

Quarry at Rossmore and Barryscourt (CKQY.106),
Carrigtwohill, County Cork

Substitute Consent for Quarry Operations Application Under
Section 177E(2A) and 177G of the Planning & Development Act 2010

Remedial Natura Impact Statement (rNIS)

CONTENTS

1.0	INTRODUCTION.....	1
1.1	Background.....	1
1.2	Remedial Natura Impact Statement Overview	1
1.3	Purpose of this Report	2
1.4	Ecologist and Experience	2
2.0	METHODOLOGY.....	3
2.1	Baseline Data Collection	3
2.2	Assessment of Effects	3
2.3	Ascertaining the Threat to Site Integrity	4
3.0	DESCRIPTION OF THE PROJECT	5
3.1	Location and Setting	5
3.2	Outline Description of Project.....	5
4.0	NATURA 2000 SITES.....	7
4.1	Potential Zone of Influence of Project and Screening of Natura 2000 Sites .	7
4.2	Great Island Channel SAC.....	7
4.3	Cork Harbour SPA	8
5.0	ASSESSMENT OF EFFECTS OF PLANNING REFERENCE S/99/3410.....	11
5.1	Hazard Identification and Potential Exposure (Screening Assessment)	11
5.2	Assessment of Likely Significant Effects of Planning Reference S/99/3410	30
6.0	ASSESSMENT OF EFFECTS OF PLANNING REFERENCE S/99/3411.....	31
6.1	Hazard Identification and Potential Exposure (Screening Assessment)	31
6.2	Assessment of Likely Significant Effects of Planning Reference S/99/3411	49
7.0	ASSESSMENT OF EFFECTS OF PLANNING REFERENCE 03/4570.....	50
7.1	Hazard Identification and Potential Exposure (Screening Assessment)	50
7.2	Assessment of Likely Significant Effects of Planning Reference 03/4570..	69
8.0	IN-COMBINATION ASSESSMENT.....	70
9.0	AVOIDANCE AND MITIGATION	71
10.0	SUMMARY AND CONCLUSIONS.....	72
10.1	Natura Impact Statement –Summary.....	72
11.0	CLOSURE.....	75

TABLES

Table 1:	Natura 2000 Sites within a 15km of the Quarry Site	7
Table 2:	Identification of Potential Hazards from Planning Reference S/99/3410.....	11
Table 3:	Screening Assessment of Hazards and Likely Significant Effects of the Planning Reference S/99/3410	12
Table 4:	Summary of Screening Assessment Findings	30
Table 5:	Identification of Potential Hazards from Planning Reference S/99/3411.....	31
Table 6:	Screening Assessment of Hazards and Likely Significant Effects of the Planning Reference S/99/3411	32
Table 7:	Summary of Screening Assessment Findings	49
Table 8:	Identification of Potential Hazards from Planning Reference S/99/3410.....	50
Table 9:	Screening Assessment of Hazards and Likely Significant Effects of the Planning Reference 03/4570.....	51
Table 10:	Summary of Screening Assessment Findings	69
Table 11:	Find of No Significant Effects Report.....	72

FIGURES

Figure 1	Project Site and Natura 2000 Sites
Figure 2a	S/99/3410 Original Application Boundary (xxx 1999)
Figure 2b	S99/3410 Application Boundary (SLR 2016)
Figure 2c	S99/3410 Application Boundary on 1995 Aerial Photograph
Figure 3a	S/99/3411 Original Application Boundary (xxx 1999)
Figure 3b	S/99/3411 Application Boundary (SLR 2016)
Figure 3c	S/99/3411 Application Boundary on 1995 Aerial Photograph
Figure 4a	03/4570 Original Application Boundary (xxx 1999)
Figure 4b	03/4570 Application Boundary (SLR 2016)
Figure 4c	03/4570 Application Boundary on 1995 Aerial Photograph
Figure 5	Current Dewatering Operations

APPENDICES

Appendix A	Analysis of Water Quality at the Quarry Sump (September 1999)
Appendix B	Noise Monitoring Report
Appendix C	Water Quality Monitoring Results 2013 (Cemex ROI Limited)
Appendix D	Water Quality Monitoring Results at SW1 (Quarry Sump) for 2015
Appendix E	Water Quality Monitoring Results at SW2 (End of Discharge Pipe) for 2015-16
Appendix F	Water Quality Monitoring Results at SW3 (Surface Water Lagoon Receiving the Discharge) for 2015-16
Appendix G	Water Quality Monitoring Results at SW4 (Intertidal Waters) for 2015-16

1.0 INTRODUCTION

1.1 Background

This report provides a remedial Natura Impact Statement (rNIS) that identifies and assesses any significant effects that may have arisen or are likely to arise from quarrying operations on any relevant Natura 2000 site, or sites, within the zone of influence of quarry at Rossmore and Barryscourt (CKQY.106), Carrigtwohill, Co. Cork.

It has been prepared by SLR Consulting Ireland (SLR) on behalf of Kilsaran Concrete (trading as Kilsaran Build) and hereafter referred to as Kilsaran, in response to a notice issued by Cork County Council¹ requiring an application to be submitted to An Bord Pleanála (ABP) for substitute consent for quarrying operations at Rossmore and Barryscourt.

1.2 Remedial Natura Impact Statement Overview

An amendment of Section 177E of the Planning and Development Act 2010 made under the European Union (Environmental Impact Assessment and Habitats)(No.2) Regulations 2015 now permits a quarry operator/owner to apply for substitute consent for all the development the subject of an invalid or defective permission, including development not yet carried out.

Under Section 177G of the Planning and Development Acts 2000-2010 (as amended), a rNIS shall contain the following:

- a. a statement of the significant effects, if any, on the relevant European site which have occurred or which are occurring or which can reasonably be expected to occur because the development the subject of the application for substitute consent was carried out;
- b. details of:
 - i. any appropriate remedial or mitigation measures undertaken or proposed to be undertaken by the applicant for substitute consent to remedy or mitigate any significant effects on the environment or on the European site;
 - ii. the period of time within which any such proposed remedial or mitigation measures shall be carried out by or on behalf of the applicant;
- c. such information as may be prescribed under Section 177N;
- d. and may have appended to it, where relevant, and where the applicant may wish to rely upon same:
 - i. a statement of imperative reasons of overriding public interest;
 - ii. any compensatory measures being proposed by the applicant.

This Statement follows a Screening Assessment carried out by Cork County Council as part of their examination of quarrying operations at Rossmore under Section 261A of the Planning and Development Act 2000, enacted under Section 75 of the Planning and Development (Amendment) Act 2010, requiring quarries having had due regard to the Environmental Impact Assessment (EIA) Directive and the Habitats Directive. This follows the decision of the European Court of Justice², where Ireland was required to remove the facility to apply for retention planning permission in the case of projects which would have required EIA.

¹ ABP Inspector's Report 04.QV.0174 dated 11th June 2013.

² European Court of Justice case C-215-06 on July 2008.

1.3 Purpose of this Report

This report has been produced to provide a rNIS, as required under Sections 177E and 177G of Section 261A(3) of the Planning and Development Acts 2000-2010 (as amended), on the significant effects, if any, on a relevant Natura 2000 site, or sites, that may have occurred or which are occurring or which can be reasonably be expected to occur because of the quarrying operations at Rossmore and Barryscourt.

It provides an assessment of potential hazards with the potential to impact upon a relevant Natura 2000 site, or sites and where likely effects have been identified provides further information to the Competent Authority (in this case ABP) in order for them to determine whether quarrying operations at Rossmore and Barryscourt have had, are having or are likely to have significant effects on the integrity of any Natura 2000 site, or sites, within its zone of influence.

Where potential impacts have been identified, appropriate remedial mitigation measures are recommended to be implemented in order to mitigate any significant effects on a European site, or sites.

1.4 Ecologist and Experience

This Statement has been conducted by Steve Judge whom is an Associate Ecologist with 15 years' experience in ecological consultancy and a member of the Chartered Institute of Ecology and Environmental Management (CIEEM). All work produced is subject to technical review and Quality Assurance.

2.0 METHODOLOGY

2.1 Baseline Data Collection

Baseline information was gathered through a combination of desk-based study, site visits and inspections made on 3rd December 2013 and on 7th October 2015, and technical assessments consistent with current standard methodologies and published best practice guidelines, in order to provide relevant data to allow an assessment of significant effects of quarrying operations at Rossmore that may have occurred or which are occurring or which can reasonably be expected to occur at any Natura 2000 site, or sites within the zone of influence of this quarry site.

The principal source of information on key qualifying features has been data collected through information publically available through the National Parks and Wildlife Service (NPWS)³ and other relevant sources including historical Environmental Impact Assessments (EIA) carried out and submitted with the relevant planning applications.

2.2 Assessment of Effects

The requirements for an Appropriate Assessment are set out under Article 6 of the EU Habitats Directive (92/34/EEC) transposed into Irish law through The European Communities (Birds and Natural Habitats) Regulations 2011 that requires a Competent Authority to make an Appropriate Assessment of the implications for Natura 2000 sites in view of a site's conservation objectives, before deciding to undertake, or give consent, permission or other authorisation for, a plan or project which:

- i. is not directly connected with or necessary to the management of that site; and
- ii. is likely to have a significant effect thereon, either individually or in combination with other plans and projects in view of its conservation objectives.

The European Commission's methodological guidance⁴ promotes a four stage process, as set out below, to complete an Appropriate Assessment:

- Stage 1 – Screening for Appropriate Assessment (preliminary screening carried out by Cork County Council);
- Stage 2 – Appropriate Assessment;
- Stage 3 – Alternative Solutions; and
- Stage 4 – The 'IROPI Test' (Imperative Reasons of Overriding Public Interest).

A person applying for any such consent, permission or other authorisation must provide such information, as the Competent Authority may reasonably require, for the purposes of the assessment or to enable them to determine whether an Appropriate Assessment is required.

In considering whether a plan or project will adversely affect the integrity of any Natura 2000 site or sites, the Competent Authority should consider whether the effects of the proposal on the site or sites, either individually or in combination with other plans or projects, is likely to be significant in terms of the conservation objectives and in respect of each interest feature for which the site was designated a Special Area of Conservation (SAC) under the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

³ <http://www.npws.ie>

⁴ European Communities (2002). *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites. Methodological Guidance on the Provision of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. European Communities, Luxembourg.

(Habitats Directive), or classified a Special Protection Area (SPA) under Council Directive 2009/147/EC on the Conservation of Wild Birds (The Birds Directive) that codifies Directive 79/409/EEC.

In the light of the conclusions of the assessment, and in consideration of Imperative Reasons of Overriding Public Interest (IROPI), the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the Natura 2000 site.

In order to undertake this assessment of significant effects, the guidance produced by the NPWS in 2009⁵ has been followed in order to:

- characterise the potential impacts to the qualifying interests of any Natura 2000 site, or sites, that may result from the quarrying operations at Rossmore;
- assess the likely significance of potential impacts on the qualifying interests of any Natura 2000 site or sites within the zone of influence of the quarry site; and
- assess the risk of an adverse effect on the integrity of the site or occurring to a qualifying interest feature for which the site is of European interest.

The methodology for the assessment of impacts is derived from the guidelines published by the CIEEM⁶. Impacts are characterised in terms of whether specific hazards emanating from the project have had or are likely to have significant effects on the integrity of a defined ecosystem and/or conservation status of individual habitats or species for which a site is of European interest, and on a relevant site as a whole.

Where under the assessment of potential hazards it has been identified significant effects as being certain, likely or uncertain further information is provided in order for the Competent Authority, in this case ABP, to make a determination in granting of any substitute consent.

2.3 Ascertaining the Threat to Site Integrity

The Competent Authority will be required to determine whether the existing quarrying operations at Rossmore has had an adverse effect, or is having an effect, or would adversely affect the integrity of any Natura 2000 site, or sites, in light of the conservation objectives for that particular site or sites. The integrity of a site is defined as:

“The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was designated/classified.”

Further to the above, an adverse effect on integrity can also be defined as one that is likely to prevent the site from making the same contribution to favourable conservation status for the relevant features as it did at the time of its designation.

⁵ NPWS (2009 revised February 2010). *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. Department of the Environment, Heritage and Local Government, Dublin.

⁶ Institute of Ecology and Environmental Management (2006). *Guidelines for Ecological Impact Assessment in the United Kingdom*.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location and Setting

The quarry operated by Kilsaran is located in the townlands of Rossmore and Barryscourt approximately 1.7km south of the village of Carrigtwohill and 13.5km east of Cork city centre, Co. Cork (**Figure 1**).

The application area for the substitute consent, including development not yet carried out at this site, covers a total of 29.4 hectares (ha) that comprises a limestone quarry, areas used for the storage of soils and overburden, aggregate processing areas, concrete batching plants and all associated infrastructure and facilities.

The surrounding landscape is characterised by Cork Harbour and the numerous islands, tidal estuaries, loughs and channels that make up Cork Harbour. The land-use consists predominantly of agricultural land with fields under arable production and permanent pasture but also includes a number of other quarries and golf courses. The city of Cork is the largest urban area with industrial and commercial development extending eastwards from the city along the N25 to Carrigtwohill with other smaller rural settlements and isolated farmsteads scattered along the roads and lanes throughout this area.

3.2 Outline Description of Project

There has been quarrying operations at Rossmore and Barryscourt since the 1940s. Planning approval for the extraction of sand and gravel was granted in 1981. Subsequent granting of planning permissions were made and consented and which should have been subject to the Appropriate Assessment process by the Competent Authority including:

- Planning Reference **S/99/3410**, granted on 26th July 2000, for the extension over 7.3ha and retention of the limestone quarry to include extraction below the level of the water table (proposed floor at -7mOD) and construction of a settlement pond and retention of an extension of quarry use over 2.4 ha. and the use of drilling and blasting to extract limestone (please refer to **Figures 2a, 2b and 2c**). Please note that as part of the planning permission, it was conditioned that a screening berm was to be enhanced along parts of the southern and western boundary of the quarry site including supplementary landscape planting and which did not form part of the original project;
- Planning Reference **S/99/3411**, granted on 26th July 2000, for an additional concrete batching plant with seven silos for the storage of materials, provision of a truck wash and retention of an existing processing plant including aggregate crushing and screening plant, concrete batching plant, concrete block plant and block yard, readymix mortar plant, bitmac plant and all associated infrastructure and structures including crushers, hoppers, silos, conveyors, conveyors rails, storage bins, storage bays, storage sheds, storage tanks, settlement ponds, retaining walls, workshop, ESB substation, weighbridge, offices staff canteen, two septic tanks all on 6.3ha (please refer to **Figures 3a, 3b and 3c**); and
- Planning Reference **03/4570**, granted on 12th August 2004, for the extension and retention of the quarry of 19.9ha and the deepening of the quarry floor to 40m below OD permitted under S/99/3410, the relocation of 38kv electricity supply poles on the south-eastern part of the site, and the retention of northern and southern quarry faces (0.9ha), and the restoration of the northern section of the site from the public

road to the production facilities (3.8ha) to its pre-quarrying landform (please refer to **Figures 4a, 4b and 4c**).

Under the requirements of Section 177E(2A), each of the above granted planning permissions, which subsequently require substitute consent, should be considered as individual projects each requiring an assessment to be made on the implications of these as a stand-alone project on the relevant Natura 2000 site(s).

4.0 NATURA 2000 SITES

There are three Natura 2000 sites within a 15km radius of the quarry at Rossmore and Barryscourt. These sites are listed **Table 1** and their locations in relation to the quarry site shown in **Figure 1**.

Table 1: Natura 2000 Sites within a 15km of the Quarry Site

Natura 2000 Site	Site Code	Location at Closest Point to Project Site
Great Island Channel SAC	001058	Adjoining to the west and south
Cork Harbour SPA	004030	Adjoining to the west and south
Blackwater River (Cork / Waterford) SAC	002170	14.4km north

4.1 Potential Zone of Influence of Project and Screening of Natura 2000 Sites

Based on the size and nature of the quarrying operations at Rossmore and Barryscourt it is considered that the maximum distance for which any of the individual project elements should be evaluated in terms of Natura 2000 sites is up to a maximum radius of 5km from the application site unless there are any potential source-pathway-receptor links between the quarry at Rossmore and any Natura 2000 site(s) outside this distance.

Based on the above, it is considered that the Blackwater River (Cork / Waterford) SAC can be screened out from any further assessment as this Natura 2000 site lies outside the potential zone of influence of the quarry at Rossmore and Barryscourt and that there are no source-pathway-receptor links between this quarry and this Natura 2000 site.

Given the proximity of the application site to both the Great Island SAC and the Cork Harbour SPA it is deemed that these sites are relevant and have been screened-in as part of this assessment.

4.2 Great Island Channel SAC

4.2.1 Site Description

The Great Island Channel was designated as a candidate SAC in January 2000. The SAC, covering 1,443.22 ha, comprises the north-eastern part of Cork Harbour. It includes the Great Island Channel, the intertidal areas between Fota Island and Little Island, and also the estuary of the Dungourney and Owennacurra Rivers as far as Midleton. The site is of ecological importance for its examples of intertidal mud and sand flats and Atlantic salt meadows of the estuarine type.

4.2.2 Qualifying Features

The Great Island Channel was selected as a SAC for the following habitat types listed under Annex I of the EU Habitats Directive:

- Mudflats and sandflats not covered by seawater at low tide; and
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*).

4.2.3 Conservation Objectives

The overarching conservation objective for the Great Island Channel SAC is to maintain or restore the favourable conservation condition of the Annex I habitats for which the SAC has been selected. Site specific conservation objectives have been produced which aim to

define favourable conservation condition for each of the qualifying Annex I habitats for which this site is of European importance⁷.

4.2.4 Site Vulnerabilities

The site vulnerabilities, including any key pressures or trends within and around the Great Island Channel SAC that have been identified as impacting upon the site, may be summarised as:

- agriculture:
 - grazing:
 - fertilisation.
- transportation and service corridors:
 - roads, paths and railroads:
 - roads, motorways.
- urbanisation, residential and commercial development:
 - urbanised areas, human habitation.
- biological resource use other than agriculture and forestry:
 - marine and freshwater aquaculture.
- invasive, other problematic species and genes:
 - invasive non-native species.
- natural system modifications:
 - human induced changes in hydraulic conditions:
 - landfill, land reclamation and drying out, general:
 - reclamation of land from sea, estuary or marsh.
- natural biotic and abiotic processes (without catastrophes):
 - biocenotic evolution, succession:
 - eutrophication (natural).

4.3 Cork Harbour SPA

4.3.1 Site Description

Cork Harbour was classified as a SPA in November 1994. Cork Harbour SPA is a large, sheltered bay system, with several river estuaries including Rivers Lee, Douglas, Owenboy and Owenacurra. The site comprises the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy Estuary, Whitegate Bay and the Rostellan inlet.

The SPA is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country.

4.3.2 Qualifying Interests

The Cork Harbour qualifies under Article 4 of the EC Directive on the Conservation of Wild Birds (2009/147/EC) (Birds Directive) as a SPA because it regularly supports populations of European importance including:

- over wintering:
 - Little Grebe (*Tachybaptus ruficollis*);
 - Great Crested Grebe (*Podiceps cristatus*);
 - Cormorant (*Phalacrocorax carbo*);
 - Grey Heron (*Ardea cinerea*);

⁷ NPWS (2014). *Conservation Objectives for Great Island Channel SAC 001058*. Generic Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- Shelduck (*Tadorna tadorna*);
- Wigeon (*Anas penelope*);
- Teal (*Anas crecca*);
- Pintail (*Anas acuta*);
- Shoveler (*Anas clypeata*);
- Red-breasted Merganser (*Mergus serrator*);
- Oystercatcher (*Haematopus ostralegus*);
- Golden Plover (*Pluvialis apricaria*);
- Grey Plover (*Pluvialis squatarola*);
- Lapwing (*Vanellus vanellus*);
- Dunlin (*Calidris alpina*);
- Black-tailed Godwit (*Limosa limosa*);
- Bar-tailed Godwit (*Limosa lapponica*);
- Curlew (*Numenius arquata*);
- Redshank (*Tringa totanus*);
- Black-headed Gull (*Chroicocephalus ridibundus*);
- Common Gull (*Larus canus*); and
- Lesser Black-backed Gull (*Larus fuscus*).
- breeding:
 - Common Tern (*Sterna hirundo*).

