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IW-ER-LT0076
27th June 2014

**RE: Holycross Waste Water Discharge Licence Application D0478-01.**

Dear Aoife Loughnanne,

In response to the Regulation 18(3)(b) request for further information notice dated the 3rd of June 2014 , please find attached the Appropriate Assessment (Natura Impact Statement) Report for the Holycross Agglomeration as requested.



Best Regards,

**Gerry Galvin**

**Chief Technical Advisor**

# Irish Water Report

Natura Impact Statement as part of the Holycross Waste Water Discharge Licence Application: D0478-01



# Contents

# Introduction

This Natura Impact Statement provides an Appropriate Assessment (AA) of the existing Waste Water Treatment Plant (WwTP), located at Holycross, County Tipperary, for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007), as amended. It assesses whether the on-going operation of the plant, alone or in combination with other plans and projects, is likely to have significant effects on a European Site(s) in view of best scientific knowledge and the conservation objectives of the site(s). European Sites are those identified as sites of European Community importance designated as Special Areas of Conservation under the Habitats Directive or as Special Protection Areas under the Birds Directive.

This report follows the guidance for AA published by the Environmental Protection Agency's (EPA) '*Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007)*' (EPA, 2009); and takes account of the Department of the Environment, Heritage and Local Government's guidelines '*Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities*' (DoEHLG, 2009) and Circular L8/08 '*Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments*' (DoEHLG, 2008).



## Legislative Context

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as "The Habitats Directive", provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/ECC) as codified by Directive 2009/147/EC.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment (AA):

> *Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In 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.*

Article 6(4) states:

> *If, in spite of a negative assessment of the implications for the [Natura 2000] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out*

*for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*

# Methodology

## Guidance Followed

Both EU and national guidance exists in relation to Member States fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in relation to this AA has had regard to the following guidance:

- Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007). Environmental Protection Agency, (EPA, 2009).

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

- Circular L8/08 – Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments. Department of Environment, Heritage and Local Government, (DoEHLG, 2008).

- Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg, (EC, 2000a).

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

- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2001).

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

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

- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document, National Parks and Wildlife Service, Dublin (NPWS, 2012).

- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No.477 of 2011).

- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013).

## Stages Involved in the Appropriate Assessment Process

**Stage 1: Screening / Test of Significance**
This process identifies whether the WwTP discharge is directly connected to or necessary for the management of a European Site(s); and identifies whether the discharge is likely to have significant impacts upon a European Site(s) either alone or in combination with other projects or plans.

The output from this stage is a determination for each European Site(s) of not significant, significant, potentially significant, or uncertain effects. The latter three determinations will cause that site to be brought forward to Stage 2.

**Stage 2: Appropriate Assessment**
This stage considers the impact of the WwTP discharge on the integrity of a European Site(s), either alone or in combination with other projects or plans, with respect to (1) the site's conservation objectives; and (2) the site's structure and function and its overall integrity. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts

The output from this stage is a Natura Impact Statement (NIS). This document must include sufficient information for the EPA to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must consider alternatives (Stage 3) or proceed to Stage 4.



**Stage 3: Assessment of Alternatives**
This process examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European Site. This assessment may be carried out concurrently with Stage 2 in order to find the most appropriate solution. If no alternatives exist or all alternatives would result in negative impacts to the integrity of the European sites then the process either moves to Stage 4 or the project is abandoned.

**Stage 4: Assessment Where Adverse Impacts Remain**
An assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

## Field Walkover Surveys
Field walkover surveys were undertaken during 20th of June 2014 to identify the potential for qualifying species and habitats in the surrounding environs of the WwTP discharge.

## Consultation
The EPA, as the competent authority, will seek NPWS advice as may be required in reaching their decision on a WwTP discharge. The NPWS can only communicate with the applicant (i.e. Irish Water) on request from the competent authority, when the formal application process to the competent authority has already commenced.

# Stage 1: Screening

Screening for Appropriate Assessment was undertaken by the Ecofact Environmental Consultancy on behalf of North Tipperary County Council who determined that an Appropriate Assessment of the existing discharge from the Holycross WwTP is required due to the potential adverse impact on the qualifying interests of the Lower River Suir SAC. This determination was based on the following:

*'there is the potential for on-going, un-quantified significant cumulative impacts affecting the River Suir cSAC arising from the ongoing operation of the Holycross WwTP. From the examination of the information available it is considered that the discharge has the potential to result in significant impacts to the Natura 2000 site network, specifically in relation to direct and cumulative impacts affecting the conservation interests of the Lower River Suir cSAC and; where impacts on key conservation interests and features of interest of these Natura sites i.e. Annex II species and key indicators of conservation value (water quality) are uncertain following the Precautionary Principle and may be significant.'*

Therefore, applying the Precautionary Principle and in accordance with Article 6(3) of the Habitats Directive, the current WwTP discharge at Holycross will be brought forward for a Stage 2 Appropriate Assessment.

# Stage 2: Appropriate Assessment

The Lower River Suir SAC, which has been determined as requiring AA, is described and all the potential impacts resulting from the Holycross WwTP discharge are discussed in relation to the conservation objectives of this designated site.

## Description of the Project

Holycross is a small town located in the Southern part of the County of North Tipperary. Holycross Agglomeration discharges into the Lower River Suir Special Area of Conservation (SAC). The WwTP discharges to the River Suir via the primary discharge point. This is located at Grid Reference E208738 N153839. The primary discharge point is a 150mm open concrete pipe with no flap valve. The agglomeration has no storm water overflows or emergency overflows.

