

# ATHY FLOOD RELIEF SCHEME

## Constraints Report



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Environmental Constraints Report

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Prepared by:

RPS

Prepared for:

Kildare County Council

Dublin | Cork | Galway | Sligo | Kilkenny  
rpsgroup.com

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The Registered office of each of the above companies is West Pier  
Business Campus, Dun Laoghaire, Co. Dublin, A96 N6T7



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**Appendix B** IAPS Descriptions

**Appendix C** IAPS Maps

**Appendix D** Cultural Heritage of Athy Supporting Information



## Environmental Constraints Report

# ACRONYM

| Acronym | Meaning   |
|---------|---|
| AA      | Appropriate Assessment                                      |
| ABTA    | Area Based Transport Assessment                             |
| ACA     | Architecture Conservation Area                              |
| AEP     | Annual Exceedance Probability                               |
| AFA     | Area for Further Assessment                                 |
| BCI     | Bat Conservation Ireland                                    |
| BCT     | Bat Conservation Trust                                      |
| BSBI    | Botanical Society of Britain and Ireland                    |
| CAP     | Climate Action Plan   |
| CFRAM   | Catchment-based Flood Risk Assessment and Management        |
| CIEEM   | Chartered Institute of Ecology and Environmental Management |
| CMU     | Catchment Management Unit                                   |
| EclA    | Ecological Impact Assessment                                |
| EIA     | Environmental Impact Assessment                             |
| EIS     | Environmental Impact Statement                              |
| EPA     | Environmental Protection Area                               |
| EU      | European Union  |
| FRS     | Flood Relief Scheme   |
| GIS     | Geographical Information System                             |
| GSI     | Geological Survey Ireland                                   |
| GWB     | Ground Waterbody  |
| IAPS    | Invasive Alien Plant Species                                |
| ICOMOS  | International Council on Monuments and Sites                |
| IFI     | Inland Fisheries Ireland                                    |
| ILP     | Institute of Lighting Professionals                         |
| KCC     | Kildare County Council                                      |
| LAP     | Local Area Plan   |
| NAF     | National Adaptation Framework                               |
| NBDC    | National Biodiversity Data Centre                           |
| NBHS    | National Built Heritage Service                             |
| NBS     | Nature Based Solutions                                      |
| NDP     | National Development Plan                                   |
| NPF     | National Planning Framework                                 |
| NPWS    | National Parks and Wildlife Services                        |
| NHA     | Natural Heritage Area                                       |
| NMS     | National Monument Services                                  |
| NPWS    | National Parks and Wildlife Services                        |
| OPW     | Office of Public Works                                      |
| P&D     | Planning and Development                                    |
| PPD     | Public Engagement and Participation Day                     |
| RBMP    | River Basin Management Plan                                 |
| QI      | Qualifying Interest   |
| SAC     | Special Areas of Conservation                               |



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| Acronym | Meaning                            |
|---------|------------------------------------|
| SCI     | Species of Conservation Interest   |
| SDG     | Sustainable Development Goal       |
| SEA     | Strategic Environmental Assessment |
| SFRA    | Strategic Flood Risk Assessment    |
| SPA     | Special Protection Area            |
| SuDS    | Sustainable Drainage Systems       |
| UWWTP   | Urban Waste Water Treatment Plant  |
| WFD     | Water Framework Directive          |

## EXECUTIVE SUMMARY

The constraints report provides details on a constraints study completed for the proposed Athy Flood Relief Scheme. The purpose of identifying the constraints is to ensure they are considered and integrated into the selection and development of options for the Proposed Scheme.

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 following summarises the key constraints within or close to the proposed Scheme Area along with aspects that were highlighted, which require further consideration during options selection.

## Legislation and consenting

Compliance with the requirements of legislation and policy will be required during the development of options.

## Stakeholder engagement

It is important that all stakeholder feedback is considered and that the project team continue to engage with the key stakeholders during the development of the Proposed Scheme.

## Population and Human Health

The key constraints to consider under 'population and human health' include:

- Properties and land use;
- Land zoning;
- Nearby sensitive receptors including residential and working communities; community and amenity facilities; healthcare and educational facilities; and
- Tourist attractions and amenity facilities including those on the River Barrow.

Several recommendations are outlined for the project team during the selection of options including early engagement with landowners and key stakeholders such as Waterways Ireland.

## Biodiversity

The key constraints to consider under 'biodiversity' include:

- River Barrow and River Nore SAC and the Grand Canal pNHA;
- several Annex I habitats;
- protected mammal species such as otter and bats; and
- Birds species.

Further surveys are proposed as a recommendation to further understand the biodiversity baseline of the Proposed Scheme area

## Land, Soils, Geology and Hydrogeology

The key constraints to consider under 'Land, Soils, Geology and Hydrogeology' include:

- The Scheme Area lies in an area of high value and sensitivity groundwater;
- Hydrogeological connectivity with water dependant European Sites;
- The Scheme Area lies within a Regionally Important aquifer with high to moderate vulnerability.; and

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- Potentially contaminated soils due to presence of EPA licensed facilities and former cement and asbestos factory;
- Soft soils across the Scheme Area with low bearing capacity.

Several recommendations are outlined for the project team including the use of ground investigation data to inform Scheme design and the use of soil sampling to determine potential level of contamination in high risk areas/ if avoidance of EPA licensed facilities and former cement and asbestos factory is not possible.

## Water

The key constraints to consider under 'Water' include:

- River waterbodies traversing the Scheme Area have a 'Poor' WFD Status;
- The River Barrow as being Nutrient Sensitive Water and a drinking water source;
- Extent and intensity of flood events.

Several recommendations are outlined for the project team during the selection of options including collaboration with design team to ensure water quality is not degraded by works and assessments to ensure this.

## Air Quality, Climate and Noise and Vibrations

The key constraints to consider under 'Air Quality, Climate and Noise and Vibrations' include respectively:

- Proximity of work to contaminated land and sensitive receptors (Air Quality);
- Climate change, embedded carbon in materials and green infrastructure (Climate);
- Nearby sensitive receptors and cultural heritage features (Noise and Vibrations).

Several recommendations are outlined for the project team including:

- Consideration of contaminated land locations during option selection and identification of activities and mitigation measures in relation to air quality;
- Implement measures from Scheme Climate Change Adaptation Plan (SCCAP), include BREEAM certification during Proposed Scheme design and assessment of embodied carbon during option selection (Climate);
- Identify activities and mitigation measures that influence noise and vibration impacts and consult with specialists on design options (Noise and Vibration).

## Material Assets

The key constraints to consider under 'Material Assets' include:

- Transport networks through the Scheme Area;
- Utilities that may be impacted during/ Disruption to utilities during Proposed Scheme construction;
- Waste generated over the course of the Proposed Scheme.

Several recommendations are outlined for the project team during the selection of options including determining activities resulting in higher volumes of traffic, consideration of haul routes and storage locations, consultation with key stakeholders and to integrate sustainability and reuse of materials into Project design.

## Cultural Heritage

The scheme area is host to a variety of archaeological and architectural heritage assets. The key constraints to consider under 'Cultural Heritage' include:

- 37 no. recorded archaeological RMP sites and/or respective associated Zones of Notification;

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- 149 no. RPS recorded architectural heritage structures;
- 142 no. recorded NIAHs;
- 1 no. ACAs;
- Watercourses located within the scheme area (may also retain archaeological potential);
- Unknown archaeology.

Several recommendations are outlined for the project team during the selection of options including receiving input from the project archaeologist, consultation with the stakeholders including National Monuments Service (NMS), the OPW and Kildare County Council, completion of full archaeological assessment and determine requirement of Underwater Archaeological Impact Assessment if instream works are needed.

## Landscape and Visual Amenity

Some key constraints to consider under 'Landscape and Visual Amenity include:

- Landscape Character Areas: River Barrow LCA – Class 4 special sensitivity;
- Designated Area of High Amenity: River Barrow Valley and Grand Canal Barrow Branch;
- Scenic Route and Scenic Viewpoints;
- Architectural Conservation Area.

Several recommendations are outlined for the project including consultation with prescribed bodies, Kildare County Council and Athy Municipal District and the development of a tree survey and a tree constraints plan.

## Interactions

Interactions between the EIA factors above may occur during activities relating to the construction phase of the Proposed Scheme including the impact of contaminated dust on human health in the absence of appropriate mitigation measures and the potential effects on human health and biodiversity from impacts on water.

# 1 INTRODUCTION

RPS were commissioned by Kildare County Council to assist in the delivery of the “Athy Flood Relief Scheme”, hereafter referred to as the Proposed Scheme, located in the town of Athy.

The objective of Proposed Scheme is the identification and design of a flood scheme which is technically, socially, environmentally and economically acceptable to alleviate the risk of flooding to the community of Athy and the surrounding environs to a determined standard of protection.

This report provides the results of a constraints study for the Proposed Scheme, which will inform the selection and design of a preferred option. The services requirements outlined that the constraints study :

*“.. identify 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 services requirements also outlined:

*“The output from the Constraints Study shall be a report, including graphics, which shall identify the constraints and issues arising provide a full account of the findings of the study and Opening PPD, the topics and geographic areas covered, the documents referred to and the organisations and people consulted.*

## 1.1 Purpose

This report provides the constraints study report in accordance with the requirements set out in **Section 7.4.3** of the services requirements. The purpose of identifying the constraints is to ensure they are considered and integrated into the selection and development of options for the Proposed Scheme.

Undertaking a constraints study is an essential part of the development of the Proposed Scheme. It provides an early opportunity to assemble relevant baseline information to allow the identification of constraints that can either conflict or enhance the design of the Proposed Scheme.

It is also an important aspect in the consideration of alternatives that is required for the EIA process as it allows the selection of options and design to avoid key sensitivities where possible rather than mitigating potential issues later on in the development of the Proposed Scheme.

Constraints mapping has been prepared to support the study and it is recommended that this mapping and the results of this study be used to inform the Emerging options workshop prior to the development of options to discuss how the constraints interact with the Proposed Scheme. This workshop will ensure a full understanding of the constraints and allow early identification of the project risks.

It is recommended that the constraints study is updated as new information becomes available and any new constraints circulated to the Project team for discussion during the options development and design process. New constraints can arise as a result of feedback from stakeholders, survey data or changes in planning / legal issues arising from case law.

## 1.2 Background

The South Eastern CFRAM Study Area included Athy as an Area for Further Assessment (AFA), and concluded that a flood relief scheme would be viable and effective for the community.

The Flood Risk Management Plan for the Barrow (OPW, 2018) described the proposed measures as:

*“The proposed measure consists of building hard defences, at risk properties in Athy would be protected by a series of hard defences consisting of flood embankments and walls. These hard defences would be set back from the river channel where possible and would protect to the 1% AEP fluvial flood event with an estimated average height of 1.2m and length of 2.9km.”*

There are currently no existing structures maintained and operated as flood defences within the Proposed Scheme Area, although there are existing structures that may be relied upon by the Proposed Scheme. These include existing walls such as the Rathstewart Crescent Wall. Remedial or replacement works may be required to existing structures to ensure they are structurally capable of providing the Standard of Protection (SoP) in conjunction with the measures proposed in the Proposed Scheme.

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A number of flood risk management measures will be considered to identify potential options that could provide flood relief including:

- Do Nothing (i.e., implement no new flood alleviation measures);
- Non structural measures including flood warning systems, individual property protection and restrictions on development in the Flood Plain;
- Relocation of properties and / or infrastructure;
- Reconstruction of properties and/or infrastructure to a higher level;
- Flow Diversion (Diversion of entire river; Flood flow bypass channel);
- Flow Reduction (Upstream catchment management (i.e. reduce runoff), Upstream flood storage (single site or multiple site), Natural Water Retention Measures);
- Flood Containment through Construction of Flood Defences (Walls or embankments, demountable defences);
- Increase Conveyance (upstream and / or through and / or downstream of the town) including change the channel section and / or grade, change the floodplain section and / or grade, remove or reduce local key constraints, e.g. bridges, bends, throttles, infill material on a floodplain, etc., reduce the roughness of the channel / floodplain (removal of vegetation, lining, etc.) and specify ongoing channel / floodplain maintenance;
- Sediment Deposition and Possible Sediment Traps;
- Tidal Barrage (although it is noted that the River Barrow is not tidal);
- Pump storm waters from behind flood defences; and
- Measures Specific to the Study Location.

### 1.3 Scheme Area

The Scheme Area (as identified in **Figure 1-1**) is the area:

- Within which it is expected physical works will be constructed, accessed and maintained as part of the Proposed Scheme;
- Areas that are intended to benefit from and be protected by the Proposed Scheme.

For the purposes of this constraints study, constraints within the extent of the Scheme Area have been identified, but where the Proposed Scheme has potential to impact (either during the construction or operational and maintenance phase) outside the Scheme Area, a wider study area has been examined. For example, on biodiversity, a wider study area is examined to consider the connectivity of designated sites within the River Barrow.

A large proportion of the Scheme Area is covered by the Athy Local Area Plan 2021-2027 boundary as shown in **Figure 1-1**.



## Environmental Constraints Report

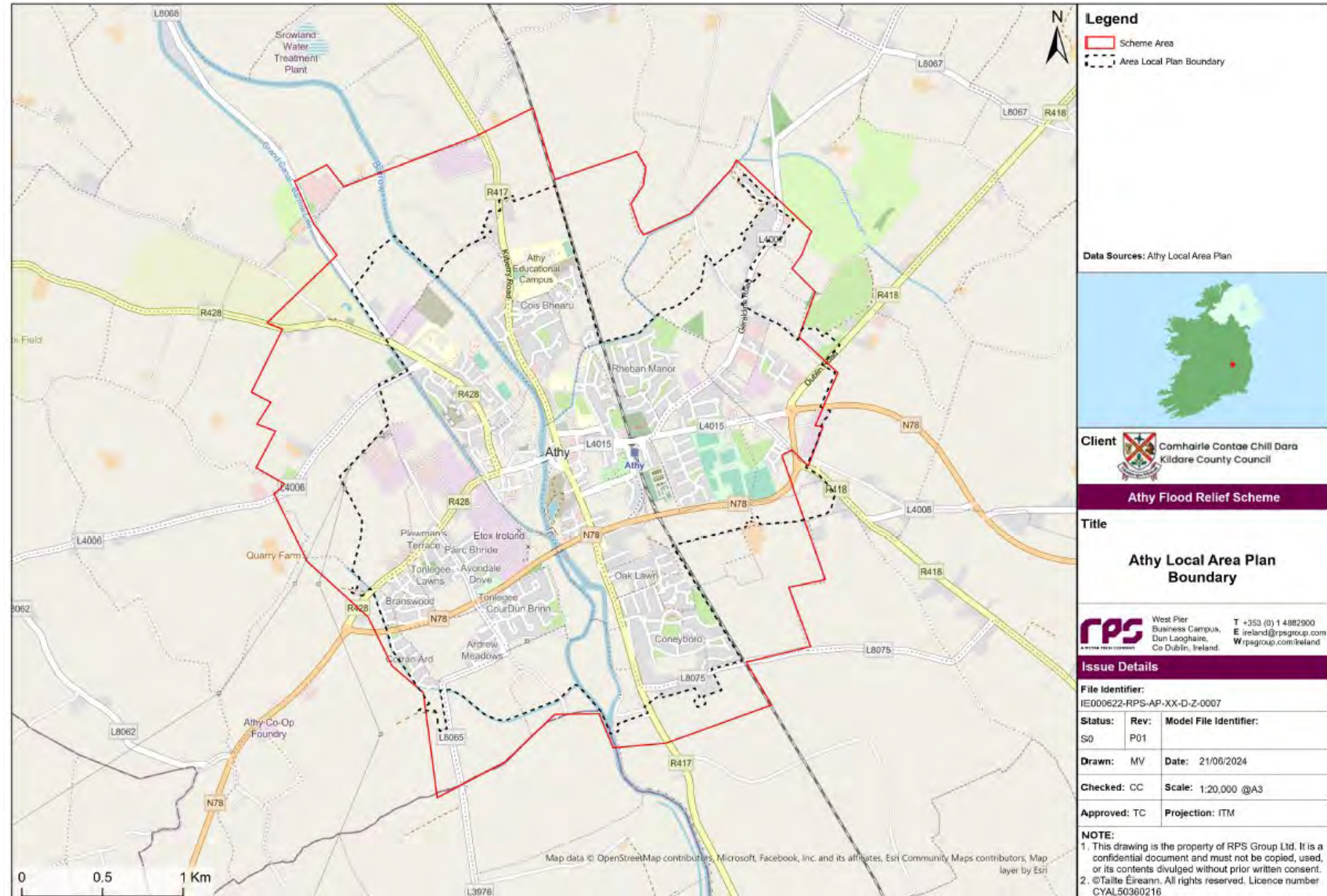


Figure 1-1 Scheme Area and Athy LAP boundary.



## 2 METHODOLOGY

### 2.1 Scope of constraints study

The services requirement requires for the scope of the constraints study to consider issues which reflect:

*“... the scope of an Environmental Impact Assessment (EIA), in accordance with the requirements of the EIA Directive 2014/52/EU including*

- *Population & Human Health;*
- *Biodiversity;*
- *Land, Soil, Water, Air and Climate;*
- *Material Assets, Cultural Heritage and the Landscape; and*
- *The interaction between the factors referred to in points a) to d).”*

The constraints study examined each of the above EIA factors to identify the key environmental issues and constraints that may impact on the development of the Proposed Scheme. The EIA factors identified in the EIA Directive and where they are assessed in this constraints report are detailed in **Table 2-1** below.

**Table 2-1: EIA Factors Addressed in the Constraints Study.**

| Constraints Study Report Section                              | Environmental factors as per the EIA Directive (2011/92/EU) as amended (2014/52 EU)   |
|---|---|
| Section 5 Population and Human Health                         | a) <i>Population and Human Health</i>   |
| Section 6 Biodiversity  | b) <i>Biodiversity (with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive)</i> |
| Section 7 Land and Soils (including Geology and Hydrogeology) | c) <i>Land, Soils, Water, Air and Climate</i>   |
| Section 8 Water   |   |
| Section 9 Air Quality   |   |
| Section 10 Climate  |   |
| Section 11 Noise and Vibrations                               |   |
| Section 12 Material Assets                                    | d) <i>Material Assets, Cultural Heritage and the Landscape</i>  |
| Section 13 Cultural Heritage                                  |   |
| Section 14 Landscape and Visual Amenity                       |   |
| Section 1 Interactions  | <i>The interaction between the factors referred to in points (a) to (d)</i>   |

To examine the constraints for each EIA factor, a desk study was completed to inform the baseline environment and understand the extent of constraints in the Proposed Scheme Area. Supporting maps are provided for each topic (where relevant). The results of stakeholder feedback to date has also informed the constraints study (see **Section 4**). To inform the biodiversity constraints, a number of field surveys were also completed (see **Section 6.3**).

In addition to the EIA factors, the constraints study also considered external constraints that would restrict the development of the Project. These relate to the legal, consultation and consenting issues that may restrict the Proposed Scheme and are listed in **Sections 3 to 4**.

## Environmental Constraints Report

It is important that the constraints study is kept up to date. If there is a delay between the method screening and selection of options, a review of the constraints should be undertaken to ensure no new issues have arisen that need to be taken into account.

## 2.2 Understanding the key environmental issues

To assist in identifying the key constraints in the Scheme Area, it is important that the nature and types of potential impacts that can arise from the construction and operation of flood relief measures (as outlined in **Section 1.2**) are understood.

In 2018, a Flood Risk Management Plan<sup>1</sup> was developed for the River Barrow Basin. This plan sets out a strategy for long-term, sustainable and cost-effective flood risk management in the River Barrow Basin. As part of this plan, a Strategic Environmental Assessment (SEA) was developed. The SEA identified a number of potential short-term, negative impacts associated with the proposed measures including:

- Potential disturbance of local communities during the construction of hard defences

Potential short term sedimentation and water quality impacts;

- Potential disturbance or loss of habitat and/or species from the construction; and
- Potential for impact on the Freshwater Pearl Mussel species and/or its potential habitat.
- The direct impacts relate to the footprint of hard defences and disturbance of protected habitats and species in the River Barrow and River Nore SAC, while the indirect impacts relate to the risk of increased sediment loads and associated nutrients to the water during the construction phase.
- Other potential impacts that are often associated with the development of flood relief measures during the construction phase include:
  - Restricted access to waterways and amenities;
  - Potential for disturbance to known and unknown cultural heritage features (including those underwater);
  - Potential for proliferation of Invasive Alien Plant Species (IAPS);
  - Disturbance to fisheries and fish migration;
  - Changes to the water flow resulting in impacts on habitats and species;
  - Potential for contamination to enter groundwater during excavations;
  - Potential for disruption and / or damage key underground utility services through anticipated excavation activities; and
  - Potential for excavating contaminated soils. This could result in negative effects to the population / site worker health, biodiversity, water quality etc.

It would be expected that the Proposed Scheme will have an overall positive effect through reducing the risks of flooding along the Athy section of River Barrow. Other types of potential impacts that can arise in the operational and maintenance phase are as follows:

- Permanent alterations to the River Barrow's hydromorphology may impact fisheries habitats, water quality and instream plant communities;
- Flood relief measures may result in the requirement for permanent land take; and
- Visual impacts on amenities arising from embankments and changes in the landscape.

Many potential impacts particularly those relating to disturbance from construction such as employment and impacts on population and traffic disruption levels will arise for many of the options considered for the Proposed Scheme and therefore these have not been outlined in detail as part of this constraints study. They instead will

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<sup>1</sup> OPW (2018) Flood Risk Management Plan: Barrow.

## Environmental Constraints Report

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be managed and controlled as part of the environmental assessment and recommendations for mitigation for the preferred option.

### 2.3 Guidance

There is no specific guidance on the completion of constraints study, however it is important to note that the constraints study is an important step in the development of alternative options. Avoidance of key environmental sensitivities should be a priority where feasible in the development of project options. The consideration of alternatives is an important part of the EIA process and therefore consideration has been given to the following EPA EIA guidance:

- Environmental Protection Agency (EPA) Guidelines including: Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2002), Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003), Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2015), and Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);
- The EPA EIA guidance also provides detail on the EIA factors. Also it is worth highlighting that avoidance particularly during options selection is the most effective form of mitigation (EPA, 2022).

In addition the following guidance documents were considered in the completion of the constraints study:

- National Monuments Services (NMS) (2023) Archaeology and Flood Relief Schemes: Guidelines;
- Chartered Institute of Ecology and Environmental Management (CIEEM). (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Version 1.2 updated April 2022. Winchester. (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018); and
- Inland Fisheries Ireland (IFI) (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.

### 2.4 Mapping

RPS in house GIS created the maps that support the constraints study using the most up to date available datasets. To inform the desktop studies completed in **Sections 6 to 15**, the following online mapping tools have also been used:

- <https://gis.epa.ie/EPAMaps/>
- [Environmental Sensitivity Mapping \(geohive.ie\)](https://www.geohive.ie/)
- [Historic Environment Viewer \(arcgis.com\)](https://www.arcgis.com/)
- Google street maps.

These tools can also be used to support discussion on options at selection stage and it is recommended that the reader familiarise themselves with these tools.

## 3 LEGISLATIVE CONTEXT

### 3.1 Legislation

Consideration of relevant legislation at EU and National level can influence the progression of the Proposed 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 Proposed Scheme. On this basis a list of the key relevant legal, planning and policy related requirements relative to the Proposed Scheme are set out in **Table 3-1**.

The relevant policies from the Kildare County Development Plan 2023-2029 and the Athy Local Area Plan 2021-2027 (LAP) are referred to throughout the report.

**Table 3-1: Legislation with Potential to Influence the Proposed Scheme.**

| Legislation   | Content Relative to the Proposed Scheme   |
|---|---|
| <b>EU Level</b>   |   |
| EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) | <ul style="list-style-type: none"> <li>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, is 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.</li> <li>Should the Proposed Scheme screen in for EIA, an EIAR will be required.</li> </ul>   |
| EU Flood Directive (2007/60/EC)   | <ul style="list-style-type: none"> <li>Aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity; and</li> <li>Establish a framework for the assessment and management of flood risks.</li> </ul>  |
| Water Framework Directive (2000/60/EC) as ammended                      | <ul style="list-style-type: none"> <li>Establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater.</li> </ul>   |
| Habitats Directive (92/43/EEC)  | <ul style="list-style-type: none"> <li>All works during the development and operation of a project must aim to maintain/conservate habitats and species of community interest. These habitats and species of community interest are identified as; Special Areas of Conservation (SAC), designated under the Habitats Directive and Special Protection Areas (SPAs), designated under the Conservation of Wild Birds Directive (79/409/ECC), as codified by Directive 2009/147/EC. The project will be screened for Appropriate Assessment (AA) in accordance with Article 6(3) and 6(4) of the Directive</li> <li>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.</li> <li>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.</li> <li>Should the Proposed Scheme screen in for AA, a Natura Impact Statement will be required.</li> </ul> |
| Birds Directive (2009/147/EC)   | <ul style="list-style-type: none"> <li>All works during the development and operation of the Proposed Scheme must aim to maintain/conservate wild bird species occurring in the Scheme Area and Study Area.</li> </ul>  |
| Waste Framework Directive (2008/98/EU), as amended.                     | <ul style="list-style-type: none"> <li>This directive outlines a framework for waste management principles which aids in improving waste reuse. This framework sets targets aiming to re-use waste material.</li> </ul>   |
| <b>National Level</b>   |   |
| Arterial Drainage Act 1945 (As amended)                                 | <ul style="list-style-type: none"> <li>Arterial drainage act outlines legislation regarding arterial drainage works that are mainly used for improvement of agricultural land throughout Ireland.</li> </ul>  |
| Barrow Drainage Act 1927  | <ul style="list-style-type: none"> <li>This act sets provisions for the formulation, carrying out and maintenance of an Arterial drainage scheme for the River Barrow and its associated tributaries.</li> </ul>  |

## Environmental Constraints Report

| Legislation   | Content Relative to the Proposed Scheme  |
|---|--|
| Climate Change Sectoral Adaptation Plan for Flood Risk Management (2019 - 2024)                         | <ul style="list-style-type: none"> <li>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: <ul style="list-style-type: none"> <li><b>Objective 1:</b> Enhancing our knowledge and understanding of the potential impacts of climate change for flooding and flood risk management through research and assessment.</li> <li><b>Objective 2:</b> Adapting flood risk management practice to effectively manage the potential impact of climate change on future flood risk</li> <li><b>Objective 3:</b> Aligning adaptation to the impact of climate change on flood risk and flood risk management across sectors and wider Government policy</li> </ul> </li> </ul> |
| Climate Change and Low Carbon Development Act (2015)  | This act is for the purpose of pursuing the transition to a low carbon economy as well as for the establishment of the Climate Change Advisory Council.  |
| Climate Action Plan 2024  | The Climate Action Plan 2024 is Ireland's all of Government Plan to tackle climate break down and achieve net zero greenhouse gas emissions by 2050. Climate Action Plan 2024 sets out the roadmap to deliver on Ireland's climate ambition. It aligns with the legally binding economy-wide carbon budgets and sectoral ceilings that were agreed by Government in July 2022.   |
| National Adaptation Framework: Planning for a Climate Resilient Ireland 2024                            | The National Adaptation Framework (NAF) specifies the national strategy for the application of adaptation measures in different sectors and by local authorities to reduce the vulnerability of the State to the negative effects of climate change and to avail of any positive effects that may occur.   |
| EC (Assessment and Management of Flood Risks) Regulations (SI 122 2010)                                 | Transposes and gives effect to the EU Flood Directive 2007/60/EC into Irish legislation.   |
| European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) (as amended)     | <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>   |
| European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 as amended | EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) transposed into Irish legislation by S.I. No. 296 of 2018.   |
| Planning and Development (P&D) Acts 2000 (as amended)   | Requirements for an Environmental Impact Assessment are outlined under Section 172 of the P&D Act  |
| P&D Regulations 2001 as amended   | <p>The thresholds for prescribed classes of development requiring EIA are set out under the P&amp;D Regulations 2001 Schedule 5. The thresholds for flood relief works are provided under Schedule 5 Part II, Section 10(f)(ii)</p> <p><i>“Canalisation and flood relief works, where the immediate contributing sub-catchment of the proposed works (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.”</i></p>   |
| 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   |

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| Legislation  | Content Relative to the Proposed Scheme   |
|--|---|
| 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.  |
| Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023<br>The Heritage Act 1995.<br>Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999.<br>Planning and Development Acts 2000 as amended<br>Archaeology and Flood Relief Schemes: Guidelines 2023 | All works during development and operation of the Proposed Scheme 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. <ul style="list-style-type: none"> <li>The Department of Housing, Local Government and Heritage National Monuments Service published the Archaeology and Flood Relief Schemes (FRS): Guidelines 2023 with the aim to provide a framework for the effective integration of archaeological heritage into the design and development of FRS developed by the Office of Public Works (OPW) directly or in association with relevant local authorities.</li> <li>Archaeological licenses may be required to support the assessment of the Proposed Scheme.</li> </ul> |
| EU Invasive Alien Species Regulations (No. 1143 of 2014)   | This regulation requires the prevention and management of the spread of invasive alien species.   |
| Wildlife Act 1976 (as amended)   | <ul style="list-style-type: none"> <li>The Wildlife Act, 1976, is the principal national legislation providing for the protection of wildlife and the control of some activities that may adversely affect wildlife.</li> <li>The aims of the Wildlife Act, 1976, are 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.</li> <li>Should the Proposed Scheme result in disturbance to protected wildlife, a derogation licence will be required.</li> </ul>  |
| European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011), as amended.  | <ul style="list-style-type: none"> <li>This regulation sets measures that aim to prevent or reduce negative effects resulting from waste generation and management. Ultimately, these regulations seek to improve the efficient re-use of waste</li> </ul>  |

As part of Stage 1, an EIA screening and AA screening will be undertaken. To inform the EIA screening, it will be important to understand what legislation and consenting route will apply to the Proposed Scheme i.e. what consent application process will apply and who will develop the Proposed Scheme.

It is also worth noting that the EU Nature Restoration Law sets binding targets to restore degraded ecosystems, in particular those with the most potential to capture and store carbon and to prevent and reduce the impact of natural disasters. Ireland will be required to submit National Restoration Plans to the Commission within two years of the Regulation coming into force showing how they will deliver on the targets. Examples of nature restoration include projects that provide flood protection and restore nature and biodiversity in parallel.

## 3.2 Policy context

**Table 3-2: Policy Requirements with Potential to Influence the Proposed Scheme.**

| Policy  | Content Relative to the Proposed Scheme  |
|---|--|
| <b>National Level</b>   |  |
| Ireland 2040 Our Plan National Planning Framework and National Development Plan (NDP) 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 NDP provides enabling investment to implement the strategy to 2027. The NPF is a long-term, 20-year strategy for the |



## Environmental Constraints Report

| Policy  | Content Relative to the Proposed Scheme  |
|---|--|
| Report of the Flood Policy Review Group, 2004                                     | <p>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</p> <hr/> <p><b>National Policy on flooding:</b></p> <p><i>'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'</i></p> <p>In determining if a flood relief scheme is to be implemented the regard must be had to the following broad criteria:</p> <ul style="list-style-type: none"> <li>(a) the scheme must be technically feasible;</li> <li>(b) the scheme must generally be cost beneficial (a cost benefit analysis is undertaken to determine the economic merits of the project); and</li> <li>(c) the scheme must also be environmentally compatible (an Environmental Impact Study is normally undertaken for each scheme and the scheme must satisfy the requirements of the EIS).</li> </ul>  |
| Planning System and Flood Risk Management – Guidelines for Local Authorities 2020 | <p>The core objectives of the Guidelines are to:</p> <ul style="list-style-type: none"> <li>• Avoid inappropriate development in areas at risk of flooding;</li> <li>• Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off;</li> <li>• Ensure effective management of residual risks for development permitted in floodplains;</li> <li>• Avoid unnecessary restriction of national, regional or local economic and social growth;</li> <li>• Improve the understanding of flood risk among relevant stakeholders;</li> <li>• 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.</li> </ul>  |
| National Biodiversity Action Plan   | <ul style="list-style-type: none"> <li>• Ireland's 4<sup>th</sup> National Biodiversity Action Plan (Government of Ireland, 2024) includes a number of overarching objectives and key actions, which are of relevance to the assessment, include: <ul style="list-style-type: none"> <li>– Objective 2: Meet Urgent Conservation and Restoration Needs.</li> <li>– Outcome 2A: The protection of existing designated areas and protected species is strengthened and conservation and restoration within the existing protected area network are enhanced;</li> <li>– Outcome 2D: Biodiversity and ecosystem services in the marine and freshwater environment are conserved and restored; and</li> <li>– Outcome 2H: Invasive alien species (IAS) are controlled and managed on an all-island basis to reduce the harmful impact they have on biodiversity and measures are undertaken to tackle</li> </ul> </li> <li>• Action 2D5: OPW will work with relevant authorities to ensure that Flood Risk Management planning and associated Strategic Environmental Assessment (SEA), EIA and Appropriate Assessment (AA), minimises loss of biodiversity and ecosystem services through policies to promote more catchment-wide and non-structural flood risk management measures <ul style="list-style-type: none"> <li>– Indicator: Assessment to identify and promote natural flood management techniques that may be suitable for application in Ireland; Inclusion of catchment wide and non-structural measures within the options assessed by Flood Risk Management Plans</li> </ul> </li> <li>• Action 2D7 requires the OPW to: assess the potential of NBS-CM (Nature-based Solutions for Catchment Management) as part of the development of future flood relief schemes</li> </ul> |



## Environmental Constraints Report

| Policy   | Content Relative to the Proposed Scheme  |
|--|--|
|  | <ul style="list-style-type: none"> <li>Action 2D8 states that the OPW will review existing flood relief schemes, identifying opportunities for retrofit of biodiversity enhancement measures</li> </ul>  |
| River Basin Management Plan for Ireland 2022-2027                  | <p>The 3rd cycle River Basin Management Plan for 2022-2027 was finalised in September 2024. The aim of the Plan is to protect, improve and sustainably manage our water environment to 2027. The plan is produced in implementation of the EU Water Framework Directive (WFD). The overall approach of the third cycle River Basin Management Plan will be to increased level of ambition. The updated cycle plan will focus on all waterbodies with clear strategies to protect those that are still at good status or above and to improve water bodies that are at less than good status.</p>   |
| Regional Level   |  |
| Eastern River Basin Management Plan 2009-2015                      | <p>The RBMP for the Eastern River Basin District in Ireland, issued in December 2009, sets out a number of objectives and measures for all water bodies in the Eastern Region which incorporates the surrounding counties of Dublin which include Kildare.</p>   |
| Regional Planning Guidelines for the Greater Dublin Area 2010-2022 | <p>The Guidelines for the Greater Dublin Area outline measures through which both the flood risk. The implementation of the planning guidelines on flood risk establishes the mechanism to reconcile development and flood risk issues within which flooding is likely or has a history of flooding.</p> <ul style="list-style-type: none"> <li><b>Strategic Policy FP1</b> That flood risk be managed pro-actively at all stages in the planning process avoiding development in flood risk areas where possible and by reducing the risks of flooding to and from existing and future development. Strategic Recommendations</li> <li><b>FR1</b> New development should be avoided in areas at risk of flooding. Alongside this, the Regional Flood Risk Appraisal recognises the need for continuing investment and development within the urban centres of flood vulnerable designated growth towns and the City and for this to take place in tandem with the completion of Catchment-based Flood Risk Assessment and Management (CFRAM) Studies and investment in comprehensive flood protection and management.</li> <li><b>FR2</b> Development and Local Area Plans should include a Strategic Flood Risk Assessment and all future zoning of land for development in areas at risk of flooding should follow the sequential approach set out in the Departmental Guidance on Flood Risk Management. All Flood Risk Assessments and CFRAM studies should take place in coordination and consultation with adjoining local authorities and regions and in coordination with the relevant River Basin Management Plans.</li> <li><b>FR3</b> Local authorities should take the opportunities presented to optimise improvements in biodiversity and amenity when including policies and actions in development plans/local area plans (such as flood plain protection and Sustainable drainage systems (SuDS)) for existing and future developments.</li> <li><b>FR4</b> Plans and projects associated with flood risk management that have the potential to negatively impact on Natura 2000 sites will be subject to a Habitats Directive Assessment (HDA) according to Article 6 of the habitats directive and in accordance with best practice and guidance.</li> </ul> |
| County Level   |  |
| Kildare County Council Climate Action Plan 2024-2029               | <p>The Kildare County Council Climate Action Plan 2024-2029 was established to support the Government's National Climate Objective which aims to transition to a more climate resilient, biodiversity rich, sustainable and climate neutral society by 2050. Ireland is legally required to reduce greenhouse gas emissions by 51% by 2030 in time with the Climate Action and Low Carbon Development (Amendment) Act 2021. This plan along with the other local authority plans will aid in</p>   |

## Environmental Constraints Report

| Policy   | Content Relative to the Proposed Scheme  |
|--|--|
|  | assisting Ireland to achieve this objective. This Climate Action Plan sets out climate mitigation and adaptation measures.   |
| Kildare Development Plan 2023-2029: Strategic Flood Risk Assessment (SFRA) | The SRFA is an environmental report as part of the Kildare Development Plan 2023-2029 for Kildare. This document outlines the types of flooding and the flood risk of different locations throughout the area and includes the Barrow River catchment.   |
| County Kildare Biodiversity Action Plan 2009-2014                          | <p>This document outlines a number of objectives for the protection of biodiversity within Kildare County. Through this Plan, Kildare County Council aims to support and sustain healthy ecosystems and help alleviate the impact of climate change. Actions are set to support best practice management of Kildare's natural Heritage. The Plan sets out Objectives and Actions for the protection, preservation, promotion of biodiversity as well as the identification of vulnerable areas to climate change. Those actions and Objectives which are relevant to the Proposed Scheme include the following:</p> <ul style="list-style-type: none"> <li>• <b>Objective 3:</b> To promote best practice in heritage conservation and management. <ul style="list-style-type: none"> <li>– <b>Action 22:</b> Identify methods for incorporating natural features, native species and biodiversity into new developments.</li> </ul> </li> <li>• <b>Objective 4:</b> To inform policy and provide advice to Kildare Local Authorities. <ul style="list-style-type: none"> <li>– <b>Action 25:</b> Continue to provide biodiversity training for local authority staff with particular emphasis the following: <ul style="list-style-type: none"> <li>○ The management of hedgerows and trees.</li> <li>○ Carrying out works in or near watercourses.</li> <li>○ Carrying out works in or near bridges.</li> <li>○ The protection of bat roosts and bird habitats.</li> <li>○ The control of invasive species.</li> <li>○ The retention of natural habitats in new developments.</li> <li>○ The use of native species of trees and shrubs, consistent with the findings of the hedgerow survey 2006, and native wildflowers (of native provenance) in local authority planting schemes and in planning conditions.</li> </ul> </li> </ul> </li> </ul> |
| Kildare Heritage Plan 2019-2025  | This plan commits to continuing to work with the community and various stakeholders to raise awareness, understanding and appreciation of Kildare's natural and cultural heritage assets. The aim of the plan is: "To recognise by all, the value and opportunity of Kildare's unique heritage resource and to manage, conserve and protect it, in partnership, for present and future generations".   |
| Local Level  |  |
| Athy Local Area Plan 2021-2027: Strategic Flood Risk Assessment            | This document outlines the types of flooding and the flood risk of Athy. The National Preliminary Flood Risk Assessment (PRFA) <sup>2</sup> study has identified Athy as an Area for Further Assessment (AFA).   |

### 3.3 Constraints

The development and the preparation of a consent application will require to comply with EU and national legislation. Similarly, the application documents will need to demonstrate how the Proposed Scheme complies with relevant policy.

<sup>2</sup> OPW (2012) National Preliminary Flood Risk Assessment: Designation of the Areas for Further Assessment.

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**Table 3-3** presents the constraints around compliance relevant to legislation and recommends how the constraint can be addressed as part of the development of the Proposed Scheme.

**Table 3-3: Legislative and policy constraints.**

| What is the constraint?                           | How should the constraint be addressed during options selection:   | Recommendations  |
|---|--|--|
| Compliance with legislation and policy objectives | <ul style="list-style-type: none"> <li>Throughout options selection and the development of the Proposed Scheme adhere to the requirements of relevant legislation and policy.</li> </ul> | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Ensure the legislative and policy requirements for all licence and consent application processes are understood and addressed during the development of the Project.</li> <li>Keep up to date with new legislation or changes arising from case law and good practice.</li> <li>As part of the options selection process, Project team to discuss the level of consenting risk associated with each option.</li> <li>As part of options selection ensure that the extent and nature of construction activities required for each option are discussed and understood by the project team.</li> <li>Early engagement with key stakeholders such as NPWS, IFI, NMS.</li> <li>Liaise and engage with any adjoining or interfacing projects to determine if there is interaction with the Proposed Scheme and potential for cumulative effects to arise during construction or operational and maintenance phase (including projects proposed as part of the Athy Urban Regeneration Framework)/</li> </ul> |

## 4 STAKEHOLDER ENGAGEMENT

The service requirements requested that the opening Public Engagement and Participation Day (PPD) seek initial view from the public and other interested parties in relation to a number of aspects including 'The key issues that the Constraints Study should address'. These key issues are outlined in **Section 4.1**. Details of stakeholder consultation feedback received to date are outlined in **Section 4.2**.

### 4.1 Public Engagement and Participation Day (PPD)

A summary report on the PPD held in October 2023 has been prepared. A summary of the key environmental issues that are considered relevant to the constraints study are:

Members of Public identified the following areas as experiencing flood:

- St Joseph's Terrace and Courthouse;
- The Grand Canal Barrow Line;
- Near railway line culvert on Moneen river;
- Bennetts stream has flooding issues as a result of the bridge on the bend;
- Member of Public stated that flooding occurring in St. Joseph Terrace two years ago occurred from water surcharging drains with backwater from the river. They did not think that the riverbank had overtopped to create flooding;
- In the canal, there is a lock (Cardington Lock) near L4006 crossing canal, which was opened by unknown individuals which caused water to spill along Duke street into town centre. No other awareness of spill from canal;
- A member of public stated that seepage from the canal previously caused flooding at the golf course approximately 12 years ago (canal dredging contractor pierced the clay seal). This has since been repaired and no further issues;
- Member of Public outlined the importance of the Castle (White Castle);
- Member of Public highlighting the beauty of the confluence of Bennetts and Barrow;
- Member of Public emphasised the importance of biodiversity and habitats;
- Member of Public outlined work done with bog projects; and
- Member of Public queried accuracy of previous topography survey of Athy.

### 4.2 Stakeholder feedback

**Table 4-1** summarises the issues identified during stakeholder consultation to date and outlines how the issues identified will be addressed during the development of the Proposed Scheme. Early and ongoing engagement with key stakeholders will be important as the Proposed Scheme develops.