The site also qualifies under Article 4.2 as a wetland of international importance by regularly supporting significant populations of water birds.

4.3.3 Conservation Objectives

The overarching conservation objective for Cork Harbour SPA is to maintain or restore the favourable conservation status of the bird species of Special Conservation Interest for this SPA. Site specific conservation objectives have been produced which aim to define favourable conservation condition for each of the qualifying bird species for which this site is of European importance⁸.

4.3.4 Condition Assessment

The current condition status of based on the population trend only of the qualify bird species and contained within the Conservation Objectives Supporting Document⁹ is as following:

- | | |
|--------------------------|----------------------------|
| ● little grebe | favourable; |
| ● great crested grebe | unfavourable; |
| ● cormorant | high unfavourable; |
| ● grey heron | intermediate unfavourable; |
| ● shelduck | unfavourable; |
| ● wigeon | unfavourable; |
| ● teal | intermediate unfavourable; |
| ● pintail | highly unfavourable; |
| ● shoveler | highly unfavourable; |
| ● red-breasted merganser | highly unfavourable; |
| ● oystercatcher | intermediate unfavourable; |

⁸ NPWS (2014). *Conservation Objectives: Cork Harbour SPA 004030*. Generic Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

⁹ NPWS (2014). *Conservation Objectives Supporting Document: Cork Harbour SPA 004030*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

- golden plover favourable;
- grey plover highly unfavourable;
- lapwing highly unfavourable;
- dunlin unfavourable;
- black-tailed godwit favourable;
- bar-tailed godwit favourable;
- curlew unfavourable;
- redshank unfavourable;
- black-headed gull highly unfavourable;
- common gull highly unfavourable;
- lesser black-backed gull highly unfavourable;
- common tern not assessed.

4.3.5 Site Vulnerabilities

The site vulnerabilities, including any key pressures or trends within and around Cork Harbour SPA that have been identified as impacting upon the site, may be summarised as:

- agriculture:
 - fertilisation.
- transportation and service corridors:
 - roads, paths and railroads:
 - roads, motorways.
 - shipping lanes, ports, marine constructions:
 - port areas;
 - shipping lanes.
- urbanisation, residential and commercial development:
 - urbanised areas, human habitation:
 - dispersed habitation.
 - industrial or commercial areas.
- biological resource use other than agriculture and forestry:
 - marine and freshwater aquaculture.
 - fishing and harvesting aquatic resources:
 - leisure fishing.
- human intrusions and disturbance:
 - outdoor sports and leisure activities, recreational activities:
 - nautical sports;
 - walking, horse-riding and non-motorised vehicles.
- pollution:
 - pollution to surface waters (limnic, terrestrial, marine and brackish):
 - diffuse pollution to surface waters due to transport and infrastructure.

5.0 ASSESSMENT OF EFFECTS OF PLANNING REFERENCE S/99/3410

5.1 Hazard Identification and Potential Exposure (Screening Assessment)

This section identifies the potential hazards (the pathways) for which the quarrying operations consented under Planning Reference **S/99/3410** could have adversely affected or is likely to adversely affect the interest features of the relevant Natura 2000 sites and whether the exposure to a particular hazard is likely to have had, is having or is likely to have a significant effect for any development not yet carried out as part of this permission.

The main purpose of this stage is to screen out those aspects of this individual project element that can be considered not likely to have a significant effect, as well as those features of the relevant Natura 2000 sites that are not likely to be significantly affected from the exposure to a potential hazard and/or pathway. This is essentially a risk assessment to decide whether a more detailed assessment is required, and if so, the scope of the issues and features to be addressed. If it cannot be concluded with confidence that adverse effects are unlikely, then under the precautionary principle, it is assumed that any particular issue requires more detailed consideration.

Significant effects are defined in terms of changes to the baseline conditions of one or more of the qualifying interest features for which Great Island Channel SAC and Cork Harbour SPA were designated / classified, whether negative or positive, and which are likely to be directly and indirectly attributable to the quarrying operations at Rossmore and Barryscourt, as a stand-alone project.

A review of the potential hazards, based on the development proposals as consented under Planning Reference **S/99/3410** and the on the vulnerabilities of the Great Island Channel SAC and Cork Harbour SPA, that might affect the interest features for which these sites were designated / classified and the potential exposure of the interest features from any of the development proposals at the quarry at Rossmore and Barryscourt are summarised in **Table 2**.

Table 2: Identification of Potential Hazards from Planning Reference S/99/3410

Potential Hazard	Great Island Channel SAC	Cork Harbour SPA
Direct habitat loss, damage and disturbance	√	√
Effects of habitat loss, damage, fragmentation and disturbance to qualifying species	-	√
Disturbance (i.e. noise, vibration, visual disturbance)	-	√
Changes in air quality -dust deposition	√	√
Changes in air quality –traffic emissions	√	√
Changes in water quality	√	√

A summary of the screening assessment of the identified hazards and the likelihood of any exposure and significant effects of the quarrying operations associated with Planning Reference **S/99/3410**, including any development not yet carried out, from such hazards is provided in **Table 3**.

Table 3: Screening Assessment of Hazards and Likely Significant Effects of the Planning Reference S/99/3410

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
<p>Direct habitat loss, damage and disturbance and the effects of habitat loss, damage and fragmentation on qualifying species</p>	<p>Habitat loss involves the direct destruction or physical take-up of vegetation within a Natura 2000 site that would directly or indirectly affect the integrity of the site or the individual qualifying habitats and/or species for which a site is of European importance. The loss of habitats lying adjacent and outside a European site could also have a direct impact on individual populations and assemblages of qualifying species, or indirectly by increasing levels of stress placed upon populations of some species through negative edge effects (e.g. predation pressure) and dispersal problems that can become increasingly severe as surrounding habitat is lost and remaining habitat is divided into smaller units.</p>	<p>The application site for Planning Reference S/99/3410 covered 9.7ha that included for the retention of an existing limestone quarry (2.4ha) and the proposed extension of the said quarry by 7.3ha in an area comprised of two agricultural fields under permanent pasture bounded by hedgerows.</p> <p>Great Island Channel SAC</p> <p>The application site was outside the defined boundary of the Great Island Channel SAC. Therefore the planning application for the retention and extension of the limestone quarry has not and will not result in the direct loss of any habitat within the defined boundaries of the Great Island Channel SAC.</p> <p>The land within the application site comprised of an existing quarry (2.4ha) and two fields under agricultural improved grassland separated by hedgerows (7.3ha). The application site did not support any qualifying Annex I habitat for which the Great Island Channel SAC was designated and which could be considered to contribute to the qualifying habitats within this</p>	<p>None</p>	<p>No existing or likely exposure to hazard and no effect identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC.</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>SAC.</p> <p>The quarry operations associated with Planning Reference S/99/3410 have not and will not, as part of any development not carried out, result in the direct loss of any Annex I qualifying habitats for which the Great Island Channel SAC is of European importance.</p>		
		<p><u>Cork Harbour SPA</u></p> <p>The application site was outside the defined boundary of the Cork Harbour SPA and the retention and extension of the aggregate processing plant has not and will not result in the direct loss of any habitat within the defined boundaries of this SPA.</p> <p>The lands lost to quarrying are not likely to have supported breeding common tern, as these are not likely to have been favoured by this species and unsuitable for breeding purposes.</p> <p>No information has been made available on the potential usage and/or importance of the two agricultural fields lost to quarrying as part of project for any particular over-wintering qualifying bird species for which the Cork Harbour SPA is of European importance prior to the onset of quarrying operations. In the absence of any survey data, it is not possible to quantify the importance of</p>	<p>None</p>	<p>No existing or likely exposure to hazard and no effect identified or predicted on any of the qualifying bird species in light of their conservation objectives or on the integrity of the Cork Harbour SPA.</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>this site, or the immediately surrounding area for any of the qualifying species. However, given the small area lost and the widespread availability of alternative habitat around Cork Harbour is not likely that the loss of two agricultural fields to quarrying operations associated with Planning Reference S/99/3410 were critical or important for any of the qualifying birds species or in maintaining the overall population status of any individual over-wintering species.</p> <p>The continuation of quarrying operations associated with Planning Reference S/99/3410, including any development not carried out, will not result in any direct loss, damage or disturbance to any habitat within the defined boundaries of the SPA, or would result in any loss, damage or disturbance of habitat outside the defined boundaries of the SPA with the potential to be used by any of the qualifying bird species.</p>		
<p>Disturbance (including noise, vibration, visual disturbance)</p>	<p>Increases in human disturbance including noise, vibration and visual disturbance from human activity can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.</p> <p>The response of individual species to</p>	<p>The extension of quarrying operations had the potential to generate noise, vibration and visual disturbance.</p> <p>The main sources of disturbance was expected to be from the drilling, blasting and crushing of rock, the loading of materials and from vehicle movements used in the haulage of rock to the</p>		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>increased levels of human disturbance will depend upon a number of factors including the sensitivity, reproductive status, previous exposure to human disturbance, behaviour during the event, species tolerance to disturbance, location in relation to the source, availability of alternative nearby habitat, and environmental factors (i.e. topography, vegetation and atmospheric conditions which can influence noise levels).</p>	<p>processing plant.</p>		
	<p>Noise It is generally accepted that for noise of 70dB (or greater) and visual disturbance certain species or groups of species can be impacted upon up to a distance of 300m from its source for high level and discontinuous disturbance with these distances reducing for low level and/or continuous disturbance levels. Where noise levels are below 80dB L_{Amax} and 55dB $L_{Aeq,1hr}$ measured at a nest site it is considered unlikely that it will have an adverse impact on designated species (LAQMTG 09¹⁰).</p>	<p>Cork Harbour SPA A noise assessment undertaken as part of the EIA found that the extension of quarrying operations was expected to increase ambient noise levels from between 40 to 42dB $L_{Aeq,1hr}$ to 45 to 50 dB $L_{Aeq,1hr}$ up to a distance of 240m. No assessment was made in respect of noise levels on the Cork Harbour SPA but it is likely that the similar levels of noise would be expected as for the human receptors. A noise monitoring programme implemented at the quarry, conditioned by the planning consent, showed that the site was in compliance the noise</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on any of the qualifying bird species in light of their conservation objectives or on the integrity of the Cork Harbour SPA.</p>

¹⁰ Defra (2009). *Local Air Quality Management Technical Guidance*. LAQMTG(09). Defra, London.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>levels conditioned at 55dB daytime and 45dB night-time at two locations on the northern side of the quarry site to assess noise levels on human receptors only. No monitoring was undertaken along the southern and western boundaries of the site in the location of the SPA therefore it is not possible to quantify what noise levels would have been and whether there was likely a significant effect on birds using the adjacent estuary. However, as part of this project the screening berm appears to have been re-enforced along the western and southern boundaries of the quarry which would have attenuated noise levels within Rossmore Bay and it is highly unlikely that noise levels within the defined boundaries of the SPA would have been significantly elevated over and above the noise levels recorded at the human receptors to the north of the quarry site.</p> <p>Taking into consideration noise monitoring on the north side of the quarry and the noise attenuation effect of the screening berms along the southern and western boundaries of the quarry site no measureable effects are predicted to have occurred or are likely to occur on the behaviour of any qualifying bird species foraging or</p>		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		roosting within the SPA or from using areas of adjacent land from the quarry operations associated with Planning Reference S/99/3410.		
	<p><u>Visual Disturbance</u> Visual disturbance from human activity can include the movement of people, machinery and plant during both the construction phase can disturb birds, through causing increased anxiety and flight due to perceived danger. The response to visual disturbance is variable between species, threat type and habituation to human contact. For most bird species the escape flight distance are in the range of 50 to 500m with most being below 300m.</p>	<p><u>Cork Harbour SPA</u> The quarry is below ground level and is not visible from the intertidal habitats from the perspective of birds using these areas for foraging. The re-enforcement of the screening berms along the southern and western boundaries of the quarry site, as conditioned under the planning permission granted, further reduced the visibility of the quarry from the estuary. The quarry is therefore not predicted to have had or is likely to have any effect on any bird species from visual disturbance from operations associated with Planning Reference S/99/3410, or from any development not yet carried out at the quarry.</p>	None	No existing or likely exposure to hazard and effects identified or predicted on any of the qualifying bird species in light of their conservation objectives or on the integrity of the Cork Harbour SPA.
	<p><u>Vibration</u> Any blasting operations have the potential to generate vibration. Studies into the effects of blasting on nesting falcons indicate that quarry blasting initiated flight up to 500m from the point source of the blast. The maximum distances at which</p>	<p><u>Cork Harbour SPA</u> All blasting operations have been and continue to be undertaken on a needs only basis. From 1994 to 1999 a total of 37 blasts were undertaken. Between 1999 and 2002 a total of 72 blasts were carried out. Blast measurements taken at the quarry</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on any of the qualifying bird species in light of their conservation objectives or on the

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>vibration from other operational sources may be just perceptible to humans is between 30 to 50m from its source and this is likely to be similar for most groups of species.</p> <p>Whilst it is generally recognised vibration can disrupt wildlife, the effects of vibration are usually masked by other disturbance factors including human visual disturbance and noise. It is likely that any species sensitive to increased noise will also be sensitive to vibration whilst less sensitive species to noise are likely to tolerate levels of vibration.</p>	<p>site show that from 2000 to 2002 that the mean longitudinal Peak Particle Velocity (PPV) of any groundborne vibration ranged from 2.71mm/sec to 3.31mm/sec. At these levels and the frequency blasting it is considered not likely that any flight initiated by a blast event would affect the behaviour of any over-wintering bird species within the zone of influence of the quarry (up to 500m). All birds would be expected to return very shortly after any such blasting event.</p> <p>None of the key common tern colonies that were of and continue to be of importance are located in close proximity to the quarry (i.e. Martello Tower and Deep Water Port) and are well outside the potential zone of influence of where any blasting event is likely to affect nesting birds and cause abandonment of any nest with eggs or young.</p> <p>No measureable effects identified or predicted on any of the qualifying bird species as a direct result of any vibration caused from blasting and/or other quarrying operations associated Planning Reference S/99/3410, or from any development not yet carried out at the quarry.</p>		<p>integrity of the Cork Harbour SPA.</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
Air Quality - Dust	<p>Fugitive dust can have adverse effects upon vegetation restricting photosynthesis, respiration and transpiration. Furthermore it can lead to phytotoxic gaseous pollutants penetrating the plants. The overall effect can be a decline in plant productivity, which may then have indirect effects on the quality of the affected habitats and associated fauna.</p> <p>There is limited research into dust particle dispersion however, literature on the mineral sector suggests that the most sensitive species area to be affected by dust deposition at levels above 1000 mg/m²/day^{11 12} which is five times greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans. The amounts of dust deposited and its effects are dependent upon weather conditions as in wet weather less dust will be generated and that which has been deposited upon foliage is more likely to be washed off.</p> <p>Most fugitive dust generated through the</p>	<p>The extension of quarrying operations had the potential to generate dust through the stripping of topsoils / overburden, drilling, blasting and crushing of rock, and through the loading and haulage of materials.</p> <p>Dust deposition monitoring undertaken at the quarry prior to any extension indicated dust generated from quarrying operations ranged from 30 to 306 mg/m²/day.</p> <p>The stripping of topsoils and overburden was undertaken progressively and used to construct and re-enforce existing screening berms around the quarry site that have subsequently become vegetated through natural re-colonisation and supplementary landscape planting.</p> <p>Dust deposition monitoring undertaken on a monthly based, conditioned by planning consent, would indicate dust levels generated from the quarrying operations were below the conditioned limits and in accordance with DoEHLG guidelines for dust deposition at</p>		

¹¹ Farmer, A.M. (1993). *The Effects of Dust on Vegetation – A Review*. Environmental Pollution Vol.79, Issue 1, Pages 63-75.

¹² Highways Agency (2007). Design Manual for Roads and Bridges Volume 11, Section 3, Part 1 HA207/7 Air Quality. Highways Agency.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>quarrying operations is likely to be typically deposited within 100-200m of its source; the greatest proportion of which comprising larger particles (greater than 30 microns) deposited within 100m¹³ of the site.</p>	<p>extraction sites of 350mg/m²/day. In-built measures to minimise the generation of dust from quarrying operations have been and continue to be implemented as part of the quarrying operations including standard dust suppression techniques to damp down areas during dry weather and enforcement of speed limits.</p> <p>Great Island Channel SAC The qualifying Annex I habitats for which the SAC is of European importance including Mudflats and sandflats not covered by seawater at low tide and Atlantic salt meadows (<i>Glaucos-Puccinellietalia maritimae</i>) are not considered sensitive to low levels of dust deposition. Based on the dust monitoring results and the limited extent of any dust deposition on the SAC from quarrying operations it is considered not likely that any dust deposition within the Great Island Channel SAC have been or will be at levels or be of a reactive material where any qualifying habitat or individual component species of flora have been or are likely to be affected.</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC</p>

¹³ Department of the Environment (1995). *The Environmental Effects of Dust from Surface Mineral Workings. Volume 1: Summary Report & Best Practice Guides.* HMSO.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>No measureable effects have been identified or are predicted or from any dust deposition from quarrying operations associated with Planning Reference S/99/3410, or from any development not yet carried out at the quarry.</p> <p><u>Cork Harbour SPA</u></p> <p>Any dust generated from the operation of the quarry is considered to be inert and will not result in any chemical reactions or toxicological effects on the intertidal habitats or on the prey organisms of the qualifying bird species supported by these habitats (i.e. fish, benthic macroinvertebrates, molluscs, bivalves).</p> <p>No measureable effects have been identified or are predicted or from any dust deposition from quarrying operations associated Planning Reference S/99/3410, or from any development not yet carried out at the quarry.</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on the any of the qualifying bird species or on the integrity of Cork Harbour SPA.
Changes in air quality - traffic emissions	<p>The pollutants with the potential to have the most significant ecological impact from the emissions to air from traffic would be from NOx and oxides of sulphur, mainly SO₂.</p> <p>High rates of nitrogen deposition upon</p>	<p>The operation of the quarry was anticipated to generate 124 heavy duty vehicle (HDV) movements in and out of the site per day. The anticipated additional traffic generated was expected to represent 3% of the total volume of HDV movement s on the N25</p>		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>sensitive ecosystems can increase the eutrophication of soils and water that can have a detrimental effect on species-rich plant communities and semi-natural habitats that are often associated with a low nutrient status. Eutrophication can decrease species diversity and the dominant plant species can change to those better to respond to increased nitrogen levels.</p>	<p>and 11% on the R624.</p>		
	<p>Acid deposition, whether from SO₂, NO_x or ammonia formed by the reaction of SO₂ and NO_x, can affect habitats by changing the species composition of plants and their associated communities of fauna. Acid deposition can occur through both wet and dry deposition.</p>	<p>Although the HDV movements along the R624 were anticipated to exceed the 5% NRA threshold, these guidelines on assessing the significance of changes to traffic flows and emissions to air on designated sites were published much later than the original traffic assessment and the quarrying operations for which Planning Reference S/99/3410 relates were carried out. In addition the quarrying operations were also carried out before the setting of air quality standards in respect to SO₂, and NO_x under SI. No. 271/2002 - Air Quality Standards Regulations 2002. As such there was not a requirement to assess the implications of traffic emissions on designated sites at the time of the application under Planning Reference S/99/3410.</p>		
	<p>Under National Roads Authority guidelines¹⁴ detailed consideration need only to be given to emission to air where there is a significant change to traffic flows (>5%) and the designated site lies within 200m of the road centre line.</p>	<p>At the time of the planning application ambient concentrations of NO_x and SO₂ at the quarry were likely to have been similar to the levels recorded in rural locations around Cork Harbour that did not exceed the critical levels for SO₂ of 20 µg/m³ per annum and for NO_x of 30</p>		

¹⁴ National Roads Authority (2006). *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*. National Road Authority.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>$\mu\text{g}/\text{m}^3$ per annum for the protection of ecosystems as defined under the National Air Quality Standards (NAQS)¹⁵. Even though the quarrying operations were expected to significantly increase traffic flows along the R624 there is no quantifiable data to indicate that the contribution of HDVs generated through the transportation of aggregates had an impact on air quality sufficiently so that there would be any measureable impacts on the deposition rates of NO_x and SO₂ within Rossmore Bay.</p> <p>From 1999 to the implementation of air quality standards in 2002 there was substantial increase in overall traffic flows on both on the N25 and R625 with the overall effect that the percentage contribution of HDVs generated through the transportation of aggregates decreased over this period up to the time Planning Reference 03/4570 was submitted (please refer to Section 8).</p> <p>Based on the above it is considered not likely that the contribution of traffic emissions from any additional traffic generated from the quarrying operations</p>		

¹⁵ Air Quality Standards Regulations 2011 (SI 180 of 2011).