Holycross WwTP has a design capacity of 500-600 P.E. and a current loading of 650 P.E. The Agglomeration is approximately 64.01ha in size. The agglomeration has an existing combined gravity sewerage system with 3 No. pumping stations, two of which are located in North Tipperary. One is located in South Tipperary.

The WwTP was designed and constructed in the mid-1970s. The current Holycross WwTP was originally built on a Greenfield site located approximately 350m downriver from Holycross Bridge on the northern bank of the River Suir. No major upgrading work has been carried out since its construction in the mid-1970s, except when approximately 6 years ago a new sludge storage tank was built to replace the sludge drying beds. The Treatment Plant is quite compact currently occupies an area of only 0.1492 hectares.



The existing WwTP consists of a small inlet flume and flow meter, activated sludge tank with surface aerator (aeration tank), rectangular shaped clarifier, air lift sludge return, sludge drying beds (no longer used), sludge storage tank, and control house.

The wastewater plant is in wastewater treatment technology terms, an extended aeration activated sludge plant. The activated sludge reactor consists of a tank which is aerated by a vertical shaft surface aerator. There are no inlet screens or grit trap. It does not have primary or preliminary treatment. It does not have a storm water tank. The wastewater undergoes secondary treatment in an aeration basin with surface aerators. Its current final effluent satisfies the criteria of the Urban Waste Water Regulations.

Wastewater enters the plant and travels through an inlet flume equipped with a flow meter. The wastewater then flows into the aeration tank. The mixed liquor from the aeration tank then overflows via an overflow weir to the clarifier. The clarified supernatant from the clarifier then flows by gravity to the River Suir via the primary discharge point. The settled sludge at the base of the clarifier is returned to the aeration tank via an air lift pump and an excess sludge is sent to the sludge storage tank. The sludge is allowed to settle in this sludge and the supernatant is returned to the aeration tank. The settled sludge is disposed of off-site by a licensed waste contractor.

The excess sludge from the WwTP is stored in the sludge storage tank and is land spread via soil injection when weather conditions allow on farmland, subject to appropriate Nutrient Management Plans for individual farms, and subject to all appropriate regulations. A sludge register is maintained.

The current plant has 4 monitoring points, one each at the inlet, final effluent sampling point, one upstream and one downstream of the primary discharge point. The primary discharge point is located at the riverbank in the field adjacent to the WwTP.

**Description of the Receiving Environment and Monitoring Results**

The River Suir is designated as nutrient sensitive at Holycross. This section of the River Suir is considered nutrient sensitive until Twoford Bridges (this is the next major bridge downstream of Holycross Agglomeration). This bridge is located approximately 3km downstream of Holycross Agglomeration. The River Suir loses its nutrient sensitive status beyond this point.

The WwTP discharges to the River Suir. Monitoring data from both upstream and downstream of the discharge location demonstrates that the water quality within the River Suir is not in compliance with Schedule 5 of the European Communities Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009). The Ammonia and Orthophosphate levels both upstream and downstream of the WwTP discharge are above that for a Good Status water body.



**Table 1.0: Monitoring Data both Upstream and Downstream of WwTP Discharge**

| Parameter | | EQS* | Upstream | Downstream |
|---|---|---|---|---|
| **BOD** | | ≤2.6 | 2 | 2 |
| **Ammonia (as NH3 – N)** | | ≤0.14 | 0.15 | 0.13 |
| **Orthophosphate** | | ≤0.075 | 0.06 | 0.0.85 |

*European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. No. 272 of 2009 (95%ile standards presented).

EPA Biological Water Quality monitoring data shows that the current biological water quality upstream (immediately upstream of the discharge location at Station Holycross Bridge) is Q 3-4 and downstream (approximately 3.0km downstream at Station Twofold Bridge) is Q 4, which indicates Moderate Status water quality upstream and Good Status water quality downstream of the WwTP discharge.

**Waste Assimilative Capacity**

The 2008 EPA monitoring data for Holycross Bridge was used in the assessment, along with information on the final treated effluent, flows and quality. It is noted that background water quality data was available for a limited number of days only (n=4). This adds uncertainty to the assessment. Flows for the River Suir at Holycross were obtained using the EPA's Hydrotool Hydrometric Data System.

Table 2.0 summaries the assimilative capacity calculations which are based on the current loading of 650p.e., 95%ile river flow and water quality standards in the European Communities Environmental Objectives (Surface Water) Regulations, 2009 (S.I. No. 272 of 2009). Assimilative capacity calculations use both actual background concentrations and the 'notionally clean river' approach.

**Table 2.0: Assimilative capacity calculations at estimated 2020 loadings of xxxxxp.e. for actual background concentrations and for a notionally clean river.**

| Parameter | | Background (mg/l) | Predicted downstream quality (mg/l) | EQS* (mg/l) |
|---|---|---|---|---|
| **BOD** | Actual Background | 1.525 | 1.55 | ≤2.6 |
| | Notionally Clean | 0.260 | 0.29 | |
| **Ammonia** | Actual Background | 0.1 | 0.1 | ≤0.14 |
| | Notionally Clean | 0.008 | 0.008 | |
| **Orthophosphate** | Actual Background | 0.0725 | 0.079 | ≤0.075 |
| | Notionally Clean | 0.005 | 0.011 | |

*European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. No. 272 of 2009 (95%ile standards presented).



Using both the actual background concentrations demonstrates that the River Suir has a very limited assimilative capacity for both Ammonia and Orthophosphate, and the current WwTP discharges exceed the water quality standards in the Surface Water Regulations.