**Table 4-1: Summary of Key Issues Raised During Consultation.**

| Date                      | Consultee and type of response         | Issues raised   | Outline how issue will be addressed at options selection  |
|---------------------------|--|---|---|
| 27 <sup>th</sup> May 2024 | Inland Fisheries Ireland (IFI) – email | <ul style="list-style-type: none"> <li>• The over-deepening and over-widening of the Barrow tributaries in the Athy area along with long sections of some tributaries which were culverted, with gates/fences and other structures have contributed to flooding.</li> <li>• It is important that the issue of long sections of streams clogged with willow trees is addressed.</li> </ul> | <p>The Project team:</p> <ul style="list-style-type: none"> <li>• To identify the existing structures and willow areas in the River Barrow and tributaries that have contributed to flooding and consider how they interact with the Proposed Scheme.</li> <li>• Consult with the IFI during the development of the options.</li> </ul> |

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| Date         | Consultee and type of response          | Issues raised   | Outline how issue will be addressed at options selection   |
|--------------|---|---|--|
|              |   | <ul style="list-style-type: none"> <li>Main issues for IFI is that the Athy Stream (flowing to the River Barrow on the east side of town upstream of Athy Bridge) and the second Barrow tributary (which flows to the Barrow downstream of Athy Bridge in Tonlagree on the western side of the River) are important salmonid tributaries of the Barrow with excellent populations of salmon and trout. It is important that the Proposed Scheme protects/preserves this important habitat and includes habitat restoration in sections that were over-deepened by the Barrow drainage scheme.</li> <li>IFI also request that the Proposed Scheme model the impact of altering flows through the derelict mill stream at Ardreich Lock upon water levels in the River Barrow (main river). IFI understand that significantly greater flows are permitted during the winter months when the control structure here is raised, though it is not clear who controls this. It is important that the potential for this to contribute to flooding upstream is addressed.</li> </ul>   | <ul style="list-style-type: none"> <li>Baseline aquatic ecology assessments to map the habitat and identify opportunities for enhancement.</li> <li>Design team to consider how Ardreich Lock can contribute to flooding upstream.</li> </ul>  |
| 22 May 2024  | Kildare County Council - workshop       | <ul style="list-style-type: none"> <li>KCC (Public Realm Department) outlined the importance of the education centre/Blueway sports hub described in the Dominican Lands Masterplan and highlights the importance for it to be considered in the design process.</li> <li>KCC (Environment Department) brought a landfill remediation project to the project team's attention which will be underway through the duration of the Proposed Scheme. This will need to be considered cumulatively with the Proposed Scheme.</li> <li>A member of the Department of Housing, Local Government and Heritage outlined the archaeological value of Athy with a specific emphasis placed on the River Barrow banks.</li> <li>Uisce Éireann brought the drainage masterplan project to the attention of the project team which will need to be considered for the cumulative effect with the Proposed Scheme.</li> <li>KCC (Parks &amp; Open Spaces Department) outlines that it would be possible for future parks &amp; open spaces master plan to be developed for Athy town. This is something that will be considered for cumulative effects with the Proposed Scheme.</li> </ul> | <p>The Project team:</p> <ul style="list-style-type: none"> <li>RPS to liaise with KCC during the options selection and design phase.</li> <li>KCC to confirm the programme for works at the landfill and the location of the landfill. Also the programme for works for the drainage project and any parks and open spaces to be confirmed.</li> <li>Consult with the DHLGH on options and potential to impact on archaeological value. Also engagement of project archaeologist in the options selection process.</li> </ul> |
| 24 July 2024 | Inland Fisheries Ireland (IFI) – Letter | <ul style="list-style-type: none"> <li>IFI outlined that Barrow_130, Barrow_140 and Athy Stream Stream_020 surface water bodies have a WFD Ecological Status of Poor and are</li> </ul>   | <p>The Project team to:</p> <ul style="list-style-type: none"> <li>Discuss options to ensure that they will not cause deterioration in status and is consistent with</li> </ul>  |

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| Date | Consultee and type of response | Issues raised  | Outline how issue will be addressed at options selection  |
|------|--------------------------------|--|---|
|      |                                | <p>considered At Risk of not achieving Good Status within the current RBMP cycle.</p> <ul style="list-style-type: none"> <li>• IFI referenced that the Qualifying Interests (QI) within the River Barrow and River Nore SAC and the failure to reach its Salmon Conservation Limit. IFI suggested unsatisfactory ecology status of the River Barrow and Athy Stream is primarily due to widening and deepening works of the watercourse by the Barrow Drainage Board.</li> <li>• IFI stated that that long sections of the Athy/Moneen Stream and Bennett's stream is completely clogged by the growth which contributes to flooding.</li> <li>• IFI stated that the bridge conveyance capacity along the Moneen/Athy Stream and Bennet's Stream may be limited or bridge design may be prone to blockage/partial blockage, which in turn may contribute to flooding upstream.</li> <li>• IFI indicated that water levels in the Barrow through Athy are maintained at a higher than natural level by the weir linked to the Barrow Navigation/Ardreigh Lock.</li> <li>• IFI suggested for the Proposed Scheme's assessment to address the requirements of the fourth National Biodiversity Action Plan, including the following: <ul style="list-style-type: none"> <li>– <b>Action 2D5</b>, namely that the OPW will work with relevant authorities to ensure that Flood Risk Management planning and associated Strategic Environmental Assessment (SEA), EIA and Appropriate Assessment (AA), minimises loss of biodiversity and ecosystem services through policies to promote more catchment-wide and non-structural flood risk management measures</li> <li>– <b>Action 2D7</b> requires the OPW to: assess the potential of NBS-CM (Nature-based Solutions for Catchment Management) as part of the development of future flood relief schemes</li> <li>– <b>Action 2D8</b> states that the OPW will review existing flood relief schemes, identifying opportunities for retrofit of biodiversity enhancement measures.</li> </ul> </li> <li>• IFI stated that they will object to any scheme which does not include a habitat restoration programme on Athy/Moneen and Bennet's Stream watercourses.</li> </ul> | <p>their restoration to Good ecological status.</p> <ul style="list-style-type: none"> <li>• Examine likely significant effects of options on QI.</li> <li>• Examine how streams and bridges are contributing to flooding.</li> <li>• Assess the impact of altering flows through the derelict mill stream at Ardreigh Lock upon water levels in the Barrow main River during flood events.</li> <li>• A bathymetric survey of the Barrow River throughout Athy will be considered during the design stage. As part of this survey, it will determine if the depth of the Barrow downstream of the Horse weir is more than those required for navigation and if there is scope for a reduction in the height of the weir here.</li> <li>• The options for habitat restoration measures will be integrated into the options selection and the assessments for the selected Proposed Scheme.</li> </ul> |



## 5 POPULATION AND HUMAN HEALTH

This section identifies the constraints in relation to population and human health within the Scheme Area.

During the construction phase, activities have the potential to result in temporary impacts on local population and human health as a result of disturbance from increases in noise levels and atmospheric emissions, potential impacts on water supplies, disruption to traffic on the surrounding network, disruption to local amenities from restricted access, etc.

During the operation and maintenance phase, the Proposed Scheme will result in positive effects arising from the protection against flood risk on properties. Depending on the chosen measures chosen there is potential for effects on visual amenity and access.

### 5.1 Policy objectives

The following objectives have been identified as being relevant to flood relief schemes in the Kildare County Council Development Plan 2023-2029:

**CS O2:** Ensure that the future growth and spatial development of County Kildare provides for a county that is resilient to climate change, enables the decarbonisation of the county's economy and reduces the county's carbon footprint in support of national targets for climate mitigation and adaption objectives as well as targets for greenhouse gas emissions reductions.

**UD P1** Apply the principles of people-centred urban design and healthy placemaking as an effective growth management tool to ensure the realisation of more sustainable, inclusive, and well-designed settlements resilient to the effects of climate change and adapted to meet the changing needs of growing populations including aging and disabled persons.

**UD P2** Develop towns and villages of all types and scale as environmental assets and ensure that their regeneration and renewal forms a critical component of efforts to achieve compact growth development and increased climate resilience within settlements across the county.

The following objectives relating to tourism in the Athy LAP 2021-2027 are important for consideration in the development of options for the Proposed Scheme:

#### Policy EDT3 – Tourism

**EDT3** It is the policy of the Council to support and facilitate the development of the tourism infrastructure in Athy with particular emphasis on utilising and harnessing, in an appropriate and sustainable manner the potential of the town's natural and built heritage assets.

The LAP includes a number of supporting objectives for the Council supporting the development of the Barrow Blueway route along the Barrow, supporting Athy as a Blueway destination, acknowledging the importance and potential of Athy's waterways and water sports including angling.

### 5.2 Desktop study

The key sources (i.e. data and reports) used to inform the constraints study for population and human health are summarised in **Table 5-1** below. These sources were used to understand the baseline environment and identify constraints.

**Table 5-1: Summary of key desktop sources.**

| Title                                       | Source/Author  | Year      |
|---|----------------|-----------|
| Athy Local Area Plan 2021-2027              | KCC            | 2021      |
| Fáilte Ireland: Research                    | Fáilte Ireland | 2024      |
| Google Earth Imagery                        | Google Earth   | 1984-2024 |
| Kildare County Development Plan (2023-2029) | KCC            | 2023      |



## 5.3 Baseline environment

### 5.3.1 Population

Census 2022 population figures indicate a population of 11,035 within the overarching settlement of Athy Town, compared to 9,677 in 2016. This is approximately 5% of the Kildare population<sup>3</sup>. Based on the Kildare County Development Plan, Athy is zoned to hold 4.8% of Kildare's housing growth. This will equate to an additional 771 residential properties and approximately 2,160 additional persons within Athy over the Development Plan's duration.

### 5.3.2 Properties

The property types within the scheme area were identified through the An Post Geodirectory database and Google Earth. The following properties characterise the Scheme Area:

- Residential development dominates the Scheme Area;
- Community facilities and amenities; and
- Commercial properties.

### 5.3.3 Community and amenity facilities

Based on a review of the Athy Local Area Plan 2021-2027 and Google Earth, the following community and amenity facilities were identified within the Scheme Area:

- People's Park located to the west of the River Barrow and south of the Athy Distributor Road;
- Athy Library is located to the west of the River Barrow and south of the Duke Street;
- Education facilities within the Scheme Area are operating close to full capacity. Education facilities present within the Scheme Area include the following:
  - Four primary schools;
  - Two post-primary schools;
  - Four further education / training centres.
- There is a total of 12 childcare facilities and the Local Area Plan noted that these facilities are nearly at full capacity (Based on 2019/2020 figures, these facilities were using 95% of their capacity);
- A total of ten faith facilities were recorded within the Scheme Area. Six of which were places of worship and four being cemeteries;
- A total of 21 sports facilities / clubs within the Scheme Area including:
  - Athy GAA Club
  - Athy RFC.
  - Athy Town FC
  - Athy Tennis Club
  - Arch Community Centre
  - 25m swimming pool and gym at K-Leisure

<sup>3</sup> CSO (n.d) Census Mapping. Available at: <https://visual.cso.ie/?body=entity/ima/cop/2016&boundary=C03849V04599&guid=2ae19629-14a7-13a3-e055-000000000001>

### 5.3.4 Healthcare facilities

The following healthcare facilities were noted within the Scheme Area:

- Five General Practitioner Clinics;
- One Primary Care Centre;
- One Health Centre;
- Four Dental Practices;
- Four Physiotherapists;
- Two Nursing Homes;
- Four specialist Services; and
- Six Pharmacies.

### 5.3.5 Tourism

Athy town is a heritage town, admired for its' picturesque landscape and cultural significance. White Castle and Crom a Boo Bridge is a popular tourist attraction within the town. White Castle is located on the east bank of the River Barrow. It is an objective of the Athy Local Area Plan 2021-2027 to maintain public access to White Castle:

- **BH1.8** - Support the public access to White Castle as a tourist and heritage destination.

Burtown House and Gardens is an early Georgian villa approximately 4 km to the east of the Scheme Area. Moreover, Athy Boat Tours travels along the River Barrow and traverses through the Historic horse Bridge, Ardreich Lifting Bridge which is an area attracting tourists for its historical and cultural significance<sup>4</sup>.

Faillte Ireland have developed an initiative in 2018 called Ireland's Ancient East. This initiative highlights the historical and cultural significance of the town via wayfinding, interpretation, photography, maps and other signage across Athy (see also **Section 13** which provides information on the cultural and historical significance of the town).

The other tourist attractions within the Proposed Scheme Area include:

- Museum (Athy Heritage Centre – Shackleton Museum) is located to the south of Duke Street in the former 18th Century Market House (now Athy Town Hall);
- Regular exhibitions and cultural events along with the Community Arts Facility in the Methodist Church on Woodstock Street (According to the Athy Local Area Plan 2021-2027).
  - Bluegrass Jamboree held within the Scheme Area each July. Hosted across three days.
- Annual TriAthy annual event.
- Woodstock Castle.

### 5.3.6 Recreational use of the River Barrow

The calm waters of the River Barrow are suited for water sports and is commonly used for swimming, sailing, waterskiing, rowing, canoeing and kayaking. The River Barrow hosts the Carlow Regatta annually at the end of May which acts as a tourist attraction for visitors from across Europe. Athy Boat Tours provides boat tours and private boat tours from the centre of Athy.

<sup>4</sup> Discover Ireland (2024) Athy Boat Tours. Available at: <https://www.discoverireland.ie/kildare/athy-boat-tours>

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The Barrow way is a waymarked waterway that traces the perimeter of the River Barrow for approximately 114 km. The Barrow Way crosses through the Scheme Area and is a key recreational feature for Athy. This recreational facility is suitable for a wide demographic range<sup>5</sup>.

Athy Town has a strong angling reputation for angling along the River Barrow, the Marina and Grand Canal. These waterbodies can support fishing year round. Due to the low to moderate velocity of the Grand Canal and River Barrow, it can host a wide range of fishing methods and suitable for all levels of fishing experience. The Marina is regularly used by the Athy & District Angling Club for Winter competitions<sup>6</sup>.

According to the Athy Local Area Plan, the KCC see the potential of the River Barrow as a key recreational and tourist attraction and are committed to work in conjunction with the Waterways Ireland and the NPWS to harness the full potential of the Canal and River Barrow in terms of fishing, walkways and cycleways.

### 5.3.6.1 River Barrow and Grand Canal Connectivity

The River Barrow and associated canals are a key feature of the town that provide value for tourism as well as recreation and amenities to the local population and visitors to Athy Town.

## 5.4 Constraints

**Table 5-2** presents the constraints for population and human health and recommends how the constraints can be addressed as part of the development of the Proposed Scheme.

**Table 5-2: Population and human health constraints.**

| What is the constraint? | How should the constraint be addressed during optioneering:   | Recommendations   |
|-------------------------|---|---|
| Properties and land use | <ul style="list-style-type: none"> <li>All properties (including those that have planning but are not developed) 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.</li> </ul> | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Understand the extent of temporary and permanent landtake at the options stage including aspects such as rights of way.</li> <li>Nature based solutions generally require a larger degree of landtake and a certain type of habitat. Engage with the environment team to consider what areas are suitable and also consider the green infrastructure outlined in the Athy LAP.</li> <li>Early engagement with landowners.</li> </ul> |
| Land zoning             | <ul style="list-style-type: none"> <li>The design of flood relief defences should take into consideration the land zoning requirements of the Scheme Area including the accessibility into and around the Scheme Area.</li> <li>The design options should also consider the residential and visual amenity provisions built into the Athy LAP in the form of greenspaces, linkages, and</li> </ul>  | <p>Project team to:</p> <p>Review the Athy LAP and zoning requirements so that the Proposed Scheme can integrate with current and proposed uses. Also review the Urban Regeneration Framework for Athy and when published, the Public Realm Strategy for Athy</p>   |

<sup>5</sup> Waterways Ireland (2023) Barrow Way. Available at: <https://www.waterwaysireland.org/things-to-do/walking/barrow-way>

<sup>6</sup> Athy & District Anglers (n.d) Fishing in Athy. Available at: <https://athyanglers.com/>

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| What is the constraint?   | How should the constraint be addressed during optioneering:  | Recommendations   |
|---|--|---|
|   | protection of views and prospects.   |   |
| Nearby sensitive receptors including residential and working communities; community and amenity facilities; healthcare and educational facilities | <ul style="list-style-type: none"> <li>The construction of the Proposed Scheme will result in temporary to short term disturbance to nearby sensitive receptors. This constraint needs to be addressed by considering the potential disturbance that can arise from the construction activities for the Proposed Scheme to ensure likely significant effects can be avoided either by considering alternative construction methods or recommending mitigation measures to minimise impacts and ensure no significant effects.</li> <li>The flood relief infrastructure has potential to impact on properties i.e. impacts on access and visual impacts.</li> </ul> | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Through consultations and workshop, environment specialists and design team to engage (through workshop) during the options selection stage to fully understand the nature and type of construction activities associated with each option. This will help understand if mitigation measures can be proposed to prevent or minimise impacts such as those on air quality, noise, vibration, water quality, transport, access during construction. If mitigation could still result in significant effects, alternatives need to be explored. Similarly, to understand the potential impacts from permanent works and the presence of flood relief infrastructure.</li> <li>Propose mitigation measures for the Proposed Scheme to minimise impacts from construction activities.</li> </ul>  |
| Tourist attractions and amenity facilities including those on the River Barrow  | <ul style="list-style-type: none"> <li>The construction and operation of the Proposed Scheme has to potential to impact on tourism and amenities in the Athy area. During the option selection, the potential impacts of the Proposed Scheme on the tourism and amenity value needs to be addressed.</li> </ul>  | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Consider the existing key tourism features in the Scheme Area (as outlined in <b>Section 5.3</b>) and how each option may interact with these features.</li> <li>Consider the importance of the connectivity of the River Barrow and Grand Canal and how flood relief measures may interact in particular with these strategic connectivity routes.</li> <li>Consider the existing and future tourism and amenity potential of the Scheme Area ( i.e. Connecting wider cultural assets to the Scheme Area via amenity pathways) when designing hard defence flood relief measures.</li> <li>Identify timing of tourism and sporting events such as festivals and triathlons to ensure construction phase impacts have minimal impact on such events.</li> <li>Engage early with key stakeholders Failte Ireland, Waterways Ireland and other stakeholders to discuss how the Proposed Scheme may impact or interact with tourism.</li> </ul> |

## 6 BIODIVERSITY

This section provides information on the known biodiversity constraints (terrestrial and aquatic) within the Scheme Area following completion of a desktop study and site specific surveys. Further details on the survey methodology and the baseline environment are provided in **Appendix A**. The key biodiversity constraints which could potentially affect or be affected by the Proposed Scheme are listed in **Table 6-7**.

### 6.1 Policy Objectives

The following policies from the Kildare County Development Plan have been identified as being relevant to flood relief schemes:

**BI P1:** *Integrate in the development management process the protection and enhancement of biodiversity and landscape features by applying the mitigation hierarchy to potential adverse impacts on important ecological features (whether designated or not), i.e. avoiding impacts where possible, minimising adverse impacts, and if significant effects are unavoidable by including mitigation and/or compensation measures, as appropriate. Opportunities for biodiversity net gain are encouraged*

**BI P2:** *Seek to contribute to maintaining or restoring the conservation status of all sites designated for nature conservation or proposed for designation in accordance with European and national legislation and agreements. These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs), Ramsar Sites and Statutory Nature Reserves.*

**BI P4:** *Ensure that any new development proposal does not have a significant adverse impact, incapable of satisfactory mitigation on plant, animal or bird species which are protected by law.*

**BI P6:** *Recognise the important contribution trees and hedgerows make to the county biodiversity resource climate mitigation, resilience and adaptation.*

**BI P8:** *Ensure that Kildare's wetlands and watercourses are retained for their biodiversity, climate change mitigation properties and flood protection values and at a minimum to achieve and maintain at least good ecological status for all wetlands and watercourses in the county by, at the latest, 2027 in line with the Water Framework Directive and Ramsar Convention.*

**BI P11:** *Identify and map the key elements of the green infrastructure network in Kildare; and seek to protect, enhance, and expand the County's green infrastructure network, through informed, evidence-based methods, which do not threaten the integrity of existing native biodiversity.*

**BI P12:** *Recognise the importance of Green Infrastructure in Kildare and protect this valued biological resource, the ecosystem services it provides and the contribution to climate resilience.*

**BI P13** *Recognise the importance of Urban Green Infrastructure in addressing a broad range of urban challenges, such as connecting people with nature, adapting to climate change, supporting the green economy and improving social cohesion and to seek to protect and enhance this resource, particularly existing semi-natural areas, or habitats (such as hedgerows, canals, rivers, ponds).*

**BI P14:** *Protect and enhance the Green Infrastructure network throughout the county.*

These policies also include a number of objectives which are relevant to the Proposed Scheme and should be referred to in full for consideration during options selection and assessment of the preferred option.

The following objectives relating to tourism in the Athy LAP are important for consideration in the development of options for the Proposed Scheme:

#### **Policy NH1 – Natural Heritage**

**NH1** *It is the policy of the Council to support the protection of species and habitats that are designated under the Wildlife Acts 1976 and 2000, the Birds Directive 1979 and the Habitats Directive 1992 as well as areas of high local biodiversity value and to ensure that developments with potential to impact the integrity of the Natura 2000 network will be subject to Appropriate Assessment.*

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This LAP is supported by several objectives which puts an emphasis on seeking to protect the integrity of the Grand Canal and River Barrow.

## 6.2 Desktop study

Information on biodiversity within a number of study areas (depending on the ecological feature) (see **Table 6-3**) was collected through a detailed desktop review of existing studies and datasets. These are summarised in **Table 6-1**.

**Table 6-1: Summary of Key Desktop Sources.**

| Title   | Source   | Year   | Author   |
|---|--|--|--|
| Map of Irish Wetlands   | Wetlands of Ireland  | 2024   | Wetlands of Ireland <sup>7</sup>   |
| Fish monitoring data for the Water Framework Directive (WFD)  | Inland Fisheries Ireland   | 2023   | Inland Fisheries Ireland <sup>8</sup>  |
| Current and Historical mapping  | Ordnance Survey Ireland  | 2024   | Ordnance Survey Ireland <sup>9</sup>   |
| Bedrock, subsoil and groundwater data and mapping   | Geological Survey of Ireland   | 2024   | Geological Survey of Ireland <sup>10</sup>   |
| Surface and ground water quality status, and river catchment boundaries   | Environmental Protection Agency (EPA)  | 2024   | Environmental Protection Agency (EPA) <sup>11</sup>  |
| NPWS designated areas spatial data  | National Parks and Wildlife Services (NPWS)  | 2024   | NPWS   |
| NPWS Data request for Hectads S69 and S79   | NPWS   | 2024   | NPWS   |
| Distribution records for protected species and habitats (including suitability index for bats) held online by the National Biodiversity Data Centre (NBDC) , NPWS, UCD, and Heritage Council. | NBDC<br>NPWS<br>Heritage Council<br>Environmental Sensitivity Mapping (ESM) Webtool hosted by UCD<br>Lundy et al., (2011). | 2011-2024  | NBDC<br>NPWS<br>Heritage Council<br>Environmental Sensitivity Mapping (ESM) Webtool hosted by UCD<br>Lundy et al., (2011).   |
| Botanical Society of Britian and Ireland's (BSBI) Distribution Database   | BSBI   | Live Database (Records from 1930 onwards)                  | BSBI   |
| Checklists of protected and threatened species in Ireland   | Nelson et al. (2019).  | 2019   | Nelson et al. (2019).  |
| Red Lists   |  | 1998, 2006, 2009, 2010, 2011, 2012, 2016, 2019, 2020, 2021 | Curtis and Gough (1998); Fitzpatrick et al., (2006); Byrne et al. (2009); Foster et al. (2009); Marnell et al., (2009); Regan et al., (2010); King et al., (2011); Nelson et al., (2011); Kelly-Quinn & Regan (2012); Lockhart et al. (2012); Nelson (2016); Wyse Jackson et al., (2016); Marnell et al., (2019); Feeley |

<sup>7</sup> Available at <http://www.wetlandsurveysireland.com/wetlands/map-of-irish-wetlands-/> Accessed June 2024

<sup>8</sup> Available at <http://wfdfish.ie/> Accessed June 2024

<sup>9</sup> Available at <https://webapps.geohive.ie/mapviewer/index.html> Accessed June 2024

<sup>10</sup> Available at <https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx> Accessed June 2024

<sup>11</sup> Available at <https://gis.epa.ie/EPAMaps/> Accessed June 2024



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| Title  | Source   | Year                    | Author   |
|--|--|-------------------------|--|
|  |  |                         | et al. (2020); Gilbert et al., (2021).               |
| Status of EU Protected Habitats and Species in Ireland, Volume 1, 2, and 3 | NPWS   | 2019a<br>2019b<br>2019c | NPWS   |
| Interpretation Manual of European Union Habitats                           | European Commission                                  | 2013                    | European Commission                                  |
| National Biodiversity Action Plan 2023-2030                                | Department of Housing, Local Government and Heritage | 2024                    | Department of Housing, Local Government and Heritage |
| Athy Local Area Plan 2021-2027   | KCC  | 2021                    | KCC  |

**Table 6-2: Study areas used to examine different ecological features.**

| Ecological Features   | Desktop Study Area   |
|---|--|
| Sites designated for nature conservation                              | Groundwater bodies (GWB) 'Athy-Bagenalstown Gravels' (IE_SE_G_160), Bagenalstown Upper (IE_SE_G_153) and 'New Ross' (IE_SE_G_152)<br>Sub-Catchments – Barrow_SC_70 and Barrow_SC_80 which are found within the wider<br>Catchment Management Unit (CMU) Barrow (ID: 14)<br>Special Protection Areas (SPAs) where the foraging distance/area of the Special Conservation Interest (SCI) bird species is likely to interact with the Proposed Scheme area. |
| Habitats and protected flora (including invasive alien plant species) | 10km Hectads – S69, S79  |
| Otter <i>Lutra lutra</i>  |  |
| Badger <i>Meles meles</i>   |  |
| Bats  |  |
| Other mammals   |  |
| Amphibians  |  |
| Invertebrates   |  |
| Birds   |  |
| Aquatic surveys (freshwater)  | Watercourses that traverse within the Scheme Area  |

## 6.3 Surveys

In consultation with the design team, a number of areas within the Scheme Area were identified where works are likely to be required and also where GI is proposed. A summary of the surveys undertaken by RPS from 31 April to 2 May 2024 in these areas is provided in **Table 6-3** below.

**Table 6-3: Summary Details on Surveys Completed.**

| Title                               | Extent of survey                                   | Overview of survey  |
|-------------------------------------|--|---|
| Preliminary walkover                | Refer to <b>Figure 6-1</b> and <b>Figure 6-2</b> . | Walkover of survey area to identify what detailed surveys are required to be undertaken to ensure sufficient baseline data is obtained to undertake assessments |
| Habitats                            | Refer to <b>Figure 6-1</b> .                       | Habitat classification within 100m of proposed works areas to Fossitt (2000) and identification of potential Annex I habitats                                   |
| Invasive alien plant species (IAPS) | Refer to <b>Figure 6-1</b> .                       | Identify all Third Schedule IAPS within 100m of proposed preliminary GI works and scheme areas  |
| Badger                              | Refer to <b>Figure 6-2</b> .                       | Identify all signs of badger within 150m of proposed preliminary GI works and scheme areas  |
| Otters                              | Refer to <b>Figure 6-2</b> .                       | Identify all signs of otter within 150m of proposed preliminary GI works and scheme areas   |



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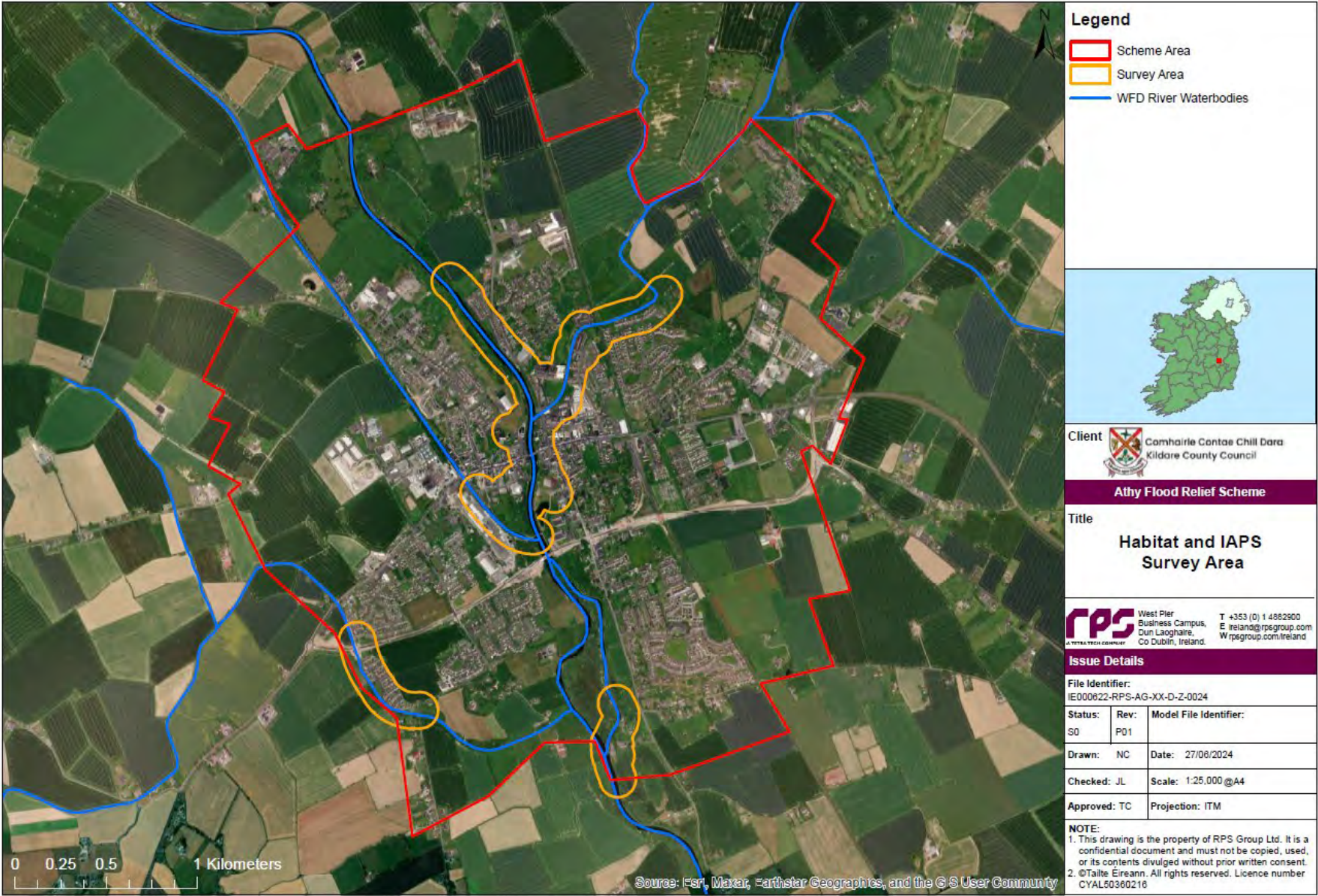


Figure 6-1: IAPS and habitat survey extent.



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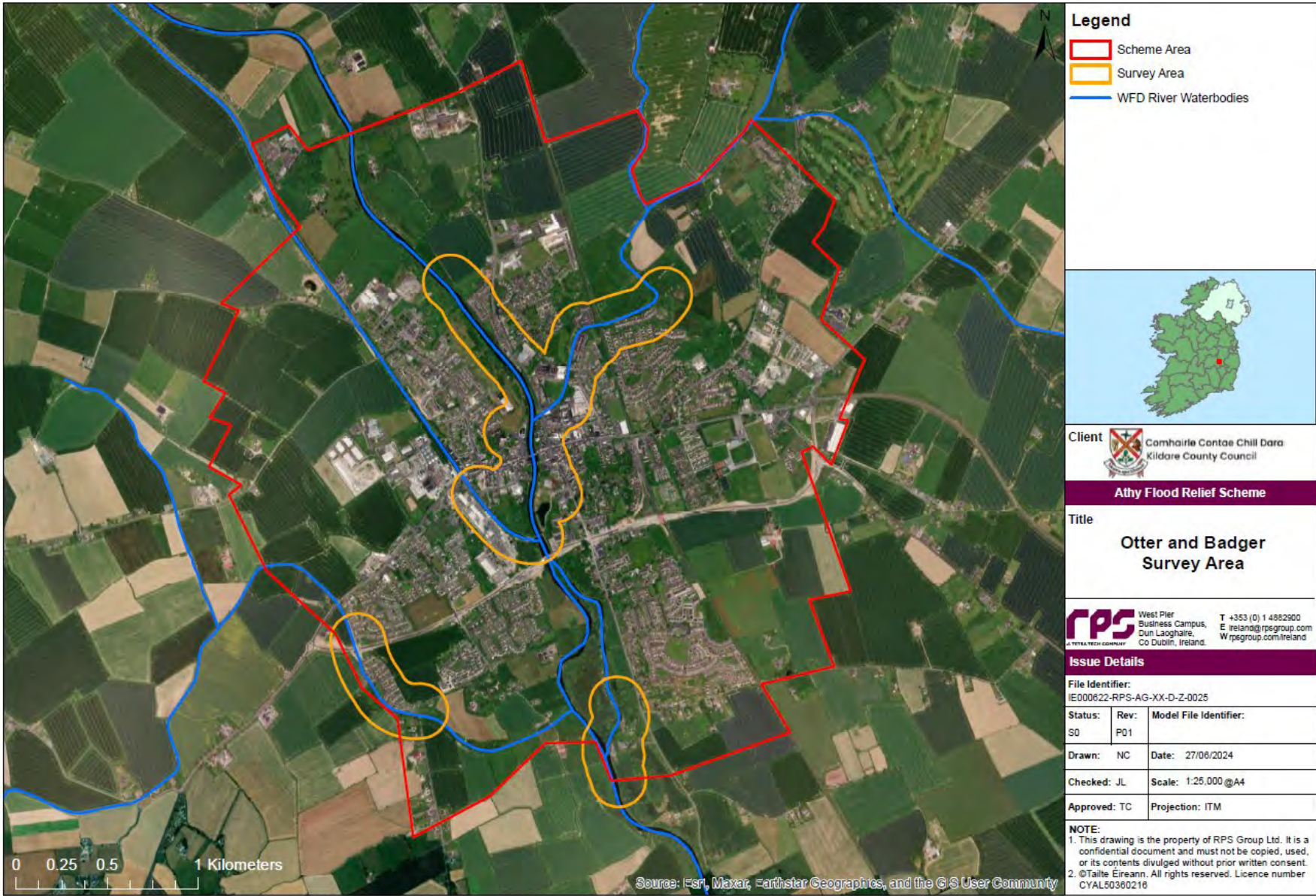


Figure 6-2: Otter and Badger Survey Area

## 6.4 Baseline environment

### 6.4.1 Designated Sites

#### 6.4.1.1 Natura 2000 sites

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as “The Habitats Directive”, provides protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of a European Union (EU)-wide network of sites known as Special Conservation Areas (SCAs). Additionally, Council Directive 2009/147/EC on the conservation of wild birds, better known as “The Birds Directive”, provides protection to all naturally occurring wild bird species present in the EU and their most important habitats. Under this directive Member States must classify Special Protection Areas (SPAs) for the protection of bird species listed in Annex I of the directive. Collectively, SCAs and SPAs are known as the Natura 2000 network (hereafter referred to as ‘European Sites’).

The requirements of both Directives have been transposed into Irish legislation principally through the Birds and Natural Habitats Regulations (BNHR) 2011, as amended and Part XAB of the Planning and Development Act 2015 (as amended).

A detailed assessment of the connectivity between the Proposed Scheme Area and European Sites was undertaken. This assessment took into consideration the existing environment (aerial pathways, groundwater pathways, surface water pathways), the Qualifying Interests (QI) and Special Conservation Interests (SCI) of European Sites in the vicinity of the Scheme Area, the ecology and mobility of each QI/SCI species and each SCI foraging range. A single European Site (The River Barrow and Nore SAC 002162) was deemed to be connected to the Proposed Scheme (**Table 6-4; Figure 6-3**). This European Site intersects with the Proposed Scheme Area (**Figure 6-4**).

**Table 6-4: European Sites with Connectivity to the Proposed Scheme**

| Natura 2000 Site Name and Code                      | Qualifying Interests (QI) - Habitats (*=Priority)  | Qualifying Interests (QI) - Species   |
|---|--|---|
| River Barrow and River Nore SAC (site code: 002162) | Estuaries [1130]<br>Mudflats and sandflats not covered by seawater at low tide [1140]<br>Reefs [1170]<br>Salicornia and other annuals colonising mud and sand [1310]<br>Atlantic salt meadows ( <i>Glaucopuccinellietalia maritimae</i> ) [1330]<br>Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]<br>Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]<br>European dry heaths [4030]<br><i>Hydrophilous</i> tall herb fringe communities of plains and of the montane to alpine levels [6430]<br>Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220]<br>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]<br>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0] | <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail) [1016]<br><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]<br><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]<br><i>Petromyzon marinus</i> (Sea Lamprey) [1095]<br><i>Lampetra planeri</i> (Brook Lamprey) [1096]<br><i>Lampetra fluviatilis</i> (River Lamprey) [1099]<br><i>Alosa fallax fallax</i> (Twait Shad) [1103]<br><i>Salmo salar</i> (Salmon) [1106]<br><i>Lutra lutra</i> (Otter) [1355]<br><i>Trichomanes speciosum</i> (Killarney Fern) [1421]<br><i>Margaritifera durrovensis</i> (Nore Pearl Mussel) [1990] |

#### 6.4.1.2 Other International Sites

No other sites of international importance were deemed to have connectivity to the Scheme Area.



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Figure 6-3: European Sites with connectivity to the Scheme Area.



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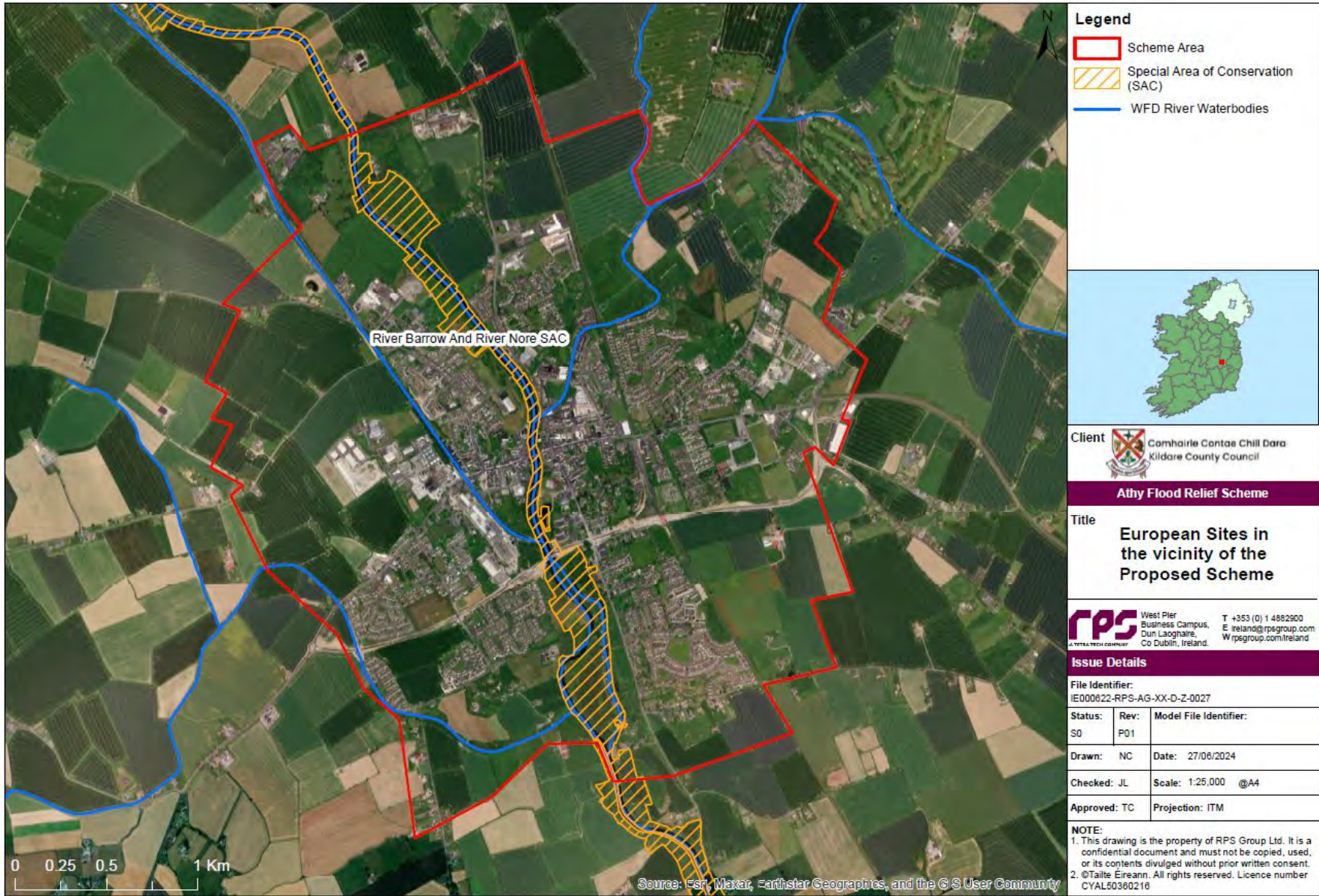


Figure 6-4: European Sites in the vicinity of the Proposed Scheme Area



## 6.4.2 Designated Sites for Nature Conservation – National Sites

### 6.4.2.1 Natural Heritage Areas and proposed Natural Heritage Areas

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) comprise of 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.

There are no Natural Heritage Areas (NHA) with connectivity to the Proposed Scheme Area. Two proposed Natural Heritage Areas (pNHA) are connected to the Scheme Area, The Grand Canal pNHA (002104) and Barrow Valley at Tankardstown pNHA (000858) (**Figure 6-5** and **Figure 6-6**).

#### Grand Canal pNHA

The Grand Canal pNHA intersects with the Scheme Area (**Figure 6-5** and **Figure 6-6**). The Grand Canal pNHA comprises the canal channel and the banks on either side of it. A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods.

#### Barrow Valley at Tankardstown Bridge pNHA

The Barrow Valley at Tankardstown Bridge pNHA is co-located with an approximate 3km stretch of the River Barrow and River Nore SAC approximately 3km downstream of the Proposed Scheme Area (**Figure 6-5**, **Figure 6-6**). The site synopsis for this pNHA is not available, however, the Laois County Development Plan 2021-2027 (Laois County Council, 2022) states that this pNHA has been proposed to be designated for the following habitats: river, canal, grassland, marsh.

### 6.4.2.2 Other National Sites

No other sites of national importance were deemed to have connectivity to the Scheme Area.

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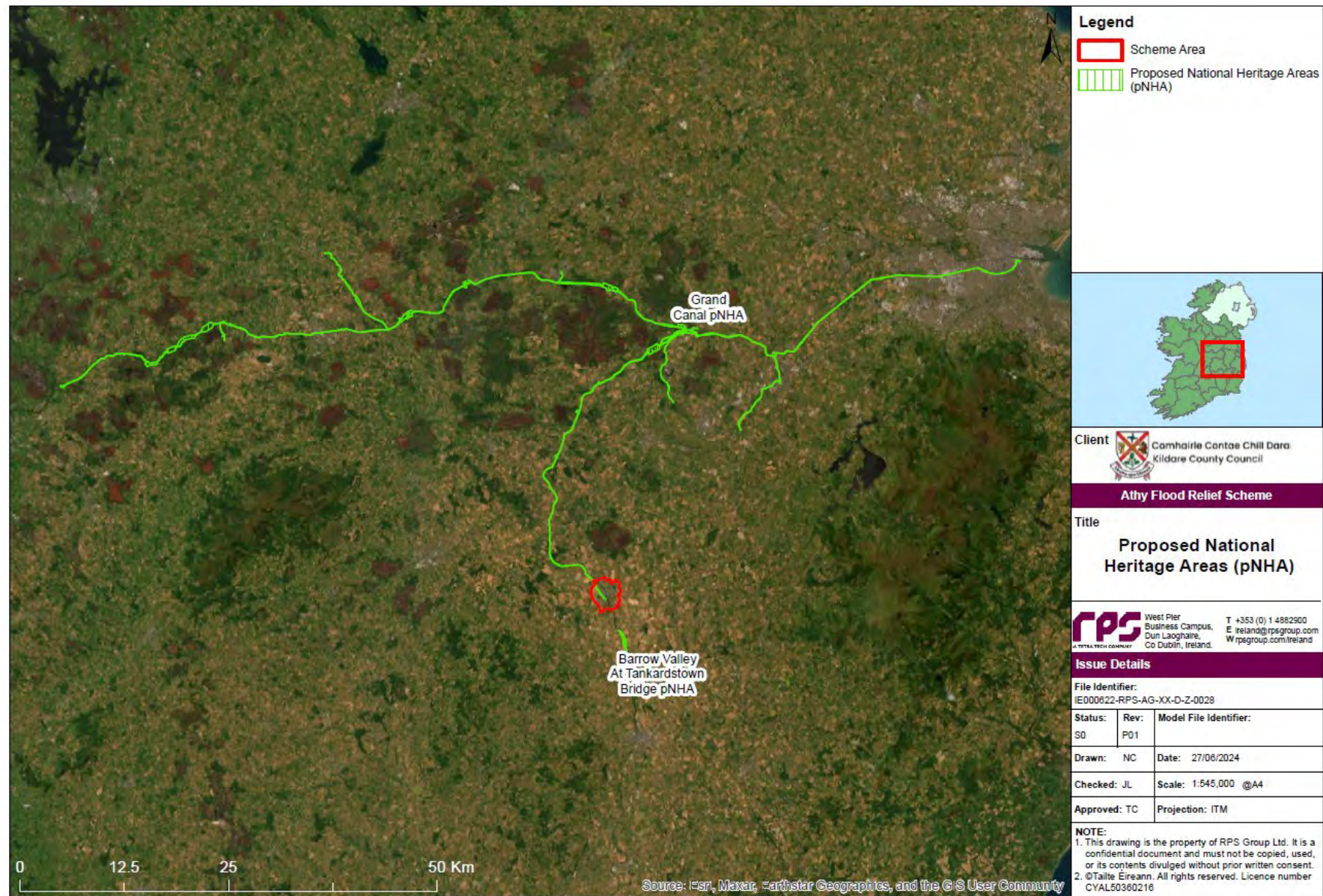


Figure 6-5: Proposed Natural Heritage Areas with connectivity to the Proposed Scheme Area.



