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Ms Noeleen Keavey,
Office of Climate Licensing and Resource,
Environmental Inspection Agency,
PO Box 3000,
Johnstown Castle Estate,
County Wexford.
Y35W821

10th February 2016.

Re: Application for Waste Licence (W0287-01) Ormonde Organics Ltd, Portlaw, County Waterford

Dear Ms Keavey,

I refer to the Agency's notice under Regulation 10 (2)(b)(ii) of the EPA Industrial Emissions (Licensing) (Regulations) 2013 dated 8th June 2015 and our letter dated 12th January regarding the submission of the outstanding information. The outstanding information is

7. ...You are thereby required to submit a Natura Impact Statement as defined in Regulation 2(1) of the European Communities (Birds and Natural Habitats) Regulations (S.I No. 477 of 2011)...

A copy of the Natura Impact Statement is in Attachment 1.

An up to date drawing of the current site layout is in Attachment 2.

Ormonde Organics has reviewed the recently granted Licence Reg. No. P0993-01 and P1004-02, both of which are for anaerobic digestion installations and has an observation on the stability quality limit specified for the digestate.

Ormonde Organics has Department of Agriculture, Fisheries and Food approval to operate AD plant and the digestate meets the Departments quality requirements. Ormonde Organics considers that given the low solids content in the digestate the oxygen uptake rate is not an appropriate method to determine stability and suggests that the method set out in PAS 110:2014 (Wrap BSI 2014) be considered as an alternative.

Yours Sincerely,

Jim O' Callaghan

Cc: Michael Murphy, Ormonde Organics

Attachment 1
Natura Impact Statement

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Dixon.Brosnan

environmental consultants

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|--|-----------|-----------------|-----------------|
| Project | | | |
| Stage Two Natura Impact Statement for an Industrial Emissions licence application by Ormonde Organics Ltd in respect of Killowen, Portlaw, Co. Waterford. | | | |
| Client | | | |
| Project ref | Report no | Client ref | |
| 1611 | 1611 | Indaver | |
| <p>DixonBrosnan The Cedars, Bridewood, Ovens, Co Cork Tel 086 851 1437 carl@dixonbrosnan.com www.dixonbrosnan.com</p> | | | |
| Date | Rev | Status | Prepared by |
| 09/02/15 | 0 | Issue to client | Carl Dixon MSc. |
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1. Introduction

Following on from the submission of a Habitats Directive Screening Report the Environmental Protection Agency stated that in accordance with Regulation 42(8) (a) of the European Communities (Birds and Natural Habitats) Regulations 2011 and 2013 that the agency has made a determination that an Appropriate Assessment is required as the project individually and in combination with other plans and projects, is likely to have a significant effect on a European site(s). The following reasons contributed to the determination that the Appropriate Assessment of the activity is required:

Surface water runoff from the site discharges into the Lower River Suir SAC which is located approximately 370m from the site. There is a risk that the surface water run-off may be polluted by waste with a high biological oxygen demand (BOD) which may have a significant effect on the conservation objectives of this European site.

Accordingly, this Natura Impact Statement for Appropriate Assessment comprises a compilation of the information relevant to the competent authority's assessments relating to the potential significant impacts of the proposed facility on Natura 2000 sites within the surrounding area. The Environmental Impact Statement [EIS], which has been prepared for this site and previously submitted provides much of the detail upon which this NIS is based, particularly in relation to the receiving environment and baseline ecology. Thus, this NIS contains reference to the information set out in considerable detail in the EIS. Where relevant, reference is also made to the previous screening reports prepared for this site.

2. Regulatory Context and the Appropriate Assessment Procedure

2.1 Regulatory context

Article 6(3) of *Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended) (hereafter 'the Habitats Directive') requires that, any plan or project not directly connected with or necessary to the management of a designated 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.

The possibility of there being a significant effect on a designated or "European" site has generated the need for an appropriate assessment to be carried out by the competent authority for the purposes of Article 6(3). In this instance, the competent authority is the EPA. A Stage Two Appropriate Assessment 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. The first (Screening) Stage for appropriate assessment operates merely to determine whether a (Stage Two) Appropriate Assessment must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

2.2 Appropriate Assessment Procedure

The assessment requirements of Article 6(3) establish a stage-by-stage approach. This assessment follows the stages outlined in the 2001 European Commission publication "*Assessment of plans and projects significantly affecting Natura 2000 sites: methodological guidance on the provisions of Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC*" (2001) *Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (Draft)* Office for Official Publications of the European Communities, Luxembourg (EC, 2015);

The stages are as follows:

Stage One: Screening — the process which identifies any appreciable impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

Stage Two: Appropriate assessment — the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

Stage Three: Assessment of alternative solutions: The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site. It is confirmed that no reliance is placed by the developer on Stage Three in the context of this application for development consent;

Stage Four: Assessment where no alternative solutions exist and 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 (it is important to note that this guidance does not deal with the assessment of imperative reasons of overriding public interest). Again, for the avoidance of doubt, it is confirmed that no reliance is placed by the developer on Stage Four in the context of this application for development consent

Documentation/guidelines of relevance to this NIS include the following:

- European Commission, 2001. *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);
- European Commission, 2000a. *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 (Draft)* Office for Official Publications of the European Communities, Luxembourg (EC, 2015);
- *Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2000)*
- 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; (EC, 2007);
- *Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities.* Department of the Environment, Heritage and Local Government, Dublin (DEHLG, 2010a);
- Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities (DEHLG, 2010b);
- *Interpretation Manual of European Union Habitats. Version EUR 28.* European Commission (EC, 2013);
- Applications for approval for Local Authority Developments made to An Bord Pleanála under 177AE of the Planning and Development Act, 2000, as amended (Appropriate Assessment): Guidelines for Local Authorities. An Bord Pleanála, Dublin (ABP, 2013).

3. Methodology

3.1 Study Area and Scope of Appraisal

In line with the precautionary principle, the study area for the preparation of this Natura Impact Statement extended to a radius of 15km from the applicant's site boundary. Thus any appreciable direct, indirect or cumulative impacts which could arise from the proposed development in relation to the designated sites within this zone were considered. No potential ecological risks to designated sites outside this 15km radius were identified. It is noted that local potential ecological impacts within the development site itself, which is not designated as a European site, are considered in detail by the EIS.

3.2 Desktop Study

A desktop review facilitates the identification of the baseline ecological conditions and key ecological issues relating to Natura 2000 sites and facilitates an evaluation assessment of potential in-combination impacts. Sources of information used for this NIS include previous reports prepared for the site, information from statutory and non-statutory bodies and information from other projects in the area. The sources of information and relevant documentation utilised are as follows:

- Natura 2000 screening report for a proposed development at a composting facility at Killowen, Portlaw, Co. Waterford. (DixonBrosnan, 2011).
- Environmental Impact Statement for an Anaerobic Digestion Facility at Ormonde Organics Ltd, Kilowen, Portlaw, Co. Waterford (O'Callaghan Moran & Associates, 2011).
- Habitats Directive Article 6 Screening Assessment Portlaw Local Area Plan 2014-2020 February 2014
- Portlaw WWTP AA Screening April 2014
- Appropriate Assessment Carrick-on-Suir Town Development Plan 2013. Tipperary County Council 2013
- National Parks & Wildlife Service (NPWS) - www.npws.ie including qualifying interests and conservation objectives for Natura 2000 sites.
- Environmental Protection Agency (EPA) – www.epa.ie
- National Biodiversity Data Centre – www.biodiversityireland.ie
- County Waterford Local Biodiversity Action Plan 2008 2013 (Waterford County Council, 2009);
- Integrated water quality assessment – south eastern region (EPA, 2013)
- Waterford County Development Plan 2011-2017
- South East Region Waste Management Policy.

3.3 Author of Report for Screening and Appropriate Assessment

This NIS was prepared by Carl Dixon MSc. (Ecological Monitoring). He has considerable experience in ecological assessment and the preparation of Natura Impact Statements for a range of large and small scale developments. Where relevant, specialist input was also received from O' Callahan Moran & Associates in relation to potential impacts on water quality.

4. Description of the project

Ormonde Organics Ltd, the applicant, operates a sewage sludge and biodegradable organic waste composting and anaerobic digestion facility at Killowen, Portlaw, County Waterford. The facility operates in accordance with planning permission granted by An Bord Pleanála, a Waste Permit granted by Waterford County Council an approval under the Animal By Products Regulations issued by the Department of Agriculture Fisheries and Food. The planning permission allows the facility to take in and compost a total of 40,000 tonnes of sewage sludge, kitchen waste, green waste (grass and tree cuttings) and septic tank waste annually.

Ormonde Organics proposed to treat more than 10,000 tonnes of organic waste, which is the maximum that can be authorised by a Waste Permit and has applied to the Environmental Protection Agency for an Industrial Emissions Licence.

The anaerobic digestion plant is designed to cater for organic sludge produced in urban and industrial wastewater treatment plants. It will comprise a solids feeder and enclosed digestion that will be heated to 47°C and continuously agitated. The process will produce a biogas containing approximately 65 % methane, which will then be treated and used as a fuel in an on-site combined heat and power plant.

4.1 Location

The facility is located at Killowen, Portlaw, County Waterford, at National Grid 11786N 24650E. It is approximately 3km north of Portlaw, 3km to the south of Fiddown, and 9km southeast of Carrick-on-Suir. The River Suir runs to the east of the site, approximately 350 metres from its eastern boundary. The regional route R680 runs along the western boundary of the site and links Portlaw village to the south with Carrick-on-Suir to the north-west. Approximately 2km from the site is the R680 junction with the N24 linking Waterford to Clonmel and Limerick.

4.2 Site Layout

The site layout is shown on Drawing No 151005G which is included in **Appendix 1**. The main features are the compost building (including waste reception areas, 11 No enclosed forced aeration composting bays, maturation area, screening area); the anaerobic digestion plant (three digester tanks, waste reception building, and a combined heat and power system, with and a gas flare) odour abatement systems, paved open yards, bunded fuel storage areas and landscaped areas. It is proposed to construct a biomass storage area south the AD waste reception building and to replace the existing septic tank with a new wastewater treatment plant. A surface water flow attenuation tank will be installed at the rear of the digestate storage tank bund.

