or inert and segregated according to its category as described in the European Waste Catalogue (EWC Codes).

Suitably sized and secure containers for each waste stream will be provided by the Principal Contractor and monitored by the Waste Co-ordinator/Manager. These will be clearly identifiable by colour and signage.

The number and size of the containers required for segregation will be agreed with waste collectors prior to commencement and reviewed during the course of the project. The principle of segregation of wastes at source is fundamental and results in managed waste streams which in turn lead to cost savings and environmental benefits. In addition the diversion of waste from landfill will create savings in the avoidance of landfill tax levy.

Waste may only be treated or disposed of at appropriately licensed facilities. The appointed contractor will be required to keep records of all waste movements. Every waste movement off site will require a waste transfer triplicate docket form with one copy to be retained on site, a copy for the transporter and a copy for the receiving facility.

The contractor will also be required to carry out spot checks on waste collectors and disposal sites. These records will be forwarded to the client on completion of the works for inclusion within the Safety File. The Waste Co-ordinator is obliged to ensure that all vehicles transferring waste for a particular haulier are listed on the NWCPO licence. For this reason it is good practice that a daily list of lorries entering and leaving the site and their registrations are recorded.

In order to prevent and minimise the generation of wastes, the contractor will be required to ensure that materials are ordered so that the timing of deliveries and storage of same is not conducive to the creation of unnecessary waste.

The contractor will be required to in conjunction with the Works Programme, show estimated delivery dates and quantities for each specific material associated with each element of the works. The contractor will review the C&D Waste Management Plan at regular site meetings at which the Waste Co-ordinator will report.

13.1.5 Summary

There will be a requirement to handle, store, remove and dispose of waste material in accordance with the relevant waste management legislation. Waste material will be generated from two sources:

- Wastes resulting from general construction on-site; i.e. waste fuels, oils from machinery, cement and concrete from required masonry works and wastewater from sanitary facilities.
- Excess excavated materials generated from general site clearance and earthwork excavations, including, where necessary, bridge abutments, as well as construction and demolition waste from proposed bridge works and other construction activities.

The nature of the wastes generated from site clearance and earthworks will generally be vegetation, topsoil, subsoil and stone. Where this material is to be stored on-site and reused it is important that it is not stored close to any watercourses or lakes. Any excavated material which is deemed unacceptable for re-use in the works will have to be removed off-site for disposal or for processing and as such may be required to be removed or disposed of under a waste permit or certificate of registration from the local authority.

It is important to ensure that correct procedures for storage and disposal of such wastes and excess materials are noted and implemented. It is important that the location of any site compounds is assessed as part of the EIAR.

13.2 CEMP

An outline Construction Environmental Management Plan (oCEMP) will be prepared during preferred option assessment. The oCEMP consolidates all the environmental mitigation measures identified within the EIAR and NIS. It also includes procedures for monitoring the effectiveness of the environmental protection measures. This will be updated (CEMP) by the Contractor following their appointment, and in advance of the commencement of construction.

A CEMP is a key tool for delivering environmental management during the construction phase. It sets out the mechanisms by which the various construction activities would be managed to comply with the relevant environmental legislation and best practice to minimise the impacts and effects on human receptors and environmental receptors.

It provides the framework for recording environmental risks and also defines the measures required to mitigate and monitor construction effects, including the mitigation measures set out in the associated supporting environmental documents and assessments. It also outlines provisions for auditing and reporting and sets out action to be taken to resolve any corrective actions arising during the course of construction. The purpose of the CEMP is to:

- record environmental risks and identify how they would be managed during the construction period;
- provide a means of identifying environmental commitments, objectives and targets;
- provide a means of monitoring and reporting performance against the objectives and targets;
- provide a framework to ensure that all parties are aware of their responsibilities;

- establish a checklist of control procedures which can then be integrated into an overall environmental management protocol;
- describe how construction activities would be undertaken and managed in accordance with the obligations of environmental legislation and policy, and the requirements of environmental regulatory authorities;
- provide detailed environmental mitigation measures for reducing the potential for environmental impacts during pre-construction and construction;
- highlights that some activities may require consents or licences;
- act as a link and main document reference for environmental issues between the design, and construction stages; and
- ensure the mitigation requirements of the associated environmental assessments (contained in supporting environmental documents for the planning application) are met.

13.3 Engineering, Physical and Cost Constraints

In determining if a flood defence scheme is to be implemented, the OPW have regard to the following broad criteria:

- the scheme must be technically feasible;
- the scheme must generally be cost beneficial (a cost benefit analysis is undertaken to determine the economic merits of the project);
- the scheme must also be environmentally compatible (an Environmental Impact Assessment Report is normally undertaken for each scheme and the scheme must satisfy the requirements of the EIAR). A Natura Impact Statement is normally prepared also in accordance with the requirements of the Habitats Directive.

13.3.1 Engineering & Physical Constraints

The first step in the environmental assessment process is the identification of environmental constraints. The Constraints Study will be primarily delivered via desk-top work and targeted field assessments by various experts. The Study will identify environmental constraints that might be relevant to, or impose restrictions on, the design and construction of the proposed flood relief scheme. The Constraints Study will be informed through consultation with statutory and non-statutory bodies, collation of background information, relevant national datasets & mapping, public information days (including feedback) and relevant information from the Engineering team & Steering Group.

Following the publication of the Environmental Constraints report, Stage 1 (Part 2) then identifies and develops a Preferred Scheme. Within this stage an assessment will be undertaken that includes; technical, geotechnical, environmental, and economic assessments, and thorough detailed hydraulic modelling of potential flood risk management options.

The technical and geotechnical assessments will consider engineering constraints including examining the buildability of measures, options for building on existing structures, the rate of seepage under any potential water retaining structures, the need for ancillary works, etc.

13.3.2 Cost Benefit Analysis

An outline cost-estimate will be prepared for the emerging engineering Scheme, comprising flood relief channel and culvert works, road raising and flood relief roads, flood protection embankment and wall works, flood over-pumping facilities, drainage works, accommodation works, and channel, embankment and maintenance works.

The direct cost for construction works will be estimated for the preferred engineering option. Pending the outcome of the options assessment process, the cost estimate will evolve as the scheme design is further developed in parallel with geotechnical investigations, environmental assessments, stakeholder engagement and public consultation.

Whole Life Costs are used in cost benefit analysis for flood relief schemes. The direct cost of construction works form part of the Whole Life Costs, along with costs such as contingency, long term operation and maintenance, land acquisition, geotechnical investigation, design and supervision, environmental and archaeological mitigation, etc.

In order for a scheme to be considered ‘Cost Beneficial’, the Economic Benefits must outweigh the Whole Life Costs of the scheme. The Benefit to Cost Ratio will be reviewed periodically if and when the scheme progresses to subsequent stages.

14 INTERACTION BETWEEN THE ENVIRONMENTAL FACTORS AND SUMMARY OF CONSTRAINTS

14.1 Interaction Between Environmental Factors

It is a requirement under of the Article 3(1)(e) of the EIA Directive that the interaction of environmental are assessed. However, in order to fully understand the potential interactions between environmental factors, detailed information on the proposed development is required. The key characteristics of the project will be important in influencing such interaction. In addition, it should also be noted that interactions may only occur at different phases of the project such as at construction stage and operational stage or time of year etc.

The matrix in **Table 14-1** shows the potential interactions between environmental factors. From the matrix below there is potential for interaction between most environmental factors. However, this will be assessed further in environmental assessments to be completed as the project progresses and the characteristics of the project are known.

Table 14-1: Interaction between Environmental Factors

Population and Human Health	✓						
Biodiversity	✓	✓					
Land, Soils, Geology and Hydrogeology	✓	✓					
Water	✓	✓	✓				
Air, Climate and Noise	✓	✓	✓	✓			
Material Assets	✓	✓	✓	✓	✓		
Cultural Heritage	✓	✓	✓	✓	✓	✓	
Landscape	✓	✓	✓	✓	✓	✓	✓

14.2 Summary of Constraints

There are some environmental constraints that need to be considered before finalising the flood relief study option. The main environmental constraints are summarised in **Table 14-2** below.

Table 14-2: Summary of Environmental Constraints

Category	Source	What is the Constraint	How should the Constraint be addressed
Legislative, Planning and Policy	EU and National Legislation National, Regional, County and Local Planning Policy	• Compliance with the Water Framework Directive, Habitats Directive, Birds Directive, Directive on the Assessment and Management of Flood Risks and the EIA Directive will create constraints on the proposed measures to varying degrees depending on the final project and location of same. • Archaeological and Cultural Heritage legislation pertaining to protected structures may constrain proposed structural works.	Throughout the various stages of the process the requirements of the relevant legislation and policy should be adhered to including the constraints, option assessment, EIA, AA etc Consultation with statutory bodies including the NPWS, IFI, OPW, National Monuments Service etc to ensure compliance with legislation.
Stakeholders Consultation	Table 3.2 lists the stakeholders contacted as part of this stage in the project and a summary of the submission received.	• In November 2021, a number of the key stakeholders to the project were identified and contacted in writing to inform them that the proposed study was being undertaken. The stakeholders were each invited to contribute observations and comments on environmental elements of the project regarding the proposed study. • Submissions from consultees may constrain the design and location of FRS measures.	All constraints, observations and comments received from these stakeholders are being considered as part of the environmental assessment of the proposed study. Stakeholder will be consulted with throughout the process using various mediums such as mailshots, PCDs, project website etc and the team will engage with stakeholders on particular elements of the design as required.
Population and Human Health	Central Statistics Office, Kerry County Development Plan (2022-2028) Tralee Municipal District Local Area Plan (2018-2024)	• Properties represent a constraint which should, where practicable, be avoided during the development of options. Residential houses generally represent a considerable constraint and avoidance of residential properties, where possible, is generally the considered best approach. Commercial properties also represent a considerable constraint and in most cases are best avoided. However, extensive properties may be able to absorb a degree of land take and ultimately benefit from	The proposed study should have consideration of the zoning objectives set out in the County Development plan. It is recommended that the location of all properties / facilities, in particular health centres and schools, within the scheme area are considered to ensure services are not interrupted. Study design should aim to be sympathetic to the existing land uses. It is necessary to ensure that the Flood Relief Study will not adversely affect the value and visual qualities of public amenities within the scheme area, and

Category	Source	What is the Constraint	How should the Constraint be addressed
		• improved flood relief infrastructure. • The FRS has the potential to impact community facilities, amenity sites and tourist attractions such as Tralee Town Park, Kerry County Museum and Blennerville Windmill etc. • Access to the River for recreational activities will need to be maintained, such as Wild Water Adventures and angling. • The current CFRAM preferred option for Tralee AFA would have a direct impact on a number of existing routes such as Canal Walk and River Lee Greenway and the following three proposed routes; Ballymullen to Ballyseedy Greenway (Part 8 in place) – Greenway planned along section of proposed embankment near Hunters wood area; The Big River Amenity Trail (Pre-Part 8) – Greenway planned along the banks of the Big River; and Ballyard to Blennerville – Greenway planned along Kearney road. • As part of the Tralee Regeneration Project there are a number of public realm projects at various stages of development which may be impacted by the proposed flood relief study for Tralee.	enhancement opportunities are implemented where appropriate.
Biodiversity	NPWS natural heritage database for designated areas and Rare and Threatened Species Database NBDC, BSBI, New Atlas of the British and Irish Flora databases	• The proximity of designated sites is a significant constraint to the proposed study. There is potential connectivity via hydrological and hydrogeological pathways to the following sites; Ballyseedy Wood SAC/ Tralee Bay Complex SPA/ Akeragh, Banna and Barrow Harbour SAC/ Magharee Islands SPA/ Magharee Islands SAC/ Tralee	Avoidance of all designated sites and important ecological features should be prioritised where possible. In the event where works located within or in proximity to designated sites and ecological features appropriate mitigation measures should be implemented to avoid or minimise disturbance. Further surveys and assessments are required for terrestrial and

Category	Source	What is the Constraint	How should the Constraint be addressed
	GeoHive online mapping EPA – water bodies and water quality, Catchments resource GSI – geology, soils and hydrogeology WFD website Status of EU Protected Habitats and Species in Ireland (NPWS, 2019a) OSI maps and orthophotography Kerry County Development Plan (2022-2028) Boundaries for catchments with confirmed or potential Freshwater Pearl Mussel (FPM) Bat Conservation Ireland's website Department of Housing, Planning, Community and Local Government Inland Fisheries Ireland BirdWatch Ireland Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation	Bay Complex SPA/ Tralee Bay Complex SPA/ Tralee Bay And Magharees Peninsula, West To Cloghane SAC/ Slieve Mish Mountains SAC/ Castlemaine Harbour SAC&SPA/ Lower River Shannon SAC/ Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA • In addition to the habitats and species protected under designated sites, there are numerous records for rare and protected species which will require further assessments for habitats and protected flora species, Wildlife Act species or species listed Annex II/IV/V of the EU Habitats Directive, as well as protected bird species under the Birds Directive and important bird assemblages that are likely to be found within the scheme area. • Water quality impacts to receiving waters such as the River Lee has the potential to significantly impact protected species/ habitats which may be present. • Non-native invasive species listed on the Third Schedule to the EC Birds and Natural Habitats Regulations 2011, as amended were recorded within the scheme area.	aquatic habitats and species protected under Wildlife Act, Annex II/IV/V of the EU Habitats Directive and Birds Directive. When designing the study, it will be necessary to ensure that movement of species between identified ecological sites are not impaired by the provision of the Flood Relief Study (i.e. fish, mammal, invertebrates etc.). Where works within important waterbodies cannot be avoided timing of works and best site practice should be incorporated into the physical design and construction of the Flood Relief Study to minimise pollution risk and alteration of hydrology The NPWS and IFI should be consulted when determining viable options for flood relief and at further stages of study development and appropriate mitigation should be determined Further surveys for non-native invasive species will be required to inform the design and to identify potential interactions with the infected sites. A management plan will also need to be prepared to ensure compliance with Regulation 49 of the 2011 Regulations

Category	Source	What is the Constraint	How should the Constraint be addressed
	Concern in Ireland 2020-2026		
Soils, Geology and hydrogeology	Geological Survey of Ireland – geology, soils and hydrogeology EPA The Irish Soil Information System Teagasc Groundwater Flooding Data Viewer GeoHive National Parks & Wildlife Service Census of Agriculture 2010	• The principal land cover types as classed by CORINE are mainly urban fabric (continuous at Tralee Town centre and discontinuous urban fabric away from the centre), industrial, commercial and transport units at Monavalley and Clash Industrial estates and Manor West Retail Park with Pasture land (agricultural areas) at the periphery of the scheme area. There are areas of land classified as coastal wetland (salt marshes) in the vicinity of the River Lee/ Tralee Bay at the southwest of the scheme area and areas classified as heterogenous agricultural areas with significant areas of natural vegetation cultivation at the southeast of the scheme area. There is some wooded areas and forestry at the southeast of the scheme area, at Ballyseedy Wood which is classified as mixed forest. Overall, forestry in the scheme area amounts to only approximately 25 ha. • The vast majority of the scheme area is comprised of the Cracoean Reef Member (CLcr) of the Cloonagh Limestone, described as unbedded calcilutite limestone and the masive unbedded limestone of the Waulsortian Limestone Formation (WA). The poorly exposed Rockfield Limestone Formation (RF) occurs as a narrow band at the centre of the scheme area separating the Waulsortian from the Cloonagh Limestone. Cherty Limestones from the Dirtoge Formation (DF) the bedrock at the northern periphery, these rocks represent the highest preserved Visean rocks. The Clare Shale Formation (CS) is present at the east of the scheme area	Ground conditions within the scheme area will be identified through geotechnical investigation during the next stages of study development. Construction associated with soft and made ground will require adherences to best practice and construction standards to avoid any potential negative impacts. Cognisance must be given to the constraints posed by the presence of the varied groundwater vulnerability areas, karstified nature of the landscape and poorly drained mineral soils of the scheme area, of which will require further assessments. Due consideration is to be given to any design and option selection process to avoid any negative adverse impacts to these receptors.

Category	Source	What is the Constraint	How should the Constraint be addressed
		separated from the Dirtoge Limestone by an unconformity. The northern periphery of the scheme area is underlain by the undifferentiated Namurian shale and sandstone rocks, these rocks outcrop in the Stacks Mountain to the northwest of the scheme area. At the southern periphery of the scheme area the Ballysteen Limestone(BA) and Lack Sandstone (LK) form the bedrock. • The scheme area is dominated largely by Moderate (M) groundwater vulnerability increasing away from the Tralee Town to areas of High (H) and Extreme vulnerability (E)- where rock is less than 3m below the surface, at the periphery of the scheme area. Areas of Extreme (X) -where rock is <1m below the surface or at surface correspond to mapped outcrops and is dominant at the southeast of the scheme area in the vicinity of Blennerville and Manor West. There is also an area of Low (L) vulnerability at the west of the scheme area where low permeability marine/ estuarine silts and clays are present adjacent to the inner area of Tralee Bay.	
Water	OSI survey vector, six inch and 'discovery' series mapping The Office of Public Works River Basin Management Plan 2018-2021 WFD national website and Water Maps viewer	• This section discusses the surface waterbodies that flow through the scheme area. Water quality data of the waterbodies associated with the scheme area is detailed in Table 7-1. The surface waterbodies found within the scheme are shown in Figure 7-1. • These will require the application of design standards and construction best practice in order to avoid degrading any surface or groundwater quality rating for the scheme area.	The design and construction methodology for the study must be such that it does not jeopardise the waterbody-specific objectives of the Water Framework Directive. The hydrology of all watercourses that might be impacted by the proposed study should be assessed to ensure that the WFD hydromorphological status is not affected by the study. The design should consider the presence of protected water resources and water dependent terrestrial ecosystems. Suitable mitigation measures should be developed for the

Category	Source	What is the Constraint	How should the Constraint be addressed
	EPA waterbody mapping	• **Tralee Bay-Feale WFD Catchment (ID 23)** - This catchment includes the area drained by the River Feale and all streams entering tidal water in Tralee Bay and between Clogher Head and Kilconly Point, Co. Kerry, draining a total area of 1,784km². The largest urban centre in the catchment is Tralee. The other main urban centres in this catchment are Listowel, Abbeyfeale and Ballybunnion. The total population of the catchment is approximately 77,832 with a population density of 44 people per km². The catchment is characterised by an inland upland area underlain by shales and sandstones with low-lying coastal area underlain by relatively pure karstified limestones and mountainous peninsular areas which are underlain by old red sandstone. • The Lee (Tralee)_030 has Poor (Q3) status and is “At risk” failing to achieve their WFD objectives while the Lee (Tralee)_040, Big River (Tralee)_010 and Pinure_010 all have a status of unassigned and their risk of failing to achieve their WFD objectives is currently under review. • Blennerville Lake East and Blennerville Lake West both have an Unassigned status, and their risk is currently under review while the Lee K Estuary has a Moderate status and is “At risk” of failing to achieve its WFD objectives. • Flood relief works have the potential impact on the biology, water quality, hydrology, and morphology of watercourses. • The scheme area for Tralee FRS is located within three drinking water (groundwater) areas, Tralee (IE_SH_G_226),	project in line with best practice measures in order to avoid negative impacts to water quality.

Category	Source	What is the Constraint	How should the Constraint be addressed
		Spa (IE_SH_G_223) and Brandon (IE_SH_G_044) shown in **Figure 7.4**. Steps will need to be taken to ensure that construction work does not impact upon the integrity and quality of this groundwater supply.	
Air, Climate and Noise	Guidelines on the information to be contained win Environmental Impact Assessment Reports (EPA Draft, 2017)'.	• The construction phase poses the greatest potential impact to air quality within the scheme area. However, these impacts will be temporary in nature and with the adherence of best practice construction measures will create minimal impact. Due to the nature of the works it is not envisaged that the operational phase will impact upon the surrounding air quality. • As the proposed study will take place in an urban environment which is already subjected to noise levels from passing traffic, it is not anticipated that the proposed study will contribute significantly to the existing noise levels, therefore the potential impacts associated with noise during the construction phase is not deemed a significant constraint provided best practice measures are implemented. • The potential impacts to biodiversity from noise, vibration and air pollution will be assessed further as the study progresses. However, impacts to ecological receptors from these pollution sources are thought to be short term and localised. • As part of the Tralee FRS there is a requirement prepare a draft SCCAP in consultation with the Climate Action Regional offices.	The study design should take into account any air, noise/vibration sensitive receptors such as schools, retirement homes and biodiversity located in proximity to works associated with the flood relief study. The FRS assessment and the draft SCCAP should determine the most robust strategy and design for short-term investment in flood risk management measures, taking account of the range of mid-to-long-term future investments that may be necessary. This will help ensure that future flood relief works are sustainable and resilient to climate change.

Category	Source	What is the Constraint	How should the Constraint be addressed
Material Assets: Non-Agricultural	EPA online mapped Licensed facilities TII Kerry County Council website EPA Waste Water Discharge License Applications	• The primary constraints within the scheme area are the utilities consisting of water supply networks, telecommunications, storm and foul sewers, electricity supply and gas pipelines. • Early consideration of how options can integrate with the existing material assets in the area is essential and will require engagement with service providers to ensure that utilities can be avoided and/ or modified to mitigate impacts.	The existing and proposed location of electricity infrastructure and other underground services in the vicinity of any proposed flood relief study to be ascertained as part of the engineering study. Consultation with Kerry County Council and utility providers at the option selection stage is recommended. It is recommended that Kerry County Council and the Transport Infrastructure Ireland be consulted in relation to any effects on the existing and proposed roads infrastructure in the scheme area from any proposed flood relief study. A Traffic Management Plan will be implemented prior to the construction work. This will include procedures for keeping the working site(s) and transport routes clean. This may be implemented by various methods but will depend on the appointed contractor e.g. wheel wash facilities and road sweeping.
Material Assets: Agricultural	Census of Agriculture, 2010 CORINE (Co-Ordinated Information on the Environment) 2018 'Google Earth' 2014 to 2018 Property Registration Authority of Ireland website	• At this stage of the project there are no details on the extent of land ownership and therefore the size of any farms is not known. However, when the imagery was compared with the land registry on the Property Registration Authority website a better understanding, from a high level, of agricultural practices and the intensity at which they may be farmed was reached. Geodirectory information shall be cross-referenced against these criteria to further identify potential agricultural constraints. • It is evident from the desk study that intensive agricultural practices are not common	At this stage of assessment, it is not anticipated that the proposed study will interact or result in any negative impacts caused to the material assets – agriculture receptors in proximity of the scheme area.

Category	Source	What is the Constraint	How should the Constraint be addressed
	Teagasc EPA Soil and Subsoil Mapping, 2006	within the scheme area. "Google Earth" was used with maps spanning 2014-2018 and "Bing Maps" with imagery dating 2021.	
Cultural Heritage	National Monuments Service (NMS) Historic Environment Viewer (HEV) Database of Irish Archaeological Excavations Sites and Monuments Record (SMR)/Record of Monuments and Places (RMP) National Inventory of Architectural Heritage (NIAH) Record of Protected Structures (RPS) Buildings of Ireland website Wreck Inventory of Ireland Database maintained by NMS Record of Protected Structures (RPS) was obtained from Kerry County Council Wreck Inventory of Ireland Database maintained by NMS	• The scheme area is host to a variety of archaeological and architectural heritage assets and there is also potential for the presence of unrecorded archaeological and architectural sites within the area. There are 186 archaeological sites and monuments listed in the SMR for the scheme area. • There are two National Monuments within the scheme area. These comprise National Monument No. 57, a church (KY029-157001-) and ogham stone (KY029-157002-) in Ratass townland, and Tralee Walled Town. There are no sites subject to a Preservation Order, or Temporary Preservation Order within the scheme area. • No definitive Mesolithic or Neolithic sites are recorded from the scheme area. However, there is a possibility that a prehistoric house (Table D.1) and a megalithic structure (Table D.2) recorded from the scheme area could date to these periods, however, no specific dating is provided in the HEV inventory detail for both of these monuments. • Thirty sites are recorded within the scheme area that likely date to the Bronze Age including eleven burnt mounds (Table D.3); three burnt spreads (Table D.4); one flat cemetery (Table D.5); eight fulachtaí fia (Table D.6); three ring ditches (Table D.7); two standing stones (Table D.8). Three ring-barrows (Table D.9), two unclassified barrows (Table D.10), one	At this stage of the project, cognisance should be taken of all recorded archaeological monuments and protected structures including National Monuments, recorded archaeological monuments and protected structures should be avoided and, in respect of recorded archaeological monuments, their zones of notifications should be allowed as a buffer zone free from development. Should this not be possible then archaeological investigations are recommended for cultural heritage that would be impacted by the study The National Monuments Service, the Architectural Advisory Unit and the Underwater Archaeological Unit of the Department of Arts, Heritage and the Gaeltacht should be consulted when determining viable options for flood relief and at further stages of study development and appropriate mitigation should be determined. Any alternatives/option design considered for the Tralee FRS and subsequent environmental impact assessment, which will involve a desk study and field walkover inspection of archaeological and built heritage receptors, and possibly a (separate) underwater archaeological survey, will ensure that known and extant cultural heritage sites and features are identified, and any potential likely impacts are measured, with mitigation measures detailed for same, as appropriate. Specific mitigation requirements to address potential 'unknowns' can only be identified as items for review once the location of works

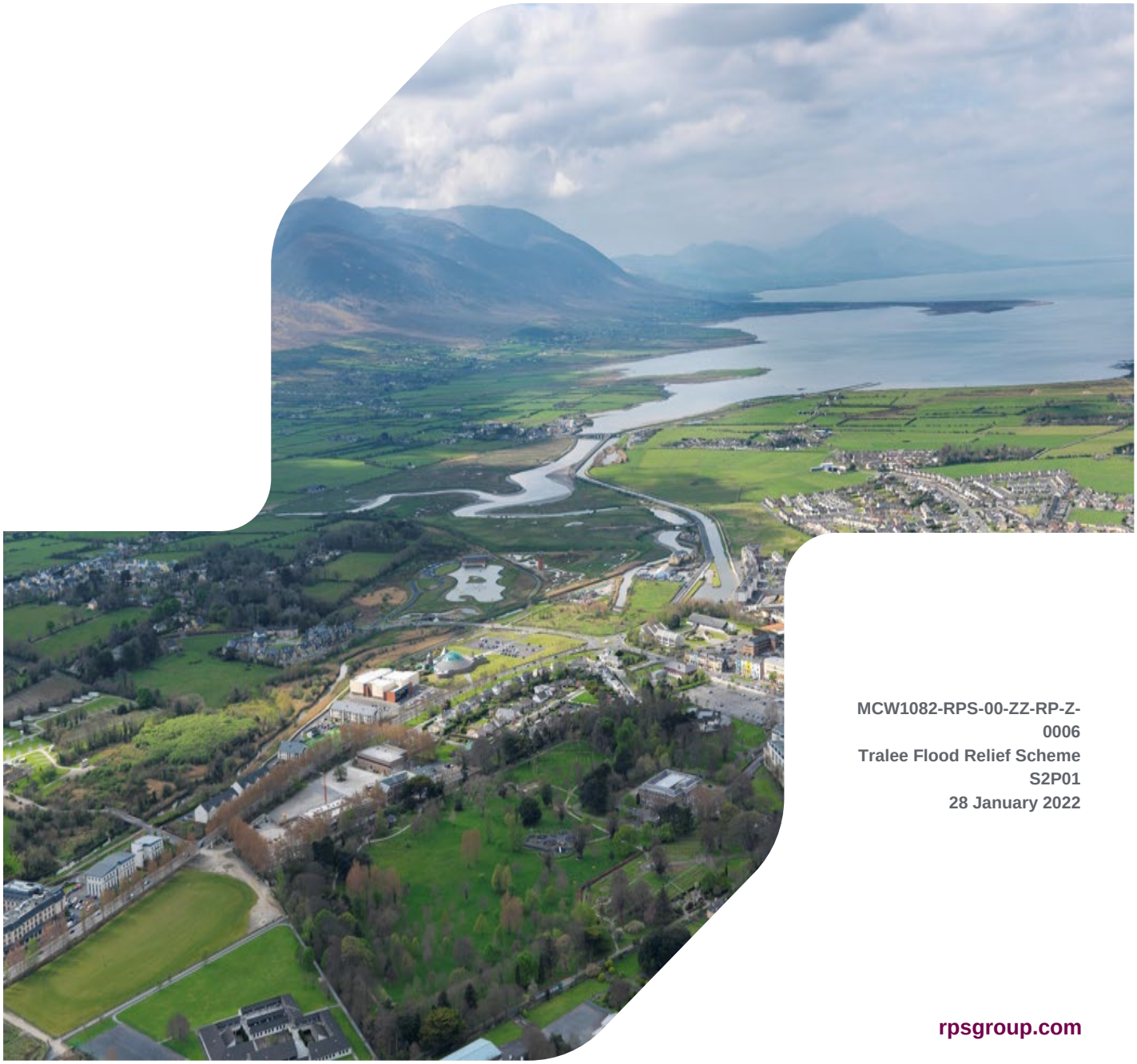
Category	Source	What is the Constraint	How should the Constraint be addressed
	List of Preservation Orders held by the NMS	hilltop enclosure (Table D.11) and one large enclosure (Table D.12) are also recorded from the scheme area, which could date from the Bronze Age to the Iron Age. • There are thirty-one medieval sites from the scheme area, as summarised in Table 11-1.	options is defined. Additional non-intrusive archaeological surveys such geophysical survey may be appropriate if a specific set of investigative questions require more detailed analyses at that stage. At some locations, further exploratory archaeological test excavation may be also considered, either to further augment additional (non-intrusive) survey indicators or, to be adopted in areas where geological bedrock or soil conditions are not conducive to geophysical survey equipment.
Landscape	Any national or other relevant strategies i.e. RSES Kerry County Development Plan 2015-2020 Draft Kerry County Development Plan 2022-2028 Tralee Municipal District Local Area Plan 2018-2024 Aerial photography Google maps	• The Rural Area types have been identified in the Core Strategy in the County Development Plan 2015-2021. According to the Tralee Municipal District Local Area Plan 2018-2024, the Municipal District Area is generally characterised by both rural areas under strong urban influence and stronger rural areas. The eastern part of the district is a structurally weak area. The environs and rural areas surrounding Tralee are under strong urban influence. The current level and pattern of development in these rural areas is unsustainable. The cumulative impact of development in the countryside has the potential to reduce its value as a regional asset by damaging the landscape, water quality, biodiversity interests and to create additional and unnecessary problems for the supply of infrastructure and services and to increase car dependency and high energy use.	Landscape character areas and the associated recommendations under the Kerry County Development Plan are identified in this report such that the design of the study can be empathetic to the sensitivity and value of the local landscape. Minimise disturbance to hedgerows and stone walls. Ensure protection of scenic views. Minimise impacts from adjoining landowners' views to the river in particular from amenity, cultural or tourist areas. Minimise impacts from the river to the surrounding hinterland i.e. users of the river including boating, kayaking etc. Conserve and enhance the characteristics of the landscape that are important to tourism. Where possible, enhance scenic routes, driving routes, walking routes and cycling routes. Opportunities to enhance the amenity value of the area should be explored during detailed design. The design of the study must adapt to the receiving environment in any particular location in terms of materials, form, gradient, and new vegetation.