Environmental Constraints Report

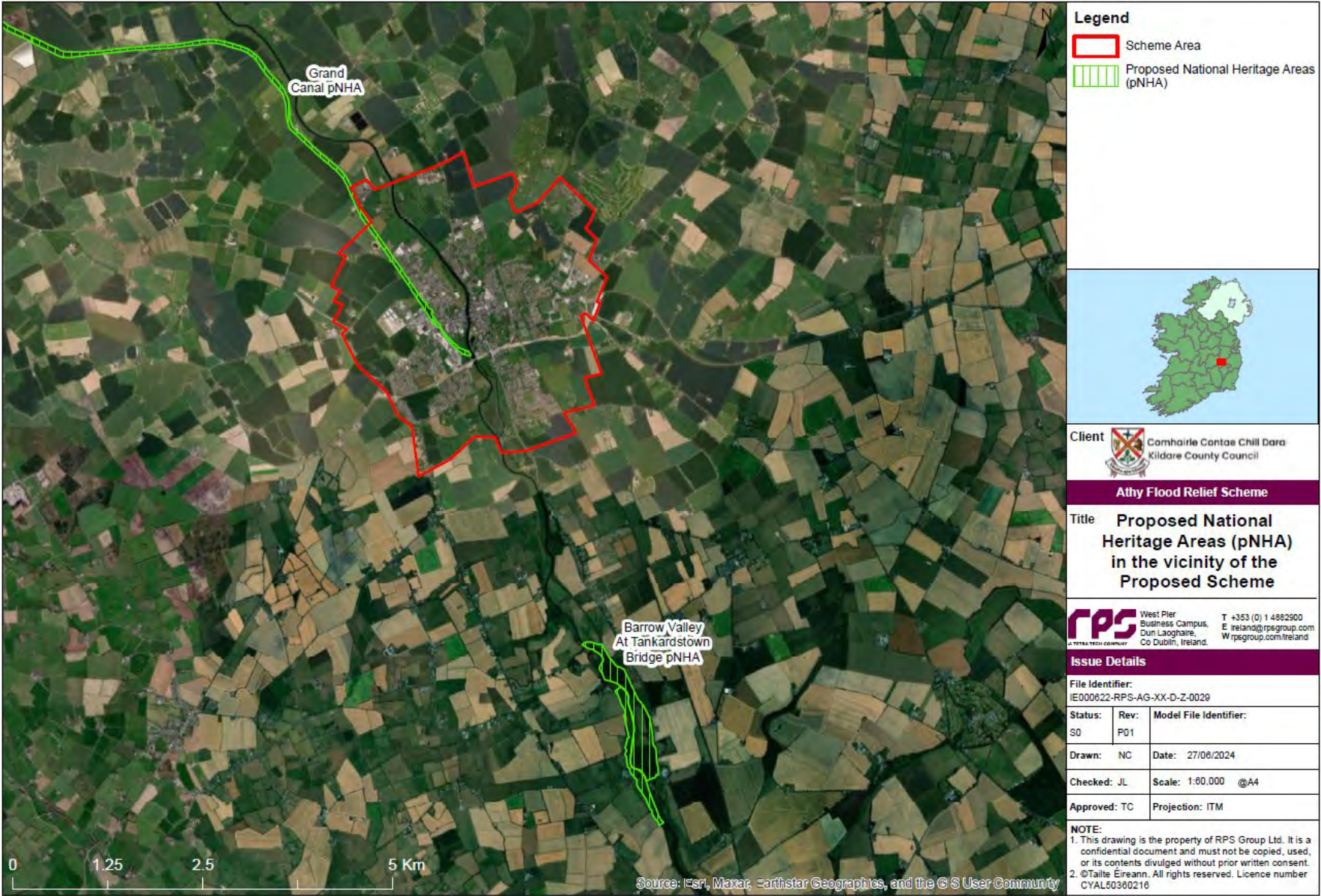


Figure 6-6: Proposed Natural Heritage Areas (pNHAs) in the vicinity of the Scheme Area

### 6.4.3 Desktop data

#### 6.4.3.1 Habitats

Annex I habitats are habitat types whose conservation requires the designation of SACs. Within this designation is priority habitats (usually highlighted with an \*) which are in danger of disappearing within the EU territory.

The desktop search did not return any Annex I habitats within the Scheme Area, however, the Map of Irish Wetlands has a record of a single wetland (the Barrow Canal – River Barrow and River Nore SAC WMI\_KE53) within the Scheme Area (**Figure 6-7**). This site has been evaluated as being internationally important. The main wetland types present are canal, scrub, wet woodland (oak, ash or willow, alder) and marsh. It is described as a canal area with stonework and marginal tow path. There is an area of wet willow woodland on the eastern margin of the canal which grades into marsh where trees are felled in the north. There is an island between the canal and River Barrow to the west which is dominated by wet grassland and marsh mosaic.

#### 6.4.3.2 Rare and Protected Flora

Two rare and protected flora species were returned from grid squares S69 and S79 from a data search of the NPWS, NBDC and BSBI datasets (**Figure 6-4**). Further examination of these databases determined that the Irish whitebeam (*Sorbus Hibernica*) record for grid square S69 is potentially within the 100m habitats and IAPS survey area within the Proposed Scheme Area. The record for purple spurge (*Euphorbia peplis*) is outside the Scheme Area.

**Table 6-5: Rare and Protected Flora within the Various Database Searches for Grid Squares S69 and S79**

| Common Name     | Scientific Name         | Grid Square | Data Source | Year of Last Record | Status*            |
|-----------------|-------------------------|-------------|-------------|---------------------|--------------------|
| Irish whitebeam | <i>Sorbus hibernica</i> | S79, S69    | BSBI        | 2006                | Vulnerable         |
| Purple spurge   | <i>Euphorbia peplis</i> | S69         | NBDC        | 2007                | Regionally Extinct |

Status as per Wyse Jackson *et al.* (2016) the Irish red list of Vascular Plants which provides information on the degree to which species are at risk of extinctions and, by implication, those for which conservation measures need to be considered.

#### 6.4.3.3 Invasive Alien Plant Species

A number of different Third Schedule IAPS were identified from the various databases queried for grid squares S69 and S79 (**Figure 6-8**). Further examination of these databases determined that the Japanese knotweed (*Reynoutria japonica*) and Nuttall's waterweed (*Elodea nuttallii*) records are within the Proposed Scheme Area while rhododendron (*Rhododendron ponticum*) was not recorded from within the Proposed Scheme Area. The exact locations of the giant knotweed (*Reynoutria sachalinensis*), giant hogweed (*Heracleum mantegazzianum*) and Himalayan balsam (*Impatiens glandulifera*) records could not be ascertained as these records were input at the 10km grid square resolution.

**Table 6-6 Invasive Alien Plant Species Records within the Various Database Searches for Grid Squares S69 and S79.**

| Common Name         | Scientific Name                 | Grid Square | Data Source | Year of Last Record | Status*                    |
|---------------------|---------------------------------|-------------|-------------|---------------------|----------------------------|
| Rhododendron        | <i>Rhododendron ponticum</i>    | S79         | BSBI, NBDC  | 2005                | SI 477 of 2011 High Impact |
| Giant knotweed      | <i>Reynoutria sachalinensis</i> | S79         | BSBI        | 2019                | SI 477 of 2011 High Impact |
| Japanese knotweed   | <i>Reynoutria japonica</i>      | S79, S69    | BSBI, NBDC  | 2022                | SI 477 of 2011 High Impact |
| Giant hogweed       | <i>Heracleum mantegazzianum</i> | S69         | BSBI        | 2017                | SI 477 of 2011 High Impact |
| Nuttall's waterweed | <i>Elodea nuttallii</i>         | S69         | BSBI        | 2014                | SI 477 of 2011 High Impact |

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| Common Name      | Scientific Name               | Grid Square | Data Source | Year of Last Status*<br>Record | Status*                               |
|------------------|-------------------------------|-------------|-------------|--------------------------------|---------------------------------------|
| Himalayan balsam | <i>Impatiens glandulifera</i> | S69         | BSBI        | 2012                           | <b>SI 477 of 2011<br/>High Impact</b> |

\*Impact (High, Medium) status based on Kelly *et al.* (2013); SI 477 refers to the Third Schedule of Irish Statutory Instrument S.I. No. 477 of 2011 (European Union (Birds and Natural Habitats) Regulations 2011). Note: this SI has been amended by S.I. No. 293 of 2021. Under this legislation it is an offence to plant, disperse, allow or cause to disperse, spread or otherwise cause to grow any plant listed under the Third Schedule of this legislation.





Figure 6-7 Barrow Canal - River Barrow and River Nore SAC Wetland. Accessed at: <https://www.wetlandsurveys.ie/miw-intro>



#### 6.4.3.4 Otter

The NBDC database holds nine records for otter (*Lutra lutra*) for grid square S69 and eleven records for grid square S79. The most recent records from both grid squares were from 2018. No recent records ( $\leq 10$  years) of otter for either grid square are held by the NPWS.

Otter are listed on Annex II and Annex IV of the EU Habitats Directive and are also protected by the Wildlife Acts (1976 as amended). Annex II species under the Habitats Directive require the designation of protected areas by Member States (Special Areas of Conservation) as set out in Articles 3, 4 and 6 of the Directive. As per the requirement of Articles 12, 13 and 16 of the Habitats Directive, Annex IV species require Strict Protection to protect against extinction and ensure their long-term survival. Otter is also listed on Appendix 1 of CITES and Appendix II of the Bern Convention as a species requiring protection.

#### 6.4.3.5 Badger

The NBDC database holds 18 records for badger (*Meles meles*) from grid square S69 with the most recent record dating from 2014. It also holds 13 records of badger for grid square S79 with the most recent record from 2018. No recent records ( $\leq 10$  years) of badger for either grid square are held by the NPWS.

Badgers are protected under the Wildlife Acts 1976 and as amended. They are also listed in Appendix III of the Bern Convention as a species requiring protection.

#### 6.4.3.6 Bats

The NBDC database holds records for common pipistrelle (*Pipistrellus pipistrellus*) (S69 – 7 records; S79 – 249 records), Daubenton's bat (*Myotis daubentonii*) (S69 – 43 records), Leisler's bat (*Nyctalus leisleri*) (S69 – 4 records; S79 – 76 records) and soprano pipistrelle (*Pipistrelle pygmaeus*) (S69 – 7 records; S79 – 85 records). The NPWS database holds no records of bat species for the S69 and S79 grid squares.

All Irish bat species are protected under the Wildlife Act (1976) as amended. Also, 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 are listed under Annex II of the Habitats Directive and all bat species are listed in Annex IV. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions.

#### 6.4.3.7 Other Protected Mammals

A number of records of other protected mammal species were also returned from the desktop study. These included red squirrel (*Sciurus vulgaris*) (NBDC: S69 – 12 records; S79 – 2 records), Irish hare (*Lepus timidus* subsp. *hibernicus*) (NBDC: S69 – 6 records; S79 – 4 records), Irish stoat (*Mustela erminea* subsp. *hibernica*) (NBDC: S69 – 2 records; S79 – 1 record), pine marten (*Martes martes*) (NBDC: S69 – 12 records; S79 – 7 records) and hedgehog (*Erinaceus europaeus*) (NBDC: S69 – 14 records; S79 – 16 records). No recent records ( $\leq 10$  years) of any of these species for either grid square are held by the NPWS.

Red Squirrel, Irish hare, pine marten, Irish stoat and hedgehog are all afforded legal protection in Ireland under the Irish Wildlife Acts, 1976 and as amended, meaning it is a criminal offence to kill, trap or disturb them intentionally without licence. Additionally, each of these species are listed in Appendix III (protected fauna) of the Bern Convention.

#### 6.4.3.8 Amphibian and reptile species

The NBDC database holds recent records for just one amphibian and reptile species for grid squares S69 and S79. This species is common frog (*Rana temporaria*) where there are 21 records for grid square S69 and three records for grid square S79. The NPWS holds no recent records ( $\leq 10$  years) for any amphibian or reptile species for grid squares S69 or S79.

Common frog is protected under the Wildlife Act 1976, as amended.

#### 6.4.3.9 Aquatic Species

The NBDC database holds 36 records for white clawed crayfish (*Austropotamobius pallipes*) for grid square S69 and 11 records for this species from grid square S79. White clawed crayfish are listed on Annex II of the Habitats Directive and is also protected in Ireland under the Wildlife Act 1976, as amended. Both the NBDC and NPWS databases hold a record of Desmoulin's whorl snail (*Vertigo moulinsiana*) from grid square S69 from the year 1933. This record is located within "marsh with Iris" south of Ardriagh Hill. Desmoulin's whorl snail is protected under Annex II of the Habitats Directive and both white-clawed crayfish and Desmoulin's whorl snail are QI of the River Barrow and River Nore SAC.

Four records of swan mussel (*Anodonta cygnea*) were returned from the NBDC database for grid square S69, the most recent from 2022. Further analysis of the database determined that a number of these records are from watercourses within Athy. The NBDC database also holds a single record for duck mussel (*Anodonta anatina*) for grid square S69 from the year 1993. Further analysis of the database determined that this record is from the grand canal approximately 7.5km upstream of the Proposed Scheme Area. Both swan mussel and duck mussel have been classified as Vulnerable within the Ireland Red List of Non-marine Molluscs<sup>12</sup>.

The Barrow catchment is a *Margaritifera* (i.e. fresh water pearl mussel (*Margaritifera margaritifera*)) sensitive area. It is designated as a 'catchment with previous records of *Margaritifera*, but current status is unknown'. Freshwater pearl mussel are listed under Annex II of the Habitats Directive and are QI of the River Barrow and River Nore SAC.

The NBDC holds a single record for zebra mussel (*Dreissena polymorpha*) for grid square S69 from the year 2009. Further analysis of the database determined that this record is from the River Barrow, 85m downstream of the Athy wastewater treatment plant (WWTP) outfall. This record further states that a single mussel was discovered attached to a stone within the river and that there were no zebra mussels recorded at the same site the previous year (2008), however, empty shells were found upstream of the WWTP. Zebra mussel are a Third Schedule invasive alien species.

The NPWS holds no recent records ( $\leq 10$  years) for any aquatic species for grid square S69 or S79.

##### 6.4.3.9.1 River Barrow Fisheries Review

IFI have undertaken fisheries surveys in the Barrow catchment on six occasions, in 2009, 2010, 2012, 2013, 2014, and 2016 as part of the WFD Fisheries Monitoring programme (Kelly *et al.*, 2009, 2010, 2013, 2014, 2015, 2017). The most recent survey targeted ten different River Barrow sites within the same year (2015) and provide a good indication of the longitudinal utilisation of the channel by various fish species.

One survey site on the River Barrow, located at Pass Bridge, was surveyed in 2009 using an electric-fish pass. Just downstream of the confluence with the Black River in Monasterevin, Kildare, an area of 10,906m<sup>2</sup> was covered. A total of eleven fish species were recorded at this site. Gudgeon was the most abundant species, followed by roach, salmon (1+ fish) (n = 34), perch, pike, minnow, brown trout, stone loach, European eel, dace, roach x bream hybrids and bream (Kelly *et al.*, 2009). Pass Bridge was resurveyed in 2014 as a species rich site. Dace was the most frequently encountered species. Salmon showed similar trends, with 1+ & older dominating, compared to 0+ dominating in 2012 (Kelly *et al.*, 2015).

Goresbridge, 150m upstream from the confluence with the River Barrow, was subject to WFD surveillance and electric fished in 2010 and 2013. Three electric-fishing passes were conducted for

<sup>12</sup> Byrne, A., Moorkens, E.A., Anderson, R., Killeen, I.J. & Regan, E.C. (2009) Ireland Red List No. 2 – Non-Marine Molluscs. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

each survey, with glide the most dominant habitat present. Six and seven fish species were recorded for each respective survey. In 2010, stone loach the most abundant, followed by brown trout, salmon (0+, 1+ and older) (n = 32), eel, lamprey, and three-spined stickleback. In 2013, three-spined stickleback was the most abundant species recorded, followed by brown trout, salmon (0+ and 1+) (n = 4), stone loach, European eel, minnow, and lamprey. A second site was surveyed in 2010, approximately 500m upstream of Graiguenamanagh. One electric-fishing pass was performed, with a total wetted area of 31,365m<sup>2</sup> surveyed. A total of five fish species were recorded. Minnow was the most abundant species followed by eels, dace, pike, and perch (Kelly *et al.*, 2010; Kelly *et al.*, 2013).

As part of the WFD surveillance monitoring programme in rivers 2012 two sites on the River Barrow were sampled using one electric-fishing pass each. Upstream of the Scheme Area at Pass Bridge, thirteen species were recorded. Minnow was the most abundant species, followed by roach, gudgeon, dace, salmon, perch, stone loach, brown trout, European eel, three-spined stickleback, lamprey, roach x bream hybrids and pike. At Leighlinbridge, downstream of the Scheme Area, a total of 7 species were identified. Dace was the most abundant species, followed by minnow, roach, brown trout, salmon, European eels and three-spined stickleback (Kelly *et al.*, 2013).

IFI undertook a catchment wide electrofishing survey in the River Barrow catchment during summer 2015. 28 sites were electrofished from upstream of Athy (Belview) downstream to St. Mullin's. Methods used include systematic point abundance sampling 23 (sPASE) using boom boat electrofishing (Barrow main channel and canal cuts from upstream Athy (Belview) to St. Mullin's). A small number of adult salmon were also recorded during the course of the electrofishing survey at sites which included Graiguenamanagh, Athy and Mountloftus. These fish ranged in length from 49 to 73 cm and when aged were found to be 2.1 or 2.2 (i.e., fish that had spent either 1 winter at sea (grilse salmon) or 2 winters (spring salmon) at sea). Roach were most abundant at Dunleckny (Bagenalstown), Belview (Athy), Strawhall (upstream of Carlow) and St. Mullin's Canal cut. Roach were present in all canal cuts and were the dominant fish species. Roach x bream hybrids ranged in length from 7.5cm to 35.8cm. Juvenile fish ( $\leq 2+$ ) were recorded from the site upstream of Athy at Belview and at the most downstream site at St. Mullin's Canal cut. During the current survey dace were largely found only in those lowland, predominantly drained catchments north of Athy (Delanty *et al.*, 2017).

#### 6.4.3.10 Birds

Numerous records of bird species were returned from both the NBDC and NPWS database for grid squares S69 and S79. These included Birds of Conservation Concern in Ireland (BoCCI) (Gilbert *et al.*, 2021) Red listed species (e.g. barn owl (*Tyto alba*), kestrel (*Falco tinnunculus*), quail (*Coturnix coturnix*), snipe (*Gallinago gallinago*), swift (*Apus apus*), woodcock (*Scolopax rusticola*), grey wagtail (*Motacilla cinerea*), red grouse (*Lagopus lagopus hibernicus*), red kite (*Milvus milvus*), whinchat (*Saxicola rubetra*) and yellowhammer (*Emberiza citrinella*)), SCI species (e.g. coot (*Fulica atra*), curlew (*Numenius arquata*), teal (*Anas crecca*), cormorant (*Phalacrocorax carbo*), great black-backed gull (*Larus marinus*), grey heron (*Ardea cinerea*), lesser black-backed gull (*Larus fuscus*), little grebe (*Tachybaptus ruficollis*), mallard (*Anas platyrhynchos*), lapwing (*Vanellus vanellus*)), Annex I species (e.g. kingfisher (*Alcedo atthis*), golden plover (*Pluvialis apricaria*), hen harrier (*Circus cyaneus*), little egret (*Egretta garzetta*), merlin (*Falco columbarius*), peregrine (*Falco peregrinus*), whooper swan (*Cygnus cygnus*) and a number of BoCCI Amber and Green listed species also.

### 6.4.4 Field Survey Results

#### 6.4.4.1 Habitats

A number of areas of Annex I alluvial woodland [91E0]<sup>13</sup> were observed along the banks of the River Barrow within the habitats survey area during field surveys. These were primarily located upstream of the Athy Sports Hub and are labelled WN6 wet willow-alder-ash woodland in the associated mapping (**Appendix A**). Botanical species present in this habitat included willows (*Salix* sp.), nettles (*Urtica dioica*), lesser celandine (*Ficaria verna*), creeping buttercup (*Ranunculus repens*), Yorkshire fog (*Holcus lanatus*), horsetail (*Equisetum* sp.) and cuckoo flower (*Cardamine pratensis*). A number of other areas across the habitats survey area have the potential to support Annex I habitat and will need further surveys to ascertain the presence/absence of protected habitats. These are:

<sup>13</sup> Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

- The River Barrow and the Grand Canal have the potential to support floating river vegetation [3260]<sup>14</sup>
- Certain wetland areas across the Scheme Area adjacent to Ardreich Lock have the potential to support hydrophilous tall herb swamp [6430]<sup>15</sup>

#### 6.4.4.2 Rare and Protected Flora

No rare or protected flora were observed within the survey areas during the field survey. The location where Irish whitebeam was recorded within the BSBI database in grid square S69 is at the edge of the habitat survey area and located within private lands which were not accessed on the day of the survey. There is, therefore, the potential for this species to be present within the habitat survey area.

#### 6.4.4.3 Invasive Alien Plant Species

The following Third Schedule plant species were identified during site surveys: Japanese knotweed (*Reynoutria japonica*), Spanish/hybrid bluebell (*Hyacinthoides hispanica*/*Hyacinthoides x massartiana*) and three-cornered leek (*Allium triquetrum*). Each of these species are listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011, as amended, and subject to strict controls under Regulation 49. Japanese knotweed is a species with a risk of High impact (Kelly *et al.*, 2013) while three-cornered leek has a risk of Medium impact and Spanish/hybrid bluebell are species with a risk of Low impact. **Appendix B** lists the individual Third Schedule IAPS stands recorded during the walkover surveys. **Figure 6-8** provides an overview of the IAPS recorded across the survey area while **Appendix C** shows the location of each infestation in finer resolution.

A number of other invasive plant species that are not listed as Third Schedule species were also observed during the survey including snowberry (*Symphoricarpos albus*), cherry laurel (*Prunus laurocerasus*), sycamore (*Acer pseudoplatanus*), winter heliotrope (*Petasites pyrenaicus*), old man's beard (*Clematis vitalba*), butterfly bush (*Buddleja davidii*), rock cotoneaster (*Cotoneaster horizontalis*) and lilac (*Syringa vulgaris*). Cherry laurel has been classified as a species with a risk of high impact (Kelly *et al.*, 2013) while sycamore, butterfly bush, old man's beard and rock cotoneaster have been classified as species with a risk of medium impact with regards to their environmental effect. Winter heliotrope, snowberry and lilac are classed as being of low impact. The impact of all these species on conservation goals remains uncertain due to lack of data showing impact (or lack of impact). Therefore, precautionary measures to avoid interaction and spread of the species are recommended.

#### 6.4.4.4 Otter

A number of different otter signs were observed across the otter survey area, primarily consisting of footprints on the banks of the River Barrow and Bennett's stream (**Figure 6-9**). A single trail was observed also adjacent to potential feeding remains along the right-hand bank of the River Barrow along the lands to the south of St. Dominic's Priory. No holts or potential holts were observed during surveys.

#### 6.4.4.5 Badger

No signs of badger were observed during field surveys.

#### 6.4.4.6 Bats

No specific bat surveys were undertaken during field surveys, however, a number of structures (buildings, walls etc.) and trees observed across the survey area had the potential to support roosting bats. Furthermore, a number of habitats present across the survey area (e.g. watercourses, hedgerows, treelines etc.) and wider Scheme Area had the potential to support commuting and foraging bat species.

#### 6.4.4.7 Other Protected Mammals

No specific surveys for red squirrel, Irish stoat, Irish hare, hedgehog, pygmy shrew and deer species were undertaken during field surveys, however, there was a number of habitats across the survey area

<sup>14</sup> Watercourses of plain to montane levels with *Ranunculus fluitans* and *Callitriche-Batrachium* vegetation

<sup>15</sup> Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

(e.g. hedgerows, scrub, woodland etc.) with the potential to support one or more of these species. It is expected that hedgehog, Irish stoat and pygmy shrew are present across the survey area and wider Proposed Scheme Area. There is also potential for red squirrel and pine marten to be present across the survey area and wider Scheme Area. Deer species are not expected to occur across the Scheme Area.

#### **6.4.4.8 Amphibians and reptiles**

No specific surveys were undertaken for amphibians or reptiles across the Scheme Area, however, there was a number of habitats across the survey area (e.g. hedgerows, wet grassland, marsh etc.) and wider Scheme Area with the potential to support amphibians (common frog, smooth newt (*Lissotriton vulgaris*)) and reptiles (common lizard (*Zootoca vivipara*)).



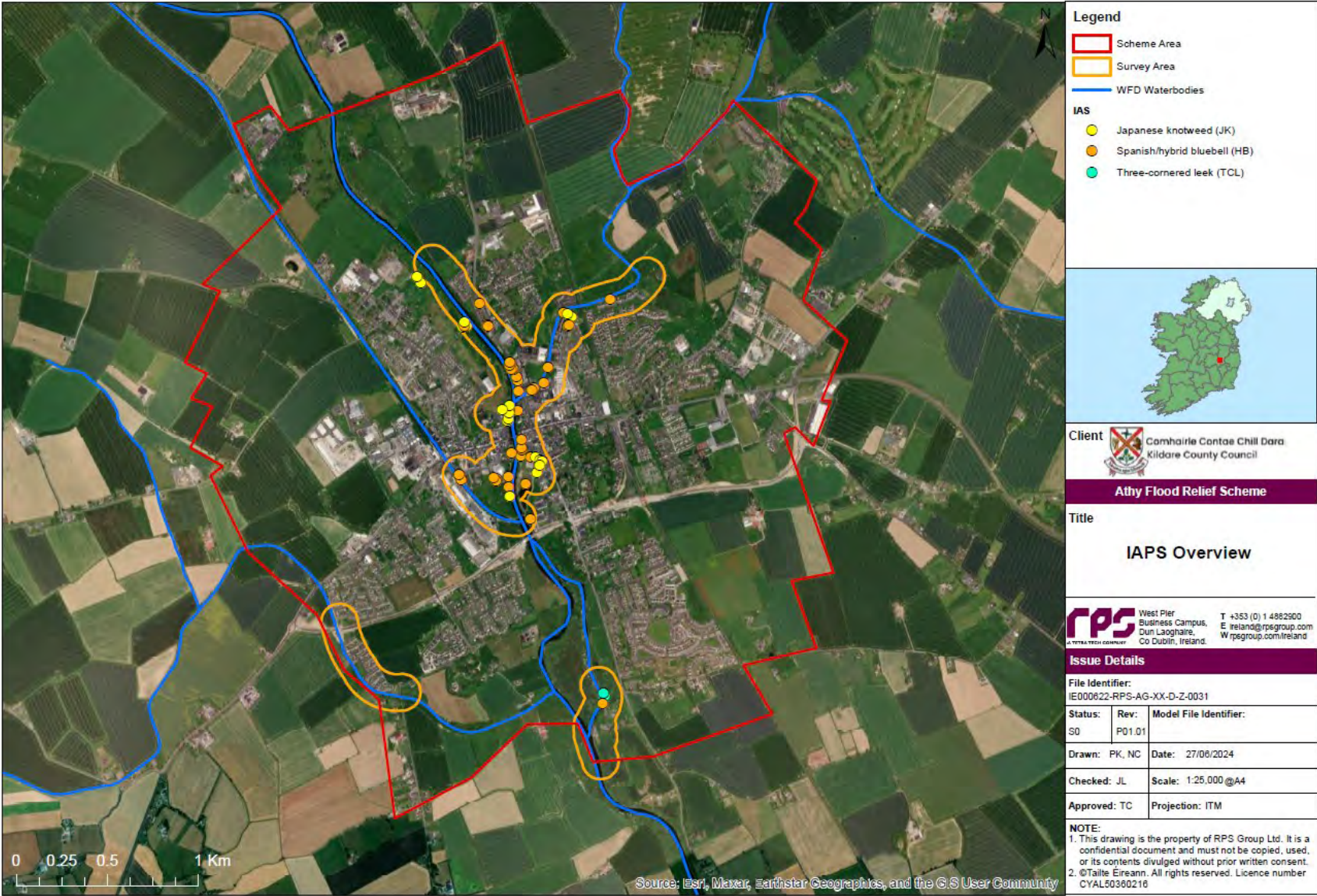


Figure 6-8 Invasive alien plant species identified across the survey area.



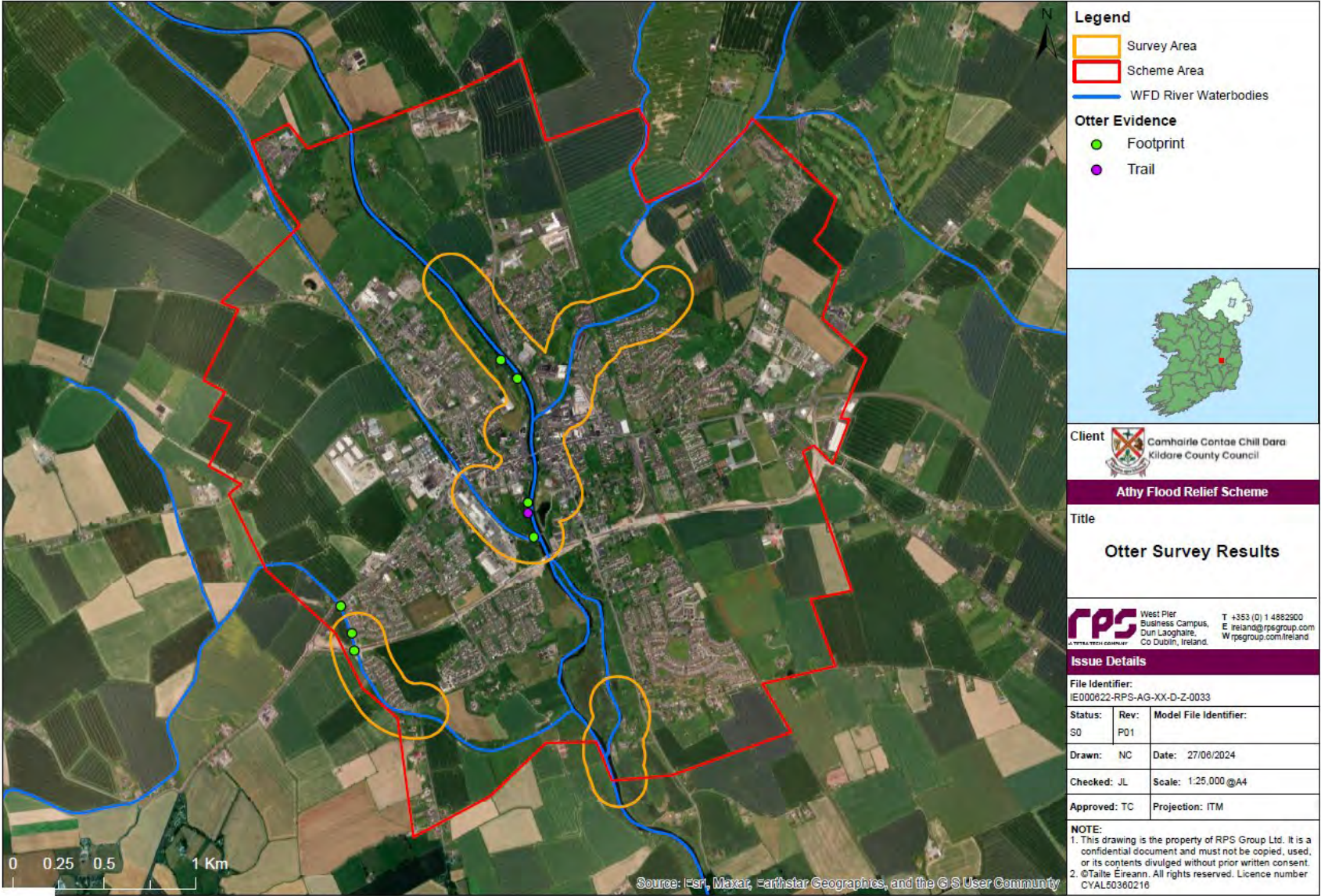


Figure 6-9 Otter Survey Results

#### 6.4.4.9 Aquatic Species

No specific aquatic surveys were undertaken across the Scheme Area, however, the watercourses across the survey areas and wider Scheme Area (River Barrow, Athy (Moneen) stream, Bennet's stream) their associated habitats have the potential to support all of the aquatic QI species of the River Barrow and River Nore SAC (Desmoulin's whorl snail, freshwater pearl mussel, white-clawed crayfish, sea lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), river lamprey (*Lampetra fluviatilis*), otter, salmon (*Salmo salar*)) with the exception of twaite shad (*Alosa fallax fallax*).

During surveys, a dead mussel and its shell was observed on the banks of the artificial angling pond on the grounds of the old Abbey House. It appeared that this mussel was brought up from the pond when floating vegetative material was removed from one of the angling access points to the pond. This mussel is thought to be either a duck mussel or a swan mussel. A definitive identification of this shell has not been ascertained at the time of writing this report.

#### 6.4.4.10 Bird Species

No specific surveys were undertaken across to Scheme Area for bird species, however, the habitats across the survey areas and wider Scheme Area have the potential to support breeding, foraging and commuting bird species, including Annex I bird species, SCI bird species and Red, Amber and Green listed BoCCI species.

### 6.5 Constraints

**Table 6-7** presents the constraints for biodiversity and recommends how the constraints can be addressed as part of the development of the Proposed Scheme.

Where there are seasonal constraints to completing further surveys or for construction activities, it is important that these are noted and incorporated into the programme for the delivery of the Proposed Scheme.

## Environmental Constraints Report

Table 6-7: Biodiversity Constraints.

| What is the Constraint?  | How should the constraint be addressed during optioneering*:   | Recommendations  |
|--|--|--|
| <p>1. <b>River Barrow and River Nore SAC</b> – as this SAC intersects by the Scheme Area there is potential for direct effects to the SAC e.g. loss of SAC habitat and direct and indirect effects to a number of QI of this SAC e.g. direct disturbance of otter, white-clawed crayfish, salmon and lamprey due to the works or water pollution arising as a consequence of the works having direct effects (e.g. mortality if pollution is toxic) or indirect effects (e.g. reduction in prey items) on the above listed species.</p> <p>2. <b>Grand Canal pNHA</b> - as this pNHA is intersected by the Proposed Scheme Area there is potential for direct effects to this pNHA and direct and indirect effects to a number of habitats proposed to be designated for this pNHA.</p> <p>3. <b>Barrow Valley at Tankardstown Bridge pNHA</b> – as this pNHA is approximately 3km downstream of the Proposed Scheme Area there is potential for indirect effects to a number of habitats proposed to be designated for this pNHA.</p> <p>4. <b>Habitats</b> – a number of habitats are at risk of direct and indirect effects from the Proposed Scheme including Annex I alluvial woodland, wetland habitats, hedgerows and treelines.</p> <p>5. <b>Rare and Protected Flora</b> – A single protected species (Irish whitebeam) is at risk of direct and indirect effects from the Proposed Scheme.</p> <p>6. <b>Invasive alien plant species</b> – IAPS pose a risk to the Proposed Scheme. They can add additional costs and also if not dealt with accordingly can pose a risk to ecological parameters such as protected sites, habitats and species.</p> <p>7. <b>Otter</b> – Otter are a QI of the River Barrow and River Nore SAC. This species is at risk of direct (e.g. direct disturbance) and indirect (e.g. reduction in prey items due to pollution event) effects from the Proposed Scheme.</p> <p>8. <b>Bats</b> – Both roosting and commuting/foraging bats are at risk of direct (e.g. removal of tree roost while bats are present) and indirect (e.g. loss of prey items due to pollution release) from the Proposed Scheme.</p> <p>9. <b>Other Protected Mammals</b> – A number of protected mammals have the potential to be directly (e.g. mortality during vegetation</p> | <p>1. Scheme measures should seek to:</p> <ul style="list-style-type: none"> <li>– avoid in-stream works where possible; however where this not possible, such works should be limited and appropriate measures implemented to minimise impacts.</li> <li>– be set back from the SAC as much as possible.</li> <li>– ensure the river can interact with its flood plain.</li> <li>– avoid interaction with QI species and habitats.</li> <li>– explore off-line water retention measures.</li> </ul> <p>2. Scheme measures should seek to:</p> <ul style="list-style-type: none"> <li>– be set back from the pNHA as much as possible.</li> <li>– avoid interaction with designated habitats.</li> </ul> <p>3. Avoid instream works where possible; however where this not possible, such works should be limited and appropriate measures implemented to minimise impacts. Adhere to all water protection mitigation and/or standard water protection measures.</p> <p>4. Avoid in-stream works where possible; however where this not possible, such works should be limited and appropriate measures implemented to minimise impacts. Every effort must be made to limit the amount of vegetation and tree removal required to facilitate the Proposed Scheme.</p> <p>5. Avoidance of this species.</p> <p>6. Avoidance of all IAPS in conjunction with early engagement of a suitably qualified IAPS specialist to treat all IAPS identified across the Proposed Scheme Area.</p> <p>7. Scheme measures should:</p> <ul style="list-style-type: none"> <li>– be set back from watercourses as much as possible.</li> </ul> | <p>1. Further surveys:</p> <ul style="list-style-type: none"> <li>– detailed habitat survey (e.g. alluvial woodland, floating river vegetation)</li> <li>– species surveys (otter, Desmoulin's whorl snail, white-clawed crayfish, fish species etc.)</li> <li>– aquatic surveys (e.g. Q-value, RHAT etc.)</li> </ul> <p>2. Further surveys</p> <ul style="list-style-type: none"> <li>– habitats (e.g. floating river vegetation)</li> <li>– aquatic surveys (e.g. RHAT)</li> </ul> <p>3. Further surveys are not required for this site.</p> <p>4. Further surveys</p> <ul style="list-style-type: none"> <li>– detailed habitat surveys (e.g. alluvial woodland, floating river vegetation, marsh, wet grassland)</li> </ul> <p>5. A survey is required of the location where this species has been recorded to assess presence/absence.</p> <p>6. Update surveys for IAPS as scheme measures are developed.</p> <p>7. Update surveys for otter as scheme measures are developed.</p> <p>8. Further surveys:</p> <ul style="list-style-type: none"> <li>– bat roost assessment of all trees likely to be impacted by the Proposed Scheme.</li> <li>– bat roost assessment of all structures likely to be impacted by Proposed Scheme.</li> <li>– bat activity (transect and static detectors) surveys scheme wide.</li> </ul> |



## Environmental Constraints Report

| What is the Constraint?  | How should the constraint be addressed during optioneering*:  | Recommendations  |
|--|---|--|
| clearance) and/or indirectly (e.g. fragmentation of commuting routes) affected by the Proposed Scheme.   |   | – dependant on results of above – tree climbing and/or emergence/re-entry surveys may be required.   |
| 10. <b>Amphibian and reptile species</b> – there is the potential for amphibians and reptiles to directly (e.g. disturbance while machinery is tracking/disturbing wetland habitats) or indirectly (e.g. pollution event affecting prey items) affected by the Proposed Scheme.  | <ul style="list-style-type: none"> <li>– avoid any areas where this species has active resting (holt/couching) area (currently none of these areas have been identified).</li> <li>– avoid in-stream works unless no other alternative.</li> <li>– limit vegetation removal</li> <li>– adhere to all water protection measures.</li> </ul>  | 9. No additional surveys anticipated – it is assumed these species are present.  |
| 11. <b>Aquatic species</b> - should instream or bankside works be required for the Proposed Scheme there is the potential for direct disturbance of aquatic species (including fish (lamprey, salmon), white-clawed crayfish, Desmoulin's whorl snail and invertebrates (freshwater pearl mussel, swan/duck mussel etc.). Additionally, all aquatic species have the potential to be indirectly affected by the proposed Scheme e.g. from pollutant (e.g. silt/sediment, hydrocarbons etc.) laden runoff from the proposed works to watercourses. Zebra mussel also pose a risk to the Proposed Scheme should in-stream works be required. They can add additional costs to the Proposed Scheme and can also have a detrimental effect on other aquatic species should they be caused to spread. | 8. Scheme measures should seek to: <ul style="list-style-type: none"> <li>– avoid in-stream works where possible; however where this not possible, such works should be limited and appropriate measures implemented to minimise impacts.</li> <li>– limit vegetation and tree removal or disturbance, especially linear features.</li> </ul>   | 10. Further surveys: <ul style="list-style-type: none"> <li>– eDNA analysis of wetland areas</li> </ul>  |
| 12. <b>Birds</b> – there is potential for numerous bird species to be directly (e.g. loss of roosting/nesting/foraging/ commuting habitat) and indirectly (e.g. reduction in prey items due to habitat removal) affected by the Proposed Scheme.   | 9. Scheme measures should seek to: <ul style="list-style-type: none"> <li>– limit vegetation and tree removal or disturbance.</li> </ul> 10. Scheme measures should seek to: <ul style="list-style-type: none"> <li>– limit vegetation and tree removal or disturbance.</li> <li>– avoid wetland areas such as wet grassland, marsh etc.</li> </ul> 11. Scheme measures should seek to: <ul style="list-style-type: none"> <li>– avoid in-stream and bankside works where possible; however where this not possible, such works should be limited and appropriate measures implemented to minimise impacts.</li> <li>– be set back from watercourses as much as possible.</li> <li>– ensure the river can interact with its flood plain.</li> <li>– avoid vegetation and tree removal adjacent to watercourses.</li> <li>– adhere to all water protection measures.</li> </ul> 12. Scheme measures should seek to: <ul style="list-style-type: none"> <li>– avoid interactions which would impact on bird species.</li> </ul> | 11. Further surveys are dependent on Proposed Scheme measures e.g. in-stream works, bankside works etc. <ul style="list-style-type: none"> <li>– Q-value assessments</li> <li>– fisheries assessments</li> <li>– white-clawed crayfish surveys</li> <li>– Desmoulin's whorl snail survey</li> <li>– mussel survey (duck mussel/swan mussel/zebra mussel/freshwater pearl mussel)</li> </ul> 12. Further surveys <ul style="list-style-type: none"> <li>– full breeding bird surveys scheme wide</li> </ul> |

Environmental Constraints Report

| What is the Constraint?   | How should the constraint be addressed during optioneering*:  | Recommendations |
|---|---|-----------------|
|   | <ul style="list-style-type: none"><li>– limit the removal of suitable bird nesting habitats e.g. hedgerows, trees, wetlands etc.</li><li>– adhere to all water protection measures.</li></ul> |                 |
| *The measures outlined here are non-exhaustive. Further surveys may identify additional suitable measures to deal with each constraint. |   |                 |

## 6.6 Biodiversity enhancement

Action Number 2D5 of the National Biodiversity Action Plan 2023-2030 states “*ensure that Flood Risk Management planning and associated Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and Appropriate Assessment (AA), minimises loss of biodiversity and ecosystem services through policies to promote more catchment-wide and non-structural flood risk management measures.*” With this in mind, there is potential for biodiversity enhancement measures to be incorporated into the Proposed Scheme, however it will depend on where flood relief measures are required and the surrounding environment’s capacity to allow for enhancement.