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>associated with Planning Reference S/99/3410 is likely to have resulted in any significant changes in environmental baseline conditions or exceedance of any critical levels where ecosystems would be impacted upon.</p>		
		<p><u>Great Island Channel SAC</u> No measureable effects have been identified or are predicted to have had or is likely to have resulted in any significant changes in air quality from traffic emissions from quarrying operations associated Planning Reference S/99/3410, or from any development not yet carried at the quarry in the deposition rates of NOx and SO₂ or in the eutrophication and acidification of as to directly or indirectly affect any qualifying Annex I habitats for which the Great Island Channel SAC is of European importance.</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC
		<p><u>Cork Harbour SPA</u> No measureable effects have been identified or are predicted to have had or is likely to have resulted in any significant changes in air quality from traffic emissions from quarrying operations associated with Planning Reference S/99/3410, or from any</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on the any of the qualifying bird species or on the integrity of Cork Harbour SPA.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>development not yet carried at the quarry in the deposition rates of NO_x and SO₂ or in the eutrophication and acidification of as to directly or indirectly affect the wetland habitats within the defined boundaries of the Cork Harbour SPA and any individual qualifying bird species for which this site is of European importance.</p>		
<p>Changes in water quality</p>	<p>Surface water discharges and diffuse pollution from surface water run-off can contribute to a reduction in water quality through a net contribution of nutrients or contamination from a wide range of organic and inorganic compounds.</p> <p>Contamination of groundwater can occur through the direct recharge of groundwaters close to the ground surface or of deeper aquifers through percolation and other hydrological pathways.</p> <p>For transitional and coastal waters, the status of an individual waterbody is assessed using the Environmental Protection Agency's (EPA) Trophic Status Assessment Scheme (TSAS) required for the Urban Waste Water Treatment Directive and Nitrates Directive. This scheme compares the compliance of individual parameters against a set of criteria indicative of</p>	<p>At the time of this planning application spring water emanating from the base of the quarry face was channelled into a sump in the quarry floor before being discharged into the estuary.</p> <p>Water quality data indicated that wastewater emanating from the quarry sump consisted of waters from the mixing of highly saline water from the estuary and freshwater from groundwater flows that was generally good quality with no organic contamination from quarrying operations.</p> <p>It was identified that the deepening of the quarry to -7mOD had the potential to create high levels of suspended solids. Therefore as part of this project, it was proposed that water would be pumped from the sump in the quarry floor to a concrete lined stilling pond in the southeast part of the quarry before</p>		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>trophic state. These include dissolved inorganic nitrogen (DIN) and molybdate reactive phosphorus (MRP).</p>	<p>being discharged via a hydrocarbon interceptor to the estuary. It is unsure if this development took place, or as is likely that a pipe was installed along the access track/lane running along the estuary foreshore (above the high water mark) to allow water to be discharged into a surface water lagoon located in a worked out sand and gravel pit to the southeast of the quarry site at Rossmore B. The surface water lagoon at Rossmore B did not have and does not have any direct discharge to the Rossmore Bay. As no date is available when this discharge to the worked out sand and gravel pit may have been implemented no further assessment can be carried out in respect to Planning Reference S/99/3410 but is covered in the assessment carried out for Planning Reference 03/4570 later in this document.</p> <p>However, before the discharge to Rossmore B, in emergency situations and in exceptional circumstances, i.e. heavy and prolonged rainfall, high groundwater levels, it is believed that Readymix (South West) Ltd the then owners and operators of the Quarry at Rossmore and subsequently by Cemex (ROI) Ltd, did allow the pumping of excess groundwater from the quarry</p>		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>directly to estuary to ensure the quarry could be safely worked. Cemex (ROI) Ltd continued with the practice until Kilsaran, the now owners and operators of the quarry at Rossmore, instigated a review of quarry procedures at this site and have subsequently barred all such discharges from taking place.</p> <p>In-built measures to minimise the risk of groundwater pollution occurring from quarrying operations and implemented at this site and which continue to this date include:</p> <ul style="list-style-type: none"> • all refuelling of vehicles and plant take place in an existing dedicated hard-standing area within the existing quarry site; • no petroleum-based products (fuels, lubricating oils, waste oils, etc.) or chemicals stored within the operational area of the quarry; • all fuel, oils, lubricants etc are stored in appropriate bunded storage areas; • all plant used as part of the quarrying operations regularly maintained and inspected daily for leaks of fuels, lubricating oil or other contaminating liquids; and • spill kits are kept on-site to stop the migration of any accidental 		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>spillages, should they occur.</p> <p>From 1995 to 2003, water quality in the Lough Mahon that includes Rossmore Bay was classified by the EPA as 'eutrophic' with low levels of dissolved oxygen and failing on nutrient levels. Over this timeframe the transitional waters were showing signs of recovery in respect of dissolved oxygen and in respect of DIN¹⁶.</p> <p>The quarry lies above the Midleton 2 Groundwater Body (GWB) as characterised by the GSI (Groundwater Web Mapping) for the implementation of the Water Framework Directive (WFD) (2000/60/EC). The Midleton 2 GWB was and continues to be classified as being of 'poor' groundwater quality status under the WFD.</p> <p>The cessation of the direct discharge to the estuary, except in emergency and/or exceptional circumstances, is not likely to have had any measureable impact positive and/or negative on water quality in the Rossmore Bay based on the nature and quality of the wastewaters consisting of groundwater and incidental</p>		

¹⁶ Toner, P., Bowman, J., Clabby, K., Lucey, J., McGarrigle, M., Concannon, C., Cunningham, P., Delaney, J., O'Boyle, S., MacCarthaigh, M., Craig, M., and Quinn, R. (2005). *Water Quality in Ireland 2001 to 2003*. Environmental Protection Agency, Johnstown Castle.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>rainfall only that were historically being discharged from the quarry site based on 1999 analysis of water quality in the quarry sump (Appendix A).</p>		
		<p><u>Great Island Channel SAC</u> No measureable effects have been identified or are predicted to have had or is likely to have resulted in changes in water quality in in Lough Mahon and Rossmore Bay as to affect the extent and distribution of the qualifying Annex I habitats including mudflats and sandflats not covered by seawater at low tide and Atlantic salt meadows (<i>Glaucao-Puccinellietalia maritima</i>), or on the functionality of the intertidal ecosystem from quarrying operations associated Planning Reference S/99/3410.</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC.
		<p><u>Cork Harbour SPA</u> No measureable effects have been identified or are predicted to have had or is likely to have resulted in changes in Lough Mahon and Rossmore Bay as to affect, directly or indirectly, the over-wintering or breeding status of any of the qualifying bird species from quarrying operations associated Planning Reference S/99/3410.</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on the any of the qualifying bird species or on the integrity of Cork Harbour SPA.

5.2 Assessment of Likely Significant Effects of Planning Reference S/99/3410

Based on the screening of potential hazards outlined in **Table 3** above, no measureable effects on the Great Island Channel SAC or on any of its qualifying habitats, or on the Cork Harbour SPA and any of its qualifying birds, for which these sites have been designated / classified respectively as being of European importance, have been identified as having occurred or which are occurring or which can reasonably be expected to occur from the quarrying operations associated with Planning Reference **S/99/3410**, including any development not yet carried out, as a stand-alone project. A summary of the screening assessment findings are presented in **Table 4**.

It is therefore considered that no further assessment is required for the quarrying operations associated with Planning Reference **S/99/3410**, including any development not yet carried out, as a stand-alone project on the Great Island Channel SAC and on Cork Harbour SPA.

Table 4: Summary of Screening Assessment Findings

Qualifying Features	No Likely Significant Effects	Significant Effects Uncertain	Significant Effects Likely
Great Island Channel SAC			
Mudflats and sandflats not covered by seawater at low tide	√		
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	√		
Cork Harbour SPA			
Overwintering:			
Little Grebe (<i>Tachybaptus ruficollis</i>)	√		
Great Crested Grebe (<i>Podiceps cristatus</i>);	√		
Cormorant (<i>Phalacrocorax carbo</i>)	√		
Grey Heron (<i>Ardea cinerea</i>)	√		
Shelduck (<i>Tadorna tadorna</i>)	√		
Wigeon (<i>Anas penelope</i>)	√		
Teal (<i>Anas crecca</i>)	√		
Pintail (<i>Anas acuta</i>)	√		
Shoveler (<i>Anas clypeata</i>)	√		
Red-breasted Merganser (<i>Mergus serrator</i>)	√		
Oystercatcher (<i>Haematopus ostralegus</i>)	√		
Golden Plover (<i>Pluvialis apricaria</i>)	√		
Grey Plover (<i>Pluvialis squatarola</i>)	√		
Lapwing (<i>Vanellus vanellus</i>)	√		
Dunlin (<i>Calidris alpina</i>)	√		
Black-tailed Godwit (<i>Limosa limosa</i>)	√		
Bar-tailed Godwit (<i>Limosa lapponica</i>)	√		
Curlew (<i>Numenius arquata</i>)	√		
Redshank (<i>Tringa totanus</i>)	√		
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	√		
Common Gull (<i>Larus canus</i>)	√		
Lesser Black-backed Gull (<i>Larus fuscus</i>)	√		
Breeding:			
Common Tern (<i>Sterna hirundo</i>)	√		
Wetlands	√		

6.0 ASSESSMENT OF EFFECTS OF PLANNING REFERENCE S/99/3411

6.1 Hazard Identification and Potential Exposure (Screening Assessment)

This section identifies the potential hazards (the pathways) for which the retention and extension of the processing plant consented under Planning Reference **S/99/3411** could have adversely affected or is likely to adversely affect the interest features of the relevant Natura 2000 sites and whether the exposure to a particular hazard is likely to have had, is having or is likely to have a significant effect.

The main purpose of this stage is to screen out those aspects of this individual project element that can be considered not likely to have a significant effect, as well as those features of the relevant Natura 2000 sites that are not likely to be significantly affected from the exposure to a potential hazard and/or pathway. This is essentially a risk assessment to decide whether a more detailed assessment is required, and if so, the scope of the issues and features to be addressed. If it cannot be concluded with confidence that adverse effects are unlikely, then under the precautionary principle, it is assumed that any particular issue requires more detailed consideration.

Significant effects are defined in terms of changes to the baseline conditions of one or more of the qualifying interest features for which Great Island Channel SAC and Cork Harbour SPA were designated / classified, whether negative or positive, and which are likely to be directly and indirectly attributable to the retention and extension of the processing plant at the quarry at Rossmore and Barryscourt, as a stand-alone project.

A review of the potential hazards, based on the development proposals as consented under Planning Reference **S/99/3411** and the on the vulnerabilities of the Great Island Channel SAC and Cork Harbour SPA, that might affect the interest features of for which these sites were designated / classified and the potential exposure of the interest features from any of the development proposals at the quarry at Rossmore and Barryscourt are summarised in **Table 5**.

Table 5: Identification of Potential Hazards from Planning Reference S/99/3411

Potential Hazard	Great Island Channel SAC	Cork Harbour SPA
Direct habitat loss, damage and disturbance	√	√
Effects of habitat loss, damage, fragmentation and disturbance to qualifying species	-	√
Disturbance (i.e. noise, vibration, visual disturbance)	-	√
Changes in air quality - dust deposition	√	√
Changes in air quality – traffic emissions	√	√
Changes in air quality – stack emissions	√	√
Changes in water quality	√	√

A summary of the screening assessment of the identified hazards and the likelihood of any exposure and significant effects of the retention and extension of the processing plant associated with Planning Reference **S/99/3411** from such hazards is provided in **Table 6**.

Table 6: Screening Assessment of Hazards and Likely Significant Effects of the Planning Reference S/99/3411

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
<p>Direct habitat loss, damage and disturbance and the effects of habitat loss, damage and fragmentation on qualifying species</p>	<p>Habitat loss involves the direct destruction or physical take-up of vegetation within a Natura 2000 site that would directly or indirectly affect the integrity of the site or the individual qualifying habitats and/or species for which a site is of European importance. The loss of habitats lying adjacent and outside a European site could also have a direct impact on individual populations and assemblages of qualifying species, or indirectly by increasing levels of stress placed upon populations of some species through negative edge effects (e.g. predation pressure) and dispersal problems that can become increasingly severe as surrounding habitat is lost and remaining habitat is divided into smaller units.</p>	<p>The application site for Planning Reference S/99/3411 covered approximately 6.3a that included the retention and extension of the aggregate processing plant (aggregate crushing / screening, concrete batching, concrete block making, readymix mortar production and asphalt macadam plant) within the existing quarry site.</p> <p>Great Island Channel SAC</p> <p>The red line application boundary submitted as part of the planning application in July 1999 (prior to the Great Island Channel SAC being designated as a candidate SAC / proposed Site of Community Interest (SCI) in January 2000) crosses into the defined boundary of this Natura 2000 site based on the NPWS SAC GIS dataset. This would show that 0.18ha or 0.01% of total area of SAC was affected by the project.</p> <p>However, there appears to be a discrepancy in the Natura 2000 site boundary at this location that may be due to the NPWS mapped GIS datasets having been based on old six inch to one mile maps. The boundary of the</p>	<p>None</p>	<p>Exposure to hazard through the retention and extension of the aggregate processing plant extending into defined boundary of SPA but no effects identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC</p>

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
		<p>SAC should be the high water mark which based on modern 1:2,500 Ordnance Survey Ireland maps shows this line outside the extent of the red line application site boundary.</p> <p>Notwithstanding the above, based on the NPWS GIS datasets, the application site crossed into the defined boundary of the Great Island Channel SAC and has to be considered in this context.</p> <p>Based on 1995 aerial photographs, the area of SAC lying within the application site appears to show that this area already largely formed part of the active quarry site with the exception of some scrub and which did not support any Annex I habitats, as cited for the SAC, including: Mudflats and sandflats not covered by seawater at high tide; and Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (please refer to Figure 3C).</p> <p>The retention and extension of the aggregate processing plant (aggregate crushing / screening, concrete batching, concrete block making, readymix mortar production and asphalt macadam plant) within the existing quarry site therefore did not result in any direct loss, damage and/or disturbance of any Annex I habitats or has resulted in any changes</p>		

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
		<p>in the habitats that were present at the time the SAC was designated.</p> <p>The area of 0.24ha potentially disturbed and/or damaged within the defined boundary of the Great Island Channel SAC has not had or is likely to have any significant effects on the overall integrity of this Natura 2000 site, in light of the conservation objectives for this site.</p>		
		<p>Cork Harbour SPA</p> <p>The red line application boundary includes some 0.18ha within the defined boundary of the Cork Harbour SPA (<0.01% of total area of SPA).</p> <p>However, as detailed previously, this discrepancy may be due to the NPWS mapped data using old six inch maps and which show the quarry site outside the defined SPA boundary.</p> <p>Aggregate processing at the quarry preceded the classification of the Cork Harbour SPA in 1994 and backed up by the 1995 aerial photograph (Figure 3C). As such the application site was already stripped of any habitats with the potential to be used by any of the qualifying birds for which SPA is of European importance. Therefore it is considered not likely that the retention of the processing plant at the quarry associated with Planning Reference</p>	<p>None</p>	<p>Exposure to hazard through the retention and extension of the aggregate processing plant extending into the defined boundary of SPA but no measureable effects identified or predicted on any of the qualifying bird species in light of their conservation objectives or on the integrity of the Cork Harbour SPA.</p>

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
Disturbance (including noise, vibration, visual disturbance)	<p>Increases in human disturbance including noise, vibration and visual disturbance from human activity can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.</p> <p>The response of individual species to increased levels of human disturbance will depend upon a number of factors including the sensitivity, reproductive status, previous exposure to human disturbance, behaviour during the event, species tolerance to disturbance, location in relation to the source, availability of alternative nearby habitat, and environmental factors (i.e. topography, vegetation and atmospheric conditions which can influence noise levels).</p>	<p>S/99/3411 has had or is likely to have any measureable effects on the local population status and in light of the conservation objectives for any of the qualifying bird species.</p> <p>The operation of all retained processing plant and from the additional concrete batching plant had the potential to generate noise and visual disturbance.</p>		
	<p>Noise</p> <p>It is generally accepted that for noise of 70dB (or greater) and visual disturbance certain species or groups of species can</p>	<p>Cork Harbour SPA</p> <p>A noise assessment undertaken as part of the EIA found that the addition of the new concrete batching plant was</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on any of

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
	<p>be impacted upon up to a distance of up to 300m from its source for high level and discontinuous disturbance with these distances reducing for low level and/or continuous disturbance levels. Where noise levels are below 80dB L_{Amax} and 55dB $L_{Aeq,1hr}$ measured at a nest site it is considered unlikely that it will have an adverse impact on designated species (LAQMTG 09¹⁷).</p>	<p>expected to generate noise levels ranging from 37 to 42 dB $L_{Aeq,1hr}$ with the total noise generated by all the plant ranging from 44 to 51dB $L_{Aeq,1hr}$ up to a distance of 320m. No assessment was made in respect of noise levels on the Cork Harbour SPA but it is likely that the similar levels of noise would be expected as for the human receptors. A noise monitoring programme implemented at the quarry, conditioned by planning consent has been undertaken at two locations on the northern side of the quarry site to assess noise levels on human receptors only. The noise monitoring at these locations would indicate that noise levels generated by the quarry and associated infrastructure at these locations are below 55dB, in accordance with the expected levels in the EIA. However, no monitoring of noise levels has historically been undertaken along the boundary of the quarry site adjacent to Cork Harbour SPA. In April 2014, SLR undertook noise monitoring at locations on the southern and western boundaries of the quarry</p>		<p>the qualifying bird species in light of their conservation objectives or on the integrity of the Cork Harbour SPA.</p>

¹⁷ Defra (2009). *Local Air Quality Management Technical Guidance*. LAQMTG(09). Defra, London.

