Natura Impact Statement

IN SUPPORT OF THE

APPROPRIATE ASSESSMENT

At: **Intel, Leixlip, Co. Kildare**

Client: **Intel Ireland**

Environmental Impact Services

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1 INTRODUCTION

1.1 BACKGROUND

This Natura Impact Statement (NIS) was prepared by Dr. Marian Coll of Environmental Impact Services on behalf of Intel in order to determine the potential for any negative impacts on the Natura 2000 network of sites from development of the Fab 24C conversation. This NIS contains a record of the Stage 1 Screening and Stage 2 Appropriate Assessment that was carried out.

The Intel Ireland Campus at Collinstown Industrial Park, Leixlip, County Kildare, is one of Intel's largest manufacturing sites. The Intel site is located adjacent to the Rye Water Valley/Carton SAC.

1.2 LEGISLATIVE CONTEXT

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

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

"Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

This requirement is implemented in the Republic of Ireland by the European Communities (Birds and Natural Habitats) Regulations 2011. These new regulations consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats)(Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in the CJEU judgements.

If, in spite of a negative assessment of the implications for the [Natura 2000] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

1.3 STAGES OF THE APPROPRIATE ASSESSMENT

This NIS has been prepared in accordance with the following guidance:

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

- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission Environment DG, 2000.

- Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC: European Commission, 2000

AA comprises up to four stages:

Stage One: Screening

The process which identifies the likely 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.

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.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First, the plan or project should aim to avoid any impacts on European sites by identifying possible impacts early in the development process. Second, mitigation measures should be applied, if necessary, during the AA process to the point where no adverse impacts on the site(s) remain. If the project is still likely to result in impacts on European sites, and no further practicable mitigation is possible, then it must be rejected. If no alternative solutions are identified and the project is required for imperative reasons of overriding public interest (IROPI test) under Article 6(4) of the Habitats Directive, then compensation measures are required for any remaining adverse effect.

In the case of this Natura Impact Statement, it is found that the proposed development only requires Stage 1 and Stage 2 assessment.

2 SCREENING

2.1 DESCRIPTION OF THE PROJECT

2.1.1 The Developer

Intel Ireland Limited is a subsidiary of the Intel Corporation, which is among the world's leaders in the design and manufacture of microprocessors and systems. The Intel Ireland Campus at Collinstown Industrial Park, Leixlip, County Kildare, is one of Intel's largest manufacturing sites. Intel first located a technology campus in Ireland in 1989 and production of motherboards and systems began the following year.

Intel Ireland's Leixlip campus is the location of four semi-conductor, wafer-fabrication facilities: FAB 10 and FAB 14, which operate jointly as Ireland FAB Operations (IFO), and FAB 24 and FAB 24-2 which operate jointly as FAB 24. These facilities produce latest generation silicon microprocessors that power platforms and technology advancements. The IFO facility produces both flash memory and logic devices. The FAB 24 facility processes 300mm wafers on both 90 and 65-nanometer process technologies.

2.1.2 The Project

Intel Ireland proposes to seek permission for development at their existing manufacturing facility at Leixlip, Co. Kildare, specifically for the conversion of the existing Fab24 manufacturing facilities and new development as outlined below. The changes accommodate processes required to manufacture new versions of the electronic products that are currently made in these buildings.

The work will consist of alterations and additions to already permitted industrial buildings and equipment. Most of the new equipment is for air and water treatment. A Site layout plan is shown in Figure 2.1.

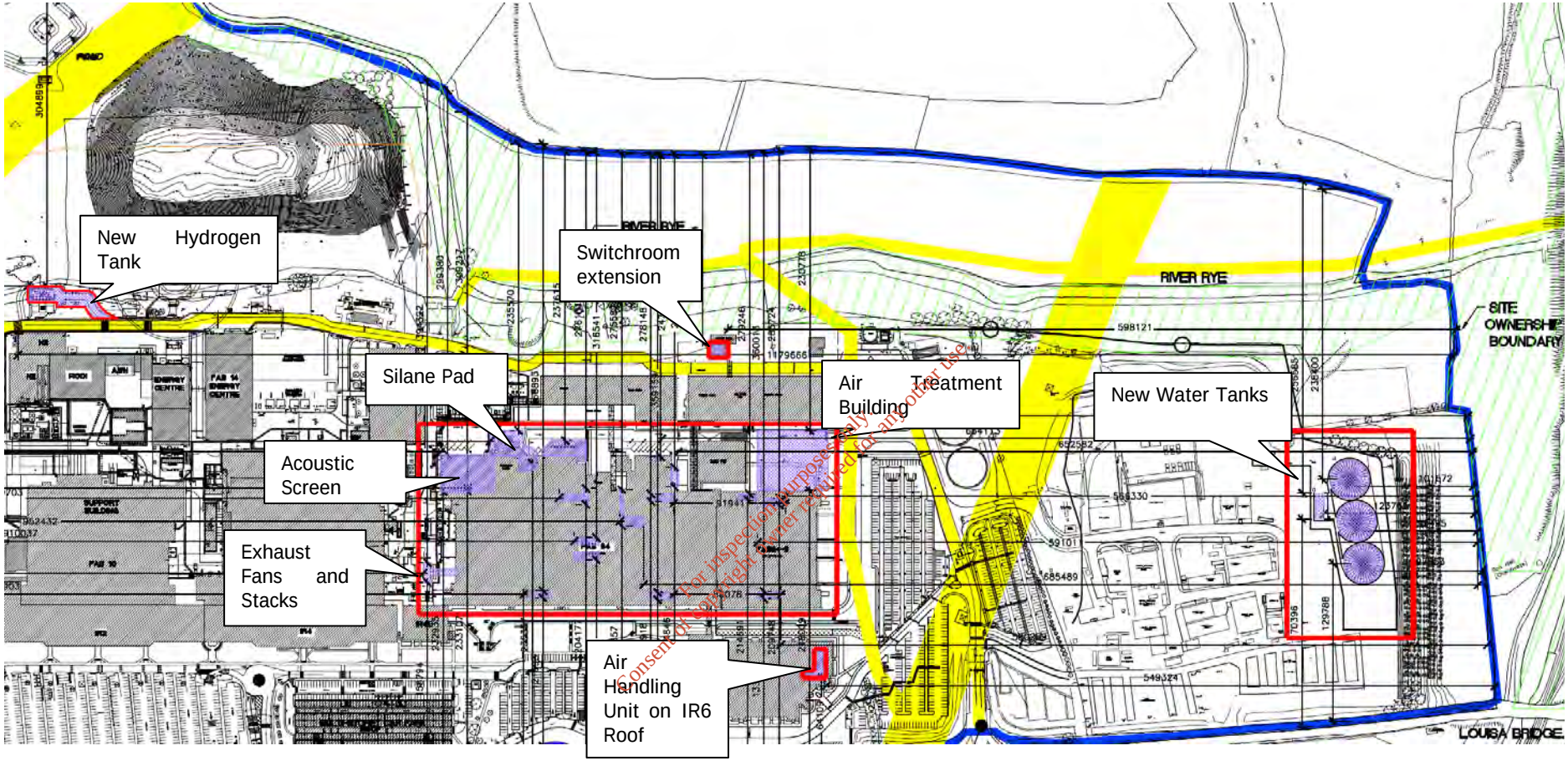


Figure 2.1 Site layout with areas of proposed development outlined in red (Air Handling units in Fab24 also shown in purple)

The proposed development consists of the following modifications to the FAB 24 Building: -

a) 29 new roof mounted stack;
   - The stacks are located on the roof of the new Air Treatment Building (16 no.), Fab 24 (2 no.) Free standing structure between F14 and F24 (3 no.), north west of Fab 24 (4 no. including a new generator stack), north central of Fab 24 (4 no.). The stacks are on average 12m above the parapet of Fab 24 and 8m above the parapet of the existing Air Abatement parapet;
   - Photomontages accompany the EIS which demonstrate the imperceptibility of the stacks amongst the existing stacks.

b) A new Air Treatment Building located north east of Fab24-2 (Figure 2.2);
   - This building comprises steel structures to house the air treatment equipment and mezzanines for access to the equipment and is cladded as per Drawing 6111-D009;
   - It is a three storey building – however for ease of understanding this building (which is extending the footprint and increasing the number of floors at various levels) is laid out as five levels on Drawing 6111-D010 – however two of the levels are void and equipment is simply passing through the void;
   - The air treatment facilities comprise complex ductwork, air cleaning equipment (including scrubbers, fans and filtration systems).

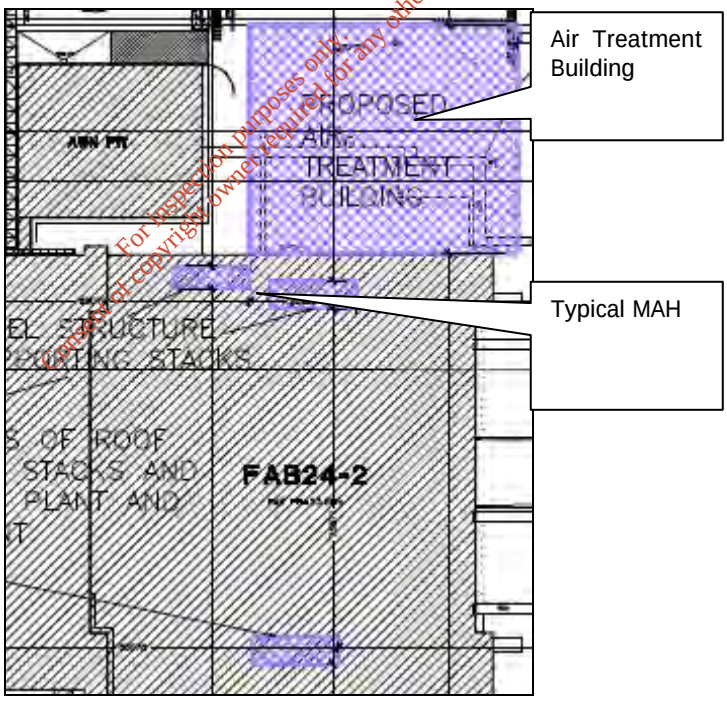


Figure 2.2 Location of Air Treatment Building

c) An additional 9 Air Handling and Exhaust units (Make up Air Handlers – MAH) on the roof of Fab 24;
   - The additional ventilation systems are required as new toolsets in the manufacturing area require increasing amounts of ventilation;
   - 3 of the MAH's are on the south side of the Fab 24 roof; 2 are along the central spine of existing MAH's and 4 are located to the north of the roof;
   - All of the MAH's are approximately 20m x 6m x 5m high.

d) Extension (50m^2) and conversion of the Silane pad to a gas and chemical store located to the north of Fab 24 (Figure 2.3);
   - The Silane pad currently houses only Silane (a pyrophoric gas stored in cylinders). This area is being extended and converted to a Solvent staging room;
   - This modification includes a link to the manufacturing area as well as a canopy to cover the dock area;
   - New loading dock levellers and a concrete ramp complete with guardrails are also included.

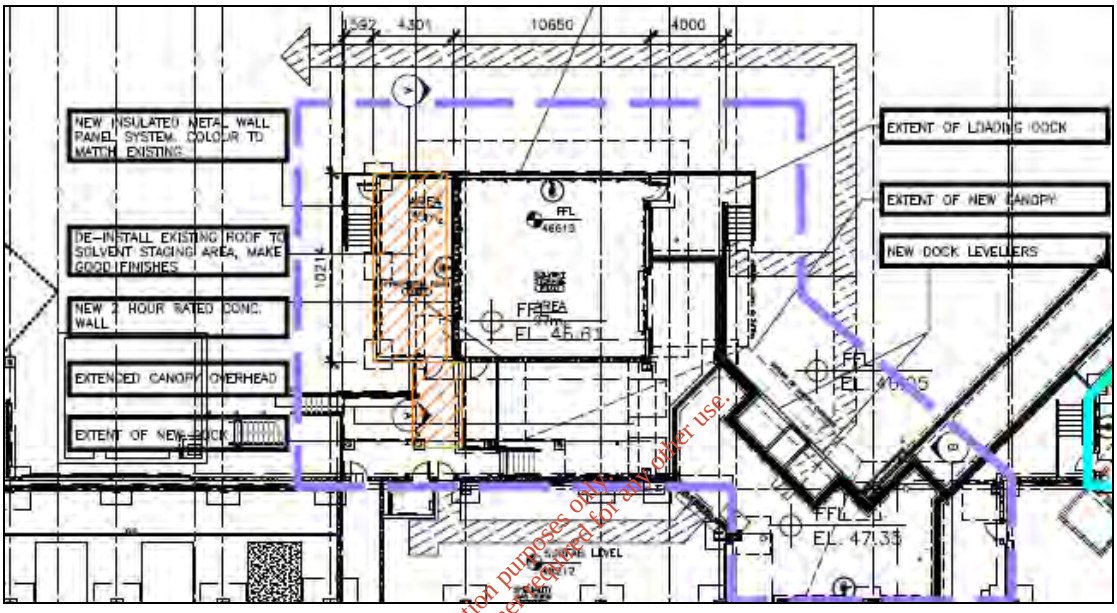


Figure 2.3 Silane pad extension and conversion

e) An Aqueous and Solvent Room expansion area;
   - Both of these expansion areas have been previously approved as part of Planning Reg. Ref 07/482.

f) An external free standing structure in the Fab 14/24 yard (Figure 2.4).
   - This structure is located in the yard area between the Fab 14 and Fab 24 buildings;
   - This structure will comprise 3 new exhaust fans and stacks and a structure to carry the ductwork horizontally across to the roof.