Options that should be considered during the options selection include:

- Improve ex-situ fisheries habitat in consultation with Inland Fisheries Ireland via removal of upstream restrictive culverts.
- Allow watercourses to interact more with flood plains and restore existing watercourse by implementing vegetation and woodland buffers.
- Consider areas that may be suitable for rewetting such as Kilberry bog or other upstream storage areas along the River Barrow to the north of Athy town. This should be considered in the hydrology and climate change adaption assessments.



## 7 LAND AND SOILS (INCLUDING GEOLOGY AND HYDROGEOLOGY)

### 7.1 Policy objectives

The following objective relating to hydrogeology in the Athy LAP are important for consideration in the development of options for the Proposed Scheme:

#### Policy I2 - Surface Water and Groundwater

It is the policy of the Council to maintain and enhance the existing surface water drainage systems in Athy and to protect surface and ground water quality in accordance with the Water Framework Directive.

In addition Policy Objective Policy NH1 – Natural Heritage includes an objective to

**NH1.6** Protect and conserve the integrity of soils that supports the rich biodiversity and ecological networks in Athy.

### 7.2 Desktop Study

The key sources (i.e. data and reports) used to inform the constraints study for Land, Soil, Geology and Hydrogeology are summarised in **Table 7-1** below.

**Table 7-1: Summary of Key Land, Soils, Geology and Hydrogeology Desktop Sources.**

| Title                                     | Source/Author   | Year  |
|---|---|---|
| Athy Local Area Plan 2021-2027            | KCC   | 2021  |
| EPA Maps                                  | EPA   | National spatial dataset layers<br>Catchment data |
| Irish Soil Information System             | Teagasc and EPA<br>Teagasc SIS National Soils. Available at:<br><a href="http://gis.teagasc.ie/soils/map.php">http://gis.teagasc.ie/soils/map.php</a> | n.d   |
| Kildare County Development Plan 2023-2029 | KCC   | 2022  |

### 7.3 Baseline Environment

#### 7.3.1 Land Use

The land use zoning within the Scheme Area is provided in Map 6 in the Athy LAP. The land use zoning within the Scheme Area is comprised of town centre within the centre of the Scheme Area. Outside of the Town Centre along the Barrow is composed of Open Space and Amenity. On the outskirts of the town centre, there is a high concentration of existing / infill residential development. Industry and Warehousing is prevalent on the periphery of the Scheme Area. Moreover, there are several community and education zones scattered throughout the Scheme Area. To the west of the town centre is a large area of Enterprise and Employment.

Based on the Athy Local Area Plan, each land use has an objective associated that the Proposed Scheme will need to adhere to (See **Table 7-2**).

**Table 7-2: Land Use Zoning Objectives within Athy.**

| Land Use Zone | Land Use Objectives  |
|---------------|--|
| Town Centre   | To protect, improve and provide for the future development of the town centre. |

## Environmental Constraints Report

| Land Use Zone               | Land Use Objectives  |
|-----------------------------|--|
| Existing Residential/Infill | To protect and enhance the amenity of established residential communities and promote sustainable intensification.   |
| Community and Educational   | To provide for education, recreation, community and health.  |
| Open Space and Amenity      | To protect and provide for open space, amenity and recreation provision.   |
| Neighbourhood Centre        | To provide for new/existing neighbourhood centres and associated facilities.   |
| Industry and Warehousing    | To provide for industry, manufacturing, distribution and warehousing.<br>H lands – Athy West (Bennetsbridge Road)<br>a. Access to these lands shall be via the existing industrial lands to the immediate east. No further access shall be permitted on to the N78 national primary route.<br>b. The development of these lands shall be subject to a site-specific transport assessment to protect the integrity and carrying capacity of the N78 at this location. |
| Agricultural                | To retain and protect agricultural uses.   |
| Enterprise and Employment   | To provide for and facilitate the provision of high job-generating uses.   |
| Leisure and Amenity         | To provide for tourism and leisure facilities.   |
| Transport and Utilities     | To provide for the needs of transport and utility uses.  |
| Strategic Reserve           | To protect strategic lands from inappropriate forms of development which would impede the orderly expansion of the strategic urban centre.   |

Outside of the LAP, the CORINE 2018 data illustrates the following land uses within the Scheme Area:

- Predominantly comprised of (112) artificial surfaces;
- Agricultural Areas are found in the following:
  - The south west of the Scheme Area is comprised of (242) Agricultural Areas;
  - From the centre to the south of the Scheme Area along the Barrow River is comprised by (243) Agricultural Areas;
  - The northern section of the Scheme Area is made up by (231) agricultural areas;

### 7.3.2 Soil Types

According to Teagasc<sup>16</sup>, the Scheme Area is comprised of the following soil types:

- The centre of the Scheme Area comprises of manmade surfaces.
- River Alluvium soil with poor drainage is present along the River Barrow banks.
- Clayey drift with limestones lays across the northeast section of the Scheme Area.
- Fine loamy drift with limestones lays across the western, northern and eastern section of the Scheme Area.

<sup>16</sup> Teagasc (n/d) SIS National Soils. Available at: <http://gis.teagasc.ie/soils/map.php>

### 7.3.3 Geology

The Scheme Area is comprised of the following bedrock material:

- Milford Formation (CDMILF) make up the western section of the Scheme Area. This bedrock is characterised as Peloidal calcarenitic limestone.
- Ballysteen Formation (CDBALL) overlays the eastern section of the Scheme Area. This bedrock is characterised as dark muddy limestone, shale.
- A patch Milford Formation (CDMILF) outcrop lies within the far western section of the Scheme Area. This bedrock is characterised as peloidal calcarenitic limestone. Outcrop is characterised as exposed bedrock or ancient superficial deposits along the surface.
- No Karst features were identified by GSI mapping.

#### 7.3.3.1 Geohazards

The Scheme Area lies in an area of low and low (inferred) landslide susceptibility. The centre of the Scheme Area is characterised with an N/A for landslide susceptibility.

#### 7.3.3.2 Geological Heritage Sites

There are no audited or unaudited geological heritage sites within the Scheme Area.

### 7.3.4 Contaminated lands

A historic (closed) landfill as defined in S.I. No. 524 of 2042 is located along the western side of the River Barrow approximately 150 m north from Duke Street. The site has been added to KCC's Section 22 Register of Unregulated Waste Disposal Sites under the Waste Management Act, 1996 (as amended). The site is located at a former asbestos cement factory located within the Scheme Area. This factory previously produced large quantities of bulk cement. Due to this historic manufacturing process, there is a likelihood of historic disposal areas within the Proposed Scheme Area (See **Figure 7-1**).

Environmental Constraints Report

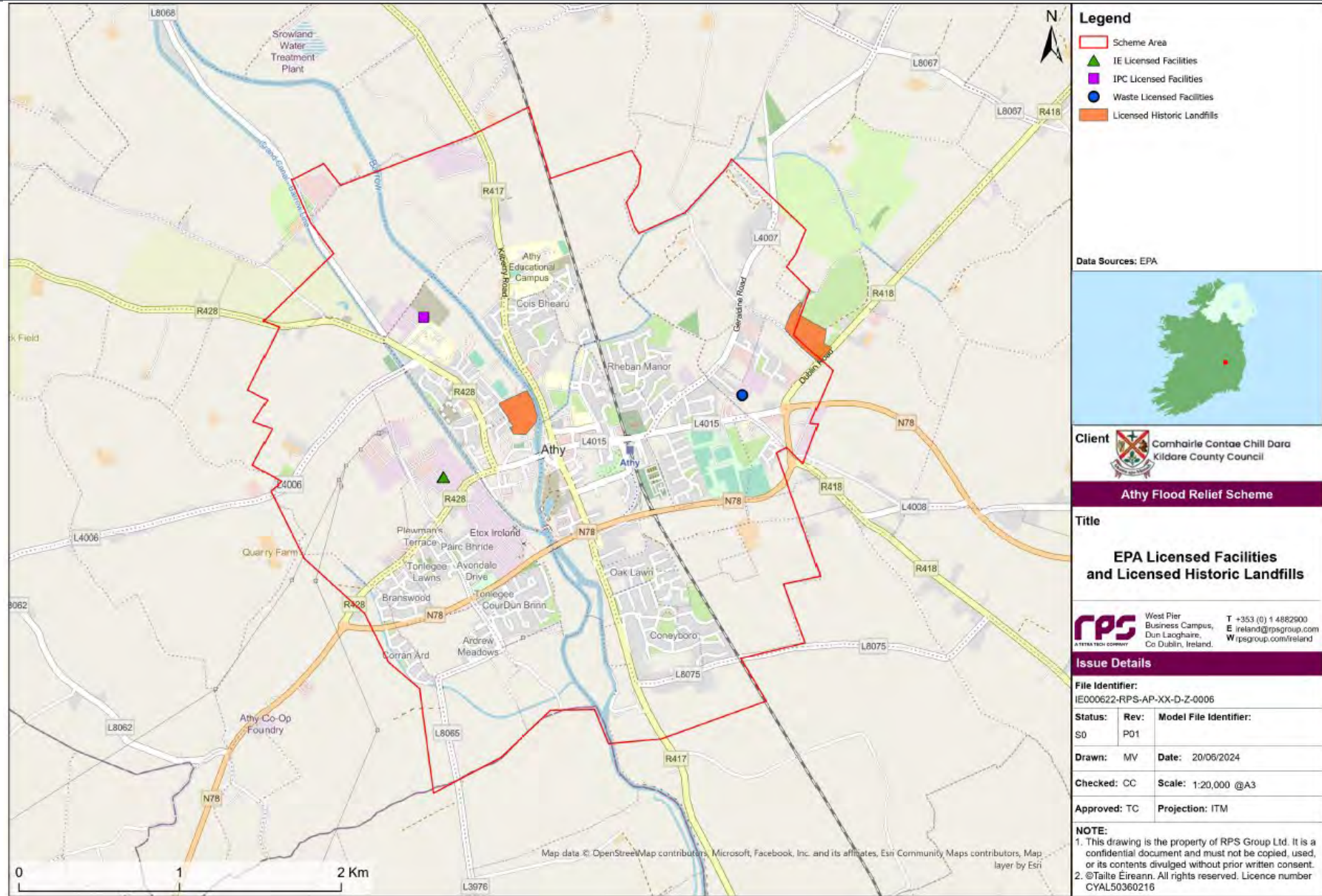


Figure 7-1: Location of Licensed Waste Facilities within the Scheme Area



### 7.3.5 Groundwater

The Scheme Area lies across two respective areas, the majority of which is the Athy-Bagnelstown Gravels Ground Waterbody (GWB) and a smaller north east section of the Scheme Area overlays the New Ross Ground Waterbody (See **Table 7-3** and **Figure 7-2**).

**Table 7-3: Ground Waterbody WFD 2016-2021 Status and Risk.**

| GWB Name                 | European Code | WFD 2016-2021 Status | Risk Level  | Connectivity with European Sites  |
|--------------------------|---------------|----------------------|-------------|---|
| Athy-Bagnelstown Gravels | IE_SE_G_160   | Poor                 | At risk     | River Barrow And River Nore SAC (002162)  |
| New Ross                 | IE_SE_G_152   | Good                 | Not at risk | River Barrow And River Nore SAC (002162); and Blackstairs Mountains SAC (IE_SE_G_152) |

#### 7.3.5.1 Aquifer

The Scheme Area overlays the following aquifers (See **Figure 7-3**):

- The western half of the Scheme Area lies within a Regionally Important aquifer. This aquifer has the ability to supply large public water supplies.
- The eastern half of the Scheme Area lies within a Local Important aquifer. This aquifer provides smaller public water supplies and water group schemes. This aquifer has moderately productive bedrock within local zones.

#### Aquifer Vulnerability

The Scheme Area lies within an area of high to moderate groundwater vulnerability. Area of moderate groundwater vulnerability is located within the centre of the Scheme Area and an area of high groundwater vulnerability surrounds the periphery of the Scheme Area. The rivers within the Scheme Area predominantly lie within the area of moderate vulnerability. Moreover, there are pockets of 'extreme' groundwater vulnerability and 'rock at or near Surface or Karst' entering the east and northeast section of the Scheme Area (See **Figure 7-4**).

#### 7.3.5.2 Public Supply Source Protection Areas

There is a GSI Public Supply Source Protection Areas that enters the Scheme Area. The Athy UDWSS Inner Protection Area lies along the north-western section of the Scheme and the Outer Protection Area lies along the outside of the town to the west of the Scheme Area (See **Figure 7-5**).

Environmental Constraints Report

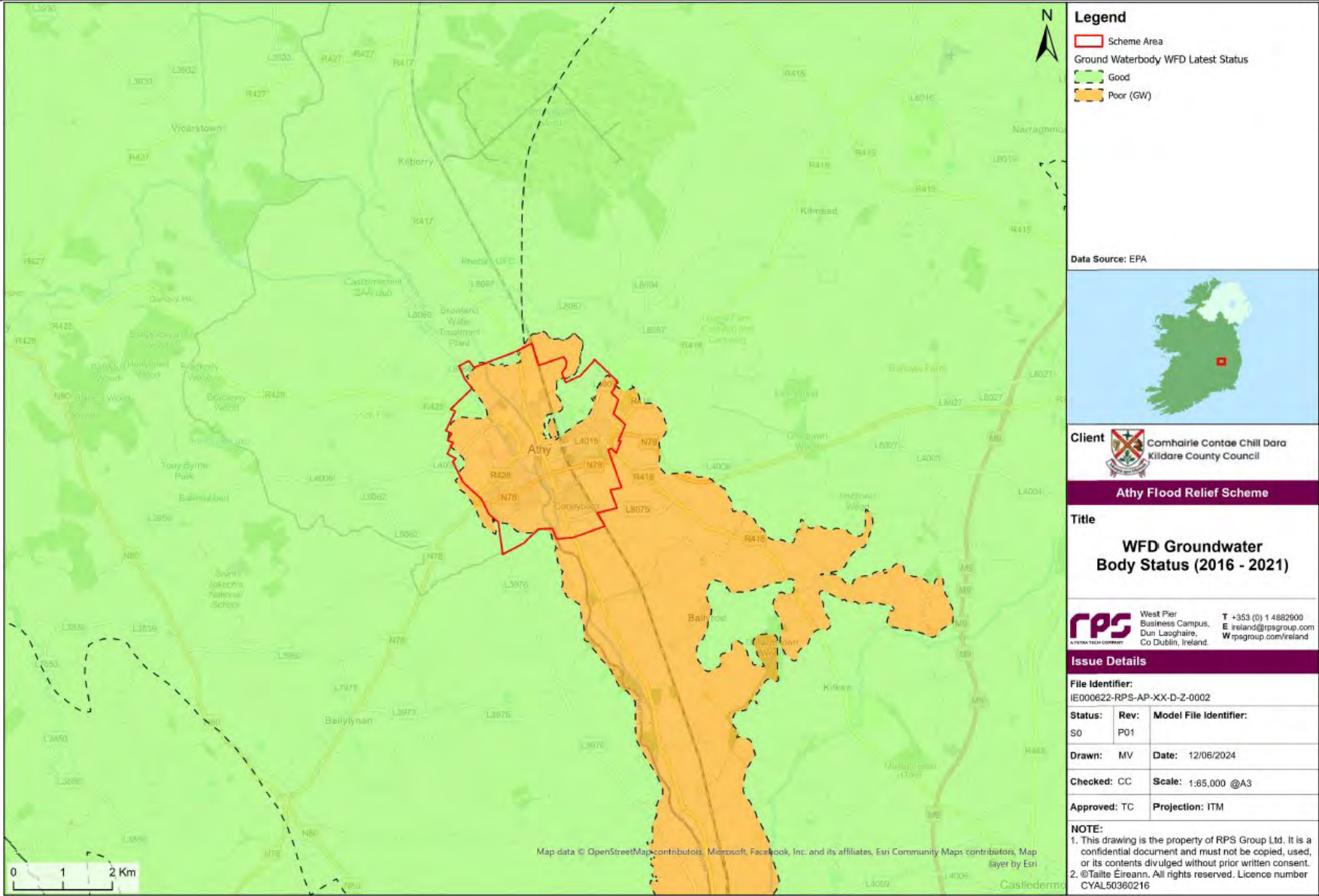


Figure 7-2: WFD Groundwater Body Status (2016-2021) within the Scheme Area

Environmental Constraints Report

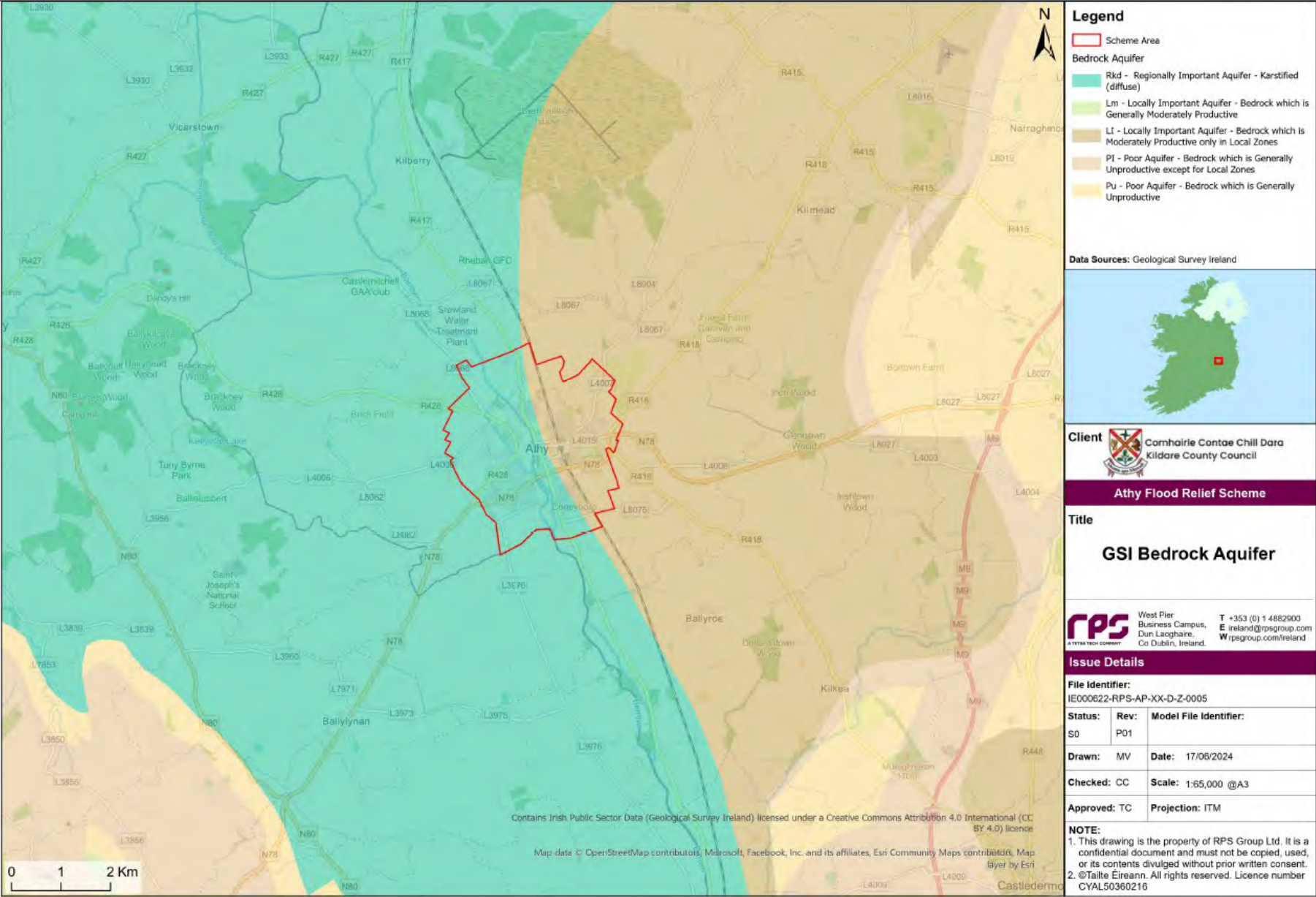


Figure 7-3: GSI Bedrock Aquifer within the Scheme Area



Environmental Constraints Report

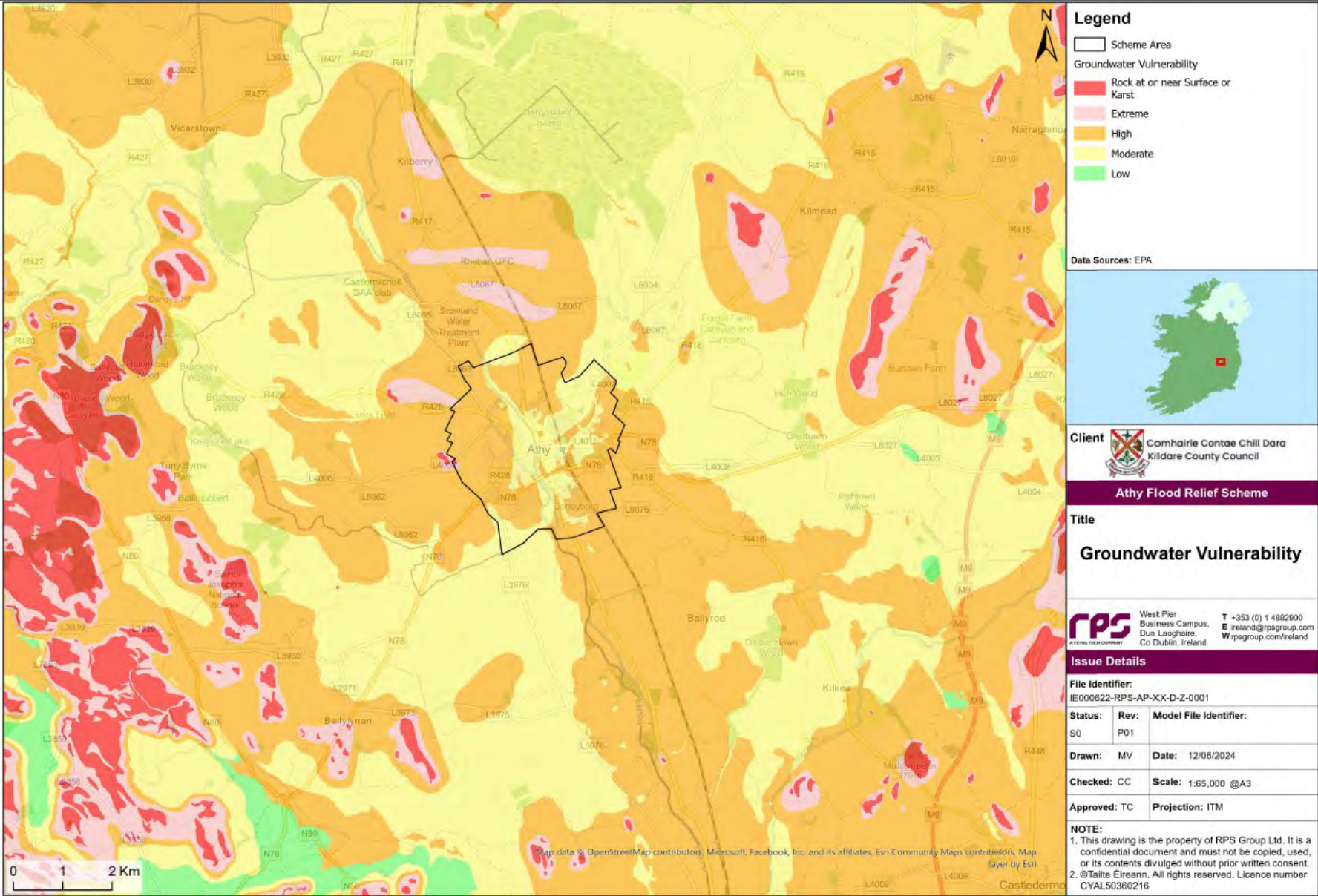


Figure 7-4: Groundwater Vulnerability within the Scheme Area



Environmental Constraints Report

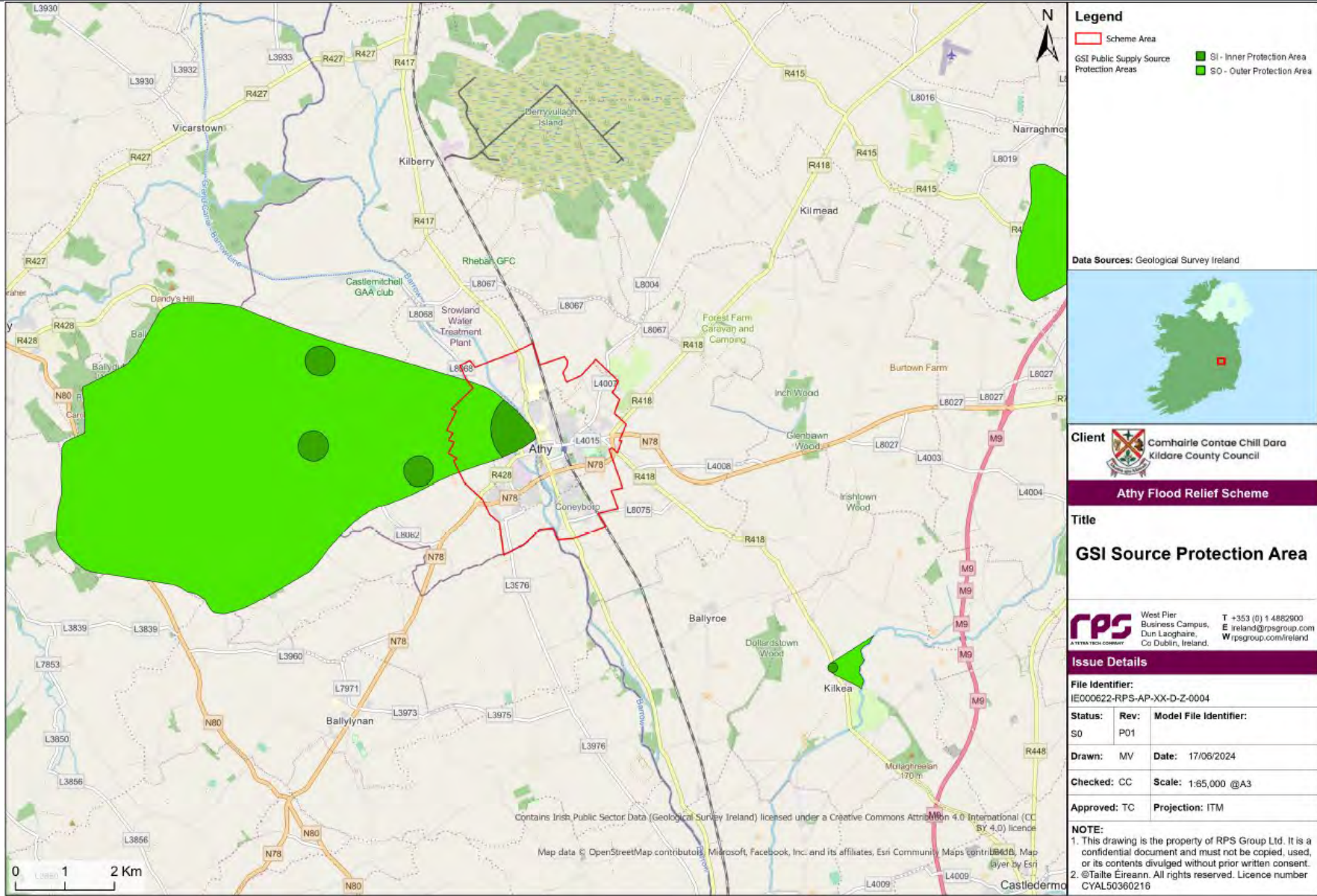


Figure 7-5: GSI Source Protection Area

## Environmental Constraints Report

## 7.4 Constraints

Table 7-4 presents the constraints on land and soils and recommends how the constraint can be addressed.

**Table 7-4: Land and Soils Constraints.**

| What is the constraint?   | How should the constraint be addressed during optioneering:  | Recommendations   |
|---|--|---|
| <ul style="list-style-type: none"> <li>The Scheme Area lies in an area of high value and sensitivity groundwater.               <ul style="list-style-type: none"> <li>WFD Groundwater Body 2016-2021 was assessed as 'Poor' and 'At Risk'. Proposed Scheme will likely cause short-term negative effects.</li> <li>Lies within a Public Supply Source Protection Area.</li> <li>Limestone is the bedrock that overlays the Scheme Area. High permeability making it sensitive to contamination.</li> <li>Scheme Area lies within a Regionally Important aquifer with high to moderate vulnerability.</li> <li>Hydrogeological connectivity with water dependant European Sites (River Barrow and River Nore SAC (002162)). Potential pathway to contaminate water supply.</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>The selection of options must consider how the Proposed Scheme will prevent the deterioration in the existing status of groundwaters and to ensure that all waters achieve at least "Good Status".</li> <li>Consider the types of construction activities required for each option and their potential to impact on groundwater through contamination.</li> </ul> | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Consider the extent and depth of earthworks that will be required for each option. Due consideration to be given to the option selection process and design to avoid any negative adverse impacts to these receptors.</li> <li>Ground Investigation data to be used to inform the design of the proposed Scheme and recommended mitigation proposals.</li> <li>Provide detailed project description setting out the construction activities including extent of excavation, areas to be disturbed to inform recommended mitigation proposals for the Proposed Scheme.</li> </ul> |
| <ul style="list-style-type: none"> <li>Limestone is the predominant bedrock rock type.               <ul style="list-style-type: none"> <li>Limestone may result in weaknesses below the ground surface and lead to fractures, faults and caves.</li> </ul> </li> </ul>   | <ul style="list-style-type: none"> <li>As the bedrock under the entire Scheme Area is limestone, mitigation measures will need to be put in place not to overburden the bedrock.</li> </ul>  |   |
| <ul style="list-style-type: none"> <li>Potentially contaminated soils due to presence of EPA licensed facilities and former cement and asbestos factory.</li> </ul>   | <ul style="list-style-type: none"> <li>Where possible avoid options that traverse areas of known contamination.</li> </ul>   | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Update constraints if GI provides details on other areas of known contamination.</li> <li>Where avoidance is not possible, undertake soil sampling to determine extent and level of contamination.</li> <li></li> </ul>  |
| <ul style="list-style-type: none"> <li>Soft soils (River Alluvium and fine loamy drift) lay across the Scheme Area.               <ul style="list-style-type: none"> <li>Potential to degrade soil resource.</li> <li>Unable to support the capacity of heavy machinery due to low bearing capacity.</li> </ul> </li> </ul>   | <ul style="list-style-type: none"> <li>Where possible, avoid works in areas with soft soils.</li> <li>Ensure measures are in place so that soft soil isn't overburdened.</li> </ul>  | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Complete GI provides to provide further details on geotechnical aspects.</li> </ul>  |

## 8 WATER

This section identifies the key constraints within the Scheme Area relating to water resources including hydrology and drainage. Freshwater ecology is addressed **Section 6** and groundwater is addressed in **Section 7** of this report.

### 8.1 Policy Objectives

The following Policies have been identified as being relevant to flood relief schemes in the Kildare CDP:

**IN P2** Ensure the protection and enhancement of water quality throughout Kildare in accordance with the EU WFD and facilitate the implementation of the associated programme of measures in the River Basin Management Plan 2018-2021 (and subsequent updates).

**IN P3** Support Irish Water to ensure adequate and appropriate wastewater treatment infrastructure is available over the Plan period to service the projected growth of towns and villages throughout Kildare in accordance with the Core Strategy and Settlement Hierarchy.

**IN P5** Ensure the continued incorporation of Flood Risk Management and National Flood Risk Policy (2018) into the spatial planning of Kildare, to meet the requirements of the EU Floods Directive and the EU Water Framework Directive and to promote a climate resilient County.

**IN P7** Support the implementation of the Water Framework Directive, the River Basin Management Plan, and the Local Authority Waters Programme in achieving and maintaining at least good ecological status for all water bodies in the county.

**BI P7** Recognise and promote inland waters, natural environmental assets and to protect rivers, streams and other watercourses and, wherever possible, maintain them in an open state capable of providing suitable habitats for fauna and flora while discouraging culverting or realignment.

**BI P15** Promote and support the development of Sustainable Urban Drainage Systems (SuDS) to ensure surface water is drained in an environmentally friendly way by replicating natural systems.

The following objectives relating to water in the Athy LAP are important for consideration in the development of options for the Proposed Scheme:

#### **Policy I1 – Water Supply and Wastewater**

I1 - It is the policy of the Council to work in conjunction with Irish Water to protect existing water and wastewater infrastructure in Athy, to maximise the potential of existing capacity and to facilitate the timely delivery of new water services infrastructure to facilitate future growth.

#### **Policy I2 – Surface Water and Groundwater**

I2 - It is the policy of the Council to maintain and enhance the existing surface water drainage systems in Athy and to protect surface and ground water quality in accordance with the Water Framework Directive.

The following objectives are also noted as relevant to the Proposed Scheme

**IO2.5** Maintain, improve and enhance the environmental and ecological quality of surface waters and groundwater in Athy in accordance with the River Basin Management Plan for Ireland and in conjunction with the Environmental Protection Agency.

**IO2.6** Require applicants, where necessary, to demonstrate that proposals will not negatively impact on any groundwater or surface water body and be compliant with the requirements of the Water Framework Directive and measures to protect and improve our water bodies set down in the River Basin Management Plan for Ireland 2018 – 2021 and future cycles of this Plan

**IO2.8** Ensure that development along urban watercourses must comply with the Inland Fisheries Ireland Guidance 'Planning for Watercourses in the Urban Environment' (2020), including the maintenance of a minimum riparian zone of 35 metres for river channels greater

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that 10 metres in width, and 20 metres for rivers channels less than 10 metres in width. Development within this zone will only be considered for water compatible developments.

### Policy I3 – Flood Risk Management

**I3** It is the policy of the Council to manage flood risk in Athy in conjunction with the Office of Public Works and in accordance with the requirements of the Planning System and Flood Risk Management Guidelines for Planning Authorities (2009) and circular PL02/2014 (August 2014).

Flooding is identified as a key issue within the Athy LAP. A flood risk management plan has been developed for the area due to the flooding associated with the River Barrow.

## 8.2 Desktop study

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;
- The Office of Public Works ([www.floodmaps.ie](http://www.floodmaps.ie));
- River Basin Management Plan 2018-2021 (<https://www.housing.gov.ie/>);
- IW InfoNet Drainage Maps;
- WFD national website and Water Maps viewer; ([www.wfdireland.ie](http://www.wfdireland.ie)); and
- Environmental Protection Agency, (<https://www.epa.ie/>).

This section discusses the surface waterbodies that traverse the Scheme Area.

## 8.3 Baseline Environment

### 8.3.1 Surface waterbody

The Scheme Area lies within the WFD Catchment number 14, Barrow. The Scheme Area is divided into two respective sub-catchments (Barrow\_SC\_080 and Barrow\_SC\_070). The following rivers lie within the Scheme Area:

- The River Barrow (EU Code: IE\_SE\_14B011600) flows in a north to south direction within the Scheme Area.
- The Athy Stream (EU Code: IE\_SE\_14A060600) runs in a northeast to southwest direction where it converges with the River Barrow within the centre of the Scheme Area.
- Bennetsbridge stream (EU Code: IE\_SE\_14B011900) flows in a west to east direction where it converges with the River Barrow along the southern section within the Scheme Area.
- Coneyburrow stream (EU Code: IE\_SE\_14B011900) diverges from the River Barrow in the lower centre section within the Scheme Area and converges back into the River Barrow along the southern section within the Scheme Area.
- Grand Canal Barrow Line is a canal which traverses from the northwest to centre of the Scheme Area where it converges with the River Barrow.
- Salisbury Stream (EU Code: IE\_SE\_14A060600) doesn't enter the Scheme Area but it runs adjacent to the border along the northwestern section adjacent to the Scheme Area.



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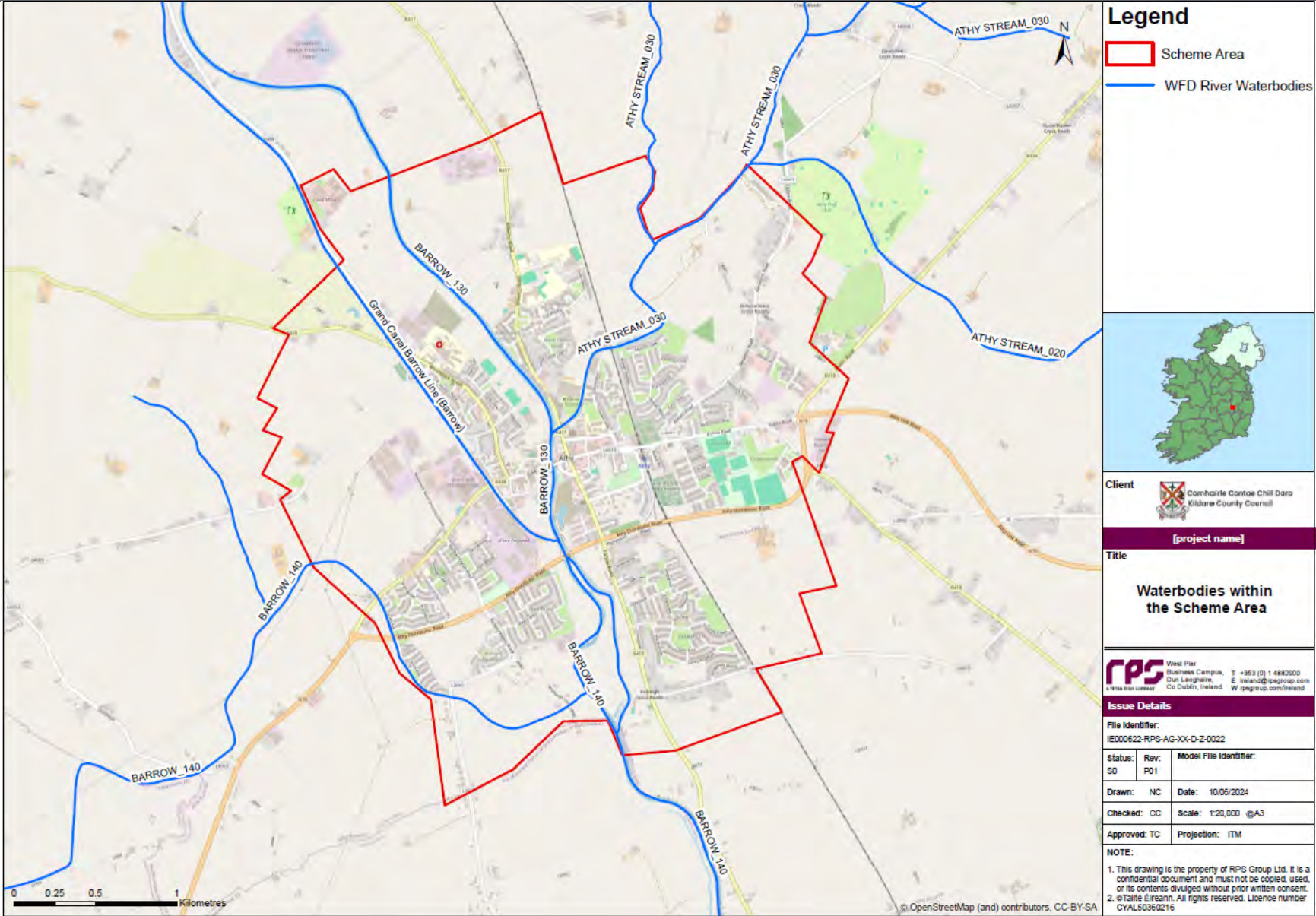


Figure 8-1: Surface Waterbodies within the Scheme Area

### 8.3.2 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 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”.

**Table 8-1** provides an overview of the Waterbody WFD Status of the respective waterbodies within and adjacent to the Scheme Area outlined in **Section 8.3.1**.

**Table 8-1: Surface Watercourses and Waterbodies within the Scheme Area**

| Local / EPA Name        | Waterbody Code (EU_CD) | River Waterbody WFD Status 2016-2021 | WFD Cycle 2 Risk Score | EPA 2016-2021 Biological Status |
|-------------------------|------------------------|--------------------------------------|------------------------|---------------------------------|
| River Barrow            | IE_SE_14B011600        | Poor                                 | Under Review           | 3-4 (Moderate)                  |
| Athy Stream             | IE_SE_14A060600        | Poor                                 | Under Review           | 4 (Good)                        |
| Bennetsbridge stream    | IE_SE_14B011900        | Poor                                 | At Risk                | N/A                             |
| Coneyburrow stream      | IE_SE_14B011600        | Poor                                 | Under Review           | N/A                             |
| Grand Canal Barrow Line | IE_14_AWB_GCBL         | Good                                 | Under Review           | N/A                             |
| Salisbury Stream        | IE_SE_14A060600        | Poor                                 | Under Review           | N/A                             |

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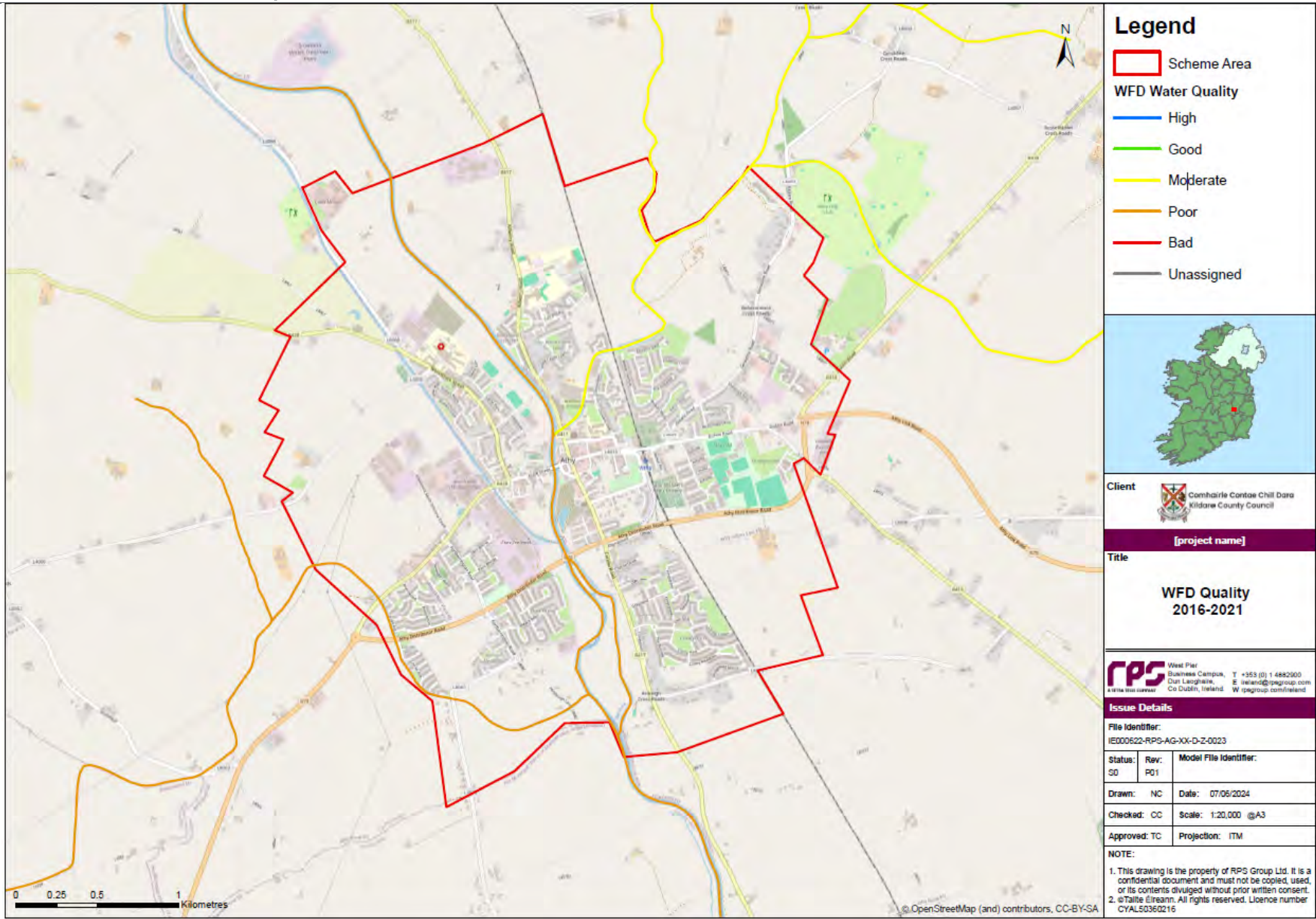


Figure 8-2: WFD Quality Status of Water Bodies within the Scheme Area



### 8.3.3 Water / Wastewater Facilities

There is one licensed Urban Wastewater Treatment Plant (UWWTP) (registration code: D0003) operated by Uisce Éireann located within the Scheme Area and is adjacent to the River Barrow. This plant has a Population Equivalent (PE) of 15,000. Downstream of the Scheme Area there are four UWWTP which share a hydrological link with the Scheme Area but are not located within the Scheme Area.