**Field Walkover Survey**

Both upstream and downstream of the existing discharge location the River Suir contained a riffle / glide / pool habitat types. The stretch of the River Suir a good flow with a substratum type of bedrock, boulders, cobbles, gravel, sand and silt deposition in places. Water depth 0.4 – 1m+, with a river width of 15 – 30m. In-stream vegetation consisted of a good distribution of Water-crowfoot (*Ranunculus* spp.), Yellow iris (*Iris pseudacorus*), Branched bur-weed (*Sparganium erectum*), Common club-rush (*Schoenplectus lacustris*), Bulrush (*Typha latifolia*), Reed canary-grass (*Phalaris arundinacea*) and filamentous algae both upstream and downstream of the discharge location. In-streram macrophytes and filamentous algae are indicative of nutrient enrichment.

Field examination, including both upstream and downstream of the discharge location, revealed the presence of the Annex I habitat (see Table 3.0):

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260].

And suitable habitats for the Annex II Species (see Table 4.0):

- White-clawed crayfish (*Austropotamobius pallipes*) [1092];
- Sea lamprey (*Petromyzon marinus*) [1095];

- Brook lamprey (*Lampetra planeri*) [1096];
- River lamprey (*Lampetra fluviatilis*) [1099];
- Salmon (*Salmo salar*) [1106]; and
- Otter (*Lutra lutra*) [1355].

Good spawning and nursery habitats was located along this stretch of the River Suir, both upstream and downstream of the discharge location. There was a greater proportion of spawning grounds upstream of the discharge location, however, suitable spawning and resting pools were also recorded downstream of the discharge location.

Juvenile salmonids were observed through out the upstream or downstream sections, together with White-clawed crayfish (Table 4.0).

Otter are widespread throughout the River Suir catchment. Otter signs (e.g. spraints, feeding remains, paths/slides) were recorded downstream of the discharge location (Table 4.0).

## Description of the Natura 2000 Site Affected

The Lower River Suir SAC (site code: 002137) is a large site, extending from Cabragh Bridge south of Thurles, with tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford. It includes many tributaries; the Clodiagh in Co. Waterford, the Lingaun, Anner, Drish, Nier, Tar, Aherlow, Multeen and Clodiagh in Co. Tipperary. It is selected as an SAC for the presence of a priority habitat on Annex I of the E.U. Habitats Directive, alluvial wet woodlands. The site is also selected as a candidate SAC for floating river vegetation, Atlantic salt meadows, Mediterranean salt meadows, old oak woodlands and eutrophic tall herbs, all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive - Sea Lamprey, (*Peteromyzon marinus*), River Lamprey (*Lampetra fluviatilis*), Brook Lamprey (*Lampetra planeri)*, Freshwater Pearl Mussel (*Margaritifera margaritifera*), Crayfish (*Austropotamobius pallipes*), Twaite Shad (*Alosa fallax*), Atlantic salmon (*Salmo salar*), and Otter (*Lutra lutra*).



Floating river vegetation is evident in the freshwater stretches of the River Suir and along many of its tributaries. Typical species found include Canadian Pondweed (*Elodea Canadensis*), Milfoil (*Myriophyllum* spp.), Fennel Pondweed (*Potamogeton pectinatus*), Curled Pondweed (*P. crispus*), Perfoliate Pondweed (*P. perfoliatus*), Pond Water-crowfoot (*Ranunculus peltatus)*, other Crowfoots (*Ranunculus* spp.) and the moss (*Fontinalis antipyretica*). Opposite-leaved Pondweed (*Groenlandia densa*), a species protected under the Flora (Protection) Order, 1999, is known from the lower reaches of the Suir around Clonmel and Carrick-on-Suir. Cabragh marshes, just below Thurles, lie in a low-lying tributary valley into which the main river floods in winter.

The Suir SAC also supports populations of several animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat (*Myotis daubentonii*), Nattererer's Bat (*M. nattereri*), Pipistrelle (*Pipistrellus pipistrellus)*, Pine Marten (*Martes martes*), Badger (*Meles meles*), the Irish Hare (*Lepus timidus hibernicus*), Smelt (*Osmerus eperlanus*) and the Frog (*Rana temporaria*).

Kingfisher, a species that is listed on Annex I of the EU Birds Directive, occurs along some of the many tributaries throughout the site. Notable populations of other bird species are recorded from the Lower reaches of the site, as well as at Cabragh marshes where there is abundant food for surface feeding wildfowl. Widgeon, Teal and Mallard are numerous and the latter has a large breeding population - with up to 400 in summer. In addition, less frequent species like Shoveler and Pintail occur and there are records for both Whooper and Bewick's swans.The legally protected species Meadow Barley (*Hordeum secalinum*) occurs in the Suir estuary near Waterford.

**Description of the Conservation Interests of the SAC**

**Annex I Habitats**

The Lower River Suir SAC contains seven Annex I habitats:

- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330];
- Mediterranean salt meadows (Juncetalia maritimi) [1410];
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260];
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430];
- Old sessile oak woods with Ilex and Blechnum in British Isles [91A0];
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]; a priority habitat; and
- *Taxus baccata* woods of the British Isles [91J0].



Of these habitats, the Holycross WwTP discharge is assessed as having the potential to impact on floating river vegetation (Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion*) and Hydrophilous tall herb fringe communities only, as these habitats are dependent on water quality. Water quality does not threaten other habitats for which the site has been selected to the same degree with little/no potential for adverse effects, and no changes to the conservation status of these habitats.

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (3260) (floating river vegetation) is characterised by the abundance of water-crowfoots *Ranunculus* spp. Floating mats of these white-flowered species are characteristic of river channels in early to mid-summer. They may modify water flow, promote fine sediment deposition, and provide shelter and food for fish and invertebrate animals.