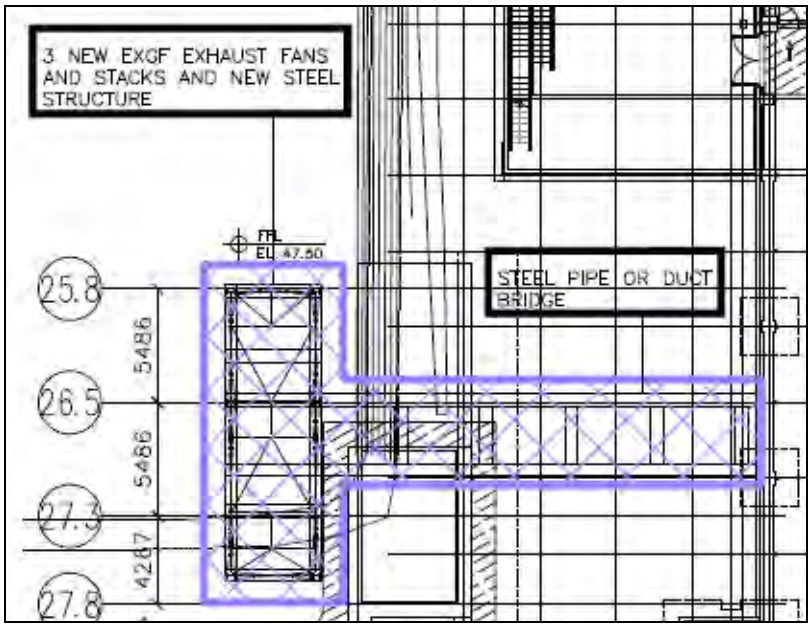


Figure 2.4 Steel Structure between Fab14 and Fab24

g) A new horizontal hydrogen tank to the north of the Fab 10 utility buildings (Figure 2.5);
   - The tank is to be located to the rear of the existing Hydrogen tank (referred to as HPH2 – High Purity Hydrogen);
   - Modifications to the existing roadway (highlighted in yellow below) are required to provide road access to the tank;
   - The tank is surrounded by a 3m high fence and accessed via double sliding gates;

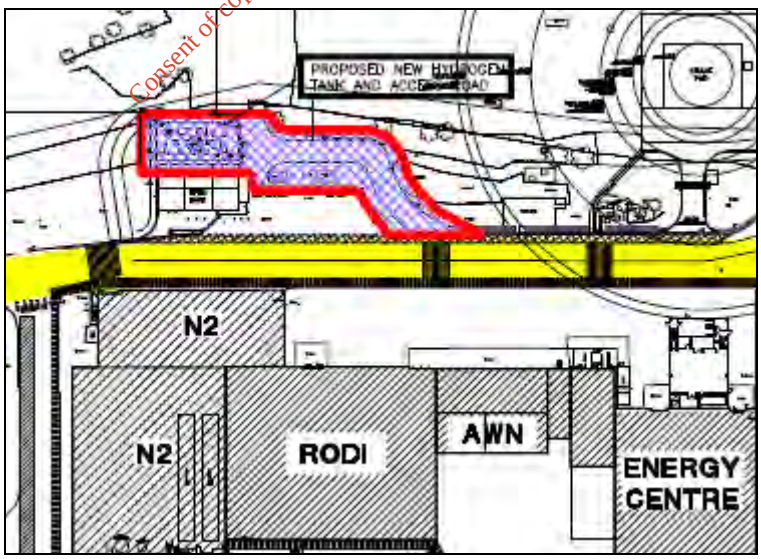


Figure 2.5 Location of new Hydrogen tank

h) A single storey extension to the existing electrical switchroom;
i) A new Air Handling Unit on the roof of IR6 to the south of Fab 24;
j) A new steel structure to support 3 new fans and stacks to the west of the AWN Pit;
k) Three new water storage tanks to the east of the site (Figure 2.6);

- These tanks are approximately 16m in diameter, 7m high with a galvanised tank cover in the shape of a shallow cone extending the height at the central apex by 1.5m;

l) A cladded roof mounted acoustic screen to the north west of FAB24.

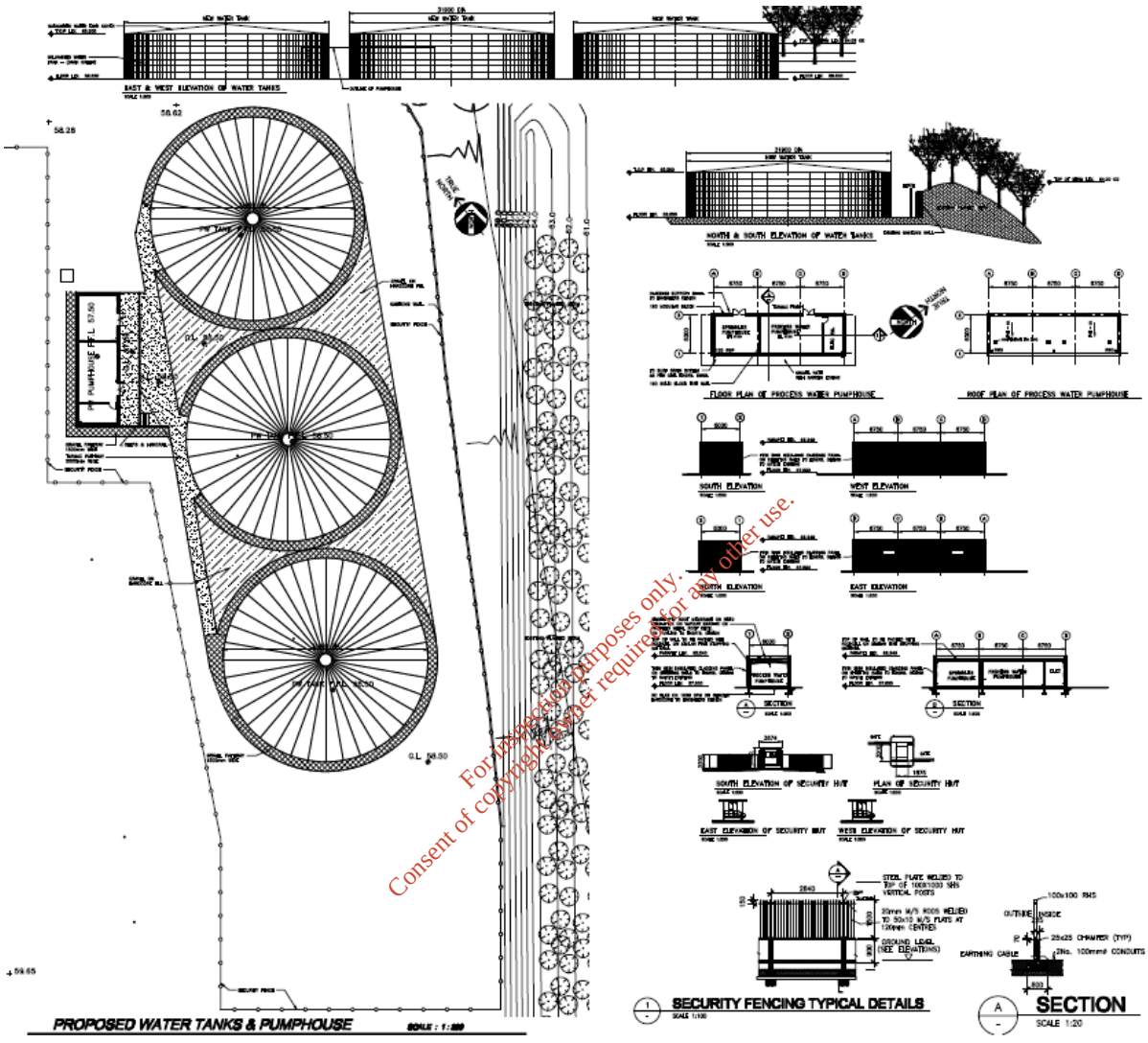


Figure 2.6 Indicative plan of water tanks and pumphouse

2.2 BRIEF DESCRIPTION OF THE NATURA 2000 SITES

This section of the screening process describes the Natura 2000 sites within a 15km zone of impact of the proposed development site. A distance of 15km is currently recommended in the DoE document *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* and as a precautionary measure, to ensure that all potentially affected Natura 2000 sites are included in the screening process. A map indicating the locations of the sites is given in Figure 2.7. Natura 2000 sites within 15km of the proposed development site are outlined in Table 2.1. In addition to sites within 15km of the proposed development, sites downstream have also been included in the screening process.

Table 2.1 Natura 2000 sites within 15km of the proposed development area

Site Code	Approximate distance to site	Site Name	Qualifying Feature
000206	17 km	North Dublin Bay SAC	Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Salicornia and other annuals colonizing mud and sand [1310] Spartina swards (*Spartinion maritimae*) [1320] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Petalwort (*Petalophyllum ralfsii*) [1395] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190]
000210	17 km	South Dublin Bay SAC	Mudflats and sandflats not covered by seawater at low tide.
001398	20m	Rye Water Valley/Carton SAC	*Vertigo angustior* [1014] *Vertigo moulinsiana* [1016] Petrifying springs with tufa formation (Cratoneurion) [7220
004006	17km	North Bull Island SPA	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] Black-headed Gull (*Larus ridibundus*) [A179] Wetlands & Waterbirds [A999]
004024	17km	South Dublin Bay and River Tolka Estuary SPA	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Oystercatcher (*Haematopus ostralegus*) [A130] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Bar-tailed Godwit (*Limosa lapponica*) [A157] Redshank (*Tringa totanus*) [A162] Black-headed Gull (*Larus ridibundus*) [A179] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Wetlands & Waterbirds [A999]

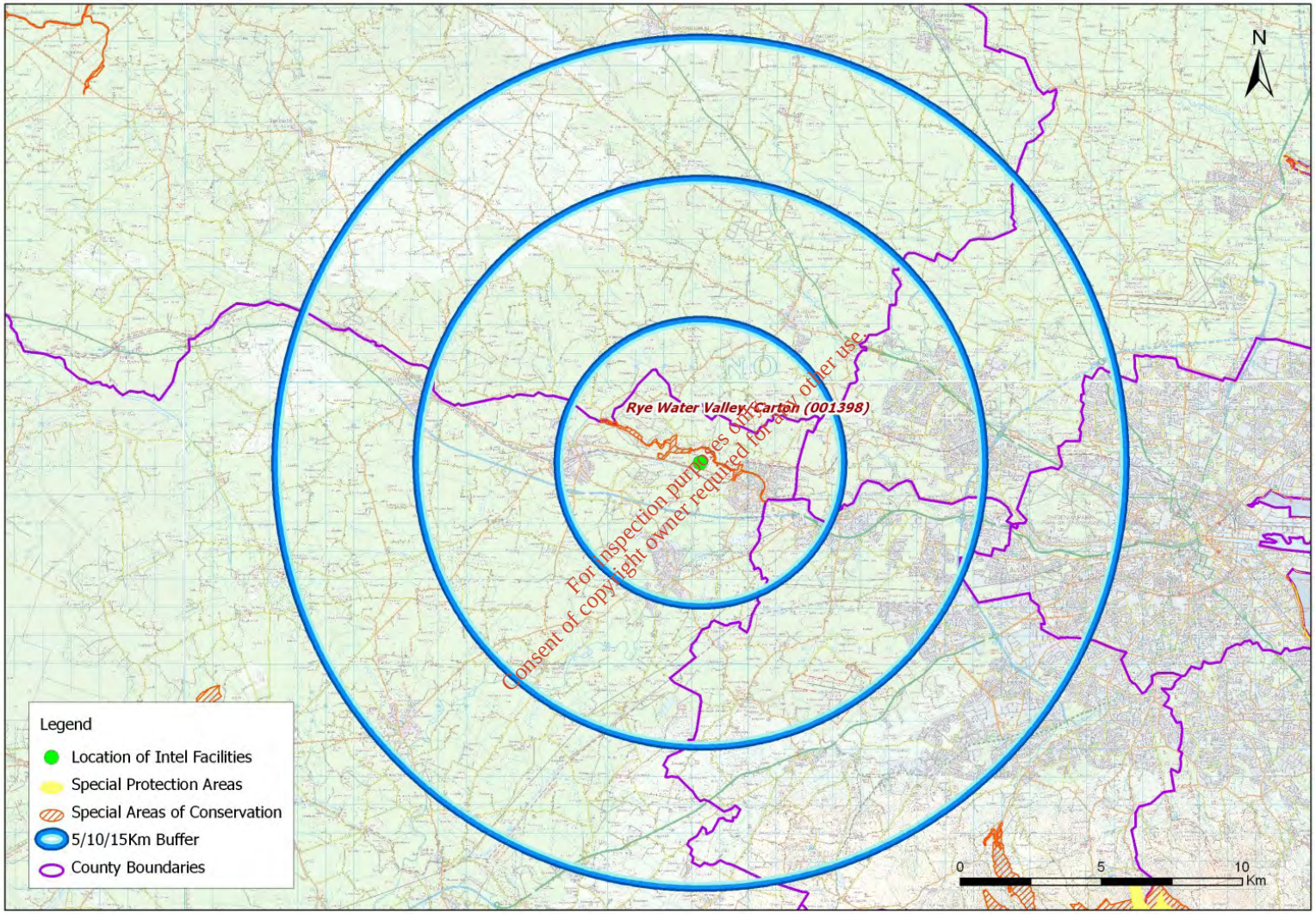


Figure 2.7 Natura 2000 sites within 15km of the proposed development area

2.3 ELEMENTS OF THE PROJECT LIKELY TO GIVE RISE TO IMPACTS ON THE NATURA 2000 NETWORK

In general, developments may have impacts on the environment during the construction and operational phase.

2.3.1 Construction of the proposed development

Construction impacts may consist of disturbance to species such as birds and mammals, impacts from dust and noise, runoff of pollutants and/or soils into nearby watercourses. There is the potential that these impacts may occur during the construction of the proposed development. These impacts will be examined in more detail further on in this document. Construction of the proposed development will not lead to direct habitat loss within any Natura 2000 site.

2.3.2 Operation of the proposed development

Emissions to air and water are controlled through Intel's IPPC licence. The following sections outline how these emissions are controlled to ensure that they do not impact significantly on the environment. Any changes to the licensed Emission Limit Values in the future will only occur following the a review of the IPPCL.

2.3.2.1 Surface Water Discharges

No process effluent is discharged to the Rye Water. Process effluent is treated on site to strict parameters and in accordance with Intel's Integrated Pollution Prevention and Control (IPPC) Licence. This effluent is pumped and further subjected to biological treatment in the adjacent Leixlip Municipal wastewater treatment plant (MWWTP). Process effluent treatment is subject to a management system designed to ensure that once an effluent arises from a process having applied all of the relevant design constraints and minimisation at source objectives, that the treatment is designed to: -

- ensure that no undue environmental risk arises;
- that licensed ELV's are met with an appropriate safety margin;
- that no undue risk to personnel arises either on site or off site;
- that the effluent cannot damage the fabric of the sewerage system;
- that the effluent cannot harm downstream treatment processes;
- that the effluent does not contain pollutants which will pass through the treatment processes and harm the external environment;
- that all applicable national and International ELV's EQS's and EQO's are not compromised;
- that resultant sludges are not compromised for disposal;
- that the combination of effluent treatment represents BAT (Best Available Technology); and
- that the appropriate treatment occurs at the appropriate location.

This approach ensures compliance with the relevant EU Water Directives, Biodiversity objectives , National regulations and the requirements under the spirit and intent of the IPPC regulations and the granted licence.

The existing surface water drainage system on the Intel Property consists of a number of independent drainage routes from roofs, paved areas and sub-drainage systems covering the Site. These systems combine prior to entering the 3000 m^3 Retention Pond with and discharge via a single outlet pipe to Rye Water. The retention pond isolates any contamination events including contaminated fire fighting water should such an event happen. The storm water management is designed to use the entire onsite network of drains and storage units to isolate and protect the receiving environment from potential hazards and from excessive storm events. The area of the site is also very small relative to the Rye Water catchment upstream of Intel and the contribution of flow from the site is therefore very small. Discharges to the Rye Water outlet are monitored regularly and are compliant with the limits contained in the IPPC licence. The proposed development will not result in any significant changes to the quantity or quality of storm water runoff.

2.3.2.2 Air Discharges

Emissions to atmosphere currently arise from both process and utility sources from the site and currently contribute to background levels of certain airborne pollutants in the area.

The principal process emission sources include;

- acid gas scrubbers that have the potential to release residual levels of fluoride of acids following treatment;
- solvent exhausts that can release volatile organic compounds following appropriate treatment;
- inorganic particulate releases from particulate abatement plant that lead to extremely low levels (below the limit of sampling detection) of such particulate.

Utility sources include boilers that will produce combustion gas emissions including oxides of nitrogen (NO_x) and carbon monoxide (CO). Combustion gases are also generated by the VOC abatement plant and during the testing of emergency generators.