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
		<p>site lying adjacent the Cork Harbour SPA (Noise Monitoring Report presented at Appendix B).</p> <p>The results of this noise monitoring would indicate that generally noise levels generated from all quarrying operations including the processing plant are below 55dB and therefore at levels where it is not likely noise levels would affect birds using the adjacent intertidal habitats. However, at the monitoring location adjacent to the current concrete batching plant (Location 2) the noise levels recorded were at 59dB $L_{Aeq,1hr}$ and these elevated levels are directly attributable to the operation of this plant, approved under Planning Reference S/99/3411 and which was relocated under Planning Reference S/01/6604. Although noise levels are over 55dB it is considered given the history of the operation of the processing plant at this site that any over-wintering birds using this part of the Cork Harbour SPA will be somewhat habituated to passive and relatively low-level of continuous noise disturbance through the operation of all the various type of plant and from quarrying operations at this site. It is also assessed that the elevation of noise levels is limited to only a short section</p>		

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
		<p>along the frontage of the concrete batching plant and up to less than 200m from source, based on the monitoring results obtained at Location 1 and 5 (c.200m from Location 2) both of which had noise levels less than 55dB.</p> <p>Given the noise levels recorded and the limited area of the SPA that is likely to have experience an elevation in noise levels from the retention and extension of the processing plant at the quarry associated with Planning Reference S/99/3411, it is assessed that no measureable effects are likely to have occurred or are likely to occur on the behaviour of any qualifying bird species foraging or roosting within the SPA or from using areas of adjacent land.</p>		
	<p><u>Visual Disturbance</u></p> <p>Visual disturbance from human activity can include the movement of people, machinery and plant during both the construction phase can disturb birds, through causing increased anxiety and flight due to perceived danger. The response to visual disturbance is variable between species, threat type and habituation to human contact.</p> <p>For most bird species the escape flight distance are in the range of 50 to 500m with most being below 300m.</p>	<p><u>Cork Harbour SPA</u></p> <p>With the exception of the concrete batching plant and the asphalt/macadam plant none of the processing plant is visible from the intertidal areas of the SPA. Although the concrete and asphalt/macadam plants are visible these are not considered to create significant features that overshadow the SPA and which would have affected the behaviour of birds or disrupt any flight lines of birds using Cork Harbour SPA at this location.</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on any of the qualifying bird species in light of their conservation objectives or on the integrity of the Cork Harbour SPA.</p>

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
		<p>The retention and extension of the processing plant at the quarry associated with Planning Reference S/99/3411 is therefore not predicted to have had or is likely to have any measureable effects on any bird species from visual disturbance.</p>		
<p>Changes in air quality – dust deposition</p>	<p>Fugitive dust can have adverse effects upon vegetation restricting photosynthesis, respiration and transpiration. Furthermore it can lead to phytotoxic gaseous pollutants penetrating the plants. The overall effect can be a decline in plant productivity, which may then have indirect effects on the quality of the affected habitats and associated fauna. There is limited research into dust particle dispersion however, literature on the mineral sector suggests that the most sensitive species area to be affected by dust deposition at levels above 1000 mg/m²/day^{18 19} which is five times greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans. The</p>	<p>The processing of aggregates had and continues to have the potential to generate dust. Dust deposition monitoring undertaken at the quarry prior to any retention and extension of the processing plant showed dust levels generated from quarrying operations ranged from 30 to 306 mg/m²/day. Dust deposition monitoring undertaken on a monthly based, conditioned by planning consent, would indicate dust levels generated from the quarrying operations and the processing plant are typically below 350mg/m²/day under DoEHLG guidelines for dust deposition at extraction sites. There have been occasions however, where these threshold limits have been exceeded</p>		

¹⁸ Farmer, A.M. (1993). *The Effects of Dust on Vegetation – A Review*. Environmental Pollution Vol.79, Issue 1, Pages 63-75.

¹⁹ Highways Agency (2007). Design Manual for Roads and Bridges Volume 11, Section 3, Part 1 HA207/7 Air Quality. Highways Agency.

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
	<p>amounts of dust deposited and its effects are dependent upon weather conditions as in wet weather less dust will be generated and that which has been deposited upon foliage is more likely to be washed off.</p> <p>Most fugitive dust generated through the quarrying operations is likely to be typically deposited within 100-200m of its source; the greatest proportion of which comprising larger particles (greater than 30 microns) deposited within 100m²⁰ of the site.</p>	<p>(maximum peak recorded 570.8mg/m²/day confirmed without other contamination of sample), but are still below the levels when sensitive species are likely affected by dust deposition.</p> <p>In-built measures to minimise the generation of dust from quarrying operations have been and continue to be implemented as part of the operation of the processing plant included factory fitted dust suppression techniques (i.e. water sprayer at end of conveyors) and the damping down of areas during dry weather, limited drop heights of aggregates being moved and enforcement of speed limits.</p> <p>Great Island Channel SAC</p> <p>The qualifying Annex I habitats for which the SAC is of European importance including Mudflats and sandflats not covered by seawater at low tide and Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) are not considered sensitive to low levels of dust deposition.</p> <p>Based on the dust monitoring results and the limited extent of any dust deposition on the SAC from the</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC</p>

²⁰ Department of the Environment (1995). *The Environmental Effects of Dust from Surface Mineral Workings. Volume 1: Summary Report & Best Practice Guides.* HMSO.

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
		<p>processing plant it is considered not likely that any dust deposition within the Great Island Channel SAC have been or will be at levels or be of a reactive material where any qualifying habitat or individual component species of flora have been or are likely to be affected.</p> <p>No measureable effects have been identified or are predicted or from any dust deposition from retention and extension of the processing plant at the quarry associated with Planning Reference S/99/3411.</p>		
		<p><u>Cork Harbour SPA</u></p> <p>Any dust generated from the operation of the processing plant is considered to be inert and will not result in any chemical reactions or toxicological effects on the intertidal habitats or on the prey organisms of the qualifying bird species supported by these habitats (i.e. fish, benthic macroinvertebrates, molluscs, bivalves).</p> <p>No measureable effects have been identified or are predicted or from any dust deposition from retention and extension of the processing plant at the quarry associated with Planning Reference S/99/3411 at the quarry.</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on the any of the qualifying bird species or on the integrity of Cork Harbour SPA.

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
<p>Changes in air quality - traffic emissions</p>	<p>The pollutants with the potential to have the most significant ecological impact from the emissions to air from traffic would be from NO_x and oxides of sulphur, mainly SO₂.</p> <p>High rates of nitrogen deposition upon sensitive ecosystems can increase the eutrophication of soils and water that can have a detrimental effect on species-rich plant communities and semi-natural habitats that are often associated with a low nutrient status. Eutrophication can decrease species diversity and the dominant plant species can change to those better to respond to increased nitrogen levels.</p> <p>Acid deposition, whether from SO₂, NO_x or ammonia formed by the reaction of SO₂ and NO_x, can affect habitats by changing the species composition of plants and their associated communities of fauna. Acid deposition can occur through both wet and dry deposition.</p> <p>Under National Roads Authority guidelines²¹ detailed consideration need only to be given to emission to air where</p>	<p>The operation of the processing plant was anticipated to generate 160 heavy duty vehicle (HDV) movements in and out of the site per day. The traffic generated was expected to represent 6% of the total volume of HDV movements on the N25 and 29% on the R624. However, as the processing plant was already in operation the anticipated increase as a result of the retention and extension was not likely to result in any significant increase in traffic movements that would have caused any variation in the existing environmental baseline conditions in respect of the local air quality and would have remained constant to the levels recorded in rural locations around Cork Harbour that did not exceed the critical levels for SO₂ of 20 µg/m³ per annum and for NO_x of 30 µg/m³ per annum for the protection of ecosystems as defined under the National Air Quality Standards (NAQS)²².</p> <p>Based on the above it is considered not likely that the contribution of traffic emissions from the retention and</p>		

²¹ National Roads Authority (2006). *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*. National Road Authority.

²² Air Quality Standards Regulations 2011 (SI 180 of 2011).

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
	<p>there is a significant change to traffic flows (>5%) and the designated site lies within 200m of the road centre line.</p>	<p>extension of the processing plant at the quarry associated with Planning Reference S/99/3411 is likely to have resulted in any significant changes in environmental baseline conditions or exceedance of any critical levels where ecosystems would be impacted upon.</p> <p><u>Great Island Channel SAC</u> No measureable effects have been identified or are predicted from any changes in air quality from traffic emissions from the retention and extension of the processing plant at the quarry associated with Planning Reference S/99/3411 at the quarry in the deposition rates of NO_x and SO₂ or in the eutrophication and acidification of as to directly or indirectly affect any qualifying Annex I habitats for which the Great Island Channel SAC is of European importance.</p> <p><u>Cork Harbour SPA</u> No measureable effects have been identified or are predicted from any changes in air quality from traffic emissions from the retention and extension of the processing plant at the quarry associated with Planning Reference S/99/3411 at the quarry in the deposition rates of NO_x and SO₂ or in the eutrophication and acidification of</p>	<p>None</p> <p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC</p> <p>Potential exposure to hazard but no measureable effects identified or predicted on the any of the qualifying bird species or on the integrity of Cork Harbour SPA.</p>

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
		<p>as to directly or indirectly affect the wetland habitats within the defined boundaries of the Cork Harbour SPA and any individual qualifying bird species for which this site is of European importance.</p>		
<p>Changes in air quality (stack emissions)</p>	<p>The principle emissions from the production of asphalt are sulphur dioxide (SO₂), oxides of nitrogen (NO_x), carbon monoxide, volatile organic compounds (VOCs), particulates and other products of combustion.</p> <p>The pollutants with the potential to have the most significant ecological impact from the emissions to air from traffic would be from NO_x and oxides of sulphur, mainly SO₂.</p> <p>High rates of nitrogen deposition upon sensitive ecosystems can increase the eutrophication of soils and water that can have a detrimental effect on species-rich plant communities and semi-natural habitats that are often associated with a low nutrient status. Eutrophication can decrease species diversity and the dominant plant species can change to those better to respond</p>	<p>The asphalt/macadam plant with a stack height of 18m and 1.24m diameter with an exhaust volume of 41,000 Nm³ per hour.</p> <p>Air dispersion modelling indicated that the stack emissions from the asphalt/macadam plant would not exceed the critical levels for SO₂ of 20 µg/m³ per annum and for NO_x of 30 µg/m³ per annum for the protection of ecosystems as defined under the National Air Quality Standards (NAQS)²³.</p> <p>Great Island Channel SAC</p> <p>No measureable effects have been identified or are predicted from any changes in air quality from stack emissions from the asphalt/macadam plant at the quarry associated with Planning Reference S/99/3411 at the quarry in the deposition rates of NO_x</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC</p>

²³ Air Quality Standards Regulations 2011 (SI 180 of 2011).

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
	<p>to increased nitrogen levels. Acid deposition, whether from SO₂, NO_x or ammonia formed by the reaction of SO₂ and NO_x, can affect habitats by changing the species composition of plants and their associated communities of fauna. Acid deposition can occur through both wet and dry deposition.</p>	<p>and SO₂ or in the eutrophication and acidification of as to directly or indirectly affect any qualifying Annex I habitats for which the Great Island Channel SAC is of European importance.</p> <p>Cork Harbour SPA No measureable effects have been identified or are predicted from any changes in air quality from stack emissions from the asphalt/macadam plant at the quarry associated with Planning Reference S/99/3411 at the quarry in the deposition rates of NO_x and SO₂ or in the eutrophication and acidification of as to directly or indirectly affect the wetland habitats within the defined boundaries of the Cork Harbour SPA and any individual qualifying bird species for which this site is of European importance.</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on the any of the qualifying bird species or on the integrity of Cork Harbour SPA.</p>
<p>Changes in water quality</p>	<p>Surface water discharges and diffuse pollution from surface water run-off can contribute to a reduction in water quality through a net contribution of nutrients or contamination from a wide range of organic and inorganic compounds. Contamination of groundwater can occur through the direct recharge of groundwaters close to the ground surface or of deeper aquifers through percolation and other hydrological</p>	<p>The processing plant at the time of the application did not have any surface water discharge. All surface water run-off was allowed to naturally percolate into the ground or directed into a closed water management system. This still remains the case for this part of the quarry site with the closed water management system still in operation. The plant with the potential to impact on groundwater quality included the</p>		

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
	<p>pathways.</p>	<p>concrete batching plant, asphalt plant, fuel tanks and office and canteen sewage system.</p> <p>In-built measures to minimise the risk of groundwater pollution occurring from processing plant and which continue to this date include:</p> <ul style="list-style-type: none"> • all fuel tanks are above ground and appropriately bunded; • wastewater from truck washing drains a settlement pond where fines are allowed to settle out and recycled in the processing of aggregates; • refuelling of vehicles and plant take place in an existing dedicated hard-standing area; • spill kits are kept on-site to stop the migration of any accidental spillages, should they occur; • all effluent from toilet facilities is treated in an on-site septic tank. <p>The processing plant lies above the Midleton 2 Groundwater Body (GWB) as characterised by the GSI (Groundwater Web Mapping) for the implementation of the Water Framework Directive (WFD) (2000/60/EC). The Midleton 2 GWB was and continues to be classified as being of 'poor' groundwater quality status under the WFD.</p>		

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
		<p>The environmental risk of groundwater contamination from the operation of the processing plant to groundwater was and continues to be assessed as negligible and not likely to have resulted in or be attributable to the 'poor' quality status of groundwater in the Midleton 2 GWB.</p> <p>The re-enforcement of the screening berms (conditioned under Planning Reference 99/3410) along the southern and western boundaries provided and continued to provide protection from tidal flooding of the processing plant and the outflow of suspended solids from the quarries processing plant to the Rossmore Bay.</p>		
		<p>Great Island Channel SAC</p> <p>No effects identified or predicted to have had or is likely to have resulted in changes in water quality in Lough Mahon and Rossmore Bay as to affect the extent and distribution of the qualifying Annex I habitats including mudflats and sandflats not covered by seawater at low tide and Atlantic salt meadows (<i>Glaucio-Puccinellietalia maritima</i>), or on the functionality of the intertidal ecosystem from retention and extension of the processing plant at the quarry associated with Planning</p>	None	No existing or likely exposure to hazard and no effects identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC.

Hazard	Nature of Hazard	Assessment	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects	Qualifying Features at Potential Risk in Light of Conservation Objectives
		<p>Reference S/99/3411 at the quarry.</p> <p><u>Cork Harbour SPA</u> No effects identified or predicted to have had or is likely to have resulted in changes in water quality in Lough Mahon and Rossmore Bay as to affect, directly or indirectly, the over-wintering or breeding status of any of the qualifying bird species from retention and extension of the processing plant at the quarry associated with Planning Reference S/99/3411 at the quarry.</p>	<p>None</p>	<p>No likely exposure to hazard and no effects identified or predicted on the integrity of any qualifying birds or on Cork Harbour SPA.</p>

6.2 Assessment of Likely Significant Effects of Planning Reference S/99/3411

Based on the screening of potential hazards outlined in **Table 6** above, no measureable effects on the Great Island Channel SAC or on any of its qualifying habitats, or on the Cork Harbour SPA and any of its qualifying birds, for which these sites have been designated / classified respectively as being of European importance, have been identified as having occurred or which are occurring or which can reasonably be expected to occur from the retention and extension of the processing plant associated with Planning Reference **S/99/3410**, including any development not yet carried out, as a stand-alone project. A summary of the screening assessment findings are presented in **Table 7**.

It is therefore considered that no further assessment is required for the retention and extension of the processing plant associated with Planning Reference **S/99/3411** as a stand-alone project on the Great Island Channel SAC and on Cork Harbour SPA.

Table 7: Summary of Screening Assessment Findings

Qualifying Features	No Likely Significant Effects	Significant Effects Uncertain	Significant Effects Likely
Great Island Channel SAC			
Mudflats and sandflats not covered by seawater at low tide	√		
Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	√		
Cork Harbour SPA			
Overwintering:			
Little Grebe (<i>Tachybaptus ruficollis</i>)	√		
Great Crested Grebe (<i>Podiceps cristatus</i>);	√		
Cormorant (<i>Phalacrocorax carbo</i>)	√		
Grey Heron (<i>Ardea cinerea</i>)	√		
Shelduck (<i>Tadorna tadorna</i>)	√		
Wigeon (<i>Anas penelope</i>)	√		
Teal (<i>Anas crecca</i>)	√		
Pintail (<i>Anas acuta</i>)	√		
Shoveler (<i>Anas clypeata</i>)	√		
Red-breasted Merganser (<i>Mergus serrator</i>)	√		
Oystercatcher (<i>Haematopus ostralegus</i>)	√		
Golden Plover (<i>Pluvialis apricaria</i>)	√		
Grey Plover (<i>Pluvialis squatarola</i>)	√		
Lapwing (<i>Vanellus vanellus</i>)	√		
Dunlin (<i>Calidris alpina</i>)	√		
Black-tailed Godwit (<i>Limosa limosa</i>)	√		
Bar-tailed Godwit (<i>Limosa lapponica</i>)	√		
Curlew (<i>Numenius arquata</i>)	√		
Redshank (<i>Tringa totanus</i>)	√		
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	√		
Common Gull (<i>Larus canus</i>)	√		
Lesser Black-backed Gull (<i>Larus fuscus</i>)	√		
Breeding:			
Common Tern (<i>Sterna hirundo</i>)	√		
Wetlands	√		

7.0 ASSESSMENT OF EFFECTS OF PLANNING REFERENCE 03/4570

7.1 Hazard Identification and Potential Exposure (Screening Assessment)

This section identifies the potential hazards (the pathways) for which the quarrying operations consented under Planning Reference **03/4570** could have adversely affected or is likely to adversely affect the interest features of the relevant Natura 2000 sites and whether the exposure to a particular hazard is likely to have had, is having or is likely to have a significant effect for any development not yet carried out as part of this permission.

The main purpose of this stage is to screen out those aspects of this individual project element that can be considered not likely to have a significant effect, as well as those features of the relevant Natura 2000 sites that are not likely to be significantly affected from the exposure to a potential hazard and/or pathway. This is essentially a risk assessment to decide whether a more detailed assessment is required, and if so, the scope of the issues and features to be addressed. If it cannot be concluded with confidence that adverse effects are unlikely, then under the precautionary principle, it is assumed that any particular issue requires more detailed consideration.

Significant effects are defined in terms of changes to the baseline conditions of one or more of the qualifying interest features for which Great Island Channel SAC and Cork Harbour SPA were designated / classified, whether negative or positive, and which are likely to be directly and indirectly attributable to the quarrying operations at Rossmore and Barryscourt, as a stand-alone project.

A review of the potential hazards, based on the development proposals as consented under Planning Reference **03/4570** and the on the vulnerabilities of the Great Island Channel SAC and Cork Harbour SPA, that might affect the interest features of for which these sites were designated / classified and the potential exposure of the interest features from quarrying operations at Rossmore and Barryscourt are summarised in **Table 8**.

Table 8: Identification of Potential Hazards from Planning Reference S/99/3410

Potential Hazard	Great Island Channel SAC	Cork Harbour SPA
Direct habitat loss, damage and disturbance	√	√
Effects of habitat loss, damage, fragmentation and disturbance to qualifying species	-	√
Disturbance (i.e. noise, vibration, visual disturbance)	-	√
Changes in air quality -dust deposition	√	√
Changes in air quality –traffic emissions	√	√
Changes in water quality	√	√

A summary of the screening assessment of the identified hazards and the likelihood of any exposure and significant effects of the quarrying operations associated with Planning Reference **03/4570**, including any development not yet carried out, from such hazards is provided in **Table 9**.