The habitat type 'Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation' is present along the stretch of the River Suir into which the Holycross WwTP discharges.

In the lowlands, as in the case of the current study, Hydrophilous tall herb fringe communities habitat occurs as a plant community of along unmanaged edges of slow-moving rivers. Nutrient levels may be naturally high in vegetative communities of this type. The main pressures associated with this habitat is grazing (particularly by cattle) as well as agricultural and industrial

pollution. As a marginal habitat agricultural intensification and land reclamation are also deemed to be pressures (NPWS, 2013c).

**Annex II Species**

The Lower River Suir SAC is very important for the presence of a number of scarce and specialised Annex II animal species with particularly important populations of the fish species Atlantic Salmon and Twaite Shad. Otter is widespread on the system, as is White-clawed Crayfish.

The Lower River Suir SAC is selected for the following Annex II species:

- Freshwater pearl mussel (*Margaritifera margaritifera*) [1029];
- White-clawed crayfish (*Austropotamobius pallipes*) [1092];
- Sea lamprey (*Petromyzon marinus*) [1095];
- Brook lamprey (*Lampetra planeri*) [1096];
- River lamprey (*Lampetra fluviatilis*) [1099];
- Allis shad (*Alosa alosa*) [1102];
- Twaite shad (*Alosa fallax fallax*) [1103];
- Atlantic Salmon (*Salmo salar*) [1106]; and
- Otter (*Lutra lutra*) [1355].



*Freshwater Pearl Mussel (1029)*

The distribution of freshwater pearl mussel *Margaritifera margaritifera* is well known and mapped in Ireland. There have been no documented population extinctions since before the 1970s, therefore the species' range is stable. The population has been in decline for a very long time, and was likely initiated by early drainage schemes in Ireland (NPWS, 2013b). Pearl mussels have a complicated life cycle, involving native salmon or trout. The key cause of decline in pearl mussel populations in Ireland is unsuitable habitat for juvenile mussels after they fall off the gills of host salmonids (Moorkens, 1999). This stage requires the safety of remaining within the river bed gravels, before growing to a size that allows the emergence of the filtering siphons into the open water body. While the juvenile mussels remain within the river bed gravels, they filter the interstitial water within the gravels. Where the gaps between the gravel and stones get clogged with fine silt, either physical (from suspended solids entering the river) or organic (from algal growth and decay prompted by nutrients in the water), the flow of water in the interstices becomes very restricted. Without adequate water movement and replacement, oxygen levels are exhausted and young mussels die.

The freshwater pearl mussel occurs in the River Clodiagh (Portlaw) within the Suir catchment. The Clodiagh (Portlaw) River joins flows into the River Suir in Co. Waterford in excess of 60km downstream of Holycross. A Catchment Management Plan for Freshwater Pearl Mussel in the River Clodiagh was published by the DoEHLG in 2009. This plan sets out a number of detailed measures for the future conservation of the species. This plan also forms part of the Programme of Measures under the SE River Basin District Management Plan. The Clodiagh River is failing in its habitat quality and on its population demographic profile, where it is evident that there are not the numbers of juveniles present in the population to provide sustainable replacement of the

current adult numbers. Generally low densities of mussels were found in the Clodiagh together with an apparent absence of juveniles and small mussels. The catchment fails most of the requirements as specified in the European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. 296 of 2009).

*White-clawed crayfish (1092)*

The River Suir is within the known range of White-clawed crayfish *Austropotamobius pallipes* (Demers *et al.,* 2005) and occurs in the main channel of the River Suir. This species is recognised as being tolerant of moderate pollution levels; classed as Group C organisms in the EPA Q-Value biotic index.

There has been an improvement or no deterioration in the in the range and habitat quality and population of White-clawed crayfish in Ireland. As the greatest threat to the species is from disease and introduction of alien species and this is as likely in the future as now, the overall trend is considered stable. The overall assessment of the conservation status of White-clawed crayfish is 'Unfavourable Inadequate' (NPWS, 2013b).

During the current assessment of the River Suir, suitable rocky habitat within the river was recorded at both upstream and downstream, and this stretch of the river into which the effluent is discharged is characterized as providing suitable physical habitat for this species. White-clawed crayfish, both adults and juveniles, were observed both upstream and downstream of the discharge location during the current study.



*Sea Lamprey (1095)/River Lamprey (1099)*

Sea lamprey *Petromyzon marinus* (1095) and River lamprey *Lampetra fluviatilis* (1099) are anadromous species, spending part of their life cycle in the marine environment and returning to natal watercourses to spawn. These species are likely to be confined to the lower reaches of the River Suir. Spawning of river lampreys starts when the water temperature reaches 10–11ºC, usually in March and April (Morris & Maitland 1987). The sea lamprey usually spawns in late May or June, when the water temperature reaches at least 15ºC (Maitland, 2003). During a survey of juvenile lamprey sin the Suir catchment in 2006, Sea lampreys were recorded on the main channel of the Suir downstream of Caher, Co Tipperary. This species was also present in the lower reaches of the River Tar. However, only nominal numbers of sea lampreys (n=10) were recorded. A nominal number of transformed river lampreys were also recorded on the main channel of the Suir downstream of Clonmel.

The NPWS (2013b) overall assessment of the conservation status of sea lamprey is 'Bad', with the overall trend in conservation status and the habitat status 'Good'. The status of river lamprey is evaluated as being of 'Favourable' conservation status nationally (NPWS, 2013b).

