Comhairle Chontae Chill Chainnigh
Halla an Chontae, Sráid Eoin, Cill Chainnigh, R95 A39T.

Kilkenny County Council
County Hall, John Street, Kilkenny, R95 A39T.

Fónamh don Phobal - Caomhnú don Oidhreacht

Serving People – Preserving Heritage

NATURA IMPACT REPORT DETERMINATION
UNDER
SECTION 177V OF THE PLANNING AND DEVELOPMENT ACT 2000, AS AMENDED,
FOR THE
Draft Conservation Management Plan for the
Abbey Quarter, Kilkenny

A Natura Impact Report on the **Draft Conservation Management Plan for the Abbey Quarter, Kilkenny** was carried out under Article 6(3) of the Habitats Directive. This determined that the Draft Plan will not adversely affect the integrity of any Natura 2000 sites. While it was identified that the implementation of the Plan may have the potential to adversely affect the integrity of a Natura 2000 site, mitigation measures have been included which will negate any such adverse effects on the integrity of the Natura 2000 sites in view of their conservation objectives.

Signed Mow. A/SP.

Date 21/06/22

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Natura Impact Statement

For the Abbey Quarter Kilkenny City Draft Conservation Management Plan

prepared for Howley Hayes Cooney Architecture

on behalf of Kilkenny County Council

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1 Introduction

1 This Natura Impact Statement (NIS) has been prepared by Scott Cawley Ltd. for the applicant, who is seeking permission for the Abbey Quarter Kilkenny City Draft Conservation Management Plan (hereafter referred to as "the draft CMP". The purpose of the draft CMP is to establish the history and significance of the Abbey Quarter, with a particular focus on three protected structures; St. Francis Abbey, Evans Turret, and the City Walls, and to deliver clear objectives for maintenance and conservation, guidance or any future development of the site.

2 This NIS has been prepared in accordance with the provisions of Part XAB of the Planning and Development Act, 2000 (as amended) and in accordance with the requirements of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive).

3 It considers the implications of the draft CMP, on its own and in combination with other plans or projects, for European sites[1] in view of the conservation objectives of those sites. It includes a scientific examination of evidence and data to identify and assess the implications of the draft CMP for any European sites in view of the conservation objectives of those sites. It considers whether the draft CMP, by itself and in combination with other plans or projects, would adversely affect the integrity of any European sites. In reaching a conclusion in this regard consideration is given to any mitigation measures necessary to avoid or reduce any potential negative impacts.

4 The purpose of this NIS is to provide an examination, analysis and evaluation of the potential impacts of the draft CMP on European sites and to present findings and conclusions with respect to the draft CMP in light of the best scientific knowledge in the field. This NIS will inform and assist the competent authority, Kilkenny County Council , in carrying out its Appropriate Assessment as to whether or not the draft CMP will adversely affect the integrity of any European sites, either alone or in combination with other plans and projects, taking into account their conservation objectives.

5 The draft CMP is neither connected with nor necessary to the management of any European sites.

6 It is the considered view of the authors of this NIS (Scott Cawley Ltd) that following the implementation of the mitigation measures proposed in Section 7, that the draft CMP will not individually or in combination with other plans or projects, have any adverse effect on the integrity of any European sites in view of their conservation objectives.

2 Legislative Context

7 The Birds and Habitats Directives - Council Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the Birds Directive) and Council Directive 92 /43 /EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) – require Ireland to establish protected sites as part of a European wide network of sites (the Natura 2000 network which are known in Ireland as European sites) for habitats and species that are of international importance for conservation. In Ireland, European sites include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). SACs are selected for habitats listed on Annex I of the Habitats Directive (including priority Annex I habitat types which are in danger of disappearance) and species listed on Annex II. SPAs are selected for bird species (listed on Annex I of the Birds Directive), regularly-occurring

[1] The Natura 2000 network of sites are defined under the Habitats Directive (Article 3) as a European ecological network of special areas of conservation, composed of sites hosting the natural habitat types listed in Annex I and species listed in Annex II, and special protection areas classified pursuant to the Birds Directive (2009/147/EC). The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats. In Ireland, these sites are designed as *European sites* – as defined under the Planning and Development Acts and/or Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs).

populations of migratory bird species (such as ducks, geese and waders), and areas of international importance for migratory birds. The specified habitats and species for which each SAC and SPA is selected, correspond to the qualifying interests (in the case of SACs) or special conservation interest species (in the case of SPAs) for the sites, for which conservation objectives are prepared.

8 Article 6(3) of the Habitats Directive states that:

> 'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.'

9 This provision is transposed into Irish law by Part XAB of the Planning and Development Acts 2000 as amended. Section 177U(4) of the said Acts provides for screening for Appropriate Assessment as follows:

> *'The competent authority shall determine that an appropriate assessment of [...] a proposed development [...] is required if it cannot be excluded, on the basis of objective information, that the [...] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.'*

10 Section 177U(5) provides as follows:

> *'The competent authority shall determine that an appropriate assessment of a […] proposed development, […], is not required if it can be excluded, on the basis of objective information, that the […] proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.'*

11 Section 177T(1) and (2) provide that a NIS is '*a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites*' *and specifies that it 'shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European site in view of the conservation objectives of the site or sites*'.

12 The Court of Justice of the European Union (CJEU) has made a number of rulings in relation to Appropriate Assessment, regarding when it is required, its purpose and the standards it should meet. Two of the key rulings include, Case C-127/02 Waddenzee where the CJEU found that '*Any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects*' and that the plan or project may only be authorised '*where no reasonable scientific doubt remains as to the absence of such effects*', and Case C-258/11 where the CJEU found that *'[The Appropriate Assessment] cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned*'.

13 Consideration has been given in the preparation of this report, to the evolution in interpretation and application of directives and national legislation arising from jurisprudence of the European and Irish courts, in respect of Article 6 of the Habitats Directive.

3 Methodology

3.1 Scientific and Technical Competence Relied Upon

14 This NIS was authored by Síofra Quigley and reviewed by Niamh Burke of Coiscéim Consulting and Tim Ryle of Scott Cawley Ltd. The background and experience of the author and contributors to this report are set out below.

15 Síofra Quigley is a Consultant Ecologist with Scott Cawley Ltd.. She obtained an honours degree in Zoology, from National University of Ireland Galway, and a Masters degree in Wildlife Biology and Conservation from Edinburgh Napier University. She has four years' professional experience working in the UK and Ireland on large to small scale infrastructure projects, with governmental and private clients. Síofra is experienced in carrying out field surveys in several protected species , including bat, otter, badger, red squirrel, reptile, pine marten and mountain hare. She has also been involved in radio tracking mountain hares and bats, bat call analysis, badger bait marking, acting as an Ecological Clerk of Works, undertaken Phase 1 habitat surveys and reports (Joint Nature Conservation Committee, 2010), habitat surveys to Fossitt (2000) and desk top studies. Since joining Scott Cawley Ltd, Síofra's work involves project management, and the preparation of reports, including Ecological Impact Assessment and Appropriate Assessment reports for residential, commercial, and infrastructural projects across Ireland.

16 Niamh Burke is Principal Ecologist with Coiscéim Consulting Ltd. She holds a BSc in Natural Sciences with Environmental Science and a PhD in salmonid ecology. She is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Full Member of the CIEEM. Niamh is a senior scientist with academic research and consulting experience in terrestrial ecology, aquatic ecology and fluvial geomorphology. She is an experienced project manager with a full working knowledge of EIA, the planning process and relevant environmental legislation, both national and European. With a specialism in aquatic habitats, she also has experience of terrestrial species' surveys and mitigation approaches. In her extensive consultancy roles she has acted as reviewer for all ecological reporting and ensured consistency of standards and approach.

17 Tim Ryle is a Principal Ecologist with Scott Cawley Ltd. He holds an honours degree in Botany from University College Dublin and was later awarded a Ph.D. from the same institution. He is a full Member of the Institute of Environmental Scientists. Tim is an experienced ecological consultant with twenty years' experience in in private consultancy in designing, undertaking and managing a wide range of ecological survey and in assessing impacts and designing mitigation measures and biodiversity enhancements, in particular for protected species including badgers, otters, bats, birds, amphibians as well as habitats of conservation importance. He is also experienced in undertaking appropriate Assessment for small-scale development projects and larger infrastructural projects, land plans as well as national/government plans.

3.2 Guidance and Approach

18 This NIS has been prepared having regard to the following documents.

<u>European Commission Guidance</u>

- *Assessment of Plans and Projects in Relation to Natura 2000 sites: Methodological Guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission, 2021)
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (European Commission, 2019)

- *Communication from the Commission on the Precautionary Principle* (European Commission 2000)[2]
- *Nature and Biodiversity Cases – Ruling of the European Court of Justice* (European Commission 2006)
- *Article 6 of the Habitats Directive – Rulings of the European Court of Justice* (European Commission Final Draft September 2014)

Irish Guidance

- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government 2010 revision)
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. *Circular NPW 1/10 & PSSP 2/10* (NPWS, 2010)
- *OPR Practice Note PN01. Appropriate Assessment Screening for Development Management* (Office of the Planning Regulator, 2021)

19 In addition, regard has been had to the following guidance in characterising impacts, including determining magnitude and significance of impacts, as relevant in the application to Appropriate Assessment and European sites:

- *Guidelines for Ecological Impact Assessment in the UK and Ireland* (Chartered Institute of Ecology and Environmental Assessment, 2018)

3.3 Assessment Methodology

20 The draft CMP (including the proposed design, repointing/repair methodologies and operational effects) was analysed and assessed to identify the potential impacts associated with the draft CMP that could affect the ecological environment.

21 From this, the zone of influence of the draft CMP was defined. Based on the identified impacts, and their zone of influence, the European sites potentially at risk of any direct or indirect impacts were identified.

22 In establishing which European sites are potentially at risk (in the absence of mitigation) from the draft CMP, a source-pathway-receptor approach was applied. In order for an impact to occur, there must be a risk enabled by having a source (e.g. water abstraction or repointing/repair works), a receptor (e.g. a European site or its Qualifying Interest(s) (QIs) or Special Conservation Interest(s) (SCIs) species/habitat), and a pathway between the source and the receptor (e.g. pathway by air for air borne pollution, or a pathway by a watercourse for mobilisation of pollution). For an impact to occur, all three elements must exist; the absence or removal of one of the elements means there is no possibility for the impact to occur.

23 The identification of source-pathway-receptor connection(s) between the draft CMP and European sites essentially is the process of identifying which European sites are within the zone of influence of the draft CMP, and therefore potentially at risk of significant effects. The zone of influence is defined as the area

[2] The precautionary principle is a guiding principle that derives from Article 191 of the Treaty on the Functioning of the European Union and has been developed in the case law of the European Court of Justice (e.g. ECJ case C-127/02 – Waddenzee, Netherlands).

This guidance document notes that the precautionary principle "*covers those specific circumstances where scientific evidence is insufficient, inconclusive or uncertain and there are indications through preliminary objective scientific evaluation that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the chosen level of protection*".

Applying the precautionary principle in the context of screening for appropriate assessment requires that where there is uncertainty or doubt about the risk of significant effects on a European site(s), it should be assumed that significant effects are likely and AA must be carried out.

within which the draft CMP could affect the receiving environment such that it could potentially have significant effects on the QI habitats or QI/SCI species of a European site, or on the achievement of their conservation objectives (as defined in CIEEM, 2018).

24 The identification of a source-pathway-receptor risk does not automatically mean that significant effects will arise. The likelihood of significant effects will depend upon the characteristics of the source (e.g. extent and duration of repointing/repair works), the characteristics of the pathway (e.g. direction and strength of prevailing winds for air borne pollution) and the characteristics of the receptor (e.g. the sensitivities of the European site and its QIs/SCIs). However, identification of the risk does mean that there is a possibility of ecological or environmental damage occurring, with the significance of the effect depending upon the nature and exposure to the risk and the characteristics of the receptor. In this case, where there is uncertainty, the precautionary principle has been applied.

25 This assessment has been undertaken in consideration of all potential impact sources and pathways connecting the draft CMP to European sites, in view of the conservation objectives supporting the conservation condition of the sites' QIs/SCIs.

26 The conservation objectives relating to each European site and its QIs/SCIs are expressed generally for SACs as "to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the cSAC has been selected", and for SPAs "to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA".

27 Following on from this, and as defined in the Habitats Directive, favourable conservation status (or condition, at a site level) of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable

28 The favourable conservation status (or condition, at a site level) of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis

29 Where site-specific conservation objectives have been prepared for a given European site, these include a series of specific attributes and targets against which effects on conservation condition, or integrity, can be measured, i.e. an impact which affects the achievement of favourable conservation condition, as measured by the attributes and targets, is an impact on site integrity.

30 In the case of some QIs/SCIs in certain European sites, the conservation objective is to restore rather than maintain conservation condition and this distinction is taken into account in the assessment; as is any legacy damage to European sites that has occurred since their designation, insofar as possible.

3.4 Desktop Study

31 The desktop data sources used to inform the assessment presented in this report are as follows (accessed on the May 2022):

- Online data available on European sites and protected habitats/species as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie[3], including conservation objectives documents
- Online data available on protected species as held by the National Biodiversity Data Centre (NBDC) from www.biodiversityireland.ie
- Information on the surface water network and surface water quality in the area available from www.epa.ie
- Information on groundwater resources and groundwater quality in the area available from www.epa.ie and www.gsi.ie
- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie
- Information on the location, nature and design of the draft CMP supplied by the applicant's design team
- *Stage 2: Appropriate Assessment – Natura Impact Statement, Abbey Quarter – Urban Park and Street*. Malone O' Regan Environmental, July 2020.
- Kilkenny County Council (2021) *Kilkenny City and County Development Plan 2021-2027*

3.5 Baseline Surveys

32 This section describes the methodologies followed for the ecological surveys undertaken to inform the assessment presented in this NIS.

33 This section describes the ecological surveys carried out to inform the assessment of likely significant effects on European sites.

34 Ecological field surveys were carried out following the best practice professional guidelines in August and September 2021. The surveys and their dates are presented in Table 1.

35 Habitat and flora surveys, terrestrial fauna surveys, ground-level assessment of buildings and trees, and breeding bird habitat suitability were undertaken on the 17th August 2021 by Síofra Quigley BSc (Hons) MSc. Bat activity surveys of the buildings within the boundary of the draft CMP area were undertaken by Dr. Caroline Shiel, an independent bat specialist, on the 5th August, 12th August, 9th, 27th and 28th of September 2021.