Current operations on-site require the use of electricity and gas for the operation of abatement systems, manufacturing, heating and lighting. In the case of electricity use, this can give rise to emissions of the global warming gases, carbon dioxide (CO_2) and nitrous oxide (N2O) at the point of electricity generation where fossil fuels are used. In relation to the use of gas, energy centres currently emit both CO_2 and N_2O. Certain process gases, principally compounds known as perfluorocarbons (PFC's) also have high global warming potentials.

Ambient air has been monitored on an on-going basis to ensure compliance with regulatory ambient air quality standards designed to protect human health and vegetation. The ambient monitoring results have demonstrated that the background air quality with existing operations is good.

2.4 DIRECT, INDIRECT OR SECONDARY IMPACTS

Table 2.1 lists the Natura 2000 sites within 15 km of the proposed development site, as well as those sites downstream of the Intel site. There are five sites in all, three SACs and two SPAs. The nearest Natura 2000 site is the Rye Water Valley/Carton SAC. At its closest, the

Fab 24 development site is within approximately 100m of the boundary of the SAC. There are four designated sites downstream of the proposed development site (North Dublin Bay SAC, South Dublin Bay SAC, North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA). These sites are located approximately 17km to the east of the site at Leixlip. It is unlikely that significant effects on the surface water dependant habitats further downstream of the proposed development site will occur, given the distance (17 km) to the designated sites associated with Dublin Bay.

As part of this screening those features of the proposed development that have the potential to impact on features and conservation objectives of the Natura sites were assessed. It was concluded that there are potential risks to the Rye Water/Carton SAC during construction and operation of the facility by pollution and reduction in water quality as a result of accidental spillages and pollution events. Impaired water quality could also affect various protected species including salmon, lampreys, otter, white-clawed crayfish and kingfisher.

Tables 2.2 and 2.3 summarises any potential impacts on and likely changes to the Natura 2000 network of sites. These tables are derived from European Commission Environment DG document *"Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*".

Table 2.2 Potential Direct, Indirect and Secondary Impacts

Site Name	Land take	Resource Requirements (Drinking Water Abstraction Etc.)	Emissions (Disposal to Land, Water or Air)	Excavation Requirements	Transportation Requirements	Duration of Construction, Operation, Decommissioning
North Dublin Bay SAC	None	No impacts predicted	No impacts predicted	No impacts predicted	No impacts predicted	No impacts predicted
South Dublin Bay SAC	None	No impacts predicted	No impacts predicted	No impacts predicted	No impacts predicted	No impacts predicted
Rye Water Valley/Carton SAC	None	No impacts predicted	Potential impact due to accidental runoff of soils and/or pollutants	No impacts predicted	No impacts predicted	No impacts predicted
North Bull Island SPA	None	No impacts predicted	No impacts predicted	No impacts predicted	No impacts predicted	No impacts predicted
South Dublin Bay and River Tolka Estuary SPA	None	No impacts predicted	No impacts predicted	No impacts predicted	No impacts predicted	No impacts predicted

Table 2.3 Likely Changes to Natura 2000 Sites

Site Name	Reduction of 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
North Dublin Bay SAC	None	None	None	None	None	None
South Dublin Bay SAC	None	None	None	None	None	None
Rye Water Valley/Carton SAC	None	None	None	Changes to water quality may lead to reduction in	Potential impact due to accidental runoff of soils and/or pollutants	None
North Bull Island SPA	None	None	None	None	None	None
South Dublin Bay and River Tolka Estuary SPA	None	None	None	None	None	None

2.5 CONSULTATION

Consultation was carried out with National Parks and Wildlife (NPWS) and Inland Fisheries Ireland (IFI). A meeting was held with Dr. Linda Patton, Regional Ecologist for the Eastern Division on August 17th 2011. Issues such as cumulative impacts and the general approach to screening and appropriate assessment were discussed. A formal scoping letter was sent to the Development Applications Unit on September 21st 2011. A response from the DAU was received on September 26th which confirmed that an Appropriate Assessment was required and made reference to Department of Arts, Heritage and Local Government guidance and EU guidance. Issues raised by the Development Applications unit included potential impacts on surface and groundwater dependant habitats and species within the SAC.

Correspondence was also carried out with Brian Beckett, Fisheries Environmental Officer, Inland Fisheries Ireland and a meeting was held on August 30th. Measures that should be taken to ensure comprehensive protection of local aquatic ecological integrity were outlined by Mr. Beckett and these measures were included in Section 4 Mitigation Measures.

2.6 CONCLUSIONS OF STAGE 1

The likely impacts that will arise from the proposed development have been examined in the context of a number of factors that could potentially affect the integrity of the Natura 2000 network. On the basis of the findings of this Screening for Appropriate Assessment, it is concluded that the proposed development:

(i) is not directly connected with or necessary to the management of a Natura 2000 site; and

(ii) may have significant impacts on the Natura 2000 site being the Rye Water Valley/Carton SAC

Therefore, applying the Precautionary Principle and in accordance with Article 6(3) of the Habitats Directive, a Stage 2 Appropriate Assessment is required. That stage is set out in Section 3 of this report.

3 STAGE 2 APPROPRIATE ASSESSMENT

3.1 INTRODUCTION

The main objective of this stage (Stage 2) in the AA is to determine whether the project would result in significant adverse impacts to the integrity of any Natura 2000 site with respect to the site's structure, function and/or conservation objectives. The potential adverse effects considered at this stage will be effects occurring as a result of the proposed development either alone or in-combination with other projects.

In relation to the proposed development, potential impacts have been identified at the screening stage that may affect the Rye Water/Carton SAC. In addition, this appropriate assessment will assess impacts on other relevant species listed under Annexes I and II of the Birds and Habitats Directives respectively – namely otter, Atlantic salmon, white clawed crayfish and kingfisher.

3.2 METHODOLOGY

3.2.1 Legislation and Policy Context

In carrying out the Stage 2 Appropriate Assessment, reference has been made to the following policy and guidance documents, including specific guidance on Appropriate Assessment, Environmental Impact Assessment and Ecological Impact Assessment

3.2.1.1 National and International Policy and Legislation

- Wildlife Act, 1976 and Wildlife (Amendment) Act (2000) including all amendments 1976-2011. In this document, the legislation is referred to collectively as the Wildlife Acts;
- European Communities (Natural Habitats) Regulations 1997 including all amendments 1997-2011. In this document, the legislation is referred to collectively as the Habitats Regulations. These regulations transpose the EC Habitats Directive 92/43/EEC into Irish law;
- EC Birds Directive 79/409/EEC;
- European Communities (EIA) Regulations, including all amendments 1989-2011
- Flora (Protection) Order, 1999; and
- Planning and Development Acts, 2000-2010.

3.2.1.2 Appropriate Assessment

- Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, 2009.
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission Environment DG, 2000.
- Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC: European Commission, 2000

3.2.1.3 Environmental Impact Assessment

- Guidelines for Ecological Impact Assessment (IEEM, 2006).
- Environmental Protection Agency: Guidelines on the information to be contained in Environmental Impact Statements (2002),
- Environmental Protection Agency: Advice Notes on current practice in the preparation of Environmental Impact Statements (2003),
- National Road Authority: Environmental Assessment and Construction Guidelines (2004-2007).

3.2.1.4 Habitats and flora

- Best Practice Guidance for Habitat Survey and Mapping (Smith et al, 2011)
- A Guide to Habitats in Ireland (Fossitt, 2000).
- Phase I Habitat Survey Techniques (Joint Nature Conservancy Council, 1993).
- River Habitat Survey in Britain and Ireland: Field Guidance Manual. (Environment Agency, 2003).

3.2.1.5 Fauna

- Bat Mitigation Guidelines for Ireland (NPWS, 2006).
- Bat Surveys: Good Practice Guidelines (UK Bat Conservation Trust, 2007).
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes (NRA, 2005).
- Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes (National Roads Authority, 2006).
- Design Manual for Roads and Bridges: Mitigating Against Effects on Badgers (Highways Agency, 2001).
- Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (NRA, 2006).

3.2.2 Desk study

A desktop review was carried out to identify features of ecological importance within the site and immediate surroundings. The following sources of information were reviewed.

- Ordnance Survey Ireland maps.
- Aerial photography.
- Data on species that are rare, protected or threatened located within the vicinity (up to 10km) of the proposed alignment, as held by the National Park and Wildlife Service (NPWS) Database and the NBN Gateway.
- Annual Limnological Report for the Rye Water (Aquens Ltd, 2010)
- Soils, geology and water assessment (AWN 2011)
- An Examination of the Rye Water Bridge at INTEL, Leixlip for the implications of repair work to the bridge upon fauna including kingfishers and bats (Brian Keeley and Donna Mullen June 2010)
- Ecological Impact Assessment of Ryebrook Substation and Pumping Station, Intel, Leixlip, Co Kildare (Scott Cawley 2011).
- FAB 24-3 Environmental Impact Assessment. Intel, 2005

3.2.3 Field surveys

Field surveys were carried out in August and November 2011 to identify, describe and evaluate habitats in the study area. The survey methodology used was based on the Phase 1 Habitat survey methodology, contained in the Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 habitat survey – a technique for environmental audit. The study area was also surveyed for signs of badger and otter use (i.e. latrines, sprainting sites, mammal paths) as well as breeding and resting places. Habitats were classified using habitat descriptions and codes published in 'A Guide to Habitats in Ireland' (Fossitt, 2000).

3.2.4 Approach to Impact Assessment

The criteria used to assess the ecological value and significance of habitats is shown in Table 3.1, which follows Guidelines for assessment of Ecological Impacts of National Road Schemes (Nairn & Fossitt, 2006) and is consistent with the approach recommended in the Guidelines for Ecological Impact Assessment (IEEM, 2006).

Table 3.1: The Ecological Importance of Sites

Rating	Importance of site
A	**Internationally important** Site qualifying for designation as SAC or SPA under EU Habitats or Bird's Directives.
B	**Nationally or regionally important** Site proposed for designation as NHA or containing habitats or populations of species that are nationally or regionally significant.
C	**High value, locally important** Sites containing semi-natural habitat types with high biodiversity or significant populations of locally rare species.
D	**Moderate value, locally important** Sites containing some semi-natural habitat or locally important for wildlife.
E	**Low value** Widely found habitats with typical but relatively low species diversity and low wildlife value.

Source: *National Roads Authority, Environmental Assessment and Construction guidelines (2004-2007)*

The impact significance for terrestrial and aquatic habitats has been assessed using the Guidelines for Ecological Impact Assessment (IEEM, 2006). Detailed Ecological Impact Assessment was undertaken for all Sensitive Ecological Receptors (defined as those valued at Level C and above in Table 3.1). Based on these guidelines, the criteria used to characterise impacts are outlined in Table 3.2.

Table 3.2 Characterisation of impacts

Parameter	Categories
Type of impact	Positive/ Negative
Magnitude of impact	Size or amount of impact
Extent	Area over which impact occurs (may be the same as magnitude if whole habitat impacted)
Duration	Time over which impact is expected to last. For example, described as Short-term, Medium-term or Long-term in relation to relevant species/ habitat time-scales.
Reversibility	Temporary/ Permanent
Timing and frequency	Timing of impacts in relation to relevant life-stages or seasons
Likelihood of impact occurring	Near-certain: probability >95% Probable: probability 50-95% Unlikely probability 5-50% Extremely unlikely: probability <5%

An impact is considered to be Ecologically Significant if it impacts the integrity or conservation status of an Ecologically Sensitive Receptor within a specified geographical area. If impacts are not found to be significant at the highest geographical level at which the Ecological Receptor has been valued, then the impacts may be significant at a lower level. For instance there may be a significant impact at a local level on a species which is valued at an international level.

Flora and fauna species have been evaluated in relation to any legal protection they may be afforded (International or National), their conservation status and local abundance. For instance, a species that is listed on Annex II or IV of the EC Habitats Directive is considered to be of 'International' importance. As above, this does not mean that an impact will necessarily be significant at an International level.

3.3 THE EXISTING ENVIRONMENT

3.3.1 Designated Areas

3.3.1.1 Rye Water/Carton SAC

The Rye Water Valley/Carton SAC is located between Leixlip and Maynooth extending along the River Rye Water, a tributary of the River Liffey. The Rye Water River forms the northern perimeter of most of the Intel site. The river was arterially drained in the early 1950s, but remains the only significant salmon spawning and nursery stream discharging into the River Liffey downstream of Leixlip dam.

The Rye Water Valley/Carton SAC is designated for the protection of two molluscs listed on Annex II of the EU Habitats Directive. These semi-aquatic snails, *Vertigo angustior* and *V. moulinsiana* occur in marsh vegetation near Louisa Bridge, downstream of the Intel site. In addition, the marsh, mineral spring and seepage area found at Louisa Bridge, which supports the presence of these molluscs is of a type considered to be rare in Europe and is a habitat listed on Annex I of the EU Habitats Directive.

An ecological survey carried out by Scott Cawley in 2011 of a bridge over the Rye Water within Intel lands included a survey of emergent and bank-side vegetation in the vicinity for *Vertigo* species. None were found and the habitats surveyed were not found to be suited to their presence.

During this survey several White-clawed crayfish *Austropotamobius pallipes* were seen in the substrate of the river and in crevices in the banksides. Remains of crayfish were also seen in otter spraints. Based upon site observations and the nature of the substrates, this species is deemed to be abundant in this stretch of the river. It favours rocky crevices as well as muddy banks, both of which are found in the river at this location. Whilst crayfish can tolerant a degree of organic pollution, they rely on low suspended and river bed sediment levels.

3.3.2 Records of protected, rare and other notable Flora and Fauna species

3.3.2.1 NPWS data

A search was undertaken of records of Red Data Book and Protected species held by the NPWS and the NBN Gateway. Relevant records from the 10km x 10km grid squares occupied by the study area (N93), and those within 1km of the Proposed Scheme, (O03) are listed in Table 3.3.

Table 3.3 Records of rare and protected species from the NPWS database

Scientific name	Common Name	Location & date[2]	Grid Ref.	Distance from Proposed Scheme	Conservation status
Galeopsis angustifolia	Red Hemp Nettle	Kildare, Leixlip 1896, Knockmaroon Hill 1866, Clonsilla 1884, Peatown 1836.	N92, N93, O03	Various	FPO, RDB V.
Lutra lutra	Otter	Naas 1992	N92	>5km	Annex II, IV.
Hypericum hirsutum	Hairy St. John's Wort	Carton 1894, 1991, St Catherines Wood 1991, Luttrellstown estate 1899, Leixlip waterfall 1799, Lucan Desmesne 1893.	N9637	3km	FPO, RDB V.
Viola hirta	Hairy Violet	Carton 1894, Furry Glen, Knockmaroon Hill 1799.	N96, O03	Various	FPO, RDB V.
Acinos arvensis	Basil Thyme	Clonsilla 1895	O03	>5km	FPO, RDB V.
Hordeum secalinum	Meadow Barley	Scribblestown 1922, Castleknock 1866.	O03	>5km	FPO, RDB V.
Stachys officinalis	Betony	Abbotstown 1802.	O03	>5km	FPO, RDB V.