4.3 Surface Water Drainage

All rainwater run-off from the compost building and paved areas in the west of the site passes through an oil interceptor on the northern site boundary and then to a sump in the north east of the bund around the digestate storage tanks, from where there is an underground pipe to

an outfall in the river.

Rainwater run-off from the roofs of the AD building, digesters and paved areas in the east of the site is collected and directed to the sump in the north-east corner of the digestate tank bund. It is proposed to install an attenuation system to control the run-off from this area during storm events. The tank will have a retention capacity of 244m³, which will contain the run-off from a 1:100 year return storm event (50mm in one hour). Run-off from the biomass storage area (1,409m²) will be directed to an effluent collection tank, which will not be connected to the drainage system.

A shut off valve will be fitted on the outlet from the sump. The valve will, when activated, allow the surface water to be contained within the site in the event of an incident or accident at the facility that could give rise to surface water pollution.

Five surface water samples were taken from the surface water monitoring point SW1 as shown in **Appendix 2**. Results are included in **Table 1**. The samples were all taken on the same day when the plant was in operation with the objective of providing an overview of water quality of surface water being discharged from the site. The samples were analysed by ALS Ltd. who are INAB accredited. The results indicate that surface water quality was generally satisfactory. An elevated level for suspended solids of 70mg/l is not considered of high concern given that surface water is discharged into a tidal environment where silt levels naturally vary.

Table 1. Sampling results 3 December, 2015

| Sample | Units | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 |
|------------------------------|-------------------------|----------|----------|----------|----------|----------|
| Suspended solids | Mg/l | <25 | <25 | <25 | <25 | 70 |
| pH | units | 7.5 | 7.6 | 7.6 | 8.9 | 8.7 |
| Fats, oils & greases | mg/l | 47 | 31 | 21 | 44 | 22 |
| Surfactant Anionic | mg/l | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| BOD 5 day total | mg/l o ₂ | <5 | <5 | <5 | <5 | 4 |
| Ammonia | mg/l NH ₃ -N | 0.04 | 0.06 | 0.06 | 0.07 | 0.02 |
| Nitrite | mg/l NO ₂ N | <0.01 | <0.01 | <0.01 | <0.01 | 0.04 |
| Nitrate | mg/l NO ₃ N | 4 | 4.1 | 4.1 | <1 | 1.2 |
| Orthophosphate | mg/l P | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Conductivity @20 degrees | us/cm | 427 | 427 | 427 | 210 | 245 |
| Total petroleum hydrocarbons | mg/l | 0.041 | 0.041 | 0.117 | 0.232 | 0.227 |

4.4 Wastewater

Wastewater generated at the site comprises sanitary wastewater from the offices which is treated in the on-site septic tank,

The leachate produced in the composting process is recirculated and surplus leachate that requires treatment is typically not generated, but any surplus is treated in the AD plant. Depending on the type of biomass, there is the potential for effluent to be generated during

the storage of this material. All liquid generated in the storage area will be collected in a concrete underground storage tank and fed into the AD process.

The AD process does not generate a wastewater that requires treatment on-site. The liquid digestate produced in the process is stored in the digestate storage tanks, which provide a minimum three months storage, and then sent from the site and applied to agricultural lands.

4.5 Treatment Process

Compost Plant

The wastes are loaded into enclosed forced aeration compost bays. A batch of waste is placed to a depth of approximately 3 m in the Bay, temperature probes inserted and the bays are closed.

The wastes are regularly turned to enhance the composting process and the temperature is monitored until each batch has reached a temperature of more than 55°C for more than three consecutive days to ensure that that material is sterilised. Upon completion of the thermophilic stage, the treated wastes are screened, with the oversize sent back to the reception area for reuse, and the finished product then sent off-site for land application.

Leachate generated in the bays is collected in floor drains and directed to an underground concrete collection tank. During the process, the moisture content of the materials is monitored and the leachate in the collection tank is recirculated to ensure optimum conditions are maintained.

AD Plant

The fully enclosed AD system has the capacity to process up to 20,000 tonnes per annum of non-hazardous organic waste and biomass, for example silage. The organic wastes are, depending on the available processing capacity, either fed directly into the AD process or temporarily stored in above ground storage tanks.

The treatment process begins in the Waste Reception Building, where the organic wastes and biomass are off loaded and fed, using a loading shovel, into slide feeding system, which move it via a fully enclosed conveyor to the tanks. The contents of the tanks are continuously agitated and maintained at an optimum temperature of 47°C.

The AD process, which takes approximately 50 days for each batch to complete the digestion and post digestion stages, produces a biogas, fibre and digestate. The biogas consists largely of methane and carbon dioxide, but also contains a small amount of hydrogen sulphide and ammonia, as well as traces of other gases.

The biogas is treated to reduce the levels of ammonia and hydrogen sulphide. The treated gas is used as a fuel in two gas engines in CHP plant. A gas flare with a capacity of 600m³/hour is provided as a back-up for when the gas engines are shut down for routine servicing.

The digestate and fibre have a significant nutrient and soil enhancement value and will, depending on the time of the year, either be immediately sent off site for application of agricultural lands, or stored in the digestate tank until ground/weather conditions allow land

application.

4.6 Implementation of Best Available Techniques in the Waste-To-Energy Facility

Best Available Techniques are techniques recommended by the EU for use in designing industrial facilities to minimise pollution. Best Available Techniques have been included in the design of the facility and will be applied in its ongoing operation, management and control. These include:

- plant management systems,
- plant safety systems,
- waste inspection, checking, testing and acceptance,
- waste handling and storage,
- optimisation of resource use

5. Appraisal of baseline conditions

5.1 Ecology

The site is located on the west bank of the Lower Suir River. The immediate surrounding lands include farmland dominated by improved pasture and broad leaved woodland plantations. Other prominent landscape features include the lower River Suir with its associated riparian woodland of willows and levees. Hedgerows, treelines, trackways and public roads are also present. The study area contains a number of minor watercourses. The site itself is dominated by artificial surfaces which include the buildings, yards and parking areas. No birds or mammals of high conservation value, including otter, were recorded from the site or in immediate proximity to it during ecological site assessments carried out as part of the EIS.

5.2 Soils and geology

The bedrock beneath the site comprises limestone and dark-grey calcareous shale of the Ballymartin Formation, which is a Dinantian Lower Impure Limestone, with the Porters Gate and Kiltorcan Formations approximately 200m to the west. The logs of the wells installed in 1990 indicates that the bedrock is heavily weathered, with numerous fractures and cavities encountered from the top of the bedrock to a depth of 20m. Based on the results of pump tests completed in 1990. it appears that the site is likely to be underlain by the Porters Gate Formation.

The Teagasc FIPS-IFS soil map indicates that the topsoil is either basic mineral deep well draining (BminDW) soil, or made ground, while the underlying subsoils comprise Carboniferous limestone tills. The 1991 geotechnical investigation established that the soils and subsoils comprised 0.3m of topsoil overlying approximately 2m of medium dense brown silty clayey sand with gravel and cobbles, which in turn was underlain by at least 2m of firm to stiff, brown, sandy, silty clay with some gravel, cobbles and the occasional boulder.

The borehole logs for the wells installed in 1990, established the subsoil thickness ranged from 34m in the north central part of the site to 12.5 m in the north east of the site. This indicates that the depth of subsoil thins moving east towards the river.

5.3 Surface Water

The site is in the catchment of the River Suir, which is approximately 350m to the east of the site. The Suir rises in Tipperary and joins the Nore and Barrow in Waterford Harbour. It is 115 miles in length and drains a total catchment of 1,394 square miles. Two unnamed tributaries

of the Suir join the river approximately 500m to the north and south of the site, with the confluence of the River Clodiagh and the Suir approximately 2km to the south of the site.

The stretch of the river to the east of the site is part of the Middle Suir. It is tidal and is categorised as a Transitional Water Body under the South East River Basin District (SERBD) Management Plan.

The EPA's water quality databases, which are derived from the SERBD Plan, identifies the stretch of the Suir from Fiddown to the north of the site south to Waterford City as being of Moderate Status and Eutrophic. The eutrophic, or nutrient enriched, status is attributed to landuse upstream of the facility.

Water samples were taken upstream and downstream of the current surface water discharge point from the facility on the Suir River on the 23 September, 2015. The sampling point is shown on on **Figure 1** and results are included in **Table 2** below. Samples were analysed by ALS Ltd. who are INAB accredited. The results indicate that surface water quality was generally satisfactory. However, the BOD level upstream of the facility was elevated to 16mg/l.

Table 2 Water quality results River Suir

| Sample | Units | Sample 1 Upstream of discharge | Sample 2 Downstream of discharge |
|------------------------------|------------|-----------------------------------|-------------------------------------|
| Suspended solids | Mg/l | 25 | 32 |
| pH | units | 8.2 | 8.5 |
| Fats, oils & greases | mg/l | 1.2 | <1 |
| Surfactant Anionic | mg/l | <0.2 | <0.2 |
| BOD 5 day total | mg/l o2 | 16 | 6 |
| Ammonia | mg/l NH3-N | 0.03 | 0.08 |
| Nitrite | mg/l NO2N | 0.02 | 0.02 |
| Nitrate | mg/l NO3N | 2.3 | 2.0 |
| Orthophosphate | mg/l P | 0.02 | <0.02 |
| Conductivity @20 degrees | us/cm | 197 | 389 |
| Total petroleum hydrocarbons | mg/l | 0.011 | 0.017 |

5.4 Flood Risk

The flood zone maps maintained by the OPW describe the lands immediately adjoining the west bank of the Suir as "benefiting lands", which are defined as being subject to either flooding or poor drainage, which would benefit from drainage works. The OSI 6"Map indicates that the "benefiting lands" are to the west of an area that was subject to flooding on Spring Tides.

A levee has been constructed along western bank of the river, between the area affected by the Spring Tide flooding and the "benefiting lands". This levee extends from Mountbolton Wood to the north of the site to the confluence of the Clodiagh and Suir to the south.

The Ormonde Organics site is not within or adjoining the “benefiting lands” and drainage from the site does not discharge to these lands. Surface water drainage from the site is piped to an outfall to the Suir. The OPW databases contain no records of any flooding either within the site boundary, or on the lands immediately adjoining the site. There have been no incidents of flooding either within the site boundaries, or on the adjoining lands since the existing composting facility opened.