Category	Source	What is the Constraint	How should the Constraint be addressed
Other Constraints	Waste Management Greenways Public Realm Projects	There will be a requirement to handle, store, remove and dispose of waste material in accordance with the relevant waste management legislation. Waste material will be generated from two sources: • Wastes resulting from general construction on-site; i.e. waste fuels, oils from machinery, cement and concrete from required masonry works and wastewater from sanitary facilities. • Excess excavated materials generated from general site clearance and earthwork excavations, including, where necessary, bridge abutments, as well as construction and demolition waste from proposed bridge works and other construction activities.	The nature of the wastes generated from site clearance and earthworks will generally be vegetation, topsoil, subsoil and stone. Where this material is to be stored on-site and reused it is important that it is not stored close to any watercourses or lakes. Any excavated material which is deemed unacceptable for re-use in the works will have to be removed off-site for disposal or for processing and as such may be required to be removed or disposed of under a waste permit or certificate of registration from the local authority. It is important to ensure that correct procedures for storage and disposal of wastes and excess materials are noted and implemented. That the location of a site compound is established. An outline Construction Environmental Management Plan (oCEMP) will be prepared during preferred option assessment. The oCEMP consolidates all the environmental mitigation measures identified within the ES. It also includes procedures for monitoring the effectiveness of the environmental protection measures. This will be updated (CEMP) by the Contractor following their appointment, and in advance of the commencement of construction.

Appendix A
Consultation Report

TRALEE FLOOD RELIEF SCHEME

Public Consultation Report



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Tralee Flood Relief Scheme
S2P01
28 January 2022

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
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Prepared by:

RPS

Prepared for:

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1 INTRODUCTION

Tralee has a long history of both coastal and fluvial flooding due to the location of the Lee Estuary and the River Lee and its tributaries which flow through the Scheme Area. This flood risk is well documented and has been subject to hydrological and hydraulic analysis, flood risk assessment and development of a preferred option as part of the Catchment Flood Risk Assessment and Management (CFRAM) 2018 Study.

In August of 2021, RPS were appointed as the engineering and environmental consultants for the Tralee Flood Relief Scheme. RPS were engaged to deliver the scheme through the statutory processes and complete detailed designs.

The objective of this project is the identification, design and submission (for planning consent) of a flood relief scheme, that is technically, socially, environmentally and economically acceptable, to alleviate the risk of flooding to the community of Tralee to a determined standard of protection. The objectives also include the procurement, management and oversight of the construction of the scheme.

At this time the Project is in Stage 1 of 5 (the stages have been listed below). A Constraints Study is currently being prepared for the project, that will highlight the environmental constraints within the Scheme Area. The information from this Public Consultation will form part of the Constraints Study.

Scheme Stages:

- **Stage I:** Identification and Development of a Preferred Scheme
- **Stage II:** Planning/Development Consent
- **Stage III:** Detailed Construction Design, Work Packages and Tenders for Contracts
- **Stage IV:** Construction
- **Stage V:** Handover of Works

Due to the ongoing Covid-19 situation, the Public Consultation Event took place online via Virtual Consultation Room (VCR). Initially, the Consultation Event was scheduled to be live for a 2-week period from the 26th of November 2021 to the 10th of December 2021, however, the closing date was subsequently changed to the 23rd of December to allow more time for the public engagement. The purpose of the event was to seek the initial public view of the scheme and any local information that could inform the constraints study. The Virtual Event was facilitated on the project website (www.floodinfo.ie/traleefrs) with public feedback being submitted via email or via online form.

Prior to the Virtual Public Consultation Event going live, a presentation was given to Kerry County Counsellors on the 01/11/2021 by members of the project team. The presentation outlined

- an introduction and summary of the project,
- an introduction to the Project Team,
- the Project Scope,
- the Key Tasks and Milestones,
- Current Activities,
- and an overview of the upcoming Public Consultation.

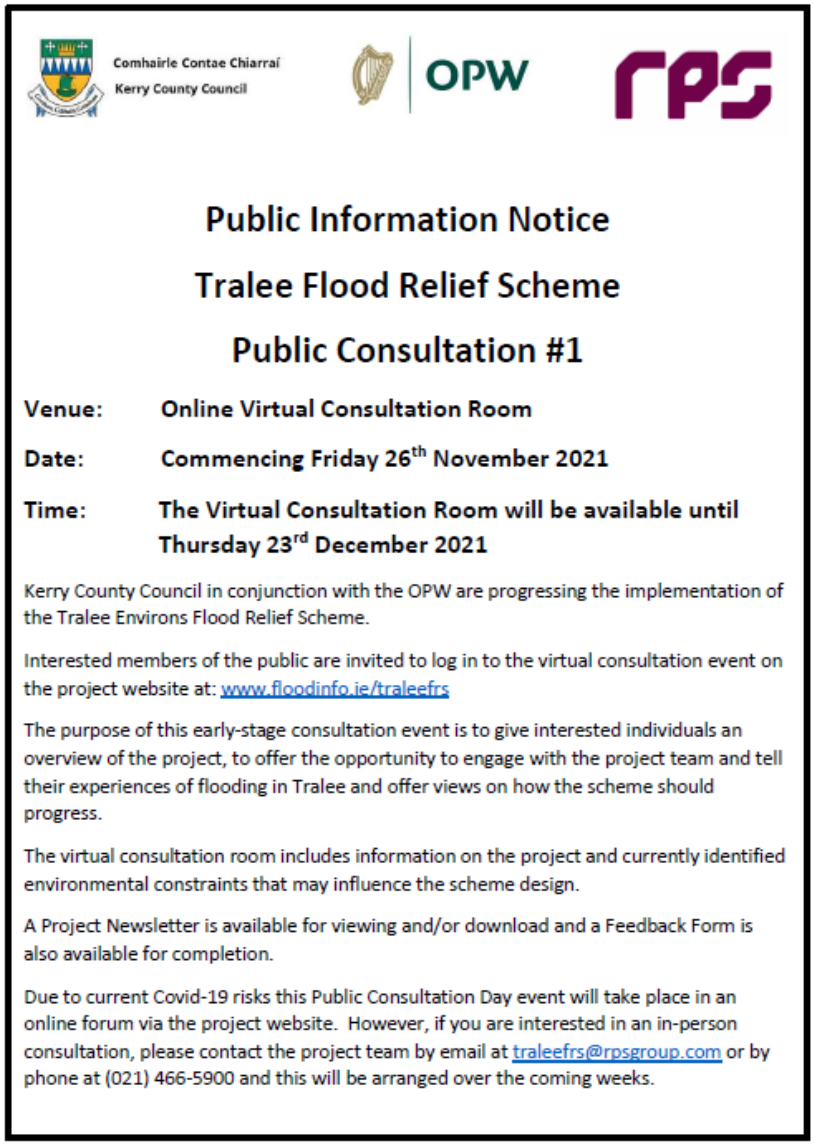
The presentation slides are included in **Appendix A**.

2 CONSULTATIONS

2.1 Virtual Public Consultation Event

The Virtual Public Consultation Event commenced on the 26th of November 2021 and was live until the 23rd of December 2021. The press release was issued on the Kerry County Council website prior to the event going live. A copy of the consultation notice is shown in **Figure 2-1** below.

Figure 2-1: Public Information Notice 26th November 2021



Comhairle Contae Chiarraí
Kerry County Council

OPW

rps

Public Information Notice

Tralee Flood Relief Scheme

Public Consultation #1

Venue: **Online Virtual Consultation Room**

Date: **Commencing Friday 26th November 2021**

Time: **The Virtual Consultation Room will be available until Thursday 23rd December 2021**

Kerry County Council in conjunction with the OPW are progressing the implementation of the Tralee Environs Flood Relief Scheme.

Interested members of the public are invited to log in to the virtual consultation event on the project website at: www.floodinfo.ie/traleefrs

The purpose of this early-stage consultation event is to give interested individuals an overview of the project, to offer the opportunity to engage with the project team and tell their experiences of flooding in Tralee and offer views on how the scheme should progress.

The virtual consultation room includes information on the project and currently identified environmental constraints that may influence the scheme design.

A Project Newsletter is available for viewing and/or download and a Feedback Form is also available for completion.

Due to current Covid-19 risks this Public Consultation Day event will take place in an online forum via the project website. However, if you are interested in an in-person consultation, please contact the project team by email at traleefrs@rpsgroup.com or by phone at (021) 466-5900 and this will be arranged over the coming weeks.

RPS developed a Virtual Consultation Room (VCR) for the event. This included numerous virtual interactive information boards and graphics.

The virtual information boards displayed the following:

- the Welcome board,
- an introduction to the CFRAM study,
- the CFRAM Flood Risk Management options,
- the Scheme/ Study Area,

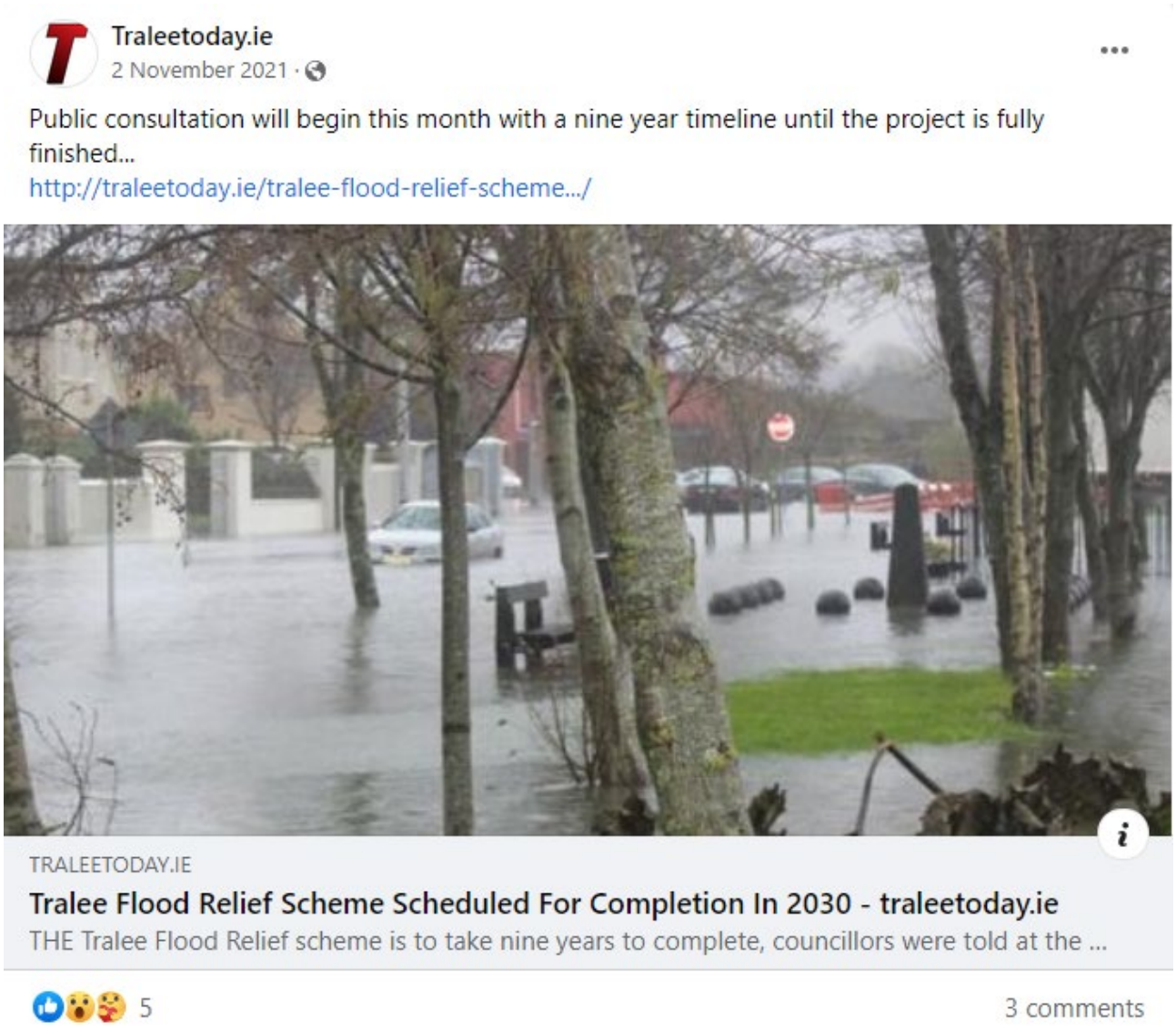
- European sites within the Scheme Area,
- Corine Land Cover,
- Natural Heritage areas,
- Watercourses within the Scheme Area,
- and the existing Embankments that are under review.

Extracts of all the information boards as outlined above from the virtual consultation room are available in **Appendix B.**

2.2 Publicity

The press release was published on the Kerry Council website and project website (www.floodinfo.ie/traleefrs) prior to the event go-live date. The event was also advertised on the Kerry County Council Facebook and twitter social media accounts on the 30th of November 2021. The Traleetoday news website and Facebook Page and the Radio Kerry News website and twitter page included advertisements of the event. Promotional material and consultation event news articles were subsequently shared by the Tralee Chamber and East Kerry Roots festival Facebook pages. Various other social medial accounts also posted about the event.

Figure 2-2: Virtual Public Consultation Event Promotion on Social Media



2.3 Consultations with Statutory and Non-Statutory Bodies

A consultation email was issued to statutory and non-statutory bodies inviting comment on the proposals. Details of the consultees, their responses to date and a sample consultation letter are provided in **Appendix C**. A brief summary of their responses is included in section 3.2.

3 ENGAGMENT

3.1 Local Engagement

As part of the opening Public Consultation Event, a total of 6 responses were received, including 4 by email, 2 by phone and 2 project questionnaires which were also submitted by email. A summary of the comments received are as follows.

- It was identified that the lines of the existing culverts shown on the maps in the virtual consultation room were incorrect - these maps were updated upon receipt of the comment.
- A member of the public mentioned that the area around Camp Ballyseedy is an area of particular concern.
- One submission identified a potential flood risk to a property located north of the railway crossing on Clash Road, Tralee. It was suggested that a possible solution to flooding in the area would be better drainage from the northern side of Clash railway crossing and a better maintenance of the road gullies etc. on the northern side of the railway crossing. The individual also suggested watching the YouTube video: “Rain from the Racecourse, source of Tralee floods?”.
- The issue of flooding in Stephens Terrace, Ballymullen was raised. A member of the public stated that there has been flooding in the area on two occasions in 2009 and 2015. The first instance was on the 19th of November 2009, severe flooding on the road resulted in 2 inches of flood water entering the basement of a house being used as an office. The second instance occurred on 5th of December 2015 during Storm Desmond, severe flooding on the road again caused approximately 1 foot of floodwater in the basement, garden sheds and garden of the individual’s house.
- An additional two comment were left under a promotional Social Media post and both of which stating that Ballymullen is an area of significant flood risk.
  - The first comment stated that they have observed consistent flooding in the Ballymullen area for the last 50 years.
  - The second poster commented that very high-water levels had been experienced at The Munster Bar Ballymullen Rd, Castlemorris Terrace.

The information provided will be subject to further assessment and consideration and will be used to inform the Environmental Constraints Study.

3.2 Key Stakeholders

The following key stakeholder provided submissions.

- Development of Housing, Local Government and Heritage (DAU),
- Transport Infrastructure Ireland (TII),
- Irish Water (IW).

The main concerns that were identified are shown in **Table 3-1**. A summary of the submissions received prior to completion of this report is included in Appendix C. Engagement with these stakeholders will continue throughout the project.

Table 3-1: Stakeholder Submission Summary

Stakeholder	Correspondence
DAU	Submission of observations/recommendations
TII	Submission of observations/recommendations
IW	Confirmation of review / report to follow

3.3 Lessons Learned and Suggested Improvements

As a result of the PCD there were a number of lessons learned including;

- Overall feedback and engagement from the public was low, this may be because this was an information gathering consultation at an early stage of the project rather than presenting flood relief options and more specific detail of the proposed scheme. The fact that it was a virtual consultation may also have impacted on some attendees accessing the event.
- Two questionnaires were submitted via email, there may be a need to change the location of the online form in the VCR to make it more visible/ accessible to encourage attendees to fill it out.
- Due to underwhelming feedback, it is difficult to assess the effectiveness and uptake of information from the Virtual Consultation presentation boards.

Improvement measures that could be considered for the next Public Consultation event, include;

- Use of analytics to record the number of visitors to the virtual room for future consultation events.
- Possible use of a presentation in the virtual room to explain the various maps.
- To facilitate additional feedback, a section in the questionnaire to provide comments on the layout of virtual PCD could be included.
- Low public engagement may be mitigated by in person consultation events.

3.4 Further Consultation

Following the closure of the Opening Consultation Event, a total of 2 requests for further consultation were received. The RPS project team are in the process of contacting those who have sent requests to arrange dates for the additional consultation. As part of the additional consultations the project team will discuss any queries, relevant information, and will fill in a questionnaire on behalf of the consultee during the consultation process.

Appendix A
Presentation to Councillors

TRALEE FLOOD RELIEF SCHEME

Kerry County Council Presentation
01/11/2021

rpsgroup.com

MAKING COMPLEX EASY

Tralee Flood Relief Scheme

Presentation Outline

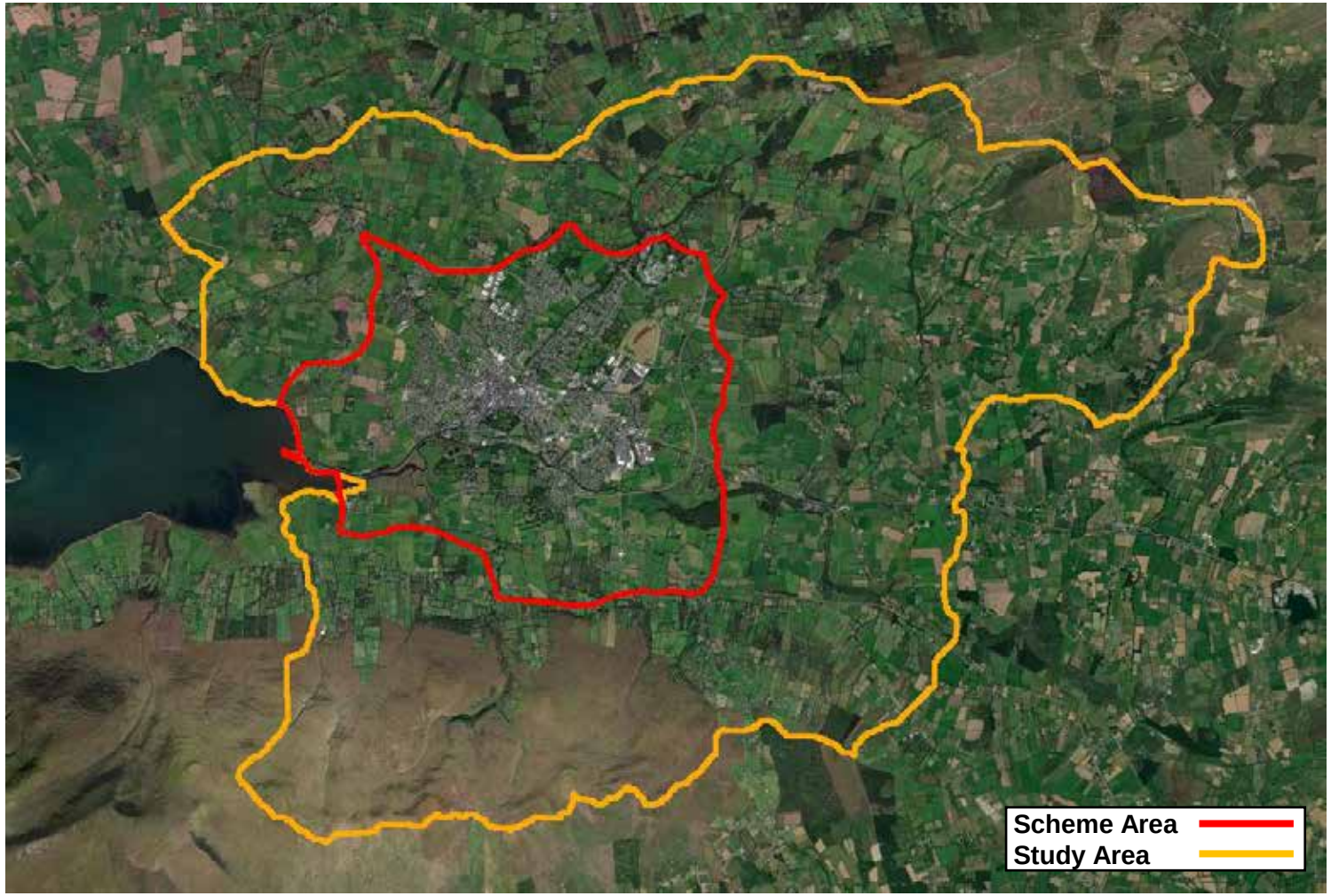
- Introduction
- Project Team
- Project Scope
- Key Tasks & Milestones
- Current Activities
- Public Consultation

Tralee Flood Relief Scheme

Introduction

Project Background

- The Scheme Area
  - Historic Flood Risk
  - Recent flood events incl. 2008, 2009 & 2011, 2014, 2015
  - Complex sources Tidal, Fluvial, Pluvial, groundwater and sewer networks
  - Major Scheme completed in 1990s reduced flood risk town centre area



Note:

- *Study Area – River Lee Sub-catchment*
- *Scheme Area – Primary area within which a Flood Relief Scheme will be provided*

Tralee Flood Relief Scheme

Project Background (contd.)

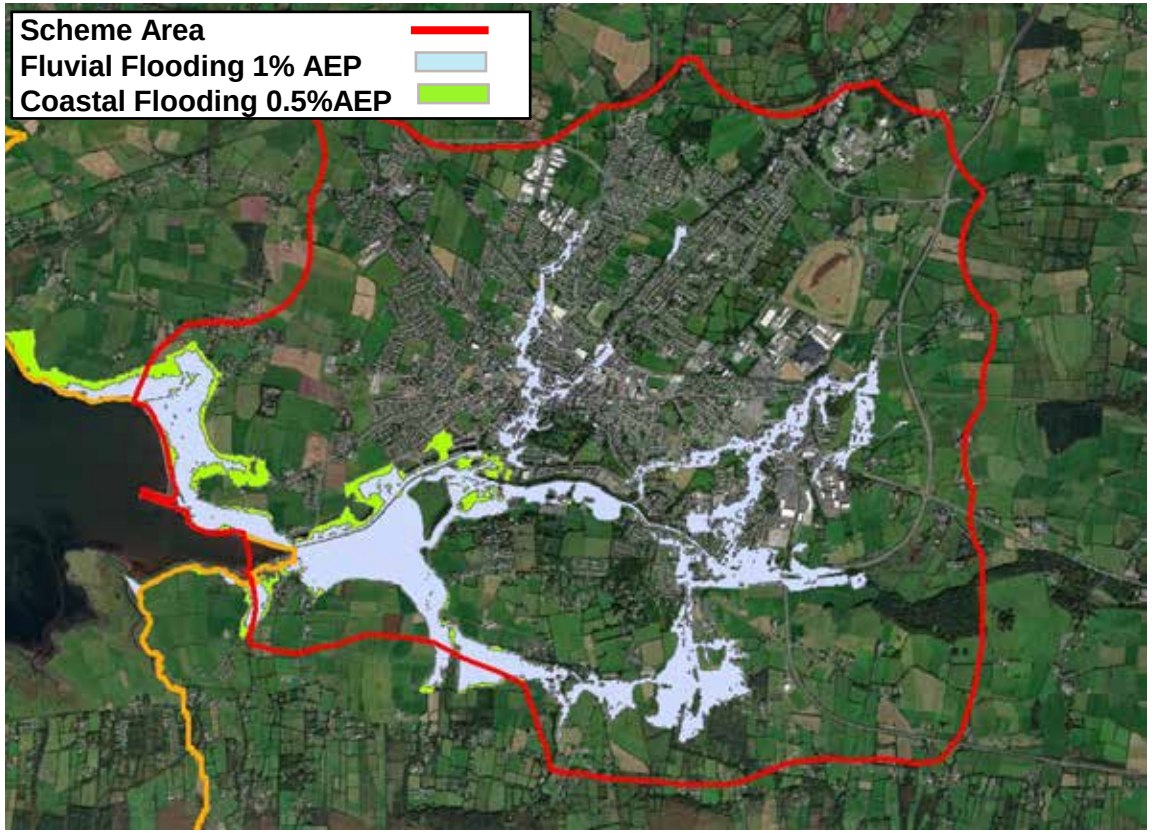
- Historic Flood Defences

Up to 10km of existing embankments along in the scheme area requiring geotechnical assessment, some of which were constructed as part of flood risk management measures in the 1990s with others being historical 19th century embankments, constructed to be used as walkways and towpaths.

- CFRAM Study

The OPW CFRAM study, completed 2018, identified flood risk within Tralee. A preliminary scheme was identified.

This FRS will build upon the outcomes of the CFRAM without being bound to its designs

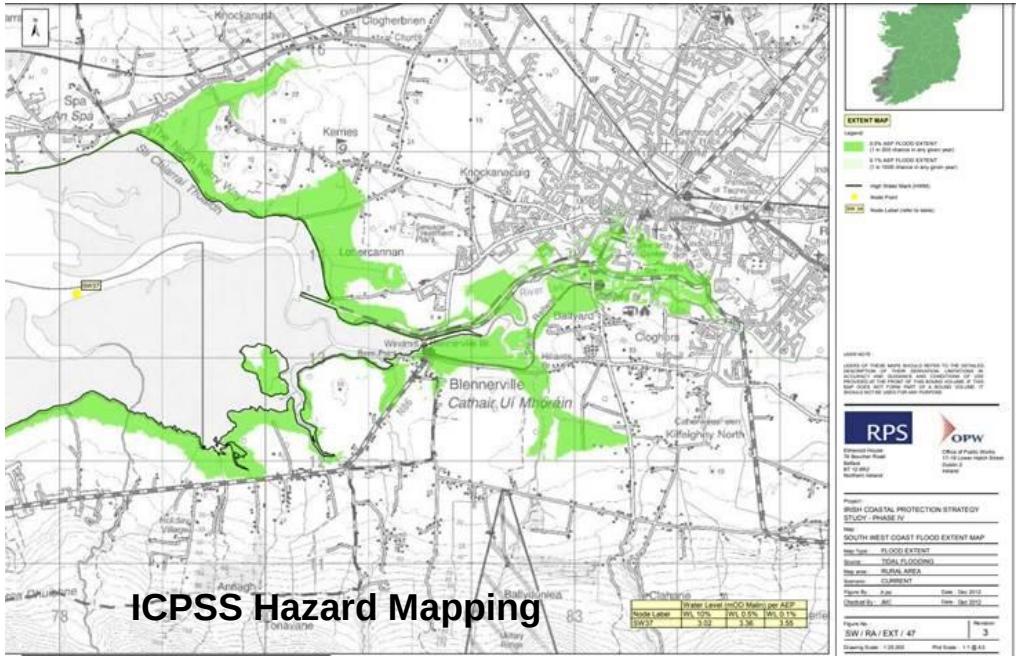


CFRAM Present Day Flood Extents (excl Climate Change)

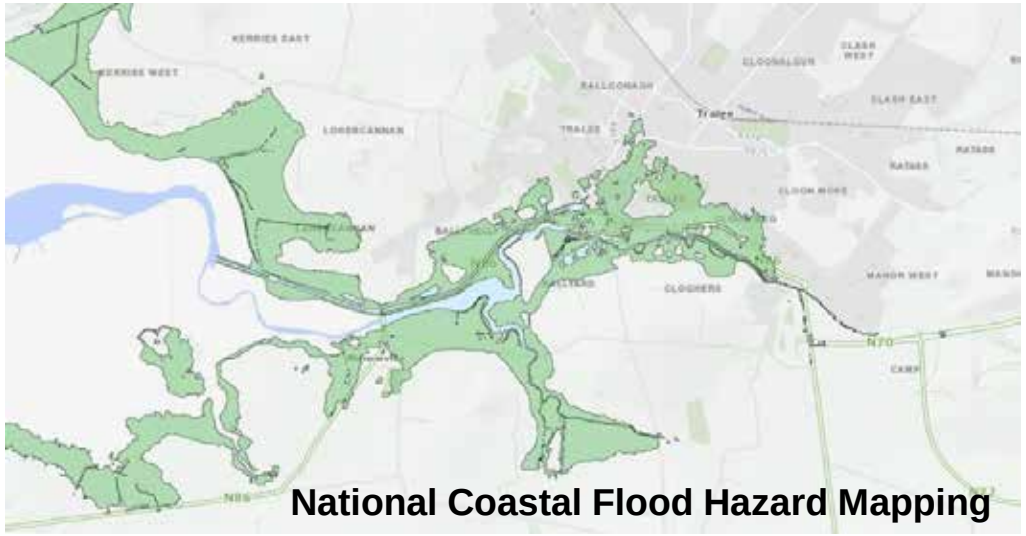
Tralee Flood Relief Scheme

Project Background (contd.)