### 8.3.4 Surface Water Designations

The only Surface Water Waterford Harbour (Cheekpoint/Arthurstown/Creadan)(IE\_SE\_100\_0100) is designated as a shellfish protected area. It is outside the Scheme Area but is located approximately 77.46 km downstream of the River Barrow.

### 8.3.5 Nutrient Sensitive Water

The River Barrow (Protected Area Code: PA4\_0015) is designated under the Urban Wastewater Treatment Directive as a Sensitive Area in 2001. As outlined in **Section 8.3.1**, the River Barrow traverses through the Scheme Area in a North to South direction within the centre of the Scheme Area.

### 8.3.6 Flooding

The Office of Public Works Past Floods Database (<https://www.floodinfo.ie/>) was used to obtain information on the flood history of the Scheme Area. The OPW indicative flood maps were consulted to identify areas that have 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 OPW undertook a National Catchment Flood Risk Assessment and Management (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. The River Barrow was identified as one such Area for Further Assessment (AFA).

Based on the OPWs' CFRAMS flood mapping, the Scheme Area lies within a 1 in 10-year fluvial flood zone (10% Annual Exceedance Probability (AEP)). The River Barrow and the Athy Stream is the main source of flooding (See **Section 8.3.1** for details on the direction of flow). The fluvial flooding occurrence is less frequent along the Bennetsbridge stream where it experiences a 1 in 10 year flooding (10% AEP) along a small section and this is widened by a 1 in 1,000 year fluvial flooding occurrence where the stream converges with the River Barrow and upstream of the stream (See **Figure 8-3**).



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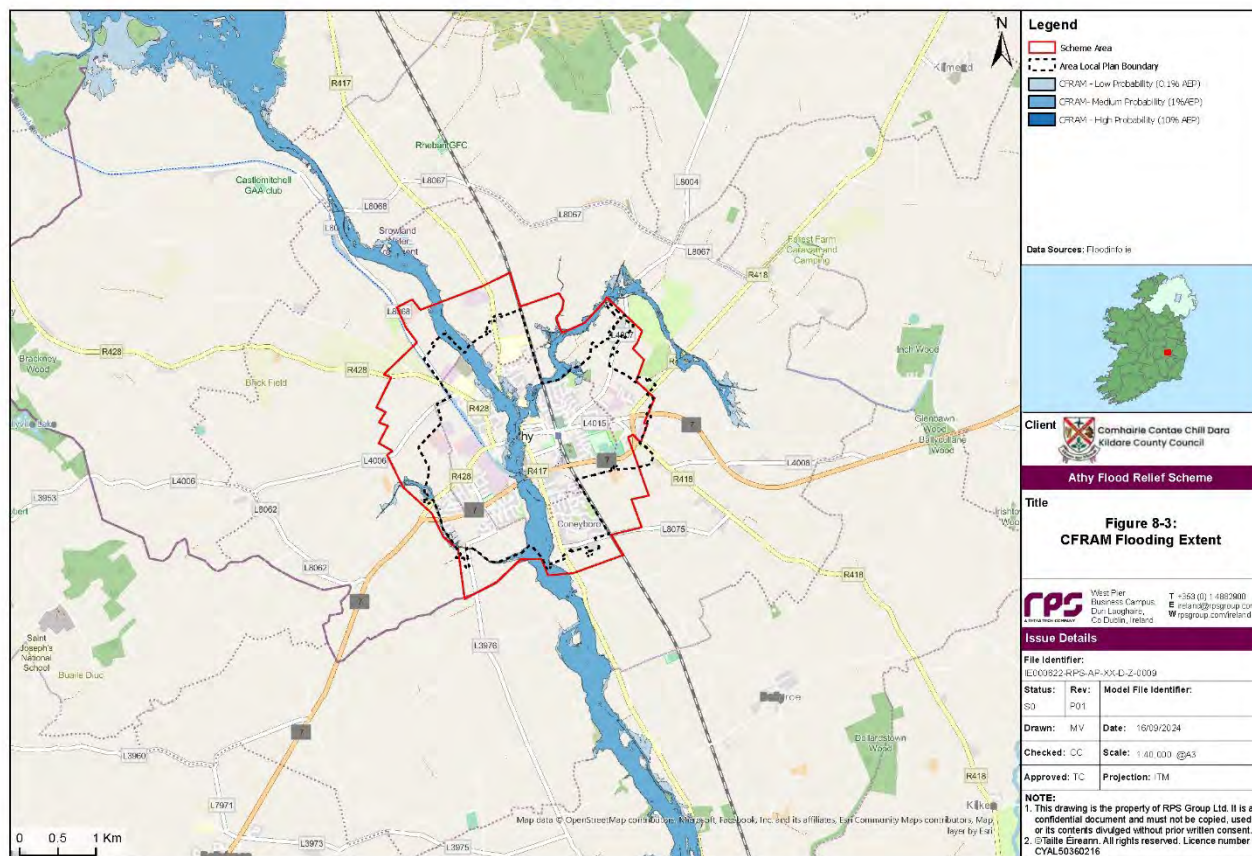


Figure 8-3: CFRAM Flooding Extent (0.1%, 1% and 10% AEP)

### 8.3.6.1 Historical Flood Events

The OPW Historical Mapping<sup>17</sup> dataset was consulted to investigate to identify past flooding events. As shown in **Table 8-2**, Athy has undergone numerous flood events of various degrees of severity in the past. The River Barrow historically overflowed its banks at two locations in Athy. **Table 8-2** describes historical flood events within Athy.

Table 8-2: Flood Events within the Scheme Area

| Flood Event   | Flood Type  | Flood Source      |
|---|---|-------------------|
| <b>River Barrow</b>                                     |   |                   |
| Flooding around Athy                                    | Single Flood Occurrence<br>Dated Flood – 27/02/2020     | Fluvial / Pluvial |
| Flooding at Athy (Carlow Road)                          | Single Flood Occurrence<br>Dated 27/12/2015 – 2/01/2016 | Fluvial           |
| Flooding at Athy on 12/11/2014                          | Single Flood Occurrence<br>Dated Flood - 12/11/2014     | Null              |
| Flooding at R417 and sections of the Monasterevin Road. | Single Flood Occurrence<br>Dated 05/02/2014             | Fluvial           |
| Flooding at the Barrow Athy 18th August 2008            | Single Flood Occurrence<br>Dated Flood - 17/08/2008     | Null              |

<sup>17</sup> OPW (n.d) Flood Maps. Available at: <https://www.floodinfo.ie/map/floodmaps/>. (Accessed 06/06/2024)

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| Flood Event  | Flood Type  | Flood Source      |
|--|---|-------------------|
| Flooding at Portarlinton, Monasterevin, Mountmellick, Athy and Carlow                                    | Recurring Flood Occurrence<br>Dated – 18/08/2008    | Fluvial / Pluvial |
| Flooding at Bord na Móna compound at Kilberry Athy Co Kildare.   | Single Flood Occurrence<br>Dated – 15/11/2002       | Fluvial           |
| Flooding at Kilberry area of Athy  | Single Flood Occurrence<br>Dated - 27/11/2002       | Fluvial / Pluvial |
| Flooding of River Barrow at Levinstown, Athy Co Kildare. <sup>18</sup>                                   | Single Flood Occurrence<br>18 /11/ 1997             | Fluvial           |
| Flooding at Portarlinton, Carlow, Leighlinbridge, Graiguenamanagh and Athy starting on 28th January 1995 | Recurring Flood<br>Dated –<br>28/01/199531/01/1995  | Fluvial / Pluvial |
| Barrow Athy February 1990  | Single Flood Occurrence<br>Dated Flood - 01/02/1990 | Fluvial           |
| Barrow Athy Recurring  | Recurring Flood                                     | Fluvial           |
| Barrow Ardreigh, Athy Recurring  | Recurring Flood                                     | Fluvial           |
| <b>Athy Stream</b>   |   |                   |
| Athy Stream Clonmullin, Athy Recurring   | Recurring Flood                                     | Fluvial           |
| <b>No Associated River</b>   |   |                   |
| Ardreigh R417 Recurring  | Recurring Flood                                     | Low lying land    |
| Gallowshill N78 Recurring  | Recurring Flood                                     | Low lying land    |

### 8.3.7 Drinking Water

The Scheme Area for Athy FRS is located within the following drinking waterbodies which is designated under Article 7 Abstraction for Drinking Water areas:

- Athy-Bagnelstown Gravels (EU Code: IE\_SE\_G\_160) underlies the entire Scheme Area.
- The River Barrow (Barrow\_130) runs through the centre of the Scheme Area (See **Section 8.3.1**).

See **Section 7** for detail on the groundwater body characteristics which underlies the Scheme Area.

## 8.4 Constraints

All of the rivers that enter the Scheme Area were assessed as 'Poor' under the River Waterbody WFD Status 2016-2021 and the Bennetsbridge Stream was identified as 'At Risk' while the others were assessed as under review. The WFD aims for a 'Good' status to be achieved by all waterbodies within Ireland and this Proposed Scheme has the potential to cause short-term negative effects to the water quality. Based on the nature of works, it would be suspected that works will predominately be constructed along the River Barrow and its associated tributaries. The River Barrow would also be considered at risk from the water quality based on the number of UWWTP identified along the River Barrow. There is a total of five UWWTPs identified within the Scheme Area and downstream of the Scheme Area. In conjunction with the water quality discussed above, it will be important for the Proposed Scheme to not significantly increase organic pollution running off into the River Barrow which could cause cumulative effects to the water quality. This will also jeopardise the River Barrow from achieving a 'Good' WFD Status. Moreover, the River Barrow is protected as a Nutrient Sensitive Area and acts as a drinking water source. Based on these reasons listed, it would be paramount to safeguard the River Barrow from pollution.

<sup>18</sup> [https://www.floodinfo.ie/map/pf\\_addinfo\\_report/1549/](https://www.floodinfo.ie/map/pf_addinfo_report/1549/)

## Environmental Constraints Report

As outlined in **Section 8.3.6**, Athy experiences extensive flooding.

**Table 8-3** presents the water constraints and recommends how the constraint can be addressed.

**Table 8-3: Water Constraints.**

| What is the constraint?  | How should the constraint be addressed during optioneering:   | Recommendations  |
|--|---|--|
| <p>The below factors need to be considered to ensure ground and surface water body water quality is not adversely affected.</p> <ul style="list-style-type: none"> <li>WFD Surface and Groundwater Body Status.</li> <li>Nutrient Sensitive Water</li> <li>Surface Water Designations</li> <li>Drinking Water (groundwater)</li> </ul> | <ul style="list-style-type: none"> <li>Avoid instream works where possible; however where this not possible, such works should be limited and appropriate measures implemented to minimise impacts.</li> <li>The selection of options must consider how the Proposed Scheme will prevent the deterioration in the existing status of waters and to ensure that all waters achieve at least "Good Status"</li> <li>This constraint needs to be addressed by considering potential sources of pollution that can arise from construction activities to ensure likely significant effects can be avoided either by considering alternative methods or recommending mitigation measures to minimise impacts.</li> </ul> | <p>Project team to.</p> <ul style="list-style-type: none"> <li>Discussions with design team and specialists to ensure water quality isn't negatively affected by works adjacent to the watercourses.</li> <li>The hydrology of all watercourses that might be impacted by the proposed scheme should be assessed to ensure that the WFD hydro morphological status is not affected by the scheme.</li> </ul> |
| Flooding extents   | <ul style="list-style-type: none"> <li>This constraint needs to be addressed by considering the requirements to protect construction works during flooding.</li> </ul>  | <p>Project team to.</p> <ul style="list-style-type: none"> <li>Discussions with design team and specialists to ensure water quality isn't negatively affected by works.</li> </ul>   |

## 9 AIR QUALITY

Air quality is not a constraint to the development of flood relief measures however sensitive receptors can be impacted by changes in local air quality. However, construction activities from the development of flood relief measures can impose constraints where there is potential for sensitive receptors to be impacted by dust or atmosphere emissions from traffic and plant used for construction. During the operational phase, the only potential for impact would arise from the operation of pumps or generators (if required) or as a result of maintenance traffic.

The main constraints to consider when examining air quality is the proximity to sensitive receptors that may be impacted from changes in air quality. Sensitive receptors 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. Sensitive receptors also include biodiversity features.

The other constraint to consider on air quality is the potential for contaminated dust to arise during excavation and construction activities. This is an important interaction with 'Land and soils' and 'Human Health' as areas of contaminated land exist within the Scheme Area and should works be required in these areas, then there is potential for impact on sensitive receptors.

### 9.1 Policy objectives

The following objective is important for consideration in the development of options for the Proposed Scheme and in particular when examining the types of construction activities that could impact on air quality:

#### **Policy I5 – Pollution and Environmental Services**

**I5** - It is the policy of the Council to protect environmental quality in Athy through the implementation of European, national and regional policy and legislation relating to air quality, greenhouse gases, climate change, light pollution, noise pollution and waste management.

The Kildare County Development Plan 2023-2029 also includes a relevant policy:

**IN P8** *Implement the provisions of EU and National legislation on air, noise, and light pollution and other relevant legislative requirements, as appropriate*

### 9.2 Desktop study

The key sources (i.e. data and reports) used to inform the constraints study for air quality are summarised in **Table 9-1** below.

**Table 9-1: Summary of Key Air Quality Desktop Sources.**

| Title                                     | Source          | Year | Author  |
|---|-----------------|------|---------|
| EPA Maps                                  | EPA             | n.d  | EPA     |
| Athy Local Area Plan 2021-2027            | KCC             | 2021 | KCC     |
| Irish Soil Information System             | Teagasc and EPA | n.d  | Teagasc |
| Kildare County Development Plan 2023-2029 | KCC             | 2022 | KCC     |

### 9.3 Baseline Environment

#### 9.3.1 Air Quality

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.



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- **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*. Athy Town is located between two air quality monitoring stations, Portlaoise and Carlow Town. On the 13<sup>th</sup> June 2024, the Carlow site listed a PM<sub>10</sub> average of 8.08 µg/m<sup>3</sup> a PM<sub>2.5</sub> average of 4.58 µg/m<sup>3</sup> and a current air quality classification of Good (1). On the 13<sup>th</sup> June 2024, the Portlaoise site listed a PM<sub>10</sub> average of 7.58 µg/m<sup>3</sup> and PM<sub>2.5</sub> average of 4.72 µg/m<sup>3</sup>.

### 9.3.2 EPA licensed facilities

There are two licensed and one surrendered EPA IPC facilities within the Scheme Area (See **Table 9-2**). The Minch facility is licensed for minor, diffuse emissions to air.

**Table 9-2: List of EPA Licensed Facilities within the Scheme Area**

| Name                            | Registration Code | Category | Subcategory | Licensed Status |
|---------------------------------|-------------------|----------|-------------|-----------------|
| Peerless Rug Europe Limited     | P0261             | Industry | IPC         | Licensed        |
| Minch Malt Limited              | IE1129            | Industry | IE          | Licensed        |
| Crown Packaging Ireland Limited | P0098             | Industry | IPC         | Surrendered     |

### 9.3.3 Potential sources of emissions

As described in **Section 7**, there is a former cement and asbestos factory within the Scheme Area in close proximity to the River Barrow. Earthworks could have the potential to unearth asbestos from contaminated soils making it airborne<sup>19</sup>. This has potential to cause detrimental effects on the air quality and resulting impacts on human health.

## 9.4 Constraints

**Table 9-3** presents the air quality constraints and recommends how the constraint can be addressed.

**Table 9-3: Air Quality Constraints**

| What is the constraint?       | How should the constraint be addressed during optioneering:   | Recommendations  |
|-------------------------------|---|--|
| Presence of contaminated land | <ul style="list-style-type: none"> <li>• Avoid works in areas of contaminated land of where there is potential for excavations to result in contaminated dusts.</li> <li>• If avoidance is not feasible, investigation extent and level of contamination to inform mitigation proposals.</li> </ul> | Project team to:<br>Consider known areas of contaminated land during options selection.<br>Review GI results to understand if other areas of contamination exist within the Scheme Area. |
| Nearby sensitive receptors    | <ul style="list-style-type: none"> <li>• Consider proximity of construction activities to sensitive receptors.</li> </ul>   | Project team to:<br>During options selection, determine which activities have potential to result  |

<sup>19</sup> EPA (N.D) Best Practice Guidance for Handling Asbestos. Local Government Ireland. Available at: [https://www.epa.ie/publications/monitoring--assessment/waste/hazardous-waste/LGI\\_HandlingAsbestosGuide.pdf](https://www.epa.ie/publications/monitoring--assessment/waste/hazardous-waste/LGI_HandlingAsbestosGuide.pdf)

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| What is the constraint? | How should the constraint be addressed during optioneering:   | Recommendations   |
|-------------------------|---|---|
|                         | <ul style="list-style-type: none"><li>If requirement for pumping/generators, consider proximity of location to sensitive receptors.</li></ul> | in impacts on air quality and how measures can be implemented to ensure no significant effects on nearby sensitive receptors. |

## 10 CLIMATE

Climate change is a constraint for the Proposed Scheme. As part of the development of options of the Proposed Scheme, the potential impacts of climate change will be considered as part of a Scheme Climate Change Adaptation Plan (SCCAP). This plan will detail the trigger points and monitoring that should inform future adaptation actions to be taken and how it may be necessary to adapt and amend the Proposed Scheme to maintain the defined SoP as the potential impacts of climate change may be realised over time.

The development of the Proposed Scheme can also impact on climate through use of construction materials with embodied carbon and also greenhouse gas emissions from construction plant or plant (such as pumps, generators) that might be required during the operation of the scheme.

### 10.1 Policy objectives

The following objectives relating to climate in the Athy LAP are important for consideration in the development of options for the Proposed Scheme:

#### **Policy CAM 1 – Climate Adaptation and Mitigation**

**CAM 1** *It is the policy of the Council to future proof Athy to ensure that it becomes a climate resilient town by promoting the economic, social and environmental benefits of low-carbon development, creating an integrated green infrastructure network, prioritising sustainable mobility within the town and building at sustainable densities in appropriate locations.*

#### **Policy UCR1 – Urban Regeneration and Development**

**UCR1** *It is the policy of the Council to support the implementation of the Athy Urban Regeneration Framework to maximise the potential of Athy's unique built and natural assets in order to instigate transformative place-based change in the town, where a revitalised town centre becomes a major visitor destination and contributes to a model of low carbon development and the creation of a climate resilient, healthy, connected and more inclusive settlement.*

#### **Policy I5 – Pollution and Environmental Services**

**I5** *It is the policy of the Council to protect environmental quality in Athy through the implementation of European, national and regional policy and legislation relating to air quality, greenhouse gases, climate change, light pollution, noise pollution and waste management.*

### **Climate Action Plan 2024**

The CAP 2024 is the third annual update of the Climate Action Plan. This plan sets out a roadmap of actions to aid in the achievement of the national climate objectives by 2050. This plan is legally binding by the Climate Action and Low Carbon Development (Amendment) Act 2021.

### **Kildare County Council CAP 2024-2029**

The Kildare County Council 2024-2029 aligns with the Government's National Climate Objectives outlined in the CAP 2024. The KCC CAP aim to achieve a shift towards a climate resilient, biodiversity rich, environmentally sustainable with a primary focus set on achieving carbon neutrality by 2050.

## 10.2 Baseline environment

From a climate perspective it is more important to consider what changes will be brought about by climate change rather than considering the current baseline. The following changes on climate are predicted by Met Éireann<sup>20</sup> and the EPA<sup>21</sup>:

- Ireland's climate is changing in line with global trends, with a temperature increase of, on average, 1.65°C compared with 1961-1009 Long-Term Average (LTA). 2023 was recorded as the second warmest year on record and was 0.35°C warmer than 2023. The number of warm days is expected to increase and heat waves are expected to occur more frequently;
- 2023 had recorded the wettest month of March across four weather station. Twelve stations had recorded their wettest month of July on record in 2023. Three weather stations in Cork recorded their wettest October on record. In short, while average rainfall will decrease, the frequency of heavy rainfall events will increase with a greater risk of future flooding;
- In 2023, it was noted that fourteen stations broke their September maximum temperature records (record lengths between 12 and 81 years). Moreover, 23 weather stations recorded their warmest month of June on record. Since the 1980s, each successive decade has been warmer than any preceding decade since 1850. In Ireland, 2023 was the second consecutive year where the annual mean temperature for Ireland exceeded 11 °C;
- The climate projections for the next century indicate that observed climate trends will continue and intensify over the coming decades including the following:
  - Changes in air temperature;
  - Changes in water temperature;
  - Increase in heatwaves, frost;
  - Changes in phenology and snowfall;
  - Increase in extreme precipitation;
  - Changes in wind speeds;
  - Increase in fluvial, coastal and groundwater flooding
  - Water stress for crops, pressure on water supply and adverse impacts on water quality; and
  - Negative impacts on human health and wellbeing.

At a local level, the constraints that are important to consider from a climate change perspective are those which provide natural floodplains and ensuring these are maintained. The Athy Local Area Plan 2021-2027 identifies six main routes of green infrastructure (See **Figure 10-1**<sup>22</sup>) which is critical to safeguarding as these areas provide a natural defence against flood risk.

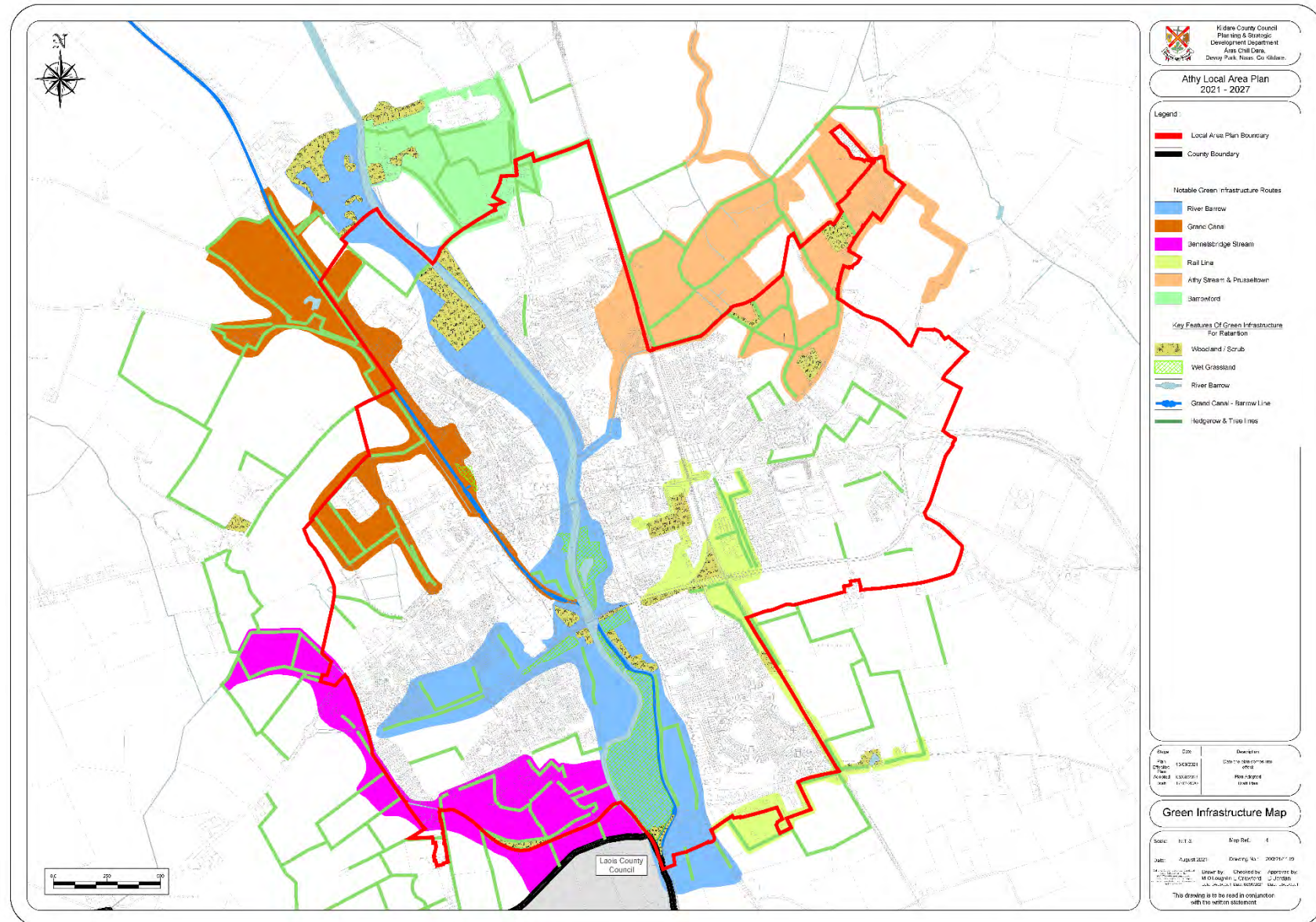
<sup>20</sup> [Annual Climate Statement for 2023 - Met Éireann - The Irish Meteorological Service](#)

<sup>21</sup> [National Climate Change Risk Assessment Methodology \(epa.ie\)](#)

<sup>22</sup> Please refer to the 'Green Infrastructure Map' in the Athy Local Area Plan 2021-2027 for further details.  
<https://kildarecoco.ie/AllServices/Planning/LocalAreaPlans/CurrentLocalAreaPlans/AthyLocalAreaPlan2021-2027/Athy%20Local%20Area%20Plan%202021%20%202027%20compressed%20with%20app%201.pdf>



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**Figure 10-1: Map of Green Infrastructure within the Scheme Area (Extracted from Map 4: Green Infrastructure from the Athy Local Area Plan)**

## 10.2.1 BREEAM

The Building Research Establishment Environmental Assessment Method (BREEAM) is a sustainability rating and award scheme for infrastructure projects. It is an evidence based self-assessment undertaken throughout a project's lifecycle. It was formally known as the Civil Engineering Environmental Quality Assessment and Awards Scheme (CEEQUAL).

The rating is based on achieving an overall score against sustainability 'criteria' and their corresponding credits. There are 248 criteria in the scheme with a maximum of 5,000 associated credits. The criteria are divided into eight sustainability categories as shown in **Figure 10-2**.



**Figure 10-2: BREEAM Sustainability Categories**

The objective of seeking a BREEAM rating on the Proposed Scheme is to stimulate best practice and achieve distinction in environmental and social performance. There will be an overall benefit to the town of Athy and the reputation of all project delivery stakeholders.

Seeking a BREEAM rating for the Proposed Scheme demonstrates the project team's commitment to contributing towards meeting the United Nations Sustainable Development Goals (SDGs), promoting climate resilience and sustainable infrastructure development.

## 10.3 Constraints

**Table 10-1: Climate Constraints**

| What is the Constraint?      | How should the constraint be addressed during optioneering:   | Recommendations  |
|------------------------------|---|--|
| Climate change               | -   | Project team to: <ul style="list-style-type: none"> <li>Implement the Proposed Scheme including measures from Scheme Climate Change Adaptation Plan (SCCAP).</li> <li>Inclusion of BREEAM certification will be implemented during the design of the Proposed Scheme which will ensure best practice for reducing Greenhouse Gas Emissions.</li> </ul> |
| Embedded carbon in materials | Consider at the options selection stage, at a high level the extent of embodied carbon associated with each option. | Project team to: <ul style="list-style-type: none"> <li>Include assessment of embodied carbon at a high level during options selection.</li> <li>During the design stage consider the resource requirements and the embodied carbon and discuss alternative materials.</li> </ul>  |

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| What is the Constraint? | How should the constraint be addressed during optioneering:   | Recommendations  |
|-------------------------|---|--|
| Green infrastructure    | Consider green infrastructure in the selection of options to ensure no impact and to consider if they could be used to enhance the Proposed Scheme. | Project team to: <ul style="list-style-type: none"><li>Discuss options with specialists.</li></ul> |

## 11 NOISE AND VIBRATIONS

Similar to air quality ‘noise and vibration’ are not constraints to the development of flood relief measures however sensitive receptors can be impacted activities that lead to increase in noise and vibration levels. Construction activities associated with the development of flood relief measures can impose constraints where there is potential for sensitive receptors to be impacted by noise and vibration with increases in traffic and from plant and machinery used for construction. During the operational phase, the only potential for impact would arise from the operation of pumps or generators (if required) or as a result of maintenance traffic.

The main constraints to consider when examining ‘noise and vibration’ are the proximity to sensitive receptors that may be impacted by disturbance from noise. Sensitive receptors 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. Sensitive receptors also include biodiversity features and cultural heritage features that can be impacted by vibration.

For many projects noise and vibration impacts can be mitigated to ensure no significant effects. During the construction phase, the impacts are temporary and during the operational phase, there is only potential for noise impacts if pumping is required.

### 11.1 Policy objectives

The following objective relating to noise and vibrations in the Athy LAP is important for consideration in the development of options for the Proposed Scheme:

#### **Policy I5 – Pollution and Environmental Services**

**I5** *It is the policy of the Council to protect environmental quality in Athy through the implementation of European, national and regional policy and legislation relating to air quality, greenhouse gases, climate change, light pollution, noise pollution and waste management.*

The Kildare County Development Plan (2023 – 2029) also includes a number of objectives relating to noise including

**IN O65** Ensure that noise levels caused by new and existing developments throughout the county do not exceed normally accepted standards.

The objectives of the Noise Action Plan are to avoid, prevent and reduce on a prioritised basis, where necessary, the harmful effects due to long term exposure to environmental noise. This can be achieved by taking a strategic approach to managing environmental noise and following a balanced approach in the context of sustainable development.

### 11.2 Desktop study

The key sources (i.e. data and reports) used to inform the constraints study for noise and vibrations are summarised in **Table 11-1** below.

**Table 11-1: Summary of key Noise and Vibrations desktop sources.**

| Title                                     | Source                  | Year        | Author                  |
|---|-------------------------|-------------|-------------------------|
| Athy Local Area Plan 2021-2027            | KCC                     | 2021        | KCC                     |
| Kildare County Development Plan 2023-2029 | KCC                     | 2023        | KCC                     |
| EPA                                       | EPA maps                | 2024        | EPA                     |
| OSI                                       | Ordnance Survey Ireland | 2024        | Ordnance Survey Ireland |
| Google Earth Imagery                      | Google Earth            | 1984 – 2024 | Google LLC              |

### 11.3 Baseline environment

The EPA maps the air noise pollution of the major settlements in the country and areas where major noise occurs such as road, railways, airports and industry, however to date no maps have been prepared for



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Athy. It is expected that noise levels in Athy are typical of other town in Ireland and dominated during the daytime by traffic.

The sensitive receptors that have the potential to be impacted by noise and vibration are outlined in the following sections:

- **Section 5.3** - baseline for population and human health within the Scheme Area;
- **Section 6.4** - baseline for Biodiversity within the Scheme Area;
- **Section 13** baseline of cultural heritage within the Scheme Area.

## 11.4 Constraints

**Table 11-2** presents the noise and vibrations constraints and recommends how the constraint can be addressed.

**Table 11-2: Noise and vibrations constraints.**

| What is the constraint?                                  | How should the constraint be addressed during optioneering:   | Recommendations   |
|--|---|---|
| Nearby sensitive receptors (population and biodiversity) | <ul style="list-style-type: none"> <li>• Consider proximity of construction activities to sensitive receptors in particular activities such as sheet piling and rock breaking</li> <li>• If requirement for pumping/generators, consider proximity of location to sensitive receptors.</li> <li>• If significant effects are likely consider if alternative methods of construction are an option and what mitigation measures can be implemented to minimise impacts.</li> </ul> | Project team to:<br>During options selection, determine which activities (e.g. piling, rock breaking, traffic) have potential to result in increases in noise levels on and how measures can be implemented to ensure no significant effects on nearby sensitive receptors. If there is potential for significant effects, consider alternative options. Design team and noise specialist to discuss options. |
| Cultural heritage features                               | <ul style="list-style-type: none"> <li>• Determine which options have potential to result in construction activities that would lead to vibration impacts.</li> <li>• Determine proximity of construction activities to cultural heritage features.</li> </ul>  | Project team to:<br>During options selection, determine which activities (e.g. piling, rock breaking, traffic) have potential to result in increases in vibration levels and discuss with the project archaeology team.   |

## 12 MATERIAL ASSETS

Material assets can be defined as economic assets of natural and human origin, or cultural assets of a physical and social type.

The EPA 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022) states that '*material assets can now be taken to mean built services and infrastructure*' and lists '*built services, roads and traffic, and waste management*' as topics under which environmental factors could be considered in an EIAR.

This section identifies the constraints in relation to transport infrastructure, utilities and waste. It identifies the existing material assets and also aims to ascertain any key proposals for future development within the Proposed Scheme Area i.e. new roads, water mains etc that may pose a constraint to works associated with the flood relief scheme in the future.

### 12.1 Policy objectives

#### 12.1.1 Transport

The following policies relating to traffic and transport in the Athy LAP are important for consideration in the development of options for the Proposed Scheme:

**Policy MT1 – Walking, Connectivity and Cycling** - It is the policy of the Council to promote enhanced connectivity for pedestrians and cyclists within Athy in order to improve access to the town centre, local schools, residential areas, recreational facilities, public transport services and other amenities.

**Policy MT3 – Public Transport** - It is the policy of the Council to promote the sustainable development of Athy by supporting and guiding the relevant national agencies in their remit to deliver improvements to the public transport network and to public transport services.

**Policy MT4 – Road and Street Network** - It is the policy of the Council to maintain, improve and extend the local road network in and around Athy to ensure a high standard of connectivity and safety for all road users.

As part of the Athy Local Area Plan 2021-2027, an Area Based Transport Assessment (ABTA) was conducted. This assessment analysed the existing and proposed transport infrastructure / services within Athy. This assessment identifies the constraints within the town. There is a forecasted increase in population within Athy and this assessment suggests interventions required to accommodate this anticipated growth. The objectives of this assessment aim to provide a series of options and measures to enhance the transport network within Athy. This assessment is underpinned by policy objectives within the LAP. A strong emphasis is placed on active and sustainable modes of transport. It will be important that the Proposed Scheme has regard to the options and measures to improve the transport network of the town proposed in the ABTA.

#### 12.1.2 Utilities

The following policy relating to utilities in the Athy LAP is important for consideration in the development of options for the Proposed Scheme:

**Policy I1 – Water Supply and Wastewater**

I1 It is the policy of the Council to work in conjunction with Irish Water to protect existing water and wastewater infrastructure in Athy, to maximise the potential of existing capacity and to facilitate the timely delivery of new water services infrastructure to facilitate future growth.

**Policy I2 – Surface Water and Groundwater** - It is the policy of the Council to maintain and enhance the existing surface water drainage systems in Athy and to protect surface and ground water quality in accordance with the Water Framework Directive.

### 12.1.3 Waste

The following policy has been identified as being relevant to flood relief schemes in the Kildare County Development Plan 2023-2029:

**IN P6** Implement European Union, National and Regional waste related environmental policy, legislation, guidance, and codes of practice, in order to support the transition from a waste management economy towards a circular economy.

The following relevant policy is included in the Athy LAP:

**Policy I5 – Pollution and Environmental Services** - It is the policy of the Council to protect environmental quality in Athy through the implementation of European, national and regional policy and legislation relating to air quality, greenhouse gases, climate change, light pollution, noise pollution and waste management.

## 12.2 Desktop Study

The key sources (i.e. data and reports) used to inform the constraints study for Material Assets are summarised in **Table 12-1** below.

**Table 12-1: Summary of Key Material Assets Desktop Sources.**

| Title                                     | Source   | Year        | Author                  |
|---|--|-------------|-------------------------|
| Athy Local Area Plan 2021-2027            | KCC  | 2021        | KCC                     |
| Kildare County Development Plan 2023-2029 | KCC  | 2023        | KCC                     |
| Utility providers                         | Virgin Media<br>Uisce Eireann<br>Eirgrid<br>ESB<br>GNI | 2024        | N/A                     |
| OSI                                       | Ordnance Survey Ireland                                | 2024        | Ordnance Survey Ireland |
| Google Earth Imagery                      | Google Earth   | 1984 – 2024 | Google LLC              |

## 12.3 Baseline Environment

### 12.3.1 Transport

The dominant mode of transport in the down is the use of private vehicles. It is expected that the Athy Distributor Road will remove the traffic through the town by 40-50% thus allowing for alternative modes of traffic. The Barrow Blueway provides high-quality off-road pedestrian and cycling route through the heart of Athy.

The Scheme Area has a high diversity of modes of transport types that traverses through the Scheme Area including the following:

- R147 runs in a north – south direction to the east of the River Barrow.
- Several link roads are present across the Scheme Area.
  - L4015 crosses through the centre of the Scheme Area moving in an east – west direction.
  - L4007 travels in a south west – north east direction.

Irish Rail line runs through the centre of the Scheme Area in a south-north direction and has an ancillary train station in the centre of the Scheme Area.

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It was noted in the Athy Local Area Plan 2021-2027 that there are several deficiencies in Athy Towns' public transport. This is the case as there are bus connections to, hinterlands, urban towns and cities, however, these routes are irregular in frequency.

### 12.3.2 Utilities

The following utilities have been noted within the Scheme Area as shown in figure:

- Uisce Eireann water supply and foul drainage;
- GNI gas network;
- Eir infrastructure throughout the Scheme Area;
- ESB infrastructure present across the Scheme Area including the following:
  - Primarily Medium Voltage Overhead Lines
  - Low Voltage Overhead Lines
  - Medium / Low Voltage Underground Cables

Virgin Media infrastructure is located primarily along the periphery of the Town Centre in residential areas.

### 12.3.3 Waste

The Athy Civic Amenity Centre is an EPA Licensed facility. No other licensed facility is located within the Scheme area.

#### 12.3.3.1 Waste Action Plan for a Circular Economy

The Department of the Environment, Climate and Communications published the 'Waste Action Plan for a Circular Economy' in September 2020. This plan sets out actions which are relevant to waste generation from the construction of projects including flood relief schemes. These include the following:

Shift the focus away from waste disposal and treatment to ensure that materials and products remain in productive use for longer;

Plan for construction and demolition waste management at the earliest possible stage in a construction and demolition project, ideally at concept stage.

Ensure that measures support sustainable economic models (for example by supporting the use of recycled over virgin materials).

In August 2024 the EPA published National By-Product Criteria for greenfield soil and stone. These criteria allow for the classification of greenfield soil and stone as a by-product, meaning the material does not become waste. This is in line with the requirements for consideration of a circular economy and allows for the soil and stone materials from one site to potentially be reused for landscaping, reprofiling of land and other similar uses.



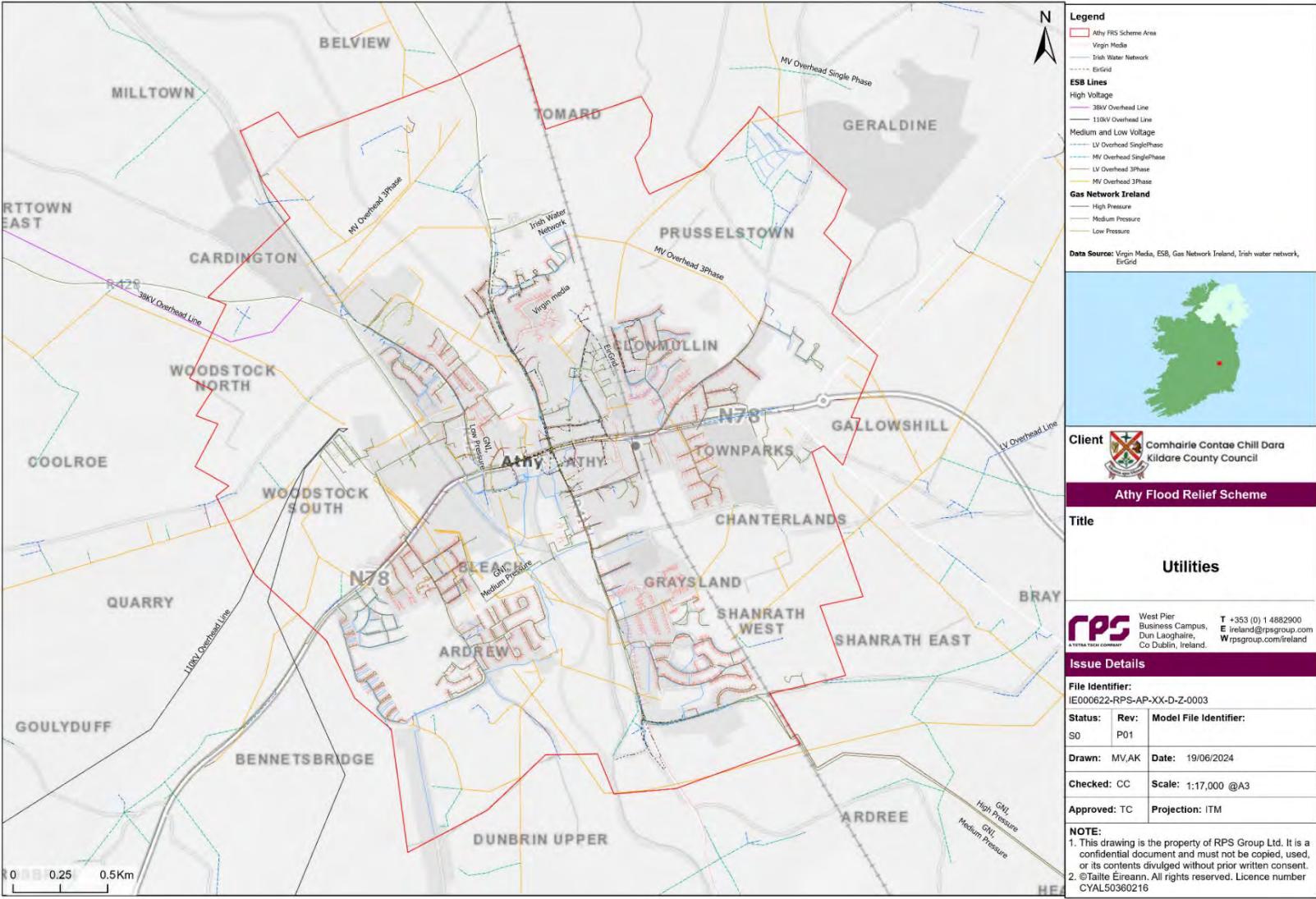


Figure 12-1 Utilities in the Scheme Area

## 12.4 Constraints

**Table 12-2** presents the material assets constraints and recommends how the constraint can be addressed.

**Table 12-2: Material Assets Constraints**

| What is the Constraint? | How should the Constraint be addressed   | Recommendations–<br>Avoid/Measures/Further survey or study  |
|-------------------------|--|---|
| Transport networks      | This constraint needs to be addressed by considering the additional traffic volumes generated during construction for the various options of the Proposed Scheme.  | Project team to: <ul style="list-style-type: none"> <li>During options selection, determine which activities result in higher traffic volumes such as embankments. Consider haul routes and areas for storage of materials.</li> <li>Consider how the options might impact on the ABTA, which contains a series of proposals to provide an integrated walking network including Integrating the Barrow Blueway into the pedestrian infrastructure.</li> <li>Consultation with key stakeholders such as KCC, TII in relation to any effects on the existing and proposed road infrastructure in the Scheme Area</li> </ul> |
| Disruption to utilities | This constraint needs to be addressed by considering the potential conflicts with utilities during the construction of the Proposed Scheme including the construction methodologies required to comply with service provider specifications. | Project team to: <ul style="list-style-type: none"> <li>Early discussions and consultations with utility providers regarding options and utility conflicts.</li> </ul>  |
| Waste generation        | This constraint needs to be addressed by considering the nature and volumes of waste that will be generated and which may be suitable for reuse and recycling from each of the options.  | Project team to: <ul style="list-style-type: none"> <li>Embed sustainability into the design of the Project including considering what options will most meet the objectives of the Waste Action Plan for a Circular Economy.</li> <li>Consider options for reuse of materials that may arise during the construction of the Proposed Scheme (and consideration of Regulation 27 of the European Communities (Waste Directive) Regulations 2011, as amended regarding byproducts).</li> </ul>   |

## 13 CULTURAL HERITAGE

### 13.1 Introduction

UNESCO define the term 'Cultural Heritage' as encompassing several aspects of tangible assets (*immovable*: archaeological sites and monuments, architectural heritage buildings; *movable*: artefacts; and *underwater*: shipwrecks and ruins) and intangible assets (e.g. folklore, oral tradition and language). Broadly, 'Cultural Heritage' includes the designated and non-designated heritage categories of (i) archaeology (known and unknown), (ii) architectural (built) heritage and (iii) history and folklore.