5.5 Hydrogeology

The subsoils are not significantly water bearing. The bedrock geology map indicates that the site is underlain by the Ballymartin Limestone Formation. The Ballymartin Formation is classified by the GSI as a Locally Important aquifer which is moderately productive only in local zones (LI). The information from the borehole log for the onsite well indicates a highly weathered and fractured bedrock, and a 72-hour pump test conducted at the site in 1990 established that the aquifer could sustain a yield of 900m³/day. This information indicates that the site is underlain by a more productive bedrock aquifer formation.

The on-site production well provided a sustainable yield of 450m³/day to the former tannery. Given the reported yields from the pump test well and the on-site production well, it is probable that the GSI mapping may not be accurate and that the site is underlain by either the Porters Gate Formation, which is classified as Regionally Important Aquifers (RF). Given the generally limited data on which the boundaries between bedrock formations are delineated, particularly underlying very thick subsoils, boundary variations of several hundred metres are not unusual.

The GSI assigned aquifer vulnerability rating, which indicates the potential susceptibility to contamination from pollution sources at the ground surface, is Low (Figure 8.4). The vulnerability rating is based on the nature and depth of the subsoils. Site specific information shows that subsoils at the site comprise a till, which is between 12.5 and 34m in depth (Ref Section 7.3). As the tills contain clay and are more than 10m thick, the vulnerability rating at the site is confirmed as Low.

The direction of groundwater flow is influenced by the topography and the proximity to the River Suir, and is expected to be predominantly from west to east. It appears, based on the information in the 1990 report on the well installation, that there is hydraulic connectivity between the bedrock aquifer and the River Suir.

The aquifer beneath the site belongs to the Clonmel Groundwater Body, as defined by the SERBD Management Plan. Groundwater quality monitoring conducted in 1990 established that the water quality was good. OCM collected a sample of the water from the on-site well on the 14th December 2010 and sent it for laboratory analysis.

The Groundwater Regulations Threshold Value (TV) were introduced in 2010 (S.I. 9 of 2010) on foot of requirements from the Water Framework Directive. The TVs were developed to assess groundwater quality for large water bodies using large drinking water supply wells and are threshold values, which if exceeded indicate that an adverse impact on groundwater quality has occurred. The 2010 results are consistent with those recorded in 1990. The groundwater quality is good, with all of the parameters well below the relevant TV.

6. Natura 2000 sites

6.1 Designated sites within a 15km radius

Natura 2000 sites within a 20km radius of the proposed development site are listed below in **Table 3**. It is noted that use of a 15km radius is a precautionary measure, as impacts at this distance from the proposed development are highly unlikely in the absence of significant aqueous emissions to the tidal environment. Air emissions will not be significant. The proposed development is located approximately 300 meters from Lower Suir River SAC (site code 002137). A full site synopsis for the SAC is included below. Due to the distances involved and the lack of hydrological connections, the only designated site considered relevant for the

purposes of this report is the Lower River Suir SAC. The position of the facility in relation to the Lower River Suir SAC is shown below in **Figure 1**.

Table 3. Protected sites within 10km.

| Site | Code | Distance |
|------------------------|--------|----------------------------------|
| SAC &cSAC | | |
| Lower River Suir SAC | 002137 | 280 meters to the north and east |
| Hugginstown Fen SAC | 000404 | 13.3 km north |
| Comeragh Mountains SAC | 001952 | 14.4 km west |

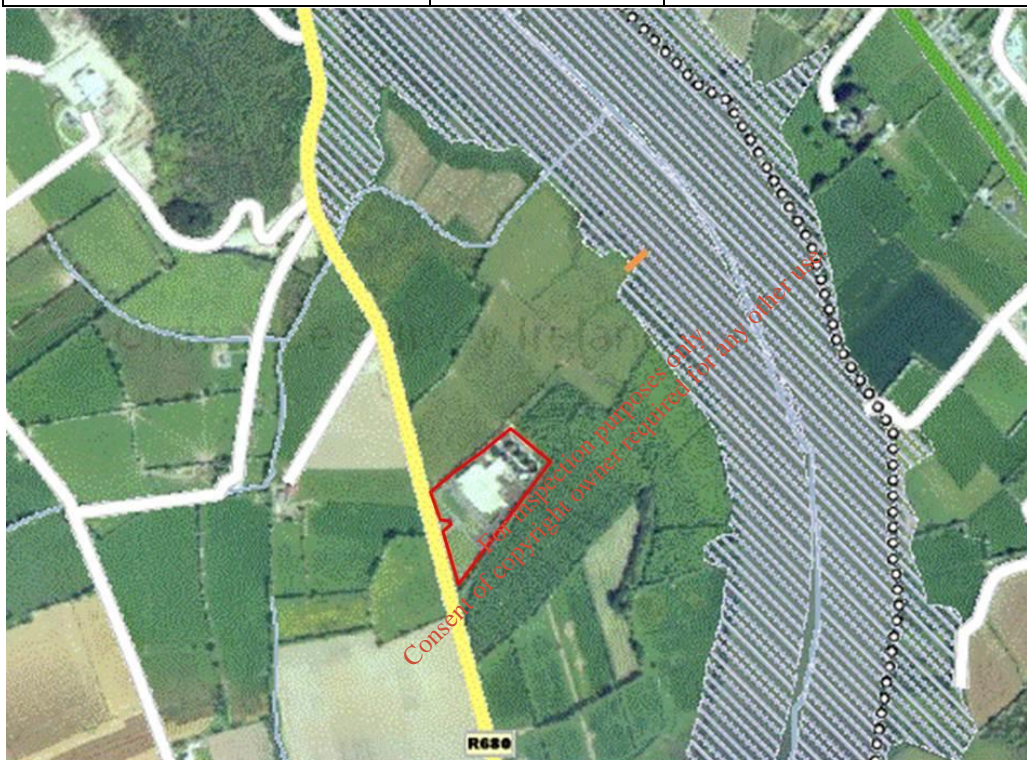


Figure1. Proposed development area (outlined in red), and the surface water discharge point (indicated in orange), in relation to the Lower River Suir SAC (hatched area).

6.2 Qualifying interests

The NPWS lists the following species and habitats as qualifying interests for the River Suir SAC (Table 4 and 5).

Table 4. Qualifying species

| Name | Species code | Species |
|------------------|--------------|------------------------------------|
| Lower River Suir | 1095 | <i>Petromyzon marinus</i> |
| Lower River Suir | 1096 | <i>Lampetra planeri</i> |
| Lower River Suir | 1099 | <i>Lampetra fluviatilis</i> |
| Lower River Suir | 1103 | <i>Alosa fallax</i> |
| Lower River Suir | 1106 | <i>Salmo salar</i> |
| Lower River Suir | 1355 | <i>Lutra lutra</i> |
| Lower River Suir | 1092 | <i>Austropotamobius pallipes</i> |
| Lower River Suir | 1029 | <i>Margaritifera margaritifera</i> |

Table 5. Qualifying habitats

| Name | Habitat Code | Habitat |
|------------------|--------------|---|
| Lower River Suir | 1330 | Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) |
| Lower River Suir | 1410 | Mediterranean salt meadows (<i>Juncetalia maritimi</i>) |
| Lower River Suir | 3260 | Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation |
| Lower River Suir | 91A0 | Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in British Isles |
| Lower River Suir | 91E0 | Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) |
| Lower River Suir | 6430 | Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels |
| Lower River Suir | 91J0 | <i>Taxus baccata</i> woods of the British Isles |

6.3 Draft Generic Conservation Objectives Lower River Suir SAC (002137)

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status sites designated as Special Areas of Conservation and Special Protection Areas. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

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.

Objective 1: To maintain the favourable conservation status of the Qualifying Interests of the SAC

- 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]
- Twaite shad (*Alosa fallax fallax*) [1103]
- Salmon (*Salmo salar*) [1106]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Otter (*Lutra lutra*) [1355]
- 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]
- *Taxus baccata* woods of the British Isles [91J0]

Objective 2: To maintain the extent, species richness and biodiversity of the entire site.

Objective 3: To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

6.4 Site synopsis Lower River Suir (Site Code 002137)

This site consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford and many tributaries including the Clodiagh in Co. Waterford, the Lingaun, Anner, Nier, Tar, Aherlow, Multeen and Clodiagh in Co. Tipperary. The Suir and its tributaries flows through the counties of Tipperary, Kilkenny and Waterford. Upstream of Waterford city, the swinging meanders of the Suir crisscross the Devonian sandstone rim of hard rocks no less than three times as they leave the limestone-floored downfold below Carrick. In the vicinity of Carrick-on-Suir the river follows the limestone floor of the Carrick Syncline. Upstream of Clonmel the river and its tributaries traverse Upper Palaeozoic Rocks, mainly the Lower Carboniferous Visean and Tournaisian. The freshwater stretches of the Clodiagh River in Co. Waterford traverse Silurian rocks, through narrow bands of Old Red Sandstone and Lower Avonian Shales before reaching the carboniferous limestone close to its confluence with the Suir. The Aherlow River flows through a Carboniferous limestone valley, with outcrops of Old Red Sandstone forming the Galtee Mountains to the south and the Slievenamuck range

to the north. Glacial deposits of sands and gravels are common along the valley bottom, flanking the present-day river course.

The site is a candidate SAC selected for the presence of the priority habitats on Annex I of the E.U. Habitats Directive - alluvial wet woodlands and Yew Wood. 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, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Crayfish, Twaite Shad, Atlantic Salmon and Otter.

Alluvial wet woodland is declining habitat in Europe as a result of drainage and reclamation. The best examples of this type of woodland in the site are found on the islands just below Carrick-on-Suir and at Fiddown Island. Species occurring here include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Grey Willow (*S. cinerea*), Osier (*S. viminalis*), with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Angelica (*Angelica sylvestris*), Pendulus Sedge (*Carex pendula*), Meadowsweet (*Filipendula ulmaria*) and Valerian (*Valeriana officinalis*). The terrain is littered with dead trunks and branches and intersected with small channels which carry small streams to the river. The bryophyte and lichen floras appear to be rich and require further investigation. A small plot is currently being coppiced and managed by National Parks and Wildlife. In the drier areas the wet woodland species merge with other tree and shrub species including Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*). This adds further to the ecological interest of this site.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the flood-plain of the river is intact. Characteristic species of the habitat include Meadowsweet (*Filipendula ulmaria*), Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calystegia sepium*).