Table 1 Ecological surveys and survey dates

Survey	Survey Date(s)	Surveyor(s)
Multidisciplinary survey	17th August 2021	Scott Cawley Ltd.
External Building inspections	17th August 2021	Scott Cawley Ltd.
Bat activity surveys	4th, 11th & 12th August, 9th, 10th , 27th and 28th September 2021	Dr Caroline Shiel, independent Licenced bat specialist

[3] The following SAC and SPA GIS boundary datasets are the most recently available at the time of writing: SAC_ITM_2022_04 and SPA_ITM_2021_10.

3.5.1 Habitats and Flora

36 A habitat survey was undertaken of the lands on the 17th August 2021 by Síofra Quigley following the methodology described in Best Practice Guidance for Habitat Survey and Mapping[4]. All habitat types were classified using the Guide to Habitats in Ireland[5], recording the indicator species and abundance using the DAFOR scale[6] and recording any species of conservation interest. Vascular and bryophyte plant nomenclature generally follow that of The National Vegetation Database[7], having regard to more recent taxonomic changes to species names after the New Flora of the British Isles[8] and the British Bryological Society's Mosses and Liverworts of Britain and Ireland: A Field Guide[9]. Invasive species as listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011-2015, were also surveyed for within the lands of the draft CMP[10].

3.5.1 Fauna Surveys

3.5.1.1 Terrestrial Mammals (excluding Bats)

37 A terrestrial fauna survey (excluding bats) was undertaken on the 17th August 2021 by Síofra Quigley. The presence/absence of terrestrial fauna species were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats on site were assessed for signs of usage by protected/red-listed fauna species, and their potential to support these species.

38 Bat surveys are not relevant for the purpose of AA, as the draft CMP is located outside the range of lesser horseshoe bat *Rhinolophus hipposideros* (only found in the west and southwest of Ireland[11]), the only Annex II species native to Ireland.

3.5.2 Birds

39 Due to the time of year of the survey season for breeding birds (April – June), breeding bird surveys could not be undertaken. Therefore, breeding bird habitat suitability checks of the habitats within the subject lands and the surrounding environs were undertaken on the 17th of August 2021 by Siofra Quigley. Anecdotal signs of birds in the area were identified by sight and song, and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes. The banks of the Breagagh River and the River Nore were also surveyed for kingfisher nesting suitability.

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[4] Smith, G.F., O'Donoghue, P., O'Hora, K. & Delaney, E. (2011) *Best Practice Guidance for Habitat Survey and Mapping*. The Heritage Council Church Lane, Kilkenny, Ireland.

[5] Fossitt, J.A. (2000) *A Guide to Habitats in Ireland*. Heritage Council, Kilkenny.

[6] The DAFOR scale is an ordinal or semi-quantitative scale for recording the relative abundance of plant species. The name DAFOR is an acronym for the abundance levels recorded: Dominant, Abundant, Frequent, Occasional and Rare.

[7] Weekes, L.C. & FitzPatrick, Ú. (2010) The National Vegetation Database: Guidelines and Standards for the Collection and Storage of Vegetation Data in Ireland. Version 1.0. Irish Wildlife Manuals, No. 49. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

[8] Stace, C. (2019) *New Flora of the British Isles*. *4th Edition*. C&M Floristics.

[9] Atherton, I., Bosanquet, S. & Lawley, M. (2010) *Mosses and Liverworts of Britain and Ireland: A Field Guide*. Latimer Trend & Co., Plymouth.

[10] *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance*. Transport Infrastructure Ireland, GE-ENV-01105, December 2020.

[11] Species Profile: Lesser horseshoe bat (Vincent Wildlife Trust, Ireland). Access here: https://www.vincentwildlife.ie/species/lesser-horseshoe-bat

4 Description of the draft CMP

40 The Abbey Quarter in the City of Kilkenny is the location of St. Francis Abbey, a twelfth-century ecclesiastical foundation, bounded to the north by the city defences and the River Breagagh and to the east by the River Nore and in more recent times it was home to the Smithwicks Brewery, prior to relocation in 2014 to the St James Gate Brewery in Dublin. Now under the ownership of Kilkenny County Council, plans (C2A and C2B) are in place to establish a city park at this area, which will bring the ruins of St Francis Abbey, now managed by the OPW, into the public realm.

41 The purpose of the Conservation Management Plan for the site is to document the history and significance of this place, and provide an overarching vision for this site, together with the various structures that survive within it, and to deliver clear objectives for maintenance and conservation, guidance or any future development of the site.

42 An integral part of the City Wall, Evan's Turret is a mural tower located at the junction of the River Breagagh and the River Nore, at the north-eastern end of the Hightown wall. It was subsequently adapted, extended and a roof added for use as a prospect tower in the eighteenth century, and occupied until the middle-nineteenth century. St Francis' Well was a large spring or pool apparently surrounded by a wall located some 34m east northeast of St Francis' Abbey. St Francis' Well was a large spring or pool apparently surrounded by a wall located some 34m east northeast of St Francis' Abbey.

43 The principal architectural significance of Evan's Turret and adjoining walls lies in their being part of an important linear monument, part standing, which once enclosed the city. This significance is reflected in the fact that the whole City Wall, together with Evan's Turret, is designated as a national monument, of national importance, under the 'National Policy on Town Defences' (DoEHLG 2008). Redundancy and neglect present the greatest single threats to the significance of an important historic structure or place, even a ruined one. The serious challenges now faced by the Kilkenny County Council and the OPW should ensure that regular maintenance and repair works are carried out to these structures to preserve them for future generations.

44 None of the historic structures on the Abbey Quarter site are in use, although as a whole, they are considered to be in a fair condition due to various conservation works undertaken over the years. The impact of the former brewing industry is seen throughout the site, as the settings of the structures have been greatly compromised, and interventions into the surviving abbey buildings are still visible from the brewing period. As the Abbey Quarter site was in private ownership for many years, much of this portion of the city wall, the turret and the abbey were hidden from view and inaccessible. Improving public access to the structures will be balanced with ensuring their preservation.

45 The buried remains of the Abbey are not currently visible above ground. The general ground level is much higher than that which would have originally surrounded the abbey and Evan's Turret. This impedes an immediate understanding of the structures. There is a lack of knowledge about the precise remains and location of the St Francis well and a greater understanding of this structure is required.

46 The proposal for the new city park include legible landscaping which will echo the archaeological remains sub-surface, such as the nave and transept. These will be welcome inclusions in the park and will demonstrate clearly the extent of the archaeological remains of the former abbey. It is recommended that the tasting or sample rooms building is removed as it detracts from the views of the abbey and is positioned too close to the structure, while also sitting proud of the east gable window. The draft CMP – Block 9 which is proposed to be four stories in height and is in close proximity to the abbey will obscure views of the east window when approaching from the river park. It is proposed that this block is set back further south, to open up this important view. The incorporation of a steel platform within Evan's Turret should be considered. This would allow for occasional access to revive the eighteenth-century purpose of the turret as a prospect tower from which to enjoy views over the River Nore and surrounding landscape. Removal of one metre or more of earth to the south side of Evan's Turret to reveal more of the historic detail is being proposed.

4.1 Conservation and Repair Strategies

47 The proposed conservation and repair works are outlined below in Table 2, with more detail described in Section 8.0 of the Conservation Management Plan.

Table 2 Recommendations for conservation and repair works

	St Francis Abbey	Evan's Turret	The City Wall	St Francis Well
Urgent (within 12 months)	Management of the willow tree, with regular trimmings and monitoring of roots, and selection of new site for propagated willow tree	Vegetation removals and general inspection	Vegetation removals and general inspection	
	Implementation of secure access to the tower to facilitate inspection, and installation of crack monitoring to the tower	Removal of fallen vault and debris from within tower to area without tower for sorting and recording, and assessment of inside of Turret	Stabilisation of the wall tops	
Short term (within 3 years)	Assessment and repair of the wall tops to ensure no loose masonry or debris could fall form the structure	Repair of the inner skin in the south western corner, and consolidation of the wall core.	Repair eastern end of the horse barracks wall	Further excavation and survey to establish the extent of the remain of the wall below ground
	Removal of vegetation and cement flaunching to the buttresses of the tower	Rebuilding of the vault within the turret, and repair of the north wall at the spring arch	Repair programme for the River Breagagh side of the wall with scaffolding in place	
	Structural assessment and investigations to determine if the concrete frame can be removed	Repointing works and general maintenance	Vegetation Management - ongoing	
	Remove the cherry trees from the south wall of the choir	Vegetation Management - ongoing	Assessment of bat activity	
	Removal of the weeping willow tree	Design repairs of vault and inner face of masonry		

	St Francis Abbey	Evan's Turret	The City Wall	St Francis Well
	First laser scan of the structure	Assessment of bat activity		
	On-going assessment of bat activity			
Medium Term (within 5 years)	Repair of concrete support system to the tower or removal of this support structure	Excavation and repair of the remaining arch		
	Regular removal of vegetation and general repointing works and repairs should be undertaken every five years	Vegetation management - ongoing		
	Regular laser scanning of the structure, every five years to determine ongoing movement			
Long term (within 10-15 years)	Regular inspections and maintenance	Vegetation management – ongoing		
	Repointing repairs			
	Post flood inspections of all wall bases			

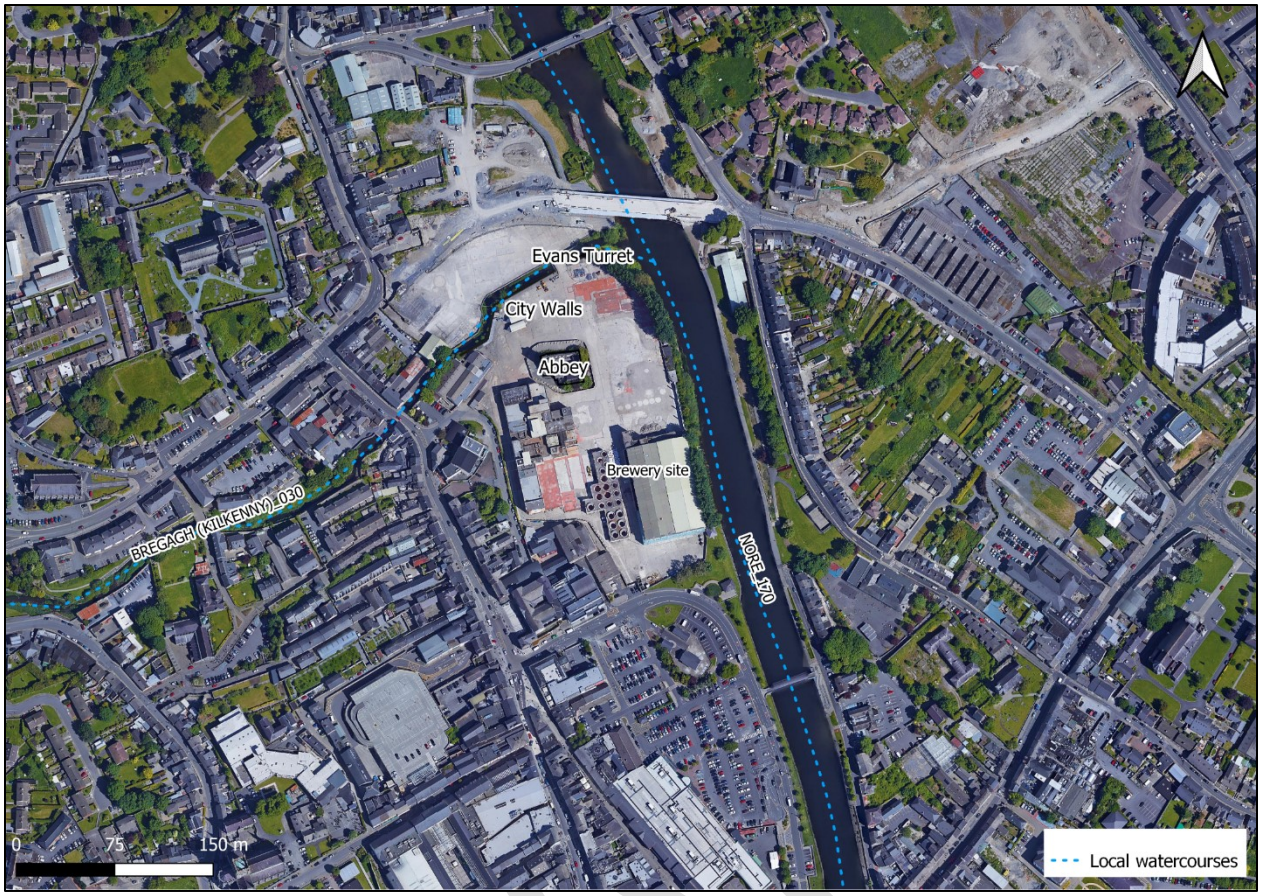

Figure 1 Draft CMP

5 Overview of the Receiving Environment

5.1 European Sites

48 There are two European sites within the vicinity of the draft CMP area. The draft CMP partially overlaps with the River Nore SPA, along the banks of the River Nore, located *c.* 10m from Evans Turret. The River Barrow and River Nore SAC is also adjacent to the draft CMP, *c.* 30m from Evans Turret. There are no other European sites within 15km of the draft CMP area, and based on the nature of the proposed works, no other pathways to European sites are predicted. The Breagagh River borders the north of the draft CMP area and the City Walls, and then discharges into the River Nore which flows in a southerly direction along the eastern aspect of the site.

49 All of the European sites present in the vicinity of the draft CMP are shown on Figure 3 below, with a more detailed image shown in Figure 1. The QIs/SCIs of the European sites in the vicinity of the draft CMP are provided in Appendix I.

50 The European sites present in the vicinity of the draft CMP are listed in Table 3, along with their qualifying interests and proximity to the draft CMP, and shown on Figure 2.

