

Comhairle Contae Chorcaí Cork County Council

Halla an Chontae,
Corcaigh, Éire.
Fón: (021) 4276891 • Faics: (021) 4276321
Suíomh Gréasáin: www.corkcoco.ie
County Hall,
Cork, Ireland.
Tel: (021) 4276891 • Fax: (021) 4276321
Web: www.corkcoco.ie



Administration,
Environmental Licensing Programme,
Office of Climate, Licensing & Resource Use,
Environmental Protection Agency,
Headquarters,
P.O. Box 3000,
Johnstown Castle Estate,
County Wexford.



Direct Tel. No. (021) 4285304
Direct Fax No. (021) 4343255
e-mail: patricia.power@corkcoco.ie

Ref.: Inniscarra A0441-01.

24th February 2011

Re: Notice in accordance with Regulation 25(c)(ii) of the Waste Water Discharge (Authorisation) Regulations 2007.

Dear Sir/Madam,

I refer to the above and to letter received from the Agency dated 14th December 2010 requiring further information in accordance with Regulation 25(c)(ii) of the regulations.

I enclose a submission to the Agency in response to the matters raised in said letter.

This information is supplied in the form of one original plus one copy and a CD-ROM of the information in electronic searchable PDF format as requested.

Yours Sincerely,

**MAIREAD LUCEY,
S/DIRECTOR OF SERVICES,
AREA OPERATIONS SOUTH,
FLOOR 5.**



Inniscarra Regulation 25 (c)(ii) Further Information Response

- Question 1** Assess the likelihood of significant effect of the waste water discharges from the above agglomerations on the relevant European sites by referring to Circular L8/08 “Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments” issued by the Department of Heritage and Local Government. In particular, the flow diagram in Appendix 1 should be completed and the results of each section recorded. Provide details of the results of this assessment within one month of the date of this notice and provide a reasoned response for the decision. If significant effects are likely then and appropriate assessment must be carried out and a report of this assessment forwarded to the Agency by the date specified below. You are advised to provide the requested information in accordance with the “Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. 684 of 2007)”.
- Question 2** Please provide the name of the agglomeration to which the Waste Water Discharge Licence Application relates.

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Question 1 “Assess the likelihood of significant effects of the Waste water discharge on the relevant European Site