Old oak woodlands are also of importance at the site. The best examples are seen in Portlaw Wood which lies on both sides of the Clodiagh River. On the south-facing side the stand is more open and the Oaks (mainly *Quercus robur*) are well grown and spreading. Ivy (*Hedera helix*) and Bramble (*Rubus fruticosus*) are common on the ground, indicating relatively high light conditions. Oak regeneration is dense, varying in age from 0-40 years and Holly (*Ilex aquifolium*) is fairly common but mostly quite young. Across the valley, by contrast, the trees are much more closely spaced and though taller are poorly grown on average. There are no clearings; large Oaks extend to the boundary wall. In the darker conditions, Ivy is much rarer and Holly much more frequent, forming a closed canopy in places. Oak regeneration is uncommon since there are as yet few natural clearings. The shallowness of the soil on the north-facing slope probably contributes to the poor tree growth there. The acid nature of the substrate has induced a "mountain" type Oakwood community to develop. There is an extensive species list present throughout including an abundance of mosses, liverworts and lichens. The rare lichen *Lobaria pulmonaria*, an indicator of ancient woodlands, is found.

Inchinquilib Wood consists of three small separate sloping blocks of woodland in a valley cut by the young Multeen River and its tributaries through acidic Old Red Sandstone, and Silurian rocks. Two blocks, both with an eastern aspect, located to the north of the road, are predominantly of Sessile oak (*Quercus petraea*) and Hazel, with Downy Birch (*Betula pubescens*), Ash and Holly. The ground flora is quite mixed with for example Wood sedge (*Carex sylvatica*), Bluebell (*Hyacinthoides non-scriptus*), Primrose (*Primula vulgaris*), Wood-sorrel (*Oxalis acetosella*), Pignut (*Conopodium majus*) and Hard fern (*Blechnum spicant*). The base poor nature of the underlying rock is, to some extent masked by the overlying drift. The third block, to the south of the road, and with a northern aspect, is a similar although less mature mixture of Sessile Oak, Birch and Holly, the influence of the drift is more marked, with the occurrence of Wood anemone (*Anemone nemorosa*) amongst the ground flora.

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*. At a couple of locations along the river, Oppositeleaved Pondweed (*Groenlandia densa*) occurs. This species is protected under the Flora (Protection) Order, 1999.

The Aherlow River is fast-flowing and mostly follows a natural unmodified river channel. Submerged vegetation includes the aquatic moss *Fontinalis antipyretica* and Stream Water-crowfoot (*Ranunculus pinnatifidus*), while shallow areas support species such as Reed Canary-grass (*Phalaris arundinacea*), Brooklime (*Veronica beccabunga*) and Water Mint (*Mentha aquatica*). The river bank is fringed in places with Alder (*Alnus glutinosa*) and Willows (*Salix* spp.).

The Multeen River is fast flowing, mostly gravel-bottomed and appears to follow a natural unmodified river channel. Water Crowfoots occur in abundance and the aquatic moss *Fontinalis antipyretica* is also common. In sheltered shallows, species such as Water-cress (*Rorippa nasturtium-aquaticum*) and Water-starworts (*Callitriche* spp.) occur. The river channel is fringed for most of its length with Alder, Willow and a narrow strip of marshy vegetation.

Salt meadows occur below Waterford City in old meadows where the embankment is absent, or has been breached, and along the tidal stretches of some of the in-flowing rivers below Little Island. There are very narrow, non-continuous bands of this habitat along both banks. More extensive areas are also seen along the south bank at Ballynakill, the east side of Little Island, and in three large salt meadows between Ballynakill and Cheekpoint. The Atlantic and Mediterranean sub types are generally intermixed. The species list is extensive and includes Red Fescue (*Festuca rubra*), Oraches (*Atriplex* spp.), Sea Aster (*Aster tripolium*), Sea Couch Grass (*Elymus pycnanthus*), frequent Sea Milkwort (*Glaux maritima*), occasional Wild Celery (*Apium graveolens*), Parsley Water-dropwort (*Oenanthe lachenalii*), English Scurvygrass (*Cochlearia anglica*) and Sea Arrowgrass (*Triglochin maritima*). These species are more representative of the Atlantic sub-type of the habitat. Common Cord-grass (*Spartina anglica*), is rather frequent along the main channel edge and up the internal channels. The legally protected (Flora (Protection) Order, 1999) Meadow Barley (*Hordeum secalinum*) grows at the landward transition of the saltmarsh. Sea Rush (*Juncus maritimus*), an indicator of the Mediterranean salt meadows, also occurs.

Other habitats at the site include wet and dry grassland, marsh, reed swamp, improved grassland, coniferous plantations, deciduous woodland, scrub, tidal river, stony shore and mudflats. The most dominant habitat adjoining the river is improved grassland, although there are wet fields with species such as Yellow Flag (*Iris pseudacorus*), Meadow Sweet (*Filipendula ulmaria*), Rushes (*Juncus* spp.), Meadow Buttercup (*Ranunculus acris*) and Cuckoo Flower (*Cardamine pratensis*).

Cabragh marshes, just below Thurles, lie in a low-lying tributary valley into which the main river floods in winter. Here there is an extensive area of Common Reed (*Phragmites australis*) with associated marshland and peaty fen. The transition between vegetation types is often well displayed. A number of wetland plants of interest occur, in particular the Narrow-leaved Bulrush (*Typha angustifolia*), Bottle Sedge (*Carex rostrata*) and Blunt-flowered Rush (*Juncus subnodulosus*). The marsh is naturally eutrophic but it has also the nutritional legacy of the former sugar factory which discharged into it through a number of holding lagoons, now removed. Production is high which is seen in the size of such species as Celery-leaved Buttercup (*Ranunculus sceleratus*) as well as in the reeds themselves.

Throughout the Lower River Suir site are small areas of woodland other than those described above. These tend to be a mixture of native and non-native species, although there are some areas of semi-natural wet woodland with species such as Ash and Willow. Cahir Park

Woodlands is a narrow tract of mixed deciduous woodland lying on the flatlying floodplain of the River Suir. This estate woodland was planted over one hundred years ago and it contains a large component of exotic tree species. However, due to original planting and natural regeneration there is now a good mix of native and exotic species. About 5km north west of Cashel, Ardmayle pond is a long, possibly artificial water body running parallel to the River Suir. It is partly shaded by planted Lime (*Tilia* hybrids), Sycamore (*Acer pseudoplatanus*) and the native Alder. Growing beneath the trees are shade tolerant species such as Remote sedge (*Carex remota*).

The site is of particular conservation interest for the presence of a number of Annex II animal species, including Freshwater Pearl Mussel (*Margaritifera margaritifera* and *M. m. durrovensis*), Freshwater Crayfish (*Austropotamobius pallipes*), Salmon (*Salmo salar*), Twaite Shad (*Alosa fallax fallax*), three species of Lampreys - Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*) and River Lamprey (*Lampetra fluviatilis*) and Otter (*Lutra lutra*). This is one of only three known spawning grounds in the country for Twaite Shad.

The site also supports populations of several other animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat (*Myotis daubentoni*), Natterer'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*). Breeding stocks of Carp are found in Kilsheelan Lake. This is one of only two lakes in the country which is known to have supported breeding Carp. Carp require unusually high summer water temperatures to breed in Ireland and the site may therefore support interesting invertebrate populations.

Parts of the site have also been identified as of ornithological importance for a number of Annex I (EU Birds Directive) bird species, including Greenland White-fronted Goose (10), Golden Plover (1490), Whooper Swan (7) and Kingfisher. Figures given in brackets are the average maximum counts from 4 count areas within the site for the three winters between 1994 and 1997. Wintering populations of migratory birds use the site. Flocks are seen in Coolfinn Marsh and also along the reedbeds and saltmarsh areas of the Suir.

Coolfinn supports nationally important numbers of Greylag Geese on a regular basis. Numbers between 600 and 700 are recorded. Other species occurring include Mallard (21), Teal (159), Wigeon (26), Tufted Duck (60), Pintail (4), Pochard (2), Little Grebe (2), Black-tailed Godwit (20), Oystercatcher (16), Lapwing (993), Dunlin (101), Curlew (195), Redshank (28), Greenshank (4) and Green Sandpiper (1). Nationally important numbers of Lapwing (2750) were recorded at Faithlegg in the winter of 1996/97. In Cabragh marshes there is abundant food for surface feeding wildfowl which total at 1,000 or so in winter. 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. Kingfisher, a species that is listed on Annex I of the EU Birds Directive, occurs along some of the many tributaries throughout the site.

Landuse at the site consists mainly of agricultural activities including grazing, silage production, fertilising and land reclamation. The grassland is intensively managed and the rivers are therefore vulnerable to pollution from run-off of fertilisers and slurry. Arable crops are also grown. Fishing is a main tourist attraction on stretches of the Suir and some of its tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. The Aherlow River is a designated Salmonid Water under the EU Freshwater Fish Directive. Other recreational activities such as boating, golfing and walking are also popular. Several industrial developments, which discharge into the river, border the site including three dairy related operations and a tannery.

The Lower River Suir contains excellent examples of a number of Annex I habitats, including the priority habitat Alluvial Forest. The site also supports populations of several Annex II animal species and a number of Red Data Book animal species. The presence of two legally protected

plants (Flora (Protection) Order, 1999) and the ornithological importance of the river adds further to the ecological interest of this site.

6.5. EPA monitoring

The Environmental Protection Agency carries out a biological assessment of most river channels in the country on a regular basis. The assessments are used to derive Q values, indicators of the biological quality of the water. The biological health of a watercourse provides an indication of long term water quality. The EPA Q value scheme is summarised in **Table 6**.

The intermediate ratings Q1-2, Q2-3, Q3-4 and Q4-5 are used to denote transitional conditions, while ratings within parenthesis indicate borderline values. Great importance is attached to the EPA biotic indices, and consequently it is these data that are generally used to form the basis of water quality management plans for river catchments.