Table 3 European sites in the vicinity of the draft CMP

Site name and code	Distance from Proposed Development	Reasons for designation[12] (*=priority Annex I Habitat)
Special Areas of Conservation (SACs)		
River Barrow and River Nore SAC [002162]	*c.* 2-3m from the draft CMP	1016 Desmoulin's whorl snail *Vertigo moulinsiana* 1029 Freshwater pearl mussel *Margaritifera margaritifera* 1092 White-clawed crayfish *Austropotamobius pallipes* 1095 Sea lamprey *Petromyzon marinus* 1096 Brook lamprey *Lampetra planeri* 1099 River lamprey *Lampetra fluviatilis* 1103 Twaite shad *Alosa fallax* 1106 Atlantic salmon (*Salmo salar*) (only in fresh water) 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1310 Salicornia and other annuals colonizing mud and sand 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) 1355 Otter *Lutra lutra* 1410 Mediterranean salt meadows (Juncetalia maritimi) 1421 Killarney fern *Trichomanes speciosum* 1990 Nore freshwater pearl mussel *Margaritifera durrovensis* 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation 4030 European dry heaths 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels 7220 * Petrifying springs with tufa formation (Cratoneurion) 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) NPWS (2011) Conservation objectives: River Barrow and River Nore SAC [002126]. Version1.0. NPWS, Department of Arts, Heritage and the Gaeltacht
Special Protections Areas (SPAs)		
River Nore SPA [004233]	Overlaps with the boundary of the draft CMP	[A229] Kingfisher *Alcedo atthis* *S.I. No. 193/2012 - European Union Habitats (River Nore Special Protection Area 004233) Regulations 2021*

[12] "Qualifying Interests" for SACs and "Special Conservation Interests" for SPAs based on relevant Statutory Instruments for each SAC and SPA, or NPWS Conservation Objectives downloaded from www.npws.ie in April 2022. Data on NHA/pNHA sites from the site synopsis documents published by the NPWS (where available).

Priority Annex I habitat types are denoted with an "*" and are habitat types which are in danger of disappearance at a European level – from the definition of "priority natural habitat types" in Article 1(d) of the Habitats Directive

Site name and code	Distance from Proposed Development	Reasons for designation[12] (*=priority Annex I Habitat)
		NPWS (2022) Conservation objectives for River Nore SPA [004233]. Generic Version 9.0. Department of Housing, Local Government and Heritage.

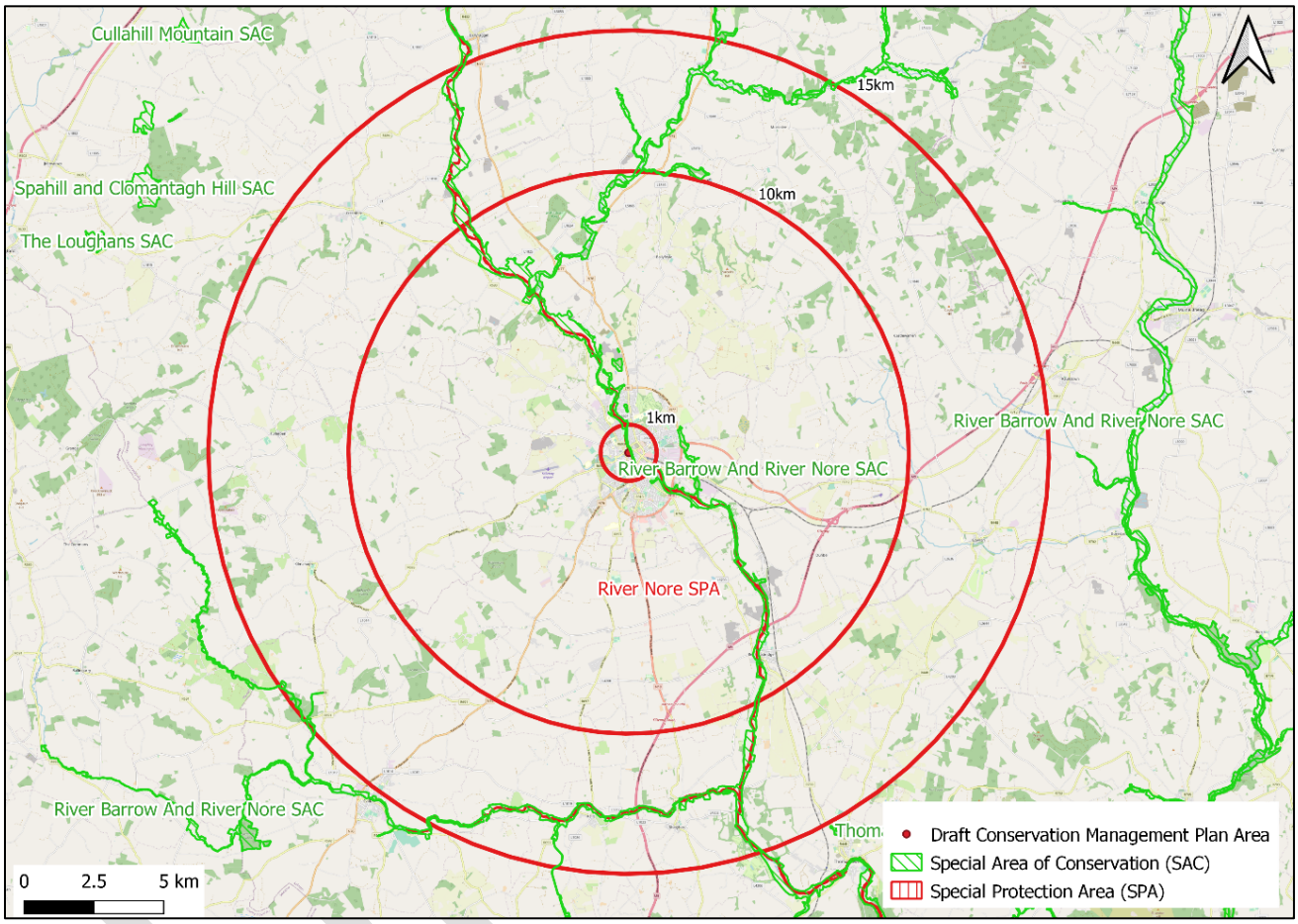

Figure 2 European sites within the vicinity of the draft CMP site

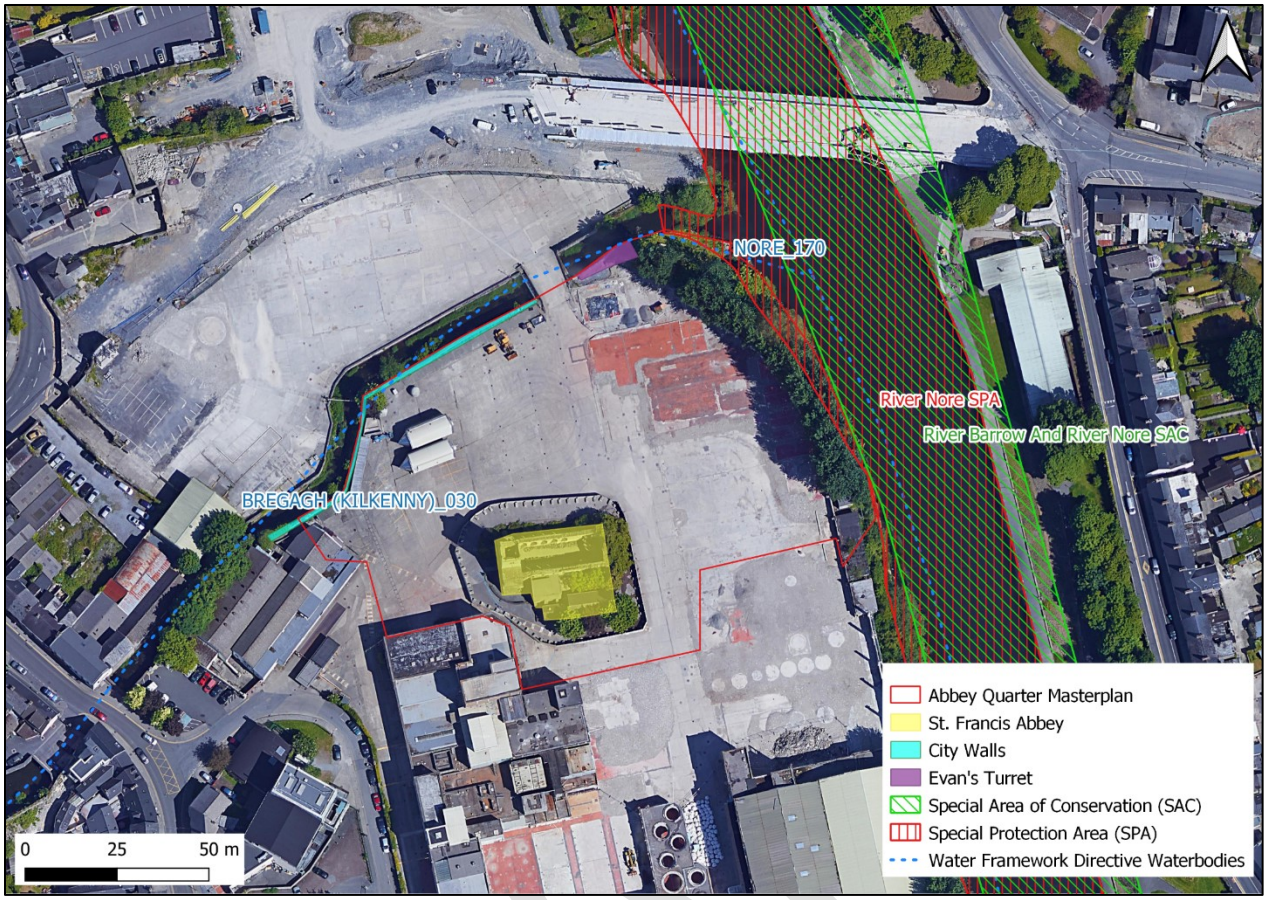

Figure 3 Close-up of European Sites in the vicinity of the draft CMP

5.1.1 Habitats

51 The draft CMP area is located in the 10km Grid Square S55, at S 50580 56335 (at its central point) in the Abbey Creative Quarter in the centre of Kilkenny City.

52 The draft CMP area is characterised by largely artificial and man-made habitats, with Evans Turret, St. Francis Abbey, and the City Walls, all comprising of stone walls and other stonework (BL1). Adjacent to Evans Turret is a small area with a mosaic of scrub (WS1) and recolonising bare ground (ED1). Treeline (WL2) habitat occurs along the eastern and southern aspect of St. Francis Abbey, with ornamental/non-native shrub (WS3) also bordering the northern aspect. The area surrounding the Abbey is predominately comprised of buildings and artificial surfaces (BL3), and consists of concrete and hard-standing, previously in use as the Smithwick's Brewery, which was mostly demolished and removed in 2021. Depositing/lowland rivers habitat (FW2) which are largely manmade, comprising of the Breagagh River borders the north of the draft CMP area, and the River Nore which borders the east of the draft CMP area. A mosaic of treeline habitat (WL2), and scrub (WS1) border the River Nore banks, also in the east, linking the draft CMP area to the Riverside Gardens along the River Nore.

53 None of the habitats within the draft CMP area correspond to Annex I Habitats, and do not provide a supporting role to any Annex I habitats connected with any European site. The nearest known location for Annex I habitats within the River Barrow and River Nore SAC is Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] a priority Annex I habitat, located *c.* 2.9km downstream from the draft CMP (NPWS, 2011). Overall, the habitats located within the draft CMP have limited ecological value and none correspond to Annex I habitats.

5.1.2 Flora and Fauna Species

54 The NBDC did not return any records for protected and/or rare plant species within 2km of the draft CMP area. Due to the artificial and managed nature of the habitats within the draft CMP, there is little habitat for rare/protected flora species to colonise.

55 With regards to non-native invasive species, the NBDC database search returned records of six species listed on Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011-2015 within *c.* 2km of the draft CMP; Japanese knotweed *Reynoutria japonica,* Giant hogweed *Heracleum mantegazzianum,* Himalayan balsam *Impatiens glandulifera,* Nuttalls waterweed *Elodea nuttallii,* Canadian pondweed *Elodea canadensis*[13]*,* and three cornered leek *Allium triquetrum.*

56 No protected and/or rare species listed in the Flora Protection Order or in Red Lists, nor invasive non-native species listed on Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) were found to be present within the draft CMP area at the time of the survey. However, Himalayan balsam and Japanese knotweed were identified in multiple areas along the river banks of the Nore and the Breagagh to the north and east of the draft CMP during field surveys, and as also noted in earlier surveys associated with the Natura Impact Statement for the Abbey Quarter Masterplan (Malone O'Regan, 2020). The protected structures (i.e. St. Francis Abbey, Evans Turret, and the City Walls) are not suitable habitat for the aforementioned species due to the artificial nature of their structure. However these species may grow in close proximity of the structures as they are opportunistic species and readily colonise a range of habitats.

57 Otter *Lutra lutra,* and their breeding and resting places, are protected under the Wildlife Acts. Otter are also listed on Annex II and Annex IV of the EU Habitats Directive and are afforded strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended). The NBDC data search returned 13 records of otter within *c.* 2km of the draft CMP, with the latest from 2018. There are numerous records of otters along the River Nore, with otter being one of the Qualifying Interest species of this the River Barrow and River Nore SAC.

58 The draft CMP area provides little habitat for otter. However, the River Nore and the Breagagh River run adjacent to the draft CMP provide ample suitable foraging, commuting and resting/breeding habitat for this species. An otter spraint was identified on a rock adjacent to the Breagagh and Nore confluence, within *c.* 20m of Evans Turret. Otter spraints and prints were also noted in the Abbey Quarter Masterplan NIS (Malone O'Regan 2020) during surveys carried out along the watercourse. The watercourse has abundant prey species for otters, as other QI species for the Nore include Salmon Salmo salar, white-clawed crayfish *Austropotamobius pallipes*, twaite shad *Alosa fallax fallax*, and lamprey species.

59 The River Nore SPA is designated for kingfisher *Alcedo atthis*, and this species was previously confirmed as commuting along the Breagagh River, which backs onto the draft CMP and the City Walls, by Malone O' Regan Environmental (2020). The Breagagh River is heavily vegetated and overgrown along the fringes, which is unsuitable for kingfisher nest burrows. The City Walls have cracks and crevices along the River side which have the potential to be used by nesting kingfishers, however a detailed inspection was carried out by Malone O'Regan Environmental for the NIS Abbey Quarter – Urban Park and Street planning proposal (Planning ref 307796-20), and these burrows were deemed to not be sufficiently big enough or long enough for the use of kingfishers. There are no banks suitable for kingfisher nests in the vicinity of the draft CMP. The Breagagh is suitable for foraging and commuting along to the adjoining River Nore, and the NBDC database search returned 14 records within *c.* 2km for kingfisher. The closest record to the draft CMP is from 2014, and located *c.* 260m south along the River Nore.