Wastewater Discharge Licence Application: A0441-01

Circular L8/08 2 September 2008

**Water Services Investment and Rural Water Programmes –
Protection of Natural Heritage and National Monuments**

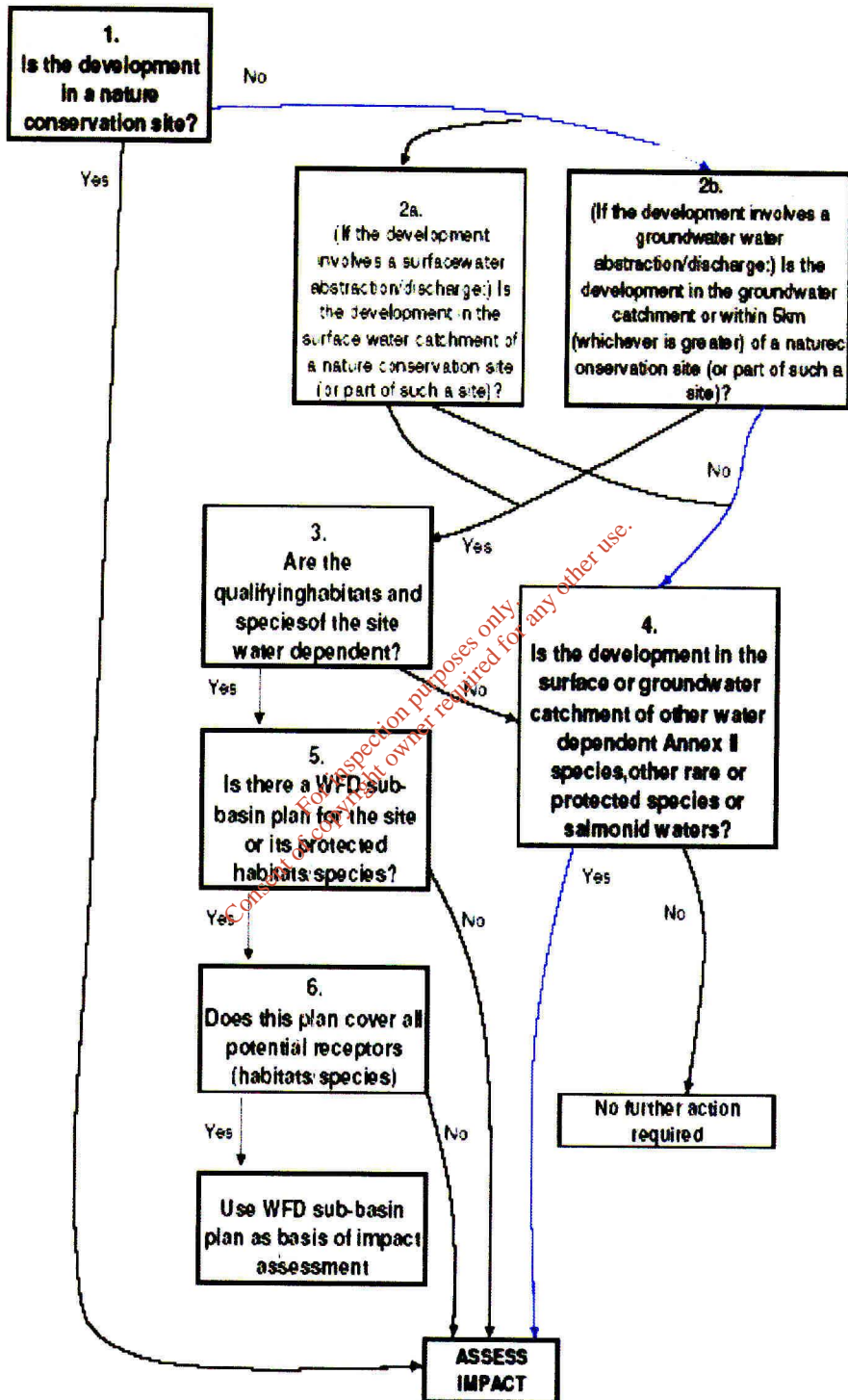
APPENDIX 1

Water Services Schemes - Natural Heritage Checklist for Local Authorities

What projects must be screened?

For new projects and significant changes to any existing operations, if the answer is 'yes' to any of the following, the project (i.e. construction, operation and maintenance) must be screened for its impacts:	
1. Is the development in or on the boundary of a nature conservation site NHA/SAC/SPA?	No
2. Will nationally protected species be directly impacted? Wildlife Acts (1976 and 2000), Flora Protection order (S.I. 94 of 1999)?	No
3. Is the development a surface water discharge or abstraction in the surface water catchment, or immediately downstream of a nature conservation site with water dependant qualifying habitats/ species?	No
4. Is the development a groundwater discharge or abstraction in the ground water catchment or within 5 km of a nature conservation site with water-dependant qualifying habitats/species?	No
5. Is the development in the surface water or groundwater catchment of salmonid waters?	Yes
6. Is the treatment plant in an active or former floodplain or flood zone of a river, lake, etc?	No
7. Is the development a surface discharge or abstraction to or from marine waters and within 3km of a marine nature conservation site?	No
8. Will the project in combination with other projects (existing and proposed) or changes to such projects affect the hydrology or water levels of sites of nature conservation interest or the habitats of protected species?	No

Flow Diagram with Question relating to the Agglomeration of Inniscarra Shaded Grey



Conclusion: An appropriate assessment is required for Inniscarra

Habitats Directive Assessment (Screening Report) in respect of Application by Cork County Council to the EPA for Wastewater Discharge Certificate for Inniscarra Agglomeration.

February 2011

1.0 Background

Inniscarra Waterworks is located approximately 5 Km west of the town of Ballincollig. It is situated on the R 618 regional road on the northern shore of the Inniscarra Lake on the River Lee, upstream of the ESB Hydro-Electric Station. The agglomeration boundary can be seen at Attachment B.1 Map 5 of the original application.

The agglomeration boundary encompasses the Inniscarra Waterworks site (See Attachment A.1 Map 3), which hosts the principal Treatment works for drinking water supply to the Cork Harbour and City region, Cork County Council's Environmental Directorate (Administrative Offices, Water and Instrumentation Laboratory & Food Hygiene Building) and the EPA Regional Inspectorate, Cork. There are 3 No. bungalows adjacent to the site which also feed into the waste water treatment plant.

From Monday to Friday (9am – 5pm) there could be up to 125 people on site at any one time and at the weekend there is only 2 Cork County Council staff to operate the waterworks treatment process.

The Treatment plant serving the Inniscarra Waterworks treats domestic wastewater and is an activated sludge treatment system incorporating pre-scanning, extended aeration and sludge storage. It is designed for a Population Equivalent (PE) of 100 and is capable of handling a hydraulic load of $23\text{m}^3/\text{day}$ and a BOD loading of 6 Kg/day and was commissioned in 1993.

Currently the WWTP is receiving flows ranging from $6\text{m}^3/\text{d}$ to $13\text{m}^3/\text{d}$, with an average DWF of $8.8\text{m}^3/\text{d}$ entering the plant. Based on hydraulic flows the PE equates to 63. The final effluent is discharged to a constructed percolation area which is adjacent to the wastewater treatment plant in the town land of Curraleigh. (See Attachment C.1 Map 10).

The primary discharge point discharges to groundwater 320m from the River Lee upstream of Lee Hydro-electric Scheme.

The Lee Valley was flooded in 1957 as part of the Lee Hydro-electricity Scheme. The River Lee flows Easterly for approximately 20 Km before flowing into the Cork Harbour.

1.1 Habitats Directive Assessment

The plant is located approx 18km upstream from the Cork Harbour Special Protection Area which is designated under the EU **Birds Directive (79/409/EEC)** as transposed into Irish Law under the European Union (Natural Habitats) Regulation SI 94/1997. As this is the case, and in accordance with requirements under this Directive, the potential impacts of proposed developments that have the potential to impact on Special Protection Areas must be assessed.