Table 9: Screening Assessment of Hazards and Likely Significant Effects of the Planning Reference 03/4570

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
<p>Direct habitat loss, damage and disturbance and the effects of habitat loss, damage and fragmentation on qualifying species</p>	<p>Habitat loss involves the direct destruction or physical take-up of vegetation within a Natura 2000 site that would directly or indirectly affect the integrity of the site or the individual qualifying habitats and/or species for which a site is of European importance. The loss of habitats lying adjacent and outside a European site could also have a direct impact on individual populations and assemblages of qualifying species, or indirectly by increasing levels of stress placed upon populations of some species through negative edge effects (e.g. predation pressure) and dispersal problems that can become increasingly severe as surrounding habitat is lost and remaining habitat is divided into smaller units.</p>	<p>The application site for Planning Reference 03/4570 covered a total of 29.4ha that included an active and worked out quarry areas. The application included: the proposed extension of the quarry to 19.5ha and deepening of the void to -40mOD of the active quarry in the south of the overall site permitted under Planning Reference S/99/3410; and the restoration of a worked out quarry in the north of the application site. Overburden from the quarry extension was to be used in the restoration of the northern worked out quarry and in the re-enforcement of the screening bunds.</p> <p>The application was also for the retention of the quarry faces extending along the northern and southern boundaries of the quarry void covering approximately 0.872ha.</p> <p>In addition the relocation of high voltage power lines was also proposed to move these structures further into the quarry site and away from the boundaries.</p> <p>Great Island Channel SAC The application site included 0.16ha of land within the defined boundary of the</p>	<p>None</p>	<p>No existing or likely exposure to hazard and no effect</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>Great Island Channel SAC, where there is a discrepancy between the defined SAC boundary, as identified on aerial photographs and as mapped by the NPWS using old six inch maps. However, as part of conditions attached to the planning permission for 99/3410, the screening berm along the southern and parts of the western quarry boundary was enhanced and which includes all this area within the defined boundaries of the SAC that were historically disturbed by quarrying operations. It is not proposed to work this area of land as part of any development which has not yet been undertaken.</p> <p>The remainder of the application site was and remains part of an active quarry site stripped of any vegetation, soils and overburden that existed prior to quarrying operations.</p> <p>The quarry operations associated with Planning Reference 03/4570 have not and will not, as part of any development not carried out, result in the direct loss of any Annex I qualifying habitats for which the Great Island Channel SAC is of European importance.</p>		<p>identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC.</p>
		<p>Cork Harbour SPA The application site included 0.16ha of</p>	None	No existing or likely exposure to hazard

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>land within the defined boundary of the Cork Harbour SPA, where there is a discrepancy between the defined SAC boundary, as identified on aerial photographs and as mapped by the NPWS using old six inch maps. However, as part of the extension of quarrying operations this areas has not been subject to any further habitat damage or disturbance and it is not proposed to work this area of land as part of any development which has not yet been undertaken that now supports a screening berm and supplementary landscape planting (conditioned under planning permission for 99/3410).</p> <p>The remainder of the application site was and remains part of an active quarry site stripped of any vegetation, soils and overburden that existed prior to quarrying operations.</p> <p>The quarry operations associated with Planning Reference 03/4570 have not and will not, as part of any development not carried out, result in the direct loss, damage or disturbance to any habitat within the defined boundaries of the SPA, or would result in any loss, damage or disturbance of habitat outside the defined boundaries of the SPA with the potential to be used by any</p>		<p>and no effect identified or predicted on the identified or predicted on any of the qualifying bird species in light of their conservation objectives or on the integrity of the Cork Harbour SPA.</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
Disturbance (including noise, vibration, visual disturbance)	<p>Increases in human disturbance including noise, vibration and visual disturbance from human activity can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.</p> <p>The response of individual species to increased levels of human disturbance will depend upon a number of factors including the sensitivity, reproductive status, previous exposure to human disturbance, behaviour during the event, species tolerance to disturbance, location in relation to the source, availability of alternative nearby habitat, and environmental factors (i.e. topography, vegetation and atmospheric conditions which can influence noise levels).</p>	<p>of the qualifying bird species.</p> <p>The extension of quarrying operations had and continues to have the potential to generate noise, vibration and visual disturbance.</p> <p>The main sources of disturbance was expected and continues to be from the drilling, blasting and crushing of rock, the loading of materials and from vehicle movements used in the haulage of rock to the processing plant.</p> <p>Landscape planting along the southern boundary was undertaken on the re-enforced screening berm undertaking under Planning Reference S/99/3410 and which provides for the attenuation of noise.</p> <p>The restoration of the worked out quarry in the northern part of the application was also expected to generate noise through the movement of vehicles and plant.</p>		
	<p>Noise</p> <p>It is generally accepted that for noise of 70dB (or greater) and visual disturbance certain species or groups of species can be impacted upon up to a distance of up to 300m from its source for high level and discontinuous disturbance with these distances reducing for low level</p>	<p>Cork Harbour SPA</p> <p>A noise assessment undertaken as part of the EIA found that the extension of quarrying operations was not expected to increase ambient noise levels form those previously modelled and in excess of the limits conditions in place under Planning Reference S/99/3410.</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on any of the qualifying bird species in light of their conservation objectives or on the

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>and/or continuous disturbance levels. Where noise levels are below 80dB L_{Amax} and 55dB L_{Aeq,1hr} measured at a nest site it is considered unlikely that it will have an adverse impact on designated species (LAQMTG 09²⁴).</p>	<p>A noise monitoring programme implemented at the quarry, conditioned by planning consent, has been undertaken at two locations on the northern side of the quarry site to assess noise levels on human receptors only. The noise monitoring at these locations would indicate that noise levels generated by the quarry and associated infrastructure at these locations are below 55dB, in accordance with the expected levels in modelled as part of the EIA. This included the noise generated during the restoration of the worked out quarry in the northern part of the application sites. However, no monitoring of noise levels has historically been undertaken along the boundary of the quarry site adjacent to Cork Harbour SPA.</p> <p>In respect of the restoration works undertaken on the worked out quarry in the north of the application site it is not possible to quantify the effects of any noise generated during these operations on the Cork Harbour SPA or on any birds using this site in proximity to these works have been completed.</p>		<p>integrity of the Cork Harbour SPA.</p>

²⁴ Defra (2009). *Local Air Quality Management Technical Guidance*. LAQMTG(09). Defra, London.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>In April 2014, SLR undertook a noise monitoring at locations on the southern and western boundaries of the quarry site lying adjacent the Cork Harbour SPA (Noise Monitoring Report presented at Appendix B). As such this represents the current baseline conditions for existing quarrying operations including the processing plant.</p> <p>The results of this noise monitoring would indicate that generally noise levels generated from all quarrying operations including the processing plant are below 55dB and therefore at levels where it is not likely noise levels would affect birds using the adjacent intertidal habitats. Given the noise levels recorded and the limited area of the SPA that is likely to have experience an elevation in noise levels from the quarrying operations associated with Planning Reference 03/4570, it is assessed that no measureable effects are likely to have occurred or on the behaviour of any qualifying over-wintering bird species foraging or roosting within the SPA or from using areas of adjacent land.</p> <p>As far as can ascertained no common terms have ever established any</p>		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>breeding colony within the potential zone of influence of noise disturbance from the quarry and are not likely to do so given that generally the local habitats provide sub-optimum breeding opportunities for this species.</p> <p>For development not yet undertaken, the noise levels generated from quarrying operations are not predicted to change, but the direction of noise will change as the quarry is continued to be worked to its consented extent and to its final level. Although the quarry walls will provide a degree of noise attenuation, as the quarry extends the area of Cork Harbour SPA affected by noise generate at the quarry is likely to increase. However, the noise levels are not anticipated to be at levels where there would be any measureable effects on any qualifying over-wintering bird species using the adjacent areas of Rossmore Bay.</p>		
	<p><u>Visual Disturbance</u> Visual disturbance from human activity can include the movement of people, machinery and plant during both the construction phase can disturb birds, through causing increased anxiety and flight due to perceived danger. The response to visual disturbance if</p>	<p><u>Cork Harbour SPA</u> The quarry is below ground level and is not visible from the intertidal habitats from the perspective of birds using these areas for foraging. The screening berms along the southern and western boundaries of the quarry site further reduced the visibility of the quarry from</p>	<p>None</p>	<p>No existing or likely exposure to hazard and effects identified or predicted on any of the qualifying bird species in light of their conservation</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>variable between species, threat type and habituation to human contact. For most bird species the escape flight distance are in the range of 50 to 500m with most being below 300m.</p>	<p>the estuary The quarry is therefore not predicted to have had or is likely to have any effect on any bird species from visual disturbance from operations associated with Planning Reference 03/4570, or from any development not yet carried out at the quarry.</p>		<p>objectives or on the integrity of the Cork Harbour SPA.</p>
	<p><u>Vibration</u> Any blasting operations have the potential to generate vibration. Studies into the effects of blasting on nesting falcons indicate that quarry blasting initiated flight up to 500m from the point source of the blast. The maximum distances at which vibration from other operational sources may be just perceptible to humans is between 30 to 50m from its source and this is likely to be similar for most group of species. Whilst it is generally recognised vibration can disrupt wildlife, the effects of vibration are usually masked by other disturbance factors including human visual disturbance and noise. It is likely that any species sensitive to increased noise will also be sensitive to vibration whilst less sensitive species to noise are likely to tolerate levels of vibration.</p>	<p><u>Cork Harbour SPA</u> All blasting operations have been and continue to be undertaken on a needs only basis. In recent years the frequency of blasting has been no more than six blasts in any given year. Blast measurements taken in 2013 to 2015, conditioned by planning consent, show that the PPV of any groundborne vibration ranges from 1.27 to 3.05mm/sec and Air Over Pressure of 115.4 to 128.9dBL. Through any continuation of quarrying not yet undertaken whilst the groundbourne vibration levels are not anticipated to increase the directional of any vibration will change over time. However, at the anticipated PPV levels and the frequency blasting has and will continue to occur at the quarry it is considered not likely that any flight initiated by a blast event would affect the behaviour of any over-wintering bird</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on any of the qualifying bird species in light of their conservation objectives or on the integrity of the Cork Harbour SPA.</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>species within the zone of influence of the quarry (up to 500m). All birds would be expected to return very shortly after any such blasting event.</p> <p>All of the key common tern colonies identified within the Cork Harbour SPA (i.e. Martello Tower and Deep Water Port) will remain outside the potential zone of influence of any blasting event taking into account any directional change. Therefore no effects are predicted on any nesting common terns.</p> <p>No measureable effects identified or predicted on the qualifying bird species using from vibration caused from blasting and/or other quarrying operations associated Planning Reference 03/4570, or from any development not yet carried out at the quarry.</p>		
<p>Changes in air quality – dust deposition</p>	<p>Fugitive dust can have adverse effects upon vegetation restricting photosynthesis, respiration and transpiration. Furthermore it can lead to phytotoxic gaseous pollutants penetrating the plants. The overall effect can be a decline in plant productivity, which may then have indirect effects on the quality of the affected habitats and associated fauna.</p>	<p>The extension of quarrying operations had and continues to have the potential to generate dust through the drilling, blasting and crushing of rock, and through the loading and haulage of materials.</p> <p>In-built measures to minimise the generation of dust from quarrying operations have been and continue to be implemented as part of the quarrying</p>		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>There is limited research into dust particle dispersion however, literature on the mineral sector suggests that the most sensitive species area to be affected by dust deposition at levels above 1000 mg/m²/day^{25 26} which is five times greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans. The amounts of dust deposited and its effects are dependent upon weather conditions as in wet weather less dust will be generated and that which has been deposited upon foliage is more likely to be washed off.</p> <p>Most fugitive dust generated through the quarrying operations is likely to be typically deposited within 100-200m of its source; the greatest proportion of which comprising larger particles (greater than 30 microns) deposited within 100m²⁷ of the site</p>	<p>operations including standard dust suppression techniques to damp down areas during dry weather and enforcement of speed limits.</p> <p>Dust deposition monitoring undertaken on a monthly based, conditioned by planning consent, would indicate dust levels generated from the current quarrying operations, including all associated infrastructure are typically below 350mg/m²/day under DoEHLG guidelines for dust deposition at extraction sites. There have been occasions however, where these threshold limits have been exceeded (maximum peak recorded 570.8mg/m²/day confirmed without other contamination of sample), but are still below the levels when sensitive species are likely affected by dust deposition.</p> <p>Great Island Channel SAC</p> <p>The qualifying Annex I habitats for which the SAC is of European importance including Mudflats and sandflats not covered by seawater at low tide and</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on the integrity of any</p>

²⁵ Farmer, A.M. (1993). *The Effects of Dust on Vegetation – A Review*. Environmental Pollution Vol.79, Issue 1, Pages 63-75.

²⁶ Highways Agency (2007). *Design Manual for Roads and Bridges Volume 11, Section 3, Part 1 HA207/7 Air Quality*. Highways Agency.

²⁷ Department of the Environment (1995). *The Environmental Effects of Dust from Surface Mineral Workings. Volume 1: Summary Report & Best Practice Guides*. HMSO.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) are not considered sensitive to low levels of dust deposition.</p> <p>Based on the dust monitoring results and the limited extent of any dust deposition on the SAC from quarrying operations it is considered not likely that any dust deposition within the Great Island Channel SAC have been or will be at levels or be of a reactive material where any qualifying habitat or individual component species of flora have been or are likely to be affected.</p> <p>No measureable effects have been identified or are predicted or from any dust deposition from quarrying operations associated Planning Reference 03/4570, or from any development not yet carried out at the quarry.</p>		<p>qualifying Annex I habitat or on Great Island Channel SAC</p>
		<p><u>Cork Harbour SPA</u></p> <p>Any dust generated from the operation of the quarry is considered to be inert and will not result in any chemical reactions or toxicological effects on the intertidal habitats or on the prey organisms of the qualifying bird species supported by these habitats (i.e. fish, benthic macroinvertebrates, molluscs, bivalves).</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on the any of the qualifying bird species or on the integrity of Cork Harbour SPA.</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>No measureable effects have been identified or are predicted or from any dust deposition from quarrying operations associated Planning Reference 03/4570, or from any development not yet carried out at the quarry.</p>		
<p>Changes in air quality - traffic emissions</p>	<p>The pollutants with the potential to have the most significant ecological impact from the emissions to air from traffic would be from NO_x and oxides of sulphur, mainly SO₂.</p> <p>High rates of nitrogen deposition upon sensitive ecosystems can increase the eutrophication of soils and water that can have a detrimental effect on species-rich plant communities and semi-natural habitats that are often associated with a low nutrient status. Eutrophication can decrease species diversity and the dominant plant species can change to those better to respond to increased nitrogen levels.</p> <p>Acid deposition, whether from SO₂, NO_x or ammonia formed by the reaction of SO₂ and NO_x, can affect habitats by changing the species composition of plants and their associated communities of fauna. Acid deposition can occur through both wet and dry deposition.</p> <p>Under National Roads Authority</p>	<p>The operation of the quarry was anticipated to generate 233 heavy duty vehicle (HDV) movements in and out of the site per day. The anticipated additional traffic generated was expected to represent 2% of the total volume of HDV movements on the local road network. This figure is below the NRA 5% criteria threshold and as such no further assessment is deemed necessary in respect of the effects of traffic emissions on Natura 2000 sites.</p> <p>Great Island Channel SAC</p> <p>No measureable effects have been identified or are predicted from any changes in air quality from traffic emissions from quarrying operations associated Planning Reference 03/4570, or from any development not yet carried at the quarry in the deposition rates of NO_x and SO₂ or in the eutrophication and acidification of as to directly or indirectly affect any qualifying Annex I habitats for which the</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>guidelines²⁸ detailed consideration need only to be given to emission to air where there is a significant change to traffic flows (>5%) and the designated site lies within 200m of the road centre line.</p>	<p>Great Island Channel SAC is of European importance.</p> <p>Cork Harbour SPA</p> <p>No measureable effects have been identified or are predicted from any changes in air quality from traffic emissions from quarrying operations associated Planning Reference 03/4570, or from any development not yet carried at the quarry in the deposition rates of NO_x and SO₂ or in the eutrophication and acidification of as to directly or indirectly affect the wetland habitats within the defined boundaries of the Cork Harbour SPA and any individual qualifying bird species for which this site is of European importance.</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or predicted on the any of the qualifying bird species or on the integrity of Cork Harbour SPA.</p>
<p>Changes in water quality</p>	<p>Surface water discharges and diffuse pollution from surface water run-off can contribute to a reduction in water quality through a net contribution of nutrients or contamination from a wide range of organic and inorganic compounds.</p> <p>Contamination of groundwater can occur through the direct recharge of groundwaters close to the ground</p>	<p>Groundwater and incidental rainfall collected in the sump in the quarry floor is pumped via an underground pipe to and discharged into a surface water lagoon located in a worked out sand and gravel pit to the south east of the quarry site (Figure 5).</p> <p>The receiving surface water lagoon does not have any direct discharge to</p>		

²⁸ National Roads Authority (2006). *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*. National Road Authority.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
	<p>surface or of deeper aquifers through percolation and other hydrological pathways.</p> <p>For transitional and coastal waters, the status of an individual waterbody is assessed using the Environmental Protection Agency's (EPA) Trophic Status Assessment Scheme (TSAS) required for the Urban Waste Water Treatment Directive and Nitrates Directive. This scheme compares the compliance of individual parameters against a set of criteria indicative of trophic state. These include dissolved inorganic nitrogen (DIN) and molybdate reactive phosphorus (MRP).</p>	<p>Rossmore Bay but has hydraulic connectivity to the estuary via the saline mixing zone. This tidal exchange is a natural process between the lagoon and estuary and which regulates water levels in this waterbody.</p> <p>The quarry extension and deepening was not anticipated to impact on the hydrochemistry of the groundwater because the quarry is hydraulically down gradient of the fresh groundwater to the north and the overall flow and management of water would be small with any change restricted to the area of the quarry workings.</p> <p>Test showed that at the time of the application the quarry was still pumping water from the fresh / saline mixing zone, as opposed to purely saline estuary water. This would seem to indicate that the quarrying operations and dewatering had not resulted in any significant saline intrusion since 1999 and had not impacted on hydrochemistry of localised groundwater.</p> <p>The deepening of the quarry was predicted to increase the amount of water discharged to the lagoon in the sand and gravel pit from 4,069m³/day to 5,086m³/day.</p>		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>Up until March 2016, where pumps could not cope with an emergency, or in exceptional rainfall events an additional pump was deployed to discharge directly from the quarry to the estuary. Following a review of quarry procedures at this site this practice has now been stopped.</p> <p>Water quality in the Lough Mahon that includes Rossmore Bay has improved since 2003 and is currently classified by the EPA as 'intermediate'²⁹ and is generally in compliance with TSAS and in accordance with the EQS for transitional and coastal waters but has some issues with DIN and biochemical oxygen demand (BOD).</p> <p>The processing plant lies above the Midleton 2 Groundwater Body (GWB) as characterised by the GSI (Groundwater Web Mapping) for the implementation of the Water Framework Directive (WFD) (2000/60/EC). The Midleton 2 GWB is classified as being of 'poor' groundwater quality status under the WFD.</p> <p>There have been no reportable pollution incidents arising from the quarrying</p>		

²⁹ Bradley, C., Byrne, C., Craig, C., Free, M., Gallagher, G., Kennedy, T., Little, R., Lucey, J., Mannix, J., McCreesh, A., McDermott, G., McGarrigle, M., Ni Longphuirt, S., O'Boyle, S., Plant, C., Tierney, D, Trodd, W., Webster, P., Wilkes, R., and Wynne, C. (2015). *Water Quality in Ireland 2010 to 2012*. Environmental Protection Agency, Johnstown Castle.

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>operations at Rossmore or from the discharge of water to the sand and gravel pit to the south east of the quarry site.</p> <p>Water quality monitoring of water collected in the sump of the quarry in 2013 and 2015 indicated that this water complied with Environmental Quality Standards (EQS) for the protection of saltwater life for List II substances, with the exception of copper (see Appendices C and D). However, as the quarry does not produce copper, or process copper, these high levels are considered to be attributable to potentially high naturally occurring in rocks and soils and/ or from the saline water in the mixing zone.</p> <p>Studies would indicate parts of Cork Harbour have elevated levels of copper (Marine Institute 1999) and which may be affected predominantly by tidal re-suspension of sediments.</p> <p>Given the similarities between the copper levels recorded in the intertidal waters and from the quarry sump and that the quarry has intercepted the groundwater table and it is considered highly likely that the elevated copper levels are due to the infiltration of sea water and not as a direct result of</p>		

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		<p>quarrying operations. In the absence of quarrying at this site it is likely that the groundwater in this location would still have elevated and similar levels of copper.</p> <p>Results of monitoring of water at the end of the discharge pipe (Appendix E) and in the water lagoon receiving the discharge from the quarry site (Appendix F) would indicate that the discharge is not having a detrimental effect on water quality on these receiving waters or on the adjacent intertidal waters which are likely to have some hydrological connectivity (Appendix G) to the surface water lagoon.</p> <p>As no effects of water quality are predicted to have occurred or which are likely to occur it is considered that the quarrying operations have not and will not result in any measureable changes in water quality of the Rossmore Bay through the hydraulic connectivity of the surface water lagoon receiving the discharge and from the mixing of fresh and saline waters within this waterbody.</p>		
		<p>Great Island Channel SAC No effects identified or predicted on water quality in the Great Island Channel (Cork Harbour) as to affect the</p>	<p>None</p>	<p>Potential exposure to hazard but no measureable effects identified or</p>

Hazard	Nature of Hazard	Assessment	Qualifying Features at Potential Risk in Light of Conservation Objectives	Potential Exposure to Hazard and Likelihood of Significant Adverse Effects
		extent and distribution of the qualifying Annex I habitats including mudflats and sandflats not covered by seawater at low tide and Atlantic salt meadows (<i>Glauca-Puccinellietalia maritima</i>), or on the functionality of the intertidal ecosystem from quarrying operations associated with Planning Reference 03/4570, or from any development not yet carried out at the quarry.		predicted on the integrity of any qualifying Annex I habitat or on Great Island Channel SAC.
		<p><u>Cork Harbour SPA</u> No effects identified or predicted on water quality in the Great Island Channel (Cork Harbour) as to affect, directly or indirectly, the over-wintering or breeding status of any of the qualifying bird species from quarrying operations associated with Planning Reference 03/4570, or from any development not yet carried out at the quarry.</p>	None	Potential exposure to hazard but no measureable effects identified or predicted on the integrity of any qualifying birds or on Cork Harbour SPA.