[1]Stace, C. (Ed) (1997) New Flora of the British Isles. Cambridge University Press.
[2]Where there are several records for the same location the most recent date is given
FPO: Plants listed on the Flora (Protection) Order (1999)

RDB: Irish Red Data Book: 1. Vascular Plants. (Curtis & McGough, 1988; updated 2005): E = Endangered, V = Vulnerable, R = Rare

Many of these species have been recorded from single sites, several kilometres away from the proposed development sites.

Additional important plant species recorded on the Rye Water cSAC natura 2000 Data Form include Green Figwort *Scrophularia umbrosa* and Blue Fleabane *Erigeron acer*. Both species are listed as on IUCN Red Data List as Endangered in Ireland.

3.3.2.2 Bat data

Data held by Bat Conservation Ireland indicates that there are several roosts in the Leixlip area for species including Leisler's bats *Nyctalus leisleri*, Common Pipistrelle Bat *Pipistrellus pipistrellus* and Daubenton's Bat *Myotis daubentonii*. Soprano pipistrelle *P. pygmaeus* and Natterer's bat have also been recorded in the Leixlip-Maynooth-Celbridge area.

Bat Surveys were undertaken within the Intel site in June 2010 and August 2011 (Keeley & Mullen, 2010 and Scott Cawley, 2011). The 2010 survey focused on a small stone bridge to the east of the proposed pumping station. No roosts were identified however Soprano pipistrelle Bats were noted to be the most common species using the area with Daubentons, Natterer's and Leisler Bats also recorded to be within the area.

The 2011 surveys focused on the south western areas of the Intel compound outside of the proposed development area. Soprano Pipistrelle, Common Pipistrelle, Leisler's and a Myotis Bat species were recorded using the area but no roosts were identified within the area

3.3.3 Habitats

3.3.3.1 Proposed development site

All of the lands in the Fab 24 development site were deemed to be of low ecological value. The lands are within the curtilage of the Intel industrial plant and therefore consist of built land. The extension to the existing switchroom will also be constructed on an existing hard standing area.

The site for the proposed new water tanks is located in an existing contractor's compound which consists of a hard standing area. The site is bounded to the east by a man made berm that separates the Intel owned lands from the Rye Water/Carton SAC and the Royal Canal. The berm is planted with a mixture native species for landscaping and screening purposes.

The proposed new hydrogen tank will be located adjacent to an existing hydrogen tank. Habitats within this site include recolonising bare ground and hardstanding area. A habitat map of this area is shown in Figure 3.1.

3.3.3.2 Lands surrounding the proposed development site

Very little natural habitat exists within the Intel campus due to the progressive development. The Rye Water forms a natural boundary to the north of the campus. The ecological status

of the Rye Water is outlined in Section 3.3.6. A mixture of natural and managed habitats form a buffer between the built up, hard surface areas of the plant and the river. The dominant habitats within this area include woodland and grassland.

3.3.3.3 Grassland

The north eastern section of the Intel campus, between the campus itself and the Rye Water is at present undeveloped and consists of a mosaic of built land, recolonising bare ground and dry meadows and grassy verges (GS2). These lands are of Local Importance (local value) and undergo infrequent levels of physical disturbance. The main habitat consists of Dry Meadows and Grassy Verges (GS2) dominated by false oat grass *Arrhenatherum elatius*, red fescue *Festuca rubra*, meadow fescue *Festuca pratensis*, cocksfoot *Dactylis glomerata*, creeping buttercup *Ranunculus repens*, Yorkshire fog *Holcus lanatus*, silverweed *Potentilla anserine* and nettles *Urtica dioica*. Other species noted in this area include red bartsia *Odontites vernus*, ribwort plantain *Plantago lanceolata* and scarlet pimpernel *Anagallis arvensis* .

A notable feature within this area is a large spoil mound. This has recolonised with vegetation hosting GS2 habitat dominated by red fescue, false oat grass, meadow fescue with nettle, creeping buttercup, yorkshire fog, tufted vetch *Vicia cracca*, ribwort plantain and black meddick *Medicago lupulina*.

The proposed location of the new Hydrogen tank comprises an area of recolonising bare ground with a range of species including brambles, coltsfoot *Tussilago farfara*, yellow wort *Blackstonia perfoliata* ribwort plantain, nettles, creeping buttercup, creeping cinquefoil, cleavers *Galium aparine*, great willowherb *Epilobium hirsutum*, meadow vetchling *Lathyrus pratensis*, cocksfoot, and ragwort *Senecio jacobea*.

A population of blue fleabane was recorded on the Rye River flood plain at the base of the eastern slope of the large spoil heap during survey's carried out in 2011 (Scott Cawley, 2011). This endangered plant species is a Red Data Book species and is likely to be of County importance.

3.3.3.4 Woodland

An area of broad-leaved woodland is located along the southern bank of the Rye Water. The woodland occurs in a narrow strip on the steep slope between the river and the perimeter of Intel's site. It has an average width of 30m. The dominant woody species present are ash *Fraxinus excelsior*, poplar *Populus* sp., hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*. A further seven species of woody plant are present, including guelder rose *Viburnum opulus* and hazel *Corylus avellana*. Some limestone outcrops occur within the woodland and a typical breeding bird community is present. Though narrow, this woodland has a high local ecological value and is included within the statutory designation of the Rye Water/Carton SAC.

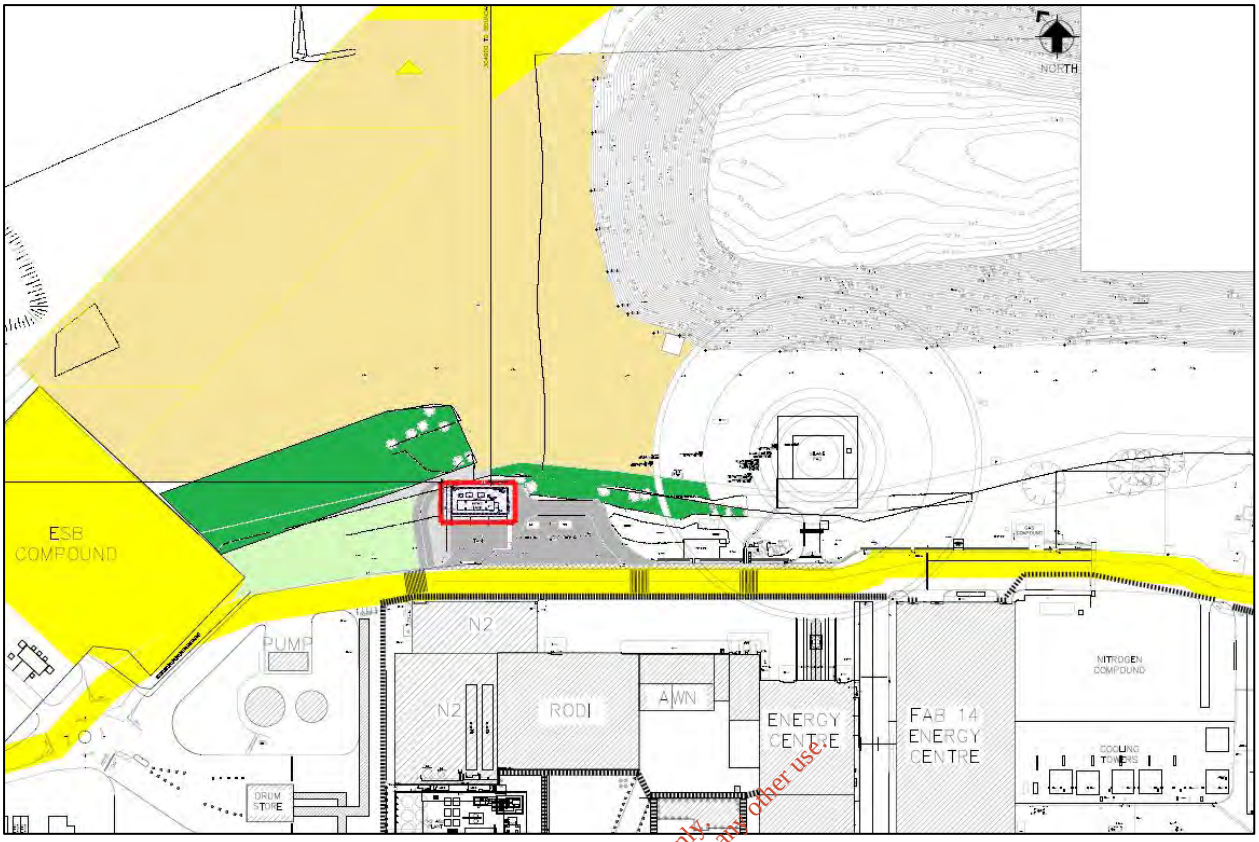
A mature strip of native and non-native deciduous woodland (WD1) forms the northern boundary of the proposed site of the Hydrogen tank. Species include ash, sycamore *Acer pseudoplatanus*, poplar, horse chestnut *Aesculus hippocastanum*, elder *Sambucus nigra* and crack willow *Salix fragilis*. The ground flora is dominated by nettles with bare soil with leaf litter and bramble in more open areas.

The berm located to the east of the proposed site has been planted with a variety of species for landscaping and screening purposes. Species present include ash, silver birch *Betula pendula* and whitebeam *Sorbus sp.*

3.3.4 Fauna

Due to the presence of artificial lighting, moving vehicles, pedestrians and the continuous operation of the Intel facility, there are relatively high levels of disturbance within the site. Mammals and birds are unaffected or habituated to disturbance at the site perimeter. Birds recorded moving through the area north of the site prposed for the new hydrogen tank (Scott Cawley 2011) included Robin *Erithacus rubecula*, Rook *Corvus frugilegus*, Bullfinch *Pyrrhula pyrrhula*, Chiffchaff *Phylloscopus collybita*, Wren *Troglodytes troglodytes*, Song Thrush *Turdus philomelos*, Swallow *Hirundo rustica*, Blue Tit *Cyanistes caeruleus*, Buzzard *Buteo buteo*, Raven *Corvus corax* and Sparrow Hawk *Accipiter nisus.*

A possible Badger *Meles meles* sett was previously recorded approximately 100m to the north (Scott Cawley, 2011). A Badger scat was observed c.300m to the northwest of the study area but there was no evidence that badgers use the proposed development site. Fox Vulpes vulpes are common in the area. Other mammals protected under the Wildlife Act 1976 (as amended) that may potentially occur in the vicinity of the site include Hedgehog *Erinaceus europaeus*, Pygmy Shrew, *Sorex minutus*, Irish Hare *Lepus timidus hibernicus* and occasionally Stoat *Mustela erminea*.



Legend

Mixed Broadleaf Woodland (WD1)

Dry Meadows and Grassy Verges (GS1)

Recolonising bare ground

Hardstanding areas

Location of Hydrogen Tank

Figure 3.1 Habitat map of proposed hydrogen tank development site and surrounding lands

3.3.5 Survey For *Vertigo* sp and Potential *Vertigo* Habitat

Two Annex II protected species (*V. moulinsiana* and *V. angustior*) are known from the cSAC, at Louisa Bridge and within the Carton estate (*V. moulinsiana*). The species have not been recorded within lands owned by Intel to date, but there has never been a full survey of habitat within the Intel lands for *Vertigo* species. The present survey by Dr. Evelyn Moorkens was carried out at the proposed extension the ESB compound at the site and the proposed new pumping station at the site. The surrounding habitat areas including the cSAC riparian zone from the proposed pumping station to the western site boundary was also surveyed for molluscs. The survey locations are shown in Figure 3.2.

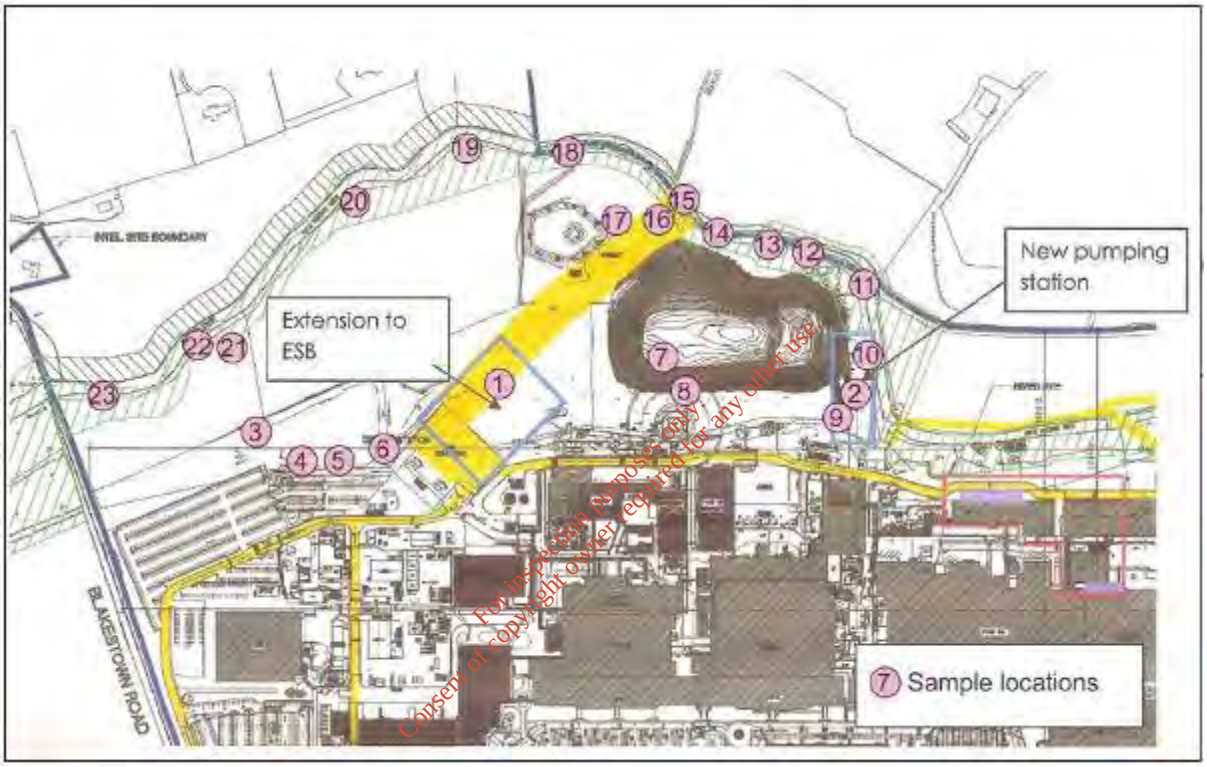


Figure 3.2 Site sampling locations for *Vertigo* sp.

A total of 26 molluscan species were found during the survey, and individual searches yielded between 0 and 13 snails and slugs. The only *Vertigo* species found in the survey was *V. pygmaea*, a grassland species that requires drier habitat than any other Vertigo species. Site 8 (Figure 3.1) was found to support a population of *Succinea oblonga*, a very rare species of snail listed in the Irish red data list as "endangered" in Ireland (Byrne et al., 2009). No protected *Vertigo* species were found during the survey, and the surveyed area of the Intel site does not appear to have any potential habitat at present for the Annex II *Vertigo* species.