The **Habitats Directive 92/43/EEC** is transposed into Irish Law under the European Union (Natural Habitats) Regulations SI 94/1997 (The Regulations). The Regulations require the assessment of all projects or plans that have the potential to impact on nature conservation sites, including SACs. This assessment is referred to as a Habitats Directive Assessment. The purpose of a Habitats Directive Assessment is to identify potential impacts on nature conservation sites arising from a project or plan and to predict the effect of such impacts on the integrity of the sites.

The European Union has provided guidance on Habitats Directive Assessment which identifies four stages in the assessment process as follows:

Stage One: Screening

The process which identifies the likely impacts upon a Natura 2000 site of a project or plan, with 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.

Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain.

This assessment considers compensatory measures, where in the light of an assessment of imperative reasons of overriding public interest, it is deemed that the project or plan should proceed.

This Submission brings together all of the information necessary to make determination as to whether there are likely to be significant impacts arising from the discharge from the Inniscarra Waterworks Site Agglomeration on the River Lee, Salmonid waters.

1.2 Stage One – Screening

Step 1:

Provide a description of the plan and other plans and projects that, in combination, have the potential to have significant effects on Natura 2000 sites within the potential impact zone;

Step 2:

Identify Natura 2000 sites which may be impacted by the plan, and compile information on their qualifying interests and conservation objectives;

Step 3:

Determine whether the plan needs to be screened for potential impacts on Natura 2000 sites;

Step 4:

Carry out an assessment of likely effects – direct, indirect and cumulative – undertaken on the basis of available information as a desk study or field survey or primary research as necessary;

Step 5:

Assess the significance of any such effects on the Natura 2000 sites within the impact zone.

The assessment has been prepared in accordance with the following guidance:

European Commission (2000) Managing Natura 2000 sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC.

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.

Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Environment, Heritage and Local Government, 2009.

2 Appropriate Assessment Screening Matrix

2.1 Description of project	
Location	Inniscarra Waterworks, Inniscarra, Co. Cork. (See A1_Map1 of the application).
Description of the key components of the project	<p>The Inniscarra Waterworks wastewater treatment plant was designed for a PE of 100 and was commissioned in 1993. The treatment works is an Activated Sludge Treatment process consisting of the following elements:</p> <ul style="list-style-type: none"> • Inlet Mechanically Raked Screen • Aeration Tank • Settlement Tank • Collection Manhole and Percolation Area • Sludge storage tank <p>The treatment plant is treating on average 8.8m³/day, a PE of 63. The final effluent is discharged to a constructed percolation area which is adjacent to the wastewater treatment plant.</p>
Distance from designated sites in potential impact zone*	Discharges directly to Groundwater 320m from the River Lee.

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2.2 Description of the Natura 2000 sites within the potential impact zone¹	
Name	Cork Harbour Special Protection Area
Site Code	4130
Site Description	<p>The Cork Harbour SPA is an estuarine complex which is primarily comprised of intertidal habitats, mainly mudflats as well as some other coastal and marine habitats. These habitats support very high numbers of wintering waterfowl that feed on the macro invertebrates inhabiting the mudflats. The Harbour regularly supports in excess of 20,000 wintering birds, making it an internationally important site and the fifth most important wintering waterfowl site in the country.</p> <p>Discharge from the Inniscarra waterworks wastewater treatment plant enters the groundwater 320m from the River Lee and 20Km upstream from the Cork Harbour SPA.</p> <p>The River Lee meets the Cork Harbour at the North Western end of the Lough Mahon estuary where the main habitats of importance are intertidal mudflats.</p> <p>More information on the Cork Harbour SPA is contained in Appendix 2 of this document. Bird count data is provided in Appendix 2.</p>
Qualifying Interests of Cork Harbour SPA.	<p>Internationally important numbers of Black-tailed Godwit and redshank; Nationally important numbers of Cormorant, Shelduck, Oystercatcher, Golden Plover, Lapwing, Dunlin and Curlew; 20,000 wintering water birds. Source – National Parks and Wildlife Service.</p>
Other Notable Features of Cork Harbour SPA	<p>Little Grebe, Great-crested Grebe, Grey Heron, Wigeon, Teal, Pintail, Shoveler, Red-breasted Merganser, Grey Plover, Black-headed Gull, Common Gull, Lesser Black-backed Gull, wetland and water birds. Source – National Parks and Wildlife Service.</p> <p>See Appendix 2 for bird count data for Cork Harbour 1998/2000 – 2007/2008.</p>
Conservation Objectives	<p>To avoid deterioration of the habitats of the qualifying species and species of special conservation interest, or significant disturbance to these species, thus ensuring that the integrity of the site is maintained.</p> <p>To ensure for the qualifying species and species of conservation interest that the following are maintained in the long term.</p>

¹ Natura 2000 sites within the potential impact zone of the proposed development have been identified in accordance with guidance provided in the NPWS circular L8/08.