This section presents the cultural heritage constraints within the Athy Flood Relief scheme area.

### 13.1 Policy Objectives

#### 13.1.1 Kildare County Development Plan 2023-2029

The following objectives have been identified as being relevant to flood relief schemes:

**AH P1** *Recognise the value and opportunity of Kildare's unique heritage resource and to manage, conserve, promote and protect it, for present and future generations.*

**AH P5** *Secure the identification, protection and conservation of historic items and features of interest throughout the county including street furniture, surface finishes, roadside installations, items of industrial heritage, riverine heritage, and other stand-alone features of interest (items not listed on the RMP or RPS).*

**AH P6** *Protect, conserve and manage the archaeological and architectural heritage of the county and to encourage sensitive sustainable development in order to ensure its survival, protection and maintenance for future generations.*

**AH P8** *Preserve and protect the historic gardens and designed landscapes identified in the National Inventory of Architectural Heritage Survey of Historic Gardens and Designed Landscapes.*

#### 13.1.2 Athy Local Area Plan 2021-2027

The following objectives relating to Cultural Heritage in the Athy LAP are important for consideration in the development of options for the Proposed Scheme:

##### **Policy BH1 – Protected Structures**

**BH1** It is the policy of the Council to preserve and enhance the buildings identified on the Record of Protected Structures and to carefully consider any proposals for development that would affect the special value of such structures, including their historic curtilage, both directly and indirectly.

##### **Policy BH2 – Architectural Conservation Area**

**BH2** It is the policy of the Council to protect the character of the Architectural Conservation Area (ACA) and to carefully consider any proposals for development that would affect the special value of the ACA, while providing guidance through the publication of a Statement of Character to support property owners located within the ACA.

##### **Policy BH3 – Archaeological Heritage**

**BH3** It is the policy of the Council to safeguard the archaeological heritage located within the boundary of the Local Area Plan and avoid negative impacts on sites, monuments, features or objects of significant historical or archaeological interest.

## 13.2 Desktop Study

This study has been compiled in accordance with the document Archaeology and Flood Relief Schemes: Guidelines published (2023) by the National Monuments Service of the Department of Housing, Local Government and Heritage, and is based on a desk study analysis.

The objective of the constraints study is to identify all known archaeological monuments, protected (architectural) structures and other features of cultural heritage significance within the defined scheme area including the legal status, if any, of these features. Ultimately this shall serve to inform the Design Team of all relevant heritage constraints, including sites vulnerable to impact.

The desktop study sought to identify all recorded archaeological monuments, architectural heritage structures, surveyed gardens/demesnes and significant cultural heritage features within the Athy Flood Relief scheme area, and the legal status of same is presented below. An archaeological and historical overview of the scheme area is provided, along with discussion of key significant constraints and identifiable areas of heritage note. The collated information shall provide a cursory insight into the historical development of the scheme area over time and shall assist in an overall evaluation of potential presence of hitherto unrecorded cultural heritage sites.

The Record of Monuments and Places (RMP) for County Kildare, published by the Archaeological Survey of Ireland, was the principal sources consulted for identifying known archaeological sites. The Record of Protected Structures (RPS) and the National Inventory of Architectural Heritage (NIAH) for County Kildare were also consulted to assess the designated architectural heritage resource within the scheme area.

In addition, the following sources were consulted as part of the desktop study:

- *Athy Conservation Management Interpretation Plan (2016)*
- *National Museum of Ireland (NMI) Findspots (2010)*: this GIS dataset (in progress) provided via [www.heritagemaps.ie](http://www.heritagemaps.ie) records the discovery locations and other recorded information on Irish archaeological objects, including those within the museum's collections.
- *Historical publications and cartographic sources*: a cursory review of various published and unpublished sources and historical maps were undertaken.
- *Place names Database of Ireland*: this online database ([www.logainm.ie](http://www.logainm.ie)) provides a comprehensive management system for data, archival records and place names research conducted by the State. A review of townlands pertaining to the scheme area was undertaken.
- *Documentary sources*: select published reference material specific to the heritage of the Athy Flood Relief scheme area was reviewed.
- *National Monuments Service Excavation Gazetteer*: a review of the known archaeological excavations that took place within the study area, and are included in the online resource [www.excavations.ie](http://www.excavations.ie), was carried out, with the objective of identifying any relevant archaeological works that have been conducted within the study area.
- *Kildare County Development Plan 2023-2029*: a review of the policies and objectives of Kildare County Council, in relation to archaeological, architectural, and cultural heritage, as outlined in the Kildare County Development Plan 2023-2029, was undertaken. The Kildare County Development Plan 2023-2029 lists the Record of Protected Structures (RPS) for Athy. The RPS entries are afforded legal protection under the Planning and Development Act 2000.
- *Athy Local Area Plan 2021-2027*: a review of the Athy Local Area Plan 2021-2027 including the Athy Architectural Conservation Area Statement of Character, was completed. The Athy Local Area Plan 2021-2027 includes an amended Athy Architectural Conservation Area (2021). This amended Architectural Conservation Area was consulted as part of this Constraints Study.
- *County Kildare Heritage Plan 2019-2025*: a review of the policies and objectives of Kildare County Council, as outlined in the County Kildare Heritage Plan 2019-2025, was undertaken.
- *National Policy on Town Defences*: This document was published by the Department of Environment, Heritage and Local Government (2008). It outlines national policies relating to the protection and promotion of archaeological town defences. This document is accessible at the following link: (<https://www.archaeology.ie/sites/default/files/media/publications/national-policy-on-town-defences.pdf>).
- *Irish Walled Town Network*. Founded by the Heritage Council in 2005, the role of the Irish Walled Towns Network (IWTN) is to unite and co-ordinate the strategic efforts of local authorities and



community groups involved in the management, conservation and enhancement of historic walled towns in Ireland, both North and South. The IWTN contains information relating to Athy's medieval town defences (<https://irishwalledtownsnetwork.ie/town/athy/>).

- Historic Ordnance Survey maps of Athy, County Kildare. The 19<sup>th</sup> and 20<sup>th</sup> century Ordnance Survey maps of the scheme area and its environs were consulted, and compared, to assist in the identification of historic structures and landscape features.
- The National Monuments service - Wreck Inventory of Ireland was consulted. There are no known wrecks within the scheme area.

### 13.3 Legal Framework

The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 is in the process of being enacted and will comprehensively modernise and eventually replace the National Monuments Acts (1930-2014). The Minister of Housing, Local Government and Heritage has issued a Commencement Order (dated 31<sup>st</sup> May 2024, Statutory Instrument no. 252 of 2024) that outlines specific measures have come into force, under the Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023. The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 will streamline and simplify existing systems and processes and provides for the State to ratify some key international conventions in the area of heritage protection, should the Government decide to do so. There are also proposals for innovative measures, such as the automatic legal protection for finds of archaeological sites, a system of civil enforcement to be used as an alternative to, or to supplement criminal proceedings, and an appeal process for license applications.

There are a number of mechanisms under the *National Monument Act 1930* (as amended), the *Heritage Act 1995* and relevant provisions of the *National Cultural Institutions Act 1997*, that are applied to secure the protection of archaeological remains, which are held to include all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes.

The *National Monuments Act 1930* (as amended) secures designation of sites of national significance as National Monuments, enters archaeological sites onto the Register of Historic Monuments (RHM) and the Sites and Monuments Record (SMR); and includes sites in the Record of Monuments and Places (RMP). All RMP sites receive statutory protection under the Act. The Act also allows for the placing of Preservation Orders and Temporary Preservation Orders on endangered sites, which secures designation protection as that for National Monuments. There are 37 no. RMPs located within the Athy Flood Relief Scheme area.

The National Monuments Act 1930 (as amended) makes provision for underwater archaeological objects, including that a person shall not dive on, damage, or generally interfere with, any wreck or archaeological object, except in accordance with a licence issued by the Minister of the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media under the Act. The Athy Flood Relief Scheme Area includes a section of the Barrow river, and several tributaries, however, there are no known legally protected wrecks or underwater archaeology assets within the Scheme area.

Protection of the architectural heritage in Ireland is provided for through a range of legal instruments that include the *Heritage Act 1995*, the *Architectural Heritage (National Inventory) and National Monuments (Misc. Provisions) Act 1999*, and the *Planning and Development Act 2000*. Under the *Planning and Development Act 2000* all Planning Authorities are obliged to keep a 'Record of Protected Structures' (RPS) of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. The relevant development plan pertaining to the scheme area at the time of writing is the *Kildare County Development Plan 2023-2029*. There are 149 RPS entries within the Scheme area of the Athy Flood Relief Scheme.

The National Inventory of Architectural Heritage (NIAH) was established to record architectural heritage structures within the State and to advise local authorities in relation to structures of architectural heritage significance within their administrative areas. There are 142 NIAH entries within the study area of the Athy Flood Relief Scheme.

In December 2015 Ireland ratified the 2003 UNESCO *Convention for the Safeguarding of the Intangible Cultural Heritage*. Ireland's obligations under the 2003 Convention include establishing a *National Inventory for Intangible Cultural Heritage* to protect, promote and celebrate Irish living cultural heritage practices, customs, crafts and traditions. There are no cultural heritage assets that are listed in the *National Inventory for Intangible Cultural Heritage* within the study area.

## 13.4 Baseline Environment

The rich and varied cultural heritage of Athy spans several thousand years of human activity, commencing in prehistory, and continuing to the modern age. **Table 13-1** sets out the key timelines for Cultural and Archaeological Heritage within the Scheme Area. For further information, please see **Appendix D**.

**Table 13-1: Key Timelines for Cultural and Archaeological Heritage within the Scheme Area**

| Timelines     | Period         | Location                             | Significance  | Protected cultural sites of interest (RMP)  |
|---------------|----------------|--------------------------------------|---|---|
| 8000- 4000BC  | Mesolithic     | Athy, at fording point on the Barrow | Hunter gatherer society   | N/A   |
| 8000- 4000BC  | Mesolithic     | Rheban (4km north of Athy)           | Appears in Ptolemy's map of Ireland from 2 <sup>nd</sup> Century  | N/A   |
| 8000- 4000BC  | Mesolithic     | Ardree /Ardreigh (south of Athy)     | Mesolithic stone tools found in excavation  | N/A   |
| 4000- 2200BC  | Neolithic      | Athy                                 | 22 Axe heads recovered during Barrow Drainage Scheme  | N/A   |
| 4000- 2200BC  | Neolithic      | Ardree                               | Several stone lithic tools  | Mound site- Grangemellon (RMP KD037-009)- possibly dates to neolithic   |
| 2200- 600BC   | Bronze Age     | Ardree                               | Burial of cremated man (aged 35-45)   | Barrow (unclassified) (RMP (No KD037-001) (from aerial photographs)   |
| 2200- 600BC   | Bronze Age     | Woodstock North                      | N/A   | Two ring ditches (RMP KD035-067 and RMP KD035-068) (from aerial photographs)  |
| 2200- 600BC   | Bronze Age     | Barrow river                         | <ul style="list-style-type: none"> <li>Recovered during Barrow Drainage Scheme:</li> <li>One Bronze Axehead</li> <li>Three Bronze Looped Spearheads</li> <li>One Bronze Socketed Dagger</li> <li>Two Bronze Swords</li> </ul>   | N/A   |
| 600BC – 400AD | Iron Age       | Ardree                               | <ul style="list-style-type: none"> <li>6<sup>th</sup> Century church and graveyard (Early Medieval)</li> <li>150 burials that date from 6<sup>th</sup> to 9<sup>th</sup> century</li> </ul>   | <ul style="list-style-type: none"> <li>N/A</li> </ul>   |
| 400- 1100AD   | Early Medieval | Athy                                 | <ul style="list-style-type: none"> <li>Situated in the kingdom of Leinster</li> <li>At intersection of two territories; west (Uí Buide and Uí Crimthain Áin families) and east (Uí Muiredaig)</li> <li>Ringfort/ rath (enclosure): most important surviving domestic settlement type</li> </ul> | <ul style="list-style-type: none"> <li>Enclosure RMPs within Athy FRS study area:</li> <li>Prusselstown (RMP KD035-118, KD035-017001, KD035-017003)</li> <li>Ardrew (RMP KD035-031)</li> <li>Woodstock South (RMP KD035-024)</li> <li>Woodstock North (RMP KD035-066, KD035-068)</li> <li>Cardington Demesne (RMP KD035-016)</li> </ul> |

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| Timelines    | Period       | Location | Significance   | Protected cultural sites of interest (RMP)  |
|--------------|--------------|----------|--|---|
| 1100- 1550AD | Medieval     | Athy     | <ul style="list-style-type: none"> <li>1175: area of Athy granted to Robert de St. Michael</li> <li>1181: Anglo-Norman settlement founded at Athy on either side of the river Barrow</li> <li>Town laid out in standard Anglo-Norman fashion</li> <li>Earliest reference to Athy in 1324 (Geoffrey de Hereford burgess of Athy)</li> <li>Inland port to supply settlements in Laois and Kildare</li> <li>The Fitzgerald Earls of Kildare had control over Athy in this period</li> <li>Athy attacked and burned in 1308 and 1374</li> <li>Bruce Invasion 1315</li> <li>Black Death 1348</li> <li>1417: Whites Castle built in response to threat of attack from Gaelic tribes</li> <li>1515: Henry VIII granted a charter of incorporation to Athy (weekly market and fortification of town)</li> <li>Suppression of the Dominican Priory in the 1530s</li> <li>Under the tudor plantations in 1550s, Athy was a vital supply line for the English settlers</li> </ul> | <ul style="list-style-type: none"> <li>Bridge (RMP KD035-022008) (constructed by Anglo-Normans, destroyed in 17<sup>th</sup> century, replaced by 18<sup>th</sup> century bridge)</li> <li>Stone castle (RMP KD035-022001) (location unknown)</li> <li>Church of St. Michael (RMP KD035-022014) (13<sup>th</sup> century)</li> <li>Woodstock Castle (RMP KD035-021) (13<sup>th</sup> century)</li> <li>Priory of St. Thomas and Hospital of St. John (Fratres Cruciferi; also known as Crutched Friars) Friars of the Holy Cross (RMP KD035-022006)</li> <li>Settlement of houses (RMP KD035-021004)</li> <li>Dominican monastery on east bank of river (RMP KD035-022004)</li> <li>Town defences documented in 16<sup>th</sup> century (RMP KD035-022002)</li> <li>Whites Castle (RMP KD025-022010)</li> </ul> |
| 1100- 1550AD | Medieval     | Ardree   | <ul style="list-style-type: none"> <li>Establishment of settlement by Thomas de Flanders or Milo de Stanton</li> </ul>   | N/A   |
| 1550- 1850   | Early Modern | Athy     | <ul style="list-style-type: none"> <li>1613: Athy declared a Borough</li> <li>Mid-17<sup>th</sup> century: Cromwellian Invasion</li> <li>1659: Census of Ireland recorded 273 households in Athy, estimated population of 1000-1500</li> <li>1756: detailed map of Athy by Jean Rocque showing similar street layout as today (e.g. layout of Emily Square, Leinster Street and Offaly Street)</li> <li>Late 18<sup>th</sup> century: construction of Cromaboo Bridge</li> <li>Late 18<sup>th</sup> century: construction of the Grand canal completed in Athy</li> <li>Late 18<sup>th</sup> century: Market town increased economic activity, industry, warehouses, brickfields...</li> <li>Constructions on mills and millraces</li> </ul>   | <ul style="list-style-type: none"> <li>Church associated with Dominican abbey (RMP KD035-022004) depicted on 1838 map, though abbey buildings not present</li> <li>The Hospital and Priory of St. John (RMP KD035-022006)</li> </ul>  |

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| Timelines                      | Period     | Location | Significance   | Protected cultural sites of interest (RMP) |
|--------------------------------|------------|----------|--|--|
|                                |            |          | <ul style="list-style-type: none"> <li>19<sup>th</sup> century: Population of Athy 4494 in 1837 and 4510 in 1871</li> <li>1838: Layout of town from first edition 6 inch to a mile OS map of Athy similar to that of today – buildings in same place as present houses, the town gaol, millrace etc</li> </ul> |  |
| Early 20 <sup>th</sup> Century | Modern day | Athy     | Early 20 <sup>th</sup> Century: 1 <sup>st</sup> edition 25 inch to a mile OS map greatly detailed depiction of the town (malshouses, warehouse, St. Dominic's R.C. Church and Conven. Great Southern and Western Railway Line station and rail bridge, Agricultural Grounds)                                   | N/A  |



### 13.4.1 Archaeological Heritage

There are 37 recorded RMP sites in the Athy Flood Relief Scheme area. Each of these known archaeological sites are afforded legal protection under the *National Monuments Act 1930* (as amended). The National Monuments Service of the Department of Housing, Local Government and Heritage will determine if any of the known and legally protected archaeological sites within the Scheme Area are National Monuments. The National Monuments Service will also determine if any proposed works in the vicinity of known and legally protected archaeological sites that are in local authority ownership, require Ministerial Consent approval issued by the Minister of State for Heritage and Electoral Reform.

The Scheme Area includes the conjectural route of the medieval town defences (RMP KD035-022002) of Athy. The National Policy of Town Defences states the following: 'The known and expected circuits of the defences (both upstanding and buried, whether of stone or embankment construction) and associated features of all town defences are to be considered a single national monument and treated as a unit for policy and management purposes. There should be a presumption in favour of preservation in-situ of archaeological remains and preservation of their character, setting and amenity.' (Department of Environment, Heritage and Local Government 2008, 6). Extant and conjectural routes of town defences that are in local authority ownership can be adjudged by the National Monuments Service to be National Monuments, under the *National Monuments Act 1930* (as amended). Any ground disturbance works that take place in the vicinity of the route of the Town Defences may require Ministerial Consent. The conjectural route of the medieval town defences of Athy is outlined in Athy Conservation Management Interpretation Plan (JANVS 2016), and also the Medieval Walled Towns of Kildare (Abarta Heritage 2023; available at the following link: [https://irishwalledtownsnetwork.ie/wp-content/uploads/2024/02/The-Medieval-Walled-Towns-of-Kildare\\_Booklet.pdf](https://irishwalledtownsnetwork.ie/wp-content/uploads/2024/02/The-Medieval-Walled-Towns-of-Kildare_Booklet.pdf) ).

**Table 13-2** below, lists the known archaeological heritage assets within the Scheme Area.

**Table 13-22: Recorded Archaeological RMP Sites Located within the Scheme Area.**

| RMP Ref.     | Townland           | Type                           | Easting (ITM) | Northing (ITM) |
|--------------|--------------------|--------------------------------|---------------|----------------|
| KD035-118    | Prusselstown       | Enclosure                      | 668922        | 695460         |
| KD035-017001 | Prusselstown       | Enclosure                      | 668838        | 695221         |
| KD035-017002 | Prusselstown       | Field System                   | 668898        | 695187         |
| KD035-017003 | Prusselstown       | Enclosure                      | 668783        | 695091         |
| KD035-022014 | Athy               | Church                         | 668764        | 694134         |
| KD035-022016 | Athy               | Graveslab                      | 668268        | 693920         |
| KD035-022021 | Athy               | Graveslab                      | 668766        | 694125         |
| KD035-022015 | Athy               | Graveyard                      | 668766        | 694125         |
| KD035-064    | Shanrath East      | Barrow-unclassified            | 669815        | 693398         |
| KD035-032002 | Ardree             | Church                         | 668755        | 692463         |
| KD035-032001 | Ardree Coneyburrow | Settlement deserted medieval   | 668732        | 692454         |
| KD035-032005 | Ardree             | Graveyard                      | 668755        | 692465         |
| KD035-101    | Ballybought        | Excavation miscellaneous       | 668246        | 692505         |
| KD035-031    | Ardrew             | Enclosure                      | 668206        | 693065         |
| KD035-049    | Bleach             | Burial                         | 668146        | 693295         |
| KD035-024    | Woodstock South    | Moated Site                    | 667000        | 693579         |
| KD035-023    | Woodstock South    | Enclosure                      | 666716        | 693855         |
| KD035-066    | Woodstock North    | Enclosure                      | 666510        | 694208         |
| KD035-068    | Woodstock North    | Ring-ditch                     | 666753        | 694742         |
| KD035-067    | Woodstock North    | Ring-ditch                     | 666748        | 694747         |
| KD035-016    | Cardington Demesne | Enclosure                      | 666966        | 695085         |
| KD035-021003 | Townparks          | House 17 <sup>th</sup> century | 667808        | 694535         |

## Environmental Constraints Report

| RMP Ref.     | Townland         | Type                              | Easting (ITM) | Northing (ITM) |
|--------------|------------------|-----------------------------------|---------------|----------------|
| KD035-021    | Townparks        | Castle: hall-house                | 667835        | 697508         |
| KD035-021001 | Townparks        | Bawn                              | 667838        | 694557         |
| KD035-021002 | Townparks        | Fish-pond                         | 667912        | 694468         |
| KD035-021004 | Townparks        | Settlement deserted – medieval    | 667965        | 697365         |
| KD035-022019 | Athy             | Architectural feature             | 668054        | 694022         |
| KD035-022020 | Athy             | Graveslab                         | 668035        | 694012         |
| KD035-022006 | Athy             | Religious House Fratres Cruciferi | 668036        | 694011         |
| KD035-022008 | Athy             | Bridge                            | 668153        | 693960         |
| KD035-022010 | Athy             | Castle tower-house                | 668178        | 693981         |
| KD035-022023 | Athy             | Memorial Stone                    | 668180        | 693976         |
| KD035-022002 | Athy             | Town Defences                     | 668242        | 693977         |
| KD035-022    | Athy / Townparks | Historic Town                     | 668242        | 693990         |
| KD035-022018 | Athy             | Crucifixion plaque                | 668266        | 693920         |
| KD035-022017 | Athy             | Cross-slab                        | 668267        | 693920         |
| KD035-022024 | Athy             | Armorial plaque                   | 668181        | 693944         |
| KD035-022004 | Athy             | Religious House Dominican Friars  | 668219        | 693807         |

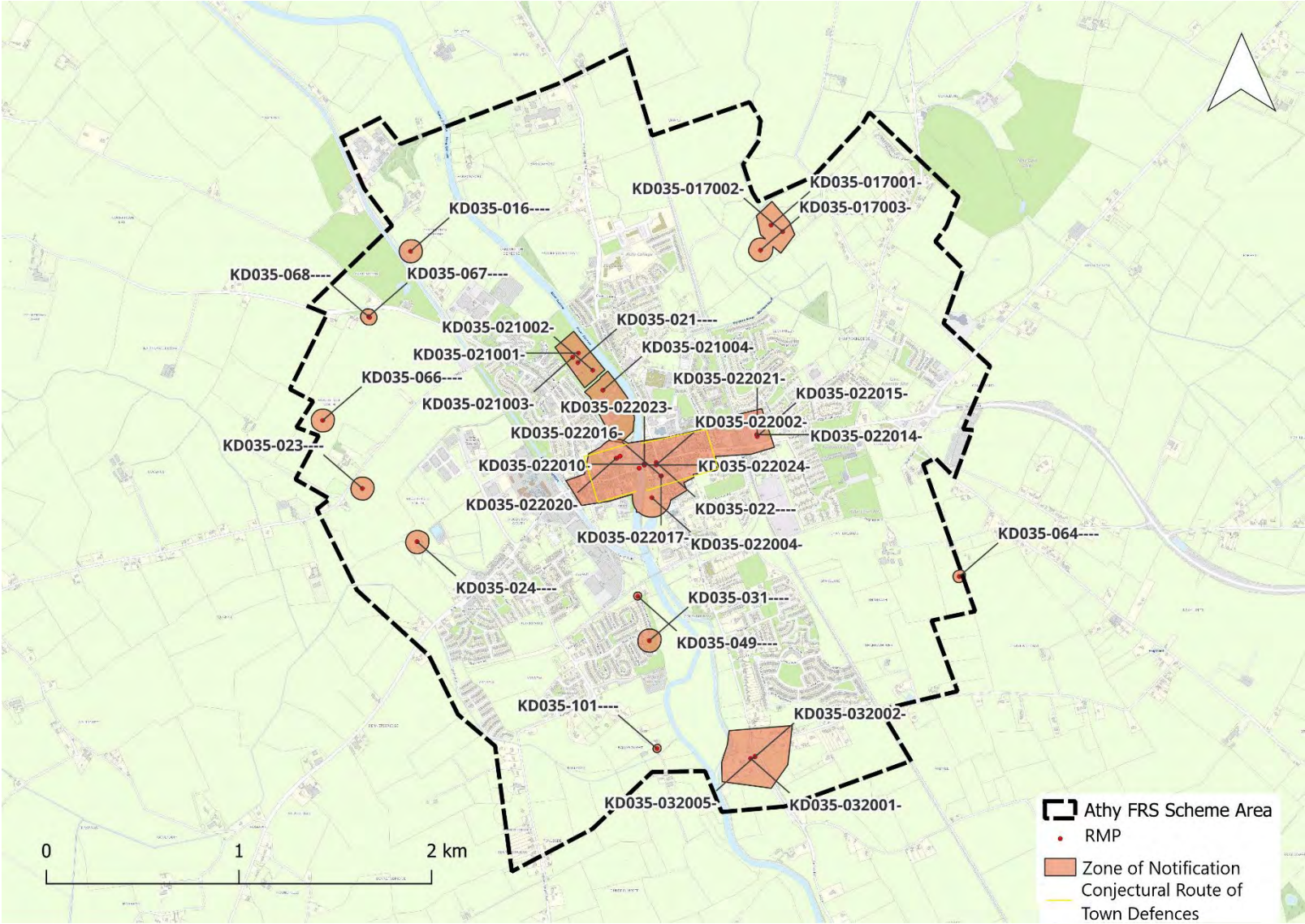


Figure 13-1: Known archaeological sites and zones of notification located within the Scheme Area

## Environmental Constraints Report

### 13.4.2 Architectural Heritage

There are 149 structures listed on the RPS of County Kildare within the Athy Flood Relief Scheme. **Table 13-3** provides a summary of all of the recorded architectural heritage sites identified within the Scheme Area and should be considered more carefully.

**Table 13-33: Recorded Architectural Heritage Sites Located within the Scheme Area**

| RPS Ref | NIAH Ref. | Townland        | Type                                 | Location  |
|---------|-----------|-----------------|--------------------------------------|---|
| AY002   | 11503008  | Tomard          | Bridge                               | Tomard  |
| AY005   | 11503016  | Athy            | St. Michaels Convent Graveyard       | Stanhope Place  |
| AY008   | 11504029  | Townparks       | Wall                                 |   |
| AY009   | 11504024  | Townparks       | Shamrock Lodge Gates                 | Geraldine Road  |
| AY010   | 11500020  | Townparks       | St. Vincents Hospital                | Woodstock Street  |
| AY011   | 11500002  | Cardington      | Canal Lock                           | Woodstock Street  |
| AY012   | 115000055 | Cardington      | Cardington Building                  | Woodstock Street  |
| AY013   | 11500015  | Townparks       | St Vincents Hospital                 | Woodstock Street  |
| AY014   | 11500019  | Townparks       | Town Wall                            | The route of the town walls includes masonry which adjoined the Barrow in Townparks. No longer visible at ground level. |
| AY015   | 11500039  | Woodstock North | St. Mary's Cemetery                  | Woodstock Street  |
| AY016   | 11500038  | Woodstock North | Lennons Canal Bridge                 | Woodstock Street  |
| AY017   | 11500056  | Townparks       | Grand Canal Bridge                   |   |
| AY018   | 11500034  | Townparks       | Woodstock Lodge                      |   |
| AY019   | 11505060  | Athy            | Duke St Building                     |   |
| AY020   | 11505040  | Athy            | Cromaboo Bridge                      | Situated on River Barrow  |
| AY021   | 11505039  | Athy            | The White Castle                     | Situated on east bank of River Barrow   |
| AY022   | 11505358  | Athy            | Emily Square Fountain                | Emily Square  |
| AY023   | 11505336  | Athy            | No 5 Emily Square Building           | Emily Square  |
| AY024   | 11505341  | Athy            | No 20 W.T Duthie                     | Emily Square  |
| AY025   | 11505342  | Athy            | No 31 Leinster St Building           | Emily Square  |
| AY026   | 11505331  | Athy            | Bank of Ireland Emily Square         | Emily Square  |
| AY027   | 11505330  | Athy            | O Briens Emily Square                | Emily Square  |
| AY030   | 11505300  | Athy            | Building on Stanhope Place           | Stanhope Place, facing River Barrow   |
| AY032   | 11505344  | Athy            | The Emigrant, Barrow Quay            | Barrow Quay, facing River Barrow  |
| AY033   | 11505311  | Athy            | Bapty Maher's Leinster St            | Leinster Street   |
| AY034   | 11505309  | Athy            | No 25 Leinster St                    | Leinster Street   |
| AY035   | 11505307  | Athy            | No 27 Leinster St                    | Leinster Street   |
| AY036   | 11505286  | Athy            | No 46 Leinster St                    | Leinster Street   |
| AY037   | 11505016  | Athy            | Community Centre                     |   |
| AY038   | 11505017  | Athy            | Carlton Hotel (St. Michaels Convent) | Stanhope Place  |
| AY040   | 11505019  | Athy            | Carlton Hotel (St. Michaels Convent) | Stanhope Place  |



## Environmental Constraints Report

| RPS Ref | NIAH Ref. | Townland    | Type  | Location                         |
|---------|-----------|-------------|---|----------------------------------|
| AY041   | 11505020  | Athy        | Carlton Hotel (St. Michaels Convent) Chapel | Stanhope Place                   |
| AY042   | 11505021  | Athy        | St Michaels RC Church                       | Stanhope Street                  |
| AY043   | 11505022  | Rathstewart | Bridge                                      | Kilberry Road                    |
| AY046   | 11505049  | Athy        | St John's Cemetery                          | St John's Lane                   |
| AY048   | 11505054  | Athy        | St John's Lane wall                         | St John's Lane                   |
| AY049   | 11505226  | Athy        | Front façade of No 9 McLaughlin's Bar       | Leinster Street                  |
| AY050   | 11505006  | Athy        | No 82 Leinster St                           | Leinster Street                  |
| AY051   | 11505258  | Athy        | No 69 Leinster St                           | Leinster Street                  |
| AY053   | 11505318  | Athy        | Meeting Lane Building                       | Meeting Lane                     |
| AY054   | 11505314  | Athy        | No 20 M.D Mullins Leinster St               | Leinster Street                  |
| AY055   | 155053131 | Athy        | No 21 Leinster St                           | Leinster Street                  |
| AY057   | 11505257  | Athy        | Post Box No 69 Leinster St                  | Leinster Street                  |
| AY058   | 11505260  | Athy        | No 67 Leinster St                           | Leinster Street                  |
| AY059   | 11505229  | Athy        | Front façade of No 6 Leinster St            | Leinster Street                  |
| AY060   | 11505230  | Athy        | Front façade of No 5 Leinster St            | Leinster Street                  |
| AY061   | 11505224  | Athy        | Front façade of No 11 Leinster St           | Leinster Street                  |
| AY062   | 11505223  | Athy        | No 12 Leinster St                           | Leinster Street                  |
| AY063   | 11505163  | Townparks   | Railway Station                             | Boherboy                         |
| AY064   | 11505164  | Townparks   | Post box Athy Railway Station               | Boherboy                         |
| AY065   | 11505168  | Townparks   | Water tower at Athy Railway Station         | Boherboy                         |
| AY066   | 11505170  | Townparks   | Bridge at Athy Railway Station              | Boherboy                         |
| AY067   | 11505172  | Townparks   | Water trough Leinster Street                | Leinster Street                  |
| AY068   | 11505001  | Townparks   | Railway Bridge                              | Boherboy                         |
| AY074   | 11505094  | Athy        | St Dominic RC Church                        | Convent Lane facing River Barrow |
| AY075   | 11505332  | Athy        | Athy Town Hall                              | Emily Square                     |
| AY077   | 11505116  | Athy        | Athy Court House                            | Emily Square                     |
| AY079   | 11505074  | Athy        | No 22 Duke St, Griffin Hawe                 | Emily Square                     |
| AY080   | 11505076  | Athy        | Griffin Hawe Duke St                        | Emily Square                     |
| AY081   | 11505063  | Athy        | Post Office Duke St                         | Emily Square                     |
| AY083   | 11505144  | Athy        | Janeville Cottage                           | Janeville                        |
| AY084   | 11505143  | Athy        | Casa Maria Janeville                        | Janeville                        |
| AY085   | 11505142  | Athy        | Offaly House Janeville                      | Janeville                        |
| AY086   | 11505136  | Athy        | No 8 Offaly St                              | Janeville                        |
| AY087   | 11505135  | Athy        | No 7 Offaly St                              | Janeville                        |
| AY088   | 11505134  | Athy        | No 6 Offaly St                              | Janeville                        |
| AY089   | 11505133  | Athy        | No 5 Offaly St                              | Janeville                        |

## Environmental Constraints Report

| RPS Ref | NIAH Ref. | Townland  | Type                                  | Location               |
|---------|-----------|-----------|---------------------------------------|------------------------|
| AY090   | 11505132  | Athy      | No 4 Offaly St (Front Façade)         | Janeville              |
| AY091   | 11505127  | Athy      | No 13 Emily Square (outbuilding)      | Emily Square           |
| AY094   | 11505119  | Athy      | No 13 Emily Square (front facade)     | Emily Square           |
| AY095   | 11505115  | Athy      | Barrow Quay                           | Facing River Barrow    |
| AY096   | 11505111  | Athy      | No 3 Duke St                          | Beside Cromaboo Bridge |
| AY097   | 11505108  | Athy      | No 5 Duke Street                      | Beside Cromaboo Bridge |
| AY099   | 11505096  | Athy      | No 1 Duke St Gazebo                   | Beside Cromaboo Bridge |
| AY100   | 11505081  | Athy      | No 16-17 Duke St                      | Duke Street            |
| AY101   | 11505083  | Athy      | No 14 Duke St                         | Duke Street            |
| AY102   | 11505073  | Athy      | No 23 Duke St                         | Duke Street            |
| AY103   | 11505072  | Athy      | No 24-25 Duke St (Perrys Supermarket) | Duke Street            |
| AY104   | 11505067  | Athy      | No 43 Duke St                         | Duke Street            |
| AY105   | 11505066  | Athy      | No 44 Duke St                         | Duke Street            |
| AY107   | 11505177  | Athy      | The Rectory Church Road               | Church Road            |
| AY108   | 11505176  | Athy      | The Rectory                           | Church Road            |
| AY109   | 11505175  | Athy      | Church Road building                  | Church Road            |
| AY110   | 11505150  | Athy      | Athy Lodge, Church Road               | Church Road            |
| AY111   | 11505146  | Athy      | Teach Iosa                            | Church Road            |
| AY112   | 11505145  | Athy      | St Michaels Church of Ireland         | Offaly Street          |
| AY113   | 11505179  | Athy      | Post Office box Offaly St             | Offaly Street          |
| AY115   | 11505147  | Athy      | Prospect House Carlow Road            | Carlow Road            |
| AY116   | 11505148  | Athy      | Prospect House Carlow Road            | Carlow Road            |
| AY120   | 11505162  | Athy      | St Annes B&B                          | Carlow Road            |
| AY122   | 11505339  | Athy      | No 3 Emily Square                     | Emily Square           |
| AY123   | 11505335  | Athy      | No 6 Emily Square                     | Emily Square           |
| AY124   | 11505337  | Athy      | The Immigrant Bar                     | Emily Square           |
| AY125   | 11506021  | Townparks | Presbyterian Church Dublin Road       | Dublin Road            |
| AY126   | 11506020  | Townparks | The Manse House                       | Dublin Road            |
| AY127   | 11506006  | Townparks | The Model Farm                        | Dublin Road            |
| AY128   | 11506007  | Townparks | Model Court, Geraldine Road           | Geraldine Road         |
| AY129   | 11506008  | Townparks | Model Court, Geraldine Road           | Geraldine Road         |
| AY130   | 11506009  | Townparks | Model Court, Geraldine Road           | Geraldine Road         |
| AY131   | 11506010  | Townparks | Model Court Youth Reach               | Dublin Road            |
| AY132   | 11506011  | Townparks | Model Court Montessori School         | Dublin Road            |
| AY133   | 11506012  | Townparks | The Model School Dublin Road          | Dublin Road            |
| AY135   | 11506019  | Townparks | Cemetery Boherboy                     | Boherboy               |

## Environmental Constraints Report

| RPS Ref | NIAH Ref. | Townland        | Type   | Location                    |
|---------|-----------|-----------------|--|-----------------------------|
| AY136   | 11501132  | Townparks       | No 89 Woodstock St                             | Woodstock                   |
| AY137   | 11501127  | Townparks       | Grand Canal Barrow Mooring Bollards            | Grand Canal Townparks       |
| AY138   | 11501126  | Townparks       | Grand Canal Barrow Dry Dock                    | Grand Canal Townparks       |
| AY139   | 11501110  | Townparks       | W Doyle Woodstock Street                       | Woodstock Street            |
| AY140   | 11501039  | Townparks       | Methodist Church Woodstock St                  | Woodstock Street            |
| AY141   | 11501038  | Townparks       | No 7 Woodstock St                              | Woodstock Street            |
| AY142   | 11501037  | Townparks       | No 8 Woodstock St                              | Woodstock Street            |
| AY143   | 11501036  | Townparks       | No 9 Woodstock St                              | Woodstock Street            |
| AY144   | 11501035  | Townparks       | No 10 Woodstock St                             | Woodstock Street            |
| AY145   | 11501028  | Townparks       | Woodstock St Post Box                          | Woodstock Street            |
| AY146   | 11505071  | Athy            | No 39 Duke St                                  | Duke Street                 |
| AY150   | 11501151  | Woodstock South | Grand Canal Barrow Navigation Mooring Bollards | Grand Canal Woodstock South |
| AY151   | 11501150  | Woodstock South | Minch Norton Building                          | William Street              |
| AY152   | 11501148  | Woodstock South | Canal Side                                     | Grand Canale                |
| AY153   | 11501118  | Townparks       | No 15 William St                               | William Street              |
| AY154   | 11501116  | Townparks       | Athy Lock-Crane William St                     | William Street              |
| AY155   | 11501115  | Townparks       | Athy Lock William St                           | William Street              |
| AY156   | 11501114  | Townparks       | Augustus Bridge William St                     | William Street              |
| AY157   | 11501105  | Townparks       | No 97 Woodstock St                             | Woodstock Street            |
| AY158   | 11501103  | Townparks       | No 98 Woodstock St                             | Woodstock Street            |
| AY159   | 11501102  | Townparks       | No 99 Woodstock St                             | Woodstock Street            |
| AY160   | 11501101  | Townparks       | No 100 Woodstock St                            | Woodstock Street            |
| AY165   | 11501079  | Townparks       | William St Post Box                            | Woodstock Street            |
| AY167   | 11501055  | Townparks       | No 27 Duke St                                  | Duke Street                 |
| AY168   | 11501054  | Townparks       | No 26 Duke St                                  | Duke Street                 |
| AY169   | 11501045  | Townparks       | No 1 Woodstock St                              | Woodstock Street            |
| AY170   | 11501044  | Townparks       | No 2 Woodstock St                              | Woodstock Street            |
| AY171   | 11507071  | Bleach          | Barrow Lock Grand Canal                        | Grand Canal, Bleach.        |
| AY172   | 11507058  | Bleach          | Convent Gates                                  |                             |
| AY173   | 11507057  | Athy            | Horse Bridge                                   | Bridge over River Barrow    |
| AY174   | 11507056  | Bleach          | Railway Bridge over Barrow                     | River Barrow, Bleach        |
| AY175   | 11507055  | Coneyburrow     | River Barrow Weir                              | River Barrow, Coneyburrow   |
| AY176   | 10507054  | Coneyburrow     | Dukes Lodge Gates                              | Carlow Road                 |
| AY177   | 11507046  | Coneyburrow     | Dukes Lodge                                    | Carlow Road                 |
| AY178   | 11507045  | Coneyburrow     | Dukes Lodge Gates / Railings                   | Carlow Road                 |
| AY179   | 11507003  | Coneyburrow     | Grayland Building                              | Carlow Road                 |
| AY180   | 11502053  | Blackparks      | Fortbarrington Road Post Box                   | Fortbarrington Road         |

## Environmental Constraints Report

| RPS Ref | NIAH Ref. | Townland        | Type   | Location                        |
|---------|-----------|-----------------|--|---------------------------------|
| AY182   | -         | Bleach          | Chimney Stack Tegral Building, William St                  | William Street                  |
| AY183   | 11502004  | Bleach          | Tegral Building William St.                                | William Street                  |
| AY184   | -         | Townparks       | Bascule Bridge StradballyGrand Canal, Stradbally Road Road |                                 |
| AY186   | -         | Ardree          | Lift Bridge at Ardree                                      | Grand Canal, Ardree             |
| AY188   | -         | Woodstock North | Woodstock Castle   | West of River Barrow            |
| AY189   | -         | Townparks       | Wall of Maltings Building Nelson Street Nelson St          |                                 |
| AY190   | -         | Athy            | Duke St Lamp Post west end of Cromaboo Bridge              | Cromaboo Bridge on River Barrow |
| AY191   | -         | Ardree          | Mill Cottage   | Ardree                          |
| AY192   | -         | Athy            | No 20 Emily Square   | Emily Square                    |
| AY193   | -         | Athy            | No 18 Emily Square   | Emily Square                    |
| AY195   | -         | Townparks       | No 18 William St   | William Street                  |
| AY197   | -         | Ardrew          | Tonlegee House   | Ardrew                          |



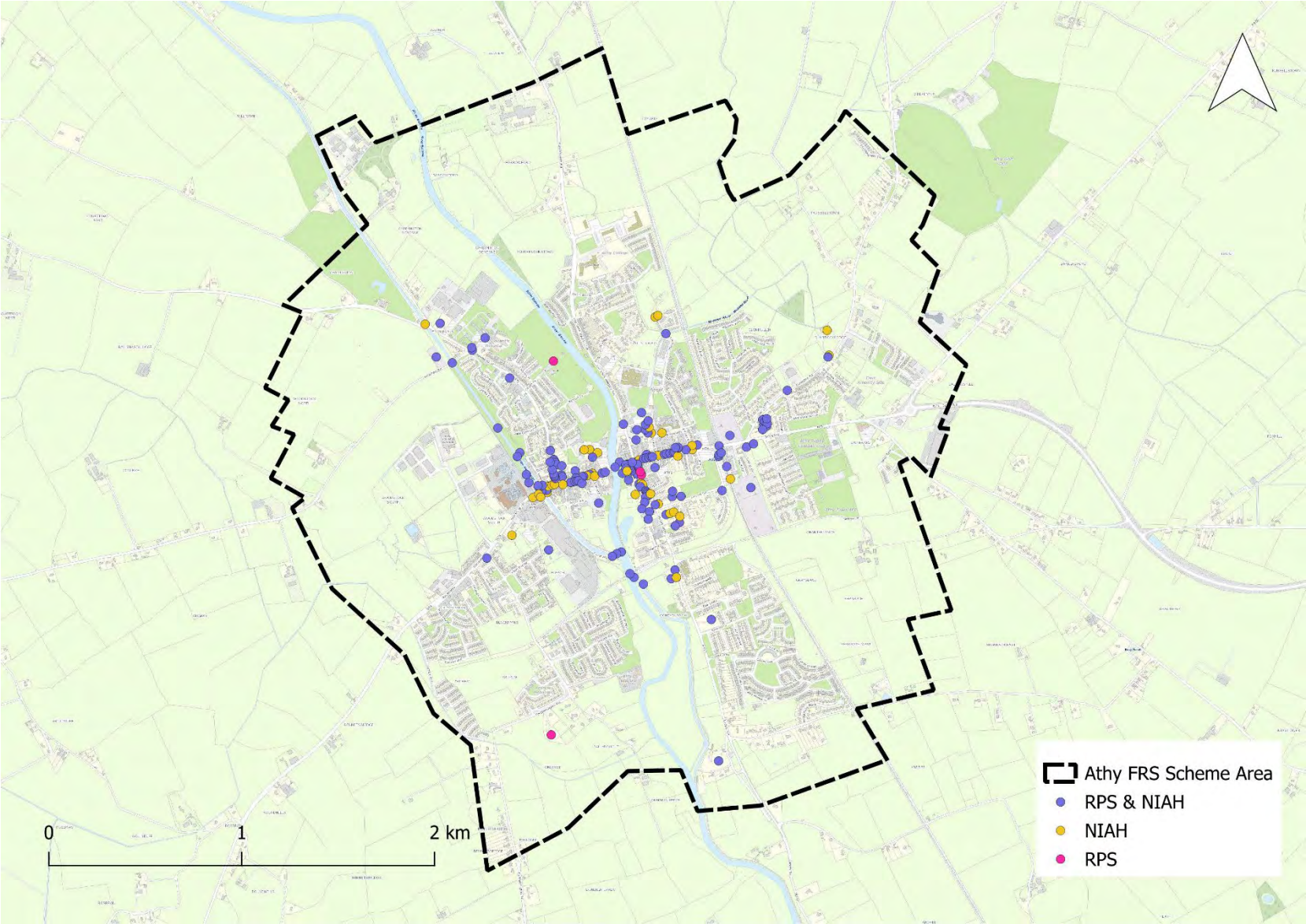


Figure 13-2: Known architectural heritage sites within the Scheme Area



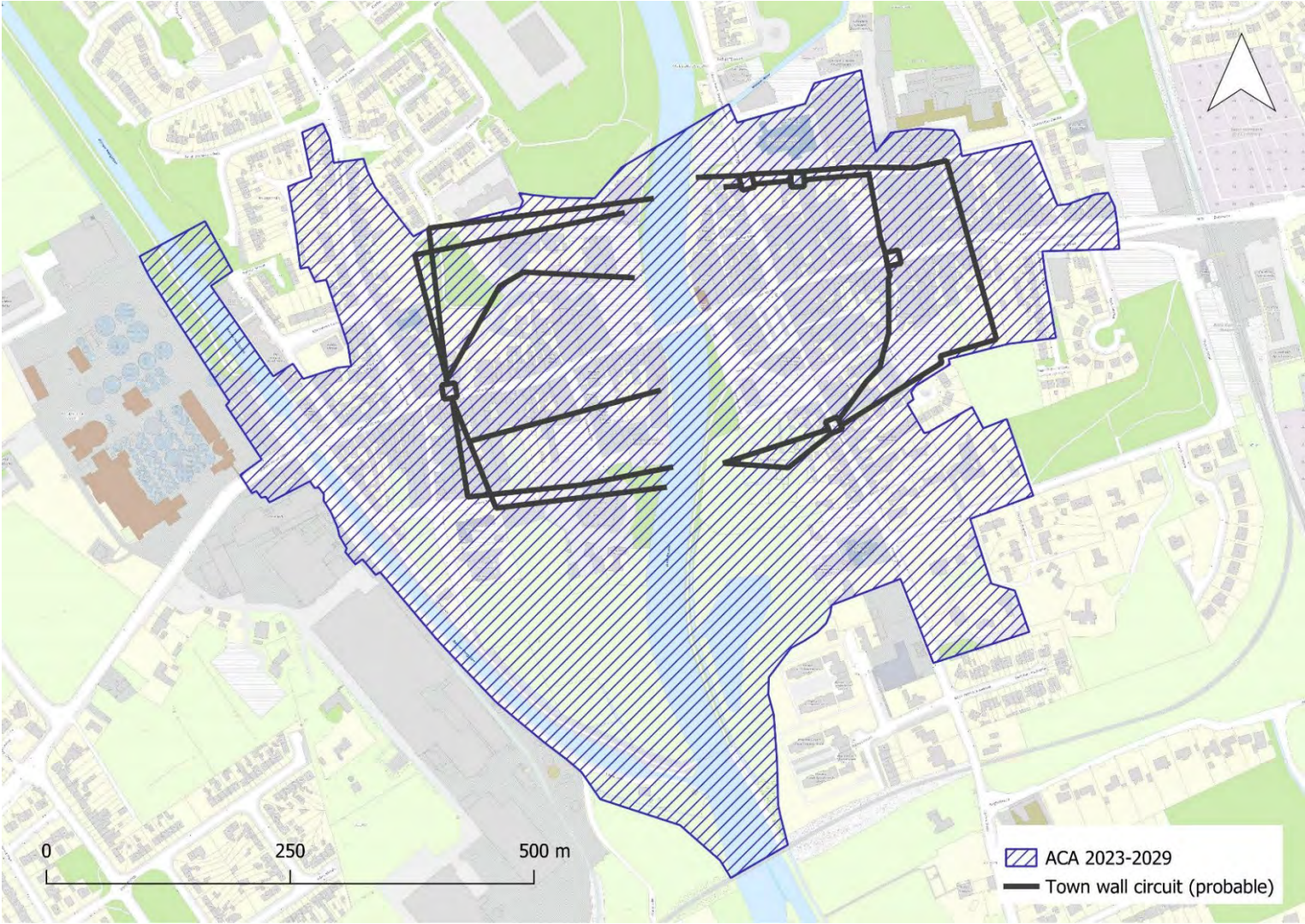


Figure 13-3: Town Walls within the Scheme Area

### 13.4.3 History & Folklore

The placename Athy is uniquely associated with the River Barrow. Athy as a placename is believed to originate in the Iron Age. According to surviving medieval texts the name derives from a second century prince named Ae (who was the son of Dearthabail and was slain in a battle between the men of Munster and the men of Leinster (Bradley et al. 1986a vol. 1, 35). The battle was fought at a Ford on the river Barrow. Following Ae's death, the ford became known as Ath (meaning ford) Ae, translated as the Ford of Ae. This name was later anglicised into Athy. As such Athy and the Barrow are tied through history and folklore.