3.3.6 The Rye Water – Biological Water Quality and Fisheries status

3.3.6.1 Overview

An annual limnological survey of the Rye Water was undertaken by AQUENS Ltd. in June and July 2010. This represents the sixteenth such survey undertaken and was commissioned

by Intel. The main focus of the study was to assess the water quality of the Rye Water and tributary using the macroinvertebrate community as bioindicators and assess the salmonid populations in the long-term established surveyed stretches. The assessment served to determine if any short term impacts are occurring along the Rye Water near Intel or if any significant impacts are originating further upstream. These surveys have also yielded a very valuable long time data series for both the invertebrates and salmonids and are unique in this respect with no similar long-term assessments made anywhere else on the island of Ireland.

3.3.6.2 Fisheries Enhancement and Monitoring

A fisheries enhancement plan for the Rye river was prepared by the Central Fisheries Board and the Office of Public Works for Intel Ireland Ltd. and initiated in 1994. The objective of this plan was to optimize the capacity of this section of the river to function as a brown trout fishery and to enhance its role as a salmon spawning and nursery area. By 1998, four years post-enhancement, the Rye Water River showed continued improvement, from a fishery viewpoint, with noticeable increases in salmonid (brown trout and salmon) stocks at many sites (McCreesh et al. 1998). In 1998, the freshwater crayfish (*Austropotamobius pallipes*) population was surveyed in this stretch of the Rye Water River and densities were found to be high (McCreesh et al. 1998). Both salmon and crayfish have statutory protection under the EU Habitats Directive (92/43/EEC; Annex II).

3.3.6.3 Water Quality

Monitoring of water quality has been carried out by the Environmental Protection Agency (EPA)since 1971 at Sandford's Bridge (upstream of the Intel site) and Leixlip Bridge (downstream of the Intel site). During this time, both sites have had slightly or moderately polluted water, varying between years. At present, the biological rating (Q value) at Leixlip Bridge is 3, indicating moderate pollution, while at Sandford's Bridge, the rating was 3-4 (Moderate status) in 2002. The River Waterbody Status has been determined by the EPA to be bad. Pollution has been attributed to non-point agricultural sources upstream of the Intel site.

Intel carries out an annual survey of the Rye Water River chemical water quality at various locations both upstream and downstream of the Intel site. The results of water samples collected in August 2010 is provided in Table 3.4. The results for the pertinent parameters have been compared to the limits set out in the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No.272 of 2009) which also incorporates the requirements for Salmonid Waters. The monitoring carried out demonstrates that discharges from the Intel site do not impact upon water quality and any impairment of water quality within the Intel site boundary is due to upstream contributions.

Table 3.4 Monitoring Results for River Rye Water – August 2010

Parameter	Units	RW1	RW2	RW3	RW4	RW5	Water Quality Standard
pH	pH Units	7.9	8.1	8.2	8.3	8.3	6.0-9.0 (6.0-9.0 Hard Water Standard)
Temperature	°C	12.8	12.7	13	13.9	13	25 (No greater than a 1.5C rise in ambient temperature outside the mixing zone)
D.O.	%	95.8	101.5	115.6	121.5	117.5	>80
Ammonia (as N)	mg/l	0.02	<0.02	<0.02	0.02	0.02	High: <0.04 Good : <0.065 (High Status: <0.040 (mean) or <0.090 (95%ile)) (Good Status: <0.065(mean) or <0.140 (95%ile))
BOD	mg/l	<2	<2	<2	<2	<2	High: <2.2 Good: <2.6 (High Status: <1.3 (mean) or <2.2 (95%ile)) (Good Status: <1.5(mean) or <2.6 (95%ile))
Conductivity	μΣ/χμ	725	761	722	662	687	1000 *
Suspended Solids	mg/l	<5	<5	<5	<5	<5	25 *
Chloride	mg/l	28.9	28.55	29.64	29.2	31.26	250
Fluoride	mg/l	0.11	<0.1	0.1	0.13	<0.1	0.5
Nitrate (as N)	mg/l	0.78	0.75	0.71	0.68	0.7	11.29 *
Nitrite	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.02***
Total Phosphorus	mg/l	0.07	0.05	0.05	0.05	0.05	-
Arsenic	µg/l	<2	<2	<2	<2	<2	25
Cobalt	µg/l	<2	<2	<2	<2	<2	-
Copper	µg/l	<2	<2	<2	<2	<2	5 or 30 **
Lead	µg/l	<2	<2	<2	<2	<2	7.2
Nickel	µg/l	<2	<2	<2	<2	<2	-
Tin	µg/l	<2	<2	<2	<2	<2	-
Chromium	µg/l	<2	<2	<2	<2	<2	50 * (Chromium III: 4.7. Chromium VI: 3.4)

Limits defined in S.I. No.272 of 2009: European Communities Environmental Objectives (Surface Waters) Regulations 2009 unless marked by *.

**In the case of Copper the value 5 applies where the water hardness measured in mg/l CaCO3 is less than or equal to 100; the value 30 applies where the water hardness exceeds 100 mg/l CaCO3.

*** Off Site Laboratory services have now reverted to methodology to attain lower detection limit

3.3.6.4 Biological Water Quality

Monitoring of biological water quality has also been carried out by AQUENS Ltd on behalf of Intel. A macroinvertebrate community assessment of the Rye Water was undertaken by AQUENS Ltd. in June and July 2010. Samples were collected from six sites (Fig. 3.3). Three sites surveyed were upstream of the Intel facility-Site 2 the Rye Water below Kilcock, Site 4 the Rye Water at Kildare Bridge and Site 5 the Rye Water at Sandford's Bridge. Site 7 the Rye Water at the Stoneland Bridge is within the Intel property and Site 8 the Rye Water above the Aquaduct at Leixlip is located downstream of the Intel facility. Sampling was also carried out at Site 11 the Lyreen River in Maynooth.

The most recent water quality results available are from 2010 and are shown in Table 3.5. These results indicate that water quality both upstream and downstream of the Intel site is Q-value 3-4, which is consistent with the EPA's evaluation of water quality along the same stretch of the river. Figure 3.4 outlines the trends in Q-value assigned to six monitoring sites on the Rye Water during the period 2002 to 2010. The trends in q-values show slight fluctuation between Q 3 and Q 3-4, though the values at Sites 7 and 8, downstream of the Intel facility have been stable at Q 3-4 since at least 2007.

Table 3.5 Summary of Biotic Scores applied to six sites on the Rye Water and Lyreen River.

Site	No. of Taxa	BMWP	ASPT	Q-value	Interpretation
Site 2	30	132	5.5	3-4	Slightly polluted
Site 4	29	136	5.9	3-4	Slightly polluted
Site 5	29	122	5.6	3-4	Slightly polluted
Site 7	34	152	6.1	3-4	Slightly polluted
Site 8	30	136	5.9	3-4	Slightly polluted
Site 11	25	117	5.9	3	Moderately polluted

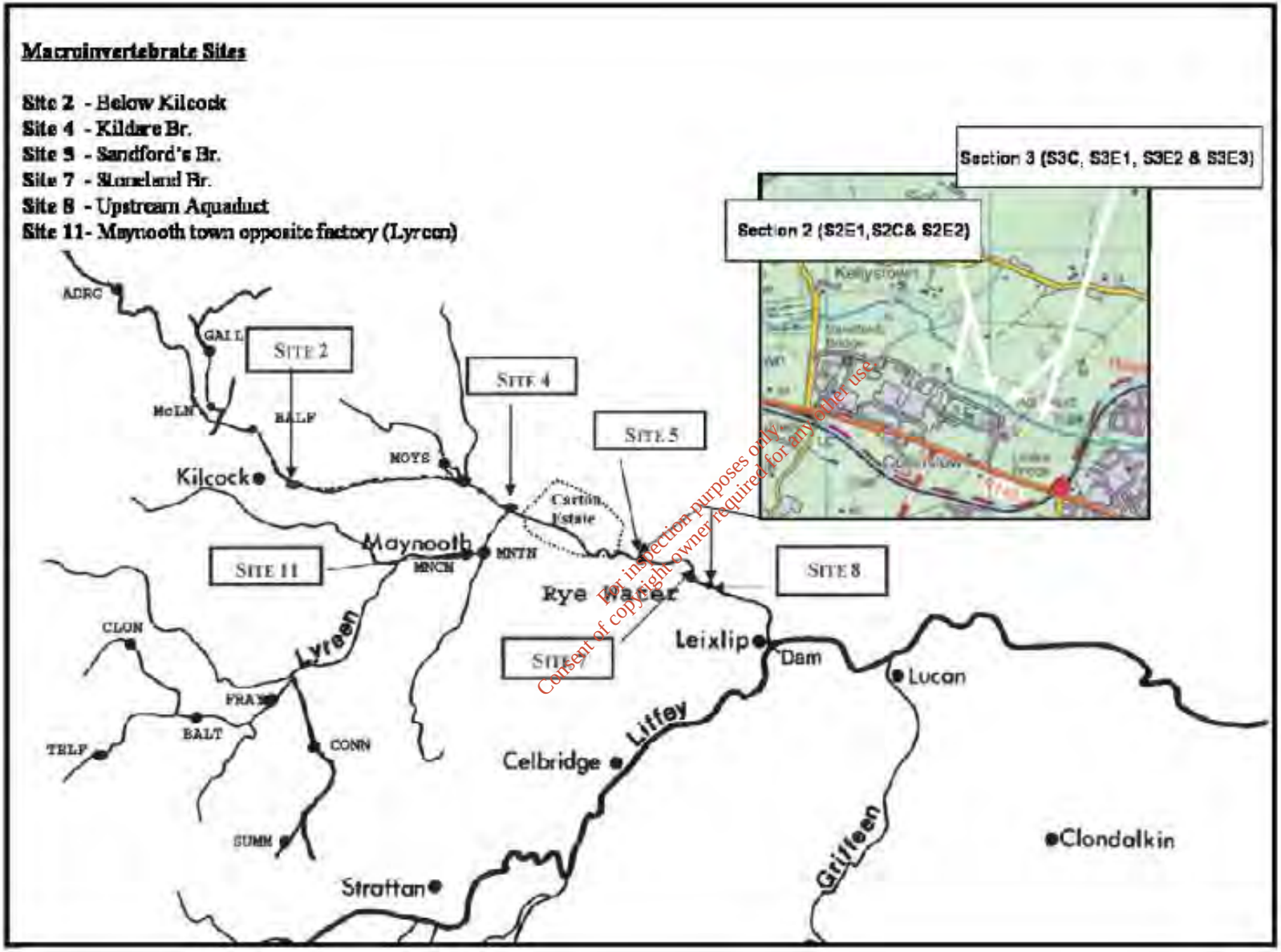


Figure 3.3 Map of Rye Water, showing location of fishing and macroinvertebrate sampling sites.

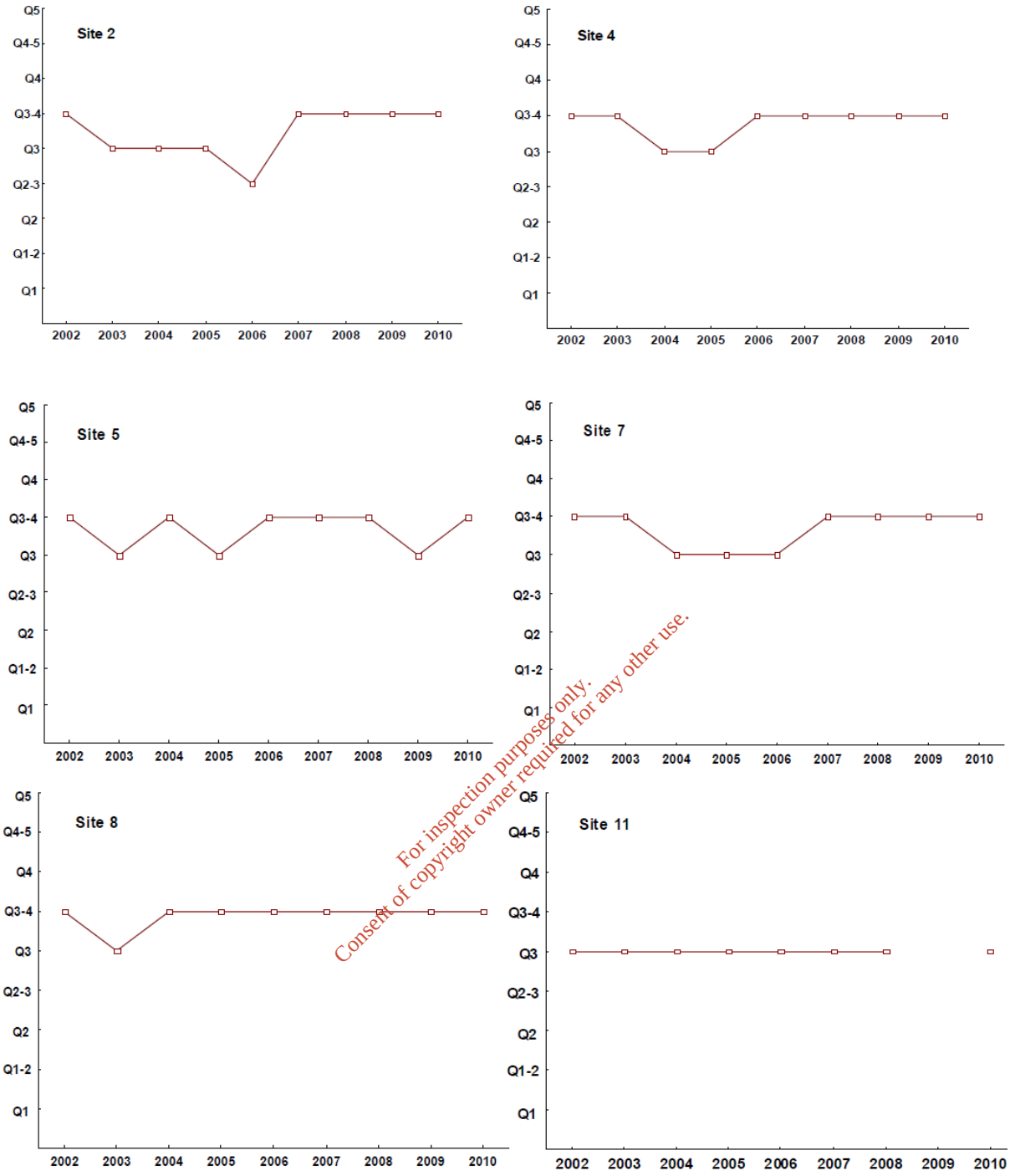


Figure 3.4 Trend in Q-value assigned to six monitoring sites on the Rye Water during the period 2002 to 2010 (Site 11 no 2009 value).

3.3.6.5 Fish Studies

Electrofishing operations were conducted by AQUENS Ltd. over two sections of the Rye Water located downstream of the Stoneland Bridge as indicated in Figure 3.1.

Both salmonid species, brown trout *Salmo trutta* and atlantic salmon *Salmo salar* were present in the catch as in previous years, along with five other species of fish; minnow (*Phoxinus phoxinus*), stoneloach (*Neomacheilus barbatulus*), lamprey (*Lampetra spp.*), eel (*Anguilla anguilla*) and stickleback (*Gasterosteus aculeatus*). The Ryewater in this area supports populations of Freshwater Crayfish and Lamprey (both Habitats Directive Annex II species) (Brian Beckett Inland Fisheries Ireland, pers. comm.) Table 3.6 presents the number of salmonids caught at each site within Sections 2 and 3.