60 There are five Annex II fish species listed as Qualifying Interests within the River Barrow and River Nore SAC, i.e. sea lamprey *Petromyzon marinus*, brook lamprey *Lampetra planeri,* river lamprey *Lampetra*

[13] Canadian pondweed *E. canadensis* was delisted as a Third Schedule species. However, as it often occurs mixed with *E. nuttallii*, it is included here for completeness.

fluviatilis, Atlantic salmon *Salmo salar* and twaite shad *Alosa fallax*. There were no records of any of the above species within *c.* 2km of the draft CMP and sea lamprey would not be expected this far upstream. Aquatic surveys were not carried out as part of this assessment; however, habitat suitability assessment surveys were undertaken on the 17th August 2021, with particular regard for the aforementioned species. Instream vegetation was present in the Breagagh and the Nore, with soft, silty substrate evident in the riverbed itself. Instream vegetation is important for rivers/streams used by salmonid species, as it provides protection from predators . Lamprey species tend to live in soft substrate, where they can hide from predators . As this habitat is present in the watercourses adjacent to the draft CMP, there is the potential for these species to occur here. Twaite shad typically use gravel substrate to spawn near estuaries, and with the nearest record of this species over 30km downstream of the draft CMP, therefore it is unlikely this species is present in the watercourses adjacent to the draft CMP due to the lack of habitat and records. Aquatic surveys were also carried out for the Abbey Quarter – Urban Park and Street (Malone O'Regan, 2020) planning application by Sweeney Consultancy, within the sections of the Breagagh River and River Nore adjacent to the draft CMP area, and also downstream within the River Nore in 2019. Salmon parr were identified in the Breagagh, and juvenile lamprey were identified downstream of the draft CMP area in the River Nore.

61 The desk study search from NBDC returned one record for white-clawed crayfish within *c*. 2km of the draft CMP area, from 1995. The surrounding aquatic environment is considered suitable for this species (i.e. high habitat heterogeneity), and white-clawed crayfish is a Qualifying Interest of the River Barrow and River Nore SAC. A single crayfish was identified during surveys carried out by Sweeney Consultancy for the Abbey Quarter planning application (Malone O'Regan Environmental, 2020).

62 The desk study returned no records of freshwater pearl mussel *Margaritifera margaritifera* or Nore pearl mussel *Margaritifera durrovensis* within *c*. 2km of the draft CMP area, although they are Qualifying Interest species of the River Barrow and River Nore SAC. This species is only known to occur in a 10km stretch of the main channel of the River Nore, approximately 22km upstream in Co. Laois (NPWS 2011). No pearl mussels were found in any of the adjacent watercourses to the draft CMP in surveys carried out by Sweeney Consultancy (subcontracted by Malone O'Regan Environmental, 2020).

63 Desmoulin's Whorl Snail *Vertigo moulinsiana* is also a Qualifying Interest species for the River Barrow and River Nore SAC. No records were identified within *c.* 2km of the draft CMP area, with the closest record from 1997, *c.* 20km north west of the draft CMP.

5.1.3 Hydrology

64 There are no surface water features within the draft CMP area. However, the draft CMP area is immediately adjacent to two waterbodies, the Breagagh (Kilkenny)_030 to the north, which discharges into the Nore_070 to the east, and flows in a southerly direction. The site is located in the Nore_SC_090 Sub Catchment, within the Nore Catchment, and also located within the Nore_170 Sub Basin.

65 According to the EPA online Map Viewer, the Breagagh has a Q-Value of "Q3-4" which is of "Poor" water quality status. EPA gather this information from the monitoring station at Brewery Bridge, located *c.* 73m upstream of the City Walls. The Breagagh is considered "at risk" of not achieving good status under the Water Framework Directive (WFD). This river is a tributary of the River Nore, which has a Q-value of "4", which is of "good" water quality status, and considered to be "not at risk" of achieving good status under the WFD.

5.1.4 Hydrogeology

66 Geological Survey of Ireland (GSI) data indicates that the draft CMP area is underlain by the "Ballyadams Formation" which is described as "Crinoidal wackestone/packstone limestone". GSI data also indicates that the draft CMP area is underlain by a "Regionally Important Aquifer" that is "Karstified (diffuse)". The site is located in an area of 'High' vulnerability in relation to the underlying aquifer.

67 The Groundwater Body (GWB) underlying the draft CMP is the "Kilkenny-Ballynakill Gravels", which is currently classified by the EPA as having "Good" groundwater status, with the groundwater risk classed as

"at risk". The adjacent River Barrow and River Nore SAC and the River Nore SPA which partially overlaps with the draft CMP area, are the only European sites located within this GWB, of which the former contains QI groundwater dependent terrestrial habitats.

6 Potential Impacts, Zone of Influence and Identifying European Sites at Risk of Effects

68 Based on the baseline and receiving ecological environment and the nature and characteristics of the draft CMP the following potential impacts have been identified:

- Habitat loss and fragmentation
- Habitat degradation as a result of hydrological impacts
- Habitat degradation as a result of hydrogeological impacts
- Habitat degradation as a result of introducing/spreading non-native invasive species
- Disturbance and displacement impacts

6.1 Habitat loss and fragmentation

69 The draft CMP area overlaps with the boundary of the River Nore SPA, and is within 3 metres of the River Barrow and River Nore SAC at its closest. The nearest known location for an Annex I habitat within the River Barrow and River Nore SAC is Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0], located *c.* 2.9km downstream from the draft CMP (NPWS, 2011). No works are proposed within the River Nore or its banks, and therefore, the River Barrow and River Nore SAC is not at risk of direct habitat loss impacts.

70 As confirmed from studies in support of the Abbey Quarter Masterplan NIS (Malone O'Regan 2020), Kingfisher use the Breagagh River for commuting and foraging and are present along the River Nore, and there is no viable habitat for kingfisher burrows within the draft CMP area. However there will be placement of a scaffolding structure within the Breagagh for the repair and repointing works, which may interfere with commuting/foraging routes, albeit on a temporary basis. Habitat loss may also occur indirectly as a consequence of severe habitat degradation in water quality and/or changes to the hydrological regime, and therefore, could affect the conservation status of this SCI species from the River Nore SPA.

71 The River Barrow and River Nore SAC is designated for a number of QI species, including; otter, Desmoulin's whorl snail, freshwater pearl mussel, white-clawed crayfish, sea lamprey, brook lamprey, river lamprey, twaite Shad, salmon, Killarney fern, and Nore pearl mussel. The draft CMP proposes conservation works on Evans Turret, the City Walls, and St. Francis Abbey, as detailed in the Abbey Quarter Kilkenny City Conservation Management Plan (Howley Hayes Cooney, 2022). These are recommended measures focused on the maintenance and conservation of these structures, in order to preserve them for future generations. No major works are recommended on the water side of Evans Turrett or City Walls (other than minor repointing works), with masonry repairs carried out by hand and under supervision of an archaeologist to ensure there is no damage to the structures. No works will be carried out within the River Nore, however scaffolding will be in place for carrying out repointing works within the Breagagh. Otters likely use the River Breagagh for commuting and foraging, and suitable habitat is present for all three lamprey species, and salmon within the watercourses adjacent to the draft CMP. Habitat loss may occur indirectly as a consequence of severe habitat degradation arising from a reduction in water quality and/or a change to the hydrological regime, as described in the hydrological impacts below. Therefore, indirect habitat loss as a result of habitat degradation in water quality and/or change to the hydrological regime, could affect the conservation status of these QI species from the River Barrow and River Nore SAC.

6.2 Habitat degradation/effects on QI/SCI species as a result of hydrological impacts

72 Surface water run-off and discharges from the site drain to the existing local surface water drainage network. No changes are proposed to the surface water drainage. However the site is immediately adjacent to the River Breagagh and River Nore. Therefore, the Zone of Influence (ZoI) of potential effects on water

quality from the draft CMP could extend to the River Nore and European sites within *i.e*. the River Blackwater and River Nore SAC and the River Nore SPA.

73 The potential release of contaminated surface water runoff and/or an accidental spillage or pollution event, or additional silt and interstitial sediment into any surface water features during any repair or repointing works to the City Walls and Evans Turret, has the potential to affect water quality in the receiving aquatic environment. Material from the wall itself and any cementitious materials from repointing could impact the sensitive QI species in the River Breagagh and the River Nore. In the absence of mitigation, the associated effects of a reduction of surface water quality could potentially extend downstream of the discharge point or location of the accidental pollution event. Such an occurrence, of a sufficient magnitude, either alone or in combination with other pressures on water quality, and in the absence of mitigation could undermine the conservation objectives of the European sites in the River Nore (*i.e.* the River Barrow and River Nore SAC and River Nore SPA).

74 The draft CMP area is adjacent to the River Breagagh and the River Nore which flow along the northern and eastern boundaries of the draft CMP. Otter territories are within the range of *c.* 7.5km for females and *c*. 7-19km for males (O'Neill *et al.*, 2008), and evidence was identified adjacent to the draft CMP on the banks of the River Nore. Therefore, there is potential for otter associated with the River Barrow and River Nore SAC to be present within the zone of influence of the draft CMP. A reduction in water quality as a result of an accidental pollution event or additional sediment load (either alone or in combination with other pressures on water quality) however, could result in the degradation of the local aquatic environment, which could in turn negatively affect the otter population through direct contact with pollutants or a decline in fish prey. Sea lamprey *Petromyzon marinus*, brook lamprey *Lampetra planeri* river lamprey *Lampetra fluviatilis*, Atlantic salmon *Salmo salar,* white-clawed crayfish *Austropotamobius pallipes* , twaite Shad *Alosa Fallax Fallax*, and freshwater pearl mussel *Margaritifera margaritifera*, all QI species of River Narrow and River Nore SAC, could also be negatively impacted from a reduction in water quality as the finest grained portion of sedimentary run-off (fine silts- to mud sized grains) are the most deleterious fraction for these species. Desmoulin's Whorl Snail *Vertigo moulinsiana,* Nore pearl mussel *Margaritefera durrovensis,* are also QI species of the River Barrow and River Nore SAC and would be sensitive to changes to water quality. However; both of these species are located a significant distance upstream of the draft CMP area and Kilkenny City (> 30km), and therefore are not at risk of hydrological impacts from the draft CMP.

75 The Killarney Fern *Trichomanes speciosum* is also a QI species of the River Barrow and River Nore SAC. This fern grows in deeply shaded, humid areas such as dripping caves, crevices and overhangs of cliffs, within stream gullies, by waterfalls and on the floor of damp woodlands (NPWS, 2013a). The draft CMP area is located outside the current known distribution and favourable reference range of this qualifying interest (NPWS, 2019). According to the SAC Conservation Objectives report, the nearest record of Killarney fern to the proposed site is located a considerable distance, approximately 33km, downstream of the draft CMP site. There are no records on the NBDC for Killarney Fern within 20km of the draft CMP site. It is therefore not anticipated that the draft CMP would have direct or indirect negative impacts upon this qualifying interest.

76 Kingfisher are an SCI species for the River Nore SPA, and would also be sensitive to changes to the hydrological regime that may affect the availability of fish prey. In a worst-case scenario potential impacts could occur to such a degree that the conservation objectives of the River Nore SPA (and River Barrow and River Nore SAC) are compromised.

77 There are also a number of QI habitats that are also sensitive to changes in the hydrological regime and are located downstream of the draft CMP area (NPWS, 2011). However; with the exception of the priority Annex I habitat Alluvial woodland [91E0], all of the QI habitats are located over 30km downstream of the draft CMP. As the works are very minor, localised, and due to the distance between the repair/repointing works and these QI habitats, the draft CMP is not likely to result in habitat degradation as a result of hydrological impacts.

78 As the draft CMP has the potential to result in habitat degradation and effects on of the qualifying/special conservation interest species of European sites as the result of hydrological impacts, there is the potential for in combination effects to occur.

6.3 Habitat degradation as a result of hydrogeological impacts

79 The draft CMP area lies within the Kilkenny-Ballynakill Gravels GWB. The only European site within the Kilkenny-Ballynakill GWB that is designated for groundwater dependant habitats and/or species is the River Barrow and River Nore SAC. The qualifying interests of the River Barrow and River Nore SAC, two priority Annex I habitats, namely; Petrifying springs and Alluvial woodland, and the whorl snail species, are dependent upon the existing condition and functioning of the groundwater regime. As the measures of the draft CMP will not interact with the underlying groundwater body, directly or indirectly, and as Policy 6.1 of the Kilkenny City and County Development Plan 2017 – 2027 states the sub-surface archaeology is to be preserved and undisturbed, it cannot influence groundwater conditions in the European site.

80 Therefore, there is no possibility of the draft CMP undermining the conservation objectives of any of the qualifying interests or special conservation interests of any European sites, either alone or in combination with any other pans or projects, as a result of hydrogeological effects.

6.4 Habitat degradation as a result of introducing/spreading non-native invasive species

81 Himalayan balsam and Japanese knotweed were identified along the banks of the River Nore and the Breagagh River. An invasive plant species management plan was included within the NIS (Malone O'Regan Environmental, 2020) for the Abbey Quarter – Urban Park and Street planning proposal (Planning ref 307796-20), which will manage, remove and contain any invasive species within the site. No conservation works are proposed within the watercourse or on banks of the River Nore and Breagagh River within the draft CMP.

82 Therefore, there is no possibility of the draft CMP undermining the conservation objectives of any of the qualifying interests or special conservation interests of any European sites, either alone or in combination with any other pans or projects, from habitat degradation as a result of introducing/spreading non-native invasive species.