	<ul style="list-style-type: none">• The population of the species as a viable component of the site;• The distribution and extent of habitats supporting the species;• The structure, function and supporting processes of habitats supporting the species; <p><i>Source – National Parks and Wildlife Service</i></p>
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2.3 Assessment Criteria

<p>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site.</p>	<p>Discharge from Inniscarra Waterworks wastewater treatment plant: The treated effluent discharges to groundwater via the percolation area in the town land of Curraleigh. Discharge from the Inniscarra waterworks wastewater treatment plant enters the groundwater 320m from the River Lee and 20Km upstream from the Cork Harbour SPA</p> <p>The discharge consists of treated domestic wastewater from the Inniscarra waterworks site Agglomeration.</p> <p>Other Significant Discharges to the River Lee between Cork Harbour SPA and Inniscarra Waterworks wastewater treatment plant:</p> <p>Treated Wastewater from the Ballincollig agglomeration discharges to the River Lee approx 13Km upstream of the Cork Harbour SPA. It should be noted that this facility has a Waste Water Discharge Licence (D0043-01).</p> <p>Treated Wastewater from the Blarney agglomeration discharges approx 19km upstream of the Cork Harbour SPA to the river Shournagh which combines with the River Lee. It should be noted that this facility has a Waste Water Discharge Licence (D0049-01).</p> <p>Treated Wastewater from Killeens discharges approx 24Km upstream of the Cork Harbour SPA to the river Blarney which flows to the River Lee. It should be noted that this facility has a Waste Water Discharge Licence (D0329-01).</p>
<p>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site taking into account the following:</p> <ul style="list-style-type: none"> ○ Size and scale ○ Land-take ○ Distance from the Natura 2000 site or key features of the site: ○ Resource requirements (water abstraction etc.) ○ Emissions (disposal to land, water or air) ○ Excavation Requirements ○ Transportation 	<p>Discharges could give rise to elevated nutrients entering the Western portion of Cork Harbour. Increased nutrient levels may impact on the ecology of an area by changing the composition of floral communities and reducing the ability of less robust plants to survive. Increased nutrient levels may also result in increasing the invertebrate populations in the estuary, thereby increasing bird population levels.</p> <p>However the potential for the treatment plant discharge to result in elevated nutrients within the harbour is reduced by two main factors:</p> <ol style="list-style-type: none"> 1. The discharge from the treatment plant is a small volume which enters directly to groundwater 320m from the River Lee and 20km upstream from Cork Harbour SPA and from the monitoring data available there are no signs of significant impact to water quality in the River Lee from the discharge. 2. The River Lee enters the Cork Harbour SPA at the North Western end of Lough Mahon which is a large and well exchanged body of water with unlimited dilution capacity.

<p>Requirements</p> <ul style="list-style-type: none"> ○ Duration of construction, operation, decommissioning ○ Other. 	<p>1 No deterioration in water quality in the River Lee The effluent enters directly to groundwater 320m from the River Lee, which has a large dilution capacity and 20Km upstream from the Cork Harbour SPA.</p> <p>Cork County Council performs Water Framework Directive testing of the River Lee at both upstream (Rooves Bridge) and downstream (Inniscarra Bridge) locations. These are assessed against the Quality of Salmonid Waters Regulations 1988 and the EQS (Surface Water) Regulations 2009. It was found that there is no significant impact to water quality of the River Lee associated with the Inniscarra Waterworks wastewater treatment plant.</p> <p>See appendix 3 – 2010 Upstream and Downstream sampling Data assessment against SI 272 of 2009.</p> <p>Effluent testing demonstrates that treated effluent meets standards set out in the Urban Wastewater Treatment Regulations 2004 (see appendix 4 for Effluent quality results).</p> <p>It should be also be noted that at Leemount Cross a point further downstream of the discharge the Q value is 4-5 (Unpolluted) and that the lake quality around the discharge location is moderately eutrophic.</p> <p>See appendix 4 for Effluent quality results for 2009.</p> <p>2 Treated Effluent discharges into Harbour Body The treated effluent enters the Cork Harbour SPA at the North Western End of the Lough Mahon Estuary which is a large and well exchanged body of water with unlimited dilution capacity. The endless dilution capability of the harbour body of water means that the discharge is properly diluted once within the SPA.</p>
<p>Describe any likely changes to the site arising as a result of:</p> <ul style="list-style-type: none"> ○ Reduction in habitat area ○ Disturbance to key species ○ Habitat or species fragmentation ○ Reduction in species density ○ Changes in key indicators of conservation value (water quality etc) ○ Climate Change 	<p>Reduction in habitat area: The effluent is discharging to a large well-exchanged body of water where dilution and dispersion potential is high. No significant impacts are evident or predicted on habitats within the Cork Harbour SPA arising from the operation of this facility.</p> <p>Disturbance to key species: The operation of the WWTP does not cause any disturbance to species within the SPA.</p> <p>Habitat or species fragmentation: No habitat fragmentation has been caused as a result of the operation of this facility.</p> <p>Reduction in species density: The effluent discharges to ground 320m from the River Lee which discharges to a large well-exchanged body of water where dilution and dispersion potential is high. No significant impacts are evident or predicted on species for which the SPA is designated.</p>