Table 3.6 Number of salmonids caught at each site within Sections 2 and 3

Site	Section 2			Section 3				Grand Totals
	S2C	S2-E1	S2-E2	S3C	S3-E1	S3-E2	S3-E3	
Brown trout	90	77	101	36	124	112	180	720
Salmon	150	110	136	29	79	131	93	728
Totals	240	187	237	65	203	243	273	1448

Salmon and trout were recorded at all sites. The overall salmonid catch was similar to 2009 at most sites but densities were generally higher. For the second year in a row there have been greater numbers of salmon captured compared to brown trout. The 1+ salmon dominated and their densities were similar or slightly lower than the 2009 figures.

However, fry recruitment was improved on figures for the last two years at most sites. Recruitment of trout fry was also good with estimated densities generally higher than the last two years. A decrease in the number of older trout (>0+) was recorded at four sites, with an increase at the three remaining sites which is an improvement on 2009. Overall, the Rye Water continues to support a self sustaining salmonid stock.

3.3.7 Geology and Hydrogeology of the Receiving Environment

3.3.7.1 Soils and Geology

The site is underlain by Lower Carboniferous (Chadian to Brigantian Stage) Calp Limestones. The subsoils consist of till derived from limestone and the EPA soil mapping indicates that the soils comprise primarily of Grey Brown Podzolics and Brown Earths. The Calp Limestone is a Locally Important Bedrock Aquifer (LI). The vulnerability of the bedrock aquifer beneath the subject site has been classed as high.

3.3.7.2 Groundwater Quality

Groundwater monitoring wells on the Intel site are sampled and analysed as required under the conditions of the existing IPPC licence (Register P0207-03). Many of the monitoring wells have been positioned down hydraulic gradient of potential contaminative site sources.

The monitoring wells provide the basis for on-going sampling and are sampled each year for a full analytical suite.

Data obtained from on-site groundwater monitoring wells indicates that groundwater beneath the site flows in an approximate north/north-easterly direction towards the Rye Water which forms a discharge boundary to the north of the site. The deeper regional position may be controlled by discharge to the River Liffey and the coast at Dublin Bay.

The groundwater monitoring results are consistent from one sampling event to another with water quality being reported as being free of industrial contamination.

3.3.7.3 Leixlip Spa

An unusual feature of the groundwater regime in Co. Kildare is the formation of warm springs that occur in a syncline in the Lucan-Celbridge area. The Leixlip Spa is considered a hydrogeological feature of particular importance in the vicinity of the subject site and is located to the immediate east of the Intel facility.

Leixlip Spa forms part of a seam of hot springs that extend from Co. Kildare to Co. Meath according to Kildare County Council. Warm springs occur in a syncline in the Lucan-Celbridge area, which allows warmer water to the surface. The Leixlip Spa is located close to the Celbridge Syncline.

The Leixlip Spa comprises a wetland area, which has developed on five distinct terraces on shallow bedrock. A complex groundwater system is understood to be present at Leixlip Spa and comprises the following, which is supported by the different hydrochemical signatures of the groundwater:

- A deeper, older, warmer groundwater system, which discharges to the spa well. The groundwater is highly mineralized and iron rich. This groundwater system is considered the main source of groundwater at the spa;

- A more recent, shallow groundwater system that flows through conduits in the karstified limestone bedrock and discharges near the filtering ponds at the spa. Groundwater from the shallow system discharges near rock faces and there is understood to be lateral flow toward the River Rye; and

- Deeper older groundwater that flows through a younger groundwater system and mixes with it.

Groundwater flow in the shallow groundwater system at Leixlip Spa is largely through conduits in the karstified bedrock. This indicates that karstified bedrock may be present beneath the Intel facility. However, the presence of notable rock cavities were not evident in the borehole logs for the Intel facility and recent rotary drilling which included obtaining rock cores did not indicate the present of karstified rock.

A chalybeate or mineral spring is situated near Louisa Bridge, located approximately 1km to the south east of the Intel facility. The warm water (16-17^{o} C) emerges from along the edge

of the Royal Canal. The spring was reportedly discovered in 1793 during canal excavations. Similar warm springs have not been noted along Rye Water and the local topography does not appear to influence location. Given the distance between the Chalybeate spring and the proposed development site, it is not anticipated that there will be interaction between groundwater at the site and the spring.

3.3.8 Summary of ecological evaluation

Table 3.7 provides a list of the ecological evaluation for all relevant habitats and species within the Rye Water Valley/Carton SAC, and identifies the Sensitive Ecological Receptors. Sensitive Ecological Receptors are defined as per the criteria set out in Table 3.1, which takes into consideration legal protection and conservation status.

Table 3.7 Ecological evaluation of habitats and species and identification of sensitive receptors

Habitat/ species	Ecological value	Highest level of ecological value	Sensitive receptor?
Habitats			
Built land	Fab 24 building. Not suitable for nesting birds or bats.	E	No
Recolonising Bare ground	At hydrogen tank site only	E	No
Surrounding habitats	The adjacent habitats comprise grassland and woodland to the north and east which is planted with native and non-native species.	D	No
Rye Water/Carton SAC	No tufa springs located within proposed development sites.	International Importance	Yes
FLORA SPECIES			
Ecological data search	Green Figwort (Red data species) known to occur locally at the river but not near the site. Blue Fleabane (Red data species) known to occur adjacent to river but not within proposed development sites	n/a	No
Fauna species			
Bats	No roosts confirmed and area at Fab24 development site deemed to be unsuitable for bats. Perimeter vegetation at hydrogen tank site are more suitable with good quality habitat for commuting and/or foraging	International	Yes – at hydrogen tank site only
Vertigo sp	No vertigo species found within Intel owned lands	International	Yes
Other protected species	The Rye Water supports a number of Internationally protected species such as salmon and white clawed crayfish	International	Yes

3.4 IMPACT ASSESSMENT

3.4.1 Overview

European Commission Environment DG document *"Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*" outlines that types of impacts that may affect Natura 2000 sites. These include:

- Reduction of 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

3.4.2 Reduction of Habitat Area

The proposed development will not result in the loss or reduction of any habitats for which the SAC is designated i.e. petrifying springs with tufa formation or any habitats within the boundary of the SAC. Habitat loss will be confined to existing built land and recolonising bare ground. This habitat loss will not impact on the integrity, structure or function of the SAC.

3.4.3 Disturbance to Key Species

The proposed development will not result in the disturbance of any species for which the SAC is designated i.e. *Vertigo angustior* and *Vertigo moulinsiana*. Although not listed as qualifying features of the SAC, the Rye Water supports a range of internationally-protected species including Atlantic Salmon, White-clawed Crayfish, Otter and Kingfisher, while bats can be found in the surrounding area.

3.4.4 Habitat or Species Fragmentation

Habitat and species fragmentation can occur through the breaking up of habitats resulting in interference with existing ecological units or when construction introduces a barrier to the free movement of species from one habitat to another. In relation to the Rye Water, no instream works or culverting are proposed as part of the development which would interfere with the populations of salmon, white-clawed crayfish, otter or kingfisher and result in the fragmentation of populations of these species. No habitats or areas suitable to the presence of *Vertigo* species were identified within the proposed development sites. Therefore the proposed development will not result in the fragmentation of populations of these species.

3.4.5 Reduction in Species Density

As outlined in Sections 3.4.3 and 3.4.4, there will be no loss of habitat or fragmentation of populations of species that would result in the reduction in species density of any protected species associated with the Rye Water/Carton SAC. Disturbance to bat and bird species if it

occurs is likely to be a short-term impact at a local level and is not likely to result in a reduction in species density.

3.4.6 Changes in Key Indicators of Conservation Value (e.g. Surface and Ground Water Quality)

3.4.6.1 Surface Water

Due to the distance from the Rye Water Valley/Carton cSAC and the nature of the intervening topography it is regarded the proposed works at the existing Fab 24 building and the new Hydrogen tank will not give rise to impacts on the cSAC. Surface water will not flow in the direction of the river and will either be intercepted by surface drains in the site or will soak away at the perimeter.

Construction of the proposed water tanks will not impact surface water quality as there is a large manmade berm between the proposed site and the Rye Water. This will ensure that no soils, silts or other polluting substances such as oils or fuels will enter the river.

The proposed development site for construction of the switchroom extension is located adjacent to the boundary of the SAC. There is potential that surface water runoff during construction may lead to temporary increased suspended solids and other pollutants entering the river.

3.4.6.2 Groundwater

The proposed development will not result in any deliberate discharges to or abstraction of groundwater in the area within the Intel Facility. The proposed development will not have any impacts on the mineral spring area at Louisa Bridge. The spring in this area is fed by a deep groundwater system that will not be affected by any excavation works associated with the proposed development. Therefore, there will be no impact on the petrifying springs that are a qualifying feature of the SAC.

During the construction phase, there is a risk of accidental pollution incidences from the following sources:

- Spillage or leakage of oils and fuels stored on site.
- Spillage or leakage of oils and fuels from construction machinery or site vehicles.
- Spillage of oil or fuel from refuelling machinery on site.

Accidental spillages may result in contamination of soils and groundwater underlying the site, should contaminants migrate through the subsoils and impact underlying groundwater. Concrete (specifically, the cement component) is highly alkaline and any spillage which migrates though subsoils would be detrimental to groundwater quality.

3.4.7 Climate Change

The proposed development will not result in any emissions to air that would contribute to climate change.

3.4.8 In Combination Effects

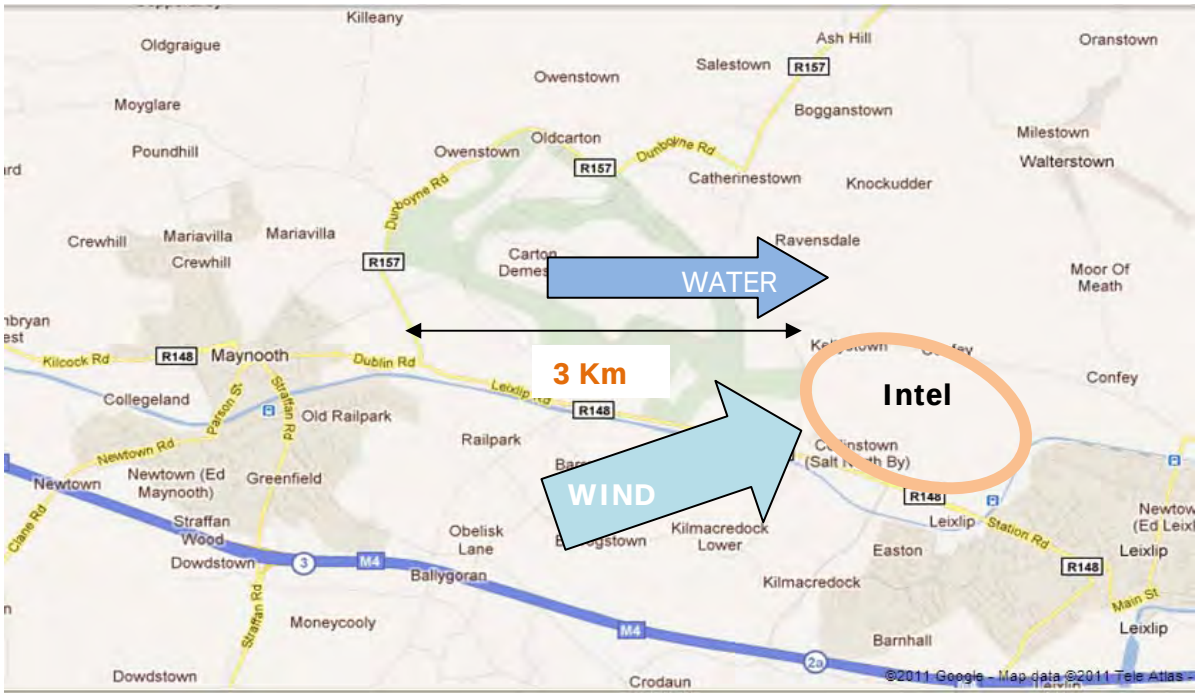
Article 6(3) of the Habitats Directive requires an assessment of a plan or project to consider other plans or projects that might, in combination with the plan or project, have the potential to adversely impact upon *Natura* 2000 sites. There are two types of cumulative effects that need to be considered in this instance. Offsite cumulative effects that consider whether developments by Intel on their lands have the potential to interact adversely with other existing or likely future development on lands that or nearby adjacent or likely to be connected – especially by the movement of water or air.

3.4.8.1 Offsite Cumulative Effects

Offsite Pathway Methodology

This assessment uses the 'pathway' approach to anticipate effects. It identifies and assesses the 'source' from which incoming, external additional environmental stresses could originate as well as the 'receptors' toward which outgoing effects from Intel could move to accumulate.

Cumulative interactions with the wider environment are influenced by topography, drainage, orientation and the type of surrounding landuses. Intel lands are influenced by prevailing west to east patterns of the movement of both air and water – roughly parallel to the course of the Rye Water – which are likely to be the principle pathways if environmental pollution occurred. This riparian corridor of the Rye Water is also likely to be one of the principle local ecological corridors that could be vulnerable to fragmentation. Thus the west-east corridors of air, water and habitat are useful means by which to evaluate the potential for cumulative environmental effects in the wider context. The schematic map below shows that the potential sources of cumulative and interacting effects are concentrated around Maynooth lies to the west of Intel. The receptors for potential cumulative interactions are around Leixlip to the east.



SOURCE	PATHWAYS	RECEPTORS

Sources of Offsite Cumulative effects

The lands from which accumulating 'incoming' effects could originate to the west, northwest and south west of Intel consist of agricultural or demesne lands – that are not managed or used intensively or in any way that creates additional environmental burdens. The nearest concentrations of developments – at Maynooth - lie over 3 km to the west. The majority of this intervening land comprises the Carton Demesne – a protected landscape, used for tourism and recreation – which is likely to remain as a stable environment for the foreseeable future.

The quality of 'incoming' environment effects – as measured by water quality in the Rye Water flowing through Intel lands has remained stable for the last 15 years, confirming the absence of increasing environmental stress levels that new developments could interact cumulatively with. Thus the source pathway for 'incoming' additional environmental effects, that could accumulate with effects from Intel is negligible.

Receptors for Offsite Cumulative effects

The lands to which 'outgoing' effects could accumulate – consist of the agricultural lands of Confey to the north-east and the established settlement of Leixlip to the east. The zoning of Confey precludes future non-agricultural uses while the established, densely developed pattern and residential character of Leixlip will minimise any future intensification uses with which Intel effects [downstream or downwind] could interact or accumulate. Thus the receptor pathway for 'outgoing' additional environmental effects, that could accumulate with effects from Intel is negligible.

Conclusion

The absence of any reasonably foreseeable, significant, offsite sources or receptors of environmental effects that could interact with any potential offsite effects of Intel have been shown to be negligible and unlikely to occur.