Table 6. EPA biotic index scheme.

| Q value | Water quality | Pollution | Condition |
|---------|---------------|---------------------|----------------|
| 5 | Good | Unpolluted | Satisfactory |
| 4 | Fair | Unpolluted | Satisfactory |
| 3 | Doubtful | Moderately polluted | Unsatisfactory |
| 2 | Poor | Seriously polluted | Unsatisfactory |
| 1 | Bad | Seriously polluted | Unsatisfactory |

Source: EPA

In estuarine waterways the EPA rates water quality as Unpolluted, Intermediate, Potentially eutrophic and Eutrophic. The former two are considered to be acceptable estuarine water quality, while the latter two water quality ratings are considered as unsatisfactory.

The 2009 Q values for and water quality measurements for the River Suir are shown in **Table 7**. This section of the River Suir is classified as the Middle Suir estuary. This designation begins 1.6 km upstream at Fiddown bridge and continues downstream to the east of Waterford city.

Table 7. EPA Q values for the waterways in relation to the proposed pipeline route

| River / waterway | Location | Approx. distance from development site | Q values/water quality |
|------------------|--|--|---|
| Suir | Kilsheelan bridge | 20.8 km upstream | 3-4 |
| Suir | Churchtown, Carrick-on-Suir | 15.1 km upstream | 4 |
| Suir | Carrick-on-Suir | 9.8 km upstream | 3-4 |
| Suir | Carrick-on-Suir to Fiddown Bridge | 10.3km upstream to 1.6km upstream | Estuarine & coastal water quality – Potentially Eutrophic |
| Suir | Fiddown bridge (and adjacent to this site) | 1.6km upstream to 23.3km downstream | Estuarine & coastal water quality – Eutrophic |

6. Water frameworks Directive – Middle Suir Estuary status (IE SE 100 0550)

The Water Framework Directive (WFD) is a key initiative aimed at improving water quality throughout the EU. It applies to rivers, lakes, groundwater, coastal & transitional waters. The Directive requires an integrated approach to managing water quality on a river basin basis; with the aim of maintaining and improving water quality. The Directive requires that management plans be prepared on a river basin basis and specifies a structured approach to developing those plans. It requires that a programme of measures for improving water quality be brought into effect.

Specifically the WFD aims to:

- protect/enhance all waters (surface, ground and coastal waters)
- achieve "good status" for all waters by December 2015
- manage water bodies based on river basins (or catchments)
- involve the public
- streamline legislation

A) The Water Frameworks Directive assesses the water quality of rivers and ranks their status as follows: High, Good, Moderate, Poor, Bad, Yet to be determined. The Middle Suir Estuary status is determined to be **Moderate** based on the following parameters.

Table 8. Parameters

| | |
|---|----------------|
| Disolved Inorganic nitrogen status | Moderate |
| Molybdate Reactive Phosphorous status | Good |
| Disolved oxygen as a per cent saturation status | Moderate |
| Biochemical Oxygen Demand (5 day) status | Moderate |
| Macroalgae – phytobiomass status | Moderate |
| Overall protected area | Less than good |
| Ecological status | Moderate |

B) The Water Framework Directive also determines the “Risk” level of the river as follows:
 1a – At risk of not achieving Good Status, 1b – Probably at risk of not archiving Good Status, 2a – Expected to achieve Good Status, 2b – strongly expected to achieve Good Status. The Middle Suir Estuary is considered **1a - At risk of not achieving Good Status** based on the following parameters.

Table 9. Risk parameters

| | |
|--|------------------|
| Overall risk from point sources – worst case (2008) | Probably at Risk |
| Marine direct impacts – worst case | N/A |
| Worst case of point overall and MDI overall overall (MIMAS) Morphological risk worst case (2008) | Probably at Risk |
| Transitional overall – worst case overall overall (MIMAS) Morphological risk worst case (2008) | At Risk |

C) The water frameworks directive also sets out the future plans for the protection and restoration of rivers as follows: Protect, Restore – 2015, Restore – 2021, Restore - 2027. The Middle Suir Estuary is to be **Restored – 2021**

7. Species and habitat listed as qualifying interests for the Lower River Suir SAC for which no potential impact has been identified.

7.1 Terrestrial habitats

Construction works will only impact on common terrestrial habitats and no potential impacts on the qualifying terrestrial habitats for the Lower River Suir cSAC (i.e. Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels, Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles, Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) and *Taxus baccata* woods of the British Isles) is predicted. These habitats do not occur within the works area.

7.2 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation

The EU (2003) definition of this habitat is very broad. There is no satisfactory definition of the habitat and its sub-types or their distribution in Ireland and a lack of relevant monitoring data concerning the habitat. This habitat can occur over a wide range of physical conditions, from acid, oligotrophic, flashy upland streams dominated by bryophytes to more eutrophic, slow flowing streams dominated by *Ranunculus* and *Callitriche* species. While the former will be sensitive to diffuse pollution the latter, especially in shallow streams, will be relatively more resistant. As the Suir is tidal at the discharge point, this habitat will not occur within the area potentially affected by discharges from the facility.

7.3 Freshwater pearl mussel

Only the Clodiagh sub-catchment has an NPWS Freshwater Mussel Management Plan; surveys in 2006 indicated that this species occurs in low numbers from Clonea to Portlaw. Populations of freshwater pearl mussel in this tributary will not be affected by the proposed development.). As the Suir is tidal at the discharge point this species will not occur within the area potentially affected by discharges from the facility.

7.4 Brook lamprey

Brook lamprey is widely distributed in the Suir catchment. As the Suir is tidal at the discharge point this species will not occur within the area potentially affected by discharges from the facility.

7.5 White clawed crayfish

This qualifying species is protected as an Annex II species under the Habitats Directive. Freshwater crayfish is generally common in well oxygenated streams within the Suir catchment particularly where underlain by carboniferous limestone or its derivative glacial drift. As the Suir is tidal at the discharge point this species will not occur within the area potentially affected by discharges from the facility.

8. Species and habitat listed as qualifying interests for the Lower River Suir SAC for which a potential impact has been identified.

8.1 Otter

Otters, along with their breeding and resting places are protected under the provisions of the Wildlife Act 1976, as amended by the Wildlife (Amendment) Act, 2000. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive which is transposed into Irish law in the European Communities (Natural Habitats) Regulations (S.I 94 of 1997), as amended. Otters are also listed as requiring strict protection in Appendix II of the Berne Convention on the *Conservation of European Wildlife and Natural Habitats* and are included in the Convention on International Trade of Endangered species (CITES)). Although rare in parts of Europe, they are widely distributed in the Irish countryside in both marine and freshwater habitats. Otter are listed as a qualifying interest of the Lower River Suir cSAC.

Otters occur along both the freshwater and tidal section of the Suir river. No evidence of otters or otter holts were recorded in the areas that will be impacted by the development. The species may periodically utilise the thin reedbeds and riparian woodland along the riverbank adjacent to the proposed development area for resting and is expected to hunt within the Suir River. However, the site itself is of no value for this species. Any deterioration in water quality could potentially impact on this species by reducing the availability of prey.

8.2 Atlantic Salmon

The Suir is one of Ireland's most important salmonid rivers and salmon spawn throughout the very extensive headwater streams and tributary rivers of the Suir system. The River Suir is also an important salmon fishery. There are no suitable gravels for juvenile salmon or spawning areas within the discharge zone which is tidal. Theoretically, salmon in holding pools downstream of the discharge or migrating through the discharge zone or could be impacted by a severe deterioration in water quality.

8.3 Twaite shad (*Alosa fallax fallax*)

This species occurs in Waterford Harbour and tidal sections of the lower River Suir as far upstream as Carrick-on-Suir. Theoretically, this species could be impacted by a severe deterioration in water quality. It is noted that given the low volume and nutrient levels within the proposed discharge, the distance between the discharge point and the estuary and the volume of dilution provided by the estuary, the impact on estuarine habitats or species is predicted to be negligible.

8.4 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) and Mediterranean salt meadows (*Juncetalia maritimi*)

Habitats further downstream within the estuarine environment are generally robust and adapted to fluctuating levels of silt and nutrients. They are only likely to be impacted by a severe deterioration in water quality.

8.5 River and sea lamprey

All three lamprey species: sea lamprey, river lamprey and brook lamprey are widely distributed in the Suir catchment. As the discharge zone is tidal no impact on spawning or juvenile habitat will occur. Theoretically, river lamprey and sea lamprey migrating through this zone could be impacted by a severe deterioration in water quality.

9. Potential impacts.

The designated site of primary relevance to this proposal is the Lower River Suir SAC. Impacts could potentially arise from the following:

9.1 Potential impacts - Discharge of nutrients, chemicals and suspended solids

Increased nutrients, chemical discharges and increased levels of suspended solids could potentially arise during construction or operation of the facility. Impacts on groundwater could potentially have knock on effects on water quality within the River Suir SAC. Potential detrimental impacts include the following:

Adult fish may also be affected by increased silt levels as gills may become damaged by exposure to elevated suspended solids levels. Increased turbidity in waters may negatively affect angling activity. Aquatic invertebrates may be smothered by excessive deposits of silt from suspended solids. In areas of stony substrate, silt deposits may result in a change in the macro-invertebrate species composition, favouring less diverse assemblages and impacting on sensitive species. Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted and photosynthesis may be reduced. Significant impacts on fish stocks could impact on otter due to a reduction in prey availability

High nutrient levels may result in low oxygen levels and habitat degradation which in turn may impact on sensitive species such as salmonids. Longer-term increases in levels of nutrients discharging to the river could increase total nutrient loadings thus leading to negative impacts on water quality. Chemical contamination could occur during construction for example from spills of hydrocarbons either accidentally or from poorly maintained machinery. During operation spills could occur due to inadequate storage of chemicals and oil.

9.2 Potential impacts -Direct disturbance

Although the AD plant has been already constructed, some construction works have yet to be completed including the biomass storage area, effluent holding tank and new septic tank. Due to the nature of the activities undertaken on a construction site, there is potential for the generation of high levels of noise to the surrounding environment. A variety of items of plant will be in use depending on the construction phasing. There will also be vehicular movements to and from the site that will make use of existing roads. Disturbance of sensitive species could arise due to increased noise and disturbance during construction works and during subsequent operation of the facility. In particular potential impacts on otter could theoretically arise due to disturbance of this species during construction works or during subsequent operation of the facility. A survey of the facility and the River Suir in proximity to the discharge point did not indicate that otters are present. Although this species could potentially occur along this section of the Suir River, no impacts on otters will occur due to the distance of the facility from the river and the high probability that any otter occurring in this area will have

habitualised to any noise and disturbance generated by the existing facility. Any impact on otters due to disturbance is considered negligible.