- Other Studies undertaken by OPW include relevant to Tralee include:
  - ICPSS Phase 4 (2012)
  - National Coastal Flood Hazard Mapping
- In summary, multiple studies indicate that there is a flood risk in Tralee and this project seeks to address this.



ICPSS Hazard Mapping


National Coastal Flood Hazard Mapping

Tralee Flood Relief Scheme

Project Team

- RPS appointed by Kerry County Council – August 2021
  - The team members includes; hydrologists & hydraulic specialists, geotechnical & structural engineers & environmental scientists
- Steering Group comprising of representatives from
  - Kerry County Council
  - Office of Public Works
  - RPS

Tralee Flood Relief Scheme

Project Scope

Stage I: Options Assessment, Scheme Development & Design

- Data collection & review
- Public Consultation
- Geotechnical Review & Ground Investigations
- Environmental Assessments
- Hydrology & Hydraulic Assessment
- Preliminary Identification of Viable options
- Environmental Impact Assessment

Tralee Flood Relief Scheme

Project Scope

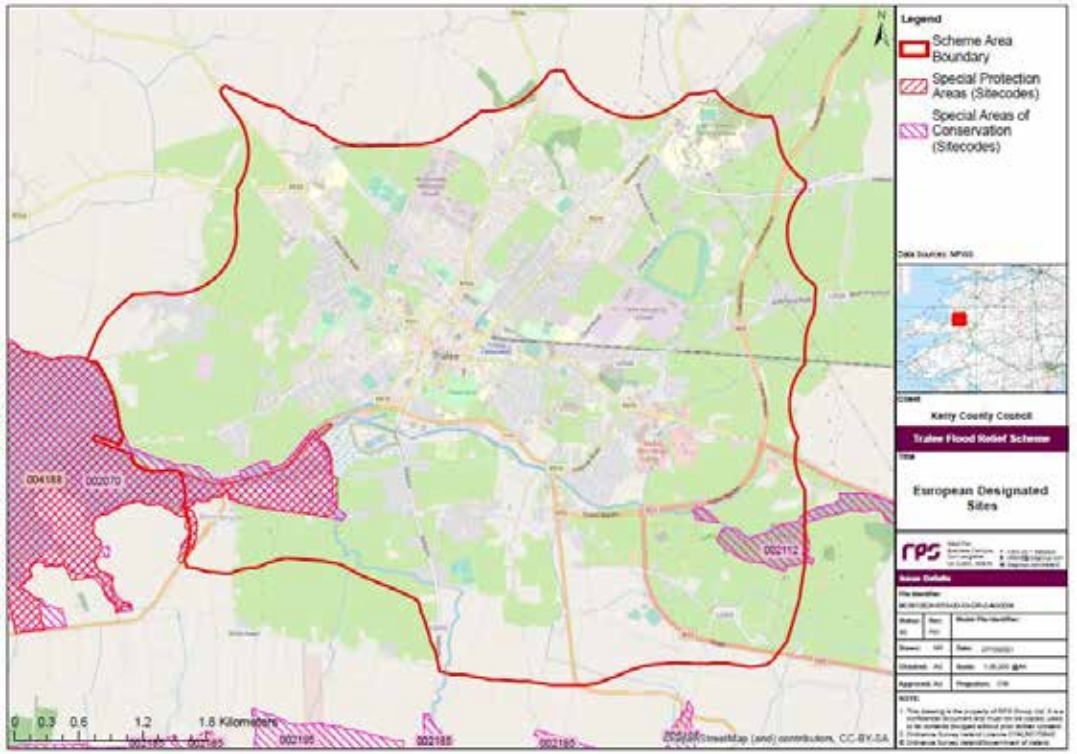
Stage II: Planning & Confirmation Process

- Public & Stakeholder Engagement
- Planning Permission
  - Planning Development Act
- Foreshore Consent
- Section 9, 47 & 50 Consent

Stage III: Detailed Construction Design and Tender

Stage IV: Construction

Stage V: Handover of Works



Tralee Flood Relief Scheme

Key Tasks & Milestones

Stage I

• Opening Public Consultation	November 2021
• Environmental Constraints	March 2022
• Hydrology Report	October 2022
• Geotechnical Study	October 2022
• Hydraulics Report	May 2023
• Emerging Scheme Consultation	May/June 2023
• Preferred Scheme Design Freeze	December 2023
• EAIR / NIS	June 2024

Tralee Flood Relief Scheme

Key Tasks & Milestones

Stage II

- Planning / Confirmation — Q4 2025

Stage III

- Detailed Design — Q2 2026
- Tender — Q4 2026

Stage IV

- Construction Completion — Q4 2029

Stage V

- Handover of Works — Q4 2030

Tralee Flood Relief Scheme

Current Activities

Geotechnical Review

- Data gathering
- Initial assessment of the existing embankments

Environmental Assessment

- Data gathering
- Initial walkover surveys & Invasive Species surveys
- Establishing environmental constraints impacting the progression of the scheme

Hydrology & Hydraulics

- Data gathering
- Survey scope development to inform model build

Tralee Flood Relief Scheme

Public Consultation #1 – November 2021

Public Consultation: Shall be to seek the initial view from the public and other interested parties in relation the options to manage the flood risk in the area, to highlight points of local importance that might constrain the design and/or viability of any potential flood alleviation measures, and to collate information on any flood events that have occurred since the CFRAM Study was undertaken.

Virtual Environment: To minimise COVID-19 risk the initial Public Consultation will take place online**.**

An online platform, hosted on the project website (https://www.floodinfo.ie) will be developed in which the public and other interested stakeholders can access proposals, interact with visualisations, share feedback and connect with the Project Team.

Questions?

Appendix B
Consultation Documentation

The Tralee Flood Relief Scheme
Welcome

Welcome to the first Public Consultation for the Tralee Flood Relief Scheme.

The public consultation will run from the 26th of November to the 10th of December.

The purpose of this consultation is to seek your view and gather information on the on the flood relief scheme.

Any feedback you could provide regarding local information, your concerns and your experiences with flooding in the scheme area would be greatly appreciated. Please complete the questionnaire provided.

If you would like an in person consultation on the scheme with a member of the design team, please send an email to traleefrs@rpsgroup.com requesting an appointment.

OPW Oifig na nOibreacha Poiblí Office of Public Works

Comhairle Contae Chiarraí
Kerry County Council

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The Tralee Flood Relief Scheme
Welcome

Contact Information:
Tralee Flood Relief Scheme
Project Manager

RPS Consulting Engineers
Innishmore, Ballincollig
Co.Cork, P31 KR68, IRL

Tel: 021 466 5900
Email: traleefrs@rpsgroup.com

Overview

Welcome to the first public consultation day for the Tralee Flood Relief Scheme. The purpose of this opening public consultation is to get your view on the key issues that the Constraints Study should address and highlight points of local importance that may aid in the design of potential flood alleviation measures.

The constraints study is undertaken during the initial stage of the project and is an exercise in collecting together as much information as possible regarding the project in order to determine what constraints (physical, legal, environmental, etc.) exist which could be impacted by possible flood relief measures and/ or which may impose constraints on the viability and/ or design of flood relief measures leading to delays in progress or influence the costs.

Background

Historically, flooding in Tralee dates to the early 20th century, with records documenting damage from floods and the inundation of lands and properties in Tralee. More recently, in September 2015 and December 2016 heavy rainfall in the region caused flood events which resulted in significant damage to properties and roads throughout the area. Currently, there are a series of existing embankments that cover stretches of land along the Estuary of the River Lee; some of these embankments were constructed as part of flood risk management measures in the 1990s with others being historical 19th century embankments.

From 2012 to 2017 the OPW undertook the National Catchment Flood Risk Assessment and Management (CFRAM) Programme, the purpose of this programme was to give a clear and comprehensive picture of flood risk in areas of potentially significant flood risk and to set out how to manage the flood risk effectively and sustainably. The (CFRAM) study report undertaken on the Tralee Bay – Feale was published in 2018 and included a Flood Risk Management Plan for Tralee. The flood relief measures identified in the CFRAM assessment for Tralee included the construction of flood walls, embankments, diversion channels, flapped outfalls, floodgates, the raising of an existing road, and the widening and/or deepening of channels along existing watercourses.

Tralee is at risk from flooding from both fluvial (river/streams/lakes) and coastal (sea/tidal/coastal) sources. With the ongoing impacts of climate change, the intensity and frequency of extreme rainfall and tidal events may cause unprecedented flood impacts on Tralee with existing defences potentially being overtopped and rendered obsolete.

Your view

Kerry County Council wish to give full consideration to all public opinions and information available during the initial stage of the project. Information will be gathered through a questionnaire which is provided in the Virtual Consultation Room.

By participating in this initial Public Consultation, sharing your comments / concerns / local knowledge and filling out the questionnaire, your information will be used to inform the key issues that are to be considered in the constraints study. Key issues such as the options to manage the flood risk in the area, the points of local importance that might constrain the design and/or viability of any potential flood alleviation measures, and the collection of information on any flood events that have occurred since the initial (2018) CFRAM Study.

OPW Oifig na nOibreacha Poiblí Office of Public Works

Comhairle Contae Chiarraí
Kerry County Council

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The CFRAM Study

CFRAM Study

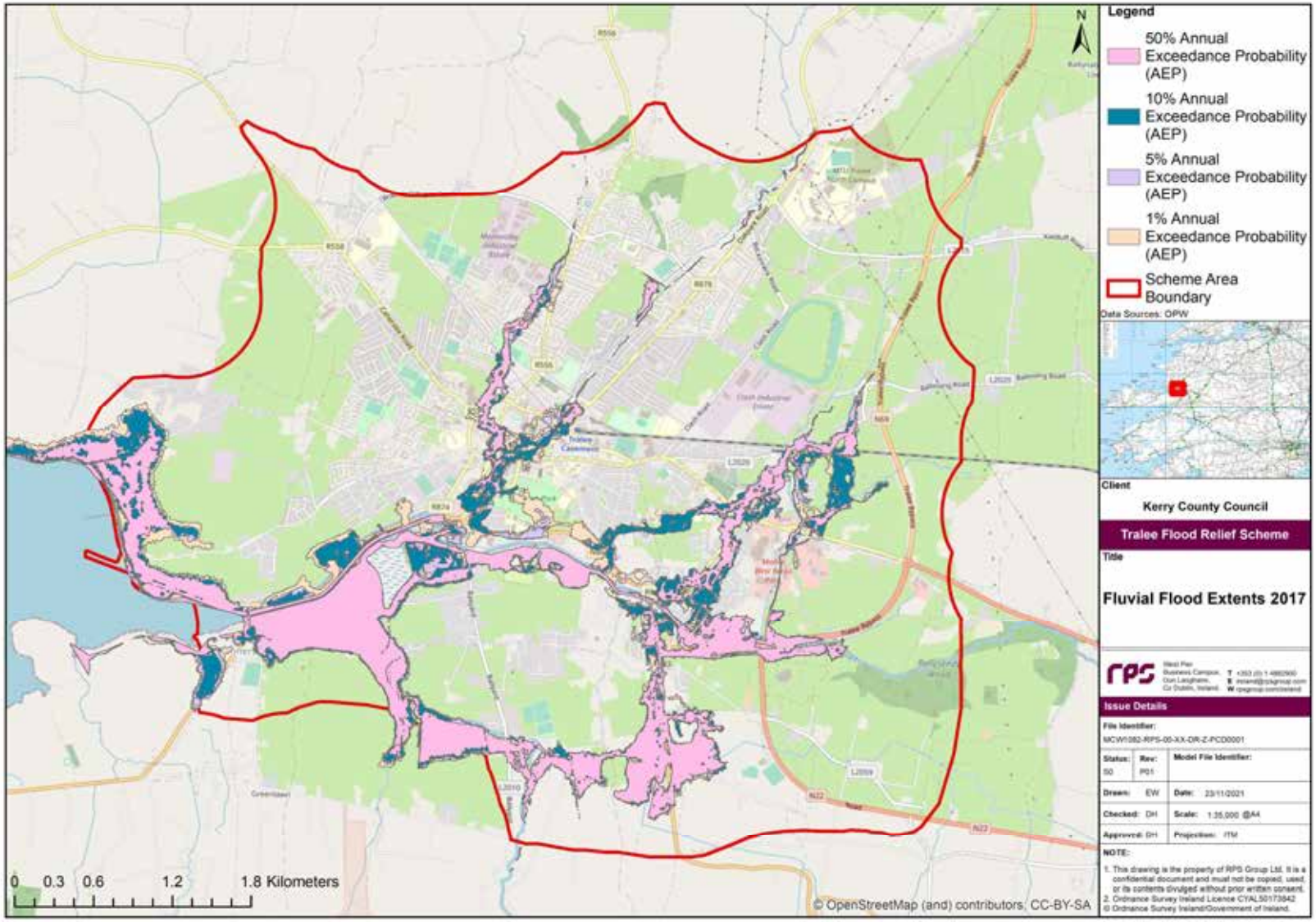
The CFRAM study concluded in 2018 and identified Tralee as an Area of Further Assessment (AFA). An area is designated as an AFA when the risks associated with flooding are considered to be potentially significant based on the CFRAM Preliminary Flood Risk Assessment.

The fluvial flood extents can be seen on the adjacent map and based on these flood extents it was recommended that certain flood defences be put in place. The defence measures were put forward in the Flood Risk Management Plan which is included in the CFRAM Study Tralee Bay-Feale, Hydrometric Area 23 (UoM23).

Refer to www.floodinfo.ie for more information on how the community of Tralee was assessed.

What next?

As an outcome from the CFRAM study, Kerry County Council and the OPW have appointed RPS Engineering Consultants to progress the development of a flood relief scheme for Tralee to the project level, and to oversee the construction of the scheme.



Tralee Fluvial Flood extents

The above map illustrates the flood extents as modelled in the 2017 CFRAM study for fluvial (stream/lake/river) sources, the extent of flooding is based Annual Exceedance Probability or AEP.

The AEP's shown are 50%, 10%, 5% and 1% scenario.

A 50% AEP is the probability of 1 flood event occurring in 2 years or a 1 in 2 year flood event.

A 10% AEP is the probability of 1 flood event occurring in 10 years or a 1 in 10 year flood event.

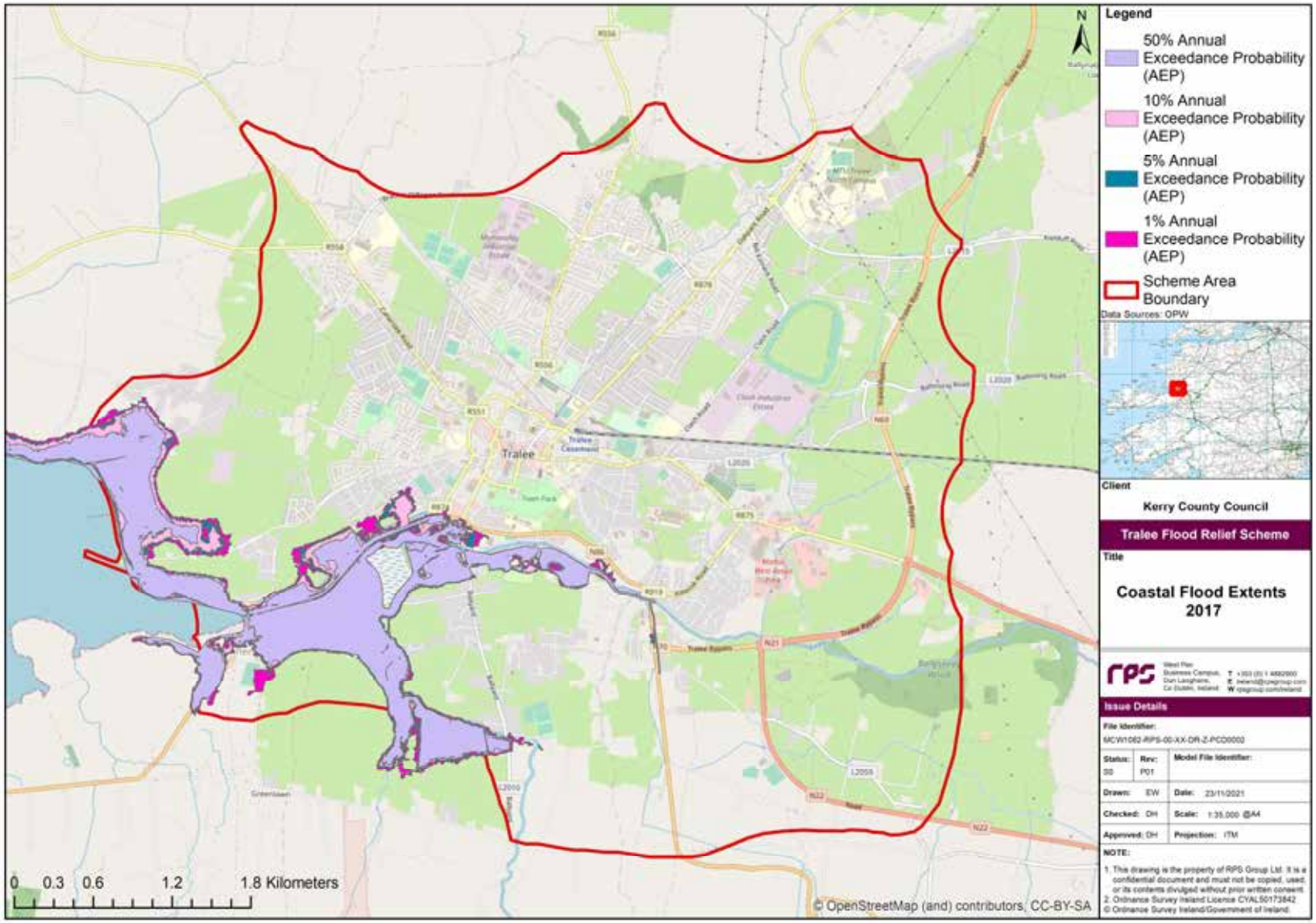
A 5% AEP is the probability of 1 flood event occurring in 20 years or a 1 in 20 year flood event.

A 1% AEP is the probability of 1 flood event occurring in 100 years or a 1 in 100 year flood event.

The CFRAM Study (cont.)

Tralee Coastal Flood extents
The adjacent map illustrates the flood extents as modelled in the 2017 CFRAM study for coastal sources, the extent of flooding is based Annual Exceedance Probability or AEP. The AEP's shown are 50%, 10%, 5% and 1% scenario. Coastal flooding in Tralee is predominantly caused by storm surges in the Lee estuary; these storm surges result in waves overtopping coastal defences and high water flows in the River Lee which cause the Lee and its tributaries to burst their banks.

What about existing flood defences?
There are a series of existing defences/embankments in Tralee. These existing embankments were primarily constructed to form towpaths and walkways and help defend agricultural land from flooding; others were constructed as part of flood relief measures in the 1990s. Currently it is unknown if these existing embankments can defend against the flood extents shown in the adjacent mapping. However, as part of the Tralee Flood Relief Scheme, detailed geotechnical surveys and analysis will be carried out to assess the stability and viability of these embankments.

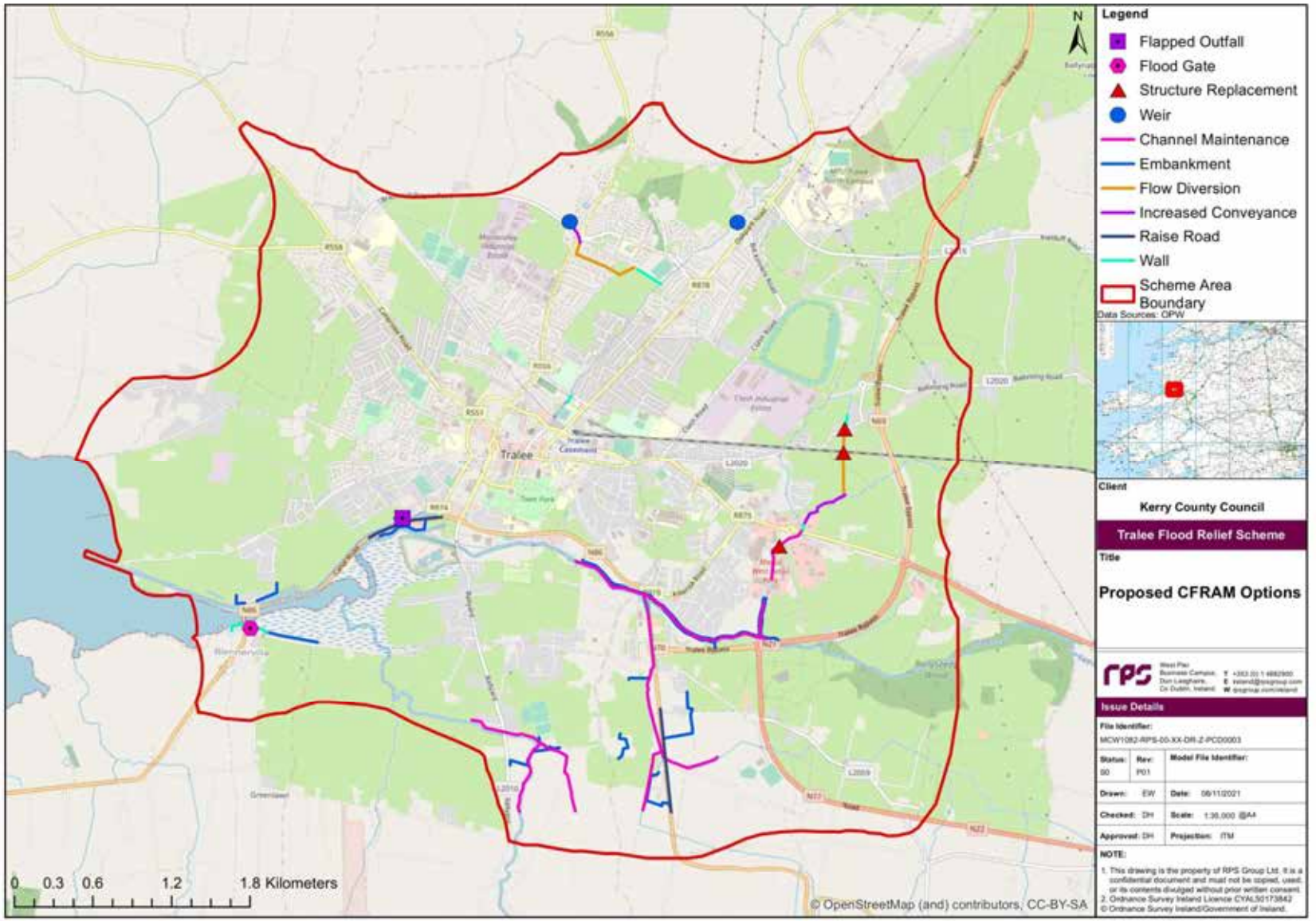


CFRAM Flood Risk Management Plan Options

The CFRAM preferred option, along with other potentially viable options, will be subject to further engineering assessment as part of the Tralee Flood relief scheme project and will be fully appraised as part of the Environmental Impact Assessment process for the scheme.

RPS are not constrained to the measures put forward in the CFRAM Flood Risk Management Plan assessment. RPS may choose to progress measures identified in the CFRAM study or consider alternative flood defence measures. The data collected and developed during the CFRAM study has been provided to RPS to help inform decision making , but RPS are not bound to the CFRAM designs

The flood defence measures put forward in CFRAM Study for Tralee relied heavily on flood protection being provided by the existing embankments. As part of Tralee Flood Relief Scheme, extensive surveys on the embankments will be undertaken to assess their viability to prevent flooding and determine any additional or alternative flood protection measures.



Scheme Area / Study Area

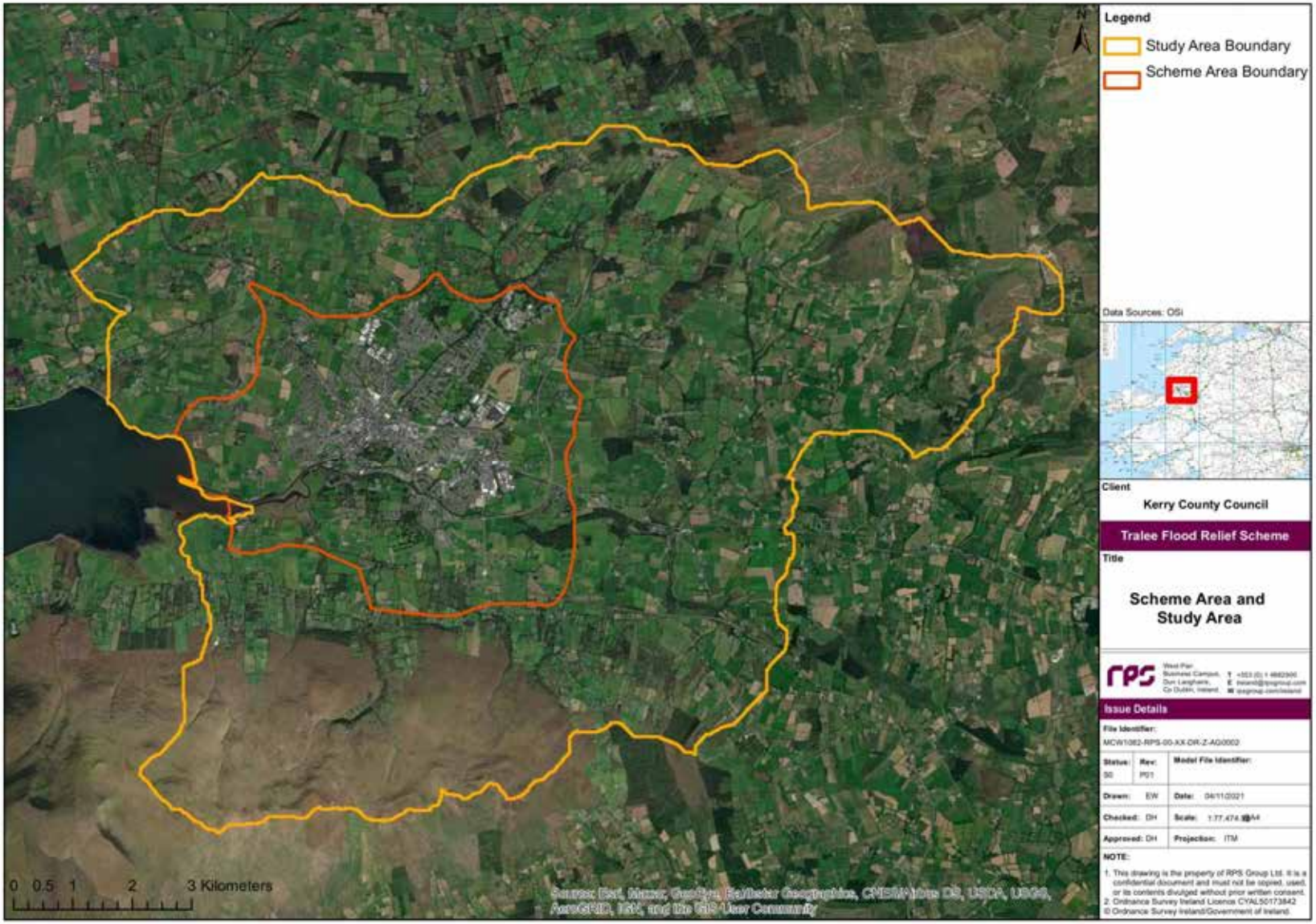
The Study Area (Lee Sub-catchment) encompasses the Town of Tralee and selected environs and contains the:

- Lengths of river channel / watercourse/estuary that have hydraulic influence on the area intended to benefit from, and be protected by, any feasible scheme.
- Full hydrological catchment areas draining to the downstream ends of those river channels/watercourses.
- Areas that require environmental assessments as part of the development of the scheme.

The Scheme Area is the area:

- within which physical works are proposed to be constructed, accessed and maintained as part of any feasible flood relief scheme;.
- Areas that are intended to benefit from, and be protected by, any such scheme;
- Lengths of river channel / watercourse upstream and downstream that are likely to be impacted hydraulically by such scheme.

Issues affecting the scheme area such as tidal effects, groundwater issues, pluvial events, and sewer network issues will be considered and assessed to inform the development of the scheme.



European Sites

In Ireland, the Natura 2000 network of European sites comprises of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)

SACs are selected for conservation under the Habitats Directive 92/43/EEC and include habitats listed in Annex I and listed species in Annex II.