3.4.8.2 Onsite Cumulative Effects

The Intel Campus is a large, highly complex industrial facility which is constantly evolving to address advances in manufacturing technology. The current project is proposed to reconfigure the site to provide Intel with unencumbered lands in the largest remaining area that is likely to be suitable for large-scale developments. There are currently a number of minor projects currently 'live' in the Planning system for planned changes to the Intel site but these are minor in nature and are mostly for small extensions to existing buildings.

The need to respond to changing production methods means that it is not, and will not be, possible to anticipate the extent, nature or effects of future applications. Instead each application – such as this – individually assess the potential for effects and interactions with existing or permitted developments, using a small number of specialists or a full EIS as appropriate to the scale and likely effect of the development.

In the case of this application and having regard to the fact that Intel are likely to continue to make applications within their lands, it has been deemed to prudent to carry out a number of specific specialist assessments to determine, inter alia, whether any of the development that is the subject of this application has the potential to give rise to adverse effects that could directly or indirectly affect habitats.

Applications are likely to continue to be made on this site in the future – including one in the near future for works to convert and upgrade the FAB 24 at the eastern end of the building complex. This is a separate development – unrelated technically, environmentally or spatially to this application and will be accompanied by a full EIS and NIS.

Currently, there are a number of other developments at the Intel site that are going through the planning process. These projects include the following:

Table 3.8 Other Projects on site

Project	Status	Impacts
Single storey extension to rear of the existing FAB 24 Process Support Building and realignment of the north road Two storey extension to the rear of FAB 24 Main Production Building	Planning permission applied for by Intel NIS submitted	Temporary impacts during construction may cause increased suspended solids and other pollutants entering the river, which could impact sensitive aquatic receptors such as spawning brown trout, salmon and White-clawed Crayfish.
Demolition of buildings (IR3, IR1 utility buildings, the Recreation centre and the F10	Planning permission applied for by Intel NIS submitted	Temporary impacts during construction may cause increased suspended solids and

Warehouse as well as a number of contractor cabins and storage sheds) Installation of carpark between R148 and the Royal Canal to the south of Intel to accommodate 1,200 car parking spaces.		other pollutants entering the river, which could impact sensitive aquatic receptors such as spawning brown trout, salmon and White-clawed Crayfish. These impacts are only likely to occur when construction occurs close to the Rye Water or the Royal Canal. Potential disturbance of bat species through lighting Localised disturbance of breeding birds during the construction phase.
Upgrade of foul sewer from Intel Ireland Ltd to the Leixlip Wastewater Treatment Plant.	Pre- planning	This project is currently undergoing Appropriate Assessment to determine impacts.
Construction of extension to an existing electricity substation and proposed new pumping station and effluent balancing tank	Pre Planning	This project is currently undergoing Appropriate Assessment to determine impacts.

Any of these have the potential to give rise to impacts on the Rye Water SAC, both during the construction phase and operational phase. Potential impacts during construction could include disturbance of species or the accidental release of sediments/pollutants during construction. However, having regard to the existing and proposed mitigation measures [see below] none of the above proposed developments will lead to the direct loss of habitats or species for which the SAC is designated (petrifying springs, *Vertigo snails*) nor will there be effects on other species listed on Annex II of the EU Habitats Directive (otter, salmon, white-clawed crayfish).

Each of these projects will be subject to Appropriate Assessment screening and all will be subject to the existing and future environmental mitigation, monitoring and management measures set out below .

3.4.8.3 Mitigation, monitoring and management measures

Impacts from scheduled emissions (to air, water ground) during the operational phase are unlikely to occur, as all activities at the Intel facility are regulated by an Integrated Pollution Prevention and Control (IPPC) licence, which is monitored by the EPA. The Intel site has an extensive list of control mechanisms in place to ensure that environmentally significant operations are identified, maintained in proper working order and assessed on an ongoing basis. The management and control systems are included in the site's EMS certified to the International Standard ISO14001. The current IPPC licence is incorporated into the EMS structure and the Environmental Management Plan ('EMP') requirements are included within the Objectives and Targets of the EMS. The EMS is therefore a management tool that drives compliance with the site's current IPPC licence conditions. Taken together, the EMS and IPPC licence ensure that the cumulative impact of emissions and activities of the entire site are controlled and regulated.

As well as controlling and regulating scheduled emissions, the IPPC licence includes provisions for accidental spillages. Intel includes state of the art technology in the initial design of the plant to ensure that the potential for an accidental release is minimised. In the unlikely event of a release, contingency measures are in place to quickly and effectively contain and treat any discharges. These measures include an immediate Emergency Response Team (ERT) capability and also an overall Emergency Preparedness Plan (EPP) to deal with emergency scenarios.

The following sections outline how emissions to air and water are controlled to ensure that they do not impact significantly on the environment. Any changes to the licensed Emission Limit Values in the future will only occur following the a review of the IPPCL.

Water

Process effluent is treated on site to strict parameters and in accordance with Intel's Integrate Pollution Prevention and Control (IPPC) Licence. This effluent is pumped and further subjected to biological treatment in the adjacent Leixlip Municipal wastewater treatment plant (MWWTP). Process effluent treatment is subject to a management system designed to ensure that once an effluent arises from a process having applied all of the relevant design constraints and minimisation at source objectives, that the treatment is designed to: -

- ensure that no undue environmental risk arises;
- that licensed ELV's are met with an appropriate safety margin;
- that no undue risk to personnel arises either on site or off site;
- that the effluent cannot damage the fabric of the sewerage system;
- that the effluent cannot harm downstream treatment processes;
- that the effluent does not contain pollutants which will pass through the treatment processes and harm the external environment;
- that all applicable national and International ELV's EQS's and EQO's are not compromised;
- that resultant sludges are not compromised for disposal;
- that the combination of effluent treatment represents BAT (Best Available Technology); and
- that the appropriate treatment occurs at the appropriate location.

This approach ensures compliance with the relevant EU Water Directives, Biodiversity objectives , National regulations and the requirements under the spirit and intent of the IPPC regulations and the granted licence.

The existing surface water drainage system on the Intel Property consists of a number of independent drainage routes from roofs, paved areas and sub-drainage systems covering the Site. These systems combine prior to entering the 3000 m^3 Retention Pond with and discharge via a single outlet pipe to Rye Water. The retention pond isolates any contamination events including contaminated fire fighting water should such an event happen. The storm water management is designed to use the entire onsite network of drains and storage units to isolate and protect the receiving environment from potential hazards and from excessive storm events. The area of the site is also very small relative to the Rye Water catchment upstream of Intel and the contribution of flow from the site is therefore very small. Discharges to the Rye Water outlet are monitored regularly and are

compliant with the limits contained in the IPPC licence. The proposed development will not result in any significant changes to the quantity or quality of storm water runoff.

Air

Emissions to atmosphere currently arise from both process and utility sources from the site and currently contribute to background levels of certain airborne pollutants in the area.

The principal process emission sources include;

- acid gas scrubbers that have the potential to release residual levels of fluoride of acids following treatment;
- solvent exhausts that can release volatile organic compounds following appropriate treatment;
- inorganic particulate releases from particulate abatement plant that lead to extremely low levels (below the limit of sampling detection) of such particulate.

Utility sources include boilers that will produce combustion gas emissions including oxides of nitrogen (NO_x) and carbon monoxide (CO). Combustion gases are also generated by the VOC abatement plant and during the testing of emergency generators.

Current operations on-site require the use of electricity and gas for the operation of abatement systems, manufacturing, heating and lighting. In the case of electricity use, this can give rise to emissions of the global warming gases, carbon dioxide (CO_2) and nitrous oxide (N_2O) at the point of electricity generation where fossil fuels are used. In relation to the use of gas, energy centres currently emit both CO_2 and N_2O. Certain process gases, principally compounds known as perfluorocarbons (PFC's) also have high global warming potentials.

Ambient air has been monitored on an on-going basis to ensure compliance with regulatory ambient air quality standards designed to protect human health and vegetation. The ambient monitoring results have demonstrated that the background air quality with existing operations is good.

3.5 CONSERVATION OBJECTIVES

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level

Favourable conservation status of a species can be described as being 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*.' Favourable conservation status of a habitat can be described as being 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 NPWS has set conservation objectives for all designated sites which define what constitutes favourable condition and which should be met if a species of habitat is to be judged in favourable condition. For the Rye Water/Carton SAC, the following objective has been stipulated:

- To maintain or restore the favourable conservation condition of the Annex I habitat(s) and /or the Annex II species for which the SAC has been selected: *Vertigo angustior*, *Vertigo moulinsiana* and petrifying springs with tufa formation (Cratoneurion)

3.6 INTEGRITY OF SITE CHECKLIST

Generally as part of a Stage 2 Appropriate Assessment a checklist of site integrity is carried out. This aids in determining whether a project will have a significant adverse effect on a Natura 2000 site. This checklist is taken from "*Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC".*

Table 3.9 Integrity of Site Checklist

Conservation objectives	
Does the project or plan have the potential to:	**Yes/No**
Cause delays in progress towards achieving the conservation objectives of the site?	No
Interrupt progress towards achieving the conservation objectives of the site?	No
Disrupt those factors that help to maintain the favourable conditions of the site?	No
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	No
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	Yes –Disposal of spoil during the construction phase may cause increased suspended solids and other pollutants entering the river, which could impact sensitive aquatic receptors such as spawning brown trout, salmon and White-clawed Crayfish. These impacts are only likely to occur when construction occurs close to the Rye Water Potential disturbance of bat species through lighting
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	Yes – Risk of accidental pollution to soils and groundwater during construction.
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	Yes - Temporary impacts during the construction phase may cause increased suspended solids and other pollutants entering the river, which could impact sensitive aquatic receptors such as spawning brown trout, salmon and White-clawed Crayfish. These impacts are only likely to occur when construction occurs close to the Rye Water
Reduce the area of key habitats?	No
Reduce the population of key species?	No impacts on *Vertigo* snails. Impacts

	may temporarily affect salmon and White-clawed Crayfish. These impacts are only likely to occur when construction occurs close to the Rye Water
Change the balance between key species?	No
Reduce diversity of the site?	No impacts on *Vertigo* snails. Impacts may temporarily affect salmon and White-clawed Crayfish. These impacts are only likely to occur when construction occurs close to the Rye Water
Result in disturbance that could affect population size or density or the balance between key species?	No
Result in fragmentation?	No
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc ?	No

3.6.1 Conclusion

In accordance with the precautionary principle, it has been identified that there is potential that the proposed development, either on its own or in combination with other developments proposed at the Intel Ireland site, may affect a number of internationally-protected species. As a result, mitigation measures are proposed in Section 4.

4 MITIGATION MEASURES

4.1 INTRODUCTION

Where a likely significant adverse effect has been identified during an Appropriate Assessment or cannot conclusively be ruled out, it may be possible to proceed with a proposal where mitigation measures can be implemented to address the adverse effect. Measures have been included to ensures that soils, silt and other pollutants will not adversely affect the Rye Water Valley/Carton SAC or the conservation status of protected habitats and species it supports.

4.2 MEASURES FOR PROTECTING BATS

In order to minimise the extent on light spill onto perimeter vegetation during nighttime works, all lights that are pole mounted will be directional and/or cowled to ensure that light is directed downward and inwards. Lights will be programmed or otherwise to be off unless required. An Ecologist will check the lighting pattern once assembled and will make recommendations if perimeter light levels exceed 0.1 lux.

4.3 MEASURE FOR PROTECTING SURFACE WATERS

Best practice shall be implemented at all times in relation to any activities that may impact on surface water (stream and river) or riparian habitats.

- Comprehensive surface water management measures (GDSDS study recommendations) shall be implemented at the construction and operational stage to prevent any pollution of local surface waters.

- Class I petrol/oil interception (and possibly hydrobrake controls) should be in place on primary surface water discharges to protect receiving freshwaters in terms of water quality.

- Precautions must be taken to ensure there is no entry of solids, during the connection of pipe-work, to the existing surface water system.

4.3.1 Measures for Reduction and Prevention of Suspended Solids Pollution

The key factors in erosion and sediment control for land based works are to intercept and manage runoff. This limits the potential for soils to be eroded and enter streams in runoff. The following measures will be implemented when any construction activities are taking place in close proximity to the Rye Water.

- The permanent fence demarcating the boundary of the SAC will be retained and vegetation on the SAC side of the fence will not be disturbed. The significance of this fence will be made known to contractors where relevant.

- Where construction occurs adjacent to the Rye Water i.e. at the extension existing Switchroom, temporary hoarding of an impermeable nature will be installed at the fence demarcating the boundary of the SAC to ensure that no silt or spoil will be washed into the Rye Water

- No works or modifications of any nature are permitted in this designated area. No disruption of the riverbed, either through the installation of services or the passage of traffic across the river will be permitted without the prior approval of NPWS via the Intel Environmental Department.

- Disposal of spoil or storage of soils shall not be carried out in any location where runoff can occur into watercourses.

- Any disposal of spoil, not detailed in the planning permission application, and in proximity to the designated site will not be carried out without the prior approval of the Intel Environmental department. Where spoil is spread in an area adjacent to the River Rye, settlement ponds will be provided in accordance with the requirements of NPWS. These should use settlement ponds already in place for construction activities if available

- The guidelines document "Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites" (www.fishingireland.net/environment/constructionanddevelopment.htm) must be consulted when planning to undertake works on this site.

- Where possible, silty water will be disposed of to the foul sewer, a TEDL (Trade Effluent Discharge Licence) for the discharge (if required) will contain information relating to the volume disposed of and will be in accordance with Local Authority conditions.

4.3.2 Measures for Reduction or Elimination of Pollution with other Substances Associated with the construction process

Best practice to prevent contamination of surface and goundwaters by spillages of fuels, lubricants and other chemicals will be implemented on the site. These measures will include the following :

- Raw or uncured waste concrete shall be disposed of by removal from the site.

- Fuels, lubricants and hydraulic fluids for equipment used on the construction site, as well as any solvents, oils, and paints shall be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to codes of practice.

- All construction tank and drum storage areas shall be rendered impervious to the materials stored therein. No bulk chemicals are to be stored in the demolition area. Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of 110% of the capacity of the largest tank/container within the

bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

- In the event of a spillage, drainage from bunded areas shall be diverted for collection and safe disposal.

- The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein shall also be tested and demonstrated. All fuel oil fill areas will have an appropriate spill apron

- Fuelling and lubrication of equipment shall not be carried out close to watercourses.

- Any spillage of fuels, lubricants of hydraulic oils shall be immediately contained and the contaminated soil removed from the site and properly disposed of.

- Waste oils and hydraulic fluids shall be collected in leak-proof containers and removed from the site for disposal or re-cycling.

- Foul drainage from site offices etc. shall be removed to a suitable treatment facility or charged to a septic tank system constructed in accordance with EPA guidelines.

- Sites for use as storage areas, machinery depots, site offices or the disposal of spoil shall be located at least 50m from the nearest watercourse.

- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in a designated area (where possible) of the site, which will be away from surface water gulleys or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001)7 will be referred to.

- Any concrete required will be mixed off–site and imported to the site. Should reinstatement of hardstanding be required in the demolition areas, the pouring of concrete will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

4.4 MEASURES FOR CONTROLLING WASTE AND SOIL

- Where concrete removal and soil stripping occurs the resulting excavated material will be separated into concrete, topsoil and subsoil stockpiles.

- Temporary storage of spoil and hardcore will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment and the material will be stored away from any surface water drains.