	<p>Changes in key indicators of conservation value e.g. water quality:</p> <p>Monitoring of the River Lee water quality indicates that there are no significant impacts to water quality associated with the treatment plant discharge to groundwater. This is confirmed by the EQS comparison tables attached in Appendix 3 -2010 Upstream and Downstream sampling Data assessment against SI 272 of 2009.</p> <p>There is a slight deterioration in water quality between the upstream and downstream monitoring points but this is not associated with the Inniscarra Water Waterworks Wastewater treatment plant which discharges a small volume directly to groundwater 320m from the River Lee.</p> <p>It should be also be noted that at Leemount Cross a point further downstream of the discharge to groundwater the Q value is 4-5 (Unpolluted) and that the lake quality around the discharge location to groundwater is moderately eutrophic.</p>
<p>Describe any likely impacts on the Natura 2000 site as a whole in terms of:</p> <ul style="list-style-type: none"> ○ Interference with the key relationships that define the structure of the site ○ Interference with key relationships that define the function of the site 	<p>Interference with the key relationships that define the structure of the site: The structure of the SPA is not impacted by the operation of this facility.</p> <p>Interference with key relationships that define the function of the site: The function of the SPA is not impacted by the operation of this facility.</p>
<p>Describe from the above those elements of the project of plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</p>	<p>No significant impacts are predicted.</p> <p>Treated effluent complies with standards laid down in the Urban Wastewater Treatment Regulations 2004 and is discharging to groundwater 320m from the River Lee, which has a large dilution capacity and 20Km upstream from the Cork Harbour SPA.</p> <p>No significant impacts are evident or predicted on species for which the SPA is designated.</p> <p>Therefore it is considered that a stage 2 – Appropriate Assessment is not necessary.</p>

3. Finding of No Significant Effects Report Matrix

3.1 Details	
Name of project or plan	Inniscarra Waterworks wastewater Treatment Plant discharge.
Name and location of Natura 2000 site	Cork Harbour Special protection Area
Description of the project or plan	<p>The Inniscarra Waterworks wastewater treatment plant was designed for a PE of 100 and was commissioned in the 1993. The treatment works is and Activated Sludge Treatment process comprised of the following;</p> <ul style="list-style-type: none"> • Inlet Mechanically Raked Screen • Aeration Tank • Settlement Tank • Collection Manhole and Percolation Area • Sludge storage tank <p>The treatment plant is treating on average 8.8m³/day, a PE of 63. The final effluent is discharged to a constructed percolation area which is adjacent to the wastewater treatment plant. The percolation area is 320m from the River Lee and 20Km from the Cork Harbour SPA.</p>
Is the project or plan directly connected with or necessary to the management of the site (provide details)?	No

3.2 The assessment of significance of effects	
Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 Site.	<p>Discharges from the Inniscarra Waterworks wastewater treatment plant either alone or in combination with discharges from other sources could give rise to elevated nutrients entering the Western portion of Cork Harbour. Increased nutrient levels may impact on the ecology of an area by changing the composition of floral communities and reducing the ability of less robust plants to survive. Increased nutrient levels may also result in increasing the invertebrate populations in the estuary, thereby increasing bird population levels.</p> <p>It is considered that the discharge from Inniscarra Waterworks wastewater treatment plant to ground is not contributing to this impact because of its distance from Cork Harbour SPA and because of the large dilution capacity of the River Lee.</p>
Explain why these effects are not considered significant.	<p>The treated effluent discharges directly to groundwater 320m from the River Lee and 20Km upstream of the Cork Harbour SPA which is a large well-exchanged body of water where dilution and dispersion potential is high. No significant impacts are evident or predicted on species for which the SPA is designated.</p>
List of agencies consulted: provide contact name and telephone or email address	<p>National Parks and Wildlife Service – <u>Natureconservation@environ.ie</u>, <u>cyril.saich@environ.ie</u></p> <p>BirdWatch Ireland</p> <p>Data requested previously by Cork County Council.</p>
Response to consultation	<p>Draft Conservation Objectives and a copy of Intention to Designate Cork Harbour as SPA was received previously from the NPWS.</p> <p>BirdWatch Ireland to send on Bird count data for 2005-2010.</p>

Data collected to carry out the assessment			
Who carried out the assessment	Sources of data	Level of assessment completed	Where can the full results of the assessment be accessed and viewed
Gavin Kelly, Cork County Council	IWebs Bird Data supplied by BirdWatch Ireland; Water Quality Monitoring Data CCC;	Desktop review of cited data.	This report.

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Question 2 Please provide the name of the agglomeration to which the Waste Water Discharge Licence Application relates.

The name of the agglomeration is **Inniscarra Waterworks Site** as stated in section B.1 of the Wastewater Discharge application form.

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APPENDIX 1

SITE SYNOPSIS

SITE NAME: CORK HARBOUR SPA

SITE CODE: 004030

Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas and Owenacura. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, Inner Lough Mahon, Lough Beg, Whitegate Bay and the Koscian inlet.