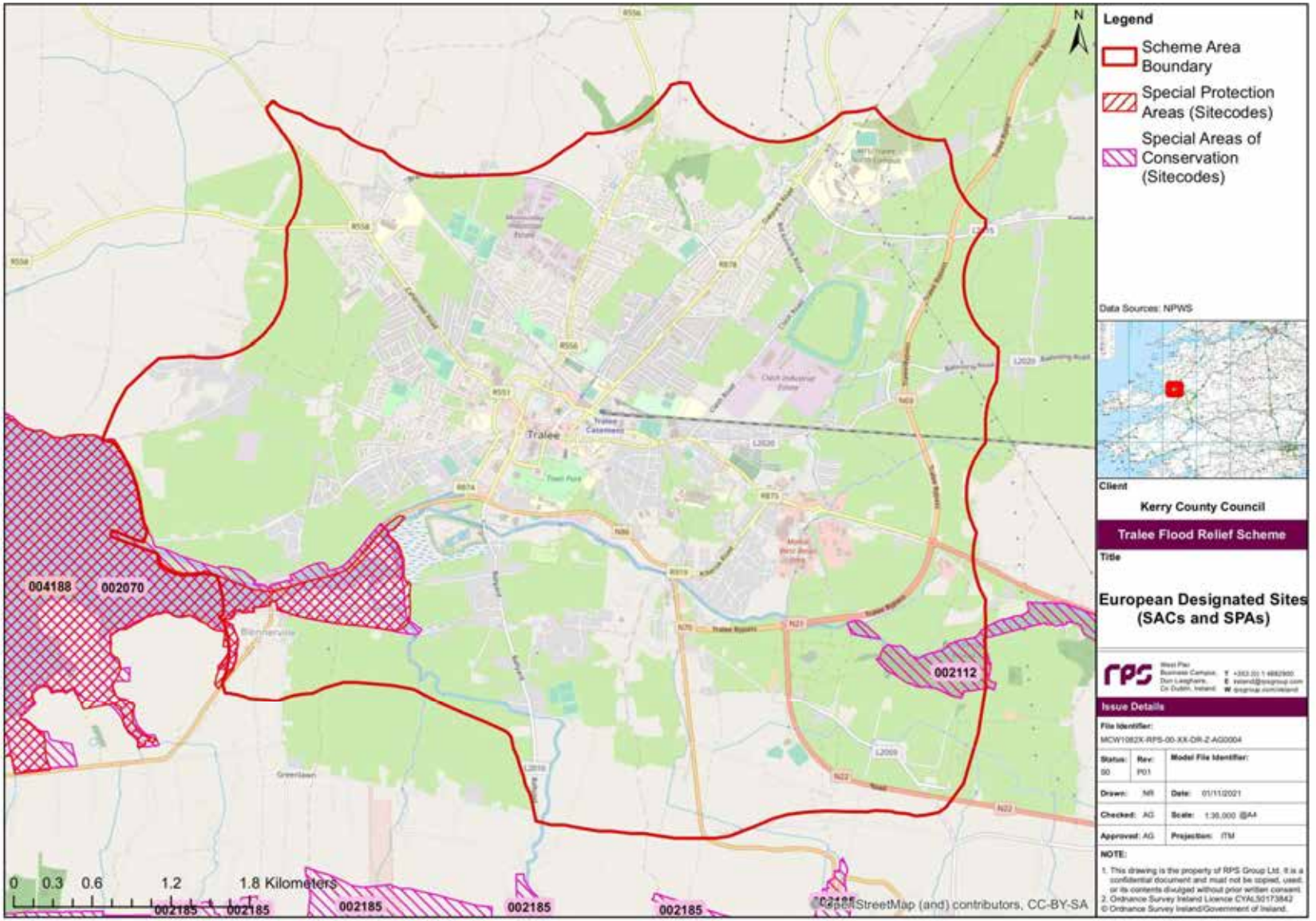
SPAs are selected for conservation under the EU Birds Directive, under which birds listed in Annex I and other migratory birds, and their habitats, are protected.

A total of 3 European sites are located within the scheme area, 2 of which are located at the estuary of the River Lee and the other is located at Ballyseedy, encompassing a stretch of the River Lee and the Ballyseedy woods. The site names and codes are listed below:

004188 – Tralee Bay Complex SPA

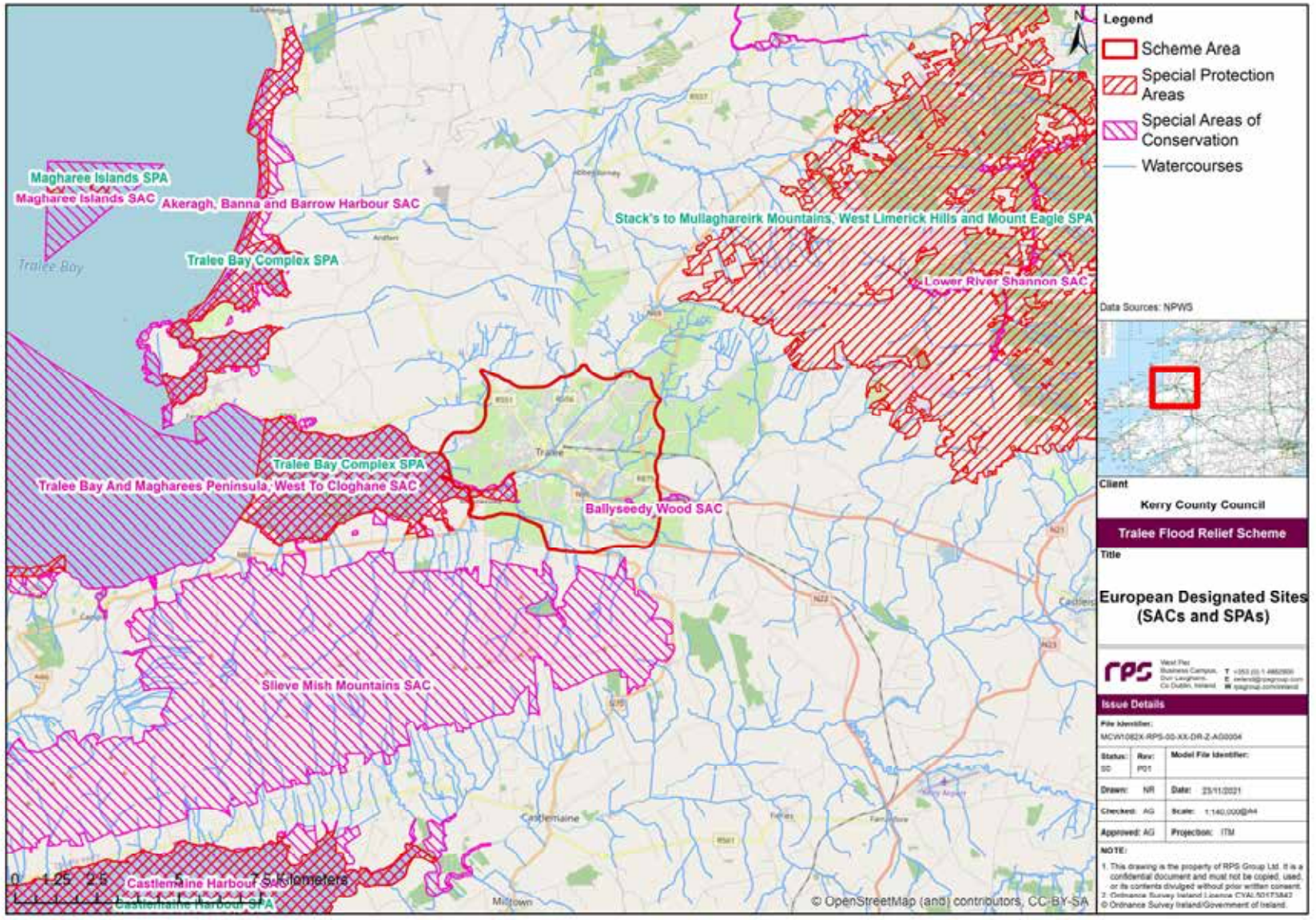
002070 – Tralee Bay And Magharees Peninsula, West To Cloghane SAC

002112 – Ballyseedy Wood SAC



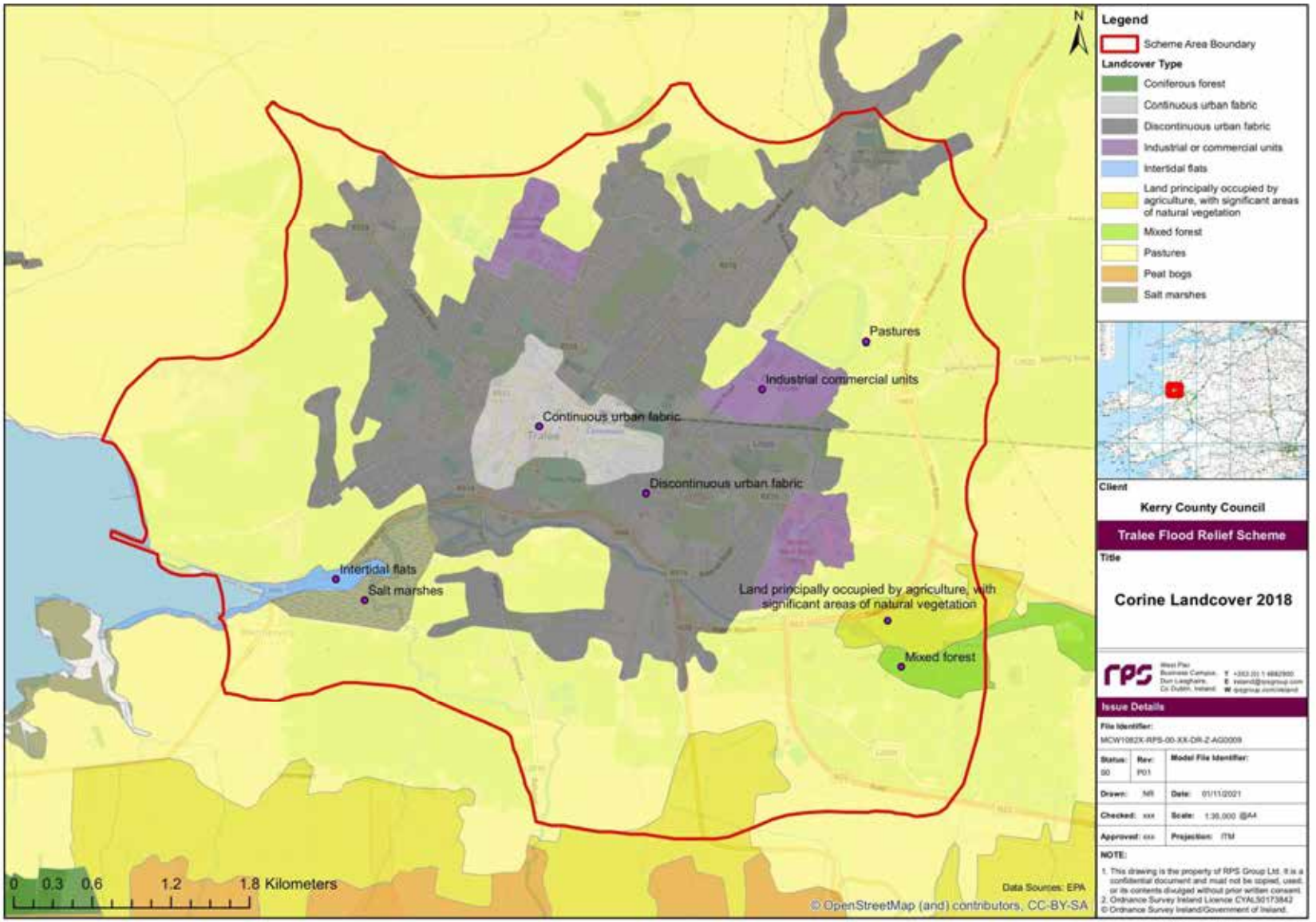
European Sites (cont.)

In the adjacent map, the European sites within the Zone of Influence (ZoI) of the proposed works are shown. The ZoI is the potential area that could be affected by the implementation of the proposed Flood Relief Scheme.



Corine Land Cover (CLC)

The CORINE (Co-Ordinated Information on the Environment) is a European programme, coordinated by the European Environment Agency (EEA) providing consistent information on land cover and land cover changes across Europe. The CORINE (2018) land cover distributions are shown across the scheme area in the adjacent map. The scheme area is primarily made up of urban/industrial fabric that is surrounded by agricultural/open space.

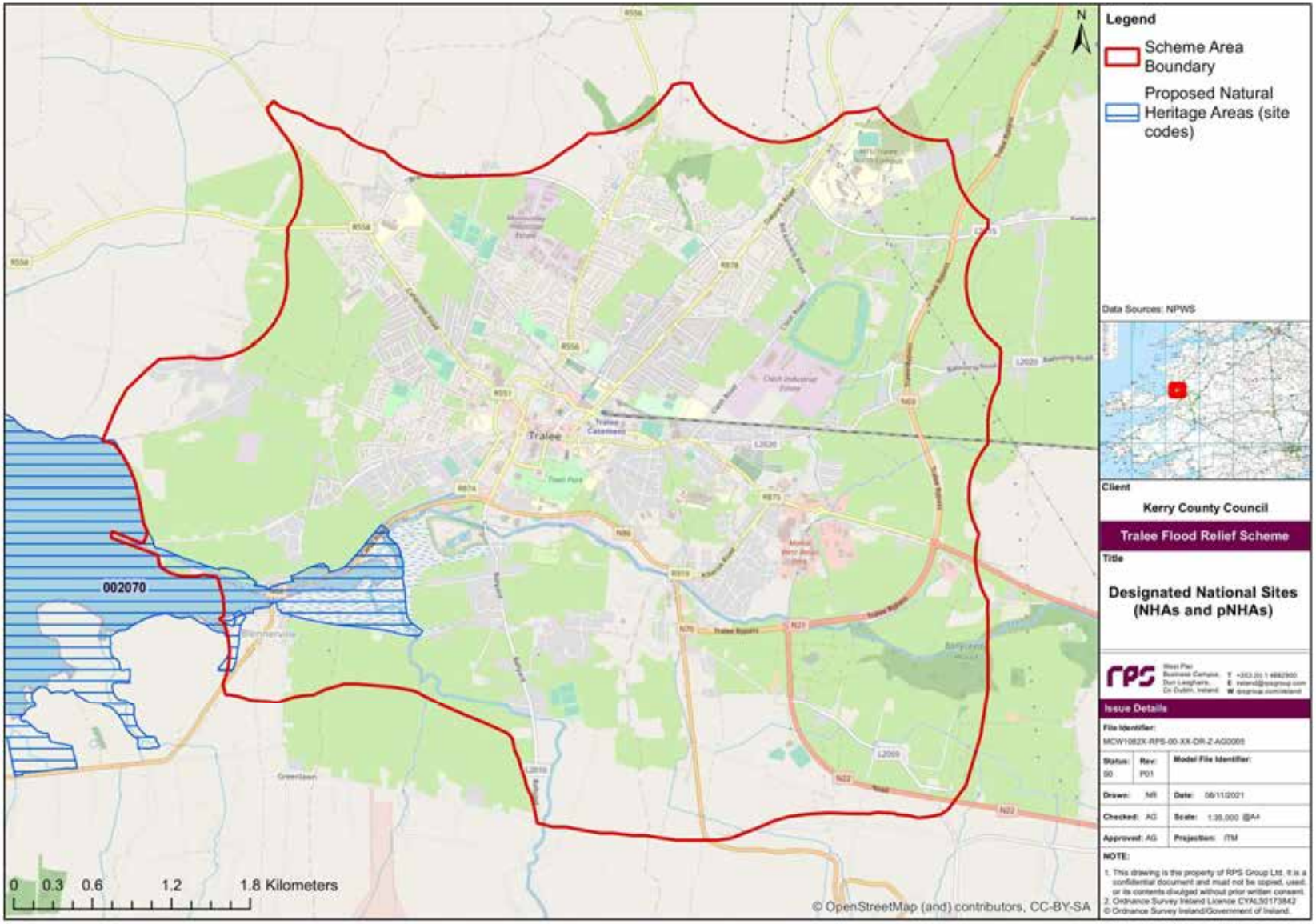


Natural Heritage Areas & Proposed Natural Heritage Areas

Natural Heritage Areas (NHA) are nationally designated areas considered important for the habitats present or which holds species of plants and animals whose habitat needs protection. NHAs are protected under the Wildlife Amendment Act 2000 (as amended). In addition to NHA, there are also a number of proposed NHAs (pNHA) which have been published on a non-statutory basis in 1995 and have not since been statutorily proposed for designation, however they are afforded some protection under schemes such as Rural Environment Protection Scheme (REPS), Agri-Environmental Options Scheme (AEOS) and County Development Plans and Licensing Authorities. Many of the NHA and pNHA boundaries overlap with European site boundaries also.

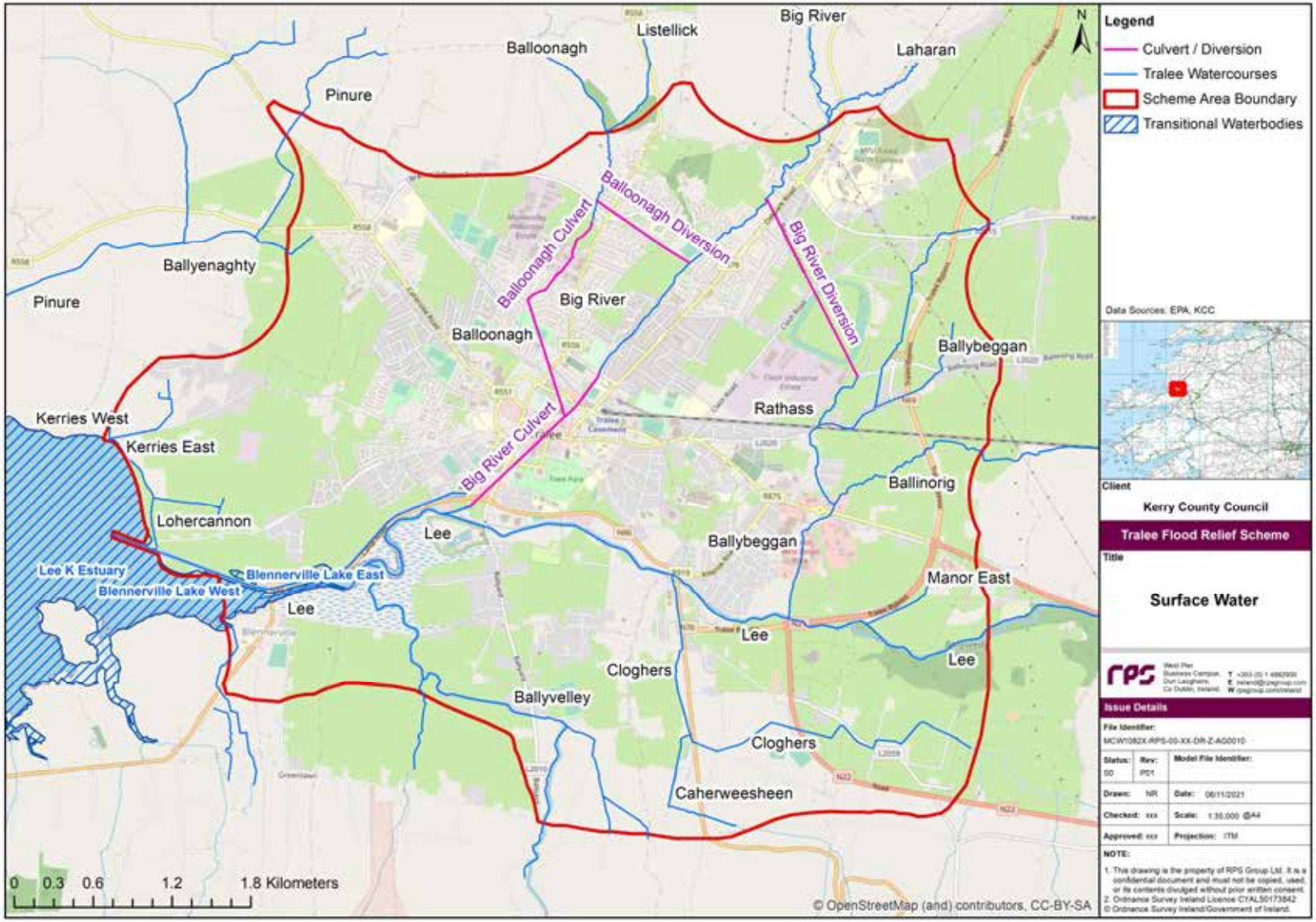
There are no NHA within the scheme area but there is one pNHA

002070 – Tralee Bay And Magharees Peninsula, West To Cloghane pNHA



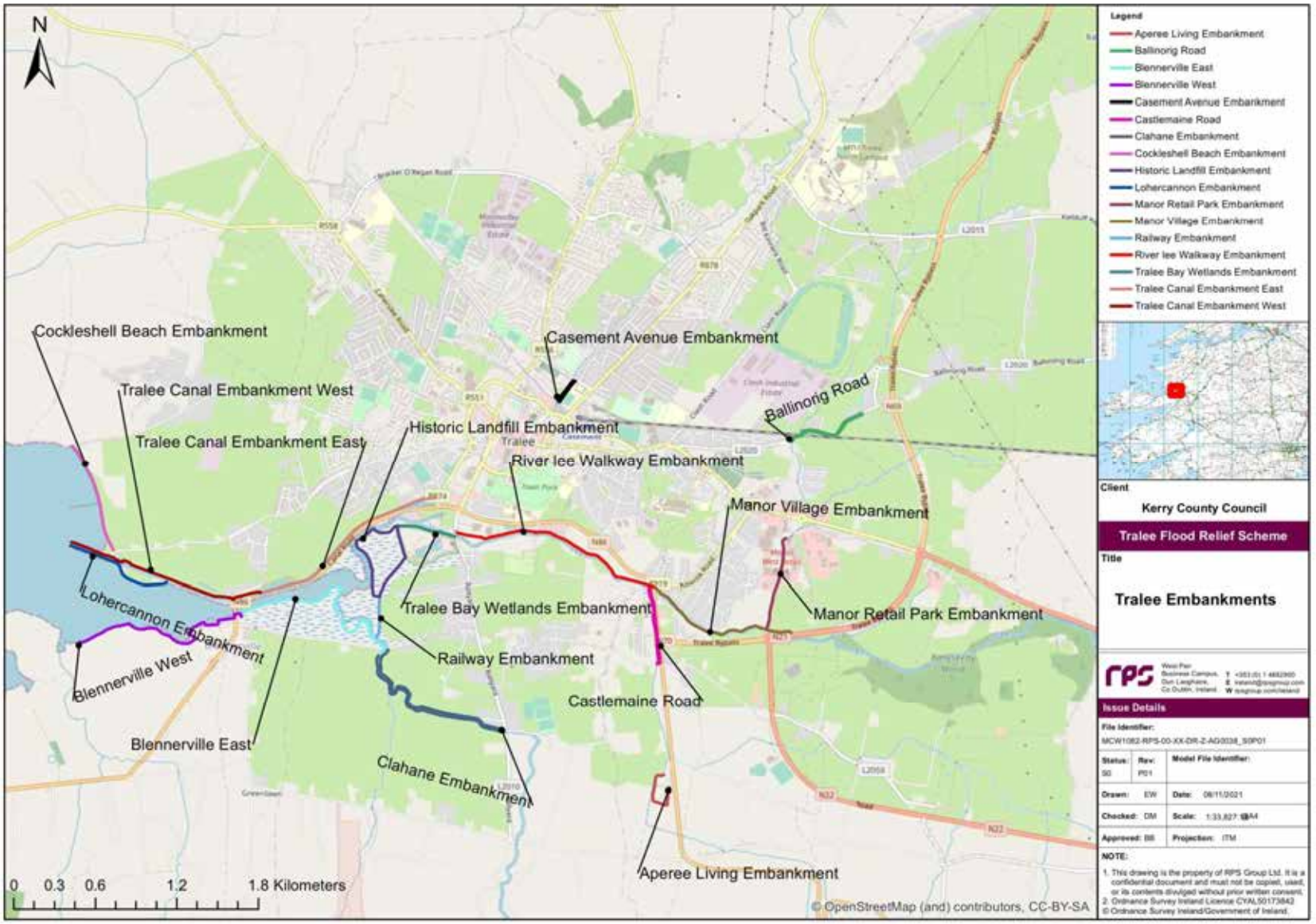
Surface Water

The scheme area lies within the Tralee Feale catchment. The surface water bodies are shown on the adjacent map. Tralee is the largest urban centre within the catchment boundary. The surface water bodies located in the scheme area consist of the Lee Estuary, the River Lee and the Lee's notable tributary the Big River. The adjacent map also shows existing culverts / diversions within the scheme area. Further culverts / diversions will be identified from the CCTV inspection which will be undertaken later in the project.



Embankments

The embankments shown are the existing embankments within the scheme area that are currently under consideration. Most of these embankments were originally put in place in the 19th and 20th century and run along both sides of the Lee estuary. Other embankments were constructed as part of flood risk management measures in the 1990s. Many of these embankments were constructed to defend agricultural lands from fluvial or tidal water overflow, others were constructed to form walkways and towpaths with flood defence being a biproduct of their primary use.



Appendix C
Consultations with Statutory and Non-Statutory Bodies

Apx Figure 1: Sample Consultation Letter

TRALEE FLOOD RELIEF SCHEME

PUBLIC & STAKEHOLDER CONSULTATION #1

Kerry County Council in conjunction with the OPW is progressing the implementation of the Tralee Environs Flood Relief Scheme.

Interested Stakeholders and members of the public are invited to log in to the virtual consultation event on the project website at: www.floodinfo.ie/traleefrs

The purpose of this early-stage consultation event is to give interested individuals an overview of the project, to offer the opportunity to engage with the project team and tell their experiences of flooding in Tralee and offer views on how the scheme should progress.

The virtual consultation room includes information on the project and currently identified environmental constraints that may influence the scheme design. A Project Newsletter is available for viewing and/or download and a Feedback Form is also available for completion.

If you are interested in an in-person consultation, please contact the project team by email at traleefrs@rpsgroup.com or by phone at (021) 466-5900 and this will be arranged by appointment.

This initial Public Consultation for the scheme runs until **Thursday 23 December 2021** and we would welcome hearing your organisation's views.

Regards,

Tralee Flood Relief Scheme Project Team

On behalf of Kerry County Council

Apx Table 1: Consultation Responses

Stakeholders	Responses Received	Summary
Development of Housing, Local Government and Heritage	13/12/2021 & 14/01/2022	DAU acknowledged receipt of correspondence and request for extension or submission of observations/recommendations at alter date (13/12/2021). **Archaeology (Underwater Unit)** • It is recommended that the services of a qualified and experienced archaeological team are engaged in order to carry out a detailed assessment, at the earliest opportunity, of the proposed Tralee FRS in accordance with the Archaeological Guidelines for Flood Relief Schemes (DHLGH and OPW 2021).It is essential that the methodologies and processes outlined in the Archaeological Guidelines for Flood Relief Schemes (DHLGH and OPW 2021) are consulted and adhered to in the design and undertaking of all archaeological assessments for the project. • In the Record of Monuments and Places (RMP) extensive records for archaeological sites are to be found within the areas addressed for the proposed Tralee flood relief scheme. The RMP is a non-extensive list, the National Monuments Service would like to draw the applicant's attention to the Department's published policy in relation to the archaeological assessment of large-scale developments on sites where there are no previously recorded monuments (Framework and Principles for the Protection of the Archaeological Heritage – Published by Dúchas The Heritage Service). • Numerous wrecks are recorded from the Tralee Bay. All wrecks over 100-years old are protected under the 1987 and 1994 (Amendment) Acts of the National Monuments Acts. Over 18,000 wrecks have been recorded to date. Previously unrecorded wreck sites may await discovery in the waterways under consideration here. • Assessment of the FRS shall include all proposed or potential impacts/effects within the terrestrial environment and within the underwater environment, including any given watercourse and structures/features associated with waterways. It should also include a full inventory and mapping (using a user-friendly identifier system) of the known and predicted extent of all archaeological/built/cultural heritage features and structures (including those identified underwater) and areas of potential and shall also include maps/drawings that clearly indicate any proposed impacts on these assets arising from the FRS project. • Potential archaeological impacts from Site Investigation works and potential secondary or indirect impacts such as access roads or construction works to facilitate access to the waterways, for example, shall also be considered in any assessments undertaken. • If the works result in a change in water levels or the hydrology near or adjacent to recorded monuments or wrecks or underwater cultural heritage, there may be an indirect resultant deterioration of water-logged archaeological material and this should be addressed in detail in any future assessments.