6.5 Disturbance and displacement impacts

83 Repointing/repair-related disturbance and displacement of fauna species could potentially occur within the vicinity of the draft CMP. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m . For birds including Kingfisher, disturbance effects would not be expected to extend beyond a distance of *c.*300m, as noise levels associated with general repointing/repair activities would attenuate to close to background levels at that distance. There are two European sites within the disturbance ZoI; River Nore SPA and the River Barrow and River Nore SAC, located adjacent to the draft CMP. Otter is a QI species of the River Barrow and River Nore SAC, and kingfisher are a SCI of the River Nore SPA. These species are both likely using the habitats within the watercourses adjacent to the draft CMP area, and associated habitats for foraging and/or commuting. The draft CMP proposes the conservation, repair and maintenance of protected structures within the site. The scale of these works is such that they will not result in disturbance or displacement of any qualifying/special conservation interest species of any European site. Both otters and kingfishers are generally shy species and will avoid human presence, as the works are so short in nature, it is unlikely to cause any kind of disturbance or displacement to these species. A scaffolding structure will be in place within the Breagagh River for the repointing works, this will be temporary in nature (*i.e*. 2-3 weeks), and will not obstruct the overall flow of the River. However this has the potential to cause a short term disturbance to aquatic species (*i.e.* brook lamprey, river lamprey, Atlantic salmon and white clawed-crayfish), by the potential creation of sediment when the scaffolding is installed and removed. Therefore there is potential for the draft CMP to cause displacement or disturbance effects that could affect the conservation objectives of these aquatic QI species.

6.6 Summary

84 The potential impacts associated with the draft CMP have the potential to affect the receiving environment and, as a result, the conservation objectives supporting the qualifying interest/special conservation interests of two European sites: River Barrow and River Nore SAC and the River Nore SPA.

85 The potential impacts of the draft CMP on the receiving environment, their zone of influence, and the European sites at risk of likely significant effects are summarised in Table 4 below.

Table 4 Summary of the potential impacts of the draft CMP on the receiving environment, their potential zone of influence, and the European sites within the zone of influence

Potential Direct or Indirect Impacts and zone of influence of the Potential Effects	Are there any European sites within the zone of influence?
Habitat loss Habitat loss will be confined to the lands within the draft CMP boundary.	Yes There are no European sites at risk of direct habitat loss. As the draft CMP includes some works involve a scaffolding structure within the Breagagh River, there is potential for indirect effects of habitat loss on the following European sites: River Barrow and River Nore SAC, and River Nore SPA
Habitat degradation as a result of hydrological impacts Habitats and species downstream of the draft CMP site and the associated surface water drainage discharge points.	Yes There are European sites at risk of hydrological effects associated with the draft CMP, namely; River Barrow and River Nore SAC and River Nore SPA
Habitat degradation as a result of hydrogeological impacts Groundwater dependant habitats, and the species those habitats support, in the local area that lie downgradient of the draft CMP site.	No There are no European sites at risk of hydrogeological effects associated with the draft CMP
Habitat degradation as a result of introducing/spreading non-native invasive species Habitat areas within, adjacent to, and potentially downstream of the draft CMP site.	No There are no third schedule non-native invasive species present on the draft CMP site and, therefore, no risk associated with the draft CMP to any European sites from the spread/introduction of non-native invasive species
Disturbance and displacement impacts Potentially up to several hundred metres from the draft CMP boundary, dependent upon the predicted levels of noise, vibration and visual disturbance associated with the draft CMP, in conjunction with the sensitivity of the qualifying interest species to disturbance effects	Yes There is potential for disturbance and/or displacement impacts on QI species of the River Barrow and River Nore SAC,

7 Assessment of Effects on European Sites

86 This section of the NIS assesses the direct and indirect impacts of the draft CMP on the European sites which fall within its zone of influence. For each of these European sites, the assessment below sets out the relevant ecological baseline information, the analysis of the potential impacts, the qualifying interests/special conservation interests at risk of these potential impacts, in view of the sites' conservation objectives, and the mitigation measures (if required) to avoid/reduce the effects of any potential impacts.

87 The assessment of the draft CMP in combination with any other plans or projects on European sites is presented in Section 8.

7.1 River Barrow and River Nore SAC [002162]

7.1.1 Ecological Baseline Description for River Barrow and River Nore SAC

88 The Natura 2000 Standard Data Form (NPWS, 2020) lists the site as supporting many Annexed habitats including the priority habitats of alluvial woodland and petrifying springs. The quality of habitat is generally good. The site also supports a number of Annex II animal species - *Salmo salar, Margaritifera margaritifera, M.m. durrovensis, Alosa fallax fallax, Austropotamobius pallipes, Petromyzon marinus, Lutra lutra, Lampetra fluviatilis* and *L. planeri*. Annex I Bird species include *Anser albifrons flavirostris*, *Falco peregrinus, Cygnus cygnus, Cygnus columbianus bewickii, Limosa lapponica, Pluvialis apricaria* and *Alcedo atthis*. A range of rare plants and invertebrates are found in the woods along these rivers and rare plants are also associated with the saltmarsh near Waterford.

7.1.2 Qualifying Interests and Conservation Objectives of River Barrow and River Nore SAC

89 The qualifying interests of Dundalk Bay SAC, and the overall conservation objective, are listed below in Table 5.

Table 5 Qualifying Interests and Conservation Objectives of River Barrow and River Nore SAC

Qualifying Interest(s)	Conservation Objective(s)
1016 Desmoulin's whorl snail *Vertigo moulinsiana* 1029 Freshwater pearl mussel *Margaritifera margaritifera*[14] 1092 White-clawed crayfish *Austropotamobius pallipes* 1095 Sea lamprey *Petromyzon marinus* 1096 Brook lamprey *Lampetra planeri* 1099 River lamprey *Lampetra fluviatilis* 1103 Twaite shad *Alosa fallax* 1106 Atlantic salmon (*Salmo salar*) (only in fresh water) 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1310 Salicornia and other annuals colonizing mud and sand 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) 1355 Otter *Lutra lutra* 1410 Mediterranean salt meadows (Juncetalia maritimi) 1421 Killarney fern *Trichomanes speciosum* 1990 Nore freshwater pearl mussel *Margaritifera durrovensis* 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and Callitricho-Batrachion vegetation	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected

[14] The status of the freshwater pearl mussel (*Margaritifera margaritifera*) as a qualifying Annex II species for the River Barrow and River Nore SAC is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species.

Qualifying Interest(s)	Conservation Objective(s)
4030 European dry heaths 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels 7220 * Petrifying springs with tufa formation (Cratoneurion) 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) NPWS (2011) Conservation objectives: River Barrow and River Nore SAC [002126]. Version 1.0. NPWS, Department of Arts, Heritage and the Gaeltacht	

90 In conjunction with considering the generic conservation objective for this SAC "To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected", the site specific conservation objectives document for River Barrow and River Nore SAC also informed this assessment.

91 The site specific conservation objectives document sets out the attributes, measures and targets that define the favourable conservation condition of the qualifying interests within the European site. Affecting the conservation condition of the qualifying interests/special conservation interests is deemed to constitute an adverse effect on the integrity of a European site. The specific attributes and targets used to define the conservation objectives of the qualifying interests of River Barrow and River Nore SAC are presented in Section 7.1.2, Table 5.

7.1.3 Examination and Analysis of Potential Direct and Indirect Impacts

92 The direct and/or indirect impacts by which the draft CMP could (in the absence of mitigation measures) potentially affect the conservation objective attributes and targets supporting the conservation condition of the qualifying interests of River Barrow and River Nore SAC, are:

- Habitat loss and fragmentation
- Habitat degradation as a result of hydrological impacts
- Disturbance and displacement impacts

7.1.3.1 Habitat loss and fragmentation

93 The River Barrow and River Nore SAC is designated for a number of QI species, including; otter, Desmoulin's whorl snail, freshwater pearl mussel, white-clawed crayfish, sea lamprey, brook lamprey, river lamprey, twaite Shad, salmon, Killarney fern, and Nore pearl mussel. The draft CMP proposes conservation works on Evans Turret, the City Walls, and St. Francis Abbey, as detailed in the Abbey Quarter Kilkenny City draft Conservation Management Plan (Howley Hayes Cooney, 2022). These are recommended measures focused on the maintenance and conservation of these structures, in order to preserve them for future generations. No major works are recommended on the water side of Evans Turrett or City Walls (other than minor repointing works), with masonry repairs carried out by hand and under supervision of an archaeologist to ensure there is no damage to the structures. No works will be carried out within the River Nore, however scaffolding will be in place for carrying out repointing works within the Breagagh. Otters likely use the River Breagagh for commuting and foraging, and suitable habitat is present for all three lamprey species, and salmon within the watercourses adjacent to the draft CMP. Habitat loss may occur indirectly as a consequence of severe habitat degradation arising from a reduction in water quality and/or a change to the hydrological regime, as described in the hydrological impacts below. Therefore, indirect habitat loss as a result of habitat degradation in water quality and/or change to the hydrological regime, could affect the conservation status of these QI species from the River Barrow and River Nore SAC.

7.1.3.2 Habitat degradation as a result of hydrological impacts

94 The release of contaminated surface water runoff and/or an accidental spillage or pollution event, or additional silt and interstitial sediment into any surface water features during any repair or repointing works to the City Walls and Evans Turret, has the potential to affect water quality in the receiving aquatic environment. Material from the wall itself and any cementitious materials from repointing could impact the sensitive QI species in the River Breagagh and the River Nore. In the absence of mitigation, the associated effects of a reduction of surface water quality could potentially extend distance downstream of the discharge point or location of the accidental pollution event. Such an occurrence, of a sufficient magnitude, either alone or in combination with other pressures on water quality, and in the absence of mitigation could undermine the conservation objectives of the European sites in the River Nore.

95 The draft CMP area is adjacent to the River Breagagh and the River Nore which flow along the northern and eastern boundaries of the draft CMP. Otter territories are within the range of *c.* 7.5km for females and c. 7-19km for males (o'Neill *et al.,* 2008), and evidence was identified adjacent to the draft CMP on the banks of the River Nore. Therefore, there is potential for otter associated with the River Barrow and River Nore SAC to be present within the zone of influence of the draft CMP. A reduction in water quality as a result of an accidental pollution event (either alone or in combination with other pressures on water quality) however, could result in the degradation of the local aquatic environment, which could in turn negatively affect the otter population through direct contact with pollutants or a decline in fish prey. Sea lamprey *Petromyzon marinus*, brook lamprey *Lampetra planeri* river lamprey *Lampetra fluviatilis*, Atlantic salmon *Salmo salar*, white-clawed crayfish *Austropotamobius pallipes* , twaite Shad *Alosa Fallax Fallax*, and freshwater pearl mussel *Margaritifera margaritifera*, all QI species of River Barrow and River Nore SAC, could also be negatively impacted from a reduction in water quality as the finest grained portion of sedimentary run-off (fine silts- to mud sized grains) are the most deleterious fraction for these species.

96 As the draft CMP has the potential to result in habitat degradation and effects on of the qualifying/special conservation interest species of European sites as the result of hydrological impacts, there is the potential for in combination effects to occur.

7.1.3.3 Disturbance and displacement impacts

97 Repointing/repair-related disturbance and displacement of fauna species could potentially occur within the vicinity of the draft CMP. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m. Otter, lamprey species, white clawed-crayfish, and Atlantic salmon are QI species of the River Barrow and River Nore SAC. Otters likely use the habitats within the watercourses adjacent to the draft CMP area, and associated habitats for foraging and/or commuting, and suitable habitat exists for aquatic species adjacent to the draft CMP. The draft CMP proposes the conservation, repair and maintenance of protected structures within the site. The scale of these works is such that they will not result in disturbance or displacement of any qualifying/special conservation interest species of any European site. Otters are generally shy species and will avoid human presence, as the works are so short in nature, it is unlikely to cause any kind of disturbance or displacement to these species. A scaffolding structure will be in place within the Breagagh River for the repointing works, this will be temporary in nature (i.e. 2-3 weeks), and will not obstruct the overall flow of the River. However this has the potential to cause a short term disturbance to aquatic species (i.e. brook lamprey, river lamprey, Atlantic salmon and white clawed-crayfish), by the potential creation of sediment when the scaffolding is installed and removed. Therefore there is potential for the draft CMP to cause displacement or disturbance effects that could affect the conservation objectives of these aquatic QI species.

7.1.3.4 Summary

98 Table 6 below presents a summary of the potential impacts of the draft CMP on the qualifying interests of River Barrow and River Nore SAC, and how these impacts relate to affecting the site's conservation objectives.

Table 6 Potential Impacts/Effects on the Conservation Objectives of River Barrow and River Nore SAC

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
River Barrow and River Nore SAC			
Desmoulin's whorl snail *Vertigo moulinsiana* [1016] To maintain the favourable conservation condition of the species in the SAC, which is defined as follows:			
Distribution: occupied sites / Number / No decline. Two known sites: Borris Bridge, Co. Carlow S711503; Boston Bridge, Kilnaseer S338774, Co. Laois.	No This species is found a significant distance upstream of the draft CMP (NPWS, 2011), therefore there is no potential for impacts on Desmoulin's whorl snail arising from the draft CMP.	No	No
Population size: adults / Number per positive sample / At least 5 adults snails in at least 50% of samples			
Population density / Percentage positive samples / Adult snails present in at least 60% of samples per site			
Area of occupancy / Hectares / Minimum of 1ha of suitable habitat per site			
Habitat quality: vegetation / Percentage of samples with suitable vegetation / 90% of samples in habitat classes I and II as defined in Moorkens & Killeen (2011)			
Habitat quality: soil moisture levels / Percentage of samples with appropriate soil moisture levels / 90% of samples in moisture class 3-4 as defined in Moorkens & Killeen (2011)			
White-clawed crayfish *Austropotamobius pallipes* [1092] To maintain the favourable conservation condition of the species in the SAC, which is defined as follows:			
Distribution / Occurrence / No reduction from baseline	Yes	Yes	No

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Population structure: recruitment / Percentage occurrence of juveniles and females with eggs / Juveniles and/or females with eggs in at least 50% of positive samples	An accidental pollution event or additional sediment load during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	
Negative indicator species / Occurrence / No alien crayfish species			
Disease / Occurrence / No instances of disease			
Water quality / EPA Q value / At least Q3-4 at all sites sampled by EPA			
Habitat quality: heterogeneity / Occurrence of positive habitat features / No decline in heterogeneity or habitat quality			
Sea Lamprey *Petromyzon marinus* [1095] To restore the favourable conservation condition of the species in the SAC, which is defined as follows:			
Distribution: extent of anadromy / % of river accessible / Greater than 75% of main stem length of rivers accessible from estuary	Yes An accidental pollution event during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	No
Population structure of juveniles / Number of age/size groups / At least three age/size groups present			
Juvenile density in fine sediment / Juveniles/m² / Juvenile density at least 1/m² J			
Extent and distribution of spawning habitat / m² and occurrence / No decline in extent and distribution of spawning beds			
Availability of juvenile habitat / Number of positive sites in 3rd order channels (and greater), downstream of spawning areas / More than 50% of sample sites positive			
Brook lamprey *Lampetra planeri* [1096] To restore the favourable conservation condition of the species in the SAC, which is defined as follows:			
Distribution / % of river accessible / Access to all watercourses down to first order streams	Yes	Yes	No