(wing to the sheltered conditions, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably *Macoma balthica*, *Scribicularia plana*, *Hydrobia ulvae*, *Nephtys hombergi*, *Nereis diversicolor* and *Corophium volutator*. Green algae species occur on the flats, especially *Ulva lactuca* and *Enteromorpha* spp. Cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially where good shelter exists such as at Kosciane and Bellevy in the North Channel. Salt marshes are scattered throughout the site and these provide high tide roosts for the birds. Salt marsh species present include Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Common

Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Lax-flowered Sea-lavender (*Limnolobos luteus*) and Sea Arrowgrass (*Triglochin maritima*). Some shallow bay water is included in the site. Cork Harbour is adjacent to a major urban centre and a major industrial centre. Koscian lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. The five-year average annual core count for the entire harbour complex was 34,661 for the period 1996/97-2000/01. (Of particular note is that the site supports an internationally important population of Redshank (1,614) - all figures given are average winter means for the 5 winters 1995/96-1999/00). A further 15 species have populations of national importance, as follows: Great Crested Grebe (218), Cormorant (620), Shelduck (1,426), Wigeon (1,750), Gadwall (15), Teal (807), Pintail (84), Shoveler (1,35), Red-breasted Merganser (90), Dystreacher (791), Lapwing (3,614), Dunlin (4,936), Black-tailed Godwit (412), Curlew (1,345) and Greenshank (36). The Shelduck population is the largest in the country (9.6% of national total), while those of Shoveler (4.5% of total) and Pintail (4.2% of total) are also very substantial. The site has regionally or locally important populations of a range of other species, including Whooper Swan (10), Pochard (145), Golden Plover (805), Grey Plover (66) and Turnstone (99). Other species using the site include Bar-tailed Godwit (45), Mallard (456), Tufted Duck (97), Goldeneye (15), Coot (77), Mute Swan (39), Ringed Plover (51),

Knor (31), Little Grebe (68) and Grey Heron (47). Cork Harbour is an important

APPENDIX 2 Bird Count Data



Cork Harbour

Species	1% National	1% International	1992-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Mean	Peak
Mute Swan	110	110	45	42	25	15	42	52	71	54	73	65	73	54	24	73
Bewick's Swan	20	200	6				2								0	2
Whooper Swan	130	210	3		10	14	12	15	7						5	15
Black Swan												2			0	2
Pink-footed Goose	2,250				1										0	0
Green and White-fronted Goose	370				1										0	0
Greylag Goose	50	570			3	4	4	1		3					2	6
Canada Goose					13	5	2	2	23	11	13				15	23
Light-bellied Brent Goose	220	260	12	2	4		2	2	16	22	11				16	26
Feral/ hybrid Goose															1	5
Shelduck	150	3,000	1,575	1,872	1,200	1,225	1,903	1,346	1,381	1,350	1,715	823		1,286	1,942	
Wigeon	520	15,000	1,553	1,402	1,274	1,512	1,831	2,226	2,042	2,332	1,422	1,259		2,010	2,822	
Gadwall	20	600	4		6		67	17	13	13					10	17
Green-winged Teal	450	5,000	772	1,214	1,139	1,225	1,482	1,511	1,169	1,502	1,67	844		0	0	
Mallard	380	20,000	671	572	431	365	422	539	523	402	423	424		408	525	
Pintail	20	600	52	41	2	74	13	42	20	14	2				16	42
Shoveler	25	400	103	145	74	42	10	32	24	45	62	51			43	62
Red Crested Pochard			1												0	0
Pochard	380	3,500	35	11	19	21	27	13	7	7	2	3			7	12
Ring-necked Duck							1								0	0
Tufted Duck	370	12,000	34	20	46	32	20	22	14	14	16	16			0	0
Scaup	45	3,100	2							2					12	33
Long-tailed Duck															0	0
Eider	30	2,200													0	0
Common Scoter	230	12,000								15					3	15
Surf Scoter			2						2	7					2	7
Velvet Scoter															0	0
Goldeneye	25	11,500	15	14	15	22	11	14	7	10	5	14			10	14
Red-breasted Merganser	35	1,700	110	125	64	77	26	25	86	50	22	72			72	88
Red-throated Diver	20	3,000													0	0
Black-throated Diver										1					0	0
Great Northern Diver			1	5	3			1							0	0
Pied-billed Grebe	50		1									4			2	4

The counts presented in the table refer to the peak counts of species in each I-WeBS season. Site peak and mean are calculated as the peak and mean of peak counts respectively over the season's specified. Blank cells with n columns which contain positive values for one or more species constitute zero for those species.