*Brook Lamprey (1096)*

The brook lamprey is the smallest of the three lampreys native to Ireland and it is the only one of the three species that is non-parasitic and spends all its life in freshwater (Maitland & Campbell, 1992). All three species of lamprey spawn in fresh waters, and juveniles of all three species,

known as ammocoetes, are found within the same catchments, using similar microhabitats, but with varying geographical distribution. Lampreys show a preference for gravel-dominated substratum for spawning, and mainly silt and sand-dominated substratum for nursery habitat (Harvey & Cowx, 2003). The spawning season of brook lampreys starts when the water temperatures reach 10–11ºC (Maitland, 2003). This usually occurs in March/April. A survey of juvenile lampreys was carried out in the Suir catchment in 2006 lampreys in the Lower River Suir cSAC and found brook lampreys to be widely distributed in the main channel of the River Suir (O'Connor, 2007).

Brook lamprey is likely to occur in the River Suir where suitable habitat occurs i.e. deposited sand and silt. Indeed, spawning and nursery habitats for lampreys were recorded during the current assessment.

Brook lamprey is evaluated as being of 'Favourable' conservation status nationally (NPWS 2013b).

*Allis Shad (1102) and Twaite Shad (1103)*

Twaite Shad (1103) and Allis Shad (1102) are one of the rarest fish species which breed in Irish freshwaters. Shad have an anadromous life cycle and have been recorded in the lower reaches of the River Suir.

It is considered that the Allis shad is an opportunistic spawner in Irish waters; and until evidence of an established breeding population is found, the species is considered a vagrant (NPWS, 2013b). Overall, the status of Twaite shad is considered Inadequate – Bad (NPWS, 2013b).



*Atlantic Salmon (1106)*

Salmon are present throughout the Suir catchment. The Salmon Conservation Limit (CL) in any river is the number of spawning salmon required to maintain a sustainable population and is used to indicate the number of salmon in a river system above which a harvestable surplus can be considered. Salmon conservation limits are set similarly for all of Ireland's 143 salmon rivers. When the average threshold level of 17 salmon fry is not reached over a four year period, fisheries have been opened for catch and release angling only. The River Suir is currently considered to be below the conservation limit and consequently only catch and release fishing for salmon and sea trout will be permitted over the forthcoming 2014 angling season.

Suitable physical habitat for salmon spawning and early life stages of salmon occurs in the River Suir downstream of the WwTP outfall with the occurrence of gravels, riffled and pool habitat present. Juvenile salmonids were observed during the current study.

The conservation status of salmon in the River Suir is dependent on good water quality status; as this species requires clean water (Q4) for spawning and early life stages. This species is evaluated as being of overall 'Bad' conservation status nationally (NPWS 2013b).

*Otter (1355)*

Otter is widespread in the Lower River Suir SAC. Otters have two basic requirements: aquatic prey and safe refuges where they can rest. This species is dependent on fish stocks which are ultimately dependent on water quality. Otter is likely to occur in the River Suir at Holycross. An important component of the otter diet in the study area is deemed to be White-clawed crayfish. Otter signs (i.e. spraints) were found during the current survey.

The overall assessment of the conservation status of otter is 'Favourable' (NPWS, 2013b).

**Table 3.0: Qualifying Habitats along Surveyed Stretch**

| Site | Qualifying Habitats | Present | |
|---|---|---|---|
| Lower River Suir SAC | Atlantic salt meadows | Upstream | No |
| | | Downstream | No |
| | Mediterranean salt meadows | Upstream | No |
| | | Downstream | No |
| | Old sessile oak woods | Upstream | No |
| | | Downstream | No |
| | Alluvial forests | Upstream | No |
| | | Downstream | No |
| | Floating River Vegetation | Upstream | Yes |
| | | Downstream | Yes |
| | Hydrophilous tall herb | Upstream | No |
| | | Downstream | No |
| | *Taxus baccata* woods | Upstream | No |
| | | Downstream | No |



**Table 4.0: Qualifying Species along Surveyed Stretch**

| Site | Qualifying Species | Observed or signs of species presence | | Suitable Habitit Present | |
|---|---|---|---|---|---|
| Lower River Suir SAC | Freshwater pearl mussel | Upstream | No | Upstream | Yes |
| | | Downstream | No | Downstream | Yes |
| | White-clawed crayfish | Upstream | Yes | Upstream | Yes |
| | | Downstream | Yes | Downstream | Yes |
| | Sea lamprey | Upstream | No | Upstream | No |
| | | Downstream | No | Downstream | No |
| | Brook lamprey | Upstream | No | Upstream | Yes |
| | | Downstream | No | Downstream | Yes |
| | River lamprey | Upstream | No | Upstream | Yes |
| | | Downstream | No | Downstream | Yes |
| | Allis shad | Upstream | No | Upstream | No |
| | | Downstream | No | Downstream | No |
| | Twaite shad | Upstream | No | Upstream | No |
| | | Downstream | No | Downstream | No |
| | Atlantic Salmon | Upstream | Yes | Upstream | Yes |

| Site | Qualifying Species | Observed or signs of species presence | | Suitable Habitit Present | |
|---|---|---|---|---|---|
| | | Downstream | Yes | Downstream | Yes |
| | Otter | Upstream | Yes | Upstream | Yes |
| | | Downstream | Yes | Downstream | Yes |

## Conservation Objectives of the Lower River Suir SAC

A specific Conservation Management Plan for the Lower River Suir SAC is currently not available for consultation and is to be prepared by the National Parks and Wildlife Service (NPWS). In the absence of a completed management plan for any designated site, the conservation objectives are taken to include maintaining or restoring the '*favourable conservation status*' (defined in the EU Habitats Directive for habitats and species) of habitats and species for which the site has been selected, including the habitats of the annexed species. These are outlined in generic conservation objectives for Lower River Suir (NPWS, 2011).