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Population structure of juveniles / Number of age/size groups / At least three age/size groups of brook/river lamprey present	An accidental pollution event or additional sediment load during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	
Juvenile density in fine sediment / Juveniles/m² / Mean catchment juvenile density of brook/river lamprey at least 2/m²			
Extent and distribution of spawning habitat / m² and occurrence / No decline in extent and distribution of spawning beds			
Availability of juvenile habitat / Number of positive sites in 2nd order channels (and greater), downstream of spawning areas / More than 50% of sample sites positive			
River lamprey *Lampetra fluviatilis* [1099] To restore the favourable conservation condition of the species in the SAC, which is defined as follows:			
Distribution: extent of anadromy / % of river accessible / Greater than 75% of main stem and major tributaries down to second order accessible from estuary	Yes An accidental pollution event or additional sediment load during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	No
Population structure of juveniles / Number of age/size groups / At least three age/size groups of brook/river lamprey present			
Juvenile density in fine sediment / Juveniles/m² / Mean catchment juvenile density of brook/river lamprey at least 2/m²			
Extent and distribution of spawning habitat / m² and occurrence / No decline in extent and distribution of spawning beds			
Availability of juvenile habitat / Number of positive sites in 2nd order channels (and greater), downstream of spawning areas / More than 50% of sample sites positive			
Twaite Shad *Alosa fallax* [1103] To restore the favourable conservation condition of the species in the SAC, which is defined as follows:			
Distribution: extent of anadromy / % of river accessible / Greater than 75% of main stem length of rivers accessible from estuary	Yes	Yes	No

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Population structure: age classes / Number of age classes / More than one age class present	An accidental pollution event load during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	
Extent and distribution of spawning habitat / m² and occurrence / No decline in extent and distribution of spawning habitats			
Water quality: oxygen levels / Milligrammes per litre / No lower than 5mg/l			
Spawning habitat quality: Filamentous algae; macrophytes; sediment / Occurrence / Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth			
Atlantic Salmon (*Salmo salar*) (only in fresh water) To restore the favourable conservation condition of the species in the SAC, which is defined as follows:			
Distribution: extent of anadromy / % of river accessible / 100% of river channels down to second order accessible from estuary	Yes An accidental pollution event or additional sediment load during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	No
Adult spawning fish / Number / Conservation Limit (CL) for each system consistently exceeded			
Salmon fry abundance / Number of fry/5 minutes electrofishing / Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling			
Out-migrating smolt abundance / Number / No significant decline			
Number and distribution of redds / Number and occurrence / No decline in number and distribution of spawning redds due to anthropogenic causes			
Water quality / EPA Q value / At least Q4 at all sites sampled by EPA			
Estuaries [1130] To maintain the favourable conservation condition of the habitat in the SAC, which is defined as follows:			
Habitat area / Hectares / The permanent habitat area is stable or increasing, subject to natural processes.	No	No	No

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Community distribution / Hectares / The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex; Fine sand with *Fabulina fabula* community.	Works are not taking place within or adjacent to this habitat therefore there will be no impact on its area, distribution, hydrological regimes or physical structure. The nearest known example of this habitat located within the SAC is *c.* 30km downstream of the propose development site on in the River Nore (NPWS, 2011).		
Community extent / Hectares / Maintain the natural extent of the *Sabellaria alveolata* reef, subject to natural process.			
Mudflats and sandflats not covered by seawater at low tide [1140] To maintain the favourable conservation condition of the habitat in the SAC, which is defined as follows:			
Habitat area / Hectares / The permanent habitat area is stable or increasing, subject to natural processes	No Works are not taking place within or adjacent to this habitat therefore there will be no impact on its area, distribution, hydrological regimes or physical structure. The nearest known example of this habitat located within the SAC is *c.* 50km downstream of the propose development site on the River Shannon (NPWS, 2011).	No	No
Community distribution / Hectares / The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex.			
***Salicornia* and other annuals colonising mud and sand [1310]** To maintain the favourable conservation condition of the habitat in the SAC, which is defined as follows:			
Habitat area / Hectares / Area stable or increasing, subject to natural processes, including erosion and succession	No Works are not taking place within or adjacent to this habitat therefore there will be no impact on its area, distribution, hydrological regimes or physical structure. The nearest known example of this habitat located within	No	No
Habitat distribution / Occurrence / No decline, subject to natural processes			
Physical structure: sediment supply / Presence/ absence of physical barriers Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Physical structure: creeks and pans / Occurrence / Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession	the SAC is over 50km downstream of the propose development site on the River Shannon (NPWS, 2011).		
Physical structure: flooding regime / Hectares flooded; frequency / Maintain natural tidal regime			
Vegetation structure: zonation / Occurrence / Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession			
Vegetation structure: vegetation height / Centimetres / Maintain structural variation within sward			
Vegetation structure: vegetation cover / Percentage cover at a representative number of monitoring stops / Maintain more than 90% of area outside creeks vegetated			
Vegetation composition: typical species and subcommunities / Percentage cover at a representative sample of monitoring stops / Maintain the range of sub-communities with typical species listed in SMP (McCorry and Ryle, 2009)			
Vegetation structure: negative indicator species - *Spartina anglica* / Hectares / No significant expansion of common cordgrass (*Spartina anglica*). No new sites for this species and an annual spread of less than 1% where it is already known to occur			
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] To restore the favourable conservation condition of the habitat in the SAC, which is defined as follows:			
Habitat area / Hectares / Area stable or increasing, subject to natural processes, including erosion and succession	No Works are not taking place within or adjacent to this habitat therefore there will be no impact on its area, distribution, hydrological regimes or physical structure. The nearest known example of this habitat located within	No	No
Habitat distribution / Occurrence / No decline, subject to natural processes			
Physical structure: sediment supply Presence/ absence of physical barriers / Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Physical structure: creeks and pans / Occurrence / Maintain creek and pan structure, subject to natural processes, including erosion and succession	the SAC is over 50km downstream of the propose development site on the River Shannon (NPWS, 2011).		
Physical structure: flooding regime / Hectares flooded; frequency / Maintain natural tidal regime			
Vegetation structure: zonation / Occurrence / Maintain the range of saltmarsh habitat zonation including transitional zones, subject to natural processes including erosion and succession			
Vegetation structure: vegetation height / Centimetres / Maintain structural variation within sward			
Vegetation structure: vegetation cover / Percentage cover at a representative number of monitoring stops / Maintain more than 90% of area outside creeks vegetated			
Vegetation composition: typical species and sub-communities / Percentage cover at a representative number of monitoring stops / Maintain the range of sub-communities with typical species listed in SMP (McCorry and Ryle, 2009)			
Vegetation structure: negative indicator species - *Spartina anglica* / Hectares / No significant expansion of common cordgrass (*Spartina anglica*), No new sites for this species and an annual spread of less than 1% where it is already known to occur			
Otter *Lutra lutra* [1355] To restore the favourable conservation condition of the species in the SAC, which is defined as follows:			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Distribution / Percentage positive survey sites / No significant decline	Yes An accidental pollution event during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	No
Extent of terrestrial habitat / Hectares / No significant decline. Area mapped and calculated as 122.8ha above high water mark (HWM); 1136.0ha along river banks / around ponds	No Works are not taking place within the SAC therefore there will be no impact on its extent of terrestrial, marine or freshwater habitat or couching sites and holts	No	No
Extent of marine habitat / Hectares / No significant decline. Area mapped and calculated as 857.7ha			
Extent of freshwater (river) habitat / Kilometres / No significant decline. Length mapped and calculated as 616.6km			
Extent of freshwater (lake) habitat / Hectares / No significant decline. Area mapped and calculated as 2.6ha			
Couching sites and holts / Number / No significant decline			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Fish biomass available / Kilograms / No significant decline	Yes An accidental pollution event during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	No
Mediterranean salt meadows (Juncetalia maritimi) [1410] To restore the favourable conservation condition of the habitat in the SAC, which is defined as follows:			
Habitat area / Hectares / Area stable or increasing, subject to natural processes, including erosion and succession	No Works are not taking place within or adjacent to this habitat therefore there will be no impact on its area, distribution, hydrological regimes or physical structure. The nearest known example of this habitat located within the SAC is over 50km downstream of the propose development site on the River Shannon (NPWS, 2011).	No	No
Habitat distribution / Occurrence / No decline, subject to natural processes			
Physical structure: sediment supply / Presence/ absence of physical barriers / Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions			
Physical structure: creeks and pans / Occurrence / Maintain creek and pan structure, subject to natural processes, including erosion and succession			
Physical structure: flooding regime / Hectares flooded; frequency / Maintain natural tidal regime			
Vegetation structure: zonation / Occurrence / Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Vegetation structure: vegetation height / Centimetres / Maintain structural variation within sward			
Vegetation structure: vegetation cover / Percentage cover at a representative number of monitoring stops / Maintain more than 90% of area outside creeks vegetated			
Vegetation composition: typical species and sub-communities / Percentage cover at a representative number of monitoring stops / Maintain range of sub-communities with typical species listed in SMP (McCorry and Ryle, 2009)			
Vegetation structure: negative indicator species - *Spartina anglica* / Hectares / No significant expansion of common cordgrass (*Spartina anglica*), No new sites for this species and an annual spread of less than 1% where it is already known to occur			
Killarney fern *Trichomanes speciosum* [1421] To maintain the favourable conservation condition of the species in the SAC, which is defined as follows:			
Distribution / Location / No decline. Three locations known, with three colonies of gametophyte and one sporophyte colony.	No According to the SAC Conservation Objectives report, the nearest record of Killarney fern to the proposed site is located a considerable distance, approximately 33km, downstream of the draft CMP area, and the draft CMP area is located outside the current known distribution and favourable reference range of this species (NPWS, 2013)	No	No
Population size / Number / Maintain at least three colonies of gametophyte, and at least one sporophyte colony of over 35 fronds			
Population structure: juvenile fronds / Occurrence / At least one of the locations to have a population structure comprising sporophyte, unfurling fronds, 'juvenile' sporophyte and gametophyte generations			
Habitat extent / m² / No loss of suitable habitat, such as shaded rock crevices, caves or gullies in or near to, known colonies. No loss of woodland canopy at or near to known locations			
Hydrological conditions: visible water / Occurrence / Maintain hydrological conditions at the locations so that all colonies are in dripping or damp seeping habitats, and water is visible at all locations			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Hydrological conditions: humidity / Number of dessicated fronds / No increase. Presence of dessicated sporophyte fronds or gametophyte mats indicates conditions are unsuitable			
Light levels: shading / Percentage / No changes due to anthropogenic impacts			
Invasive species / Occurrence / Absent or under control			
Nore freshwater pearl mussel *Margaritifera durrovensis* [1990] To restore the favourable conservation condition of the species in the SAC, which is defined as follows:			
Distribution / Kilometres / Maintain at 15.5km.	Yes An accidental pollution event during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	No
Population size: adult mussels / Number / Restore to 5,000 adult mussels			
Population structure: recruitment / Percentage per size class / Restore to at least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length			
Population structure: adult mortality / Percentage / No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution			
Habitat extent / Kilometres / Restore suitable habitat in length of river corresponding to distribution target (15.5km) and any additional stretches necessary for salmonid spawning			
Water quality: Macroinvertebrates and phytobenthos (diatoms) / Ecological quality ratio (EQR) / Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93			
Substratum quality: Filamentous algae (macroalgae), macrophytes (rooted higher plants) / Percentage / Restore substratum quality- filamentous algae: absent or trace (			
Substratum quality: sediment / Occurrence / Restore substratum quality- stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Substratum quality: oxygen availability / Redox potential / Restore to no more than 20% decline from water column to 5cm depth in substrate			
Hydrological regime: flow variability / Metres per second / Restore appropriate hydrological regimes			
Host fish / Number / Maintain sufficient juvenile salmonids to host glochidial larvae			
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation To maintain the favourable conservation condition of the habitat in the SAC, which is defined as follows:			
Habitat distribution / Occurrence / No decline, subject to natural processes	Yes An accidental pollution event during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	No
Habitat area / Kilometres / Area stable or increasing, subject to natural processes			
Hydrological regime: river flow / Metres per second / Maintain appropriate hydrological regimes			
Hydrological regime: groundwater discharge / Metres per second / The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation			
Substratum composition: particle size range / Millimetres / The substratum should be dominated by large particles and free from fine sediments			
Water chemistry: minerals / Milligrammes per litre / The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits			
Water quality: suspended sediment / Milligrammes per litre / The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments			
Water quality: nutrients / Milligrammes per litre / The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Vegetation composition: typical species / Occurrence / Typical species of the relevant habitat sub-type should be present and in good condition			
Floodplain connectivity / Area / The area of active floodplain at and upstream of the habitat should be maintained			
European dry heaths [4030] To maintain the favourable conservation condition of the habitat in the SAC, which is defined as follows			
Habitat distribution / Occurrence / No decline from current habitat distribution, subject to natural processes	No European dry heaths is a terrestrial habitat, therefore a potential deterioration in water quality would not be anticipated to have a significant adverse impact upon this qualifying interest should it be present adjacent the River Nore downstream of the draft CMP.	No	No
Habitat area / Hectares / Area stable or increasing, subject to natural processes. Habitat area is not known but estimated as less than 400ha of the area of the SAC, occurring in dispersed locations			
Physical structure: free-draining, acid, low nutrient soil; rock outcrops / Occurrence / No significant change in soil nutrient status, subject to natural processes. No increase or decrease in area of natural rock outcrop			
Vegetation structure: sub- shrub indicator species / Percentage cover / Cover of characteristic sub- shrub indicator species at least 25%: gorse (*Ulex europaeus*) and where rocky outcrops occur bilberry (*Vaccinium myrtillus*) and woodrush (*Luzula sylvatica*). Some rock outcrops support English stonecrop (*Sedum anglicum*), sheep's bit (*Jasione montana*) and wild madder (*Rubia peregrina*) as well as important moss and lichen assemblages			
Vegetation structure: senescent gorse / Percentage cover / Cover of senescent gorse less than 50%			
Vegetation structure: browsing / Percentage cover / Long shoots of bilberry with signs of browsing collectively less than 33%			
Vegetation structure: native trees and shrubs / Percentage cover / Cover of scattered native trees and shrub less than 20%			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Vegetation composition: positive indicator species / Number / Number of positive indicator species at least 2 e.g. gorse and associated dry heath/ acid grassland flora			
Vegetation structure: positive indicator species / Percentage cover / Cover of positive indicator species at least 60%. This should include plant species characteristic of dry heath in this SAC including gorse, bilberry and associated acid grassland flora			
Vegetation composition: bryophyte and non-crustose lichen species / Number / Number of bryophyte or non- crustose lichen species present at least 2			
Vegetation composition: bracken (*Pteridium aquilinum*) / Percentage cover / Cover of bracken less than 10% - however see 'Notes'			
Vegetation structure: weedy negative indicator species / Percentage cover / Cover of agricultural weed species (negative indicator species) less than 1%			
Vegetation composition: non- native species / Percentage cover / Cover of non-native species less than 1%.			
Vegetation composition: rare/scarce heath species / Location, area and number / No decline in distribution or population sizes of rare, threatened or scarce species, including Greater Broomrape (*Orobanche rapum-genistae*) and the legally protected clustered clover (*Trifolium glomeratum*)			
Vegetation structure: disturbed bare ground / Percentage cover / Cover of disturbed bare ground less than 10% (but if peat soil less than 5%)			
Vegetation structure: burning / Occurrence / No signs of burning within sensitive areas			
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] To maintain the favourable conservation condition of the habitat in the SAC, which is defined as follows			
Habitat distribution / Occurrence / No decline, subject to natural processes	Yes	Yes	No
Habitat area / Hectares / Area stable or increasing, subject to natural processes			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Hydrological regime: Flooding depth/height of water table / Metres / Maintain appropriate hydrological regimes	An accidental pollution event during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	
Vegetation structure:sward height / Centimetres / 30-70% of sward is between 40 and 150cm in height			
Vegetation composition: broadleaf herb: grass ratio / Percentage / Broadleaf herb component of vegetation between 40 and 90%			
Vegetation composition: typical species / Number / At least 5 positive indicator species present			
Vegetation composition: negative indicator species / Occurrence / Negative indicator species, particularly non-native invasive species, absent or under control- NB Indian balsam (*Impatiens glandulifera*), monkeyflower (*Mimulus guttatus*), Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*)			
*** Petrifying springs with tufa formation (Cratoneurion)** To maintain the favourable conservation condition of the habitat in the SAC, which is defined as follows			
Habitat area / Square metres / Area stable or increasing, subject to natural processes	Yes An accidental pollution event during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	No
Habitat distribution / Occurrence / No decline.			
Hydrological regime: height of water table; water flow / Metres; metres per second / Maintain appropriate hydrological regimes			
Water quality / Water chemistry measures / Maintain oligotrophic and calcareous conditions			
Vegetation composition: typical species / Occurrence / Maintain typical species			
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] To restore the favourable conservation condition of the habitat in the SAC, which is defined as follows			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Habitat area / Hectares / Area stable or increasing, subject to natural processes, at least 85.08ha for sub-sites surveyed:	No The draft CMP area is located outside the current known distribution and favourable reference range of this qualifying interest (NPWS, 2019). According to the SAC Conservation Objectives report, old oak woodlands are located approximately 30km downstream of the draft CMP area. However, the report notes that further unsurveyed areas may be present within the SAC. Old oak woodlands is a terrestrial habitat, therefore a potential deterioration in water quality would not be anticipated to have a significant adverse impact upon this qualifying interest should it be present adjacent the River Nore downstream of the draft CMP.	No	No
Habitat distribution / Occurrence / No decline.			
Woodland size / Hectares / Area stable of increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size			
Woodland structure: cover and height / Percentage and metres / Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi- mature trees and shrubs; and well-developed herb layer			
Woodland structure: community diversity and extent / Hectares / Maintain diversity and extent of community types			
Woodland structure: natural regeneration / Seedling:sapling:pole ratio / Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy			
Woodland structure: dead wood / m³ per hectare; number per hectare / At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter			
Woodland structure: veteran trees / Number per hectare / No decline			
Woodland structure: indicators of local distinctiveness / Occurrence / No decline			
Vegetation composition: native tree cover / Percentage / No decline. Native tree cover not less than 95%			
Vegetation composition: typical species / Occurrence / A variety of typical native species present, depending on woodland type, including oak (*Quercus petraea*) and birch (*Betula pubescens*)			
Vegetation composition: negative indicator species / Occurrence / Negative indicator species, particularly non-native invasive species, absent or under control			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
*** Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]** To restore the favourable conservation condition of the habitat in the SAC, which is defined as follows			
Habitat area / Hectares / Area stable or increasing, subject to natural processes, at least 181.54ha for sites surveyed: see map 6	Yes An accidental pollution event during the repointing/repair works could affect surface water in the River Breagagh, and subsequently in the River Nore. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality (vegetation structure and composition) and area/distribution of habitats.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	No
Habitat distribution / Occurrence / No decline. Surveyed locations shown on map 6			
Woodland size / Hectares / Area stable of increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size			
Woodland structure: cover and height / Percentage and metres / Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi- mature trees and shrubs; and well-developed herb layer			
Woodland structure: community diversity and extent / Hectares / Maintain diversity and extent of community types			
Woodland structure: natural regeneration / Seedling:sapling:pole ratio / Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy			
Hydrological regime: Flooding depth/height of water table / Metres / Appropriate hydrological regime necessary for maintenance of alluvial vegetation			
Woodland structure: dead wood / m^3 per hectare; number per hectare / At least $30m^3$/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder)			
Woodland structure: veteran trees / Number per hectare / No decline			
Woodland structure: indicators of local distinctiveness / Occurrence / No decline			