Stakeholders	Responses Received	Summary
		• This Department would welcome inclusion in all future consultations relating to the Tralee flood relief scheme and we would also me most grateful for an opportunity to meet with you and/or your archaeological consultants to discuss the archaeological aspects of the scheme. **Nature Conservation** • The Department is not in a position to make specific comment on this particular referral at this time. No inference should be drawn from this that the Department is satisfied or otherwise with the proposed activity. The Department may submit observations/recommendations at a later stage in the process. • The above observations/recommendations are based on the papers submitted to this Department on a pre-planning basis and are made without prejudice to any observations that the Minister may make in the context of any consultation arising on foot of any development application referred to the Minister, by the planning authority/ies, in the role as statutory consultee under the Planning and Development Act, 2000, as amended.
Department of Environment, Climate and Communications		No response
Department of Agriculture Food and Marine		No response
Department of Rural and Community Development		No response
Development Applications Unit- Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media		No response
Development Applications Unit- Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media		No response
Department of Public Expenditure and Reform		No response
Department of Transport		No response
Department of Defence		No response
Department of Enterprise, Trade and Employment (Forfas)		No response
Department of Education		No response
An Taisce		No response
Fáilte Ireland		No response
Heritage Council		No response

Stakeholders	Responses Received	Summary
Inland Fisheries Ireland		Automated response
Environmental Protection Agency – Regional Inspectorate		No response
Transport Infrastructure Ireland	22/12/2021	The Flood Relief Scheme Area includes a number of national roads, including the N21 and N22, national primary roads, and the N69, N70 and N86, national secondary roads. The N21 and N22, national primary roads, form part of the EU TEN-T Comprehensive Network. With respect to EIAR/Constraints Scoping issues, the recommendations indicated below provide only general guidance for the preparation of an EIAR, which may affect the national road network. The developer should have regard, inter alia, to the following. • Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to locations of existing and future national road schemes in the area. • TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in the proximity of the proposed development, the N21 and N22, national primary roads, and the N69, N70 and N86, national secondary road, are all within the Flood Relief Scheme and Study Area. • The developer should assess visual impacts from existing national roads, • The developer should have regard to any Environmental Impact Assessment Report/Statement and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area. The developer should in particular have regard to any potential cumulative impacts. • The developer, in conducting Environmental Impact Assessment, should have regard to TII Publications (formerly DMRB and the Manual of Contract Documents for Road Works). • The developer, in conducting Environmental Impact Assessment, should have regard to TII's Environmental Assessment and Construction Guidelines, including the Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (National Roads Authority, 2006). • The EIAR should consider the Environmental Noise Regulations 2006 (SI 140 of 2006) • Where new structures may be proposed on national roads, the developer is reminded of the requirements of TII publications DN-STR-03001 - Technical Acceptance of Road Structures on Motorways and Other National Roads. • The developer should also be aware that there is Technical Acceptance requirements relating to the assessment, alteration, modification, strengthening and repair of all existing road structures (national roads) and same shall be agreed with the Bridge Management Section of TII. TII notes there are a number of national road structures on the N20 and N21, national primary roads, and the

Stakeholders	Responses Received	Summary
		N69, N70 and N86, national secondary roads, located within the Flood Relief Study and Scheme area, • A hydraulic analysis should be undertaken to identify the impact of proposed flood alleviation works on the hydraulic capacity of any TII Structures impacted and the potential for scour at the structure, • An assessment of scour and other hydraulic actions on national road structures in accordance with UK BD 97/12 should be undertaken where necessary. • The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required, • In the interests of maintaining the safety and standard of the national road network, the EIAR should identify the methods/techniques proposed for any works traversing/in proximity to the national road network, • In relation to haul route identification, the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed.
Office of Public Works		No response
Commission for Regulation of Utilities, Water and Energy		No response
Health Services Executive		No response
Health & Safety Authority		Automated response
Irish Water	14/01/2022	Confirmation of review by Irish Water
Eirgrid		No response
Fenit Harbour		No response
Tralee Bay Sea Angling Club		No response
Angling clubs: such as but not limited to The Angling Hub Tralee and;		No response
Dingle peninsula fishing and hunting		No response
Birdwatch Ireland		No response
Boating Clubs or Associations: such as but not limited to Tralee Bay Sailing Club and;		No response
Tralee Bay Maritime Centre		No response
Tralee Chamber Alliance		No response
Climate Action Regional Office		No response

Stakeholders	Responses Received	Summary
Coastal and Marine Resources Centre		No response
Coillte		No response
Local Enterprise Office		No response
EIR		No response
Three Networks		Automated response
Electricity Supply Board		Automated response
Fáilte Ireland / Tourism Ireland		No response
Floods Committees Approved by Kerry County Council and the OPW		No response
Geological Survey Ireland		No response
Heritage Council		No response
Iarnród Éireann		No response
Inland Fisheries Ireland		No response
Irish Creamery Milk Suppliers Association (ICMSA)		No response
Irish Environmental Network		No response
Irish Farmers Association		No response
Landscape Alliance Ireland		No response
Local Authority Waters Programme		No response
Marine Institute		No response
River Trust or other River Community Groups		No response
Sustainable Water Network Ireland (SWAN)		No response
Teagasc		No response
Transport Infrastructure Ireland (TII)		No response
The Water Forum (An Forám Uisce)		No response
Water Policy Advisory Committee		No response
Kerry Public Participation Network		No response
Radio Kerry		No response
Kerry's eye		No response

Stakeholders	Responses Received	Summary
Kerryman (Tralee edition)		No response
Amárach		No response
Farming Independent		No response
Irish Farmers' Journal		No response
The Irish Times		No response
The Irish Independent		No response
The Irish Examiner		No response
RTE News		No response
TheJournal.ie		No response
Traleetoday.ie		No response
Minister for Environment, Climate and Communications and Transport		No response
Minister for Department of Agriculture, Food and Marine		No response
Minister for Tourism, Culture, Arts, Gaeltacht, Sport and Media		No response
Minister of State for the Office of Public Works		No response
Kerry TDs, Senators and MEPs		No response
Kerry County Council Councillors		No response
Executive for the Municipal District of Tralee		No response
KCC Strategic Policy Committees		No response
Economic Development, Enterprise and Community SPC		No response
Roads, Transportation and Marine SPC		No response
Environment, Climate Change and Emergency Planning SPC		No response
Housing SPC		No response
Culture & Heritage and the Gaeltacht SPC		No response
Kerry County Council Councillors		No response
Executive for the Municipal District of Tralee		No response
KCC Strategic Policy Committees		No response

Stakeholders	Responses Received	Summary
General Public & Local Stakeholders		No response
Residents and business owners in Tralee		No response
Kerry Public Participation Network		No response
Farming representative organisations		No response
Tralee Bay wetlands		No response
Tralee Rowing Club		No response
Tralee Chamber Alliance		No response
Department of Housing, Local Government and Heritage		No response
Department of Environment, Climate and Communications		No response
Department of Agriculture Food and Marine		No response
Department of Rural and Community Development		No response
Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media		No response
Department of Public Expenditure and Reform		No response
Department of Transport		No response
Department of Enterprise, Trade and Employment		No response

Appendix B
Connectivity to Designated Sites & Biodiversity Tables

Table B1– European and Nationally Designated Sites within the Environmental Constraints Scheme Area

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*=Priority Habitats)	Distance from Scheme Area	Connectivity
002070	Tralee Bay and Magharees Peninsula, West to Cloghane	SAC/pNHA	**Habitats** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] 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] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170] Humid dune slacks [2190] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] **Species** *Lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395	Within scheme area	**Yes** **Hydrologically connected via:** • Annagh (Kerry)_010 • Big River (Tralee)_010 • Lee(Tralee)_030 • Lee (Tralee)_040 • Pinure_010 • Blennerville Lake East (IE_SH_050_0300) • Blennerville Lake West () • Lee K Estuary (IE_SH_050_0100) **Hydrogeologically connected via:** • Brandon Head (IE_SH_G_044) GWB • Tralee (IE_SH_G_226) GWB • Spa (IE_SH_G_223) GWB

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*=Priority Habitats)	Distance from Scheme Area	Connectivity
004188	Tralee Bay Complex	SPA	**Species** Whooper Swan (Cygnus cygnus) [A038] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Mallard (Anas platyrhynchos) [A053] Pintail (Anas acuta) [A054] Scaup (Aythya marila) [A062] Oystercatcher (Haematopus ostralegus) [A130] Ringed Plover (Charadrius hiaticula) [A137] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Turnstone (Arenaria interpres) [A169] Black-headed Gull (Chroicocephalus ridibundus) [A179] Common Gull (Larus canus) [A182]	Within scheme area	**Yes** **Hydrologically connected via:** • Annagh (Kerry)_010 • Big River (Tralee)_010 • Lee(Tralee)_030 • Lee (Tralee)_040 • Pinure_010 • Blennerville Lake East (IE_SH_050_0300) • Blennerville Lake West () • Lee K Estuary (IE_SH_050_0100) **Hydrogeologically connected via:** • Brandon Head (IE_SH_G_044) GWB • Tralee (IE_SH_G_226) GWB • Spa (IE_SH_G_223) GWB
002112	Ballyseedy Wood SAC	SAC	**Habitats** Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	Within scheme area	**Yes** **Hydrogeological Connection.** **Upstream Hydrological Connection.**

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*=Priority Habitats)	Distance from Scheme Area	Connectivity
					The SAC is located within the scheme area. Both the scheme area and the SAC are located within the Tralee Groundwater body.
000332	Akenagh, Banna and Barrow Harbour	SAC/pNHA	**Habitats** Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] European dry heaths [4030]	8.8km downstream	**No** **No Hydrogeological Connection.** **Weak Hydrological Connection** Weak hydrological connection via the Lee K estuary which flows in to the Inner Tralee Bay and then the Outer Tralee Bay Coastal waterbody. The distance from the scheme area to this SAC is 8.8km and the connection is across a transitional waterbody and two coastal waterbodies which would allow significant assimilative capacity of any sediment or runoff and therefore will be no likely significant effect to the QI with regards to habitat loss.
000375	Mount Brandon	SAC/pNHA	**Habitats** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Alpine and Boreal heaths [4060]	18km south west as the crow flies	**No** . **Hydrogeological Connection.** Hydrogeological connection is via the Brandon Head GWB. Groundwater flow paths are short and within 30-300m. Flow paths are towards the nearest surface water bodies which within this GWB are northwards and therefore there will be no likely significant effect to the Q.I. **No Hydrological Connection.** The SAC is located 18km west of the scheme area and there will be no likely significant effect to the QI with regards to habitat loss.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*=Priority Habitats)	Distance from Scheme Area	Connectivity
			Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Species** *Margaritifera* (Freshwater Pearl Mussel) [1029] *Trichomanes speciosum* (Killarney Fern) [1421]		
002185	Slieve Mish Mountains	SAC	**Habitats** Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] **Species** Trichomanes speciosum (Killarney Fern) [1421]	830m upstream	**No** **Hydrogeological Connection.** Hydrogeological connection is via the Brandon Head GWB. Groundwater flow paths are short and within 30-300m. Flow paths are towards within this GWB are northwards from this north of the Groundwater body and therefore there will be no likely significant effect to the Q.I. **Upstream Hydrological Connection** The SAC is located approximately 830m upstream in the catchment and there will be no likely significant effect to the Q.I.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*=Priority Habitats)	Distance from Scheme Area	Connectivity
004125	Magharee Islands	SPA	**Species** Storm Petrel (*Hydrobates pelagicus*) [A014] Shag (*Phalacrocorax aristotelis*) [A018] Barnacle Goose (*Branta leucopsis*) [A045] **Common Gull** (*Larus canus*) [A182] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Little Tern (*Sterna albifrons*) [A195]	13km north west of scheme area	**Yes** **No Hydrogeological Connection.** **No Hydrological Connection** The SPA is located 13km northwest of the scheme area and there will be no likely significant effect to the protected species. Common Gull are found SCI of both the Magharee Islands SPA and the Tralee Bay Complex SPA which is within the scheme area. Common gull where also found during the preliminary site walkovers within the scheme area. Potential ex-situ impacts may occur as the distance between the scheme area which contains the Tralee Bay Complex SPA and Magharee Islands (13km) is shorter than the foraging range of the common gull (50km[51]).
004161	Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle	SPA	**Species** Hen Harrier (Circus cyaneus) [A082]	2.6km north east of scheme area	**No** **No Hydrogeological Connection.** **No Hydrological Connection** The SPA is located 2.6km east of the scheme area and there will be no likely significant effect to the protected species The core foraging range of the Hen Harrier is 2km with a maximum recorded foraging range of 10km[52]. Habitat favoured by the hen harrier includes open moorland, marginal grassland

[51] Ian Woodward, Chris B. Thaxter, Ellie Owen, Aonghais S. C. P. Cook, British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU, UK, The Royal Society for the Protection of Birds

[52] https://www.nature.scot/sites/default/files/2018-08/Assessing%20connectivity%20with%20special%20protection%20areas.pdf

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*=Priority Habitats)	Distance from Scheme Area	Connectivity
					and prethicket forest habitats. These habitats are not common within the scheme area and therefore there will be no likely significant effect to the protected species
004029	Castlemaine Harbour	SPA	**Species** Red-throated Diver (*Gavia stellata*) [A001] **Cormorant** (*Phalacrocorax carbo*) [A017] **Light-bellied Brent Goose** (*Branta bernicla hrota*) [A046] **Wigeon** (*Anas penelope*) [A050] **Mallard** (*Anas platyrhynchos*) [A053] **Pintail** (*Anas acuta*) [A054] **Scaup** (*Aythya marila*) [A062] Common Scoter (*Melanitta nigra*) [A065] **Oystercatcher** (*Haematopus ostralegus*) [A130] **Ringed Plover** (*Charadrius hiaticula*) [A137] **Sanderling** (*Calidris alba*) [A144] **Bar-tailed Godwit** (*Limosa lapponica*) [A157] **Redshank** (*Tringa totanus*) [A162] Greenshank (*Tringa nebularia*) [A164] **Turnstone** (*Arenaria interpres*) [A169] Chough (*Pyrrhocorax pyrrhocorax*) [A346]	10.6km south west as the crow flies	**Yes** **No Hydrogeological Connection.** **No Hydrological Connection** **Potential ex-situ impacts** The following species are found in both the Castlemaine Harbour SPA and the Tralee Bay Complex SPA which is within the scheme area; Sanderling, Turnstone and Turnstone are wading birds found in both the Castlemaine harbour SPA and the Tralee Bay Complex SPA which is within our scheme area. Supporting document for the Castlemaine Harbour SPA[53] state that Sanderling, Turnstone, Bar-tailed Godwit and Ringed plover are considered totally reliant on wetland habitats due to unsuitable surrounding habitats and/or species limited habitat requirements. These species are unlikely to forage a significant distance (>6km) from their preferred habitats and therefore are unlikely to forage within the Tralee Bay Complex SPA or within our scheme area and therefore these there will be no likely significant effect to these protected bird species. Oystercatcher are listed as having a high site fidelity to the Castlemaine Harbour SPA in the CO supporting documents for Castlemaine harbour SPA[54] and therefore, it is unlikely that species found in Castlemaine Harbour forages as far as the Tralee Bay Complex SPA and there will be no likely significant effect to this protected bird species.

[53] https://www.npws.ie/sites/default/files/publications/pdf/Tralee%20Bay%20Complex%20SPA%20(004188)%20Conservation%20objectives%20supporting%20document%20-%20[Version%201].pdf

[54] https://www.npws.ie/sites/default/files/publications/pdf/004029_Castlemaine%20Harbour%20SPA%20Supporting%20Doc_V2.pdf

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*=Priority Habitats)	Distance from Scheme Area	Connectivity
					Redshank is a highly site-faithful bird species. A study on Redshank in Cardiff found that tagged redshank species foraged a maximum of 4km from sites where they were ringed[55]. Therefore, it is unlikely that species found in Castlemaine Harbour forages as far as the Tralee Bay Complex SPA and vice versa and there will be no likely significant effect to this protected bird species. A study in France on the foraging behaviour of different bird species found that. Pintail foraging distances were estimated to be 1.3km from their roost with mallards foraging a distance of 0.7km – 1.3km[56]. Another study based in France found wigeon foraging ranges to be 2.5km - 2.8km[57]. These distances are significantly shorter than the distance from the scheme area to the Castlemaine harbour and therefore there will be no likely significant effect to these protected bird species. Scaup is a diving duck species that is subject to fluctuating densities and numbers. It is found on open coastal water, bays and also on freshwater lakes close to coastal localities. Supporting documents for the Castlemaine Harbour SPA[58] state that Scaup are a wide-ranging species with good ability to utilise other/alternative habitats within the Castlemaine Harbour SPA. Therefore, it is unlikely that Scaup associated within the Castlemaine Harbour SPA forage as far as the Tralee Bay Complex SPA and therefore there will be no likely significant effect to these protected bird species.

[55] Burton, Niall. (2010). Winter site-fidelity and survival of Redshank Tringa totanus at Cardiff, south Wales. Bird Scheme. March 1. 102-112. 10.1080/00063650009461164.

[56] Legagneux, P., Blaize, C., Latraube, F. et al. Variation in home-range size and movements of wintering dabbling ducks. J Ornithol 150, 183–193 (2009). https://doi.org/10.1007/s10336-008-0333-7

[57] Guillemain, M., J.-Y. Mondain-Monval, E. Weissenbacher, A.-L. Brochet, and A. Olivier. 2008. Hunting bag and distance from nearest day-roost in Camargue ducks. Wildlife Biology 14 (3):379-385.

[58] https://www.npws.ie/sites/default/files/publications/pdf/004029_Castlemaine%20Harbour%20SPA%20Supporting%20Doc_V2.pdf

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*=Priority Habitats)	Distance from Scheme Area	Connectivity
					Light bellied brent geese foraging range can reach up to 53km[59] which is within the distance between the scheme area and the Castlemaine Harbour SPA. Terrestrial grass is also vital to the diet of these geese along as eelgrass beds they graze on are usually depleted bare by the end of autumn[60] Cormorants are not an SCI of Tralee bay Complex SPA but where seen nesting within the Tralee Bay Complex SPA during the ecological walkover surveys. The distance from the Castlemaine Harbour SPA and the section of the scheme area within the Tralee Bay Complex SPA is 9.8km while the foraging range of Cormorant is 25.6km[61]. Therefore, there is potential for ex-situ impacts on Cormorant and Light bellied brent geese of the Castlemaine Harbour SPA.
001352	Bunnarudde e Bog	NHA	**Habitats** Peatlands	28.4km north east as the crow flies	**No** **No Hydrogeological Connection.** **No Hydrological Connection** The NHA is located 28.4km north east of scheme area and there will be no likely significant effect to the protected habitats.
002399	Carrigkerry Bogs	NHA	**Habitats** Peatlands	39.9km north east as the crow flies	**No** **No Hydrogeological Connection.** **No Hydrological Connection** The NHA is located 39.9km north east of scheme area and there will be no likely significant effect to the protected habitats.

[59] https://www.researchgate.net/publication/260190917_Foraging_range_habitat_use_and_minimum_flight_distances_of_East_Atlantic_Light-bellied_Brent_Geese_Branta_bernicla_hrota_in_their_spring_staging_areas

[60] https://birdwatchireland.ie/app/uploads/2019/03/Species-Focus-Brent-Goose.pdf

[61] Ian Woodward, Chris B. Thaxter, Ellie Owen, Aonghais S. C. P. Cook, British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU, UK, The Royal Society for the Protection of Birds

Table B2– Protected and Endangered Flora (Flora Atlas, NBDC and BSBI)

Scientific name	Common name	Grid Squares[62]		Conservation Status[54]	Potential Effects on the Project
		Q71	Q81		Rare and protected flora are a potential constraint to the project. Potential impacts to these species where they are found within the scheme area through field surveys or where there is potential to support these species will be assessed in the biodiversity impact assessments for the project.
Agrostemma githago	Corncockle	*o	+	WL[63]	
Allium schoenoprasum	Chives		*	VU	
Anthemis arvensis	Corn Chamomile	*o	+	WL	
Anthemis cotula	Stinking chamomile	*		NT	
Botrychium lunaria	Moonwort		+	NT	
Bromus racemosus	Smooth Brome	o		NT	
Bryum salinum	Salt marsh thread moss	*	+	FPO	
Calamagrostis epigejos	Wood small reed		o	FPO, VU	
Carduus tenuiflorus	Slender-flower thistle		o	NT	
Carex spicata	Spiked sedge		+	NT	
Carum verticillatum	Whorled Caraway		o	NT	
Centranthus ruber	Red valerian	o		NT	
Chamaemelum nobile	Roman chamomile	+	+	NT	
Coeloglossum viride	Frog orchid		+	NT	
Crambe maritima	Sea-Kale	+	+	NT	
Erodium lebelii	Sticky Stork's-bill	+	+	WL	
Gentianella campestris	Field gentian	+	+	NT	
Geranium rotundifolium	Round-leaved Crane's-bill		*o	LC	
Glaucium flavum	Yellow horned poppy	+o	+	NT	
Groenlandia densa	Opposite-leaved Pondweed		+	FPO, NT	
Hyoscyamus niger	Stinking nightshade	+	+	NT	
Ligustrum vulgare	Native privet	+	+o	WL	
Limonium recurvum		o		WL	

[62] Source: NBDC (*), Flora Atlas (+) and BSBI (o)

[63] Waiting List (WL): The concept of a Waiting List for taxa for which assessments could not be made was developed in the three recent regional vascular plant Red Lists of Cheffings & Farrell (2005), Dines (2008) and Stroh et al. (2014). In the present Red List, taxa for which additional information is required to enable assessments to be made are placed on the Waiting List for three main reasons – insufficient distribution or population data, taxonomic uncertainties and uncertainties regarding native or alien status (of taxa or individuals). For most taxa on the Waiting List research and surveys are required to address these issues before assessments can be made.

Scientific name	Common name		Grid Squares[62]	Conservation Status[54]	Potential Effects on the Project
Limonium recurvum subsp. portlandicum	Portland Sea-lavender	+	+	VU	
Linaria repens	Pale toadflax		+	NT	
Linaria vulgaris	Yellow toadflax	+o	+	NT	
Lolium temulentum	Darnel	+	+	EN	
Malva neglecta	Buttonweed		+	NT	
Marrubium vulgare	White horehound	+	+	WL	
Mentha pulegium	Penny Royal	+	+	FPO, EN	
Mentha spicata	Spearmint		+	EN	
Parentucellia viscosa	Yellow glandweed	+	+	NT	
Pimpinella major	Greater burnet-saxifrage		o	WL	
Pinus sylvestris	Scots Pine		+	WL	
Radiola linoides	Allseed	+o	+	NT	
Ranunculus baudotii	Brackish Water-crowfoot	+o	+o	NT	
Rumex maritimus	Golden Dock	+o	+	NT	
Salicornia dolichostachya	Long-spiked glasswort	+	+	WL	
Salicornia fragilis	Yellow Glasswort	+	+	WL	
Salicornia ramosissima			o	WL	
Scandix pecten-veneris	Shepherd's-needle	+*	+	RE	
Silybum marianum	Milk thistle	*o	+	NT	
Spiranthes spiralis	Autumn lady's-tresses	*	+	NT	
Torilis nodosa	Knotted hedge-parsley	+	+	NT	
Utricularia vulgaris	Common Bladderwort		+	WL	
Valerianella dentata	Narrow-fruited Cornsalad	+	+	VU	
Verbena officinalis	Common verbena	+	+o	NT	

Table B3– Rare and Protected Mammal, Aquatic and Invertebrate Species (NBDC)

Scientific name	Common name	Grid Square		Conservation[64]/Legal Status	Potential Effects on the Project
		Q71	Q81		Otter are qualifying interests of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and will be critical receptors to the proposed scheme where they are found within the scheme area through field surveys or where there is habitat potential to support these species. Potential impacts to these species will be assessed in the AA reporting and biodiversity impact assessments for the project.
Andrena (Melandrena) nigroaenea	Mining Bee		*	VU	
Andrena (Taeniandrena) wilkella			*	DD	
Anguilla	European Eel		*	OSPAR, CE	
Aplexa hypnorum	Moss Bladder Snail		*	VN	
Ashfordia granulata	Silky Snail		*	NT	
Balea (Balea) perversa	Tree Snail	*		VU	
Bombus (Melanobombus) lapidarius	Large Red Tailed Bumble Bee	*	*	NT	
Bombus (Thoracombus) muscorum	Moss Carder-bee		*	NT	
Caretta	Loggerhead Turtle	*		WA, II IV EU HD	
Cervus elaphus	Red Deer		*	WA	
Coenonympha pamphilus	Small Heath	*	*	NT	
Coenonympha tullia	Large Heath	*		VU	
(Deroceras (Deroceras) agreste)	Field Slug		*	DD	
Delphinus delphis	Common Dolphin	*	*	WA, IV EU HB	
Erinaceus europaeus	West European Hedgehog	*	*	WA, LC	
Euphydryas aurinia	Marsh Fritillary	*		II EU HD, VU	
Globicephala melas	Long-finned Pilot Whale	*		WA, IV EU HD	
Halichoerus grypus	Grey Seal	*	*	WA, II V EU HD	
Helicella itala	Heath Snail	*	*	VU	
Ischnura pumilio	Scarce Blue-tailed Damselfly	*		VU	
Lagenorhynchus acutus	Atlantic White-sided Dolphin	*		WA, IV EU HD,	
Lasiommata megera	Wall	*		EN	
Leiostyla (Leiostyla) anglica	English Chrysalis Snail	*		VU	
Lissotriton vulgaris	Smooth Newt		*	WA, LC	
Lutra lutra	European Otter	*	*	WA, II IV EU HD, LC	
Meles meles	Eurasian Badger	*	*	WA, LC	
Myotis daubentonii	Daubenton's Bat		*	WA, IV EU HD, LC	
Myotis mystacinus	Whiskered Bat		*	WA, IV EU HD	
Myotis nattereri	Natterer's Bat		*	WA, IV EU HD	
Nyctalus leisleri	Lesser Noctule		*	WA, IV EU HD, LC	
Nucella lapillus	Dog Whelk	*		OSPAR	
Ostrea edulis	Common Oyster	*		OSPAR	
Petromyzon marinus	Sea Lamprey	*		OSPAR NT	
Phoca vitulina	Common Seal	*		WA, II IV EU HD	

[64] Irish Red Lists - https://www.npws.ie/publications/red-lists

Scientific name	Common name	Grid Square		Conservation[64]/Legal Status	Potential Effects on the Project
Phocoena phocoena	Common Porpoise	*		WA, II, IV EU HD, OSPAR	
Pipistrellus pipistrellus sensu lato	Pipistrelle		*	WA, IV EU HD, LC	
Pipistrellus pygmaeus	Soprano Pipistrelle		*	WA, IV EU HD, LC	
Plecotus auritus	Brown Long-eared Bat		*	WA, IV EU HD	
(Pupilla (Pupilla) muscorum)	Moss Chrysalis Snail		*		
Rana temporaria	Common Frog	*	*	WA, V EU HD, LC	
Rostroraja alba	White Skate	*		OSPAR	
Rhinolophus hipposideros	Lesser Horseshoe Bat		*	WA, II V EU HD, LC	
Sciurus vulgaris	Eurasian Red Squirrel		*	WA, LC	
Sorex minitus	Eurasian Pygmy Shrew		*	WA, LC	
Stenella coeruleoalba	Striped Dolphin	*		WA, IV EU HD	
Succinella oblonga	Small Amber Snail		*	EN	
Tursiops truncatus	Bottle-nosed Dolphin	*		WA, II IV EU HD	
Ventrosia ventrosa		*		VU	
Vertigo (Vertigo) antivertigo	Marsh Whorl Snail	*		VU	
Vertigo (vertigo) pygmaea	Common Whorl Snail	*	*	NT	
Ziphius cavirostris	Cuvier's Beaked Whale	*		WA, IV EU HD	
Zootoca vivipara	Common Lizard		*	WA, LC	

Table B4 – Rare and Protected Bird Species (NBDC)

Scientific name	Common name	Grid Square		Conservation Status[65]	Potential Effects on the Project
		Q71	Q81		Bird Species recorded listed on Annex I of the Birds Directive include Common Kingfisher, Greater White-fronted Goose, Short-eared Owl, Dunlin, Black Tern, Hen Harrier, Bewick's Swan, Whooper Swan, Little Egret, Merlin, Peregrine Falcon, Black-throated Diver,
Actitis hypoleucos	Common Sandpiper	*	*	WA, Amber List	
Alauda arvensis	Sky Lark	*	*	WA, Amber List	
Alca torda	Razorbill	*		WA, Red List	
Alcedo atthis	Common Kingfisher	*	*	WA, I EU BD, Amber List	
Anas acuta	Northern Pintail	*	*	WA, II (I), III (II), Amber List	
Anas crecca	Eurasian Teal	*	*	WA, II(I) III(II) EU BD, Amber List	
Anas clypeata	Northern Shoveler	*	*	WA, II (I), III (III),	
Anas penelope	Eurasian Wigeon	*	*	WA, II(I) III(II) EU BD, Amber List	
Anas platyrhynchos	Mallard	*	*	WA, II(I) III(I) EU BD	
Anas strepera	Gadwall	*	*	WA, II(I) EU BD, Amber List	

[65] Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation Concern in Ireland 2020 –2026". Irish Birds 9: 523—544 https://birdwatchireland.ie/publications/birds-of-conservation-concern-in-ireland-bocci-2020-2026/

Scientific name	Common name	Grid Square		Conservation Status[65]	Potential Effects on the Project
Anser albifrons	Greater White-fronted Goose	*		WA, I, II (II), III (III), Amber List	Great Northern Diver, Red-throated Diver, Mediterranean Gull, Little Gull, Bar-tailed Godwit, Red-necked Phalarope, Ruff, Red-billed Chough, Little Tern, Common Tern, Sandwich Tern A number of these species are noted in the Site synopsis for Tralee Bay Complex SPA including Whooper Swan, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Common Gull are listed as the SCI species of the SPA. These species and will be critical receptors to the proposed scheme where they are found within the scheme area through field surveys or where there is habitat potential to support these species. Potential impacts to these species will be assessed in the AA reporting and biodiversity impact assessments for the project.
Anser brachyrhynchus	Pink-footed Goose	*	*	WA, II (II) EU BD	
Apus apus	Common Swift	*	*	WA, Red List	
Asio flammeus	Short-eared Owl	*	*	WA, I EU BD, Amber List	
Aythya ferina	Common Pochard	*	*	WA, II(I) III(II) EU BD, Red List	
Aythya fuligula	Tufted Duck	*		WA, II(I) III(II) EU BD, Amber List	
Aythya marila	Greater Scaup	*	*	WA, II (II), III (III), Red List	
Branta bernicla	Brent Goose	*	*	WA, Amber List	
Branta leucopsis	Barnacle Goose	*		WA, Amber List	
Bucephala clangula	Common Goldeneye	*	*	WA, II(II) EU BD, Red List	
Calidris alpina	Dunlin	*	*	WA, I EU BD, Red List	
Calidris canutus	Red Knot	*	*	WA, Red List	
Carduelis cannabina	Common Linnet	*	*	WA, Amber List	
Cepphus grylle	Black Guillemot	*	*	WA, Amber List	
Charadrius hiaticula	Ringed Plover	*	*	WA, Amber List	
Chlidonias niger	Black Tern		*	WA, I EU BD, Amber List	
Circus cyaneus	Hen Harrier	*	*	WA, I EU BD, Amber List	
Clangula hyemalis	Long-tailed Duck	*		WA, II (II), Red List	
Columba livia	Rock Pigeon	*	*	WA, II(I) EU BD	
Columba oenas	Stock Dove	*		WA, Red List	
Columba palumbus	Common Wood Pigeon	*	*	WA, II(I) III(I) EU BD	
Cygnus columbianus subsp. bewickii	Bewick's Swan	*		WA, I EU BD, Red List	
Cygnus cygnus	Whooper Swan	*	*	WA, I EU BD, Amber List	
Cygnus olor	Mute Swan	*	*	WA, Amber List	
Delichon urbicum	House Martin	*	*	WA, Amber List	
Egretta garzetta	Little Egret		*	WA, I EU BD	
Emberiza citrinella	Yellowhammer	*	*	WA, Red List	
Falco columbarius	Merlin	*	*	WA, I EU BD, Amber List	
Falco peregrinus	Peregrine Falcon	*	*	WA, I EU BD	
Falco tinnunculus	Common Kestrel	*	*	WA, Red List	
Fulica atra	Common Coot	*	*	WA, II(I) III(II) EU BD, Amber List	
Egretta garzetta	Little Egret	*		WA, I EU BD	
Gallinago gallinago	Common Snipe	*	*	WA, II(I) III(III) EU BD, Red List	
Gavia arctica	Black-throated Diver	*		WA, I EU BD, Amber List	
Gavia immer	Great Northern Diver		*	WA, I EU HD, Amber List	
Gavia stellata	Red-throated Diver	*		WA, I EU BD, Amber List	

Scientific name	Common name	Grid Square		Conservation Status[65]	Potential Effects on the Project
Haematopus ostralegus	Eurasian Oystercatcher	*	*	WA, Red List	
Hirundo rustica	Barn Swallow	*	*	WA, Amber List	
Lagopus lagopus	Red Grouse		*	WA, II (I) III (I) EU BD, Red List	
Larus argentatus	Herring Gull	*	*	WA, Amber List	
Larus canus	Mew Gull	*	*	WA, Amber List	
Larus fuscus	Lesser Black-backed Gull	*	*	WA, Amber List	
Larus marinus	Great Black-backed Gull	*	*	WA, Amber List	
Larus melanocephalus	Mediterranean Gull	*	*	WA, I EU BD, Amber List	
Larus minutus	Little Gull	*	*	WA, I EU BD, Amber List	
Larus ridibundus	Black-headed Gull	*	*	WA, Amber List	
Limosa lapponica	Bar-tailed Godwit		*	WA, I EU BD, Red List	
Limosa limosa	Black-tailed Godwit	*	*	WA, Red List	
Locustella naevia	Common Grasshopper Warbler	*	*	WA	
Lymnocryptes minimus	Jack Snipe	*		WA, II (I), III (III) EU BD	
Melanitta fusca	Velvet Scoter	*		WA, II (II) EU BD, Red List	
Melanitta nigra	Common Scoter	*		WA, II (II), III (III), Red List	
Mergus serrator	Red-breasted Merganser	*	*	WA, II(II) EU BD	
Morus bassanus	Northern Gannet	*	*	WA, Amber List	
Muscicapa striata	Spotted Flycatcher	*	*	WA, Amber List	
Numenius arquata	Eurasian Curlew	*	*	WA, II(II) EU BD, Red List	
Oenanthe oenanthe	Northern Wheatear	*	*	WA, Amber List	
Passer domesticus	House Sparrow	*	*	WA, Amber List	
Passer montanus	Eurasian Tree Sparrow		*	WA, Amber List	
Phalacrocorax aristotelis	European Shag	*	*	WA, Amber List	
Phalacrocorax carbo	Great Cormorant	*	*	WA, Amber List	
Phalaropus lobatus	Red-necked Phalarope		*	WA, I EU BD, Red List	

Table B5– Rare and Protected Species (NPWS)

Scientific name	Common name	Grid Square		Conservation Status	Potential Effects on the Project
		Q71	Q81		Rare and protected species are critical receptors to the proposed scheme where they are found within the scheme area or zone of influence. Otter are qualifying interests of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC Potential impacts to these species and other recorded species will be assessed in the AA reporting and biodiversity impact assessments for the project.
Fauna					
Caretta caretta	Loggerhead turtle	x		WA, II IV EU HD	
Delphinus delphis	Common Dolphin	x		WA, IV EU HB	
Lepus timidus subsp. hibernicus	Irish Hare	x	x	WA, V EU HD	
Lutra lutra	European Otter		x	WA, II IV EU HD	
Meles meles	Eurasian Badger	x		WA	
Nyctalus leisleri	Lesser Noctule		x	WA, IV EU HD, LC	
Rana temporaria	Common Frog	x	x	WA, V EU HD	
Rhinolophus hipposideros	Lesser Horseshoe Bat		x	WA, II V EU HD, LC	
Rumex maritimus	Golden Dock	x		NT	
Sorex minitus	Eurasian Pygmy Shrew	x		WA, LC	
Zootoca vivipara	Common lizard		x	WA, LC	
Flora					
Anchusa arvensis	Bugloss	x		NT	
Bromus racemosus	Smooth brome	x		VU	
Carum verticillatum	Whorled Caraway		x	NT	
Calamagrostis epigejos	Wood small-reed		x	VU	
Glaucium flavum	Yellow Horned-poppy	x		NT	
Groenlandia densa	Opposite-leaved Pondweed		x	FPO, NT	
Hyoscyamus niger	Henbane	x	x	NT	
Linaria repens	Pale toadflax		x	NT	
Lolium temulentum	Darnel	x	x	EN	
Mentha pulegium	Penny Royal		x	FPO, EN	
Ranunculus baudotii	Brackish water-crowfoot			NT	
Scandix pecten-veneris	Shepherds needle	x		RE	

Table B6: Bat Conservation Ireland Records for Bat Roosts and Transects within 10km of Q84184, 14267 (Centre point of scheme).