I-WeBS

	2	3	2	4	1	1	214	207	0	1
Ring-billed Gull	876	375	1284	1725	455	200	182	214	207	290
Common Gull	15,000						290			290
Lesser Black-backed Gull	753	175	177	106	55	254	31	230	72	297
Herring Gull	53	62	56	12	37	32	40	125	51	56
Iceland Gull			1							0
Glaucous Gu										0
Great Black-backed Gull	4,500	235	141	72	110	150	157	157	95	185
Unidentified gull				2,125						0
Sandwich Tern	2	12	2	3	5		2	2	17	42
Common Tern		12				1				1
Arctic Tern										0
Unidentified Tern						3				1
Kingfisher			1	2		3	3		2	2

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Douglas Estuary

Species	PK halophila	PK interstitialis	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Mute Swan	110	110	3	2	2	3	1	2	2
Graylag Goose	50	270							2
Canada Goose					1				
Shelduck	150	3000	200	165	270	200	107	122	134
Wigeon	620	15000	366	280	360	500	510	388	322
Green-winged Teal			1	1					262
Teal	450	5000	162	400	262	400	166	113	60
Mallard	360	20000	55	83	30	73	65	34	65
Shoveler	25	400	14	6	6	8	2		
Pochard	360	3500							
Tufted Duck	270	12000	25	21	25	3			2
Goosander	45	3100							
Goldeneye	95	11500	26	17	5	8	7	3	
Red-breasted Merganser	35	1700	6	4	15	2	6	2	4
Great Northern Diver		50							2
Little Grebe	25	4000	4	8	9	8	6		5
Great Crested Grebe	55	3600	100	4	16	18	20	2	5
Common Loon	140	1200	15	14	6	24	16	27	14
Little Egret		1300	7	2	2	12	21	16	16
Great Heron	30	2700	6	10	12	7	15	11	6
Water Rail									1
Woolly	20		2	5	5	6		2	2
Coot	220	17500							2
Cyrenatchter	660	10200	156	120	560	361	340	380	345
Greater Plover	1700	6300	3700	4000	3200	4700	3200	2500	2050
Lesser Plover	65	2500	1	1	17	1	2	1	1
Lesser Knot	2100	20000	390	1200	1210	1700	1360	1322	450
Curlew Sandpiper	190	4500	70	60	116	100	65	100	120
Dunlin			1				2	1	
Ruff	660	12300	2000	1500	650	2600	1650	2500	2400
Snip		1250							1
Slope		26000	2	1	1	2	6	3	1
Black-tailed Godwit	140	470	250	200	1000	500	500	460	464
Bar-tailed Godwit	160	1200	270	300	600	400	297	218	225
Curlew	550	6500	276	271	600	380	497	622	270
Common Sandpiper						2	1	1	1
Spotted Redshank		900	1		1		1		1
Greenshank	30	2300	7	8	7	8	16	11	9
Redshank	510	3900	120	224	610	540	664	420	261
Turnstone	120	1500							2
Mediterranean Gull								1	1
Laughing Gull									
Black-headed Gull		20000		2	400	611	300	210	260
Ring-billed Gull			1						300
Common Gull		16000		2	12	20	15		142
Lesser Black-backed Gull		4500		2	4	10	5		6
Herring Gull		13000	1	2					12
Kearns Gull									1
Great Black-backed Gull		4600	2	2		2	9	1	12
Sandwich Tern									10
Common Tern					1	1			2
Kingfisher			1			2	1	1	1

The counts presented in the table refer to the peak counts of species in each I-WeBS season. Site peak and mean are calculated as the peak and mean of peak counts respectively over the seasons specified. This table only contains counts which contain positive values for one or more species count table and for those species.

Appendix 3 2010 Upstream and Downstream sampling Data assessment against SI 272 of 2009

2010 Upstream Data from Water Quality Section Cork County Council
Assessment against SI 272 of 2009

Entity	Station	Station Reference	Station Easting	Station Northing	Sample Template	Sample Ref	Sample Date	Analyst	Conclusion	Molybdate Reactive		Alkalinity	Appearance	Chloride	Colour	Ammonium	Conductivity @ 20 oC	Dissolved Oxygen % Saturation	Dissolved Oxygen	Nitrate	Nitrite	pH	Temperature	BOD	Suspended Solids
										CaCO3	P														
Lee	Rooves Beg	RS19L030500	145700	71600	Salmonoid	2010/0055	20-Jan-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lee	Rooves Beg	RS19L030500	145700	71600	Salmonoid	2010/0393	17-Feb-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lee	Rooves Beg	RS19L030500	145700	71600	Salmonoid	2010/0809	24-Mar-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lee	Rooves Beg	RS19L030500	145700	71600	Salmonoid	2010/1088	21-Apr-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lee	Rooves Beg	RS19L030500	145700	71600	Salmonoid	2010/1357	19-May-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lee	Rooves Beg	RS19L030500	145700	71600	Salmonoid	2010/1646	16-Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lee	Rooves Beg	RS19L030500	145700	71600	Salmonoid	2010/2122	21-Jul-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lee	Rooves Beg	RS19L030500	145700	71600	Salmonoid	2010/2372	18-Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lee	Rooves Beg	RS19L030500	145700	71600	Salmonoid	2010/2713	08-Sep-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean Value										0.009333333	38	9.95	47.5	0.0477	109.33	103.789	10.5	4.85	0.032	7.5889	13.9667	1.54	1.25		
EQS Mean value										≤0.035	none	none	none	none	≤0.083as NH4)	none	none	none	none	none	6.0-9.0	none	≤1.5	none	
Compliance with EQS Regs in 2010										Yes	n/a	n/a	n/a	n/a	Yes	n/a	n/a	n/a	n/a	Yes	n/a	No	n/a		
95% Percentile Value										0.0218				0.0952		115.2									
EQS 95% Percentile Value										≤0.075	none	none	none	none	≤0.1809(as NH4)	none	>80% & <120%	none	none	none	none	1.92	none		
Compliance with EQS Regs in 2010										Yes	n/a	n/a	n/a	n/a	Yes	n/a	Yes	n/a	n/a	n/a	n/a	≤2.6	none		
value at half of LOD for statistical purposes																						Yes	n/a		