7.2 Assessment of Likely Significant Effects of Planning Reference 03/4570

Based on the screening of potential hazards outlined in **Table 12** above, no measureable effects on the Great Island Channel SAC or on any of its qualifying habitats, or on the Cork Harbour SPA and any of its qualifying birds, for which these sites have been designated / classified respectively as being of European importance, have been identified as having occurred or which are occurring or which can reasonably be expected to occur from the quarrying operations associated with Planning Reference **03/4570**, including any development not yet carried out, as a stand-alone project. A summary of the screening assessment findings are presented in **Table 10**.

It is therefore considered that no further assessment is required for the quarrying operations associated with Planning Reference **03/4570**, including any development not yet carried out, as a stand-alone project on the Great Island Channel SAC and on Cork Harbour SPA.

Table 10: Summary of Screening Assessment Findings

Qualifying Features	No Likely Significant Effects	Significant Effects Uncertain	Significant Effects Likely
Great Island Channel SAC			
Mudflats and sandflats not covered by seawater at low tide	√		
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	√		
Cork Harbour SPA			
Overwintering:			
Little Grebe (<i>Tachybaptus ruficollis</i>)	√		
Great Crested Grebe (<i>Podiceps cristatus</i>);	√		
Cormorant (<i>Phalacrocorax carbo</i>)	√		
Grey Heron (<i>Ardea cinerea</i>)	√		
Shelduck (<i>Tadorna tadorna</i>)	√		
Wigeon (<i>Anas penelope</i>)	√		
Teal (<i>Anas crecca</i>)	√		
Pintail (<i>Anas acuta</i>)	√		
Shoveler (<i>Anas clypeata</i>)	√		
Red-breasted Merganser (<i>Mergus serrator</i>)	√		
Oystercatcher (<i>Haematopus ostralegus</i>)	√		
Golden Plover (<i>Pluvialis apricaria</i>)	√		
Grey Plover (<i>Pluvialis squatarola</i>)	√		
Lapwing (<i>Vanellus vanellus</i>)	√		
Dunlin (<i>Calidris alpina</i>)	√		
Black-tailed Godwit (<i>Limosa limosa</i>)	√		
Bar-tailed Godwit (<i>Limosa lapponica</i>)	√		
Curlew (<i>Numenius arquata</i>)	√		
Redshank (<i>Tringa totanus</i>)	√		
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	√		
Common Gull (<i>Larus canus</i>)	√		
Lesser Black-backed Gull (<i>Larus fuscus</i>)	√		
Breeding:			
Common Tern (<i>Sterna hirundo</i>)	√		
Wetlands	√		

8.0 IN-COMBINATION ASSESSMENT

It is a requirement of The European Communities (Birds and Natural Habitats) Regulations 2011 that, when considering whether a plan or project will adversely affect the integrity of a European site that it must take into account in-combination effects with other current or reasonably foreseeable plans and projects.

There is no single agreed method for addressing the issue of in-combination effects, however, current practice and available guidance suggests a staged approach which takes into account the following:

- i. if it can be clearly demonstrated that the plan or project will not result in any effects at all that are relevant to the integrity of a European site then the plan or project should proceed without considering the in-combination test, further; or
- ii. if there are identified effects arising from the plan or project even if they are perceived as minor and not likely to have a significant effect on the integrity of a European site alone, then these effects must be considered 'in-combination' with the effects arising from other plans and projects.

Based on the screening of each individual project elements outlined in Sections 5 to 7, no measureable effects on the Great Island Channel SAC or on any of its qualifying habitats, or on the Cork Harbour SPA and any of its qualifying birds, for which these sites have been designated / classified respectively as being of European importance, have been identified as having occurred or which are occurring or which can reasonably be expected to occur from each of the separate planning consents at the quarry at Rossmore and Barryscourt, as stand-alone projects.

In terms of cumulative impacts from each of the individual project elements, no cumulative impacts are predicted to have occurred or are likely to occur from the current quarrying operations and associated processing of aggregates at the quarry at Rossmore and Barryscourt, or from any development not yet undertaken including noise, dust and or water quality on the Great Island Channel SAC and/or Cork Harbour SPA, in light of their conservation objectives.

In terms of other projects, there have been a number of other projects that have taken place in the localised area since the granting of the four individual planning consents at the quarry at Rossmore and Barryscourt. The environmental baseline conditions within the localised area and throughout the wider landscape within which the Great Island Channel SAC and Cork Harbour SPA lie have significantly altered since the granting of these planning permissions. As such it is not possible to do any retrospective assessment in this case. Where other projects have had appropriate assessment screening, or full appropriate assessments carried out, and no in-combination effects with the existing quarry have been identified, or where any assessment has concluded no likely in-combination effects likely, it is assumed that the baseline upon which any such assessment was made included the presence of the existing quarry at Rossmore and Barryscourt as part of any baseline and as such there is not a requirement to undertake any additional assessment where these have concluded no likely significant in-combination effects, in light of the conservation objectives for these Natura 2000 sites.

9.0 AVOIDANCE AND MITIGATION

Although no measureable effects have been identified as having occurred or which are occurring or which can reasonably be expected to occur from quarrying operations at Rossmore, the screening along the frontage of concrete batching plant with the Cork Harbour SPA could be further improved. Through appropriate remedial modifications to the screening along this section of the quarry boundary adjacent to the SPA it should be possible to decrease the noise levels within the Cork Harbour SPA along this frontage area to below 55dB.

Kilsaran will be making a formal application for a discharge licence in due course for the discharge of trade effluent from the quarry to the surface water lagoon located in the worked out sand and gravel pit to the south east of the quarry site.

As no other effects are predicted on Great Island Channel SAC and/or Cork Harbour SPA or on any of its qualifying habitats and/or species, in light of the conservation objectives for these sites and qualifying interest features, no other specific avoidance and mitigation measures are proposed in respect of the quarrying operations at the Rossmore over and above those measures already in place and in compliance with any limits set under existing planning conditions.

All quarrying operations at Rossmore will continue to be undertaken in accordance with “best practice” and appropriate guidelines for example the Department of the Environment, Heritage and Local Government (DoEHLG) Quarries and Ancillary Activities – Guidelines for Planning Authorities³⁰, the EPA’s Environmental Management in the Extractive Industry guidelines³¹ and the Irish Concrete Federation (ICF) Environmental Code³², and in a sensitive manner and with all due regard to current wildlife legislation in respect to Great Island Channel SAC and Cork Harbour SPA, and in light of the conservation objectives for these sites and their qualifying interest features.

³⁰ Department of the Environment, Heritage and Local Government (2004). *Quarries and Ancillary Activities – Guidelines for Planning Authorities*. DoEHLG.

³¹ Environmental Protection Agency (2006). *Environmental Management Guidelines – Environmental Management in the Extractive Industry (Non-Scheduled Minerals)*. EPA, Wexford.

³² The Irish Concrete Federation (2005). *Environmental Code. 2nd Edition*. ICF, Dublin.

10.0 SUMMARY AND CONCLUSIONS

This rNIS has considered the potential effects associated with the quarrying operations at Rossmore, Carrigtwohill, Co. Cork on the relevant European sites within its potential zone of influence including Great Island Channel SAC and Cork Harbour SPA.

The assessment has concluded that the quarrying operations have not had any measureable effects on any of the European sites within its potential zone of influence including Great Island Channel SAC and Cork Harbour SPA, or is likely to have any effects through any continuation of quarrying operations or any development not carried out to affect the integrity of these relevant Natura 2000 sites, or on any of their qualifying features for which these sites are of European importance, in light of their conservation objectives.

It is considered that this rNIS provides sufficient relevant information to allow the Competent Authority, in this case ABP, to reach a determination as to whether or not the application for substitute consent for quarrying operations at the Rossmore has had or is likely to have any significant effects on the integrity of any of the Natura 2000 sites within its potential zone of influence, including Great Island Channel SAC and Cork Harbour SPA, under Article 6 of the Habitats Directive (92/43/EEC).

10.1 Natura Impact Statement –Summary

A summary of the NIS and findings of no significant effects in line with the methodology set out in the '*Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites. Methodological Guidance on the Provision of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*' is provided in **Table 11**.

Table 11: Find of No Significant Effects Report

Name of project or plan	Substitute consent for quarrying operations at Rossmore and Barryscourt, Co. Cork.
Name and location of Natura 2000 site(s)	<p>The following sites lie within a 15km radius of the quarry at Rossmore:</p> <ul style="list-style-type: none"> • Great Island Channel SAC [001058], adjoining to the west and south; • Cork Harbour SPA [004030], adjoining to the west and south; and • Blackwater River (Cork / Waterford) SAC [002170], 14.4km north. <p>Based on the size and nature of the quarrying operations at Rossmore and Barryscourt is considered that the maximum potential zone of influence of the quarry, in the absence of any source-pathway-receptor link, would be up to a 5km radius of this site. At this distance only the Great Island Channel SAC and Cork Harbour SPA have been deemed relevant to this project.</p> <p>The Blackwater River (Cork / Waterford) SAC lies outside the potential zone of influence of the quarry and there are no environmental pathways linking this European sites to the quarry.</p>
Description of the project/plan	Application for substitute consent for the extraction sand and gravels by mechanical means and limestone rock by means of blasting; processing of materials by means of crushing, screening and washing, production of construction aggregates and valued added concrete and asphalt products; settlement lagoons; banded fuel storage; screening berms; canteen, toilet and office facilities; weighbridge; wheelwash and all other site related ancillary

facilities and works granted planning permission but which required an Appropriate Assessment was not undertaken as consented under Planning References S/99/3410, S/99/3411 and 03/4570.

Is the project or plan directly connected with or necessary to the management of the site?

No

Are there other projects or plans that together with the project or plan being assessed could affect the site?

No

The assessment of significance of effects

Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 sites

Great Island Channel SAC

No measureable effects have been identified as having occurred or which are occurring or which can reasonably be expected to occur from the quarrying operations at Rossmore and Barryscourt on the integrity of Great Island Channel SAC, or on any of its individual qualifying Annex I habitats, either as a stand-alone development or in-combination with other plans or projects, in light of the conservation objectives for this Natura 2000 site.

Cork Harbour SPA

No measureable effects have been identified as having occurred or which are occurring or which can reasonably be expected to occur from the quarrying operations at Rossmore and Barryscourt on the integrity of Cork Harbour SPA, or on any of its individual qualifying over-wintering and/or breeding bird species for which this site is of importance, either as a stand-alone development or in-combination with other plans or projects, in light of the conservation objectives for this Natura 2000 site.

Explain why the effects are not considered significant

A quarry at Rossmore and Barryscourt has been in operational use before the Great Island Channel SAC and/or Cork Harbour SPA were designated / classified respectively.

The quarrying operations and associated processing plant consented under Planning References S/99/3411 and 03/4570 include 0.18ha and 0.16ha respectively of land within the defined boundaries of the Great Island Channel SAC and/or Cork Harbour SPAs. However, based on 1995 aerial photographs these areas formed part of the active quarry site at the time the SPA was classified and subsequently the SAC was designated and no significant effects on any of the qualifying features have been identified as having occurred or which are occurring or which can reasonably be expected to occur from the quarrying operations at Rossmore and Barryscourt.

The loss of agricultural land under permanent pasture to quarrying is not likely to have supported breeding common tern or have been important or critical for any of the qualifying over-wintering species of bird for which the Cork Harbour SPA is of European importance.

The operation of the quarry has generally complied with the conditions set under the planning consents for this site. Although there have been the occasional exceeded in the measured parameters, for example dust, these have not been at levels where they would be expected to affect any of the qualifying Annex I habitats of Great Island Channel SAC and/or the

qualifying bird species of Cork Harbour SPA.

Although the concrete batching plant generates elevated noise levels along its frontage with the Cork Harbour SPA, this is not likely to have had or is having any measureable effects given the history of quarrying at this location before the classification of this SPA and the habituation of birds to varying degrees of disturbance from this site. Through remedial modifications to the screening along the frontage of the concrete plant noise levels within the SPA will be reduced to below 55dB.

The quarry no longer discharges any waste effluent directly to Rossmore Bay. Water is discharged to a surface water lagoon located to the south east of the quarry site. This lagoon does not directly discharge to Rossmore Bay but has hydraulic connectivity to the estuary via the saline mixing zone. This tidal exchange is a natural process between the lagoon and estuary and which regulates water levels in this waterbody. Water quality monitoring would indicate that the discharge of water is not having a detrimental effect on water quality on these receiving waters and is therefore not likely to have an effect on water quality in the Rossmore Bay.

**List of agencies consulted:
 provide contact name and
 telephone or e-mail address**

NPWS who have indicated that no significant effects directly attributable from the quarrying operations at Rossmore and Barryscourt have been identified.

Liaison with NPWS on the potential discrepancy of the Natura 2000 sites boundaries.

Data collected to carry out the assessment

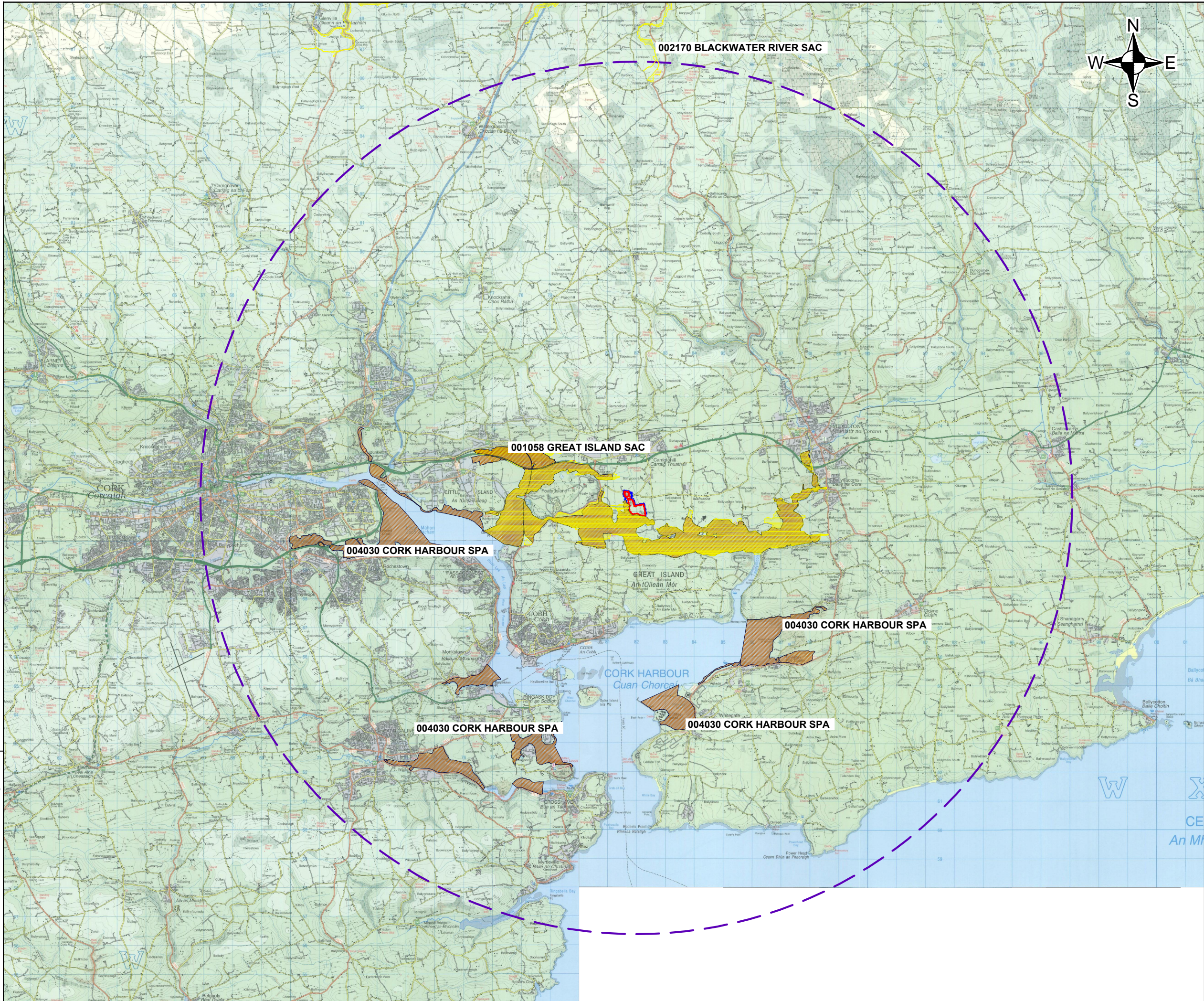
Who carried out the assessment	Sources of data	Level of assessment completed	Where can the full results of the assessment be accessed and viewed?
Steve Judge Associate Ecologist CMIEEM and employee of SLR	NPWS and EPA, EIAs previously produced and submitted as part of the original planning applications under Planning References S/99/3410, S/99/3411, and 03/4570, monitoring data supplied by Kilsaran including data from previous owners/operators, and noise monitoring commissioned by Cemex and undertaken by SLR	Stage 1 – Screening Assessment Review of desk-top information relating to the Natura 2000 sites and qualifying features. The assessment is both quantitative and qualitative based on best practice and professional experience.	This document.

11.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.






This report is for the exclusive use of Kilsaran Concrete; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.