9.3 Potential impacts - flooding of the facility

Flooding of the site could potentially result in deleterious material being flushed into the river including untreated or treated wastewater, hydrocarbons from parking areas or stored chemicals.

10. Mitigation Measures

The actual and potential emissions associated with the construction and operation of the development facility include noise, dust and particulates, exhaust gases from vehicles and mobile plant, odours, bioaerosols and surface water run-off. All of these are generally similar in nature to the current emissions and are amenable to effective mitigation measures, such as those specified in the Waste Permit. Relevant mitigation measures are as follows:

10.1 Soils and geology

Construction Stage

During the construction stage the topsoil will be stripped and stockpiled in a manner that does not adversely affect the soil structure. The measures by which this will be achieved will be described in a Construction Management Plan (CMP) prepared in advance of the works

It will be a condition of the contract between Ormonde Organics and the building contractor that the CMP specify how materials with the potential to adversely affect soil quality, for example oil, will be stored and handled in a manner that minimises the risk of accidental spills or leaks and complies with Conditions 3.7.1 and 3.9 of the Waste Permit relating to proper storage of materials and provision and maintenance of spill containment and clean-up equipment.

Given the relatively small volumes of potential polluting material (diesel, lubricating and hydraulic oil) that will be stored on site during the construction stage, and the mitigation measures that will be applied, it is considered that any impact on the soils associated with spills and leaks will be negligible, with no long term effects.

Operational Stage

In the operational stage, all waste processing will be carried out inside fully enclosed buildings, tanks and compost bays. The digester tanks will be located in a bund provided with impermeable concrete floor, which will prevent any accidental spills or leaks from impacting on the underlying soils. The converted wastewater treatment tanks, which will be used to store the incoming wastes and digestate, are also located in a bund provided with an impermeable concrete floor.

The effluent storage tank at the biomass storage area will be constructed in accordance with best practice for farm effluent storage facilities. The septic tank design and installation will comply with the guidance specified in the EPA Manual on Wastewater Treatment Systems for Small Communities, Business, Leisure Centres and Hotels and the Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses.

The design and construction of all the tank and drum storage areas comply with Conditions 3.8.1 and 3.8.2 of the Waste Permit, which requires that all such areas are impervious to the

materials stored and that there is adequate retention capacity to contain any accidental spills or leaks.

The concrete floors inside the buildings, in the bunded areas and in the paved open yards used by vehicles comply with Condition 3.5.3 of the Waste Permit and will meet the requirements of British Standard (BS) 8110-Structural Use of Concrete, or an equivalent agreed with Waterford County Council. All the bunds, the biomass effluent storage tank and the underground surface water drainage pipes will be subject to routine inspection and integrity testing specified in Condition 6.8 of the Waste Permit to confirm they are fit for purpose. Based on the site design and the inspection and testing of the bunds and tanks, pipelines and containers, which will be conducted in the operational phase, the risk of uncontrolled release of spills/leaks to the ground will be minimised.

10.2 Water

Construction Stage

During the construction stage, materials with the potential to adversely affect surface and groundwater quality, for example oil, will be stored and handled in a manner that minimises the risk of accidental spills or leaks. Appropriate spill containment and clean-up equipment will be maintained at the construction area, as required by Condition 3.7.1 of the Waste Permit.

Given the relatively small volumes of material that will be stored on site during the construction stage, and the mitigation measures that will be applied it is considered that any impact on surface water associated with spills and leaks will be negligible, with no long term effects.

Based on the nature and thickness of the subsoils (>10m of clayey till), any leaks or spills at the ground surface or leaks in the shallow subsurface will have negligible impact on groundwater.

Operational Stage Surface Water

In the operational stage, all waste processing is carried out inside fully enclosed buildings and tanks. Leachate generated in composting process is collected and stored in underground storage tanks located inside the building. The levels in the tanks are monitored to ensure the liquid does not overflow the tanks, and escape from the building

The digester tanks are located in appropriately sized and constructed bunds that will prevent any accidental spills or leaks from entering the surface water drainage system. The tanks used to store the incoming wastes and digestate are also located in a bunded area.

The effluent storage tank at the biomass storage area will be designed and constructed in accordance with best practice for farm effluent storage facilities. There will be no direct or indirect discharge of leachate or sanitary wastewater to the surface water drainage system. Sanitary wastewater will be discharged to the new septic tank.

The design and construction of all the tank and drum storages areas complies with Conditions 3.8.1 and 3.8.2 of the Waste Permit, which requires that all such areas are impervious to the materials stored and that there is adequate retention capacity to contain any accidental spills or leaks and prevent release to the surface water drainage system.

Materials with the potential to adversely affect surface and groundwater quality, for example oil, are stored and handled in a manner that minimises the risk of accidental spills or leaks. Ormonde Organics has developed site specific procedures to deal with spills and any emergencies that may arise to ensure that the appropriate response actions are taken by trained staff to minimise any associated environmental impacts. Appropriate spill containment

and clean-up equipment is provided at the facility, as required by Condition 3.7.1 of the Waste Permit.

In the event of an incident or accident at the facility, including a fire that could give rise to the risk of surface water pollution, the shut off valve on the outlet sump will be closed to contain the contaminated surface water within the drainage system. Following any such incident, the water that accumulates in the drainage system will be tested to identify the appropriate management option.

Groundwater

The on-site abstraction well is located inside the Compost Building, where one of the new air locks, (Building 4) will be constructed and this area will be used for waste reception. To avoid contamination of the well, it will be decommissioned and sealed in accordance with guidance issued by the Institute of Geologists of Ireland (IGI). A replacement will be drilled. The well will be constructed in a manner that prevents the ingress of rainwater run-off from the ground surface.

The effluent storage tank at the biomass storage area will be designed and constructed in accordance with best practice for farm effluent storage facilities. There will be no direct or indirect discharge of leachate or sanitary wastewater to the surface water drainage system. Sanitary wastewater will be discharged to the new septic tank.

The concrete floors inside the buildings, in the bunded areas and paved open yards used by vehicles will comply with Condition 3.5.3 of the Waste Permit and will meet the requirements of British Standard (BS) 8110-Structural Use of Concrete, or an equivalent agreed with Waterford County Council. All the bunds the biomass effluent storage tank and the underground surface water drainage pipes will be subject to routine inspection and integrity testing specified in Condition 6.8 of the Waste Permit to confirm they are fit for purpose.

The site design and the inspection and testing of the bunds and tanks, pipelines and containers minimise the risk of uncontrolled release of spills/leaks to the ground, which is the pathway for the downward movement of contaminants towards the water table. The nature and thickness of the subsoils (>10m of clayey till) impedes the downward migration of contaminants.

The new wastewater treatment unit will be designed to cater for a population equivalent (pe) of 4. The design and installation will comply with the guidance specified in the EPA Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses. This will ensure that treated effluent discharged to the percolation area does not adversely impact on groundwater quality

10.3 Noise

The internal access roads are maintained to reduce vehicular noise, especially banging from empty trucks. A speed limit of 30 km/hr applies for vehicles moving inside the site boundaries.

A review of reversing sirens will be carried out with a view to their possible replacement with white sound technology.

External doors on entrances to operational areas are only be opened to allow vehicle movements

Periodic noise monitoring will be carried out to ensure compliance with the emission levels set in the Waste Permit.

10.4 Ecology

All construction and operational staff be informed of the importance of the need to protect the River Suir SAC. A noise management plan will be developed and implemented during the construction stage to minimise disturbance.

To minimise the potential impacts on aquatic flora and fauna including fisheries, macro-invertebrates and aquatic plants, particularly those associated with the release of suspended solids, the following mitigation measures will be implemented.

A detailed method statement will be produced to minimise the production and escape of suspended solids and other contaminants to the watercourses. This will include a contingency plan to deal with any significant pollution incidents with the potential to impact on the SAC. Site engineers and construction workers, including sub-contractors, will be briefed on the environmental issues and pollution control methods before going on-site.

All construction and operational staff be informed of the importance of the need to protect the River Suir SAC. A noise management plan will be developed and implemented during the construction stage to minimise disturbance.

To minimise the potential impacts on aquatic flora and fauna including fisheries, macro-invertebrates and aquatic plants, particularly those associated with the release of suspended solids, the following mitigation measures will be implemented.

A detailed method statement will be produced to minimise the production and escape of suspended solids and other contaminants to the watercourses. This will include a contingency plan to deal with any significant pollution incidents with the potential to impact on the SAC. Site engineers and construction workers, including sub-contractors, will be briefed on the environmental issues and pollution control methods before going on-site.

The only discharge to the River Suir will be surface water which discharges through appropriately sized and maintained silt traps and an oil interceptor. Wastes are processed indoors and only moved between the buildings in sealed containers; therefore no nutrient enrichment of surface water is expected to occur. The proposed increased in the amount of organic wastes treated but will not give rise to any new surface water emission points or changes in the quality of the surface water discharge.

11. Implementation of Mitigation measures

11.1 Implementation of mitigation measures - evidence of how these will be secured and implemented and by whom and evidence of how measures will be monitored and should mitigation failure be identified how that failure will be rectified.

Although the AD plant has been already some construction works have yet to be completed including the biomass storage area, effluent holding tank and new septic tank. The implementation of the construction mitigation measures will be provided for in an Construction Environmental Management Plan, which effectively lists all mitigation measures prescribed in any of the planning documentation, all conditions attached to the grant of planning permission and any further mitigation measures proposed during the detailed design stage, and allows them to be audited on a regular basis. The first assessment is a simply Yes/No, has the mitigation measure been employed on-site or not. Following confirmation that the mitigation measure has been implemented, the effectiveness of the mitigation measures will be the subject of regular review and audit during the full construction stage of the project. If some

remedial actions are needed to improve the effectiveness of the mitigation measure, then these are notified to the site staff immediately during the audit site visit, and in writing by way of the circulation of the audit report. Depending on the importance and urgency of rectifying the issue, the site staff are given a timeframe by when the remedial works need to be completed. The on-site construction staff are responsible for implementing the mitigation measures. Their implementation will be overseen by supervising engineers, environmental scientists, ecologists or geotechnical specialists etc depending on who is best placed to advise on the implementation. The system of auditing referred to above ensures that the mitigation measures are maintained for the duration of the construction phase, and into the operational phase where necessary.