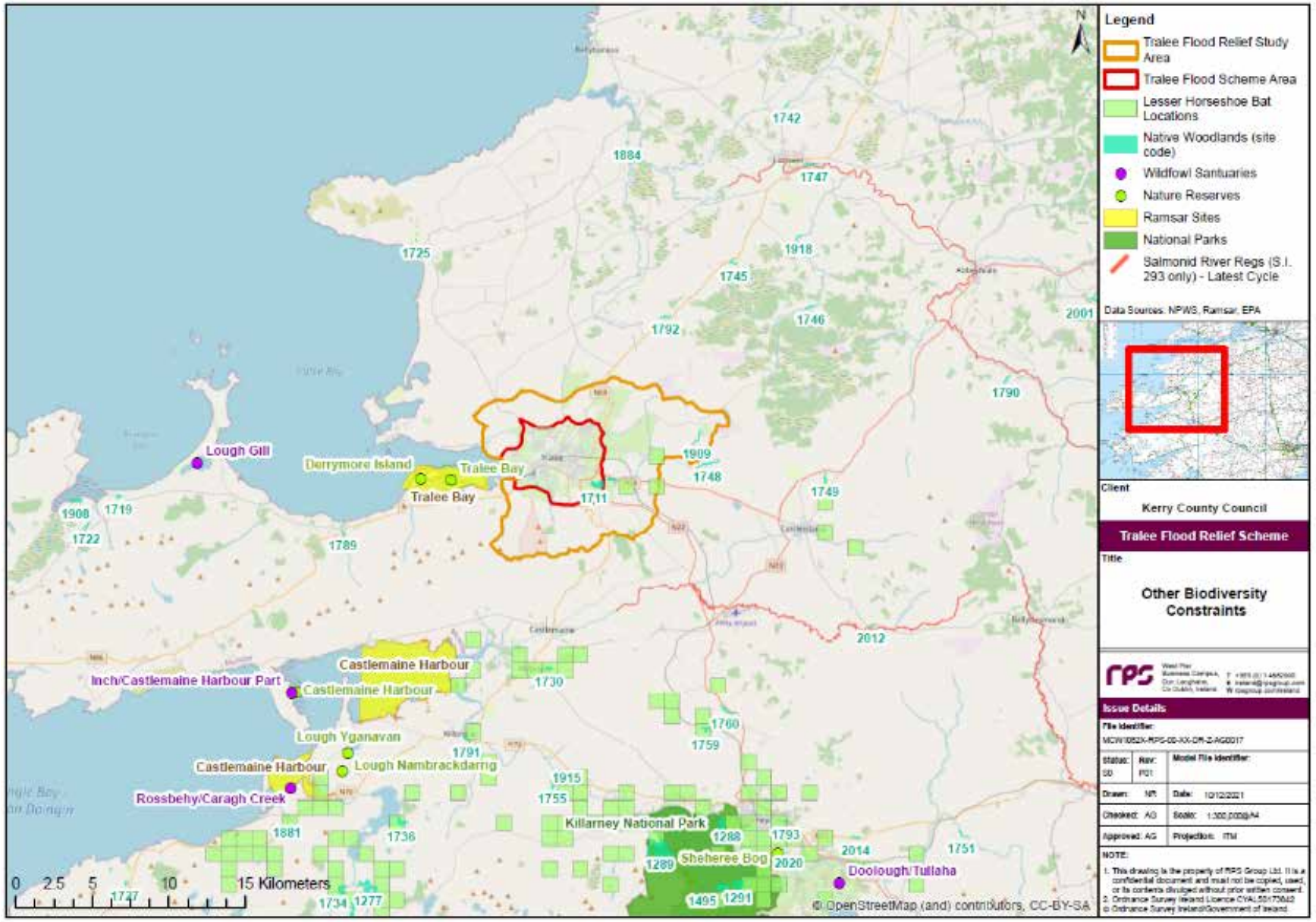
Name	Grid Reference	Address	Species observed
Private	Q8712	Tralee, Co. Kerry	*Rhinolophus hipposideros, Myotis mystacinus*
Private	Q8314	Tralee,Co. Kerry	*Pipistrellus pipistrellus* (45kHz)
Private	Q8812	Ballycarty, Tralee, Co. Kerry	*Rhinolophus hipposideros, Plecotus auritus*

Name	Grid Reference	Address	Species observed
Private	Q8214	Tralee, Co. Kerry	*Nyctalus leisleri*
Private	Q8416	Tralee, Co. Kerry	*Plecotus auritus*
Private	Q8412	Tralee, Co. Kerry	*Nyctalus leisleri*

Table B7: Bat Conservation Ireland Records for Bat Activity within 10km of Q84184, 14267 (Centre point of scheme).

Survey Type	Grid Square	Source	Easting	Northing	Species Recorded
Transect	Q8760113092	Ballyseedy Wood Transect	87601	113092	*Myotis daubentonii*,Unidentified bat
Transect	Q8164713313	Blenerville Transect	81647	113313	*Myotis daubentonii*,Unidentified bat
Transect	Q8909004815	Maine Bridge Transect	89090	104815	*Myotis daubentonii*,Unidentified bat,Pipistrellus spp. (45kHz/55kHz)
Transect	Q8371913759	Tralee Town Transect	83719	113759	*Myotis daubentonii*,Unidentified bat
Transect	Q9105913169	V99 (18) 2006-2008	91059	113169	*Pipistrellus pipistrellus* (45kHz), Pipistrellus spp. (45kHz/55kHz),*Nyctalus leisleri,Pipistrellus pygmaeus*
Ad-hoc observations	BATLAS 2010	Q8912904812	89129	104812	*Pipistrellus pygmaeus*
Ad-hoc observations	BATLAS 2010	Q9264506168	92645	106168	*Myotis daubentonii*,Myotis spp.
Ad-hoc observations	BATLAS 2020	Q9341412381	93414	112381	*Pipistrellus pipistrellus* (45kHz), *Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii*,Unidentified bat
Ad-hoc observations	BATLAS 2020	Q9003615401	90036	115401	*Pipistrellus pygmaeus,Myotis daubentonii*,Unidentified bat
Ad-hoc observations	BATLAS 2020	Q9041617229	90416	117229	*Nyctalus leisleri*,Unidentified bat
Ad-hoc observations	BATLAS 2020	Q8679304947	86793	104947	*Pipistrellus pipistrellus* (45kHz), Pipistrellus pygmaeus
Ad-hoc observations	BATLAS 2020	Q9260306185	92603	106185	*Pipistrellus pipistrellus* (45kHz), *Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii*
Ad-hoc observations	BATLAS 2020	Q9384806495	93848	106495	*Pipistrellus pipistrellus* (45kHz), *Pipistrellus pygmaeus*
Ad-hoc observations	Consultancy Surveys	Q8800012000	88000	112000	*Pipistrellus pipistrellus* (45kHz), *Pipistrellus pygmaeus,Plecotus auritus,Nyctalus leisleri,Myotis natterreri,Rhinolophus hipposideros*
Ad-hoc observations	Consultancy Surveys	Q8400016000	84000	116000	*Pipistrellus pygmaeus,Pipistrellus pipistrellus* (45kHz),*Plecotus auritus*
Ad-hoc observations	Consultancy Surveys	Q8731012300	87310	112300	*Rhinolophus hipposideros,Myotis mystacinus/brandtii*
Ad-hoc observations	Consultancy Surveys	Q8575012300	85750	112300	*Nyctalus leisleri*
Ad-hoc observations	Consultancy Surveys	Q8635015650	86350	115650	*Plecotus auritus,Myotis natterreri,Pipistrellus pipistrellus* (45kHz)

Figure B1: Other Biodiversity Constraints



Appendix C
Invasive Species Mapping

Figure C1: Invasive Species Overview

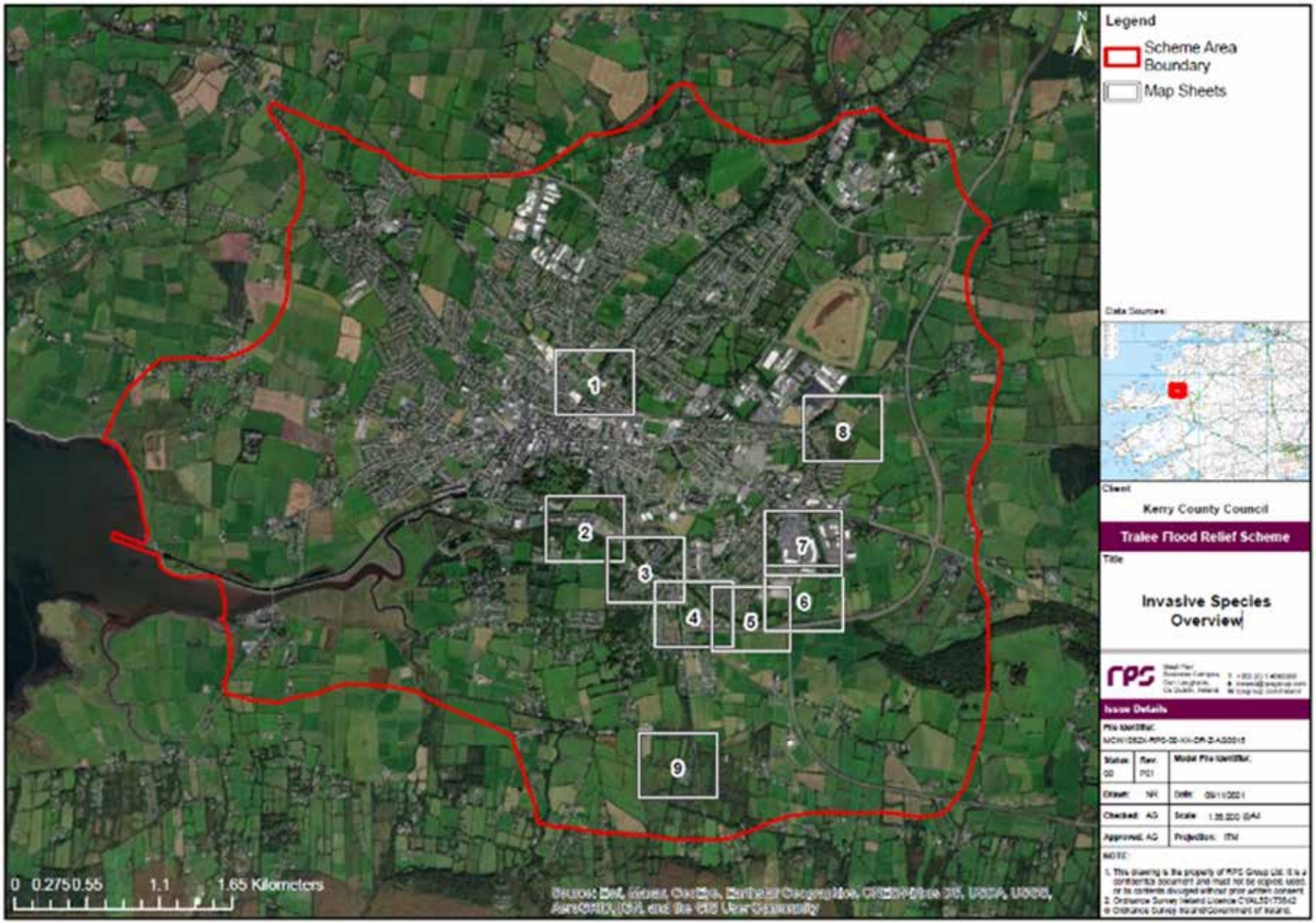


Figure C2: Map Sheet Number 1

Figure C3: Map Sheet Number 2

Figure C4: Map Sheet Number 3

Figure C5: Map Sheet Number 4

Figure C6: Map Sheet Number 5

Figure C7: Map Sheet Number 6

Figure C8: Map Sheet Number 7

Figure C9: Map Sheet Number 8

Figure C10: Map Sheet Number 9

Appendix D
Cultural Heritage Findings

Prehistoric

Table D.1: House – prehistoric (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-289----	KILLIERISK	485074	613754	1

Table D.2: Megalithic structure (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE038-163----	CAMP (Trughanacmy By., Ballyseedy ED)	485333	612696	1

Bronze Age

Table D.3: Burnt mounds (n=11)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-270----	BALLYNAHOULORT	482624	616355	1
KE029-271----	BALLYNAHOULORT	483144	616408	1
KE029-272----	BALLYNAHOULORT	483324	616412	1
KE029-268----	BALLYBEGGAN	486008	616084	1
KE038-120----	CAHERLEHEEN (Trughanacmy By., Ballyseedy Par.)	485246	611999	1
KE029-257----	MANOR EAST	486385	613192	1
KE038-127003-	CLAHANE	484089	611827	1
KE029-306----	BALLINGOWAN (Trughanacmy By.)	486011	614012	1
KE029-307----	BALLINGOWAN (Trughanacmy By.)	485951	614023	1
KE029-308----	BALLINGOWAN (Trughanacmy By.)	485993	614038	1
KE029-325----	DROMTHACKER	486193	616545	1

Table D.4: Burnt spreads (n=3)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-274----	BALLYNAHOULORT	482725	616408	1
KE029-273----	BALLYNAHOULORT	482723	616409	1
KE038-166----	CLAHANE	483971	612812	1

Table D.5: Flat cemetery (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-309----	BALLYVELLY	482214	614104	0

Table D.6*: Fulacht fia* (n=8)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-232----	DROMTHACKER	485993	616650	0
KE029-233----	DROMTHACKER	485874	616501	0
KE038-127001-	CLAHANE	484135	611906	1
KE038-127002-	CLAHANE	484084	611861	1
KE038-127004-	CLAHANE	484014	611854	1
KE038-127005-	CLAHANE	484028	611794	1
KE029-315----	BALLINGOWAN (Trughanacmy By.)	486033	614058	1
KE029-316----	BALLINGOWAN (Trughanacmy By.)	486065	614067	1

Table D.7: Ring ditches (n=3)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-280----	CLOGHERS	483453	613137	1
KE029-294----	MANOR EAST	485791	613529	1
KE029-311----	BLENNERVILLE	481796	612972	1

Table D.8: Standing stone (n=2)

SMR	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-116----	**KE029-116----**	CARRIGEENDANIEL	482402	615305	1
KE038-102----		CAMP (Trughanacmy By., Ballyseedy ED)	485325	612481	1

Bronze Age/Iron Age

Table D.9: Barrow – ring-barrow (n=3)

SMR/RMP	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
	KE038-009----	BALLYDUNLEA	482203	612557	1
KE029-258----		MANOR EAST	485858	613004	1
KE038-105----		CLAHANE	484294	611907	1

Table D.10: Barrow – unclassified (n=2)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE038-161----	CAMP (Trughanacmy By., Ballyseedy ED)	485333	612696	1
KE038-164----	CAMP (Trughanacmy By., Ballyseedy ED)	485333	612696	1

Table D.11: Hilltop enclosure (n=1)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-112----	KNOCKANACUIG, LOHERCANNAN	481948	614652	1

Table D.12: Enclosure – large enclosure (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-265----	BALLINGOWAN (Trughanacmy By.)	486378	613886	1

Early Medieval

Table D.13: Cross slab (n=1)

RMP	Townland	Easting(ITM)	Northing(ITM)	RMP Proposed
KE029-157004-	RATASS	485206	614149	1

Table D.14: Ecclesiastical site (n=1)

RMP	Townland	Easting(ITM)	Northing(ITM)	RMP Proposed
KE029-157----	RATASS	485208	614145	1

Table D.15: Ogham stones (n=9)

SMR	RMP	Townland	Easting(ITM)	Northing (ITM)	RMP Proposed
	KE029-157002-	RATASS	485205	614149	1
KE029-319---		TRALEE	482400	614480	0
KE029-247---		TRALEE	483562	614159	0
KE029-320---		TRALEE	483562	614159	1
KE029-321---		TRALEE	483562	614159	1
KE029-322---		TRALEE	483562	614159	1
KE029-323---		TRALEE	483562	614159	1
KE029-324---		TRALEE	483562	614159	1
KE029-326---		TRALEE	483562	614159	1

Table D.16: Ringfort – rath (n=18)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-128----	BALLINORIG WEST	486267	614813	1
KE029-129----	BALLINORIG SOUTH	486516	614651	1
KE029-130----	BALLINORIG SOUTH	486483	614571	1
KE029-150----	LOHERCANNAN	480936	614083	1
KE029-151----	LOHERCANNAN	481022	614300	1
KE029-155----	CLOGHERS	483486	613081	1
KE029-077----	BALLYNAHOULORT	482951	616325	1
KE029-078----	BALLYNAHOULORT	483301	616156	1
KE029-079001-	LISLOOSE	483677	616081	1
KE029-083----	KILLEEN (Trughanacmy By.)	484381	616613	1
KE029-085----	GARRANE (Trughanacmy By.)	484700	616928	1
KE029-094----	DROMTHACKER	485723	616269	1
KE029-095----	DROMTHACKER	485840	616273	0
KE029-096----	DROMTHACKER	485914	616824	1
KE029-120----	CLOONALOUR (Trughanacmy By., Tralee urban ED)	484137	614854	1
KE029-125----	CLOONALOUR (Trughanacmy By., Tralee urban ED)	484809	615183	1
KE029-126001-	CLOONALOUR (Trughanacmy By., Tralee urban ED)	484793	614959	1
KE029-131----	BALLINORIG SOUTH	486519	614480	1

Table D.17: Souterrain (n=3)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-151001-	LOHERCANNAN	481026	614293	1
KE029-118----	TRALEE	482895	614514	1
KE029-228----	CLOGHERBRIEN	482004	616284	1

Medieval

Table D.18: Architectural fragments (n=18)

SMR	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
	KE029-082002-	LISLOOSE	484133	616341	1
KE029-119004-		TRALEE	483301	614312	1
KE029-119005-		TRALEE	483299	614312	1
KE029-119006-		TRALEE	483299	614313	1
KE029-119007-		TRALEE	483299	614313	1
KE029-119008-		TRALEE	483299	614313	1
KE029-119010-		TRALEE	483299	614313	1
KE029-119012-		TRALEE	483299	614313	1
KE029-119013-		TRALEE	483299	614313	1
KE029-119014-		TRALEE	483299	614313	1
KE029-119015-		TRALEE	483299	614314	1
KE029-119016-		TRALEE	483299	614314	1
KE029-119017-		TRALEE	483299	614314	1
KE029-119018-		TRALEE	483299	614315	1
KE029-119019-		TRALEE	483298	614315	1
KE029-119020-		TRALEE	483298	614315	1
KE029-		TRALEE	483719	614628	1

SMR	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
119022-					
KE029-157006-		RATASS	485204	614143	1

Table D.19: Armorial plaques (n=2)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-236003-	TRALEE	483515	614394	1
KE029-119009-	TRALEE	483299	614313	1

Table D.20: Castle – tower house (n=2)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-123----	BALLYBEGGAN	486303	615597	1
KE029-163----	BALLYMULLEN (Trughanacmy By., Tralee Rural ED)	484539	613415	1

Table D.21: Castle – unclassified (n=2)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-119027-	BALLOONAGH	483255	614803	1
KE029-119030-	TRALEE	483628	614430	1

Table D.22: Church (n=2)

SMR	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
	KE029-157001-	RATASS	485208	614145	1
KE029-119002-		TRALEE	483719	614628	1

Table D.23: Cross – cross-inscribed stone (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-246----	TRALEE	483562	614159	1

Table D.24: Historic Town (n=1)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-119----	BALLOONAGH, CLOON BEG, CLOON MORE, TRALEE	483628	614454	1

Table D.25: Religious House – Dominican Friars (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-236001-	TRALEE	483515	614394	1

Table D.26: Ritual site – holy well (n=1)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-082001-	LISLOOSE	484133	616341	1

Table D.27: Wall monument (n=1)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-157003-	RATASS	485206	614150	1

Post-medieval

Table D.28: Font (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-119003-	TRALEE	483719	614628	1

Table D.29: Graveslab (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-119021-	TRALEE	483315	614313	1

Table D.30: Water mill – horizontal-wheeled (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-082003-	LISLOOSE	484147	616323	1

Miscellaneous

Table D.31: Burial (n=1)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-126002-	CLOONALOUR (Trughanacmy By., Tralee urban ED)	484793	614959	1

Table D.32: Building (n=1)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-079002-	LISLOOSE	483677	616081	1

Table D.33: Cairn – unclassified (n=3)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE038-092----	BALLYSEEDY	486286	612121	1
KE038-101----	CAMP (Trughanacmy By., Ballyseedy ED)	485626	612613	1
KE029-305----	MANOR WEST	485304	613544	1

Table D.34: Enclosure (n=41)

SMR	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-259----		MUING EAST	485342	615241	1
KE038-119----		BALLYSEEDY	486028	612658	1
	KE029-152----	LOHERCANNAN	481113	614171	1
	KE029-153----	LOHERCANNAN	481666	614273	1
	KE029-156----	CLAHANE	484115	612904	1
	KE029-127----	BALLINORIG SOUTH	486202	614651	1
	KE029-080----	LISLOOSE	483706	616458	1
	KE029-084----	KILLEEN (Trughanacmy By.)	484365	616503	1

SMR	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
	KE029-093----	MUING WEST	485436	616157	1
	KE029-111----	FARRANSTEPHEN	482121	615318	1
	KE029-113----	MOUNTHAWK	482796	615844	1
	KE029-114----	CARRIGEENDANIEL	482220	615312	1
	KE029-115----	CARRIGEENDANIEL	482285	615253	1
	KE029-117----	BALLYVELLY	482298	614555	1
	KE029-121----	DROMTHACKER	485701	615963	1
	KE029-122001-	BALLYBEGGAN	486369	615987	1
	KE029-158----	BALLINGOWAN (Trughanacmy By.)	486323	613942	1
	KE029-159----	BALLINGOWAN (Trughanacmy By.)	486262	613836	1
	KE029-160001-	BALLINGOWAN (Trughanacmy By.)	486652	614209	1
	KE029-164----	MANOR WEST	485002	613432	1
	KE029-165----	MANOR WEST	485354	613136	1
	KE038-015----	CAMP (Trughanacmy By., Ballyseedy ED)	484952	612790	1
	KE029-203----	BALLYBEGGAN	486132	615842	1
	KE029-205----	LOHERCANNAN	480959	614171	1
	KE029-206----	CLASH EAST	485159	614454	1
	KE029-226----	DROMTHACKER	486027	616174	1
	KE038-008----	BALLYDUNLEA	482176	612740	1
	KE038-013----	CLAHANE	483274	612661	1
	KE038-014----	SKAHANAGH	484835	612424	1
	KE038-016----	BALLYSEEDY	486505	612184	1
KE029-267----		BALLYARD	482706	613017	1

SMR	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE038-097----		BALLYSEEDY	486523	612387	1
KE038-096----		BALLYSEEDY	486281	612351	1
KE029-256----		KILLEEN (Trughanacmy By.)	484612	616176	1
KE029-293----		LOHERCANNAN	481186	613664	1
KE029-304----		MANOR WEST	485304	613544	1
KE038-154----		CAHERWEESHEEN	484329	612453	1
KE038-155----		CAHERWEESHEEN	484329	612453	1
KE038-156----		CAHERWEESHEEN	484329	612453	1
KE038-160----		CAMP (Trughanacmy By., Ballyseedy ED)	485333	612696	1
KE038-162----		BALLYSEEDY	486227	612558	1

Table D.35: Excavation – miscellaneous (n=14)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-277----	BUNTALLOON	483426	615953	1
KE029-278----	BUNTALLOON	483536	616053	1
KE029-279----	LISLOOSE	483676	616103	1
KE029-230----	BUNTALLOON	483390	615986	0
KE029-242----	BUNTALLOON	483390	615986	0
KE029-243----	BUNTALLOON	483390	615986	0
KE029-244----	BUNTALLOON	483390	615986	0
KE029-245----	BUNTALLOON	483412	616072	0
KE029-281----	CLOONALOUR (Trughanacmy By., Tralee urbanED)	484610	615211	1
KE029-288----	KILLEEN (Trughanacmy By.)	484475	616303	1
KE029-296----	MOUNTHAWK	482376	615853	1

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-310----	BALLYVELLY	482218	614507	0
KE029-312----	CLOGHERS	483676	613353	1
KE029-313----	MOUNTHAWK	482426	615803	1

Table D.36: Field boundaries (n=3)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE038-112----	SKAHANAGH	484868	612316	1
KE029-122002-	BALLYBEGGAN	486333	615987	1
KE038-098----	CAMP (Trughanacmy By., Ballyseedy ED), BALLYSEEDY	485906	612449	1

Table D.37: Hut site (n=2)

RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-114001-	CARRIGEENDANIEL	482220	615312	1
KE029-115001-	CARRIGEENDANIEL	482285	615253	1

Table D.38: Graveslab (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-236004-	TRALEE	483515	614394	1

Table D.39: Graveyard (n=2)

SMR	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
	KE029-157005-	RATASS	485203	614139	1
KE029-236002-		TRALEE	483515	614394	1

Table D.40: Linear earthwork (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE038-159----	CAHERWEESHEEN	484329	612453	1

Table D.41: Mound (n=4)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE038-157----	CAHERWEESHEEN	484329	612453	1
KE038-158----	CAHERWEESHEEN	484329	612453	1
KE038-165----	BLENNERVILLE	481711	612810	1
KE029-314----	BLENNERVILLE	481334	613021	1

Table D.42: Pit alignment (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-317----	BALLINGOWAN (Trughanacmy By.)	486591	613716	1

Table D.43: Pit burial (n=1)

SMR	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
KE029-295----	RAHOONANE	484175	615453	1

Table D.44: Redundant record (n=8)