NOTES

1. EXTRACT FROM 1:50,000 O.S DISCOVERY MAP NO. 80, 81 & 87
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

- LEGEND**
-  APPLICANTS LAND INTEREST
 -  SUBSTITUTE CONSENT APPLICATION AREA (c.29.4 ha)
 -  15KM RADIUS FROM APPLICATION AREA
 -  SPECIAL AREA OF CONSERVATION (SAC)
 -  SPECIAL PROTECTION AREA (SPA)

Kilsaran
 Piercetown, Dunboyne, Co. Meath
 www.kilsaran.ie T:01 802 6300

SLR
 SLR CONSULTING IRELAND
 7 DUNDRUM BUSINESS PARK
 WINDY ARBOUR
 DUBLIN 14
 T: +353-1-2964667
 F: +353-1-2964676
 www.slrconsulting.com

**KILSARAN CONCRETE
 SUBSTITUTE CONSENT APPLICATION**

**QUARRY @ ROSSMORE,
 CARRIGTOHILL, CO. CORK**

**PROJECT SITE AND
 NATURA 2000 SITES**

FIGURE 1

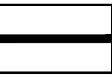
Scale 1:125,000 @ A3 Date MAY 2016


00036.00038.0001.FIG-1.R0.18.SAC-15km.dwg

NOTES

1. BASED ON EXTRACT FROM 1:2500 O.S.I MAP NO. 6386A 6386B 6386C AND 6386D
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

 PLANNING PERMISSION AREA
P. REF. 99/3410 TAKEN FROM ORIGINAL PLANNING FILE

 APPLICANT WAS READYMIX (SOUTHWEST) LIMITED

(BLACK & WHITE VERSION ONLY AVAILABLE)

Kilsaran
Piercetown, Dunboyne, Co. Meath
www.kilsaran.ie T:01 802 6300

SLR 
SLR CONSULTING IRELAND
7 DUNDUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

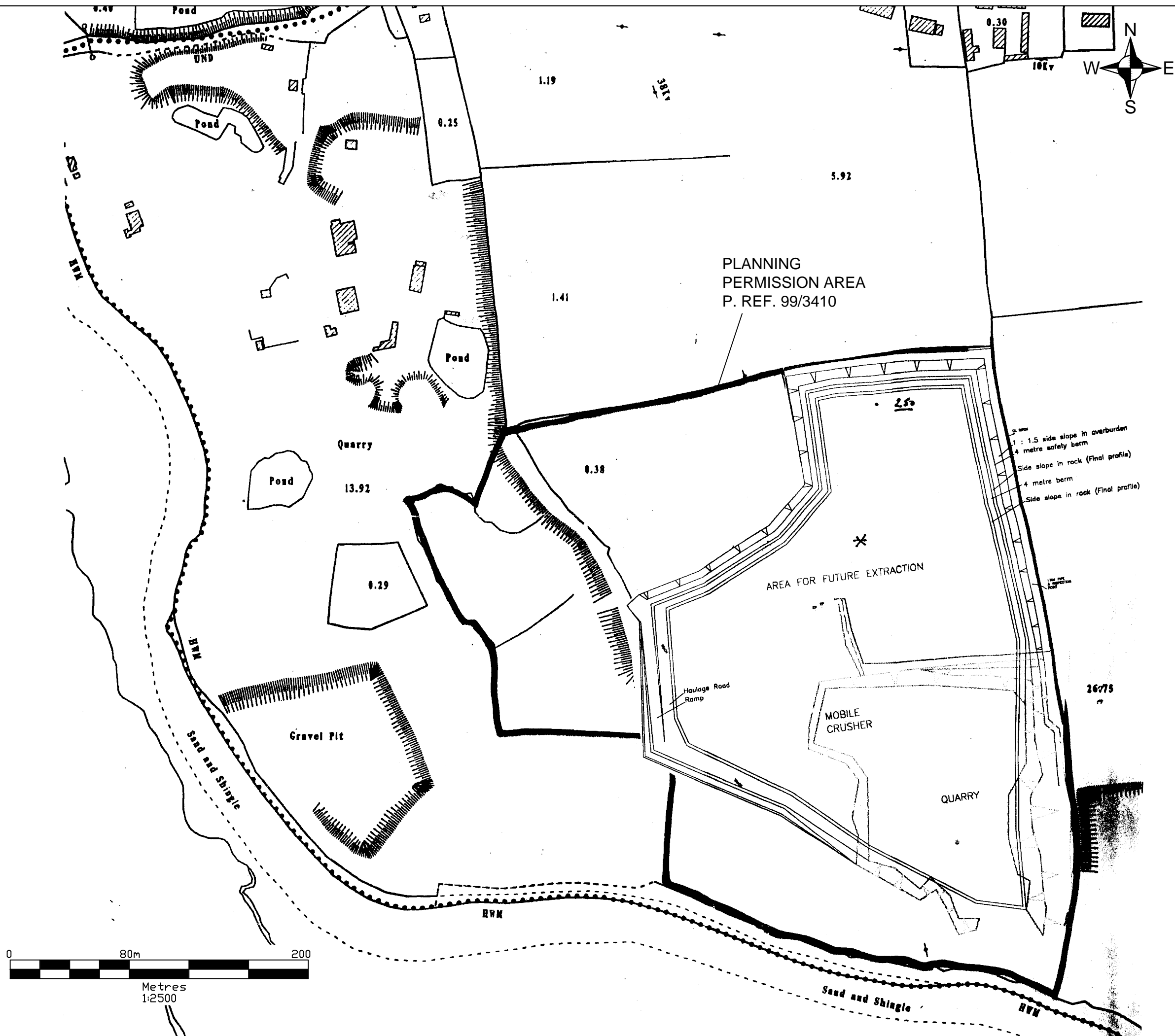
KILSARAN CONCRETE
remedial Natura Impact Statement (rNIS)

QUARRY @ ROSSMORE,
CARRIGTOHILL, CO. CORK

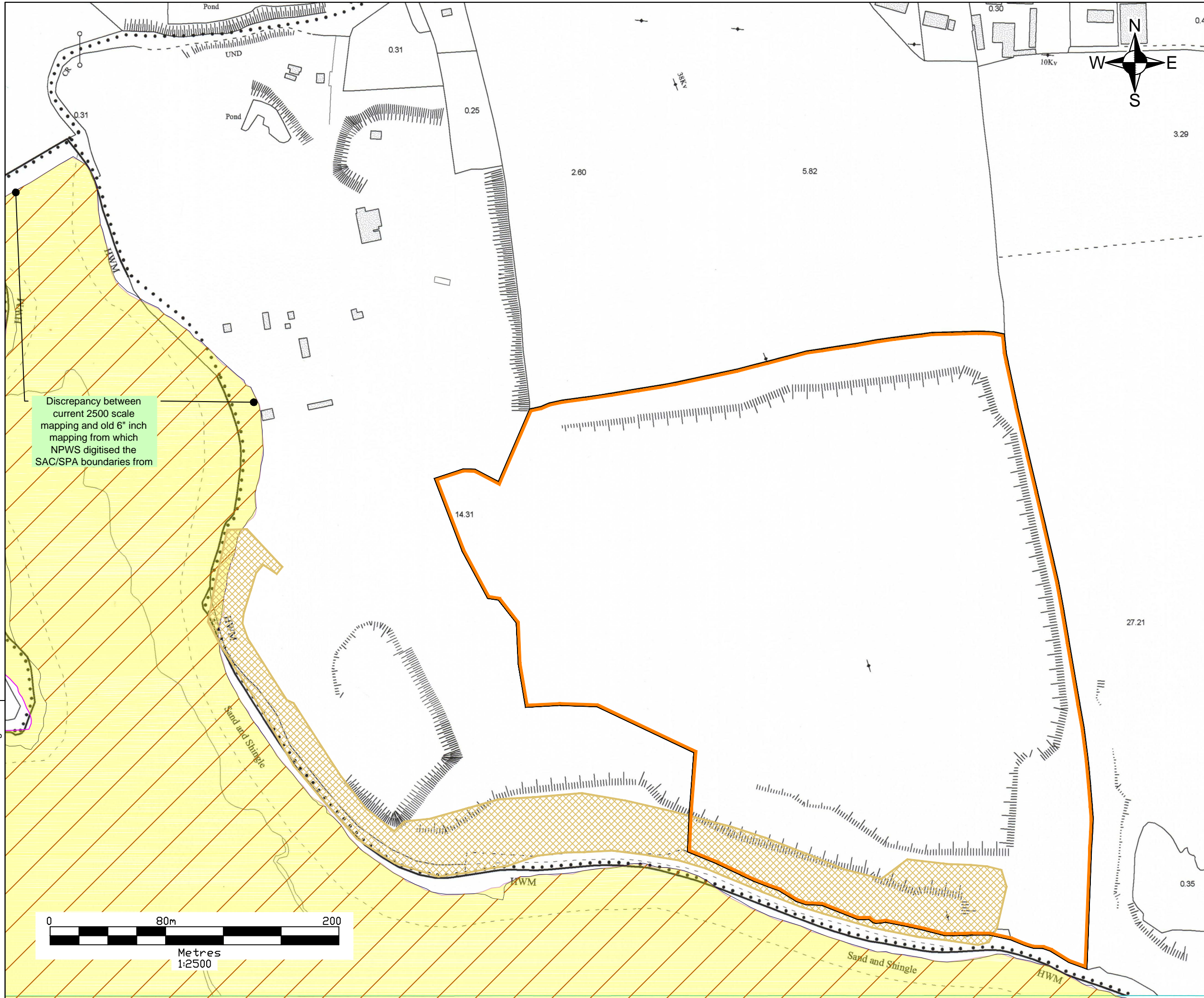
S99/3410 Application Boundary
from Original Plans

FIGURE 2-A

Scale 1:2,500 @ A3 Date MAY 2016



00036.00038.0001.rNIS-FIG-2A.R0.18.993410-App-Area.dwg



NOTES

1. BASED ON EXTRACT FROM 1:2500 O.S.I MAP NO. 6386A 6386B 6386C AND 6386D
2. 2500 SCALE MAP SURVEYED 1997-2002 AND REVISED 2011-2013
3. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

	PLANNING PERMISSION P. REF. 99/3410
	SPECIAL AREA OF CONSERVATION (SAC)
	SPECIAL PROTECTION AREA (SPA)
	SCREENING BERM (CONDITIONED AS PART OF GRANT OF PERMISSION 99/3410)

NOTE:
The SAC / SPA boundaries have been downloaded from the NPWS mapping webviewer database as a dxf data-set.

The NPWS mapping data was digitised on the old 6 inch (1841 and revised 1929-1930) mapping system in Irish Grid which has resulted in discrepancies when overlaid on the more updated 2500 scale mapping.

Kilsaran
Piercetown, Dunboyne, Co. Meath
www.kilsaran.ie T:01 802 6300

SLR
SLR CONSULTING IRELAND
7 DUNDUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

KILSARAN CONCRETE
remedial Natura Impact Statement (rNIS)
QUARRY @ ROSSMORE,
CARRIGTOHILL, CO. CORK
S99/3410 Application Boundary overlaid
OSi 2500 Scale Mapping

FIGURE 2-B

Scale 1:2,500 @ A3	Date MAY 2016
-----------------------	------------------




00036.00038.0001.rNIS-FIG-2B.R0.18.993410+OSnew.dwg



Discrepancy between current 2500 scale mapping and old 6" inch mapping from which NPWS digitised the SAC/SPA boundaries from

NOTES

1. BASED ON EXTRACT FROM O.S.I 1995 HIGH FLOWN ORTHOPHOTOGRAPHY IMAGE
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

- LEGEND**
-  PLANNING PERMISSION
P. REF. 99/3410
 -  SPECIAL AREA OF CONSERVATION (SAC)
 -  SPECIAL PROTECTION AREA (SPA)

NOTE:
The SAC / SPA boundaries have been downloaded from the NPWS mapping webviewer database as a dxf data-set.

The NPWS mapping data was digitised on the old 6 inch (1841 and revised 1929-1930) mapping system in Irish Grid which has resulted in discrepancies when overlaid on the more updated 2500 scale mapping.

00036.00038.0001.rNIS-FIG-2C.R0.18.993410+95Aerial.dwg



Kilsaran
Piercetown, Dunboyne, Co. Meath
www.kilsaran.ie T:01 802 6300

SLR
SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

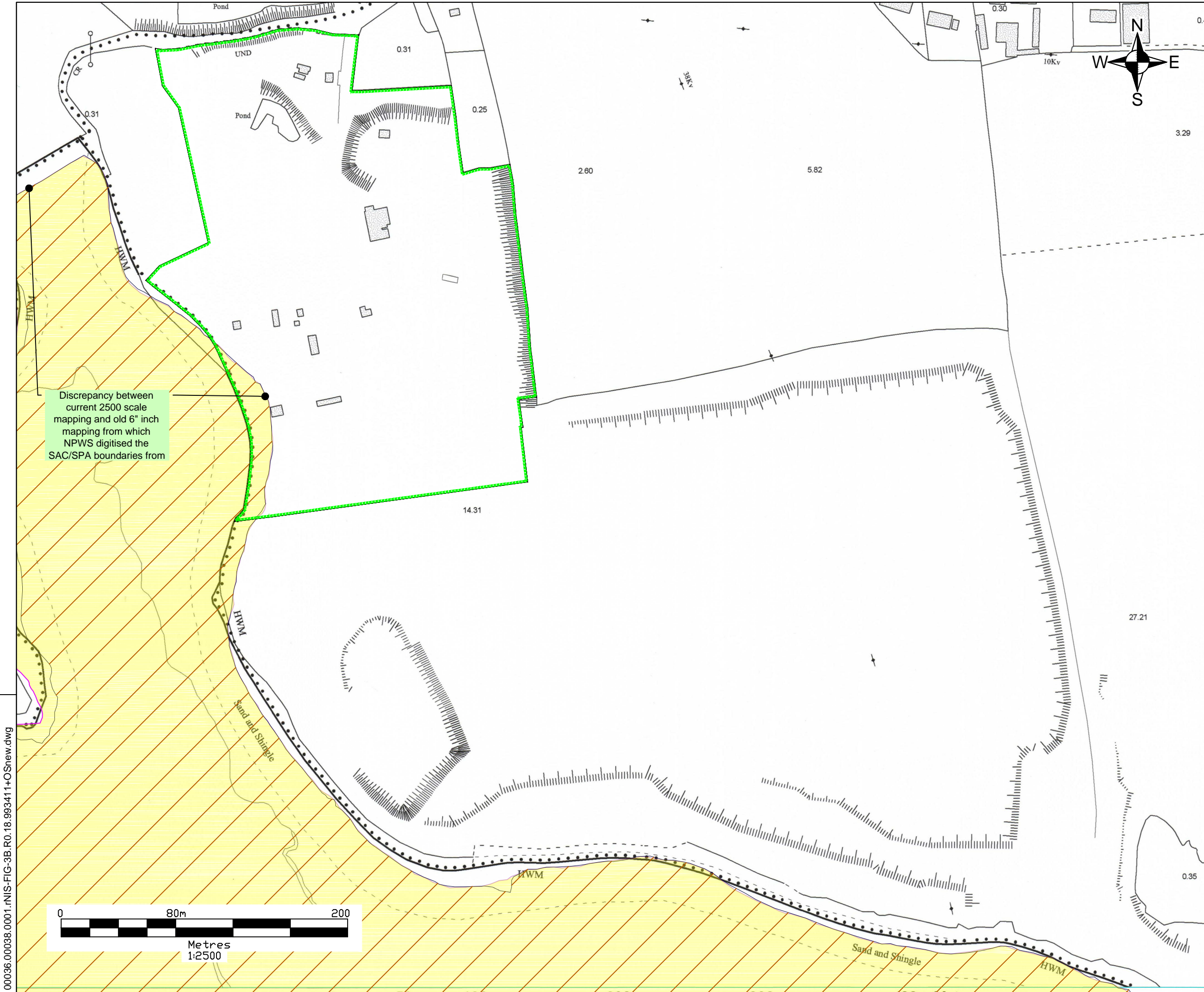
KILSARAN CONCRETE
remedial Natura Impact Statement (rNIS)

QUARRY @ ROSSMORE,
CARRIGTOHILL, CO. CORK

S99/3410 Application Boundary
overlaid OSi 1995 High Flown
Orthophotography

FIGURE 2-C

Scale 1:2,500 @ A3 Date MAY 2016



Discrepancy between current 2500 scale mapping and old 6" inch mapping from which NPWS digitised the SAC/SPA boundaries from

NOTES

1. BASED ON EXTRACT FROM 1:2500 O.S.I MAP NO. 6386A 6386B 6386C AND 6386D
2. 2500 SCALE MAP SURVEYED 1997-2002 AND REVISED 2011-2013
3. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

- PLANNING PERMISSION P. REF. 99/3411
- SPECIAL AREA OF CONSERVATION (SAC)
- SPECIAL PROTECTION AREA (SPA)

NOTE:
The SAC / SPA boundaries have been downloaded from the NPWS mapping webviewer database as a dxf data-set.

The NPWS mapping data was digitised on the old 6 inch (1841 and revised 1929-1930) mapping system in Irish Grid which has resulted in discrepancies when overlaid on the more updated 2500 scale mapping.

Kilsaran
Piercetown, Dunboyne, Co. Meath
www.kilsaran.ie T:01 802 6300

SLR
SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

KILSARAN CONCRETE
remedial Natura Impact Statement (rNIS)

QUARRY @ ROSSMORE,
CARRIGTOHILL, CO. CORK

**S99/3411 Application Boundary overlaid
OSi 2500 Scale Mapping**

FIGURE 3-B

Scale 1:2,500 @ A3 Date MAY 2016

00036.00038.0001.rNIS-FIG-3B.R0.18.993411+OSnew.dwg


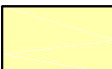



Discrepancy between current 2500 scale mapping and old 6" inch mapping from which NPWS digitised the SAC/SPA boundaries from

NOTES

1. BASED ON EXTRACT FROM O.S.I 1995 HIGH FLOWN ORTHOPHOTOGRAPHY IMAGE
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND


LEGEND

	PLANNING PERMISSION P. REF. 99/3411
	SPECIAL AREA OF CONSERVATION (SAC)
	SPECIAL PROTECTION AREA (SPA)

NOTE:
The SAC / SPA boundaries have been downloaded from the NPWS mapping webviewer database as a dxf data-set.

The NPWS mapping data was digitised on the old 6 inch (1841 and revised 1929-1930) mapping system in Irish Grid which has resulted in discrepancies when overlaid on the more updated 2500 scale mapping.

Kilsaran
Piercetown, Dunboyne, Co. Meath
www.kilsaran.ie T:01 802 6300

SLR 
SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

KILSARAN CONCRETE
remedial Natura Impact Statement (rNIS)

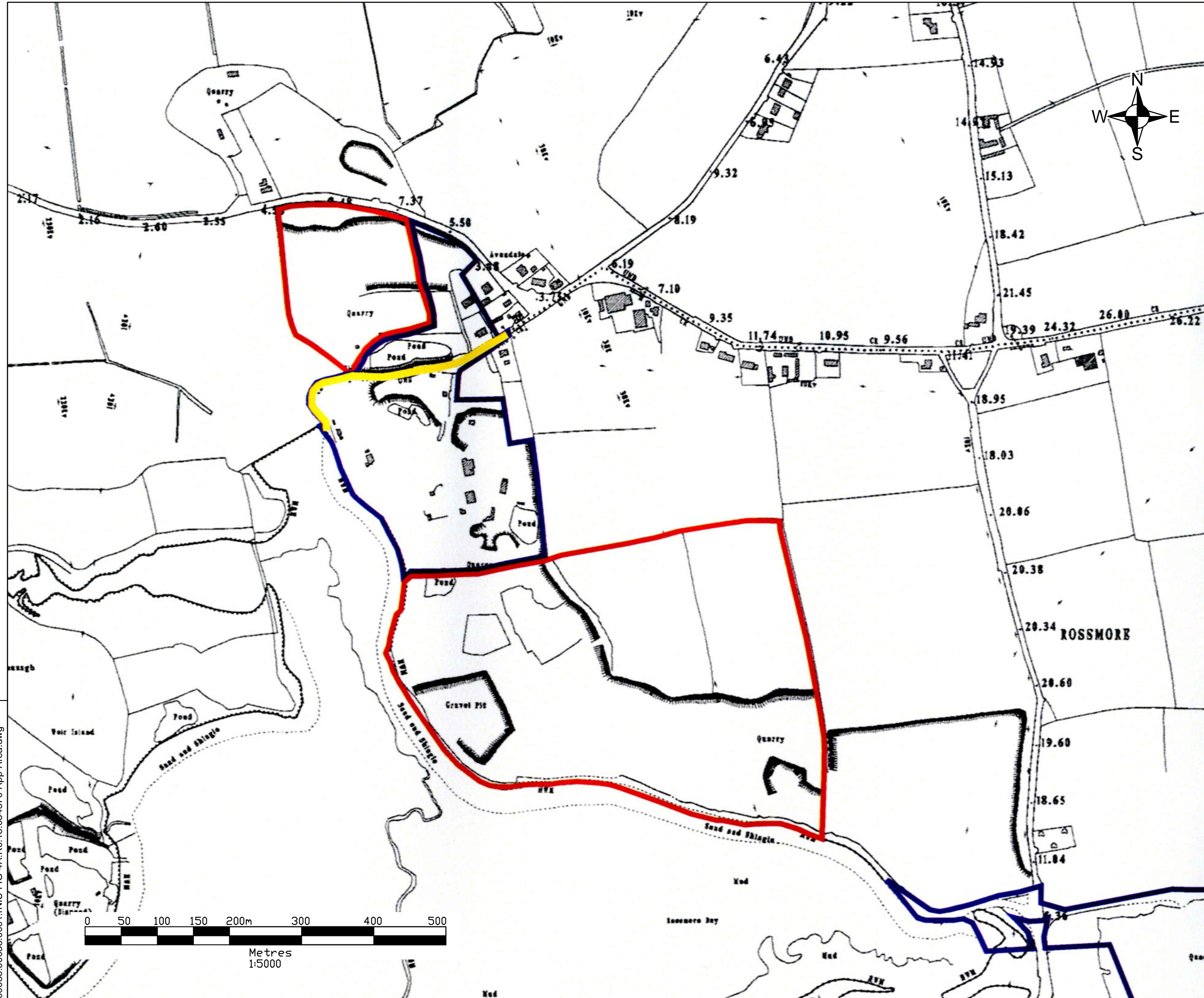
QUARRY @ ROSSMORE,
CARRIGTOHILL, CO. CORK

S99/3411 Application Boundary
overlaid OSi 1995 High Flown
Orthophotography

FIGURE 3-C

Scale 1:2,500 @ A3	Date MAY 2016
-----------------------	------------------

00036.00038.0001.rNIS-FIG-3C.R0.18.993411+95Aerial.dwg



NOTES

1. BASED ON EXTRACT FROM 1:2500 O.S.I MAP NO. 6386A 6386B 6386C AND 6386D
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

- LANDHOLDING INTEREST
- PLANNING PERMISSION AREA
P. REF. 03/4570 TAKEN FROM ORIGINAL PLANNING FILE
- APPLICANT WAS READYMIX (ROI) LIMITED
- RIGHT OF WAY

Kilsaran
 Piercetown, Dunboyne, Co. Meath
 www.kilsaran.ie T:01 802 6300

SLR SLR CONSULTING IRELAND
 7 DUNDUM BUSINESS PARK
 WINDY ARBOUR
 DUBLIN 14
 T: +353-1-2964667
 F: +353-1-2964676
 www.slrconsulting.com

KILSARAN CONCRETE
 remedial Natura Impact Statement (rNIS)
 QUARRY @ ROSSMORE,
 CARRIGTOHILL, CO. CORK
 03/4570 Application Boundary
 from Original Plans

FIGURE 4-A

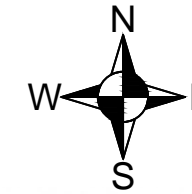
Scale 1:5,000 @ A3 Date MAY 2016

00036.00038.0001.rNIS-FIG-4A.R0.18.034570-App-Area.dwg

00036.00038.0001.rNIS-FIG-4B.R0.18.034570+OSnew.dwg

Surveyed 1997-2002
Revised 2011-2013
Levelled

Rural PLACE Map



ITM CENTRE PT COORDS
582003,571337

DESCRIPTION

MAP SHEETS
1:2500
6386-A 6386-B
6386-C 6386-D



Arna threolaigh agus arna threolaigh ag Bunreacht Ordánáil Éireann. Páirt an tPheireadaire, Stáin Ána Clárú & Éire.
Compiled and published by Ordnance Survey Ireland, Phoenix Park, Dublin 8, Ireland.