11.2 Implementation of mitigation measures - evidence of degree of confidence in their likely success.

The likely success of the proposed mitigation measures is high, either in their current form or as they will be adapted on-site to achieve the desired result. The measures incorporated into the project design and mitigation measures have been drawn up in line with current best practice and include an avoidance of sensitive habitats at the design stage. It is clear in what the mitigation measures are designed to achieve in lowering or reducing the risk of impact to acceptable levels. Whilst the proposed methods of mitigation may be amended and supplemented the risk that the mitigation measures will not function effectively in preventing adverse impacts on designated sites is low.

11.3 Implementation of mitigation measures - timescale, relative to plan or project for their implementation or completion.

The timescale for implementation of the mitigation measures will be dependent on the construction programme of the proposed project. However, based on evidence from other projects, the mitigation measures can only commence in tandem with other site operations as staff, machinery and other resources are necessary to implement the measures. Certain mitigation measures will have to be undertaken in advance of certain construction works, while others can proceed in parallel and others will only be necessary following completion of the main site works.

12. Monitoring

Emissions from the site will be monitored in line with the provision of the Waste Permit and Industrial Emissions licence.

13. Predicted impacts

13.1 Predicted impacts - Direct disturbance

Disturbance of sensitive species could arise due to increased noise and disturbance during construction works and during subsequent operation of the facility. In particular potential impacts on otter could theoretically arise due to disturbance of this species during construction works or during subsequent operation of the facility. A survey of the facility and the River Suir in proximity to the discharge point did not indicate that otters are present. Although this species could potentially occur along this section of the Suir River, no impacts on otters will occur due to the distance of the facility from the river and the likelihood that any otter occurring in this area will have habituated to any noise and disturbance generated by the existing facility. Any impact on otters due to disturbance is considered negligible.

13.2 Predicted impacts - flooding of the facility

Flooding of the site could potentially result in deleterious material being flushed into the river including untreated or treated wastewater, hydrocarbons from parking areas or stored chemicals. The OPW databases contain no records of any flooding either within the site boundary, or on the lands immediately adjoining the site. There have been no incidents of

flooding either within the site boundaries, or on the adjoining lands since the existing composting facility opened. Based on the above the flood risk for the site is considered minimal. It is also noted that given the dilution available under a flood scenario and the robust tidal nature of the River Suir in proximity to the site, any impacts on qualifying interests is predicted to be negligible.

13.3 Predicted impacts qualifying species and habitats arising from impacts on water quality during construction and operation.

It is noted that sensitive freshwater species and habitats (i.e freshwater pearl mussel, white clawed crawfish, brook lamprey and Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation) and sensitive stages in the life cycle (i.e spawning/juvenile Atlantic salmon and lamprey) are not relevant to this tidal section of the SAC. Only very severe impacts on water quality have the potential to impact on aquatic species such as salmon and lamprey migrating through this area. It is also noted that shad species are naturally adapted to the fluctuating silt and nutrient levels which naturally occur in the tidal environment and it is highly improbable that this species will be impacted by limited, localised impacts on water quality. Similarly the qualifying habitats which naturally occur in the estuarine environment (Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) and Mediterranean salt meadows (*Juncetalia maritimi*) are robust, located a considerable distance from the facility and impacts on these habitats from localised impacts on water quality, were they to occur, are predicted to be negligible.

13.4 Predicted impacts- Accidental Releases from the Site During the Construction Phase

A Construction Management Plan (CMP) will be prepared in advance of the works and will specify the measures for the storage of chemicals such as oil, minimisation of the risk risk of accidental spills or leaks and the proper storage of materials and provision and maintenance of spill containment and clean-up equipment.

Given the relatively small volumes of material that will be stored on site during the construction stage, and the mitigation measures that will be applied it is considered that any impact on surface water associated with spills and leaks will be negligible, with no long term effects.

Based on the nature and thickness of the subsoils (>10m of clayey till), any leaks or spills at the ground surface or leaks in the shallow subsurface will have negligible impact on groundwater.

In the unlikely event that construction does result in small scale spillages of hydrocarbons or increased silt levels in surface water run-off, the impacts on the tidal environment would be limited and localised. Given the dilution provided in the tidal environment such spillages would not have an adverse impact on the integrity of the Lower River Suir SAC or the conservation objectives for qualifying species and habitats.

13.5 Predicted impacts during operation

A range of mitigation measures have been implemented at the site to prevent impacts on surface water and groundwater quality. These include the following;

- All waste processing are carried out inside fully enclosed buildings, tanks and compost bays.
- The digesters and storage tanks are located in bunds provided with impermeable concrete floor, which will prevent any accidental spills or leaks from impacting on the underlying soils.
- Run-off from the biomass storage area will be directed to an effluent collection tank, which will not be connected to the drainage system. The effluent storage tank at the

biomass storage area will be constructed in accordance with best practice for farm effluent storage facilities.

- The septic tank design and installation will comply with EPA guidance
- The design and construction of all the tank and drum storage areas are impervious to the materials stored and that there is adequate retention capacity to contain any accidental spills or leaks.
- All the bunds and the underground surface water drainage pipes will be subject to routine inspection and integrity testing to confirm they are fit for purpose.
- All leachate generated in composting process is collected and stored in underground storage tanks located inside the building. The levels in the tanks are monitored to ensure the liquid does not overflow the tanks, and escape from the building
- Ormonde Organics has developed site specific procedures to deal with spills and any emergencies that may arise to ensure that the appropriate response actions are taken by trained staff to minimise any associated environmental impacts. Appropriate spill containment and clean-up equipment is provided at the facility, as required by the Waste Permit.
- In the event of an incident or accident at the facility, including a fire that could give rise to the risk of surface water pollution, the shut off valve on the outlet sump will be closed to contain the contaminated surface water within the drainage system. Following any such incident, the water that accumulates in the drainage system will be tested to identify the appropriate management option.

Based on the above, the risk of a significant adverse impact on the integrity of the Lower River Suir SAC, as a result of the operation of this facility is considered negligible.

13.6 Impacts from discharges of surface water from the site

There will be no direct or indirect discharge of leachate or sanitary wastewater to the surface water drainage system. Sanitary wastewater will be discharged to the new septic tank. The only discharge to the River Suir is surface water from the building roofs and paved areas which discharges through appropriately sized and maintained silt traps and an oil interceptor. Wastes are processed indoors and only moved between the buildings in sealed containers; therefore no nutrient enrichment of surface water is expected to occur.

In determining that an appropriate assessment was required the EPA noted that there is a risk that the surface water run-off may be polluted by waste with a high biological oxygen demand (BOD) which may have a significant effect on the conservation objectives of this European site. Results from sampling carried out on in December 2015 when the plant was in operation indicate that levels of BOD were satisfactory (See **Table 1**) and did not exceed 5mg/l. In contrast the level of BOD within the Suir River upstream of the discharge in September 2015 (See **Table 2**) was elevated at 16mg/l.

Based on the above and on the robust tidal nature of the receiving watercourse the impact on water quality from the discharge of surface water is predicted to be negligible and on adverse impact on the integrity of the River Suir SAC is predicted.

13.7 Predicted cumulative impacts

The potential for in-combination impacts to occur needs to be taken into account. Identified threats to the Lower River Suir SAC include the following:

Obstructions, impassable weirs, gross pollutants, specific pollutants, channel maintenance, man-made barriers to migration, eutrophication, leisure fishing drift netting, use of pesticides, fertilisation, removal of hedges and copses, removal of scrub, felling of native or mixed

woodland, professional fishing(including lobster pots and fyke nets)hunting, trapping, poisoning, poaching, sand and gravel extraction, mechanical removal of peat, urbanised areas, human habitation, continuous urbanisation, industrial or commercial areas, discharges, disposal of household waste, industrial waste, inert materials, other discharges, routes, autoroutes, bridge, viaduct, water pollution, other forms of pollution, infilling of ditches, dykes, pods, pools, marshes or pits, drainage, management of aquatic and bank vegetation for drainage purposes, removal of sediments, canalisation or modifying structures of inland water course

The facility comes within **Suir Estuary Water Management Unit Action Plan**. The pressure/risks for this management unit are detailed below in **Table 9**.

Table 9 Pressures and risks

| PRESSURES/RISKS (continued) | |
|--|---|
| Wastewater Treatment Plants (WWTP) and Industrial Discharges | At risk: Fiddown, Mooncoin, Mullinavat, Piltown Sewerage Scheme Grangemockler, Portlaw WWTP Proposed upgrade to 5250 pe. Cheekpoint, Faugheen No Section 4 risks , 3 IPPCs - at risk |
| Quarries, Mines & Landfills | There are 13 Quarry within the WMU. There are 2 landfills within the WMU: Kilbarry Landfill Site and Hardbog Landfill. There are no mines within the WMU. |
| Agriculture | There are 31 waterbodies at risk from agriculture within the WMU: SE_16_9, SE_16_3485, SE_16_3783, SE_16_384 SE_16_359, SE_16_4215, SE_16_3817, SE_16_4291, SE_16_3609, SE_16_1496, SE_16_4191, SE_16_3977, SE_16_869, SE_16_747, SE_16_3309, SE_16_17, SE_16_4252, SE_16_1525, SE_16_1151, SE_16_3186, SE_16_4249, SE_16_3914, SE_16_1502, SE_16_4197, SE_16_4257, SE_16_358, SE_16_1085, SE_16_4174, SE_16_4237, SE_16_3586, SE_16_4321 |
| On-site systems | There are 9323 septic tanks in this WMU, none of them are posing a risk to water quality due to their density, location and unsuitable hydrogeological conditions. |
| Forestry | There are no waterbodies within the WMU at risk from Forestry. |
| Dangerous substances | No waterbodies at risk from dangerous substances within the WMU. |
| Morphology | There are no waterbodies at risk |
| Abstractions | There are 9 waterbodies at risk from abstraction within the WMU: SE_16_3609, SE_16_1496, SE_16_4252, SE_16_3914, SE_16_4174, SE_16_4321, SE_16_4249, SE_16_4237, SE_16_4291. |
| Other | Lower Suir Estuary transitional WB has been heavily modified. |
| Nutrient sources | Most TP is diffuse (94%) mainly from agriculture (59%), unsewered properties (10%), unsewered industry (21%) and WWTP (6%). |

| | |
|-----------------|--|
| Point pressures | <p>11 WWTP - Fiddown, Mooncoin, Mullinavat, Piltown, Carrick-on-Suir, Faugheen, Grangemockler, Portlaw, Ballyneil, Waterford, Cheekpoint.</p> <p>7 Section 4 – 3 private companies, Concrete and Mortar Company, Building Product Producer, Quarries, Retail Centre.</p> <p>15 IPPCs – Animal Health Products Company, Tape Manufacturers, Pharmaceuticals Company, 2 Plating Companies, 2 Farms, 2 Transportation Companies, Lens Production Company, Carpet Company, Crystal Manufacturers, Research and Development Company, Technology Manufacturing Company, Manufacturing Timber Company.</p> <p>8 WTP - Lingaun WTP, Ahenny Treatment House, Carrickavantry WW, East Waterford, Coolnamuck Road Treatment, Ballinvir TH, Tullohea TH, Clonamy WTP.</p> <p>9 EPA Licensed Waste Facilities</p> |
|-----------------|--|