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
Vegetation composition: native tree cover / Percentage / No decline. Native tree cover not less than 95%			
Vegetation composition: typical species / Occurrence / A variety of typical native species present, depending on woodland type, including ash (*Fraxinus excelsior*) alder (*Alnus glutinosa*), willows (*Salix* spp) and locally, oak (*Quercus robur*)			
Vegetation composition: negative indicator species/ Occurrence / Negative indicator species, particularly non-native invasive species, absent or under control			

7.1.4 Mitigation Measures

99 This section presents the mitigation measures that will be implemented during repointing/repair and operation to avoid or reduce the potential impacts of the draft CMP works on the River Barrow and River Nore SAC. All of the mitigation measures will be implemented in full and are best practice, and tried and tested, effective control measures to protect the receiving environment.

100 It is recognised that there is a potential pathway to downstream European sites, therefore an NIS is required for the Conservation Plan and the policies and objectives that are included in the Conservation Plan. The implementation of the Conservation Plan will result in projects. The specific details of the works, including any specific mitigation measures, will be determined in due course and will be subject to their own AA screening/NIS as appropriate.

<u>Measures to Protect Surface Water Quality during Repointing/Repair Works</u>

101 Specific details on the location of repair/repointing works are yet to be decided, and therefore specific mitigation measures will be included in their own AA Screening and NIS (if appropriate). Therefore, generic measures for the protection of surface water quality and good site practice are included below. The repointing/repair contractor will be required to implement the following mitigation measures as a condition if granted by Kilkenny Council all of which will be incorporated in full into the Construction Environmental Management Plan (CEMP) or similar, for release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters control:

- Measures to prevent the release of sediment over baseline conditions in the downstream receiving water environment, in particular for during the repair/repointing work. These measures include, but are not limited to, the use of silt fences, silt curtains, settlement lagoons and filter materials underneath the area of repointing works, and adjacent to the River Breagagh to prevent any runoff reaching the receiving watercourses.
- Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems and hence the downstream receiving water environment.
- On the scaffolding structure, kickboards are required, and cementitious material should only be brought onto scaffold as needed with no stockpiling, with no refuelling near watercourses.
- Provision of temporary repointing/repair surface drainage and sediment control measures to be in place before works commence.
- Weather conditions will be considered when planning repointing/repair activities to minimise risk of run-off from the site.
- Prevailing weather and environmental conditions will be considered prior to the pouring of cementitious materials for the works adjacent to any surface water drainage features, or drainage features connected to same. Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to existing surface water drainage systems. Concrete washout areas will be located remote any surface water drainage features, where feasible, to avoid accidental discharge to watercourses. Washing out of any concrete trucks on site will be avoided.
- Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a designated, secure bunded area(s) to prevent any seepage of potential pollutants into the local surface water network (drainage network or watercourses. These designated areas will be clearly sign-posted and all personnel on site will be made aware of their locations and associated risks.
- All mobile fuel bowsers shall carry a spill kit and operatives must have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked. Care and attention will be taken

during refuelling and maintenance operations. Particular attention will be paid to gradient and ground conditions, which could increase risk of discharge to waters.

- A register of all hazardous substances, which will either be used on site or expected to be present (in the form of soil and/or groundwater contamination) will be established and maintained. This register will be available at all times and shall include as a minimum:
    - Valid Safety Data Sheets;
    - Health & Safety, Environmental controls to be implemented when storing, handling, using and in the event of spillage of materials;
    - Emergency response procedures/precautions for each material; and,
    - The Personal Protective Equipment (PPE) required when using the material.
- Implementation of response measures to potential pollution incidents.
- Robust and appropriate Spill Response Plan and Environmental Emergency Plan will be prepared prior to works commencing and they will be communicated, resourced and implemented for the duration of the works. Emergency procedures/precautions and spillage kits will be available and repointing/repair staff will be trained and experienced in emergency procedures in the event of accidental fuel spillages.
- All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash facilities will be provided at all site egress points.
- All waters from excavations etc. shall be drained through appropriate filter material prior to discharge from the repointing/repair sites.
- The removal of any made ground material, which may be contaminated, from the repointing/repair site and transportation to an appropriate licenced facility shall be carried out in accordance with the Waste Management Act, best practice and guidelines for same.
- A discovery procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase.
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt).

102 All of the above measures implemented on site will be monitored throughout the duration of repointing/repair to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise.

Measures to Protect Otter from habitat loss/fragmentation and Disturbance/Displacement impacts

103 Whilst no otter holts were identified within 150m of the draft CMP, this section presents the mitigation measures that will be implemented during construction to avoid the potential impacts of the draft CMP on QI otter populations associated with the River Barrow and the River Nore SAC. All of the mitigation measures will be implemented in full. They are in accordance with best practice, and tried and tested, effective control measures to protect otter.

Pre-Construction Survey

104 Prior to construction works commencing, the appointed contractor will engage the services of a suitably qualified ecologist to conduct a pre-construction otter survey of the draft CMP area and its ZOI up and downstream (as far as is practical) of watercourses. The survey will be undertaken within 10 months in advance of construction and supplemented by a further inspection of the draft CMP area immediately prior to any works alongside watercourses to ensure that no new holts have been established in the intervening period. These surveys will be carried out in accordance with Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (NRA, 2006).

105 Where any new active holts/couches are recorded within 150m of the draft CMP area the appointed ecologist will ensure that adequate mitigation is provided in accordance with Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (NRA, 2006), and a derogation licence is sought from the NPWS where necessary.

Mitigation measures for new active holts/couches recorded within 150m of the development

106 Until such time as otters have been successfully evacuated from active holts, where required and approved by NPWS, the following provisions should apply to all construction works:

107 No works should be undertaken within 150m of any holts at which breeding females or cubs are present. Following consultation with NPWS, works closer to such breeding holts may take place - provided appropriate mitigation measures are in place, e.g. screening and/or restricted working hours on site.

108 No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance (if required) should also not take place within 15m of such holts, except under licence.

109 The prohibited working area associated with otter holts should, where appropriate, be fenced with temporary fencing prior to any possibly invasive works. Fencing should be in accordance with Clause 303 of the NRA's Specification for Roadworks (National Roads Authority). Appropriate awareness of the purpose of the enclosure should be conveyed through notification to site staff and sufficient signage should be placed on each exclusion fence. All contractors or operators on site should be made fully aware of the procedures pertaining to each affected holt.

110 Where holts are present in close proximity to invasive construction works but are determined not to require destruction, construction works may commence once recommended alternative mitigation measures to address otters have been complied with.

Ecological Clerk of Works/Retained Ecologist

111 Where a new holt to be encountered, within 150 metres (up and downstream) of watercourse crossing, and NPWs consultation sought, the services of an Ecological Clerk of works or retained Ecologist (both with experience with otter survey/mitigation) would be required.

112 The appointed contractor shall employ the services of an Ecological Clerk of Works (EcOW) with experience in otter, to oversee and advise works at watercourse crossings for the draft CMP (they may also undertake the preconstruction survey). The EcOW will have the authority to:

- Review method statements;
- Oversee works;
- Provide instruction to the appointed contractor(s); and,
- Require the temporary cessation of works, where necessary.

113 The EcOW will deliver a toolbox talk on biodiversity including otter to the appointed contractor(s). This talk will include instructions on identifying otter and details on the protections afforded to otter under Irish and EU legislation. The EcOW will outline the actions which will be taken by the contractor(s) if otter are noted on or near the draft CMP during construction works.

Measures to Prevent/Reduce Disturbance and Displacement

- Night working within/directly adjacent to watercourses where otter are known to commute should be avoided and will only be permitted with the prior approval of the planning authority.
- Where night-working adjacent to watercourses known to support otter, is required, owing to practical considerations of traffic restrictions etc., the advice of a suitably qualified ecologist must be sought and a derogation licence, if necessary, may be sought from the NPWS permitting such works.

Lighting

114 The appointed contractor in liaison with the suitably qualified licensed ecologist(s) will ensure that any lighting (Security (temporary) required in proximity to watercourses, will be designed to minimise light spill and be cognisant of light-spill onto these areas. Where permenant lighting might be required as part of the draft CMP, an assessment by lighting expert will be undertaken taking cognizance of the Biodiversity potential of the site, in particular along the watercourses, but also in respect of retained buildings where bat activity has been noted.