- In the event of any soils or hardcore being taken off site, the soils will be removed and disposed of by contractors licensed under the Waste Management Act of 1996 (as amended 2001), the Waste Management (Facility Permit & Registration) Regulations of 2007 and the Waste Management (Collection Permit) Regulations of 2007. The issuing of such a permit to contractors allows them to use such material for landscaping and land reclamation, subject to conditions defined in the permit if the material has been classified as suitable for this use. Otherwise, the material will be classified for disposal at a suitably licensed landfill and removed off-site by a licensed waste contractor. In terms of surplus soil, any residuals will be stored within appropriate storage areas of sufficient capacity prior to removal by a suitably licensed waste management contractor for off-site treatment/recycling/disposal.

- A construction and demolition waste management plan will be developed in accordance with the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG, 2006) to ensure that all construction waste is stored, managed, moved, reused or disposed of in an appropriate manner by appropriate contractors in accordance with all relevant waste legislation.

4.5 MEASURES TO PREVENT ENVIRONMENTAL INCIDENTS OR MINIMISE THEIR IMPACT IN THE EVENT OF OCCURRING

Systems are built into the design of the site to ensure that environmental media are not impacted in the event of a spillage or fire. This applies to all production areas of the site. The systems are based on the principal of segregating potentially contaminated surface waters and ensuring suitable storage and containment is present in the event of contaminated material being generated.

4.5.1 Double Contained Systems

All chemicals are stored in double contained or bunded areas with monitors in place to identify leaks in containment areas. Bunds storing chemicals are lined with chemical resistant coating and a certified engineer checks the integrity of the bunds as part of the conditions under the existing IPPC licence (Register P0207). Process tools that use hazardous chemicals are also held in contained areas.

4.5.2 Segregated Surface Water Systems

Two types of surface water collection systems are in place onsite. The uncontained surface water system takes surface water from areas of the plant where chemicals are not stored. These are discharged to the Rye Water via a retention pond. The contained surface water system serves areas where chemicals are used, stored or transferred with the exception of the western service road. The contained system allows surface water to be rerouted to either dedicated underground tanks in the service yard or the AWN of each Fab in the event of a chemical spill or fire. Contaminated waters are therefore prevented from reaching the Rye Water, ground or groundwater. Approved contractors check the integrity of the contained systems as required by existing IPPC licence conditions. These integrity checks are reported to the Environmental Protection Agency (EPA) within the AER.

4.5.3 Grit and Oil Interceptors and the Retention Pond

To ensure the quality of discharges to the Rye Water, all surface waters are discharged to the River through a retention pond having passed through grit and oil interceptors. The outlet of the retention pond can be closed in the event of a spill or fire.

4.5.4 Tank Overfill Alarms and Spill Aprons

To minimize the potential of overfilling any chemical-containing tanks, all tanks are fitted with high fill alarms connected to the FMS system. In the unlikely event of any overfill or spillage, this will be captured in the bunded areas. The transfer of material to road tanker for removal on-site is also carried out in spill aprons connected to the contained surface water system.

4.5.5 Management Systems and Training

A comprehensive environmental management system is in place to ensure staff is aware of how to prevent releases and is certified to the international standard ISO 14001. The management system includes documented procedures to ensure operational control of activities is maintained and best practice is carried out at all times.

Intel has also developed training programmes that are aimed at all staff levels within the organisation. The training packages include modules for best practice, general environmental awareness and emergency response.

4.5.6 Emergency Response

Trained members of the emergency response team (ERT) are available onsite 24 hours a day to coordinate and manage any environmental incident and to minimise the consequences should an incident occur. The effectiveness of the environmental management and containment systems in preventing uncontrolled releases to the environment is demonstrated in the low number of incidents that have occurred to date.

4.6 HOW THE PROPOSED MEASURES WILL ENSURE THAT IMPACTS ARE MITIGATED.

During the construction phase, all works will be subject to Intel's environmental management system. A variety of best available techniques are applied to ensure a high standard of environmental protection is provided during the operational lifetime of the Intel Ireland plant. The measures focus on preventing residuals from initially being generated and having control measures in place for any accidental emissions.

A comprehensive environmental management system operates to ensure staff onsite are suitably trained and know how to both prevent releases from occurring and what to do in the event of a release. This includes defined procedures to ensure that chemicals are handled and stored correctly. By applying best available techniques and operating a comprehensive environmental management system in order to prevent chemical releases to

the environment, potential residuals associated with water and land in particular are also minimised.

In addition, Intel adheres to a standard set of Environmental Requirements which are issued to contractors for all construction activities. These requirements are attached in Appendix A and will also act as mitigation measures for impacts from this development. Contractors' Environmental Requirements which are requirements that form part of the contract when any construction is being carried out on site by third party construction companies. Compliance with the measures and requirements is ensured through regular auditing by the Intel Environmental Department

4.7 RESIDUAL IMPACTS

There will be no residual impacts on the Rye Water/Carton SAC.

5 CONCLUSION

Stage 1 Screening and Stage 2 Appropriate Assessment of the proposed development at Intel, Leixlip, Co. Kildare has been carried out. The proposed development has the potential to result in impacts to the integrity of the Natura 2000 network, if unmitigated.

The risks to the safeguarding and integrity of the qualifying interests and conservation objectives of the Natura 2000 network have been addressed by the inclusion of mitigation measures that will prioritise the avoidance of impacts in the first place and mitigate impacts where these cannot be avoided.

Having incorporated mitigation measures, it is considered that the proposed development will not have a significant adverse effect on the integrity of the Natura 2000 network.

6 REFERENCES

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Appendix A

Environmental requirements for construction work

ENVIRONMENTAL REQUIREMENTS FOR CONSTRUCTION WORK.

Noise

1. **Noise generation should be minimised at all times especially at night and weekends**
2. **Noise constraints should be considered when planning and scheduling construction activities**
3. **Best Practicable Means identified in BS 5228 shall be followed**
4. **The construction contractor shall appoint RPS Ltd to monitor construction noise on a monthly basis with reports sent to Intel's EHS department**

Noise can cause annoyance and potentially nuisance. Limits are specified as part of the site's IPPC licence but regardless of these limits, any complaint from nearby sensitive locations can potentially cause difficulties for the site and its operations. Noise emissions should therefore be minimised at all times by the contracting company.

Intel are required to maintain a continuous noise monitor under the IPC licence to monitor site noise levels and as such all construction activities will be registered at this point. Levels above those limits specified in the IPPC and due to construction activity will be explained as such. The contracting company will however take all measures to ensure that noise levels are kept to a minimum. This is particularly important for any activities carried out during night-time periods and other times of the day or week (such as weekends) when residents can be most affected by the presence of noise. The night-time noise limit is 45 dB and applies between 10pm and 8am.

Construction site noise levels will be regulated by BS 5228, Part 1, 1997. Whilst not specifying any particular noise limits, the guidance noise level would be 65dB, which is 10 dB above the IPPC noise limit. The Standard identifies the contracting company should operate to Best Practicable Means and methods to minimise noise. Outline guidance would include;

- Should a rock crusher be deployed on site, the contractors will ensure that it is operated in accordance with appropriate noise standards in terms of noise suppression. Similar considerations should be included for other significant noise generating plant
- A walk-round audit should be regularly carried out to identify noisy activities and minimise the contribution from redundant/idle machinery plant.
- A high level of maintenance of plant and vehicles and any acoustic enclosures should be employed.
- Noise constraints should be considered when planning and scheduling construction activities

The contracting company will appoint and pay acoustic consultants either RPS Ltd or AWN Ltd to carry out noise monitoring every month whilst construction activities are carried out. The monitoring will be carried out at five specified locations in each sampling survey with the locations, timing and sampling duration being agreed with the EHS department. These will reflect locations identified in the IPPC. All reports prepared by RPS Ltd/AWN Ltd must be issued directly to the EHS department within 10 days of the monitoring being carried out.

If construction-related noise problems arise, the EHS department will discuss identifying additional noise mitigation measures in conjunction with RPS Ltd/AWN Ltd. Again, the appointed consultants would be under sub-contract to the main construction contractors.

Fuel oil

- **Appropriate bunding shall be provided for all tank and drum storage areas**

All tank and drum storage areas shall be rendered impervious to the materials stored therein. In addition, tank and drum storage areas shall, as a minimum, be bunded, either locally or remotely, to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area.
- 25% of the total volume of substance which could be stored within the bunded area.

In the event of a spillage, drainage from bunded areas shall be diverted for collection and safe disposal.
The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein shall also be tested and demonstrated. All fuel oil fill areas will have an appropriate spill apron.

Drip trays, or approved containment, shall be used for all portable equipment containing fuel oil.
The contractor company will ensure that adequate spill clean up materials will be available on site at all times.

Chemicals

- **Approval, storage and labelling criteria must be adhered to**

The approval process for all chemicals brought onto site must be agreed with the Intel EHS dept. In addition all chemicals are to be stored in appropriate storage areas/containers. The following chemical storage requirements should be adhered to:

- Dedicated Chemical storage unit.
- Storage unit should be secured and bunded.
- Appropriate chemical signage should be posted at the entrance to the unit.
- The amount of chemicals stored onsite should be kept to a minimum.
- All chemical containers should be labeled.
- A copy of the MSDS sheets of all chemicals should be maintained in the storage unit.
- A fire extinguisher should be maintained in the storage unit appropriate to the chemicals stored.
- All out of date/spec chemicals should be disposed of in compliance with Intel's IPPC Licence.
- Incompatible materials must not be stored together, with oxidising materials being stored separately from other materials.

Dust

- **A dust control strategy must be implemented and followed**

To control dust generation from the construction activities, the following must be carried out through the development of dust mitigation strategy / code of construction practice. The following actions should be implemented to control dust;

- The surface of roads will be sprayed during periods of dry weather
- Haul road should be surfaced wherever practicable and road sweepers employed to prevent surface buildup of materials on the roads. Spillages of material on roads must be promptly swept up.
- Speed restrictions should be adhered to
- A wheel wash shall be provided and all vehicles using unpaved areas must use the wheel wash before leaving the site via public highways
- Vehicles carrying fine materials must be remain sheeted for as long as possible
- Open areas of ground should be seeded and landscaped as soon as practicable to reduce windblown dust.
- Where practicable, large construction vehicles should preferentially have upwardly pointing exhausts.

Water

1. **Groundwater monitoring wells must be protected from construction activities**
2. **All new surface waters discharges will be settled via a temporary settlement pond prior to discharge. Existing drains can be intercepted and pumped to existing facilities.**
3. **Separation of construction waste water discharges must be maintained from existing process discharges**
4. **Firewater retention capacity must be provided for.**

Monitoring Wells
No ground water monitoring wells are to be covered or interfered with in any way. Any works that may impact them are to be agreed in advance with the Intel Environmental dept. All monitoring wells within the area of the construction site are to be clearly identified/fenced in order to ensure visibility and prevent accidental damage. Should a fence be erected, access for sampling purposes will be maintained.

Surface water
All surface water from operational site will continue to be routed through the retention pond and thereafter to the River. All surface water from the construction site will be routed to a temporary settlement pond with discharge to the River Rye. Routing of surface water from the construction site to the site retention pond requires approval from Environmental Dept. Only rainwater run-off from intercepted drains currently in place is permitted to the Retention Pond. No process/waste water or any other aqueous material associated with construction is permitted to go to any retention pond.

Waste water
All waste water from the construction site will be discharged at a separate point to that of the operational sites point unless otherwise advised by the Intel Environmental Department. In the case of pipe flushing, the EHS department must be contacted prior to commencement to ensure that sewer loadings are not exceeded in conjunction with existing process discharges and that there is no impact to Intel Irelands current environmental liocence and or agreements with Kildare County Council.

Only inorganic material e.g. acids and bases are permitted to enter the sewer system, if there is agreement with the Intel environmental dept for this tie in. No solvent material, paints, oil, petroleum products etc. are permitted in the waste water to KCC. The Construction Company will have sole responsibility for this discharge.

Fire water
Provisions will be made for the retention of contaminated firewater run off in a holding tank/pond prior to release to the AWN or KCC treatment plant. This run off will not be released to either the site AWN or KCC without prior communication with the appropriate authority.

Waste

- **Collection, segregation and disposal of wastes is the responsibility of the construction contractor and must be handled, in the case of hazardous waste, through an Intel registered contractor with appropriate documentation.**

It is the responsibility of the construction contractors to prepare satellite waste collection centres. The contractor will then be required to segregate and dispose of the waste. All hazardous waste will only be disposed through Intel approved and licensed facilities and by Intel approved vendor. All non hazardous waste will be disposed of through licensed facilities. The contracting company will be responsible for the preparation of all waste handling documentation and costs associated with the disposal of all hazardous and non hazardous waste. In the case of hazardous waste, Veolia Environmental Services is currently Intel's approved haz waste vendor. Contact details can be obtained from the Environmental Department (See EHS contacts).

Special Area of Conservation (SAC)

1. **No works or construction-related activity are allowed within 20 metres of the Riverbank**.
2. **Prior approval must be obtained from the EHS Department for spoil disposal in close proximity to the SAC**.

A special area of conservation is present on the Intel site. This typically follows the line of the Rye River and extends to a distance of 20m on either side of the riverbanks. No works or modifications of any nature are permitted in this designated area. No disruption of the riverbed, either through the installation of services or the passage of traffic across the river will be permitted without the prior approval of NPWS via the Intel Environmental Department.

Spoil Disposal

Any disposal of spoil, not detailed in the planning permission application, and in proximity to the Special Area of Conservation on the Intel Ireland site will not be carried out without the prior approval of the Intel Environmental department. Where spoil is spread in an area adjacent to the River Rye, settlement ponds will be provided in accordance with the requirements of NPWS. These should use settlement ponds already in place for construction activities if available (see surface water).

Other Areas

1. **The weather station must not be affected by elevated levels of soil or other construction activity**
2. **Adherence and advice from regulatory authorities on construction activities must be followed**
3. **Litter must not be generated and a high quality of housekeeping is expected**
4. **A suitably qualified, environmental point-of-contact must be appointed by the contractor.**
5. **Any contact with the Environmental Protection Agency must be through Intel's EHS department.**
6. **Any additional monitoring required to investigate potential environmental problems will be conducted and funded by the contractor under an agreed scope with the Intel environmental department.**

Weather Station.

No works or modifications that will impact the operation of the weather station adjacent ot the EBT to rear of F14 or the weather instruments in F14 roof will be permitted. The Intel Environment Department must first approve all works.

Regulatory Requirements

If a regulatory authority requires measures to be taken as part of the construction activity, the contractor company will adhere to such requirements. All costs associated with this compliance will be borne by the contractor.

Environmental Contacts

A person will be appointed by the contracting company to act as main point of contact for environmental matters. This person will have the necessary qualification/expertise/experience to allow him/her discharge this role. In the event that contact is either required with the Environmental Protection Agency (EPA) or the contracting company is approached by the EPA, all contact and discussions must be through the EHS department of Intel.

Environmental Audits

- **The contractor will appoint a person with specific responsibility for environmental matters and in addition make that person available to accompany a member of the Intel environmental department on regular environmental audits of the F14/24 site. Frequency of audits to be agreed with expectation of weekly.**