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status areas designated as candidate Special Areas of Conservation. The Government and its agencies (i.e. the NPWS, local authorities and other statutory bodies) are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites. According to the EU Habitats Directive, favourable conservation status of a habitat is achieved when "*its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that 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*". The favourable conservation status of a species is achieved when "*population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or 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*".



The conservations objectives for the Lower River Suir SAC are set out below:

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:

- [1029] *Margaritifera margaritifera;*
- [1092] *Austropotamobius pallipes;*
- [1095] *Petromyzon marinus;*
- [1096] *Lampetra planeri;*
- [1099] *Lampetra fluviatilis;*
- [1103] *Alosa fallax;*
- [1106] *Salmo salar* (only in fresh water);
- [1330] Atlantic salt meadows (*Glauco-Puccinellietalia* maritimae);
- [1355] *Lutra lutra;*
- [1410] Mediterranean salt meadows (*Juncetalia maritimi*);
- [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation;

- [6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels;
- [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*); and
- [91J0] * *Taxus baccata* woods of the British Isles

## Impact Prediction

**Impacts on Water Quality**

The aquatic conservation interests of the Lower River Suir SAC are directly dependant on the aquatic environment and as the Holycross WwTP discharges to the River Suir within the SAC designation, there is a connection between this facility and the ecological receptors in the River Suir.

Elevated nutrient levels in the River Suir, specifically Orthophosphates, Nitrates, Ammonia and also Suspended Solids are considered to be the most significant threats to the integrity and favourable conservation status of the SAC and the Annex II species for which it is designated.

As part of its rollover water quality monitoring, the EPA carries out biological monitoring on the River Suir at Holycross Bridge approximately 0.4km upstream of the Holycross WwTP. The current biological water quality at this location was rated 'Slightly polluted' (Q3-4), equivalent to Water Framework Directive Moderate Status. The nearest EPA station downstream of the discharge point is at Twoford's Bridge, approximately 3km downstream. This part of the river was rated 'Unpolluted' (Q4) in 2011.



Assuming notional clean water in the River Suir, the receiving water has adequate WAC for the Holycross WwTP, and has substantial WAC for the key nutrients Orthophosphate and Ammonia, as well as BOD even after mixing.

To comply with the measures in the Suir Upper Water management unit action plan, an investigation into the need to increase capacity at the Holycross WwTP is required.

It appears as though the operation of the Holycross and associated discharge to the River Suir is not noticeably affecting biological water quality. Likewise, the impact of the discharge on chemical water quality is not considered to be significant.

Cumulative impacts in the catchment possibly pose the greatest risk to the conservation objectives. The potential threat(s) of the Holycross WwTP on water quality (long term or single event) is greatly increased when taken in combination with other water quality concerns in the catchment. For example the Templemore WwTP which discharges to the River Suir also affects water quality. Other impacts which are likely to act cumulatively and impact on the cSAC result from the following:

- Chemical fertiliser application to agricultural lands (the main fertilisers in use supply nitrogen, phosphorus, potassium and sulphur);

- Agricultural practices such as ploughing leads to greater mineralisation and nitrification, and in the case of old grassland, it can result in an increase in the release of nitrogen over a number of years (OECD, 1986);
- Artificial drainage increases nitrate leaching and reduce the morphological qualities of watercourses, thereby reducing the quality of habitat for flora and fauna;
- Endocrine disruptors in domestic sewage, including the main active component in the oral contraceptive pill, can interfere with the endocrine system of plants and animals which controls a wide range of processes including metabolism, growth and reproduction. Effects include a high degree of intersexuality downstream of sewage works (Routledge *et al*. 1998);
- Forestry may alter water quality indirectly through increased evaporation losses and hence an increase in solute concentrations;
- On-site wastewater treatment systems, poorly performing septic tank units and other small effluent systems can be significant sources of nutrients to rivers;
- Water abstraction from rivers can cause low flows, which can be directly damaging due to reducing flows and assimilation capacity;
- Point pressures including mining, peat production and timber production;
- Quarries - there are 5 quarries in the Suir upper WMU.

**Impacts on Annex I Habitats**

*Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]*



Water quality (particularly phosphorus and nitrates) strongly influences the species composition, extent and condition of riverine plant communities. The key parameters include alkalinity, pH, nitrate, phosphate, potassium and suspended solids. Eutrophication is regarded as the major water quality issue currently affecting plant communities in British rivers (Environment Agency 2000). The process of eutrophication and its impact on macrophyte communities varies, depending upon river type and catchment. The effects of eutrophication on aquatic macrophytes are documented (Haslam 1978; Spink *et al*. 1993; Mainstone *et al*. 2000) as usually causing a shift in community composition and increased biomass. Increasing nutrient supply will lead to an overall reduction in the number of species, with a loss of *Ranunculus spp*. and an increase in pollution-tolerant species such as *Potamogeton pectinatus, Myriophyllum spicatum, Sparganium emersum, Schoenoplectus lacustris* and filamentous algae. More extreme nutrient increases lead to an overall impoverishment of the plant community, with algae dominating.

It is considered that the ongoing operation of the Holycross WwTP plant is contributing to background quality pressures in the River Suir. This plant discharges directly to the Lower River Suir SAC. According to NPWS (2008), discharges, fertilisation and water pollution are identified as the main pressures affecting floating river vegetation habitat. This has implications for the existing WwTP at Holycross, which is contributing to cumulative impacts on background water quality in the River Suir. It is considered however that the ongoing operation of the Holycross plant would have imperceptible localised impacts in this habitat.

*Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels - [6430]*

According to the NPWS (2008) water quality and discharges are not identified as being main pressures or threats affecting this habitat. However, it is considered that there is the potential for significant water quality deterioration to affect/alter the botanical communities of these habitats along the riparian corridor of the River Suir within the SAC.

This habitat currently occurs within the Suir corridor irrespective of ongoing background water quality issues and it is considered that the conservation status of this habitat is independent of the operation of the WwTP at Holycross, where a significant deterioration in water quality is considered unlikely.

**Table 5.0: Qualifying Habitats Potentially Impacted by WwTP Discharge**

| Qualifying Habitats | Potential Impacts | Brief Explanation | Mitigation required |
|---|---|---|---|
| Atlantic salt meadows | No | Located a significant distance downstream of the Holycross WwTP and discharge with little/no potential for adverse effects, and no changes to the conservation status of these habitats. | No |
| Mediterranean salt meadows | No | Located a significant distance downstream of the Holycross WwTP and discharge with little/no potential for adverse effects, and no changes to the conservation status of these habitats. | No |
| Old sessile oak woods | No | Water quality does not threaten this habitat to the same degree with little/no potential for adverse effects, and no changes to the conservation status of these habitats. | No |
| Alluvial forests | No | Water quality does not threaten this habitat to the same degree with little/no potential for adverse effects, and no changes to the conservation status of these habitats. | No |
| Floating River Vegetation | Yes | It is considered that the ongoing operation of the Holycross WwTP plant is contributing to background water quality pressures in the River Suir. It is considered however that the ongoing operation of the Holycross plant would have localised impacts on this habitat. | Yes |
| Hydrophilous tall herb | No | It is considered that the conservation status of this habitat is independent of the operation of the WwTP at Holycross, where a significant deterioration in water quality is considered unlikely. | No |
| *Taxus baccata* woods | No | Water quality does not threaten this habitat to the same degree with little/no potential for adverse effects, and no changes to the conservation status of these habitats. | No |

**Impacts on Annex II Species**

*Freshwater Pearl Mussel (1029)*

The Freshwater Pearl mussel population is at unfavourable conservation status in the Clodiagh (Portlaw) River within the Suir catchment. The principal pressures in the catchment are agriculture, on-site wastewater treatment systems, forestry, point sources and physical modifications (DoEHLG, 2010).

There is no downstream hydrological connection between mussels in the Clodiagh (Portlaw) River and the Holycross discharge. Furthermore the Clodiagh River meets the River Suir in transitional/estuarine water. The Holycross WwTP is not adversely affecting the freshwater pearl mussel population in the Clodiagh catchment nor will its continuation.

*White-clawed crayfish (1092)*

White-clawed crayfish occur in the River Suir catchment. The species is recognised as being tolerant of moderate pollution levels and are classed as Group C organisms in the EPA Q-Value biotic index. A recent report found that "*crayfish were most often found in unpolluted waters but were also found in slightly polluted and moderately polluted waters*. *Some populations were even found at sites with very low water quality*" (Demers *et al*, 2005). However, the relationship between water quality and crayfish populations is not fully understood and there have some cases of crayfish populations being lost from rivers which deteriorated from slightly (Q3-4) to moderately polluted (Q3) conditions (Reynolds, 2007). It is therefore considered sensible to consider them as a species that is vulnerable to water quality changes (Reynolds, 2007).



Reduced water quality and ecological status downstream of the discharge of the Holycross WwTP could potentially have indirect effects on crayfish. Overall however, the white-clawed crayfish population in the SAC is not thought to be affected by the operation of the plant discharge at a level that would affect the integrity of this conservation interest. This is because this species has a wide range in the catchment and impacts of the Holycross plant appear to be localised only.

*Sea Lamprey (1095)/River Lamprey (1099)*

These anadromous fish species are confined to the lower reaches of the River Suir and its tributaries close to the sea. Due to the geographical separation of the Holycross WwTP and distance upstream of spawning and nursery areas of migratory lampreys, effluent discharged to the River Suir from the plant would not affect the status or distribution of Sea or River lampreys within the Lower River Suir SAC.

*Brook Lamprey (1096)*

Water quality impacts downstream of the Holycross WwTP outfall would not be expected to have significant negative impacts on existing brook lamprey populations, as they would tolerate such pollution. Such pollution would however be expected to affect recruitment of this species as they are understood to require a high standard of water quality for successful spawning and ova

survival. Water quality impacts arising from the operation of the WwTP and storm water discharges would be expected to have direct impacts on existing brook lamprey populations, particularly in relation to recruitment within the stretch of the River Suir downstream of the discharge point. However, brook lampreys can be expected to be found throughout the SAC and other tributaries of the river and have a favourable conservations status nationally. In this respect, it is unlikely that the ongoing operation of the Holycross WwTP would have the potential to affect the integrity of this SAC conservation interest.

*Allis Shad (1102) and Twaite Shad (1103)*

Both shad species are confined to the lower reaches of the river and do not occur in the study area. These species are also not discussed further as the Hoycross WwTP discharge does not pose a risk to these fish species, considering the distance of occurrence of these species downstream.

*Atlantic Salmon (1106)*

Poor water quality will affect the conservation status of salmon in the River Suir, as this species requires clean water (Q4) for spawning and early life stages. The Holycross WwTP is considered to be contributing to water quality problems in the River Suir but the cumulative effect of the discharge on water quality is considered insignificant. In this light, the Holycross WwTP is affecting the potential of the River Suir as a salmon producing watercourse at a limited localised level at most. Overall, the conservation status of salmon in the Lower River Suir SAC is not thought to be affected by the Holycross plant discharge as this species has a wide range in the catchment and impacts form the plant appear to be localised only.