115 Mitigation measures to reduce light spill may include the following:

- the use of sensor / timer triggered lighting;
- LED luminaires to be used where practicable;
- column heights to be considered to minimise light spill; and,
- accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only where needed.
- Where night time works are required the appointed contractor will liaise with the engaged suitably experienced and qualified ecologist(s) and implement measures to mitigate the impact of such works (especially works carried adjacent to watercourses).

7.1.5 Residual Impacts

116 The draft CMP poses no risk of affecting the conservation objectives, or the favourable conservation condition, of the qualifying interest habitats of River Barrow and River Nore SAC, and there are therefore, no residual direct or indirect impacts associated with the draft CMP that could adversely affect the integrity of River Barrow and River Nore SAC.

7.1.6 Conclusion of Assessment for River Barrow and River Nore SAC

117 Following an examination, analysis and evaluation in light of best scientific knowledge, of all relevant information in respect of the qualifying interests of River Barrow and River Nore SAC, the potential impacts, and whether or not the predicted impacts would affect the conservation objectives that support the conservation condition of the qualifying interests, it has been concluded that the measures of the draft CMP does not pose a risk of adversely affecting (either directly or indirectly) the integrity of River Barrow and River Nore SAC.

7.2 River Nore SPA [004233]

7.2.1 Ecological Baseline Description for River Nore SPA

118 The Natura 2000 Standard Data Form (NPWS, 2020) the River Nore as supporting nationally important numbers of *Alcedo atthis*. Other species which occur within the site include *Cygnus olor, Anas platyrhynchos, Phalacrocorax carbo, Ardea cinerea, Gallinula chloropus, Gallinago gallinago* and *Riparia riparia.*

7.2.2 Qualifying Interests and Conservation Objectives of River Nore SPA

119 The special conservation interests of River Nore SPA, and the overall conservation objective, are listed below in Table 7.

Table 7 Qualifying Interests and Conservation Objectives of River Nore SPA

Qualifying Interest(s)	Conservation Objective(s)
A229 Kingfisher *Alcedo atthis* S.I. No. 193/2012 - European Communities (Conservation of Wild Birds (River Nore Special Protection Area 004233)) Regulations 2012	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA

Qualifying Interest(s)	Conservation Objective(s)
NPWS (2022) Conservation objectives for River Nore SPA [004233]. Generic Version 9.0. Department of Housing, Local Government and Heritage.	

120 In conjunction with considering the generic conservation objective for this SPA "To maintain or restore the favourable conservation condition of the bird species for which the SPA has been selected", the site specific conservation objectives document for River Nore SPA also informed this assessment.

121 The generic conservation objectives document sets out the attributes, measures and targets that define the favourable conservation condition of the special conservation interests within the European site. Affecting the conservation condition of the special conservation interests is deemed to constitute an adverse effect on the integrity of a European site. The specific attributes and targets used to define the conservation objectives of the qualifying interests of River Nore SPA are presented in Section 6.1.3, Table 8.

7.2.3 Examination and Analysis of Potential Direct and Indirect Impacts

122 The direct and/or indirect impacts by which the draft CMP could (in the absence of mitigation measures) potentially affect the conservation objective attributes and targets supporting the conservation condition of the qualifying interests of River Nore SPA, are:

- Habitat loss and fragmentation
- Habitat degradation as a result of hydrological impacts

7.2.4 Habitat loss and fragmentation

123 There are no works required within the River Nore, of which the Kingfisher is a designated SCI species for. However; Kingfisher likely use the Breagagh River for commuting and foraging, and are present along the River Nore. There is no viable habitat for kingfisher burrows within the draft CMP area, however there will be placement of a scaffolding structure within the Breagagh for the repair and repointing works, which may interfere with commuting/foraging routes, albeit on a temporary basis. Habitat loss may also occur indirectly as a consequence of severe habitat degradation in water quality and/or changes to the hydrological regime, and therefore, could affect the conservation statis of this SCI species from the River Nore SPA.

7.2.5 Habitat degradation as a result of hydrological impacts

124 The release of contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water features during any repair or repointing works to the City Walls and Evans Turret, has the potential to affect water quality in the receiving aquatic environment. In the absence of mitigation, the associated effects of a reduction of surface water quality could potentially extend distance downstream of the discharge point or location of the accidental pollution event. Such an occurrence, of a sufficient magnitude, either alone or in combination with other pressures on water quality, and in the absence of mitigation could undermine the conservation objectives of the European sites in the River Nore.

125 The draft CMP is adjacent to the River Breagagh and the River Nore which flow along the northern and eastern boundaries of the draft CMP area. A reduction in water quality as a result of an accidental pollution event (either alone or in combination with other pressures on water quality) however, could result in the degradation of the local aquatic environment, which could in turn negatively affect the otter population through direct contact with pollutants or a decline in fish prey. Kingfishers use the River Nore and the River Breagagh for foraging and commuting, and would therefore be sensitive to changes in the hydrological regime that may affect the availability of fish prey.

126 As the draft CMP has the potential to result in habitat degradation and effects on of the special conservation interest species of European site as the result of hydrological impacts, there is the potential for in combination effects to occur.

7.2.5.1 Summary

127 Table 8 below presents a summary of the potential impacts of the draft CMP on the special conservation interests of the River Nore SPA, and how these impacts relate to affecting the site's conservation objectives.

Table 8 Potential Impacts/Effects on the Conservation Objectives of River Nore SPA

Conservation Objectives Attribute/Measure/Target	Potential Impacts Requiring Mitigation?	Are mitigation measures required?	Residual Impacts?
River Nore SPA			
Kingfisher *Alcedo atthis* There is no site-specific conservation objectives document available for this SPA. Therefore, the attributes, measures and targets below have been developed based on the generic conservation objectives available for the River Nore SPA:			
Population trend / Percentage change / Long term population trend stable or increasing	Yes An accidental pollution event during repointing/repair works could affect surface water in the River Breagagh and the River Nore, of which SCI species from this European site forage within. An accidental pollution event of a sufficient magnitude, either alone or cumulatively with other pollution sources, could potentially affect the quality of habitats that support the special conservation interest bird species of this SPA. This could potentially affect the use of habitat areas by birds, including foraging resources, and have long-term effects on the SPA population.	Yes The mitigation measures described in Section 7.1.4 to protect water quality in the receiving environment will ensure that surface water quality in the River Nore and River Breagagh is protected during any repair/repointing works.	**No**
Distribution / Range, timing and intensity of use of areas / No significant decrease in the range, timing and intensity of use of areas by all of the above-named species, other than that occurring from natural patterns of variation			

7.2.6 Mitigation Measures

128 This section presents the mitigation measures that will be implemented during repointing/repair and operation to avoid or reduce the potential impacts of the draft CMP on the River Nore SPA. All of the mitigation measures will be implemented in full and are best practice, and tried and tested, effective control measures to protect the receiving environment.

Measures to Protect Surface Water Quality during Repointing/Repair Works

129 The mitigation measures presented above in Section 7.1.4 will protect surface water qualify during repointing/repair of the draft CMP.

7.2.7 Residual Impacts

130 The draft CMP poses no risk of affecting the conservation objectives, or the favourable conservation condition, of the special conservation interest species of the River Nore SPA and there are therefore, no residual direct or indirect impacts associated with the draft CMP that could adversely affect the integrity of the River Nore SPA.

7.2.8 Conclusion of Assessment for the River Nore SPA

131 Following an examination, analysis and evaluation in light of best scientific knowledge, of all relevant information in respect of the special conservation interest species of the River Nore SPA, the potential impacts, and whether or not the predicted impacts would affect the conservation objectives that support the conservation condition of the qualifying interests, it has been concluded that the draft CMP does not pose a risk of adversely affecting (either directly or indirectly) the integrity of the River Nore SPA.

8 In Combination Assessment

8.1 Analysis of Potential In Combination Effects

132 This section of the report presents the assessment carried out to examine whether any other plans or projects have the potential to act in combination with the draft CMP to adversely affect the integrity of the River Barrow and River Nore SAC and the River Nore SPA. All other European sites fall beyond the zone of influence of the draft CMP. Therefore, there is no potential for any other plans or projects to act in combination with the draft CMP to adversely affect the integrity of any other European sites.

133 Projects arising from the draft CMP which require construction shall be subject to their own individual Appropriate Assessment, as per statutory obligations, and reinforced in the current Kilkenny City and County Development Plan.

134 As assessed in Section 6, none of the potential impacts associated with the draft CMP will result in any perceptible residual effect on the receiving environment or on the qualifying interests/special conservation interests of River Barrow and River Nore SAC and the River Nore SPA. Therefore, there will not be any residual impacts associated with the draft CMP that will adversely affect the conservation objectives supporting the conservation condition of the qualifying interests/special conservation interests of those European sites, and the draft CMP in isolation will not adversely affect the integrity of those European site.

135 There is the potential for other pollution sources within the Nore WFD catchment and any other catchments that also drain to the River Nore to cumulatively affect water quality in the receiving aquatic environments. There are a number of plans and projects in the vicinity of the draft CMP, and along the River Nore, and therefore there is potential for in-combination adverse effects to the QI and SCI habitats and species of the River Barrow and River Nore SAC and the River Nore SPA. This includes the Abbey Quarter Masterplan, within which the draft CMP is located, as well as a number of other projects, namely; the Abbey Quarter Urban Park and Street, The Riverside Garden Project, the redevelopment of the Mayfair Ballroom into the City Library, and the redevelopment of the former Smithwick's Brewery Brewhouse, all

of which have been approved under Part 8 of the Planning and Development Regulations, 2001, as amended. An NIR was prepared for the Masterplan for the Abbey Creative Quarter that addressed the potential impacts to QI and SCI habitats and species within the ZoI of the projects (and the European sites within), and subsequent mitigation measures to ensure there is no risk of affecting the conservation objectives, or the favourable conservation condition, of the QI/SCI species of European sites within. As part of this Masterplan, all plans and projects are subjected to Appropriate Assessment and as a result, each project was assessed for potential impacts to European sites (CAAS Ltd., 2015[15]). The AA for the redevelopment of the Riverside Garden Project, the Mayfair Ballroom, and the former Smithwick's Brewery concluded that the works would not affect the conservation objectives supporting the conservation condition of the qualifying interests/special conservation interests of any European sites either directly or indirectly. An NIS was prepared for the Urban Park and Street project, which included potential impacts and subsequent mitigation measures to be implemented during the redevelopment of the site (Malone O'Regan Environmental, 2020). Following implementation of these measures, it was concluded that there would be no significant affects from the project resulting in adverse effects on the integrity of European site, and will not cause any adverse effect on the integrity of any European site in combination with other plans and projects.

136 The potential for in combination effects to arise in the River Nore from any existing or proposed land use plans or developments is regulated and controlled by the environmental protective policies and objectives of the Kilkenny City and County Development Plan 2021-2027. Any existing/proposed plan or project that could potentially affect the River Barrow and the River Nore SAC, the River Nore SPA, or any other European site, in combination with the draft CMP, must adhere to these overarching environmental protective policies and objectives. These policies and objectives will ensure the protection of the European site within the zone of influence of the draft CMP, and include the requirement for any future plans or projects to undergo Screening for Appropriate Assessment and/or Appropriate Assessment to examine and assess their effects on European sites, alone and in combination with other plans and projects.

137 There are specific objectives and policies in the Kilkenny City and County Development Plan 2021-2027 to protect biodiversity, and specifically European sites. Objective 1A relate to the protection of European sites, AA and commitments to not permitting projects giving rise to adverse effects on the integrity of European sites without demonstrating there are no alternatives, there are imperative reasons of overriding public interest, and undertaking all compensation measures necessary to ensure the overall coherence of the network of European sites. The Kilkenny City and County Development Plan 2021-2027 also includes policies and objectives to protect (from risk of pollution), manage and enhance the counties' surface water and groundwater resources (10C).

138 Land use plans for the other local authorities (e.g. Waterford County Council, Carlow County Council) whose functional areas include surface water features which drain to the River Nore, were examined and analysed and those land use plans also include protective environmental policies to protect European sites and the receiving surface water environments.

8.2 Conclusion of In Combination Assessment

139 As the draft CMP itself will not have any effects on the conservation objectives of any European sites, and considering the protective environmental policies and objectives in the Kilkenny City and County Development Plan 2021 - 2027 and more widely across all of the other land use plans that seek to protect surface water quality in the catchments that drain to the River Nore, and the overarching Masterplan of the Abbey Quarter that all plans and projects are subject to Appropriate Assessment, there is no potential for any other plan or project to adversely affect the integrity of any European sites in combination with the draft CMP.

[15] *Natura Impact Report, In Support of the Appropriate Assessment of the Masterplan for the Abbey Creative Quarter,* CAAS 2015.

9 NIS Conclusion

140 This NIS has examined and analysed, in light of the best scientific knowledge, with respect to those European sites within the zone of influence of the draft CMP, the potential impact sources and pathways, how these could impact on the sites' special conservation interest species and whether the predicted impacts would adversely affect the integrity of the River Barrow and River Nore SAC and River Nore SPA. There are no other European sites at risk of effects from the draft CMP.

141 It is recognised that there is a potential pathway to downstream European sites, therefore an NIS is required for the Conservation Plan and the policies and objectives that are included in the Conservation Plan. The implementation of the Conservation Plan will result in projects. The specific details of the works, including any specific mitigation measures, will be determined in due course and will be subject to their own AA screening/NIS as appropriate.

142 It has been objectively concluded by Scott Cawley Ltd., following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts associated with the draft CMP, and that the implementation of mitigation measures identified in section 7.1.4 of the draft CMP (at this stage of the iterative process) that the draft CMP will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects.

9.1 Next steps

The Appropriate Assessment of the draft CMP is not concluded. The Appropriate Assessment process is an iterative process that must be fully integrated into all stages of the plan making process in order to ensure that the ecological implications of the draft CMP have no impact upon European sites in view of the conservation objectives of the site.

The Draft CMP will be put out on public consultation. Where additional changes occur, they will be assessed in respect of their potential to result in adverse effects on the integrity of European sites and their Qualifying Interest species/habitats and/or Special Conservation Interest birds species and/or supporting wetland complexes and integrated into the NIS before a final determination in respect of the overall Appropriate Assessment of the Draft Plan process can be issued by the competent authority.