Townlands are the oldest surviving civic land division in Ireland. Many townlands are believed to be over 1,000 years old, and originate in the early medieval period. Earthen banks, dry or wet ditches, hedgerows, stone banks, and streams (or an amalgamation of several of these elements), can form townland boundaries. Townland boundaries can indicate of long-forgotten early medieval land holdings. There are 20 townlands within the Athy Flood Relief Scheme Area. These are as follows: Paudeenourstown, Rathstewart, Tomard, Prusselstown, Clonmullin, Chanterland, Townparks, Greysland, Shanrath West, Coneyburrow, Ardree, Ballybought, Tonlegee, Ardrew, Blackparks, Woodstock South, Bleach, Woodstock North, Cardington, Cardington Demesne, Barrowford. Several townland boundaries are situated within the scheme area.

## 13.5 Constraints

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 scheme area including the within the river and stream courses, and their banks.

The scheme area contains:

- 37 no. recorded archaeological RMP sites and/or respective associated Zones of Notification;
- 149 no. RPS recorded architectural heritage structures;
- 142 no. recorded NIAHs;
- 1 no ACAs;

The presence of the river networks would have been particularly attractive to past settlers. This, together with the overall low-lying topography, as well as the evidence-base per recorded RMPs suggest that the scheme area is generally deemed to be of good archaeological potential to retain presently unrecorded archaeological find and features. It is also noted that the watercourses located within the scheme area also retain archaeological potential. Should any flood relief works be required as part of the project, licenced land-based or underwater archaeological surveys may be required to assess the potential for unrecorded land-based or underwater finds/features therein.

Any alternatives/option design considered for the Athy 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, geophysical surveys 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.

Many sites, with little or no remaining surface expression may still retain well-preserved finds and features below existing ground level. Specific mitigation requirements to address potential 'unknowns' can only be identified as items for review once the location of works 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.



## Environmental Constraints Report

Table 13-4: Cultural Heritage Constraints.

| What is the constraint?  | How should the constraint be addressed during optioneering:   | Recommendations   |
|--|---|---|
| 37 no. known and legally protected archaeological RMP sites and/or respective associated zones of archaeological Constraints | <ul style="list-style-type: none"> <li>Cognisance should be taken of all recorded archaeological monuments and their zones of archaeological constraints and the Athy LAP, with an assumption in favour of avoidance of any impacts, allowing preservation in situ of known archaeological resources</li> <li>Should this not be possible then archaeological investigations are recommended for cultural heritage that would be impacted by the Proposed Scheme.</li> <li>Where any works associated with the Proposed Scheme will potentially interact with RMP sites and their zones of archaeological constraints, site specific Archaeological Impact Assessments (AIA) should be completed.</li> <li>Several zones of notification were identified within the Scheme Area, with a zone of notification located along the centre of the Scheme Area through the River Barrow.</li> </ul> | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Identify RMP sites and associated zones of archaeological constraints during options selection using GIS.</li> <li>Project archaeologist input into options selection and MCA</li> <li>Consult with the NMS (including Built Heritage section) throughout the entirety of the development and design of the Proposed Scheme and construction phases to obtain feedback and update the constraints if required.</li> <li>Where further investigations are required such as underwater / riverbank / wade surveys, archaeological test excavation, geophysical surveys, consider timeline for licensing and completion of works in the project programme.</li> <li>Complete archaeological impact assessment and field walkover inspection to ensure that known and extant cultural heritage sites and features are fully identified, and any potential likely impacts are measured.</li> <li>Consultation with the OPW Project Archaeologist to accurately identify potential impacts and suitable mitigation measures.</li> <li>Careful consideration to avoid the zone of notifications as much as practicable will need to be provided. Under Section 12(c) (National Monuments Act), a notification submitted two months in advance of works will need to be provided for works taking place within a zone of notification. This will cause disruptions to the Proposed Scheme during the Construction Phase if these areas are not avoided.</li> </ul> |
| 149 no. RPS recorded architectural heritage structures   | <ul style="list-style-type: none"> <li>The location of each RPS entry (including the curtilage of buildings) is protected by law. The locations of any proposed new works should consider the standing and historic extent of any RPS entries. Avoidance of direct impacts on any RPS entries is paramount. Visual impacts of proposed new works on RPS entries must be considered.</li> <li>It should be noted that any works that will significantly affect the</li> </ul>  | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Appoint conservation architect to compile architectural (built) heritage impact assessment and field walkover inspection to ensure that known and extant cultural heritage sites and features are fully identified, and any potential likely impacts are measured.</li> <li>Consultation with the National Monuments Service (Built Heritage</li> </ul>  |



## Environmental Constraints Report

| What is the constraint?  | How should the constraint be addressed during optioneering:  | Recommendations   |
|--|--|---|
|  | integrity of an RPS may require planning permission individually.  | section) regarding any potential impacts.   |
| 142 no. recorded NIAHs.  | <ul style="list-style-type: none"> <li>'Each NIAH entry is considered to be a valuable built heritage resource. Care must be taken to ensure that proposed works do not result in direct impacts on NIAH entries</li> </ul>  |   |
| 1 no ACAs;<br>Town Walls   | <ul style="list-style-type: none"> <li>Ensure full consideration of the extent of the ACA and proposed extent of ACA.</li> <li>Consider LAP policies and objectives.</li> </ul>  | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Careful consideration of the design of the Proposed Scheme to ensure that flood relief measures do not impact negatively on the character of the area.</li> <li>Consult with Conservation Officer / Heritage officer in Kildare County Council and the NMS Built Heritage section at options development stage. Etc</li> </ul> |
| Watercourses located within the scheme area can also retain archaeological potential | <ul style="list-style-type: none"> <li>Should any flood relief works be required as part of the project, licenced land-based or underwater archaeological surveys may be required to assess the potential for unrecorded land-based or underwater finds/features therein.</li> </ul> | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Consider if instream works are required for flood relief measures as early in the design process as possible to plan for requirement for Underwater Archaeological Impact assessment.</li> <li>Consult with the NMS regarding proposed locations for any instream works for flood relief measures.</li> </ul>                  |
| Unknown archaeology  | <ul style="list-style-type: none"> <li>Once the locations of proposed works are known, consider if further investigations or surveys are required to inform the EIAR and mitigation measures.</li> </ul>   | <p>Project team to:</p> <ul style="list-style-type: none"> <li>Project team to liaise with project archaeologist on programme for surveys once option is selected.</li> <li>Project team to clearly define all areas of potential disturbance including those arising from site investigation works, enabling works, temporary works, temporary construction compounds, etc.</li> </ul>       |

## 14 LANDSCAPE AND VISUAL AMENITY

This section contains details of the main constraints associated with the Proposed Scheme in relation to landscape and visual amenity. The constraints have been identified as a desk-based study with reference to the Scheme Area.

A review of the data sources in **Table 14-1** was undertaken to inform the constraints study.

**Table 14-1: Summary of Key Landscape Desktop Sources.**

| Title                                     | Source       | Year        | Author     |
|---|--------------|-------------|------------|
| Athy Local Area Plan 2021-2027            | KCC          | 2021        | KCC        |
| Kildare County Development Plan 2023-2029 | KCC          | 2023        | KCC        |
| Google Earth Imagery                      | Google Earth | 1984 – 2024 | Google LLC |

### 14.1 Policy Objectives

The main policies in the Kildare CDP of relevance to the Proposed Scheme are:

**LR P1** Protect and enhance the county's landscape, by ensuring that development retains, protects and, where necessary, enhances the appearance and character of the existing local landscape.

**LR P2** Protect High Amenity areas from inappropriate development and reinforce their character, distinctiveness and sense of place.

**LR P3** Protect, sustain and enhance the established appearance and character of all important views and prospects.

**LR P5** Preserve, manage and maintain to a high standard the existing public parks, open spaces, amenities and recreation facilities throughout the county.

The main policy of relevance in the Athy LAP relates to the Architectural Conservation Area. In this regard, Policy BH2 states

*“It is the policy of the Council to protect the character of the Architectural Conservation Area (ACA) and to carefully consider any proposals for development that would affect the special value of the ACA, while providing guidance through the publication of a Statement of Character to support property owners located within the ACA.”*

### 14.2 Baseline landscape and visual amenity

The Scheme Area includes the town of Athy and immediate surroundings. It is located within the Southern Lowlands landscape character area (LCA) according to the published county landscape character assessment. The River Barrow and adjacent Grand Canal Barrow Branch flow through the centre of the town in a broadly south north direction and are within the River Barrow LCA according to the published county landscape character assessment. These county landscape character areas are ranked in terms of sensitivity on a score ranging from Class1 to Class 5 as follows in the Kildare CDP (see **Figure 14-1**):

- Southern Lowlands LCA - Class 1 low sensitivity defined as ‘Areas with the capacity to generally accommodate a wide range of uses without significant adverse effects on the appearance or character of the area’;
- River Barrow LCA – Class 4 special sensitivity defined as ‘Significant adverse effects on the appearance or character of the landscape having regard to prevalent sensitivity factors’

The urban area of Athy comprises a rural market town through which the River Barrow flows in a broadly south north direction along with the Barrow Branch of the Grand Canal. These waterways are defined as bridge crossing points within the town from which important valued views are attained. The centre of town is marked

## Environmental Constraints Report

with a main square. The canal marks the western end of the town and runs north south, joining the river south of the town centre. The Dublin to Waterford railway line runs in a north south direction and is located at the eastern edge of the town. The topography is relatively flat with no elevated areas affording views of the wider landscape setting outside the town and hence the viewer's experience is largely confined to the streets, open spaces, canal and river corridors.

### 14.3 Constraints

The constraints of relevance to landscape and visual amenity are presented in **Table 14-2** and **Figure 14-1**. Many of these pertain to sensitive receptors referenced in the Kildare CDP and the Athy LAP. Recommendations on avoidance and mitigation measures are outlined.

**Table 14-2: Constraints - Landscape and Visual Amenity.**

| Constraint / Receptor   | How should the Constraint be addressed   | Recommendations  |
|---|--|--|
| <b>Landscape Character Areas – KCDP 2023-2029</b><br>River Barrow LCA – Class 4 special sensitivity   | Any proposed flood relief measures within this sensitive landscape or within its setting will have to be carefully designed to be consistent with existing landscape character.<br>Input to the design of the flood relief measures, where required, in the interests of the River Barrow Corridor will take place as early as possible.   | Consultation with prescribed bodies.<br>Tree survey to be prepared in accordance with BS:5837 2012: trees in relation to construction.<br>Tree constraints plan to be developed in line with the design of the flood relief measures   |
| <b>Designated Area of High Amenity – KCDP 2023-2029</b><br>River Barrow Valley<br>Grand Canal Barrow Branch   | Proposed flood relief measures to avoid direct impacts on these waterways and associated vegetation losses.<br>Where avoidance is not feasible, proposed flood relief measures to be carefully designed in consultation with prescribed bodies to fit the character of these areas and retain existing wooded vegetation where possible.   | Consultation with Kildare County Council and other relevant prescribed bodies.<br>Tree survey to be prepared in accordance with BS:5837 2012: trees in relation to construction.<br>Tree constraints plan to be developed in line with the design of the flood relief measures |
| <b>Scenic Route and Scenic Viewpoints – KCDP 2023-2029</b><br>Scenic Route No. 05<br>Scenic Viewpoint no RB 11<br>Scenic Viewpoint no GC38  | Scenic Route No. 05 is unlikely to be affected however Scenic Viewpoints RB 11 and GC 28, in the centre of the town and associated waterways will need careful consideration of the baseline.<br>Proposed flood relief measures will ideally avoid effects on these views.<br>Where avoidance is not feasible, careful design of flood relief measures to minimise impact on views will be required. | Consultation with Kildare County Council on potential effects and mitigation of same.  |
| <b>Architectural Conservation Area ALAP 2021-2027</b>   | The proposed flood relief measures are expected to result in direct impacts on the fabric of the ACA.<br>Input to the design of these measures by a conservation architect will take place as early as possible in the design process and will also have regard for landscape and visual amenity.  | Consultation with Kildare County Council/Athy Municipal District.<br>Tree survey to be prepared in accordance with BS:5837 2012: trees in relation to construction.<br>Tree constraints plan to be developed in line with the design of the flood relief measures.             |
| <b>Views and Prospects to be Preserved – ALAP 2021-2027</b><br>(Map 3 from the Athy Local Area Plan 2021-2027)<br>View A View upstream from Cromaboo Bridge (north-side)<br>View B View downstream towards Cromaboo Bridge and river (north-side) | Views and prospects, in the centre of the town and associated waterways will need careful consideration of the baseline.<br>Proposed flood relief measures will ideally avoid effects on these views.<br>Where avoidance is not feasible, careful design of flood relief measures to   | Consultation with Kildare County Council/Athy Municipal District.<br>Tree survey to be prepared in accordance with BS:5837 2012: trees in relation to construction.<br>Tree constraints plan to be developed in line with the design of the flood relief measures.             |

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| Constraint / Receptor   | How should the Constraint be addressed  | Recommendations   |
|---|---|---|
| View C View downstream from Cromaboo Bridge (south-side)  | minimise impact on views will be required.  |   |
| View D View upstream towards Cromaboo Bridge (south-side)   | The design of proposed flood relief structures will have input from a conservation architect having regard for the preservation of views.       |   |
| View E View into Woodstock Street from junction with William Street / Duke Street   |   |   |
| View F Stanhope Street looking south towards Emily Square with the spire of St.Michael's Church of Ireland Church in the distance |   |   |
| View G View on Church Road to St. Michael's Church of Ireland church  |   |   |
| View H View towards Horse Bridge and River Barrow Sluice Gate   |   |   |
| View I View from the Canal Lock at William Street down the Canal Side towards the Dominican Lands                                 |   |   |
| <b>Trees, woodlands and hedgerow vegetation</b>   | Avoid loss of trees and wooded vegetation groups that are preserved or are important to the character and amenity of the baseline.              | Tree survey to be prepared in accordance with BS:5837 2012: trees in relation to construction.<br>Tree constraints plan to be developed in line with the design of the flood relief measures. |
| <b>Public open space</b>  | Avoid significant negative impacts on public open space. Allow for the regular functioning of these open spaces through the Construction Phase. |   |



Environmental Constraints Report

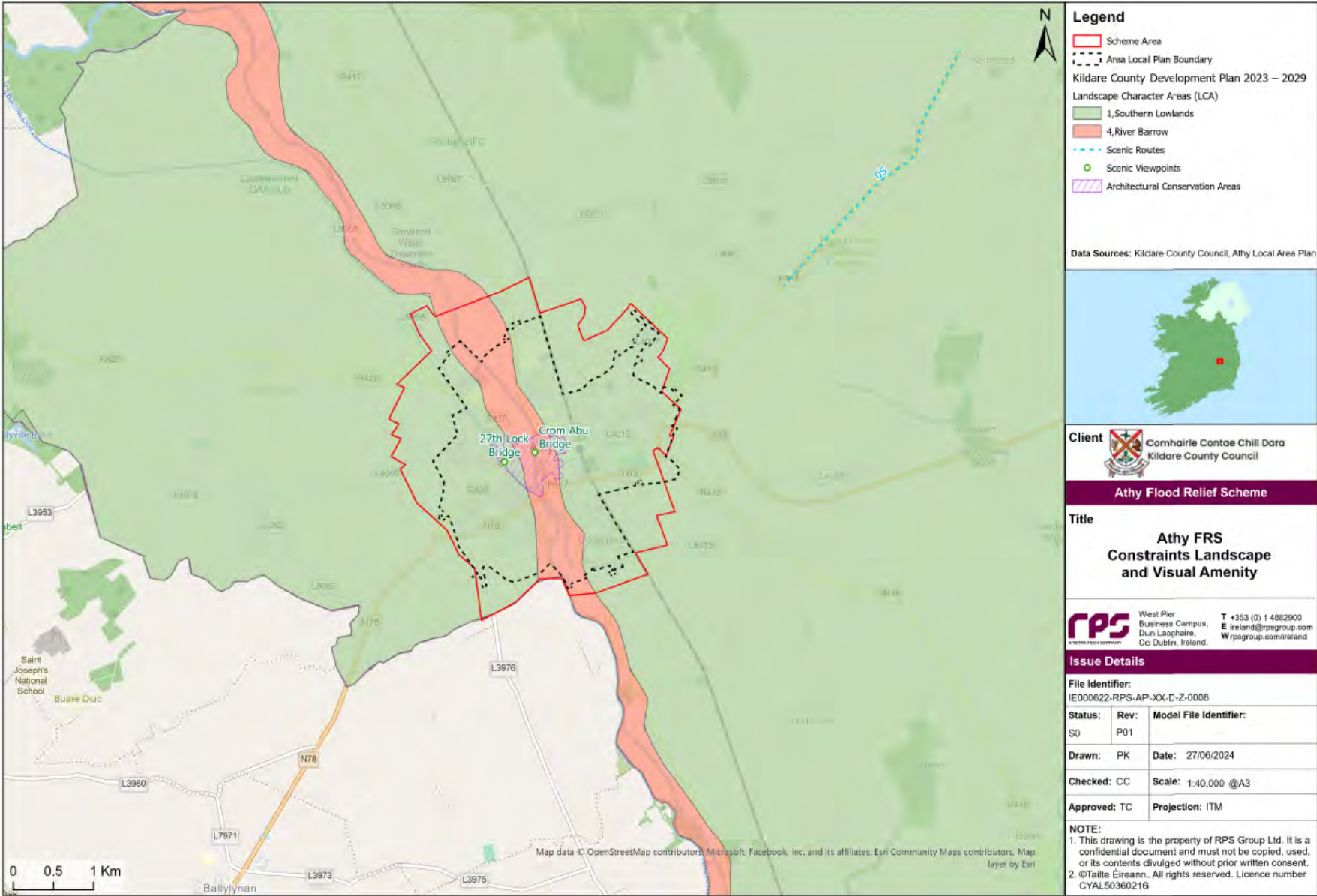


Figure 14-1 Landscape and visual amenity constraints

## 15 INTERACTIONS

Article 3(1) of the Environmental Impact Assessment (EIA) Directive requires that the interaction between the factors (population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape) is identified, described and assessed.

The EPA Guidelines (2022) states the following regarding interactions at the EIAR stage:

*“The interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR. For example, where it is established in the Hydrology section that there will be an increase in suspended solids in discharged surface waters during construction, then the Biodiversity section should assess the effect of that on sensitive aquatic receptors.”*

During the construction phase of the Proposed Scheme, there is potential interactions between EIA factors arising e.g. from increases in dust, atmospheric emissions and noise, which have the potential to interact on population and human health and biodiversity. In particular, should there be potential for contaminated dust to arise during the works, then there is potential for significant effects on human health if not appropriately mitigated. This is a key interaction to consider.

Impacts arising from vibration during construction can also interact with cultural heritage features as can changes in the landscape during the operation of the Proposed Scheme.

The other key interaction that will be important to consider for the Proposed Scheme is the potential to impact on water (surface or groundwater) and the interaction with sensitive receptors such as biodiversity and human health.

During the operational phase, the change in flood events, will interact positively with population through protection of properties. However, there is also an interaction between landscape and population during the operational phase as flood relief features can change the visual setting.

From a constraints perspective, it will be important that the interactions between the constraints are considered as part of the options selection. For example, the constraints identified under ‘water’ also need to consider the interacting effects on biodiversity and population. The key recommendation is that the relevant specialists discuss the constraints and the interactions.

## 16 NEXT STEPS

Following the completion of the constraints study, a number of constraints have been identified along with recommendations for their consideration. The next stage for the development of the Proposed Scheme will be to identify suitable options within the Scheme Area. The constraints identified in **Sections 3 to 15** including stakeholder feedback will inform the selection and assessment of options.

Where further surveys or assessments are proposed prior to selection of options e.g. ground investigations, the results of these surveys should be incorporated into the constraints study. Similarly stakeholder feedback should be incorporated and constraints updated where relevant. All updates should be circulated to the project team and discussed with the environmental specialists.

In addition to the recommendations provided for the constraints identified in **Sections 3 to 15**, the following key tasks are recommended:

- The Project team to use the information on constraints outlined in this report to inform the selection of options;
- The project team to have regard to the relevant policies listed in this report and the Athy Local Area Plan and Kildare County Development Plan;  
Continue to engage with the relevant stakeholders through the option selection and design phase; and
- Continue updates of constraints mapping to take into consideration results of surveys, stakeholder engagement, and further assessment.

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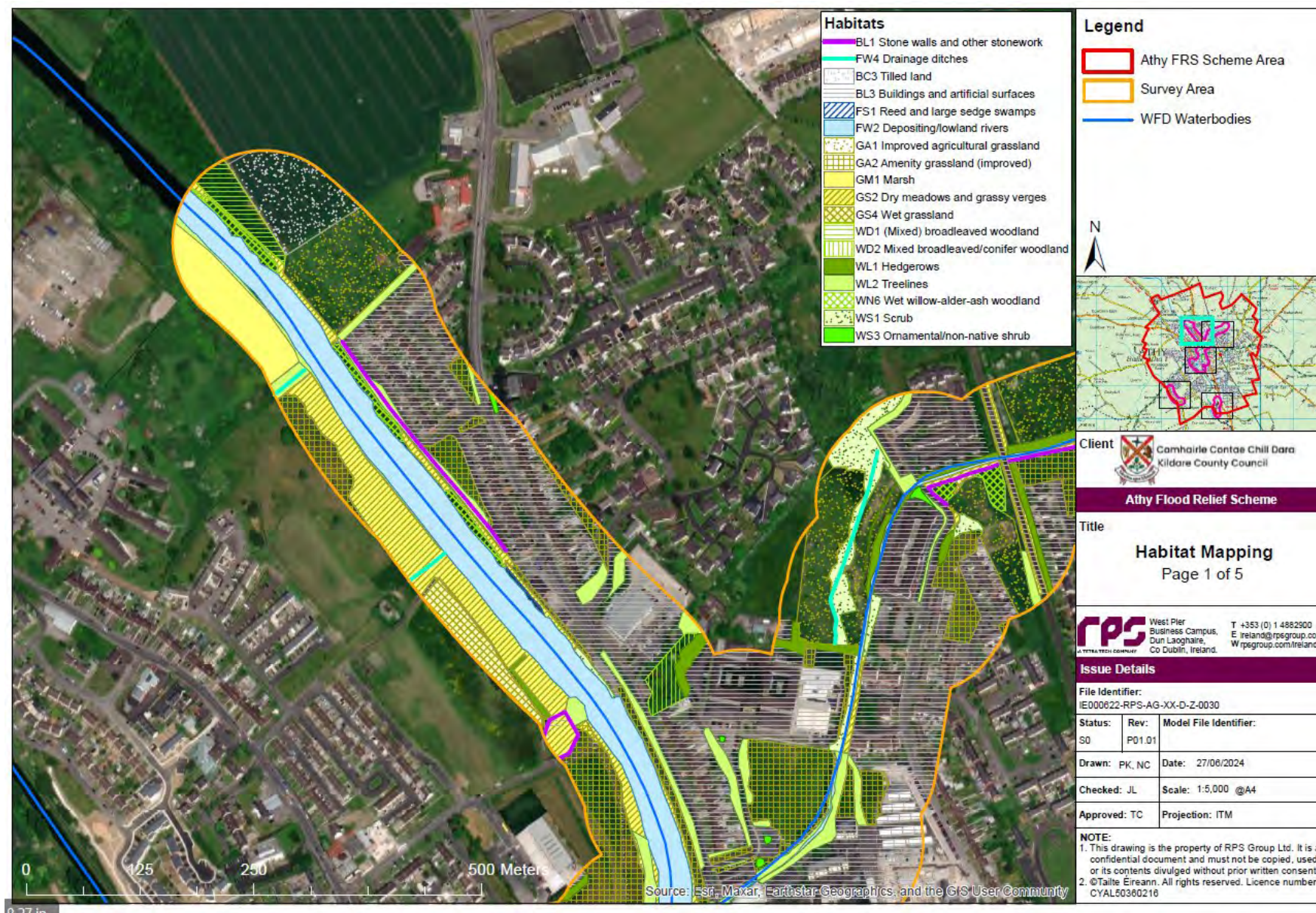
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# Appendix A

## Habitat Mapping

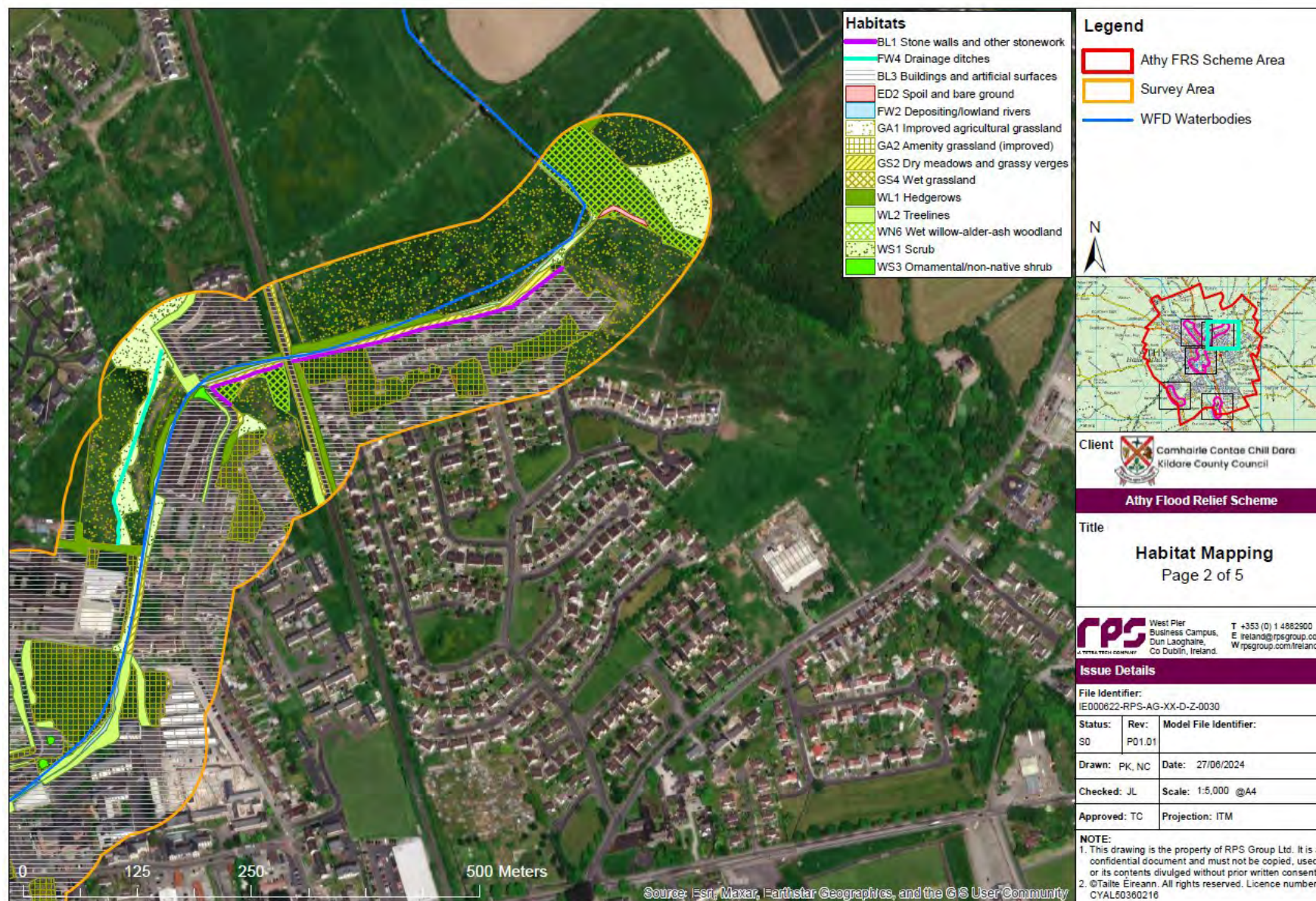


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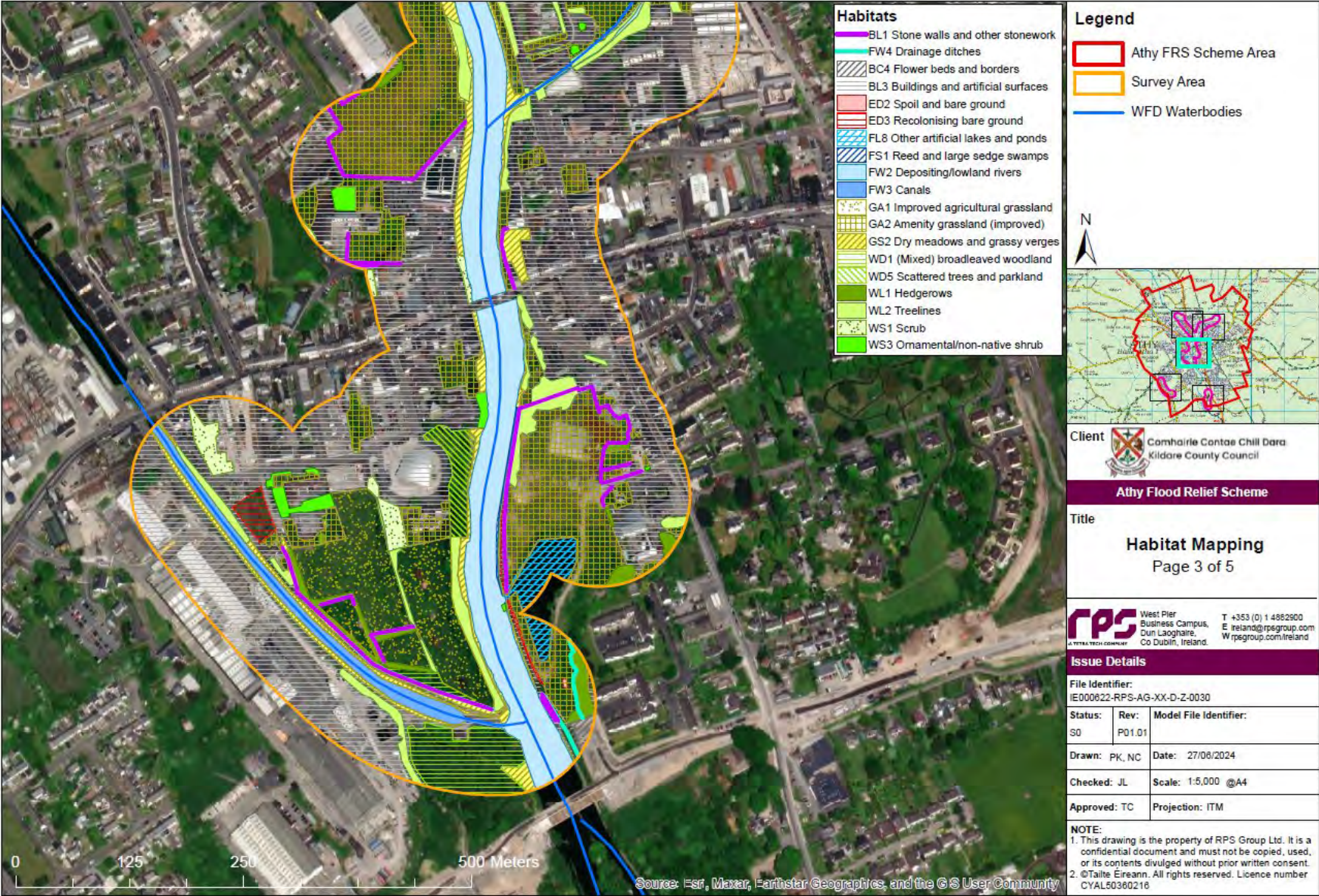


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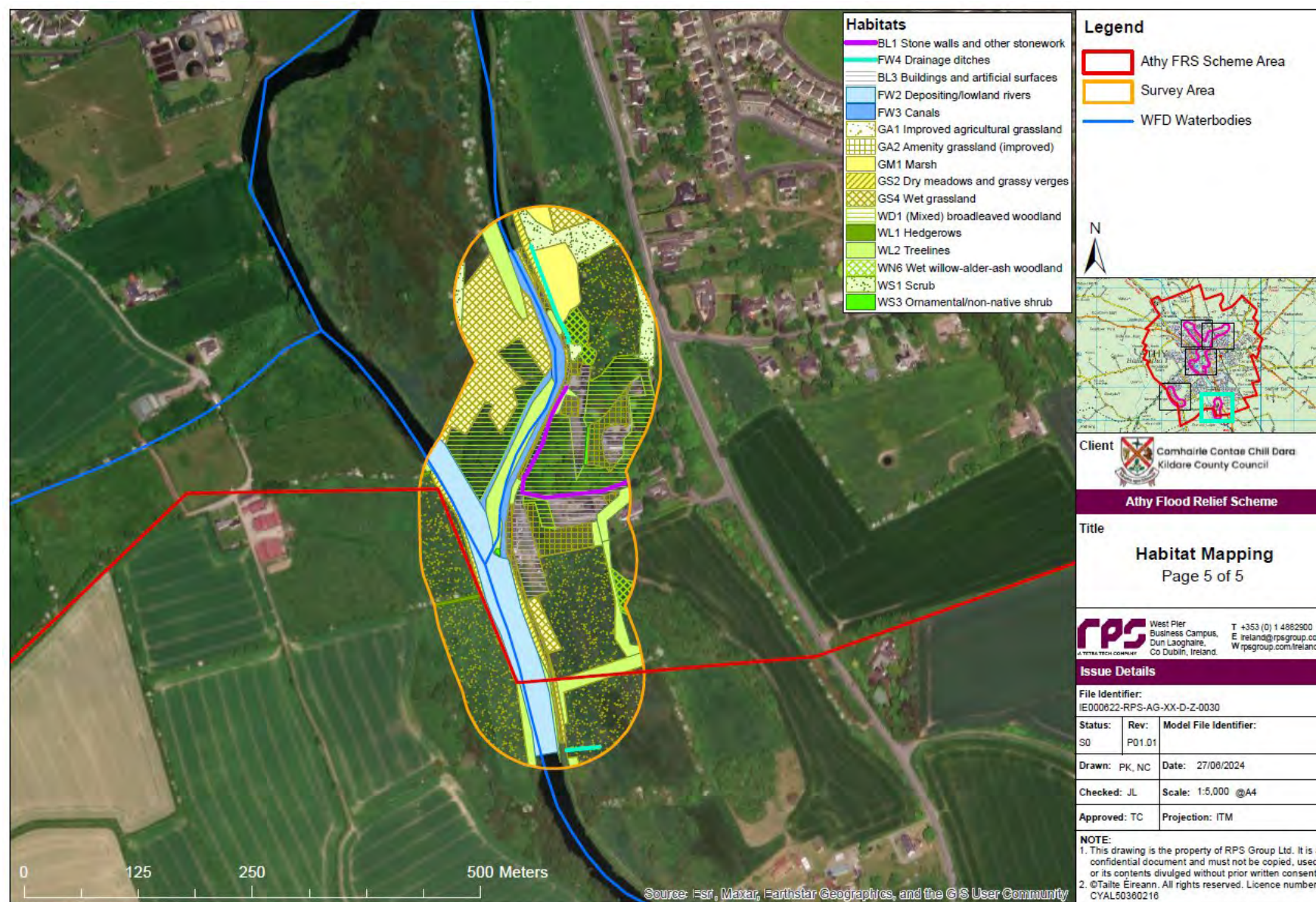


APPENDIX





## APPENDIX



APPENDIX

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## Appendix B

### IAPS Descriptions

## APPENDIX

Table B1 Japanese knotweed infestations identified across the survey area.

| Plant Species     | ID   | Approx. extent (m x m) | General Survey Notes   | X        | Y        |
|-------------------|------|------------------------|--|----------|----------|
| Japanese Knotweed | JK01 | 10x5                   | Bulk of infestation located along the wall with smaller shoots spreading out into field which have signs of been mown over. High potential that it has been spread by works and footfall associated with the Greenfields festival. Tallest shoots approx. 1.5m high.   | -6.98319 | 52.99097 |
| Japanese Knotweed | JK02 | 5x1                    | Bulk of infestation located along wall but edge looks to be recently disturbed. High potential that it has been spread by works and footfall associated with the Greenfields festival. Tallest shoots approx. 1.5m high.   | -6.98288 | 52.99086 |
| Japanese Knotweed | JK03 | 8x1                    | Well established infestation located in corner of wall. Signs of recent disturbance. High potential that it has been spread by works and footfall associated with the Greenfields festival. Tallest shoots approx. 2.5m high.  | -6.98272 | 52.99084 |
| Japanese Knotweed | JK04 | 15x3                   | Numerous shoots scattered across the area with signs of recent disturbance. High potential that it has been spread by works and footfall associated with the Greenfields festival. Tallest shoot approx. 1m tall.  | -6.98295 | 52.99059 |
| Japanese Knotweed | JK05 | 2.5x1                  | Very scattered infestation on right-hand side of entrance as you come in. Approx. 5 taller shoots by gate with numerous bonsaied shoots across rest of area indicating disturbance or treatment. Older aerial imagery suggests that this was a large infestation and signs on the day of the survey suggest that it has been inappropriately cleared. High potential that it has been spread by works and footfall associated with the Greenfields festival. Two shoots around corner of wall. Tallest shoots approx. 1m high. | -6.98316 | 52.99020 |
| Japanese Knotweed | JK06 | 3x4                    | Treated stalks on eastern hedgerow next to roadside. Some smaller shoots spreading into adjacent GA1 field. Tallest shoots approx. 1m high.  | -6.98013 | 52.99789 |
| Japanese Knotweed | JK07 | 17x5                   | Large infestation on the eastern side of wall spreading into wet willow woodland. Area subject to dumping. Tallest shoots approx. 2m high.   | -6.98048 | 52.99810 |
| Japanese Knotweed | JK08 | 5x2                    | Infestation on right-hand bank of River Barrow between carpark and water's edge. Tallest shoots approx. 1.25m high.  | -6.98542 | 52.99282 |
| Japanese Knotweed | JK09 | 5x5                    | Infestation on right-hand bank of River Barrow directly opposite corner of SuperValu building. Bulk of infestation on top of riverbank with smaller shoots spreading towards path. Dead canes approx. 2.5m high with new growth shoots approx. 1.5m high.  | -6.98541 | 52.99291 |
| Japanese Knotweed | JK10 | 0.1x0.1                | Single shoot on slope of right-hand bank of the River Barrow adjacent to the SuperValu building. Shoot is in line with upstream edge of black double doors to SuperValu building. Hybrid bluebell infestation close by. Larger dead cane visible at water's edge. Approximately 0.75m high.  | -6.98527 | 52.99321 |
| Japanese Knotweed | JK11 | 10x3                   | Infestation located on right bank of the River Barrow adjacent to SuperValu building. There is a gap in the middle of the knotweed infestation leading down to angling stand number 17. Tallest shoots approx. 1.5m high.  | -6.98528 | 52.99331 |
| Japanese Knotweed | JK12 | 5x6                    | Infestation on right hand bank of River Barrow adjacent to wall surrounding SuperValu compound. Located at the upstream edge of angling stand number 18. Dead canes approx. 2.5m high with new growth approx. 1.5m tall.   | -6.98526 | 52.99350 |
| Japanese Knotweed | JK13 | 20x2.5                 | Long infestation located along the western side of the western wall surrounding the SuperValu compound. Smaller shoots reaching to the blue WM plaque on wall. Evidence that the stand has been treated. Dead canes approx. 2.5m tall with new growth approx. 1.5m tall.   | -6.98596 | 52.99336 |
| Japanese Knotweed | JK14 | 3x0.5                  | Infestation of approx. 4 small shoots on upstream edge of drain. Infestation looks to have been treated. Forms part of a larger infestation across this area. Shoots approx. 0.75m tall.   | -6.98872 | 52.99753 |
| Japanese Knotweed | JK15 | 2x2                    | Infestation of approx. 4 viable shoots that look treated and 4 dead canes. Forms part of larger infestation across this area. Dead canes approx. 2m tall and viable shoots approx. 1.5m tall.  | -6.98904 | 52.99747 |