2010 Downstream Data from Water Quality Section Cork County Council
Assessment against SI 272 of 2009

Entity	Station	Station Reference	Station Easting	Station Northing	Sample Template	Sample Ref	Sample Date	Analyst Conclusion	Parameter	Hardness	Molybdate Reactive Phosphorous	Alkalinity	Appearance	Chloride	Colour	Ammonium	Conductivity @ 20 oC	Dissolved Oxygen % Saturation	Dissolved Oxygen	Nitrate	Nitrite	pH	Temperature	BOD	Suspended Solids
									CaCO3	P	CaCO3		Cl	H _z	NH ₄		O ₂	NO ₃	NO ₂			O ₂			
Lee	Inniscarra	RS19L030600	157251.6	71006.6	WFD Operational	2010/0392	17-Feb-10 -		62	0.028	78	good	12	31	0.059	159	96	11.8	8.6	< 0.013	7.6		1.9		
Lee	Inniscarra	RS19L030600	157251.6	71006.6	Salmonoid	2010/1087	21-Apr-10 -			0.011		clear			0.027	134	96	12		< 0.013	7.9	9.7	1.4	1	
Lee	Inniscarra	RS19L030600	157251.6	71006.6	WFD Operational	2010/2121	21-Jul-10 -		70	0.038	52	clear	12	47	0.182	155	94	9	4.6	0.075	7.7	17.3	2.1	1	
Lee	Inniscarra	RS19L030600	157251.6	71006.6	Salmonoid	2010/2380	18-Aug-10 -			0.003		Clear	12.6		0.018	166	109	9.9	4.7	< 0.013	7.7	19.8	2.2		
Lee	Inniscarra	RS19L030600	157251.6	71006.6	Salmonoid	2010/2708	08-Sep-10 -			0.003		Clear	13.8		0.006	136	101.1	9.4		0.027	7.5	15.5	3.4	< 1	
									Mean Value	66	0.0166	65		12.6	39	0.0584	150	99.22	10.42	5.9667	0.051	7.68	15.575	2.2	1
									EQS Mean value		≤0.035	none	none	none	none	≤0.083(as NH ₄)	none	none	none	none	none	6.0 -9.0	none	≤1.5	
									Compliance with EQS Regs in 2010		Yes	n/a	n/a	n/a	n/a	Yes	n/a	n/a	n/a	n/a	Yes	n/a	No		
									95% Percentile Value		0.036					0.1574		107.42						3.16	
									EQS 95% Percentile Value		≤0.075	none	none	none	none	≤0.1809(as NH ₄)	none	>80% & <120%	none	none	none	none	none	≤2.6	none
									Compliance with EQS Regs in 2010		Yes	n/a	n/a	n/a	n/a	Yes	n/a	Yes	n/a	n/a	n/a	n/a	n/a	No	n/a
									value at half of LOD for statistical purposes																

note- conversion of NH₄ to Amm as N, divide by 1.28

APPENDIX 4 Effluent Quality Results 2009

Attachment E4 Inniscarra Table E4		
Sample Date	06/10/2009	
Sample	discharge to percolation area	
Sample Code	GT1213	
Flow M ³ /Day	No result	
pH	4.9	
Temperature °C	No result	
Conductivity uS/cm 20°C	444	
Suspended Solids mg/L	12	
Ammonia-N mg/L	3	
BOD mg/L	5	
COD mg/L	36	
TN-N mg/L	30.14	
Nitrite-N mg/L	<0.1	
Nitrate-N mg/L	22.7	
TP-P mg/L	10.25	
O-PO4-P mg/L	9.46	
SO4 mg/L	38.6	
Phenols µg/L	<0.10	
Atrazine µg/L	<0.01	
Dichloromethane µg/L	<1	
Simazine µg/L	<0.01	
Toluene µg/L	<0.28	
Tributyltin µg/L	not required	
Xylenes µg/L	<0.73	
Arsenic µg/L	<0.96	
Chromium ug/L	<20	
Copper ug/L	<20	
Cyanide µg/L	<5	
Fluoride µg/L	0.391	
Lead ug/L	<20	
Nickel ug/L	<20	
Zinc ug/L	130.8	
Boron ug/L	<20	
Cadmium ug/L	<20	
Mercury µg/L	<0.03	
Selenium µg/L	<0.74	
Barium ug/L	20.9	

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