*Otter (1355)*

Reduced water quality and ecological status downstream of the discharge of the Holycross WwTP could be potentially having indirect effects on otters; as a result of reduced food supply i.e. reduced macroinvertebrate and fisheries production. The otter is dependent on fish stocks, which are ultimately dependent on water quality. However, there is no indication that the ongoing operation of this plant is having an adverse effect on otters within the Lower River SAC as a whole.

**Table 5.0: Qualifying Species Potentially Impacted by WwTP Discharge**

| **Qualifying Species** | Potential Impact | **Brief Explaination** | **Mitigation Required** |
|---|---|---|---|
| Freshwater pearl mussel | No | There is no downstream hydrological connection between mussels in the Clodiagh (Portlaw) River and the Holycross discharge. Furthermore the Clodiagh River meets the River Suir in transitional/estuarine water. The Holycross WwTP is not adversely affecting the freshwater pearl mussel population in the Clodiagh catchment nor will its continuation. | No |

| | | | |
|---|---|---|---|
| White-clawed crayfish | Yes | Reduced water quality and ecological status downstream of the discharge of the Holycross WwTP could potentially have indirect effects on crayfish. Overall however, the white-clawed crayfish population in the SAC is not thought to be affected by the operation of the plant discharge at a level that would affect the integrity of this conservation interest. This is because this species has a wide range in the catchment and impacts of the Holycross plant appear to be localised only. | Yes |
| Sea lamprey/River lamprey | No | Due to the geographical separation of the Holycross WwTP and distance upstream of spawning and nursery areas of migratory lampreys, effluent discharged to the River Suir from the plant would not affect the status or distribution of Sea or River lampreys within the Lower River Suir SAC. | No |
| Brook lamprey | Yes | Water quality impacts arising from the operation of the WwTP and storm water discharges would be expected to have direct impacts on existing brook lamprey populations, particularly in relation to recruitment within the stretch of the River Suir downstream of the discharge point. However, brook lampreys can be expected to be found throughout the SAC and other tributaries of the river and have a favourable conservations status nationally. In this respect, it is unlikely that the ongoing operation of the Holycross WwTP would have the potential to affect the integrity of this SAC conservation interest. | Yes |
| Allis shad/Twaite shad | No | Both shad species are confined to the lower reaches of the river and do not occur in the study area. The Hoycross WwTP discharge does not pose a risk to these fish species, considering the distance of occurrence of these species downstream. | No |
| Atlantic Salmon | Yes | Poor water quality will affect the conservation status of salmon in the River Suir, as this species requires clean water (Q4) for spawning and early life stages. The Holycross WwTP is considered to be contributing to water quality problems in the River Suir but the cumulative effect of the discharge on water quality is considered insignificant. In this light, the Holycross WwTP is affecting the potential of the River Suir as a salmon producing watercourse at a limited localised level at most. | Yes |
| Otter | Yes | Reduced water quality and ecological status downstream of the discharge of the Holycross WwTP could be potentially having indirect effects | Yes |

| | | | |
|---|---|---|---|
| | | on otters; as a result of reduced food supply. | |

## Mitigation Measures

The current residential population equivalent served by the WwTP is approximately 650 p.e., however,the plant is a secondary treatment plant and has a design p.e. of 500 - 600.

Assuming notional clean water in the River Suir, the receiving water does have adequate waste assimilative capacity for the Holycross WwTP. To comply with the measures in the Suir Upper Water Management Unit Action Plan, an investigation into the need to increase capacity at the Holycross WwTP is required.

Mitigation Measures recommended for the ongoing operation of the existing plant are as follows:

- Investigate the need to increase capacity at the Holycross WwTP in accordance with the Suir Upper Water Management Unit Action Plan;
- Optimisation of the current waste water treatment process and investigate further measures to reduce the levels of Ammonia and Orthophosphate currently being discharged from the plant;
- Ensure that the capacity of the WwTP is not exceeded; and
- Continuation of monitoring of the discharge, both upstream and downstream of the plant on a consistant regular basis. Annual biological water quality monitoring should also be undertaken upstream and downstream of the WwTP outfall. Any biological monitoring should be carried out during the summer / autumn periods.



## Stage 2 Appropriate Assessment Conclusion Statement

The current Appropriate Assessment has been prepared following the EPA (2009) '*Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007)*'. The Department of the Environment, Heritage and Local Government guidance '*Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities'* (DoEHLG, 2009a) has also been taken into account. The current assessment for the Waste Water Discharge Licence Application investigates the potential adverse effects on the aquatic qualifying interests of the Natura 2000 network arising from the plant discharge, in combination with other plans / projects affecting the aquatic environment. The assessment considers whether the discharge, alone or in combination with other projects or plans, will have adverse effects on the *integrity* of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects.

When the above mitigation measures are implemented in full, it is envisaged that there will be no significant adverse effects on the integrity of the Lower River Suir SAC in view of the site's conservation objectives and that the conservation status of the Annex I habitats and Annex II species will not be compromised by WwTP discharge either directly, indirectly or cumulatively.

It is therefore concluded that the Hollycross WwTP discharge, alone or in-combination with other plans and / or projects will not give rise to significant effects on the integrity of the Lower River

Suir SAC, as long as the mitigation measures as listed above are implemented in full. Stage 2 concludes the Appropriate Assessment process of the Hollycross Waste Water Discharge Licence Application.

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