SMR	RMP	Townland	Easting (ITM)	Northing (ITM)	RMP Proposed
	KE029-149----	KERRIES EAST	480256	614423	0
	KE029-081----	LISLOOSE	483996	616713	0
	KE029-086----	GARRANE (Trughanacmy By.)	484755	616848	0
	KE029-167----	CAMP (Trughanacmy By., Ballyseedy ED)	485105	612834	0
	KE029-177----	CLOGHERS	483416	613423	0
KE029-235----		CARRIGEENDANIEL	482278	615293	0
KE029-251----		BALLINGOWAN (Trughanacmy By.)	486154	614152	0
KE038-100----		CAHERWEESHEEN	484331	612491	0

Record of Protected Structures (RPS)

Table D. 45: RPS Structures within the Scheme Area (n=359)

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
RPS KY-029-004	Dwelling House (detached)	Leebrook House	Curraghleha East	486885	613003
RPS KY-030-001	Dwelling House	Rathanny House	Ballymacelligott	484701	616327
RPS KY-036-001	Dwelling House		Camp	484860	615975
21302801	Church	Ballynahaglish Church ofIreland Church	Glebe, Ballynahaglish	487608	612906
21302907	Detached House	Collis-Sandes House	Killeen, Oakpark	487694	612424
21302909	Remains of Detached House		Oak Park	487849	612648
21302913	Castle	Ballyseedy Castle Hotel	Ballyseedy	487869	612788
21,006,325	House	The Cookery	16 Abbey Street	484191	612848
21,006,326	House	The Rolling Pin	Abbey Street	483474	614366
21,001,175	Church	Our Lady and St. Brendan's (RC) Church	Our Lady and St. Brendan's (RC) Church	483462	614372
21,003,257	House		21 Ashe Street	483894	615053
21,003,258	House		20 Ashe Street	483842	614563
21,003,273	House	Pierse McCarthy LucySolicitors	9 Ashe Street	483836	614560
21,003,275	House	Partnership Trá Lí	7 Ash Street	483783	614501
21,003,276	Court House	Court House	Ashe Street	483773	614486
21,003,289	House	Mozart's	4 Ashe Street	483762	614462
21,003,290	House	Royal Palace (The Dragon Inn)	3 Ashe Street	483725	614427
21,003,298	House	Henneberry's	49 Ashe Street	483720	614421

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,003,302	House	McElligotts	42 Ashe Street	483696	614429
21,003,304	Church Hall/Parish Hall	Kerry Protestant Hall	39-40 Ash Street	483726	614470
21,003,306	House	Ger Carmody's,	37 Ashe Street	483736	614483
21,003,414	House	Finance Options,	3 Ashe Street	483750	614499
21,003,413	House	Thomas Quilter	34 Ashe Street	483781	614548
21,003,416	Church	St. John's Church (Col),	Ashe Street	483777	614543
21,003,231	Gate/Piers	Limestone gate and piers,	Ashe Street	483750	614583
21,003,131	School	St. John The Baptist's School	Balloonagh	483853	614606
21,003,128	Gate Lodge	Gate Lodge	Balloonagh	483230	614803
21,003,127	Orphanage/childrens home	Former Orphanage (Catherine McAuley Home)	Balloonagh	483200	614904
21,002,097	Convent and Trough	Sisters of Mercy Convent& Slate Trough	Balloonagh	483125	614939
21,002,097	Convent and Trough	Sisters of Mercy Convent& Slate Trough	Balloonagh	483113	614962
21,002,099	Convent/nunnery	Building to rear of Convent	Balloonagh	483150	614965
21,002,098	Laundry	Former Magdalen Asylum(laundry)	Balloonagh	483077	614983
21,002,096	Chapel	Chapel	Balloonagh	483091	614916
21,003,129	Gates	Entrance gates to School	Balloonagh	483248	614779
TTP no 27	Bridge	Mulgrave Bridge	Ballyard	483171	613890
21,302,910	Bridge	Ballyard Bridge	Ballyard	483156	613632
21,302,911	House	Ballyard House	(Foot of Ballyard Hill), Ballyard	483219	613456
TTP no 30	House	Kilteely House	Ballyard	483108	613216
TTP no 31	House	Ballard House,	Lover's Lane Ballyard	483084	613200

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,009,188	House	No. 1	Ballymullen Road	484134	614091
21,009,189	House	No. 2	Ballymullen Road	484135	614083
21,009,190	House	No. 3	Ballymullen Road	484136	614077
21,009,191	House	No. 4	Ballymullen Road	484137	614070
21,009,192	House	No. 5	Ballymullen Road	484140	614064
21,009,193	House	No. 6	Ballymullen Road	484141	614057
21,009,194	House	1 Clonmore Terrace	Ballymullen Road	484142	614047
21,009,195	House	2 Clonmore Terrace	Ballymullen Road	484144	614041
21,009,196	House	2 Clonmore Terrace	Ballymullen Road	484145	614035
21,009,197	House	4 Clonmore Terrace	Ballymullen Road	484146	614030
21,009,198	House	5 Clonmore Terrace	Ballymullen Road	484146	614025
21,009,199	House	6 Clonmore Terrace	Ballymullen Road	484148	614018
21,009,200	House	7 Clonmore Terrace	Ballymullen Road	484149	614013
21,009,201	House	8 Clonmore Terrace	Ballymullen Road	484150	614007
21,009,203	House	1 Clonmore Villas	Ballymullen Road	484151	613999
21,009,204	House	2 Clonmore Villas	Ballymullen Road	484153	613992
21,009,205	House	3 Clonmore Villas	Ballymullen Road	484153	613986
21,009,206	House	4 Clonmore Villas	Ballymullen Road	484156	613974
21,009,207	House	5 Clonmore Villas	Ballymullen Road	484145	613959
21,009,208	Gate Lodge	Clonmore Lodge	Ballymullen Road	484373	613780
21,008,010	Building & Archway	Former Prison/Barracks/Old Ballymullen Gaol	Garryruth	484319	613737
21,008,015	House	Ballybullen Post Office	Ballymullen	484320	613728
21,080,016	House		Ballymullen	484339	613643

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,008,029	House	2 Stephan's Terrace	Ballymullen Road	484350	613546
21,008,152	House	Hanlons Shop	Ballymullen Road	484449	613426
21,008,132	House	Castledesmond House	Ballymullen	484573	613377
21,008,119	Castle/fortifid house	Castle Morris	Ballymullen	484590	613423
21,008,119	House	Castle Morris House	Ballymullen	484601	613633
21,008,049	Barracks	Former Day Room	Military Barracks, Ballymullen	484464	613623
21,008,037	Barracks	Former Domestic Quarters	Military Barracks, Ballymullen	484454	613671
21,008,041	Barracks	Former Domestic Quarters	Military Barracks, Ballymullen	484420	613674
21,008,040	Prison/Jail	Former Prison	Military Barracks, Ballymullen	484564	613571
21,008,059	Barracks	Former Domestic Quarters	Military Barracks, Ballymullen	484537	613653
21,008,044	Hospital/Infirmary	Barracks	Military Barracks, Ballymullen	484565	613631
21,008,045	Barracks		Military Barracks, Ballymullen	484584	613606
21,008,050	Barracks	Former Mess	Military Barracks, Ballymullen	484443	613610
21,008,061	Barracks	Former Store	Military Barracks, Ballymullen	483178	614219
21,005,188	House	1 Basin Road	Basin Road	483175	614214
21,005,187	House	2 Basin Road	Basin Road	483172	614208
21,005,186	House	3 Basin Road	Basin Road	483168	614202
21,005,185	House	4 Basin Road	Basin Road	481440	613048
21,400,301	Windmill	Blennerville Windmill	Blennerville	481573	613015
21,400,301	House	Slate Hung 2 Storey House	Blennerville	481557	612949

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
TTP no 74	House	2 storey unpainted period house	Blennerville	481550	612935
21,400,303	House	Guesthouse	Blennerville	484156	613974
21,400,306	Building	Unpainted three storeyperiod house	Blennerville	481541	612925
21,400,304	House	Blennerville House	Blennerville	481527	612977
21,400,305	Coach-House	Former Coach-House	Blennerville House, Blennerville	481550	612999
TTP no 79	Grotto	The Grotto	Boherbee	484455	614292
21,006,082	House	No. 2 Sullivan's Lane	Boherboy	483958	614373
21,004,272	Bridge		Brewery Road	484053	614851
21,004,001	House	1 Oakview	Brewery Road	484084	614866
21,006,314	House	Val's Public House	6 Bridge Street	483489	614404
21,003,474	House	Caballs,	9 Bridge Street	483505	614428
21,003,476	House	Kerry Bookshop	Bridge Street	483516	614433
21,003,477	House	Caballs	12 Bridge Street	483521	614433
21,003,478	House	G. Connolly's	13 Bridge Street	483525	614433
21,003,520	House	Carrig Donn	17 Bridge Street	483550	614432
21,003,361	House	Mirage (Adam's)	Adam's, Bridge Street	483565	614454
21,003,387	Commercial Building	Walsh's Shoe Shop	20 Bridge Street	483555	614455
21,003,386	House	Quinlan's	21 Bridge Street	483550	614454
21,003,385	Shop/Retail Outlet	Dunne's Stores	Bridge Street	483537	614454
21,006,237	House	Stella Maris	17 Chapel Street	483286	614353
21,003,408	House	2 Church Street	Church Street	483744	614521

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,003,307	House	3 Church Street	Church Street	483744	614504
21,003,314	Shopfront	T. Mac Mahon's	8 Church Street	483695	614503
21,003,322	House		Church Street	483660	614490
TTP no 100	Facade	Spring Lodge	Cloghers	483280	613488
21,302,912	Gate Lodge	Belmont Gate Lodge	Cloghers	483284	613455
21,302,912	House	Belmont House,	Cloghers	483451	613390
21,008,105	House	Cloghers House,	Cloghers	484230	613275
21,008,099	Gate Lodge	Cloghers Gate Lodge	Cloghers	484451	613267
21,004,195	House	3 Ardara	Clonalour	484235	614742
21,004,196	House	4 Ardara	Clonalour	484242	614740
21,004,185	Gate Lodge	Clonalour Gate Lodge	Clonalour	484211	614781
21,004,187	House	Clonalour House	Clonalour	484315	614793
21,004,026	Gate Lodge	Park na Doon Lodge	Oakpark Road	484219	614831
21,004,027	House	Park na Doon House	Oakpark Road	484233	614895
21,004,043	Building	1 Cloondara	Oakpark	484427	614991
21,006,243	Former Coach Houses	Outbuildings	Cross Lane	483312	614326
21,006,170	School	St. Mary's, The Green School	The Green	483657	613890
21,007,078	House	1 Day Place	Day Place	483400	614360
21,007,077	House	2 Day Place	Day Place	483396	614353
21,007,076	House	3 Day Place	Day Place	483393	614346
21,007,075	House	4 Day Place	Day Place	483390	614339
21,007,074	House	5 Day Place	Day Place	483386	614331
21,007,073	House	6 Day Place	Day Place	483383	614324

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,007,072	House	7 Day Place	Day Place	483380	614317
21,007,071	House	8 Day Place	Day Place	483377	614309
21,007,069	House	10 Day Place	Day Place	483372	614302
21,007,070	House	9 Day Place	Day Place	483368	614295
21,006,001	House	Priory	Day Place	483358	614283
21,006,002	Church	Holy Cross (RC) Dominican's Church	Day Place	483367	614265
21,006,229	Railings	Iron Railings	Day Place	483400	614309
21,006,373	Office	Thomas Ashe Memorial Hall,	Denny Street	483596	614116
21,006,372	Railings		Boundary of Town Park, Denny Street	483643	614143
21,006,372	Railings		Boundary of Town Park, Denny Street	483595	614064
21,006,372	Railings		Boundary of Town Park, Denny Street	483548	614126
21,006,372	Railings		Boundary of Town Park, Denny Street	483621	614186
21,006,372	Railings		Boundary of Town Park, Denny Street	483602	614193
21,007,029	Gate Lodge	Gate Lodge	Denny Street	483601	614226
21,007,031	House	17 Denny Street	Denny Street	483610	614259
21,007,032	House	16 Denny Street	Denny Street	483614	614270
21,007,033	House	15 Denny Street	Denny Street	483615	614278
21,007,034	House	13-14 Denny Street	Denny Street	483617	614290
21,007,035	House	12 Denny Street	Denny Street	483620	614303
21,007,036	House	11 Denny Street	Denny Street	483622	614309

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,007,037 / 21,007,	Houses	9-10 Denny Street	Denny Street	483626	614325
21,007,039	House	8 Denny Street	Denny Street	483630	614338
21,007,040	House	7 Denny Street	Denny Street	483632	614346
21,007,041	House	6 Denny Street	Denny Street	483634	614352
21,007,042	House	5 Denny Street	Denny Street	483636	614360
21,007,043	House	4 Denny Street	Denny Street	483638	614367
21,007,044	House	3 Denny Street	Denny Street	483641	614375
21,007,045	House	2 Denny Street	Denny Street	483641	614384
TTP no 144	Post Box	Post Box	Denny Street	483653	614395
21,006,030	Monument	The Pikeman	Denny Street	483656	614372
21,007,013	House	33 Denny Street	Denny Street	483673	614374
21,007,014	House	The Pikeman Bar	Denny Street	483670	614366
21,007,015/21 ,007016	House	The Grand Hotel	Denny Street	483668	614356
21,007,017	House	29 Denny Street	Denny Street	483666	614343
21,007,018	House	28 Denny Street	Denny Street	483664	614336
21,007,019/21 ,007020	House	The Imperial Hotel	Denny Street	483660	614326
21,007,021	House	The Imperial Hotel	Denny Street	483657	614312
21,007,022	House	24 Denny Street	Denny Street	483654	614300
21,007,023	House	23 Denny Street	Denny Street	483652	614292
21,007,024	House	22 Denny Street	Denny Street	483651	614283
21,007,025	House	21 Denny Street	Denny Street	483649	614276
21,007,026	House	20 Denny Street	Denny Street	483647	614269

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,007,027	House	19 Denny Street	19 Denny Street	483646	614261
21,007,028	House	18 Denny Street	Denny Street	483642	614250
21,006,057	House	10 Edward Street	Edward Street	483839	614384
21,003,242	Post Office	Tralee Post Office,	Edward Street	483836	614430
21,003,244	Hall	Masonic Hall (Slattery Travel)	Edward Street	483863	614482
TTP no 163	Signal Box	Signal Box	Signal Box at Railway Station	484033	614609
21,004,222	Warehouse	Warehouse	Train Station, Edward Street	484202	614628
21,004,224	Warehouse	Warehouse	Train Station, Edward Street	484092	614616
21,004,223	Turntable	Turntable	Train Station, Edward Street	484191	614656
21,004,258	Wall	Wall at Railway Terrace	Edward Street	484025	614629
21,004,219	House	(former) Tralee Credit Union	Edward Street	484081	614647
21,004,201	Hall	Kingdom Hall	Edward Street	484148	614701
21,006,343	Office	Fabric Night Club	Godtrey Place	483394	614245
21,006,344	House	2 Godtrey Place	Godtrey Place	483387	614229
21,006,345	House	3 Godtrey Place	Godtrey Place	483384	614221
21,006,230	Store/Warehouse	Tralee Gas Supplies Ltd,	High Street	483356	614366
21,006,292	House	Kerry School of Music	High Street	483346	614387
21,006,236	House	Dwelling House	Corner of High Street & Chapel Street	483299	614371
21,003,062	Hospital/Infirmary	Tony Lamb's	High Street	483306	614425
21,006,348	House	Bella Bia	1 Ivy Terrace	483423	614201
21,006,347	House	2 Ivy Terrace	Ivy Terrace	483418	614204

CONSTRAINTS STUDY

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,004,227	Railway Station	Casement Station,	John Joe Sheehy Road	484078	614576
21,302,908	Gate Lodge	Collis Sandes Gate Lodge	Oakpark Road	485023	615700
21,006,047	House	John O'Connor's	23 Lower Castle Street	483799	614381
21,006,043	House	26 Lower Castle Street	Lower Castle Street	483777	614387
21,006,034	House	Country Pork	33 Lower Castle Street	483733	614395
21,006,033	House	Paddy Power	34 Lower Castle Street	483727	614396
TTP no 185	Financial Building	AIB	Lower Castle Street	483677	614387
21,006,029	Financial Building	Bureau de Change, AIB	Lower Castle Street	483686	614384
21,006,027	House	Centra	5 Lower Castle Street	483696	614382
21,006,028	House	Ross Jewellers	4 Lower Castle Street	483692	614385
21,006,026	House	Kennelly's Pharmacy,	6 Lower Castle Street	483703	614381
21,006,025	House	Allegro Restaurant	7 Lower Castle Street	483708	614380
21,006,024	House	Bank of Ireland	8 Lower Castle Street	483720	614376
21,006,023	House	Lee Records/Rusk's	9 Lower Castle Street	483740	614372
21,006,022	House	Naughton's,	10 Lower Castle Street	483749	614370
21,006,021	House	Ryle Woman	11 Lower Castle Street	483753	614369
21,006,018	House	World Choice	14 Lower Castle	483773	614366
21,006,015	House	Presbytery	Upper Castle Street	483796	614358
21,006,014	House	Presbytery	Upper Castle Street	483807	614355
TTP no 198	Monument	The Fleming Memorial,	Killerisk Road	485048	613491
TTP no 199	House	Manor House	Manor	485401	613777

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,003,328	House	CH Opticians	7 Milk Market Lane	483589	614488
21,003,327	House		8 Milk Market Lane	483593	614487
21,003,326	House	CH Chemist's,	Milk Market Lane	483596	614487
21,003,325	House	T. Lyon's,	9 Milk Market Lane	483601	614487
21,003,359	House	J. Madden's	11 Milk Market Lane	483622	614501
21,003,357	House		13 Milk Market Lane	483611	614501
21,003,356	House	T. Lyon's	14/15 Milk Market Lane	483604	614501
TTP no 208			Milk Market Lane	483579	614476
21,003,367	House		18 Milk Market Lane	483578	614493
21,000,159	House	Mounthawk House	Caherslee	482415	615580
21,006,136	House	Call-a-Cab/Solar	Moyderwell	483940	614345
21,006,106	House		48 Moyderwell	483975	614283
21,006,107	House		47 Moyderwell	483979	614278
21,006,108	House		46 Moyderwell	483983	614275
21,006,109	House		45 Moyderwell	483987	614272
21,006,110	House		44 Moyderwell	483991	614269
21,006,111	House		43 Moyderwell	483996	614266
21,006,118	House	Presentation entrance andhouse	18 Moyderwell	483985	614250
21,009,185	Convent / Nunnery	Moyderwell Convent	Moyderwell	484059	614223
21,009,240	House		39 Moyderwell (Healy's Terrace)	484061	614176
21,009,241	House		38 Moyderwell (Healy's Terrace)	484064	614171
21,009,242	House		37 Moyderwell (Healy's Terrace)	484066	614166

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,009,243	House		36 Moyderwell (Healy's Terrace)	484068	614161
21,009,223	House	Former Shop to North of VEC	Moyderwell	484066	614126
21,009,221	Library/Archive	Gaelcholáiste Chiarraí,	Moyderwell	484064	614092
21,003,246	Store/Warehouse	Sandstone Mill (Kelliher's Mill)	North Cicular Road	483905	614588
21,003,425	Workers House	Terraced House	North Circular Road	483835	614625
21,003,424	Workers House	Kerryman	North Circular Road (Rear)	483821	614632
21,003,423	Railway Station	Hogan's Funeral Home	North Circular Road (rear)	483808	614644
21,006,388	Wall		Wall on Park Lane and to rear of Denny Lane East	483694	614222
21,006,388	Wall		Wall on Park Lane and to rear of Denny Lane East	483742	614206
21,006,388	Wall		Wall on Park Lane and to rear of Denny Lane East	483735	614230
21,006,388	Wall		Wall on Park Lane and to rear of Denny Lane East	483695	614311
21,006,388	Wall		Wall on Park Lane and to rear of Denny Lane East	483739	614288
21,003,042	Store/Warehouse	Tralee Laundary,	Pembroke Street	483366	614678
21,003,073	House	Pembroke House	11 Pembroke Street	483378	614701
21,003,071	House	St. Anthony's	Pembroke Street	483362	614710
21,003,121	Store/Warehouse	Warehouse	off Pembroke Street	483404	614712
21,003,118	Creamery	Warehouse,	Pembroke Street	483387	614737
21,003,370	House	Former Restaurant	Percy Hannafin Place	483574	614506

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,003,510	Plaque	Percy Hannaafin Plaque	Pound Lane	483835	614508
21,006,228	House	Quayside House	1 Prince's Quay	483352	614240
21,006,227	House	Quayside House	2 Prince's Quay	483349	614234
21,006,225	House	3 Prince's Quay	Prince's Quay	483341	614218
21,006,224	House	4 Prince's Quay	Prince's Quay	483338	614211
21,006,223	House	5 Prince's Quay	Prince's Quay	483334	614206
21,006,222	House	6 Prince's Quay	Prince's Quay	483331	614200
21,006,217	House	12 Prince's Quay	Prince's Quay	483280	614096
21,006,216	House	13 Prince's Quay	Prince's Quay	483277	614090
21,006,215	House	14 Prince's Quay	Prince's Quay	483274	614084
21,006,214	House	Antiques	15 Prince's Quay	483272	614078
21,006,213	House		16 Prince's Quay	483268	614072
21,006,205	House	1 Greenview Terrace	Greenview Terrace	483269	614052
21,006,204	House	2 Greenview Terrace	Greenview Terrace	483266	614046
21,006,203	House	3 Greenview Terrace	Greenview Terrace	483264	614041
21,006,202	House	4 Greenview Terrace	Greenview Terrace	483262	614035
21,006,201	House	5 Greenview Terrace	Greenview Terrace	483260	614030
21,006,200	House	6 Greenview Terrace	Greenview Terrace	483257	614024
21,006,199	House	7 Greenview Terrace	Greenview Terrace	483254	614019
21,006,198	House	8 Greenview Terrace	Greenview Terrace	483251	614014
21,006,197	House	9 Greenview Terrace	Greenview Terrace	483247	614009
TTP no 256	Hospital	Kerry County Buildings	Rathass	485437	614004
TTP no 257	Church	Church of the ImmaculateConception	Rathass	485361	613999

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
TTP no 258	Monument	Manchester Martyrs Memorial	Rath Cemetery	485231	614061
TTP no 259	Church	Old Church	Rath, Graveyard	485244	614104
21,003,496	Building	Brogue Inn	Lower Rock Street	483458	614498
21,003,466	House	Jackie Power	2 Lower Rock Street	483475	614516
21,003,465	House	Infinity	3 Lower Rock Street	483475	614520
21,003,464	House	Batt Coffey	4 Lower Rock Street	483472	614524
21,003,459	House	O'Flynn Interiors	10 Rock Street	483489	614555
21,003,458	House	The Rock Inn	11 Rock Street	483491	614567
21,003,452	Market House	Market House	14-15 Lower Rock Street	483497	614593
21,003,155	Factory	Horans Fruit & Veg	Rock Street	483674	614901
21,003,154	Factory	Horans Fruit & Veg	Rock Street	483667	614892
21,003,153	Factory	Eireann Computers, CWS	Rock Street	483660	614885
21,003,088	House	Galvin's	101 Rock Street	483478	614629
21003029/21003030	House	Godley's Public House	105 Rock Street	483472	614592
21003024 /21003025	House	Kelliher's Hardware	09-112 Lower Rock Street	483460	614561
21,003,506	Gasworks	Former Gasworks	Rear of Kelliher's Hardware, Rock Street	483428	614581
21,003,470	Arch	Arch	Russell Street	483492	614501
21,002,009	House	Ballyrickard House	Spa Road	482535	614465
21,003,022	House		Spa Road	482559	614507
21,006,312	Monument	Dominican's Monument	Staughton's Row	483435	614361
21,006,333	House	1 Staughton's Row	Staughton's Row	483440	614342

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,006,334	House	2 Staughton's Row	Staughton's Row	483438	614336
21,006,335	House	3 Staughton's Row	Staughton's Row	483435	614330
21,006,275	House	80 Strand Street	Strand Street	483244	614371
21,006,276	House	79 Strand Street	Strand Street	483235	614373
21,006,277	House	78 Strand Street	78 Strand Street	483228	614368
21,006,278	School	Former CBS School/Industrial Building	Strand Street	483212	614370
21,005,140	House	Detached Dwelling	Strand Street	483023	614382
21,005,139	House	Dwelling House	Strand Road	483002	614370
21,003,483	House	Martin Cleary's,	1 The Mall	483569	614432
21,003,482	House	New Gents,	1 The Mall	483573	614431
21,003,481	House	First Active	2 The Mall	483581	614430
21,003,523 / 24	House	Fitzgerald's	4-6 The Mall	483595	614414
21,006,003	House	Irish National	7 The Mall	483605	614410
21,006,004	House	Kelly's Pharmacy	9 The Mall	483611	614409
21,006,005	House	Vero Modo,	10 The Mall	483616	614407
21,006,006	Shop/Retail Outlet	Revington's	11-13 The Mall	483622	614405
21,006,006	Shop/Retail Outlet	Revington's	11-13 The Mall	483627	614404
21,006,006	Shop/Retail Outlet	Revington's	11-13 The Mall	483633	614402
21,007,046	House	Supermac's	The Mall	483643	614399
21,003,342	House	Eason's,	25 The Mall	483631	614431
21,003,341	House	The Bag Shop	26 The Mall	483627	614433
21,003,340	House	Town and Country	27 The Mall	483619	614435

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,003,339	House	Hugh Culloty	28 The Mall	483614	614437
21,003,338	House	Der O'Sullivan	29 The Mall	483607	614439
21,003,337	House	Jerome Walsh's	30 The Mall	483599	614444
21,003,335	House	CH Chemists	31 The Mall	483589	614447
21,003,334	House	Bodywise & Razzle Dazzle	32/33 The Mall	483581	614449
21,003,333	House	The Snackery	4 The Mall	483575	614450
21,007,052	House	Fitzgerald's Jewellers	20 The Square	483587	614402
TTP no 390	House	Carphone Warehouse	9 The Square	483586	614398
21,007,053	House	Burnsworth's	18 The Square	483585	614391
21,007,055	House	Roxy Records	17 The Square	483582	614385
21,007,055	House	Roxy Records	16 The Square	483580	614380
TTP no 310	House	Vodafone	15 The Square	483578	614373
TTP no 311	House	O2	14 The Square	483558	614370
21,007,059	House	Hogan's	13 The Square	483552	614377
TTP no 313	House	Restaurant	12 The Square	483547	614381
21,007,061	House	Mick McCarthy's, Hairdresser	11 The Square	483541	614384
21,007,062	House	Young Scene	10 The Square	483535	614387
TTP no 316	House	The Red Herring	9 The Square	483530	614389
21,007,064	House	Willie Darcy's	8 the Square	483535	614401
21,007,065	House	Subway	7 The Square	483537	614405
21,007,066	House	She	6 The Square	483539	614410
21,003,522	House	Celtic Cabs	5 The Square	483543	614415
21,003,521	Building	Ruairi's	4 The Square	483548	614422

Reg. No.	Description	Building Name	Street / Townland	Easting (ITM)	Northing (ITM)
21,003,512	Market House	Old Market House	1 The Square	483569	614425
21,003,519	Market House	Old Market House	2 The Square	483573	614424
21,003,519	Market House	Old Market House	3 The Square	483579	614422
21,006,155	Church	St. John's RC Church	Lower Castle Street	483808	614269
21,006,156	Chapel	Presentation Convent Chapel	Upper Castle Street	483835	614240
21,006,157	Convent/Nunnery	Presentation Convent	Upper Castle Street	483879	614243
21,006,161	School	Presentation Primary School (Single Storey)	Upper Castle Street	483913	614265
21,006,160	School	Presentation Primary School (Single Storey)	Upper Castle Street	483904	614291
21,006,158	School	Presentation Primary School (Two Storey)	Upper Castle Street	483870	614298
TTP no 331	Gate	Presentation Entrance Gateway	Presentation Entrance Gateway	483897	614317
21,006,149	Archway	Brick Arch,	6 Upper Castle Street	483878	614351
TTP no 333	House	11 Upper Castle Street	Upper Castle Street	483905	614348
21,006,139	House	16 Upper Castle Street	Upper Castle Street	483928	614349
21,006,138	House	17 Upper Castle Street	Upper Castle Street	483932	614346
21,006,137	House	18 Upper Castle Street	Upper Castle Street	483936	614347
TTP no 337	Shopfront	30 Upper Castle Street	Upper Castle Street	483887	614367
21,003,350	House	Alms House	Church Street	483660	614509
21,003,350	Mill	Mill at rear of Alms House	Church Street	483639	614509
21,003,030	House	Godley's Bar	Pembroke Street	483467	614597
21,007,007	Church	Former Weslyan meeting house	Denny Street	483622	614375

Architectural Conservation Areas

Table D.46: Architectural Conservation Areas & Statement of Special Significance within the Scheme Area (n=6)

Tralee Architectural Conservation Areas (Draft Kerry County Development Plan 2022-2028)
Caherina Cottages: The terrace reflects the type of dwellings that were reflect improvements to the housing stock of Tralee at the turn of the twentieth century. It is considered this development is a good intact example of early twentieth century housing. The single storey design, direct access to the street, cast iron rainwater goods, chimney stacks and the brick detailing to opes are integral elements of the ACA's special character. Where new developments are proposed, the use of uPVC should not be permitted and rooflights should be placed on the rear roof slope to maintain the integrity of the design.
Edward Street, Ashe Street, Castle Street: The ACA retains much historic fabric including wrought iron railings, timber sliding sash windows with historic glass, chimney stacks and classical shopfronts and pub fronts. There are also some fine examples of coursed square stonework using local limestone. Some properties have ruled lines in the render to give the appearance of an ashlar stone building. The Courthouse and its precinct remain an important part of this ACA, influencing the plot pattern, landuses and retaining a strong visual presence and link with the wider judicial function of Tralee town.
Holy Cross Dominican Church, Day Place, Godfrey Place, Prince's Quay: The character of this ACA is defined by its former riverside location, on the edge of the former Dominican Abbey precinct, located to the east of the ACA. It is the historic built fabric, the integrity and condition of its buildings, as well as the views into and from the ACA, that are particularly significant. The relationship of buildings to each other within the landscape, the setting and vistas associated with the structures all combine to create a unique landscape within the built-up town. Boundary walls, mature trees, and the open space and gardens associated with the buildings should be retained and protected in future development proposals.
Rock Street, Ashe Street: The ACA's character is defined by the variety of streetscape elements. Original architectural features including shopfront details, chimneys, rainwater goods, boundary railings, carriage stops, windows and window sills, slates, chimney pots, decorative moulding and cornicing are key to protecting and enhancing this area's special character. The urban grain and dense plot pattern represent the area's socio-economic and landuse character which should be retained.
Urban Terrace, Rock Street: This ACA is a fine example of early twentieth century housing, built by the Urban district Council to improve living conditions in Tralee town. The use of brick detailing is a feature of the housing produced around this time and should remain as a highlighted feature in the ACA's buildings. The chimney stacks, rainwater goods and uninterrupted views along the roof planes are of special significance in this ACA as they create and define the plot pattern rhythm
Town Park/Denny Street/Saint John's Church Area/The Square & Precinct: The special character of this ACA is defined by the rhythm of its terraced buildings, the expanse of space afforded by the town park and prominent protected structures within its sphere of influence. The conservation of remaining historic joinery and rainwater goods, in addition to roof profile and plot pattern should be protected and incorporated into future proposals for the street. The setting and character of this ACA, the mixed landuses of institutional, residential and commercial, in addition to views into and from the ACA, are a core part of its interest.