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| Plant Species     | ID   | Approx. extent (m x m) | General Survey Notes  | X        | Y        |
|-------------------|------|------------------------|---|----------|----------|
| Japanese Knotweed | JK16 | 30x50                  | Numerous infestations across a large area that reaches back approx. 30m from the right-hand bank of the River Barrow and approx. 50m long. Some dense stands at the very edge of the riverbank with other infestations smaller and scattered throughout. Evidence of treatment of infestations. Tallest shoots approx. 2.5m high. | -6.98902 | 52.99781 |
| Japanese Knotweed | JK17 | 15x33                  | Very large, dense infestation on elevated land behind marshy area. Evidence of treatment present. Tallest shoots approx. 2.5m high.   | -6.99240 | 52.99966 |
| Japanese Knotweed | JK18 | 15x32                  | Very large, dense infestation on elevated land behind marshy area. Evidence of treatment present. Tallest shoots approx. 2.5m high.   | -6.99270 | 52.99999 |
| Japanese Knotweed | JK19 | 50x3                   | Long infestation on the right-hand bank of the River Barrow. Tallest shoots approx. 1.5m tall.  | -6.98544 | 52.98936 |

Table B2 Three-cornered leek infestations observed across the survey area

| Plant Species       | ID    | Approx. extent (m x m) | General Survey Notes   | X        | Y        |
|---------------------|-------|------------------------|--|----------|----------|
| Three-cornered leek | TCL01 | 5x1                    | Three clumps between path and wall near sycamore tree. More behind culvert/drain also.                                   | -6.97795 | 52.97911 |
| Three-cornered leek | TCL02 |                        | Number of clumps going from drain back into the field behind it. Can't estimate number or distance as no access to area. | -6.97783 | 52.97918 |
| Three-cornered leek | TCL03 | 1x1                    | Approximately 6 clumps in wet woodland behind drain  | -6.97796 | 52.97934 |

Table B3 Spanish/hybrid bluebell infestation observed across the survey area

| Plant Species   | ID   | Approx. extent (m x m) | General Survey Notes   | x        | y        |
|-----------------|------|------------------------|--|----------|----------|
| Hybrid bluebell | HB01 | 0.5x2                  | 3 small clumps on lefthand bank of River Barrow under birch tree   | -6.98445 | 52.99111 |
| Hybrid bluebell | HB02 | 1.5x1.5                | Number of clumps around base of birch tree on lefthand bank of the River Barrow.   | -6.98432 | 52.99136 |
| Hybrid bluebell | HB03 | 1x0.2                  | Single clump on lefthand bank of River Barrow by pontoon.  | -6.98436 | 52.99141 |
| Hybrid bluebell | HB04 | 0.3x0.5                | Large clump on lefthand bank of River Barrow at base of ash tree on the downstream side of the walkway to the pontoon. Very wide leaves, almost like Spanish bluebell. | -6.98438 | 52.99148 |
| Hybrid bluebell | HB05 | 0.5x0.5                | Large clump by wall on lefthand side of River Barrow just downstream of Crom-a-Boo Bridge.   | -6.98439 | 52.99189 |
| Hybrid bluebell | HB06 | 0.05x0.05              | Small clump inside Greenfield festival lands site. Close to fence by pathway.  | -6.98375 | 52.98799 |
| Hybrid bluebell | HB07 | 0.1x0.1                | Small clump inside Greenfield festival lands site on northern shore of angling pond.   | -6.98408 | 52.98969 |
| Hybrid bluebell | HB08 | 15x4                   | Within Greenfields festival lands site. Approximately 11 clumps spread under mature sycamore and horse chestnut wooded area.   | -6.98363 | 52.99103 |
| Hybrid bluebell | HB09 | 5x1                    | Within Greenfields festival lands site. Small number of clumps along stone wall adjacent to JK01.  | -6.98321 | 52.99095 |
| Hybrid bluebell | HB10 | 0.3x0.3                | Small clump on lefthand bank of River Barrow, approx. 1m from water's edge.  | -6.98466 | 52.99334 |
| Hybrid bluebell | HB11 | 1x0.5                  | Two clumps next to Marian Shrine Grotto on lefthand side of River Barrow.  | -6.98457 | 52.9943  |
| Hybrid bluebell | HB12 | 0.25x0.25              | Small clump under northern side of lime tree on lefthand side of River Barrow. Line of lime trees is between R417 road and pedestrian walkway along river.             | -6.98462 | 52.99478 |



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| Plant Species   | ID   | Approx. extent (m x m) | General Survey Notes   | x        | y        |
|-----------------|------|------------------------|--|----------|----------|
| Hybrid bluebell | HB13 | 2x0.5                  | Clump under northern side of lime tree on lefthand side of River Barrow. Line of lime trees is between R417 road and pedestrian walkway along river.   | -6.98463 | 52.99484 |
| Hybrid bluebell | HB14 | 0.3x0.3                | Clump on verge between lime trees, on lefthand side of River Barrow, approx. 1m from the south side of the base of a tree.   | -6.98466 | 52.9949  |
| Hybrid bluebell | HB15 | 0.3x0.1                | Clump on verge between lime trees, on lefthand side of River Barrow, approx. 2m from closest tree.   | -6.9847  | 52.99502 |
| Hybrid bluebell | HB16 | 0.25x0.25              | Small clump on verge between lime trees on the lefthand bank of the River Barrow.  | -6.98493 | 52.99537 |
| Hybrid bluebell | HB17 | 2x0.25                 | Large clump at base of lime tree on lefthand bank of River Barrow. On eastern side of tree.  | -6.98499 | 52.99539 |
| Hybrid bluebell | HB18 | 15x2                   | Approx. 50 flowerheads along a 15m stretch in long grass on lefthand bank of the River Barrow.   | -6.98513 | 52.99537 |
| Hybrid bluebell | HB19 | 4x1.5                  | Number of clumps between lime trees on lefthand side of River Barrow. Line of lime trees is between R417 road and pedestrian walkway along river.  | -6.98518 | 52.99567 |
| Hybrid bluebell | HB20 | 26x2                   | Approx. 20 flowerheads across an approximate length of 26m of rough grass on lefthand bank of River Barrow. Southern extent at most southerly mooring bollard. Northern extent approx. 17m north of northern bollard (not bollards by bin, more southerly bollards). | -6.98528 | 52.99559 |
| Hybrid bluebell | HB21 | 0.5x0.1                | Clump between lime trees on lefthand side of River Barrow. Line of lime trees is between R417 road and pedestrian walkway along river.   | -6.98524 | 52.99573 |
| Hybrid bluebell | HB22 | 2x2                    | Two clumps under planted tree at roadside verge.   | -6.98764 | 52.99866 |
| Hybrid bluebell | HB23 | 1.5x0.3                | Two clumps by wall near palisade fencing.  | -6.987   | 52.99755 |
| Hybrid bluebell | HB24 | 0.2x0.2                | Single clump within wildflower bed alongside footpath.   | -6.98695 | 52.99751 |
| Hybrid bluebell | HB25 | 1.5x0.3                | Two clumps under elder bush approx. 3m from righthand bank of Moneen stream.   | -6.98331 | 52.9944  |
| Hybrid bluebell | HB26 | 2x0.5                  | Two clumps under elder bush, approx. 4m from righthand bank of Moneen stream and 2m from palisade fence.   | -6.98346 | 52.99435 |
| Hybrid bluebell | HB27 | 20x5                   | Lefthand bank of Moneen stream under trees with abundant clumps. No access to this area. Observed from opposite bank.  | -6.98249 | 52.99465 |
| Hybrid bluebell | HB28 | 0.3x0.3                | Single clump on lefthand bank on Moneen stream in cleared area. No access to this area, seen from righthand bank. Potential for more infestations to be present in this area as it was recently cleared.   | -6.98211 | 52.99545 |
| Hybrid bluebell | HB29 | 0.2x0.2                | Clump left hand bank of Moneen stream. Seen from the path on the righthand bank.   | -6.9821  | 52.99547 |
| Hybrid bluebell | HB30 | 2.5x1.5                | Number of clumps in corner of the care home property by the fence and pathway on the lefthand bank of the Moneen stream.   | -6.98079 | 52.9981  |
| Hybrid bluebell | HB31 | 6x0.5                  | Two clumps along western side of hedgerow across from care home facility.  | -6.98044 | 52.99748 |
| Hybrid bluebell | HB32 | 0.3x0.3                | Single clump on lefthand bank of Moneen stream behind Moneen View housing estate. Infestation approx. 5m from river.   | -6.97697 | 52.99875 |
| Hybrid bluebell | HB33 | 0.3x0.3                | Single clump amongst nettles on eastern side of hedgerow opposite care home facility.  | -6.98037 | 52.99751 |
| Hybrid bluebell | HB34 | 0.75x8                 | Number of clumps at edge of footpath against stone wall on lefthand bank of Grand Canal section of River Barrow upstream of Ardreich Lock.   | -6.97796 | 52.97898 |
| Hybrid bluebell | HB35 | 5x4                    | Number of clumps in front of and behind stone wall, next to footpath on lefthand bank of Grand Canal section of River Barrow upstream of Ardreich Lock.  | -6.97795 | 52.97916 |
| Hybrid bluebell | HB36 | 1x1                    | Single clump in wet woodland adjacent to drain next to footpath on lefthand bank of Grand Canal section of River Barrow upstream of Ardreich Lock.   | -6.97792 | 52.97933 |

## APPENDIX

| Plant Species   | ID   | Approx. extent<br>(m x m) | General Survey Notes   | x        | y        |
|-----------------|------|---------------------------|--|----------|----------|
| Hybrid bluebell | HB37 | 0.5x9                     | Number of clumps against stone wall next to footpath on lefthand bank of Grand Canal section of River Barrow upstream of Ardreich Lock.  | -6.97804 | 52.97881 |
| Hybrid bluebell | HB38 | 0.2x0.2                   | Single clump on righthand bank of River Barrow adjacent to SuperValu building.   | -6.98535 | 52.99321 |
| Hybrid bluebell | HB39 | 1.5x0.5                   | Two clumps on righthand bank of River Barrow adjacent to SuperValu building.   | -6.98531 | 52.99339 |
| Hybrid bluebell | HB40 | 30x50                     | Many clumps sparsely distributed over meadow and scrub between right bank and amenity grass. Same area as JK14, JK15 and JK16.   | -6.98892 | 52.9975  |
| Hybrid bluebell | HB41 | 35x15                     | Dense infestation in field behind bank under trees/scrub and also more sparse coverage spread throughout field. No access so exact extent of infestation could not be ascertained. | -6.98522 | 52.99123 |
| Hybrid bluebell | HB42 | 1.25x1.5                  | Four clumps at base of oak tree in scattered trees and parkland habitat behind Athy library on righthand bank of River Barrow.   | -6.9855  | 52.99008 |
| Hybrid bluebell | HB43 | 3x1                       | Number of clumps against wooden fence at edge of library carpark.  | -6.98646 | 52.98999 |
| Hybrid bluebell | HB44 | 10x10                     | Large infestation in garden of property to the south of Athy library.  | -6.98651 | 52.98989 |
| Hybrid bluebell | HB45 | 0.75x0.2                  | Two clumps amongst brambles behind mesh fence to south of Athy library carpark.  | -6.9867  | 52.99004 |
| Hybrid bluebell | HB46 | 0.5x0.5                   | Single clump by barbwire fence on righthand bank of River Barrow.  | -6.98547 | 52.98958 |
| Hybrid bluebell | HB47 | 0.25 x 0.25               | Single clump under lime tree on lefthand grand canal bank.   | -6.98935 | 52.99001 |
| Hybrid bluebell | HB48 | 2x1                       | Number of clumps under trees on lefthand grand canal bank.   | -6.98933 | 52.98998 |
| Hybrid bluebell | HB49 | 0.5x0.5                   | Single clump under conifer trees on lefthand grand canal bank.   | -6.98944 | 52.99014 |
| Hybrid bluebell | HB50 | 0.3x0.3                   | Single clump in amongst area of planted non-native ornamental shrub.   | -6.98951 | 52.9902  |

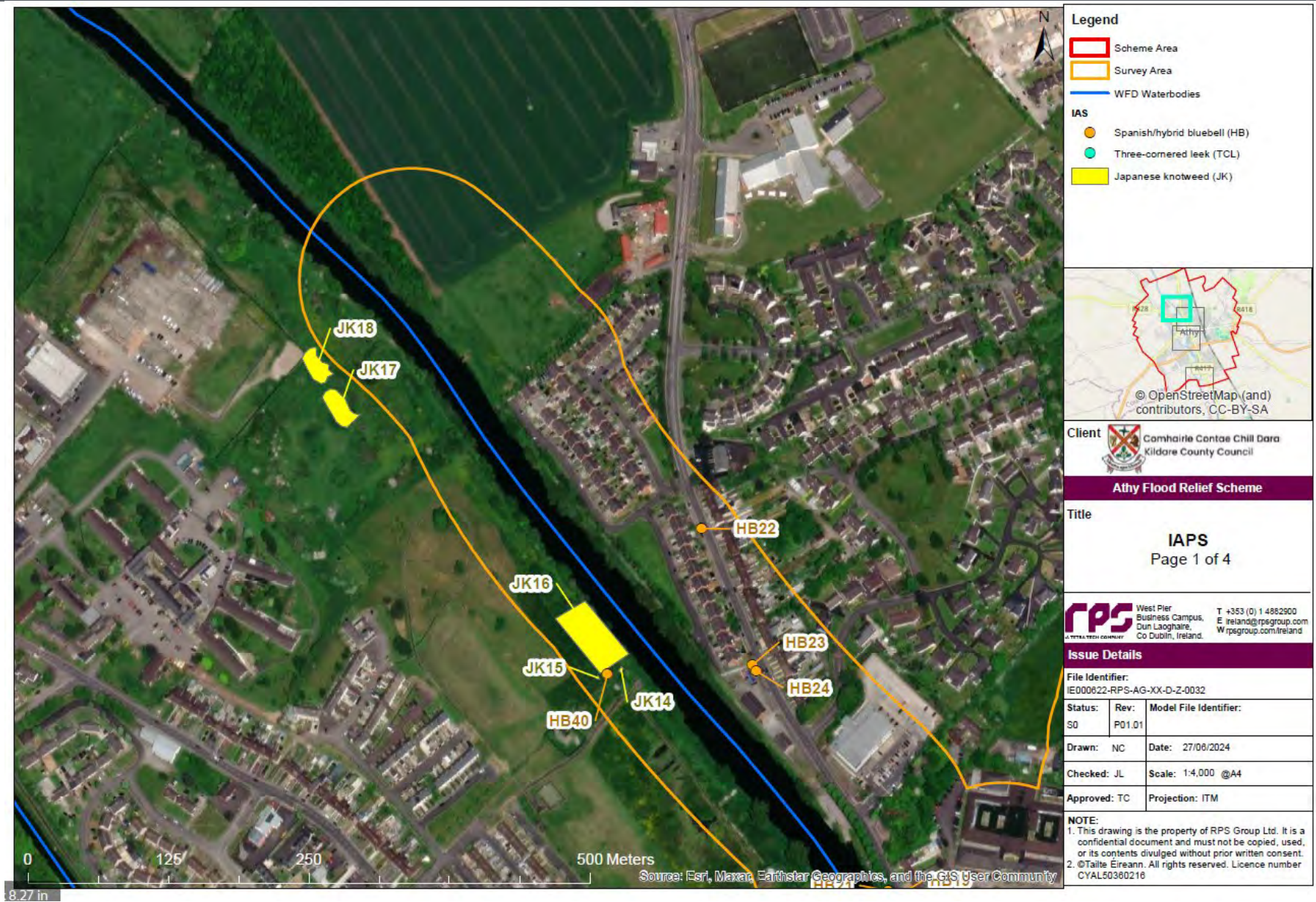
## APPENDIX

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# Appendix C

## IAPS Drawings

APPENDIX



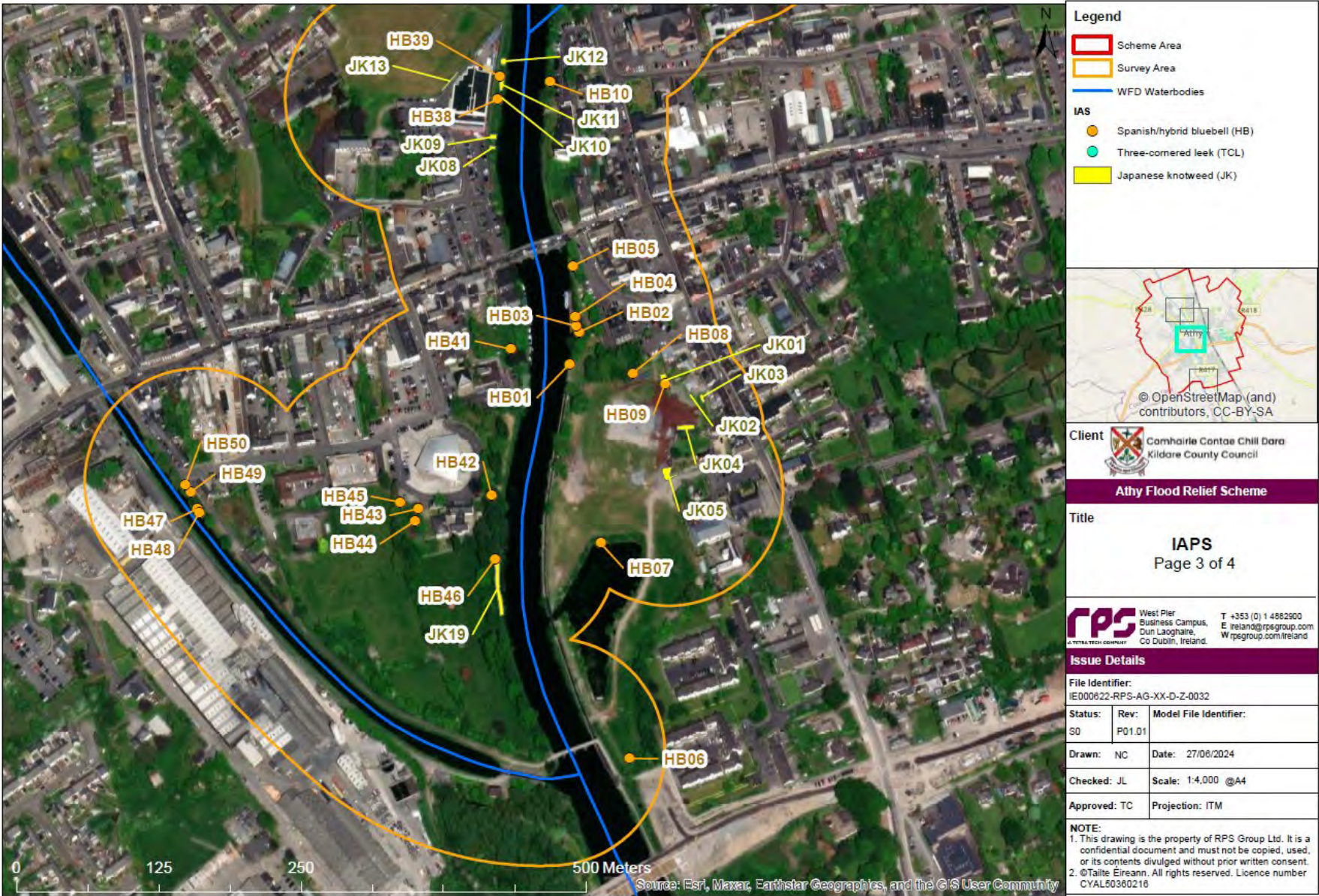


APPENDIX



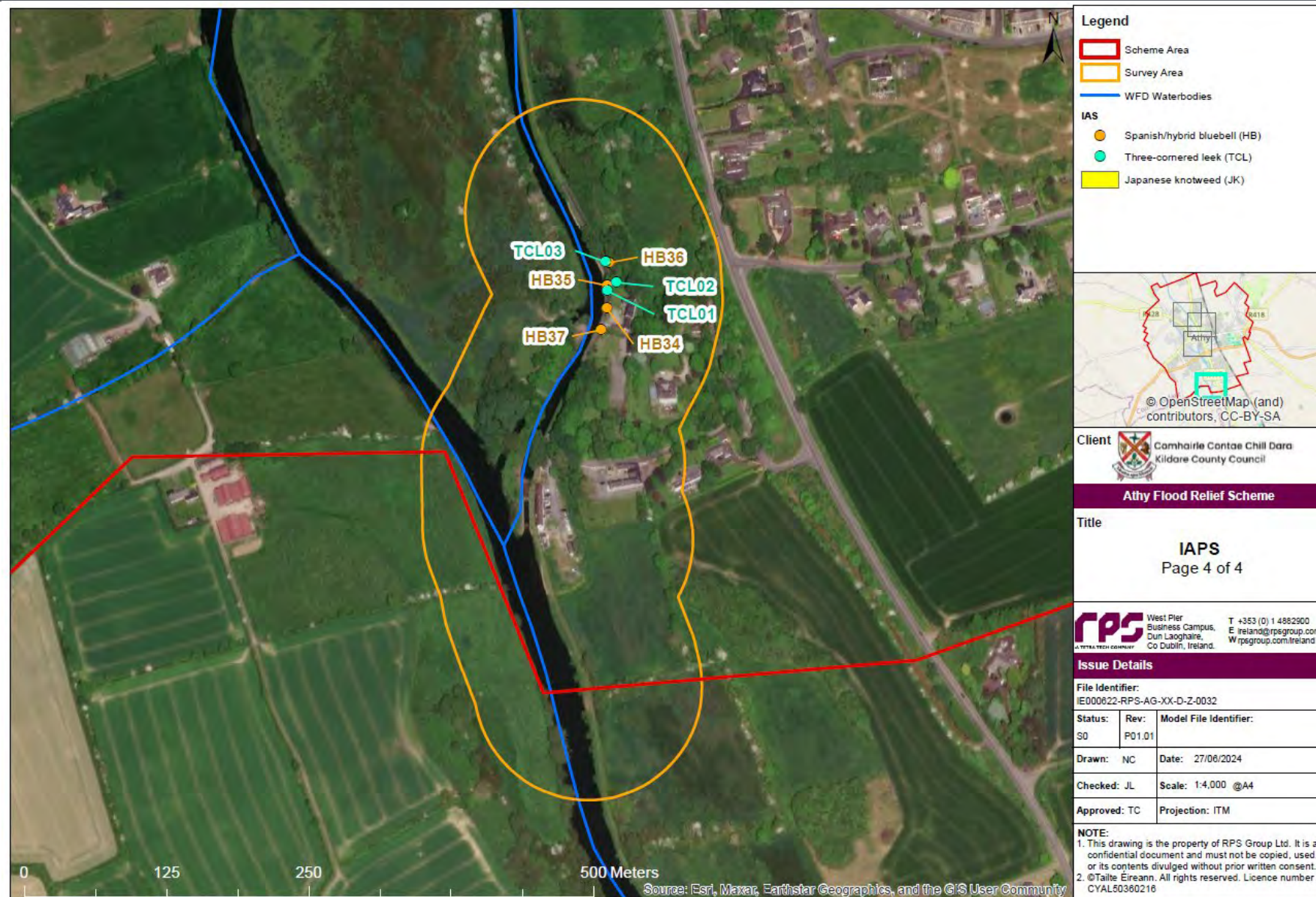


APPENDIX





## APPENDIX



## Appendix D Cultural Heritage of Athy Supporting Information

The rich and varied cultural heritage of Athy spans several thousand years of human activity, commencing in prehistory, and continuing to the modern age. The setting of Athy, at a fording point on the Barrow, surrounded by fertile arable lands, has attracted human inhabitants since the Mesolithic Period (8000-4000 BC). Such was the significance of this fording area, that the neighbouring area of Rheban situated 4km to the north of Athy, is depicted on Ptolemy's second century map of Ireland. The inhabitants of Ireland in this period formed hunter-gatherer societies which travelled mostly along shorelines and rivers in search of viable food sources. As such, Athy, on the Barrow, would have been accessible and attractive to Mesolithic communities. Evidence of Mesolithic activity within the study area of the Athy Flood Relief Scheme is demonstrated by the finding of stone tools dating to the Mesolithic Period during excavations at Ardree (also known as Ardreich) south of Athy.

In the Neolithic Period (4000-2200 BC) the first farmers in Ireland would have formed settled communities focused on newly developed agriculture in the form of crop cultivation and animal husbandry. These Neolithic agricultural practices marked the beginning of landscape transformation, traces which are still visible today, including forest clearing, and construction of field systems (Waddell, p. 29). The Neolithic populations constructed large artificial earth and stone communal burial sites known as megaliths. These megaliths also acted as territorial markers, establishing ownership and reinforcing domination of an area. In terms of material culture, the Neolithic communities were the first inhabitants of Ireland to fire clay to form pottery. Rudimentary and more complex decorative forms of pottery are identified in the archaeological record dating from the Neolithic Period. Evidence of Neolithic activity in the Scheme area of the Athy Flood Relief Scheme is attested by the number of artefacts recovered during the Barrow Drainage Scheme. In total 22 Stone Axeheads. were recovered from the Barrow works (Bradley 1986, p47). The excavations at Ardree resulted in the identification of several stone lithic tools that dated to the Neolithic, indicating human activity in and around Athy during this period. A mound site (RMP KD037-009) is known at Grangemellon, situated south of Athy. Although not scientifically dated, this archaeological site could date to the Neolithic period.

The arrival of the Bronze Age (2200-600 BC) to Ireland brought social and technological changes. In the archaeological record noticeable change in material culture occurs. The evidence of first metalworking technology is identified in Ireland, commencing with copper production, and later advancing to melting copper and tin ore to produce bronze liquid, which could be used to cast objects. New types of pottery appear during the Bronze Age. Some of the new pottery originated from northwest Europe, indicating some travel, trade, and settlement of peoples from the Continent, in Ireland. Although the Bronze Age may have resulted in some new settlers from the continent, a degree of some continuity in the archaeological record is maintained which may reflect merging of new and old communities. One of the noticeable changes of the period is identified in the funerary practices of Bronze Age communities, who buried individuals (cremated or inhumation) in archaeological sites known as ring-ditches, barrows or cists. The excavations at Ardree resulted in the identification of a burial of the cremated remains of a man aged 35-45, who burnt bones were placed in a ceramic urn, which was then buried in a small pit in the ground. Several known and legally protected archaeological sites that likely date to the Bronze Age are located within the study area. At Woodstock North, two ring-ditches (RMP KD035-067 and RMP KD035-068) were identified from an examination of aerial photography (GB89.AI.23). In Ardree, a known archaeological site identified as a Barrow (unclassified), is included in the RMP (No KD037-001). This site was also identified as a result of an examination of aerial photographs, in this instance by Cambridge University.

Whilst the Neolithic communities used large megaliths to mark territory and establish ownership, the Bronze Age peoples constructed individual standing stones. The Bronze Age is often considered Ireland's 'Golden Age' as many of the known gold artefacts from Ireland date to this period. The number of Bronze Age gold artefacts indicate that the Irish of this period were somewhat secure, and not under threat. Many of the Bronze Age gold artefacts had a decorative function, and were not primarily functional. Food scarcity was not a significant concern, as evidenced by the Bronze Age communities who could support the goldsmiths in their tasks producing non-functional items. During the Barrow Drainage Scheme 1 Bronze Axehead, 3 Bronze Looped Spearheads, 1 Bronze Socketed Dagger and 2 Bronze Swords were recovered from the Barrow works (Bradley 1986, p47).

As is generally the case in Ireland, the Iron Age (600 BC – 400 AD) has left little obvious evidence in the Athy area and surrounding landscape. Paleoenvironmental data suggests that the population of Ireland collapsed around 100BC, evidenced by a significant reduction in evidence of agriculture, and that this period of decline approximately 300AD. During Iron Age new technology came into Ireland which resulted in the development



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of iron, as a material for tools and weapons. The Gaelic language is associated with the Iron Age, although how comparable the modern Gaelic language would be to Iron Age Gaelic, remains a subject of debate. By the end of Iron Age Christianity was introduced to Ireland. The arrival of Christianity to Ireland in the fifth century resulted in the construction of ecclesiastical buildings (churches and monasteries), some of which also survive in the landscape. Evidence of a 6<sup>th</sup> century church and graveyard was identified during the excavations at Ardree. In total over 150 burials were identified at Ardree that dated from the 6<sup>th</sup> to 9<sup>th</sup> centuries.

The Early Medieval period (c. 400-1100 AD) is depicted in the surviving sources as an entirely rural society, based on agricultural produce and trade. The island of Ireland was divided into five larger overall kingdoms comprising Leinster (Laigin), Munster (Mumhan), Connacht (Connachta), Ulster (Ulaid), and Meath (Míde). The basic territorial unit known in Ireland was known as the túath, or petty kingdom. Walsh, (2000, 30) estimates that there were at least 100, and perhaps as many as 150, petty kingdoms in Ireland at any given time during this period. Athy was situated in the Early Medieval Kingdom of Leinster. Situated on the Barrow, Athy was located at the intersection of two territories. The lands west of the Barrow in modern-day County Laois were associated with the Uí Buide and Uí Crimthain Áin families. The lands east of the Barrow were associated with the Uí Muiredaig who were a sept of the more powerful Uí Dúnlainge dynasty.

The ringfort or rath (Dún or Lios) is the most common surviving domestic settlement mode from the Early Medieval period. These sites are believed to represent the farmsteads of an extended family of middle grade inhabitants (they were neither poor, nor wealthy). They consisted of an earth-cut ditch, often circular or sub-circular in plan, surrounding and enclosing a living space. The ditches were often several metres wide and up to 3m deep. The soil from the ditch was often cast up to the inner side of the enclosed living space to create a high protective bank. Some ringforts/raths have evidence of wooden palisade fences also enclosing the living space. Wooden, and less often, stone buildings housed the inhabitants in the enclosed space. There are approximately 45000 known ringforts or raths in Ireland and at least 170 known examples and almost 700 known enclosures in Co. Kildare, many of these enclosures are likely to be ringforts. The remains of many more likely survive under the ground throughout the country. There are several recorded enclosures within study area for the Athy Flood Relief Scheme. These enclosures are located in Prusselstown (RMP KD035-118, KD035-017001, KD035-017003), Ardrew (RMP KD035-031), Woodstock South (RMP KD035-024), Woodstock North (RMP KD035-066, KD035-068) and Cardington Demesne (RMP KD035-016).

Athy's archaeological heritage is largely formed in the medieval period (1100-1550 AD), particularly during the 13<sup>th</sup> century expansion of the Anglo-Norman sphere of influence in Leinster, and the associated establishment of new religious communities. In 1175 the area of Athy was granted to Robert de St. Michael by Richard de Clare. By 1181 an Anglo-Norman settlement had been founded at Athy. The lands at Athy were held by the Anglo-Norman St. Michael (later Michael) family who were made lords of the barony of Rheban, north of Athy. A separate grant of land allowed for the establishment of a distinct settlement or borough at Ardree, by the Anglo-Norman lord Thomas de Flanders or Milo de Stanton.

The Anglo-Norman town of Athy was constructed on either side of the River Barrow. The town was laid out in standard Anglo-Norman fashion with a main street (now occupied by Duke Street and Leinster Street), and individual burgage plots situated at right angles to the main street. Each burgage was established so that the dwelling was at or near the street front, with outbuildings to the rear, and a rectangular garden plot behind the outbuildings. A bridge (RMP KD035-022008) was constructed by the Anglo-Normans to connect the town, roughly at the location of the extant 18<sup>th</sup> century Cromaboo Bridge. A stone castle (RMP KD035-022001) is known to have been located in the town, but its exact location is unknown. There are written references to the church of St. Michael (RMP KD035-022014) dating to the 13<sup>th</sup> century. The 13<sup>th</sup> century Woodstock Castle (RMP KD035-021) provided protection to the west side of the town. In the early 13<sup>th</sup> century, at the invitation of the St. Michael lords of Athy, the Priory of St. Thomas and Hospital of St. John (Fratres Cruciferi; also known as Crutched Friars) Friars of the Holy Cross (RMP KD035-022006) was established near Woodstock Castle, on the west bank of the Barrow in Athy. A small settlement of houses (RMP KD035-021004) developed in the hinterland of Woodstock Castle beside the west bank of the Barrow, and this settlement is depicted on the 17<sup>th</sup> century Down Survey maps of the area ( [www.downsurvey.tcd.ie/down-survey-maps.php#c=Kildare](http://www.downsurvey.tcd.ie/down-survey-maps.php#c=Kildare) ). The presence of linear earthen banks that form rectangular features, in this location indicates that some surviving archaeological material is subterranean.

In the mid-13<sup>th</sup> century the Dominican order, which had come to Ireland in 1216, established a monastery (RMP KD035-022004) on the east bank of the river in an area south of Emily Square.

The earliest written reference to the borough of Athy is in 1324 when 'Geoffrey de Hereford burgess of Athy' is referred to in Fiants. By the mid thirteenth century Athy had grown to include two priories, a parish church and a castle or gaol (ibid, p48). It is not known how large the 13<sup>th</sup> century medieval settlement was at Athy,

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although 14th century records indicate that there were 10 burgesses, each with established rights and privileges (including to elect a provost) and a community of supporting peasant serfs and soldiers.

Although documentary sources show the first reference to town defences (RMP KD035-022002) in Athy in the early 16th century, it is highly likely that some form of town defences was erected by the Anglo-Normans in the 13th century (Bradley et al. 1986, vol. 1, 37). A 19th century document in the National Library of Ireland (NLI Ms. 16172) indicates the former location of some of Athy's town walls. Previous archaeological excavations and recent geophysical surveys (Earthsound Geophysics GPR Survey for Athy Heritage Committee) have also informed as to the route of the town walls in some locations. On the east side of the Barrow, the walled town was a D-shaped area (est. c. 290m N-S; c. 200m E-W) which extended to Tubber Muilland Gate on Stanhope Street in the north, St. Michael's Gate on Leinster Street to the east, and Preston's (or Postern) Gate) to the south on Offaly Street. Although no upstanding masonry remains of the town defences have been identified on the west side of Athy it is possible to surmise where the medieval town walls may have extended to, based on the layout of Duke St, St. John's Lane and Green Lane. It has been suggested by Bradley that the western part of medieval town of Athy was roughly square in plan, measured c. 200m N-S, c. 200m E-W, and had one gate, named 'Miss Helen's Gate', situated at the West end of Duke St (ibid, 48).

The medieval period saw Athy develop as an inland port, providing supplies and materials to the Anglo-Norman settlements in Laois and Kildare. The passage of boats from New Ross to Athy is first referred to in the 13th-century.

In 1316 King Edward II created the title of Earl of Kildare by Letters Patent, which was ennobled to John FitzThomas 4<sup>th</sup> Lord of Offaly, who became 1<sup>st</sup> Lord Kildare. The Earl of Kildare took the name Fitzgerald, after his grandfather Maurice Fitzgerald. The Fitzgerald Earls of Kildare who retain control over Athy throughout the medieval period.

During the fourteenth century Athy like the rest of Ireland, experienced a period of economic decline. The Bruce Invasion of 1315 and the Black Death of 1348 put pressures on the authority of the Anglo-Norman rulers. Athy was attacked and burned in 1308, and again in 1374 by the O Mordha (later O Moore) clan from Laois (Tresham 1828, 251: no.23).

In 1417, in response to the growing threat of attack on Athy by Gaelic tribes Sir John Talbot, the Viceroy of Ireland, built a tower-house castle (RMP KD025-022010, known as Whites Castle) on the east bank of the Barrow beside the bridge (RMP KD035-022008). This tower-house castle supported a garrison to protect the river crossing, and to limit Gaelic advances from Laois into Kildare (Bradley 1986, p24).

In 1515 Henry VIII granted a charter of incorporation to Athy. This gave the burgages of Athy the right to hold a weekly market, and to fortify the town with ditches and walls of stone and lime. This also granted the burgages of Athy customs and other incomes to pay for the construction and upkeep of the town walls and ditches (MacNiocaill 1964a, 182-5).

The Dissolution of the Monasteries under Henry VIII in the 1530s resulted in the suppression of the Dominican Priory, and the ruinous Priory of St. John. This formerly religious land in Athy was then used to pay debts accrued by the crown in its wars, and resulted in new buildings being constructed at the locations of the Dominican Priory and the Priory of St. John.

The Tudor Plantations of Laois and Offaly in the 1550s resulted in an increase in conflict between the crown and the Gaelic tribes. In the late sixteenth century Athy was a vital supply line for the often beleaguered English settlers of Leix and Offaly and control of its bridges was essential for the continued supply of men, weapons and stores.

In 1613, King James I granted a new charter to Athy declaring the town to be a Borough consisting of a Sovereign, Bailiffs, Free Burgesses and a Freeman. The Sovereign was elected annually on 24 July from amongst the 12 Burgesses of Athy who were nominated for life by the Duke of Leinster. The municipal affairs of Athy were regulated at courts held before the Sovereign and market customs. Tolls were collected to fortify the town and pave the streets. Athy Borough was empowered to nominate two Members of Parliament, a right exercised by the Duke of Leinster.

During the mid-17<sup>th</sup> century Cromwellian Invasion of Ireland Catholic forces destroyed the bridge (RMP KD035-022008). To limit the advance of Cromwell's troops. The replacement bridge (Cromaboo Bridge) was constructed in the late 18<sup>th</sup> century (Bradley et al. 1986a, vol. 1, 43). The 1659 census of Ireland records that Athy had 273 households, comprising 61 English (Protestant) and 212 Irish (Catholic) (Pender 1939, p403). This figure of 273 households indicates that there was a population of 1000-1500 in Athy in the middle of the 17th century. The gentry of Athy are listed as Robert Preston Esq and Robert Weldon Esq, and Will Weldon.

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The Restoration of the Monarchy in the late 17<sup>th</sup> century, and particularly the accession of Queen Anne to the throne in 1702, resulted in increased investments in civic projects in Ireland. Attempts were made to secure road transport links between Athy and Carlow, and northwards to Monasterevan. The French Cartographer John (Jean) Rocque compiled a detailed map of Athy in 1756. Several of the extant civic buildings in Athy date to the 18<sup>th</sup> century, and these are depicted on Rocque's map. The layout of Emily Square (then called Market Street), Leinster Street (then called High Street), Stanhope Street (then Cotters Lane), and Offaly Street (then called Preston Gate), are all similar to the extant street layout. The Shackleton Museum building (formerly Athy Town Hall) is depicted in Emily Square, as is the row of buildings on either side of Emily Square. Several of the extant buildings on Leinster Street are also depicted. The extent of the east side of the medieval town is reflected in the curving layout of Meeting Lane, and Chapel Lane. The west side of the town of Athy is not depicted as being as well developed in the mid-18<sup>th</sup> century, however, Duke Street, William Street, Woodstock Street (then Barrack Street), and Perrys Supermarket lane (then St. John's Lane), are all depicted on Rocque's map.

In the last decades of the 18<sup>th</sup> century the construction of the Grand Canal between Dublin and the Shannon, was completed in Athy. The Canal entered Athy to the west of the Barrow. This development resulted in significant improvements in transportation and trade in Athy, particularly west of the Barrow along Duke Street and William Street. Many new merchants homes, commercial buildings, and a hotel, were constructed in Athy in the late 18<sup>th</sup> and early 19<sup>th</sup> centuries, in response to this increased commercial activity. The canal provided a means of transportation of brick, coal, grain and agricultural goods. Warehouses were constructed in Athy to store these goods. Brick fields are noted in the lands to the southwest of the town, which brick production was carried out. The farmers of the rich agricultural lands in the environs of Athy used the canal to supply Dublin with their produce, resulting in Athy developing as a thriving market town. Private investment saw the construction of mills and millraces on both sides of the Barrow in Athy, north and south of Cromaboo Bridge.

Historical sources provide information about the population in Athy in the nineteenth century. Samuel Lewis' Topographical Dictionary of Ireland states that Athy had 4494 inhabitants in 1837, living in 733 houses. The census of 1871 records Athy as having a population 4510.

An examination of the mid-19<sup>th</sup> century first edition 6 inch to a mile scale Ordnance Survey map of Athy (dating to 1838) depicts the town in many ways similar to the extant layout. The town was formed along an east-west axis of Leinster Street and Duke Street, with several side streets at right angles off these main streets. Emily Square is depicted. A church (since removed) associated with the Dominican Abbey (RMP KD035-022004) is depicted to the south of the Shackleton Museum in Emily Square. The location of the Dominican Abbey (RMP KD035-022004) is noted on this map, just west of Emily Square, although no buildings are depicted, indicating that they had been removed prior to this time. Buildings are depicted along Offaly Street in the location of the extant houses. The town gaol, which was constructed circa 1830, is depicted to the east of Offaly Street. The east side of the town had developed as far as west of St. Michael's Church. Saint Michael's Convent and Catholic Church are depicted on Stanhope Street. White's Castle (RMP KD025-022010) is identified as an RIC; a function it performed since the 1830s. A millrace is depicted on the east bank of the Barrow; one of several constructed in the late 18<sup>th</sup> century in Athy.

The mid-19<sup>th</sup> century first edition 6 inch to a mile scale Ordnance Survey map of Athy west of the Barrow depicts the Grand Canal forming the western extent of the town. Several industrial and commercial buildings, including tan yards, breweries and warehouses, are depicted on this side of the town, particularly south of Duke Street. The Hospital and Priory of St. John (RMP KD035-022006) is depicted as being in ruins. A substantial millrace and mill are depicted to the west of the Barrow, and east of the Hospital and Priory of St. John.

The early 20<sup>th</sup> century first edition 25 inch to a mile scale Ordnance Survey map of Athy depicts the town in greater detail than ever previously recorded. Houses are depicted along the west end of William Street. Malthouses, warehouses, gas works, and other industrial and commercial buildings, and St. Dominic's R.C Church and Convent (now Athy Library), are all depicted on the west side of the town. Athy's Christian Brothers School (dating to circa 1860) is depicted at the location of St. Johns Priory and Hospital. To the east of the Barrow, Emily Square and its surrounding buildings are depicted roughly as they survive. Athy Courthouse is depicted to the southwest of Emily Square. The first edition 25 inch to a mile scale Ordnance Survey map of Athy depicts the Great Southern and Western Railway Line (Carlow and Kilkenny Branch), railway station, and rail bridge, which were constructed in the 1880s. The town had developed to the east of St Michaels Church by the early 20<sup>th</sup> century. The Model Farm and Presbyterian Church formed the eastern extent of the town by this time. The agricultural show grounds, situated to the east of the Presbyterian Church, are evidence of the importance of agricultural trade to Athy in the early 20<sup>th</sup> century.