Source: Suir Estuary Water Management Unit Action Plan 2010

The primary concern with respect to potential cumulative impacts relates to impacts on water quality. The closest substantial settlement is Portlaw. The Portlaw WWTP discharges to the Clodiagh River which in turn discharges to the Suir River downstream of the Ormonde Organics discharge. The site of the WWTP is located west of and just outside the boundary of the River Clodiagh catchment for Freshwater Pearl Mussel and 500m east and downstream of the nearest known location of Freshwater Pearl Mussel.

The existing wastewater treatment plant at Knockane was completed in 1995. Foul sewerage is pumped and drainage is discharged to the wastewater treatment plant, which provides secondary treatment of effluent to 25/35 (BOD:S.S) Urban Waste Water Directive Standard.

The Habitats Directive Article 6 Screening Assessment Portlaw Local Area Plan 2014-2020 notes that the upgrade of the treatment plant has been identified in the WSIP assessment of Needs 2010-2013. South-East River Basin District Management Plan Standards including FPM Regulations and Programme of Measures will guide monitoring and restoration measures.

Carrick-on-Suir is located 9km upstream of the facility. The Carrick-on-Suir Town Development Plan 2013 notes that the WWTP at Carrick on Suir involving secondary and nutrient treatment has a population equivalent of 11,000 while the P.E of the urban area is 7,557 so there is adequate waste water capacity to cater for projected population growth in Carrick on Suir

As detailed above threats to water quality have been identified. However, in the absence of significant impacts on water quality associated with the operation of, or surface water discharges from the Ormonde Organics facility, no significant, cumulative adverse impact on the integrity of Natura 200 sites have been identified.

14. Conclusions of the Natura Impact Statement

The only Natura 2000 site for which potential significant impacts has been identified is the Lower River Suir SAC, which is located approximately 280m from the facility at its closest point. Surface water from the facility is discharged directly to the Lower River Suir SAC.

Impacts which were considered to have the potential to impact on the Lower River Suir related in particular to impacts on water quality during construction and operation. Potential cumulative impacts were also considered.

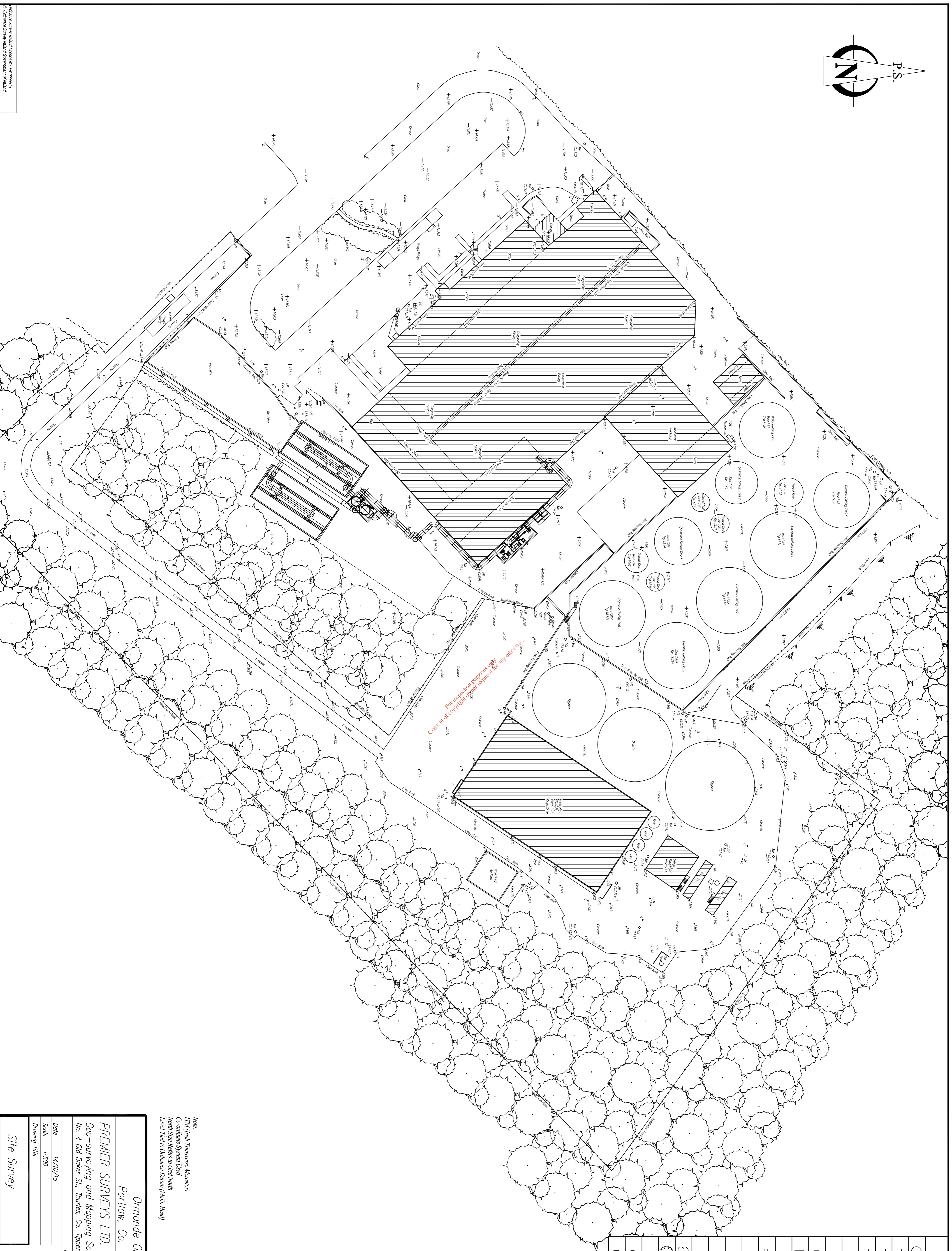
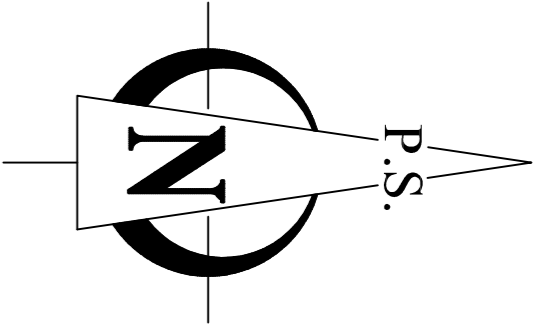
The primary concern is that impacts on water quality within the Lower River Suir SAC could occur. A range of precautionary measures have been incorporated into the project design, and other mitigation measures have been developed and proposed, with the purpose of avoiding or minimising impacts on the qualifying interests and conservation objectives of the Lower River Suir SAC. The likely success of these measures was also considered and no particular difficulties in their effective implementation were identified. No significant impact on water quality is predicted.

It is noted that sensitive freshwater species and habitats (i.e freshwater pearl mussel, white clawed crawfish, brook lamprey and Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation) and sensitive stage in the life cycle (i.e spawning/juvenile Atlantic salmon and lamprey) are not relevant to this tidal section of the SAC. Only very severe impacts on water quality have the potential to impact on aquatic species such as salmon and lamprey migrating through this area. It is also noted that shad species are naturally adapted to the fluctuating silt and nutrient levels which naturally occur in the tidal environment and it is highly improbable that this species will be impacted by limited, localised impacts on water quality. Similarly the qualifying habitats which naturally occur in the estuarine environment (Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) and Mediterranean salt meadows (*Juncetalia maritimi*) are robust, located a considerable distance from the facility and impacts on these habitats from localised impacts on water quality, were they to occur, are predicted to be negligible.

The provisions of Article 6 of the 'Habitats' Directive 92/43/EC (2000) defines 'integrity' as the 'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and / or population of species for which the site is or will be classified'. *The draft documents Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (Draft)* (EC, 2015) states that the integrity of the site can be usefully defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated"

Following a comprehensive evaluation of the potential direct, indirect and cumulative impacts on the qualifying interests and conservation objectives for the Lower River Suir SAC, it has been concluded that the proposed development will not have an adverse effect on the integrity of the Lower River Suir SAC or any other Natura 2000 sites.

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| LEGEND | |
|--------|--------------------|
| | Market Corner |
| | Road Center |
| | Intersect |
| | Road Meter |
| | Survey Mark |
| | Spot Check |
| | Faxant Corner |
| | Road Corner |
| | Road Sign |
| | Level |
| | Traffic Light |
| | Lamp Standard |
| | Fiducial Mark |
| | Electric Pole |
| | High Voltage |
| | Tree |
| | Survey Station |
| | Assessing Junction |
| | Important Corner |

Note:
 TMA (Irish Transverse Mercator)
 Coordinate System Used
 North-South Referenced to Grid North
 Level Tied to Ordnance Datum (Mean Sea Level)

Ormonde Organics
 Portlaoigh, Co. Waterford

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Date: 14/10/15
 Scale: 1:500
 Drawing Title: Site Survey
 Drawing no: 151005C

Attachment 2
Site Layout

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