National Inventory of Architectural Heritage (NIAH)

Table D.47: Sites listed on the NIAH within the Scheme Area

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21006325	house	The Cookery	TRALEE	Local	483436	614409	TTP1
21006327	house	The Original Gem	TRALEE	Local	483421	614413	0
21006326	house		TRALEE	Local	483427	614412	TTP2
21004195	house		CLOONALOUR (TR. BY.) TRALEE URBAN ED	Local	484202	614785	TTP105
21004196	house		CLOONALOUR (TR. BY.) TRALEE URBAN ED	Local	484208	614782	TTP106
21003257	house	Alice J. King	TRALEE	Local	483809	614603	TTP4
21003276	court house	Court House	TRALEE	Local	483737	614493	TTP8
21003411	house	Dr. Denis Buckley	TRALEE	Local	483725	614564	0
21003414	house	Finance Options	TRALEE	Local	483744	614590	TTP15
21003304		Kerry ProtestantHall	TRALEE	Regional	483700	614525	TTP13
21003413	house	M. Foley & T. Quilter	TRALEE	Local	483740	614585	TTP16
21003302	house	Mc Elligotts	TRALEE	Local	483687	614511	TTP12
21003289	house	Mozart's	TRALEE	Local	483690	614467	TTP10
21003298	house	O'Dwyer's	TRALEE	Local	483663	614478	TTP11
21003306	house	Partnership TráLí	TRALEE	Local	483713	614539	TTP14
21003275	house	Partnership TráLí	TRALEE	Local	483743	614523	TTP7
21003258	house	St. Jude's	TRALEE	Local	483801	614600	TTP5
21003410	house	The Ashe St. Clinic	TRALEE	Local	483722	614554	0
21002099	convent/ nunnery	Sisters of Mercy	BALLOONAGH	Local	483115	615004	TTP23

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21002097	convent/ nunnery	Sisters of Mercy	BALLOONAGH	Local	483086	614978	TTP22
21002096	church/chapel	Sisters of Mercy	BALLOONAGH	Local	483061	614960	TTP25
21002098	laundry	Sisters of Mercy	BALLOONAGH	Local	483045	615030	TTP24
21008132	house	Castle-desmond House	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484414	613467	0
21008119	castle/ fortified house	Castlemorris	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484539	613416	TTP58
21008066	house	Castlemorris House	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484555	613464	TTP59
21009208	gate lodge	Clonmore House Gate Lodge	CLOON BEG	Local	484111	614000	TTP51
21008152	house	Hanlon's	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484310	613582	TTP56
21008037	barracks	Military Barracks	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484423	613656	TTP61
21008040	prison/jail	Military Barracks	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484386	613722	TTP63
21008041	officers' mess	Military Barracks	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484418	613711	TTP62
21008044	hospital/ infirmary	Military Barracks	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484508	613696	TTP65
21008045	barracks	Military Barracks	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484532	613676	TTP65
21008049	barracks	Military Barracks	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484564	613675	TTP60
21008050	barracks	Military Barracks	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484554	613649	TTP66
21008059	barracks	Military Barracks	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Regional	484524	613591	TTP64
21008061	store/ warehouse	Military Barracks	BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484393	613655	TTP67

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21008015	house		CLOON BEG	Local	484285	613777	TTP53
21008016	house		CLOON BEG	Local	484286	613768	TTP54
21008136	house		BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484382	613493	0
21008134	store/ ware house		BALLYMULLEN (TR. BY.) O'BRENNAN ED	Local	484394	613460	0
21004272	bridge		CLOONALOUR (TR. BY.) TRALEE URBAN ED,RAHOONANE,TRALEE	Local	484013	614902	TTP81
21003477	house	Caball	TRALEE	Local	483486	614473	TTP86
21003474	house	Caball	TRALEE	Local	483470	614470	TTP84
21003520	house	Carraig Down	TRALEE	Local	483516	614473	TTP88
21003385	shop/ retail outlet	Dunnes Stores	TRALEE	Local	483507	614492	TTP92
21003478	house	G. Connolly Jewellers	TRALEE	Local	483490	614473	TTP87
21003476	house	Kerry Bookshop	TRALEE	Local	483482	614473	TTP85
21003386	house	L. Quinlan	TRALEE	Local	483516	614496	TTP91
21006314	house	Val O'Shea's	TRALEE	Local	483454	614444	TTP83
21005118	house	Caherina House	TRALEE	Local	482860	614376	0
21000159	house	Mounthawk	CARRIGEEN-DANIEL	Local	482381	615620	TTP209
21006237	house	Maris Stella	TRALEE	Local	483251	614392	TTP93
21003314	house	T. Mac Mahon	TRALEE	Local	483660	614543	TTP96
21003408	house		TRALEE	Local	483709	614561	TTP94
21003307	house		TRALEE	Local	483708	614543	TTP95
21003416	church/chapel	St. John's Church of Ireland Church	TRALEE	Local	483717	614624	0
21008099	gate lodge	Cloghers Gatelodge	CLOGHERS	Local	484416	613308	TTP104
21008105	house		CLOGHERS	Local	484195	613316	TTP103
21009194	house		CLOON BEG	Local	484108	614088	TTP38

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21009195	house		CLOON BEG	Local	484111	614082	TTP39
21009196	house		CLOON BEG	Local	484111	614076	TTP40
21009197	house		CLOON BEG	Local	484114	614071	TTP41
21009198	house		CLOON BEG	Local	484115	614066	TTP42
21009199	house		CLOON BEG	Local	484116	614059	TTP43
21009200	house		CLOON BEG	Local	484117	614055	TTP44
21009201	house		CLOON BEG	Local	484118	614048	TTP45
21009205	house	Brook House	CLOON BEG	Local	484120	614027	TTP48
21009203	house		CLOON BEG	Local	484120	614040	TTP46
21009204	house		CLOON BEG	Local	484120	614033	TTP47
21009206	house		CLOON BEG	Local	484121	614020	TTP49
21009207	house		CLOON BEG	Local	484122	614014	TTP50
21004044	house		CLOONALOUR (TR. BY.) TRALEE URBAN ED	Local	484369	615010	0
21006243	outbuilding		TRALEE	Local	483258	614374	TTP112
21007074	house	Carmady Leen O'Donnell & Co.	TRALEE	Local	483350	614372	TTP119
21006002	church/chapel	Holy Cross Roman Catholic Church	TRALEE	Local	483330	614302	TTP125
21007078	house	Law Centre	TRALEE	Local	483364	614401	TTP114
21007071	house	Liston Solicitors	TRALEE	Local	483342	614350	TTP121
21007072	house	Malone O' Regan Mc Gillicuddy	TRALEE	Local	483339	614359	TTP120
21007070	house	Ozanam House	TRALEE	Local	483338	614344	TTP122
21007077	house	Peter Moran	TRALEE	Local	483358	614394	TTP115
21006001	house	Priory	TRALEE	Local	483320	614323	TTP124
21006229	gates/ railings/ walls		TRALEE	Regional	483373	614364	TTP126
21007076	house		TRALEE	Local	483358	614387	TTP116
21007075	house		TRALEE	Local	483354	614380	TTP117
21007073	house		TRALEE	Local	483346	614366	TTP119
21007069	house		TRALEE	Local	483333	614336	TTP123
21007007	church/chapel	ACC Bank	TRALEE	Local	483584	614418	0

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21006373	office	Ashe Memorial Hall	TRALEE	Local	483559	614152	TTP127
21007033	house	Ashe TownhouseB & B	TRALEE	Local	483574	614320	TTP132
21007041	house	AXA Insurance	TRALEE	Local	483600	614393	TTP139
21007017	house	Brian T. Foley, Optometrist	TRALEE	Local	483635	614383	TTP149
21007032	house	Dr. Patrick O'Donnell / The Well Spring Gallery	TRALEE	Local	483578	614311	TTP131
21007031	house	Finnegan's Holiday Hostel	TRALEE	Local	483575	614300	TTP130
21007024	house	Finucane Insurances Ltd.	TRALEE	Local	483617	614324	TTP155
21007023	house	Giles Auctioneers	TRALEE	Local	483619	614332	TTP154
21007015	house	Grand Hotel	TRALEE	Local	483639	614398	TTP148
21007016	house	Grand Hotel, Samuel's	TRALEE	Local	483637	614391	TTP148
21007042	office	Health Centre	TRALEE	Local	483596	614402	TTP140
21007019	house	Imperial Hotel	TRALEE	Local	483632	614368	TTP151
21007020	house	Imperial Hotel	TRALEE	Local	483630	614362	TTP151
21007021	house	Imperial Hotel	TRALEE	Local	483627	614352	TTP152
21007045	house	Ireland Designs	TRALEE	Local	483603	614424	TTP143
21007035	house	J. D. Wynne & Co.	TRALEE	Local	483584	614343	TTP134
21007013	house	James H. North & Co.	TRALEE	Local	483642	614414	TTP146
21007043	house	John Joe SheehyFinance	TRALEE	Local	483600	614408	TTP141
21007036	house	Kerry Rape and Sexual Abuse Centre / Denis J. Reen	TRALEE	Local	483585	614350	TTP135
21007026	house	Murphy & Sheehy	TRALEE	Local	483618	614308	TTP157
21007025	house	O' Sullivan Cadogan	TRALEE	Local	483623	614315	TTP156
21007014	house	Pikeman Bar, Grand Hotel	TRALEE	Local	483640	614406	TTP147
21007022	house	Royal Liver Assurance	TRALEE	Local	483629	614338	TTP153

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21007018	house	Sherry Fitzgerald O' Connell	TRALEE	Local	483633	614375	TTP150
21007027	house	Southern Health Board	TRALEE	Local	483618	614299	TTP158
21007028	house	Southern Health Board	TRALEE	Local	483610	614290	TTP159
21006030	monument	The Pikeman	TRALEE	Local	483621	614413	TTP145
21007039	house	Tralee Beauty Salon	TRALEE	Local	483593	614378	TTP137
21007040	house		TRALEE	Local	483594	614389	TTP138
21007038	house		TRALEE	Local	483588	614372	TTP136
21007037	house		TRALEE	Local	483588	614361	TTP136
21007034	bank/ financial institution		TRALEE	Local	483573	614333	TTP133
21007029	gate lodge		TRALEE	Local	483567	614268	TTP129
21006372	gates/ railings/ walls	Town Park	TRALEE	Local	483545	614222	TTP128
21006372	gates/ railings/walls	Town Park	TRALEE	Local	483580	614180	TTP128
21004219	house	Tralee CIE Credit Union	CLOONALOUR (TR. BY.) TRALEE URBAN ED	Local	484047	614687	TTP168
21003242	post office	Tralee Post Office/ An Post Mail Centre	CLOONALOUR (TR. BY.) TRALEE URBAN ED	Local	483807	614492	TTP161
21004223	turntable		CLOONALOUR (TR. BY.) TRALEE URBAN ED	Local	484157	614696	TTP166
21004222	store/ warehouse		CLOONALOUR (TR. BY.) TRALEE URBAN ED	Local	484169	614671	TTP164
21008010	barracks		CLOON BEG	Local	484324	613820	TTP52
21008010	barracks		CLOON BEG	Local	484333	613788	0
21006345	house	Hibernian Insurance	TRALEE	Local	483356	614259	TTP172
21006344	house	O'Keefe Insurances Ltd.	TRALEE	Local	483359	614267	TTP171
21006343	office	Tralee Superbowl	TRALEE	Local	483367	614280	TTP170
21006340	store/ warehouse		TRALEE	Local	483393	614325	0

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21006201	house	Carl's Townhouse	TRALEE	Local	483224	614071	TTP251
21006204	house	Greenview House	TRALEE	Local	483231	614087	TTP248
21006202	house	Peevers and Slye	TRALEE	Local	483226	614076	0
21006200	house	Quirke Security	TRALEE	Local	483221	614066	TTP252
21006198	house	Walsh & Associates	TRALEE	Local	483216	614054	TTP254
21006205	house		TRALEE	Local	483234	614093	TTP247
21006203	house		TRALEE	Local	483229	614081	TTP249
21006199	house		TRALEE	Local	483218	614059	TTP253
21006197	house		TRALEE	Local	483213	614049	TTP255
21006292	house	Kerry School of Music	TRALEE	Local	483316	614430	TTP174
21003062	hospital/ infirmary	Tony Lambe	TRALEE	Local	483270	614467	TTP176
21006230	store/ warehouse	Tralee Gas Supplies	TRALEE	Local	483313	614390	TTP173
21006348	house	Bella Pia	TRALEE	Local	483388	614241	TTP177
21006347	house		TRALEE	Local	483384	614245	TTP178
21004227	railwaystation	Casement Station	CLOONALOUR (TR. BY.) TRALEE URBAN ED	Local	484048	614616	TTP179
21006025	house	Allegro Restaurant	TRALEE	Local	483672	614411	TTP190
21006024	house	Bank of Ireland	TRALEE	Local	483687	614412	TTP191
21006034	house	Country Pork	TRALEE	Local	483694	614441	TTP183
21006027	house	Hurley's	TRALEE	Local	483661	614418	TTP188
21006043	house	Jess Mc Carthy	TRALEE	Local	483744	614432	TTP182
21006047	house	John J. O'Connor	TRALEE	Local	483766	614423	TTP181
21006028	house	John Ross Jeweller	TRALEE	Local	483656	614423	TTP187
21006026	house	Kennelly's Pharmacy	TRALEE	Local	483666	614415	TTP189
21006018	house	Kingdom Travel / World Choice	TRALEE	Local	483737	614405	TTP195
21006023	house	Lee Records/ Rusk Dry Cleaners	TRALEE	Local	483706	614410	TTP192

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21006022	house	Naughton's	TRALEE	Local	483713	614408	TTP193
21006033	house	Paddy Power	TRALEE	Local	483688	614442	TTP184
21006021	house	Pat Meehan	TRALEE	Local	483717	614403	TTP194
21006015	presbytery/ parochial/ curate's house	Presbytery	TRALEE	Local	483762	614390	TTP196
21006014	house	Presbytery	TRALEE	Local	483772	614394	TTP1997
21006155	church/ chapel	St. John's Roman Catholic Church	TRALEE	Local	483772	614290	TTP325
21003370	house	Brat's Place Restaurant	TRALEE	Local	483539	614546	TTP235
21003367	house	Brat's Place	TRALEE	Local	483542	614534	TTP207
21003326	house	CH Chemists	TRALEE	Local	483562	614527	TTP202
21003328	house	CH Opticians	TRALEE	Local	483555	614524	TTP200
21003359	house	J. Madden	TRALEE	Local	483587	614542	TTP204
21003356	house	T. Lyons	TRALEE	Local	483570	614546	TTP206
21003352	store/ warehouse		TRALEE	Local	483604	614552	TTP99
21003357	house		TRALEE	Local	483576	614542	TTP205
21003322	house		TRALEE	Local	483626	614529	TTP97?
21003325	house		TRALEE	Local	483567	614528	TTP203
21003327	house		TRALEE	Local	483558	614527	TTP201
21009221	library/ archive	Gaelchol aiste Chiarrai	CLOON BEG	Local	484031	614122	TTP224
21009185	convent/ nunnery	Sisters of Mercy	TRALEE	Local	484036	614268	TTP218

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
		Convent					
21006136	house	Solar	TRALEE	Local	483905	614386	TTP210
21006106	house		TRALEE	Local	483940	614323	TTP211
21006118	house		TRALEE	Local	483950	614291	TTP217
21009240	house		CLOON BEG	Local	484028	614217	TTP219
21009241	house		CLOON BEG	Local	484030	614212	TTP220
21009242	house		CLOON BEG	Local	484033	614208	TTP221
21009243	house		CLOON BEG	Local	484034	614202	TTP222
21003424	worker's house	Denny Long Ltd.	TRALEE	Local	483783	614675	TTP227
21003246	store/ warehouse	Kelliher's Mills	TRALEE	Local	483873	614626	TTP225
21003423	railway station	Morgans Funeral Home	TRALEE	Local	483773	614684	TTP228
21003425	worker's house		TRALEE	Local	483791	614670	TTP226
21004187	house	Clonalour House	CLOONALOUR (TR.BY.) TRALEE URBAN ED	Local	484281	614834	TTP108
21004027	house	Park na Doon	CLOONALOUR (TR.BY.) TRALEE URBAN ED	Local	484196	614935	TTP110
21004043	house		CLOONALOUR (TR.BY.) TRALEE URBAN ED	Local	484392	615031	TTP111
21004026	gate lodge		CLOONALOUR (TR.BY.) TRALEE URBAN ED	Local	484185	614871	TTP109
21004001	house		CLOONALOUR (TR.BY.) TRALEE URBAN	Local	484049	614906	TTP82

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
			ED				
21006388	gates/ railings/ walls		TRALEE	Regional	483684	614267	TTP229
21003127	orphanage/ children's home	Catherine Mc Auley Home	BALLOONAGH	Local	483171	614956	TTP21
21003030	house	Godley's Bar	BALLOONAGH	Local	483430	614635	TTP271
21003073	house	Pembroke House	BALLOONAGH	Local	483343	614741	TTP231
21003071	house	St. Anthony's	BALLOONAGH	Local	483327	614750	TTP232
21003131	school	St. John The Baptist's School	BALLOONAGH	Local	483239	614825	TTP19
21003042	store/ warehouse	Tralee Laundry	BALLOONAGH	Local	483330	614715	TTP230
21003128	gate lodge		BALLOONAGH	Local	483193	614846	TTP20
21003129	gates/ railings/ walls		BALLOONAGH	Local	483212	614818	TTP26

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21003118	creamery		BALLOONAGH	Local	483353	614775	TTP234
21003121	store/ warehouse		BALLOONAGH	Local	483369	614753	TTP233
21006227	house	Quayside House	TRALEE	Local	483312	614275	TTP237
21006214	house	Antiques	TRALEE	Local	483235	614119	TTP245
21006228	house	Quayside House	TRALEE	Local	483318	614281	TTP237
21006215	house	Restaurant Uno	TRALEE	Local	483238	614125	TTP244
21006224	house	Vals Taverns Ltd.	TRALEE	Local	483302	614252	TTP239
21006225	house		TRALEE	Local	483304	614259	TTP238
21006223	house		TRALEE	Local	483298	614246	TTP240
21006222	house		TRALEE	Local	483296	614240	TTP241
21006217	house		TRALEE	Local	483244	614136	TTP242
21006216	house		TRALEE	Local	483242	614131	TTP243
21006213	house		TRALEE	Local	483233	614113	TTP246
21003464	house	Batt Coffey	TRALEE	Local	483440	614564	TTP263
21003025	house	Crua EarraÃƒÂ	BALLOONAGH	Local	483408	614619	TTP272
21003154	factory	Horan's Fruit & Veg	GALLOWSFIELDS	Local	483629	614937	TTP268
21003155	factory	Horan's Fruit and Veg	GALLOWSFIELDS	Local	483633	614947	TTP267
21003465	house	Infinity	TRALEE	Local	483438	614560	TTP262
21003466	house	Jackie Power	TRALEE	Local	483440	614557	TTP261
21003506	gasworks	Kelliher's Hardware	TRALEE	Local	483370	614634	TTP237
21003024	house	Kelliher's Hardware	BALLOONAGH	Local	483404	614609	TTP272

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21003153	factory	M & N's Bargains	GALLOWSFIELDS	Local	483625	614928	TTP269
21003459	house	O' Flynn Interiors Ltd.	TRALEE	Local	483473	614590	TTP264
21003452	market house	Rose Garden Chinese Restaurant	TRALEE	Local	483461	614632	TTP266
21003016	house	Stuff Fabrics	TRALEE	Local	483400	614538	0
21003029	house	The Corner House	BALLOONAGH	Local	483436	614633	TTP271
21003458	house	The Rock Inn	TRALEE	Local	483460	614606	TTP265
21003191	house		TRALEE	Local	483740	615007	0
21003470	arch		TRALEE	Local	483459	614540	TTP274
21002009	house	Ballyrickard House	TRALEE	Local	482498	614507	TTP275
21002023	house		TRALEE	Local	482556	614558	0
21002022	house		TRALEE	Local	482524	614547	TTP276
21006334	house	St. Joseph's Guesthouse	TRALEE	Local	483404	614376	TTP279
21006333	house		TRALEE	Local	483407	614382	TTP278
21006335	house		TRALEE	Local	483402	614370	TTP280
21002047	church/ chapel	Bon Secours	TRALEE	Local	483042	614476	0
21006287	store/ warehouse	Excise Bonded Warehouse	TRALEE	Local	483253	614442	0
21006282	house		TRALEE	Local	483217	614449	0
21006285	house		TRALEE	Local	483237	614435	0
21006284	house		TRALEE	Local	483231	614435	0
21006283	house		TRALEE	Local	483224	614433	0

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21006286	house		TRALEE	Local	483243	614435	0
21005140	house		TRALEE	Local	482989	614422	TTP285
21006275	house		TRALEE	Local	483210	614412	TTP281
21005139	house		TRALEE	Local	482967	614410	TTP286
21006276	house		TRALEE	Local	483201	614413	TTP282
21006277	house		TRALEE	Local	483193	614410	TTP283
21006236	house		TRALEE	Local	483265	614411	TTP175
21006278	school		TRALEE	Local	483177	614410	TTP274
21006082	house		CLOONALOUR (TR.BY.) TRALEE URBAN ED	Local	483923	614413	TTP80
21006170	school	Christian Brothers School	TRALEE	Local	483624	613932	TTP113
21003483	house	Cleary's Photography	TRALEE	Local	483534	614473	TTP287
21003338	house	Der O'Sullivan & Sons	TRALEE	Local	483573	614484	TTP300
21003342	house	Easons	TRALEE	Local	483598	614479	TTP296
21006006	shop/retail outlet	Elvery's / Charlie Nelligan's / A-Wear	TRALEE	Local	483591	614439	TTP294
21003481	house	First Active	TRALEE	Local	483547	614469	TTP289
21006003	house	Irish Nationwide	TRALEE	Local	483569	614447	TTP291
21003337	house	Jerome Walshe& Sons	TRALEE	Local	483567	614492	TTP301
21006004	house	Kelly's The Mall Pharmacy	TRALEE	Local	483576	614448	TTP292
21003482	house	New Gent	TRALEE	Local	483539	614472	TTP288
21003341	house	Ryle & Nolan	TRALEE	Local	483593	614478	TTP297

CONSTRAINTS STUDY

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21007046	house	Supermacs	TRALEE	Local	483607	614436	TTP295
21003334	house	The Bodywise Shop	TRALEE	Local	483546	614491	TTP303
21003333	house	The Snackery	TRALEE	Local	483540	614493	TTP304
21006005	house	Vero Moda	TRALEE	Local	483580	614443	TTP293
21003522	house	Celtic Cabs	TRALEE	Local	483507	614456	TTP320
21007061	house	Mike Mc Carthy Hairstylist	TRALEE	Local	483504	614419	TTP314
21006138	house	Franks Fast Food	TRALEE	Local	483897	614387	TTP335
21006137	house	O'Neills Pharmacy	TRALEE	Local	483901	614386	TTP336
21006157	convent/ nunnery	Presentation Convent	TRALEE	Local	483843	614281	TTP327
21006156	church/ chapel	Presentation Convent Chapel	TRALEE	Local	483804	614276	TTP326
21006149	gates/ railings/ walls	Presentation Primary School	TRALEE	Local	483843	614391	TTP332
21006158	school	Presentation Primary School	TRALEE	Local	483837	614339	TTP330
21006160	school	Presentation Primary School	TRALEE	Local	483869	614333	TTP329
21006161	school	Presentation Primary School	TRALEE	Local	483888	614301	TTP328
21006139	house		TRALEE	Local	483894	614387	TTP334
21006141	house		TRALEE	Local	483884	614383	0
21006142	house		TRALEE	Local	483880	614381	0
21302910	bridge	Ballyard Bridge	BALLYARD, CLOGHERS, TRALEE	Local	483118	613671	0
21302911	house	Ballyard House	BALLYARD	Local	483180	613502	TTP29

Reg. No.	Type	Name	Townland	Importance	Easting (ITM)	Northing (ITM)	RPS Ref.
21302912	house	Belmont House	CLOGHERS	Local	483416	613434	TTP102
21400304	house	Blennerville House	CURRAGRAIGUE (TR. BY.)	Local	481508	613051	TTP77
21400305	outbuilding	Blennerville House	CURRAGRAIGUE(TR. BY.)	Local	481491	613019	TTP78
21400301	mill (wind)	Blennerville Windmill	CURRAGRAIGUE(TR. BY.)	Local	481405	613088	TTP72
21302907	country house	Collis-Sandes House	KILLEEN (TR. BY.)	Local	484666	616367	29 -7.
21302908	gate lodge	Collis-Sandes House	CLOONALOUR (TR. BY.) TRALEE RURALED	Local	484985	615729	TTP180
21302909	house	Woodlawn	KILLEEN (TR. BY.)	Local	484825	616016	29 -9.
21400302	house		CURRAHEEN (TR.BY.)	Local	481542	613068	TTP73
21400306	house		CURRAGRAIGUE (TR. BY.)	Local	481515	612977	TTP76
21400303	house		CURRAGRAIGUE (TR. BY.)	Local	481507	612965	TTP75

Historic Gardens and Designed Landscapes

Table D.48: Gardens listed on the NIAH Garden Survey within the Scheme Area

Site Name	Townland	Easting (ITM)	Northing (ITM)
Garryruth	Tralee	483475	614153
Oak Park	Killeen	484875	616053
Mount Hawk	Mount Hawk	482475	616153

Licence / Consent Requirements

Type	Legal status	Potential Licence/Consent requirement	Programming requirement
National Monument	Site or monument in the ownership or guardianship of the State or a Local Authority	Section 14 Ministerial Consent	Allow minimum 6 weeks for processing and issue of Consent in advance of development
RMP	Statutory Record of Monuments and Places pursuant to Section 12 of the National Monuments (Amendment) Act 1994	Section 26 Archaeological Licence	Allow minimum 4 weeks for processing and issue of Section 26 Archaeological Licence
SMR	Baseline inventory of all monuments and places (sites) where it is believed there is a monument/site known to the Archaeological Survey of Ireland.	Section 26 Archaeological Licence	Allow minimum 4 weeks for processing and issue of Section 26 Archaeological Licence
Undesignated archaeological heritage asset	Previously unrecorded site identified through field survey, aerial/satellite imagery/ LiDAR analysis/ cartographic analysis etc.	Section 26 Archaeological Licence	Allow minimum 4 weeks for processing and issue of Section 26 Archaeological Licence
RPS	Statutory Record of Protected Structures maintained by each Local Authority	Potential Section 14 Ministerial Consent and/or Section 26 Archaeological Licence May be subject to Section 5 exempted development declaration, or planning permission May be subject to Section 57 declaration	Allow minimum 6 weeks for processing and issue of Consent in advance of development; Allow minimum 4 weeks for processing and issue of Section 26 Archaeological Licence. Allow sufficient time for reporting and preparation of information to support Section 5 and/or Section 57 application detail
NIAH	Non-statutory baseline inventory of built heritage sites which may be nominated for inclusion on the RPS in revisions of the County Development Plan	Non-licensed architectural heritage survey; possible Section 26 archaeological Licence	Allow minimum 4 weeks for processing and issue of Section 26 Archaeological Licence
Undesignated built heritage asset	Previously unrecorded site identified through field survey, aerial/satellite imagery/ LiDAR analysis/ cartographic analysis etc.	Potential non-licensed architectural heritage survey; Section 26 Archaeological Licence	Allow minimum 4 weeks for processing and issue of Section 26 Archaeological Licence
Geophysical Survey	Within ZoN of a Recorded Monument:	**Detection Device Consent Section 2** of the National Monuments Act 1987 (as amended) requires that **consent** must be obtained for the use of a **detection device** to search for archaeological objects at a specified place or for the use and possession of a **detection device** at a place protected under the National Monuments Acts.	Allow 4 weeks for processing and issue of consent from NMS
Works at or adjacent to an RMP site	Works within the ZoN for an SMR or RMP site	**Notification to the Minister - section 12 (3) of the National Monuments (Amendment) Act, 1994 (Recorded**	Notification form must be completed and submitted to the National

Type	Legal status	Potential Licence/Consent requirement	Programming requirement
		Monument) and section 5 (8) of the 1987 Act (Register of Historic Monuments)	Monuments Service at least 8 weeks before any work is carried out at an archaeological/historic structure or site included in the RMP or Register of Historic Monuments.