Séilimín atáilgeadh neamhúdarthaí clóphoirt Shuíbhéireacht Ordánáil Éireann agus Rialtas na hÉireann.
Unauthorized reproduction infringes Ordnance Survey Ireland and Government of Ireland copyright.

Gach cead ar coisrann. Ní ceadrúadh aon chuid den hollscéala seo a chóipeáil, a athscríobh nó a tharthaic in aon bhealach ná ar aon bhealach gan cead / scriobhín eile ná a chéile an chóipeáil.
All rights reserved. No part of this publication may be copied, reproduced or transmitted in any form or by any means without the prior written permission of the copyright owner.

Ní hionann bóthar, bealach nó ceadúnas a bhaint ar an Mearcail seo agus fianaise ar chéad áit. The representation on this map of a road, track or footpath is not evidence of the existence of a right of way.

Ní thaispeáir na Mearcail de chuid Ordánáil Shuíbhéireacht na hÉireann tuairimí phoiblí de dháil de mhóid riacht, ná d'ádhúil de ghraibhe thaiscúil.
Ordnance Survey maps never show legal property boundaries, nor do they show ownership of physical features.

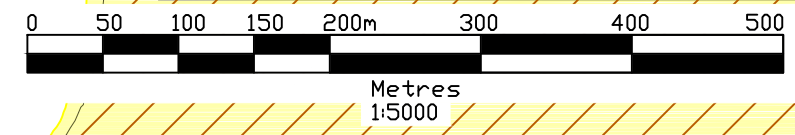
© Suirbhéireacht Ordánáil Éireann, 2014
© Ordnance Survey Ireland, 2014



Discrepancy between current 2500 scale mapping and old 6" inch mapping from which NPWS digitised the SAC/SPA boundaries from

Scale - 1:2,500
Scale - 1:2,500

Plot Ref. No. 25203832_1_1
Plot Date 21-AUG-2014



- NOTES**
1. BASED ON EXTRACT FROM 1:2500 O.S.I MAP NO. 6386A 6386B 6386C AND 6386D
 2. 2500 SCALE MAP SURVEYED 1997-2002 AND REVISED 2011-2013
 3. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

- LEGEND**
- PLANNING PERMISSION P. REF. 03/4570
 - SPECIAL AREA OF CONSERVATION (SAC)
 - SPECIAL PROTECTION AREA (SPA)

NOTE:
The SAC / SPA boundaries have been downloaded from the NPWS mapping webviewer database as a dxf data-set.

The NPWS mapping data was digitised on the old 6 inch (1841 and revised 1929-1930) mapping system in Irish Grid which has resulted in discrepancies when overlaid on the more updated 2500 scale mapping.

Kilsaran
Piercetown, Dunboyne, Co. Meath
www.kilsaran.ie T:01 802 6300

SLR SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

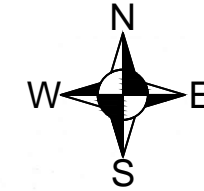
KILSARAN CONCRETE
remedial Natura Impact Statement (rNIS)
QUARRY @ ROSSMORE,
CARRIGTOHILL, CO. CORK
03/4570 Application Boundary overlaid
OSi 2500 Scale Mapping

FIGURE 4-B

Scale 1:5,000 @ A3 Date MAY 2016

Surveyed 2000
 Revised 2000
 Levelled




High Flown Orthophotography



NOTES

1. BASED ON EXTRACT FROM O.S.i 2000 HIGH FLOWN ORTHOPHOTOGRAPHY IMAGE
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

-  PLANNING PERMISSION
P. REF. 03/4570
-  SPECIAL AREA OF CONSERVATION (SAC)
-  SPECIAL PROTECTION AREA (SPA)

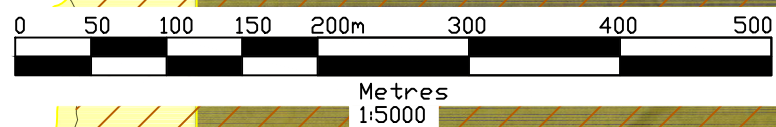
NOTE:

The SAC / SPA boundaries have been downloaded from the NPWS mapping webviewer database as a dxf data-set.

The NPWS mapping data was digitised on the old 6 inch (1841 and revised 1929-1930) mapping system in Irish Grid which has resulted in discrepancies when overlaid on the more updated 2500 scale mapping.

571852
581373

Discrepancy between current 2500 scale mapping and old 6" inch mapping from which NPWS digitised the SAC/SPA boundaries from



Kilsaran

Piercetown, Dunboyne, Co. Meath
 www.kilsaran.ie T:01 802 6300

SLR

SLR CONSULTING IRELAND
 7 DUNDRUM BUSINESS PARK
 WINDY ARBOUR
 DUBLIN 14
 T: +353-1-2964667
 F: +353-1-2964676
 www.slrconsulting.com

**KILSARAN CONCRETE
 remedial Natura Impact Statement (rNIS)**

**QUARRY @ ROSSMORE,
 CARRIGTOHILL, CO. CORK**

**03/4570 Application Boundary
 overlaid OSi 2000 High Flown
 Orthophotography**

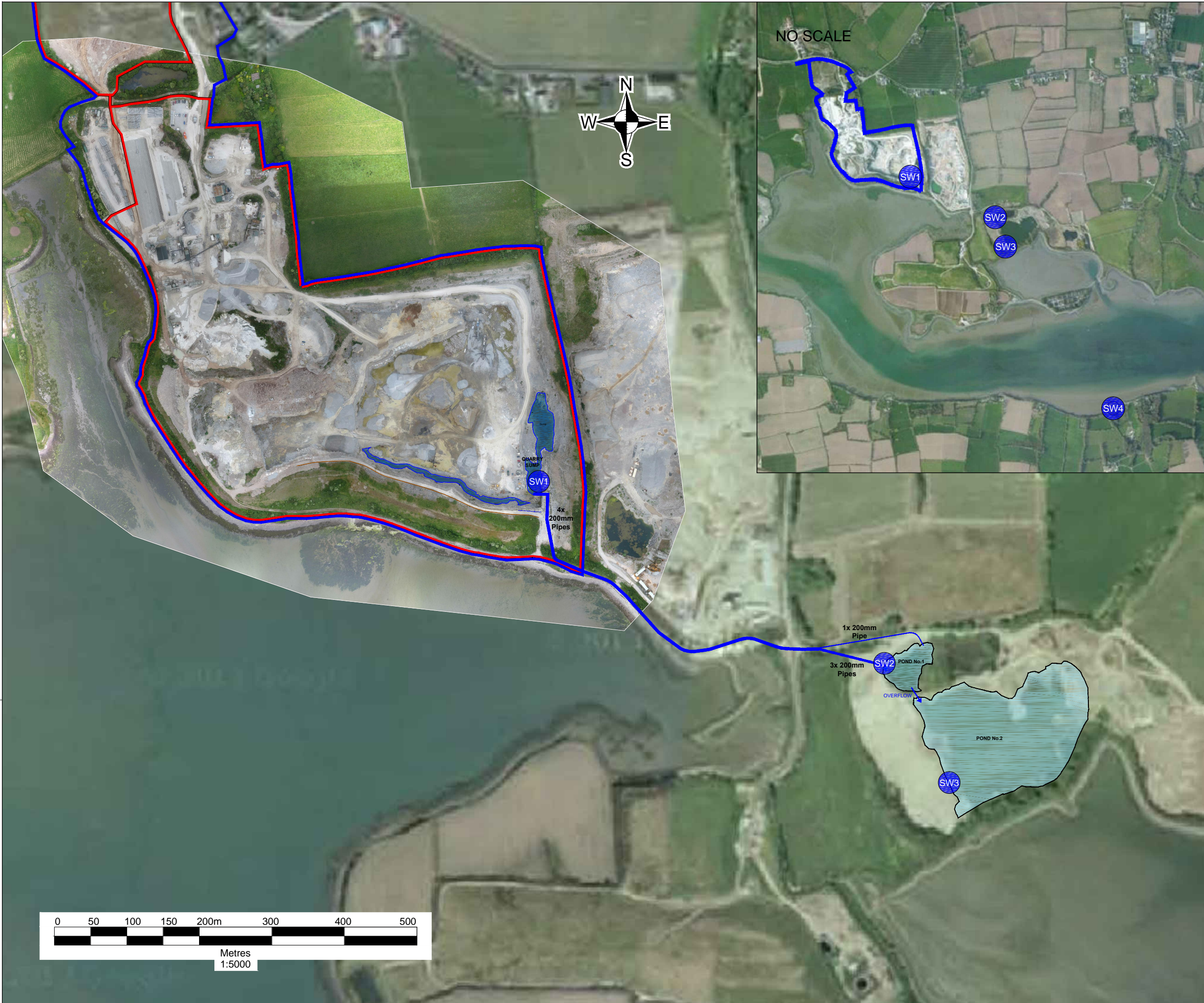
FIGURE 4-C

Scale 1:5,000 @ A3

Date MAY 2016

00036.00038.0001.rNIS-FIG-4C.R0.18.034570+2000Aerial.dwg

00036.00038.0001.r.NIS-FIG-5.R0.18.Dewatering Operations.dwg







NO SCALE

NOTES

1. EXTRACT FROM ORDNANCE SURVEY AERIAL PHOTOGRAPHS WEB VIEWER
2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000716 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

-  APPLICANTS LAND INTEREST
-  SUBSTITUTE CONSENT APPLICATION AREA (c.29.4 ha)
-  SURFACE WATER QUALITY MONITORING LOCATIONS
-  WATER PIPE

SLR 

SLR CONSULTING IRELAND
7 DUNDUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

KILSARAN CONCRETE
remedial Natura Impact Statement

QUARRY @ ROSSMORE,
CARRIGTOHILL, CO. CORK

CURRENT DEWATERING OPERATIONS

FIGURE 5

Scale 1:5,000. @ A3 Date MAY 2016

**ANALYSIS OF WATER QUALITY AT THE QUARRY SUMP
(SEPTEMBER 1999)**

APPENDIX A

Parameters	Units	September 1999 ³³
pH	pH unit	7.2
Colour	Hazen	<5
Turbidity	NTU	0.85
Conductivity	µS/cm	570
Total Hardness	mg/l CaCO ₃	320
Total Alkalinity	mg/l CaCO ₃	315
Bicarbonate	mg/l HCO ₃	405
Non-carbonate Hardness	mg/l CaCO ₃	22
Calcium	mg/l	95
Magnesium	mg/l	24
Sodium	mg/l	23
Potassium	mg/l	1.6
Iron	mg/l	0.26
Manganese	mg/l	0.31
Copper	mg/l	<0.01
Aluminium	mg/l	0.12
Nitrate	mg/l	<0.05
Nitrate	mg/l	0.01
Chloride	mg/l	24
Sulphate	mg/l	93
Total Ammonia (NH ₃ +NH ₄)	mg/l	0.08
Non-purgeable Organic Carbon	mg/l	2.7
Sulphur	mg/l	7.7
Arsenic	mg/l	<0.05
Tin	mg/l	<0.05
Mercury	mg/l	<0.0005
Chromium	mg/l	<0.01
Lead	mg/l	<0.05
Cobalt	mg/l	<0.01
Nickel	mg/l	<0.01
Boron	mg/l	0.16
Strontium	mg/l	1.6
Barium	µg/l	0.36

³³ O'Neill Ground Water Engineering (1999). *Retention of Planning Permission at the Readymix South West Site at Carrigtohill, Co. Cork*. Report dated November 1999.

NOISE MONITORING REPORT 2014

CONTENTS

1.0	INTRODUCTION.....	4
2.0	REPORT STRUCTURE	4
3.0	COMPETENT PERSON.....	4
4.0	METHODOLOGY	4
4.1	Scope of Monitoring.....	4
4.2	Noise Parameters & Measurement Periods	5
4.3	Monitoring Points	5
4.4	Equipment & Calibration	6
5.0	NOISE MONITORING RESULTS.....	7
5.1	Weather Conditions	7
5.2	Noise Monitoring Results	7
5.3	Observations during Noise Monitoring	7
6.0	AQTAG09 -GUIDANCE ON THE EFFECTS OF INDUSTRIAL NOISE ON WILDLIFE .	8
7.0	CONCLUSIONS.....	9
8.0	CLOSURE.....	9

TABLES

Table 1	Noise Monitoring Locations	5
Table 2	Summary of Measured Noise Levels	7
Table 3	Specific Noise Levels at Habitat/Nest Site.....	8

FIGURES

Figure 1	Noise Monitoring Locations	10
----------	----------------------------------	----

1.0 INTRODUCTION

SLR Consulting have been appointed by Cemex (ROI) Limited, to carry out a programme of monitoring noise levels at four locations at Rossmore Quarry western and southern boundary and one location across the channel. The western and southern quarry site boundary is also boundary of the Great Island SAC and/or the Cork Harbour SPA.

The Rossmore Quarry is in the townlands of Rossmore and Barryscourt approximately 1.7km south of the village of Carrigtohill and 13.5km east of the Cork city centre, Co. Cork.

The surrounding landscape and quarry southern boundary is characterised by Cork Harbour and the numerous islands, tidal estuaries, loughs and channels that make up Cork Harbour.

This noise survey was carried out to describe the existing noise levels at the Great Island SAC and/or the Cork Harbour SPA.

This report describes the noise monitoring carried out on the 14th April 2014.

2.0 REPORT STRUCTURE

The structure of the report is as follows:

- Section 1: Introduction.
- Section 2: Report Structure.
- Section 3: Competent Person.
- Section 4: Methodology.
- Section 5: Noise Monitoring Results.
- Section 6 : Conclusions.

3.0 COMPETENT PERSON

The noise monitoring programme was carried out by Aldona Binchy (MSc. (Eng) AIEMA Environmental Engineering).Mrs. Binchy has over 10 years of experience in environmental noise monitoring and assessments for planning compliance, PPC permitting, and waste permits / licences, and Environmental Impact Assessments.

4.0 METHODOLOGY

4.1 Scope of Monitoring

The scope of the noise monitoring programme comprised:

- Daytime (free-field noise survey at five locations).
- Reporting of measured levels.

Noise monitoring was carried out on the 14th April 2014.

- Day-time: 9:19 - 15:10
- Rossmore Quarry was operational during the noise survey.

- The adjacent Irish Asphalt Quarry was operational during the noise survey.

The location of monitoring locations is shown on the Figure 1.

4.2 Noise Parameters & Measurement Periods

At the measurement positions, the following noise level indices were recorded:

- $L_{Aeq,T}$ – the A-weighted equivalent continuous sound pressure level over the measurement period T, effectively represents an “average” energy level of all the sampled levels.
 The ambient sound level is usually measured as an $L_{Aeq,T}$ and is made up of all the sound in the area from sources near and far.
- $L_{A90,T}$ – the A-weighted noise level exceeded for 90% of the measurement period, T. This parameter is often used to describe the “background” noise level, it gives a clear indication of the underlying noise level, or the level that is almost always there in between intermittent noisy events.
- $L_{A10,T}$ – the A-weighted noise level exceeded for 10% of the measurement period, T. This parameter is often used to describe or identify road traffic noise.

A small difference in $L_{A90,T}$, $L_{A10,T}$, and $L_{Aeq,T}$ will indicate a fairly constant noise emission (or a lack of intermittent noise). The greater the difference between the $L_{A10,T}$, $L_{Aeq,T}$ and $L_{A90,T}$ indicates intermittent noise sources such as traffic.

A - weighting is the process by which noise levels are corrected to account for the non-linear frequency response of the human ear. All noise levels are quoted in dB (A) relative to a sound pressure of 20µPa.

The microphone was placed 1.5m above the ground in free-field conditions, *i.e.* at least 3.5m from the nearest vertical, reflecting surface.

4.3 Monitoring Points

The noise monitoring survey was undertaken at five locations:

Table 1
Noise Monitoring Locations






Photo	Location
	<p>Location 1 Quarry site boundary, at the shoreline of the Great Island SAC and/or the Cork Harbour SPA.</p>

Photo	Location
	Location 2 Quarry site boundary, at the shoreline of the Great Island SAC and/or the Cork Harbour SPA.
	Location 3 Quarry site boundary, at the shoreline of the Great Island SAC and/or the Cork Harbour SPA.
	Location 4 Quarry site boundary, at the shoreline of the Great Island SAC and/or the Cork Harbour SPA.
	Location 5 At the shoreline of the Great Island SAC and/or the Cork Harbour SPA.

The noise monitoring locations are shown on Figure 1.

4.4 Equipment & Calibration

The measurements were carried out using Larson Davis Model 831 Sound Level Meter (serial number: 0001642) which was field calibrated before and after each series of measurements using Larson Davis Calibrator Cal 200 (serial number: 6970). All noise equipment had been calibrated to a traceable standard by UKAS-accredited laboratories

within 12 months preceding the survey. Standard windshield was used on the microphone during the survey.

5.0 NOISE MONITORING RESULTS

5.1 Weather Conditions

The weather conditions during the monitoring period were acceptable for noise monitoring. Measurements were taken in the neutral weather conditions (absence of wind -less 5m/sec and participation).

The prevailing weather conditions at the time of survey are detailed below:

14th April 2014: sunny, cloud 10%, Temp 11^o-15^o C. No Wind.

5.2 Noise Monitoring Results

The location of quarry operations relative to the noise monitoring locations is shown on Figure 1. The noise monitoring results at the five monitoring locations are summarised in Table 2 below.

During the surveys observations of noise sources that influenced the noise levels recorded were noted. These observations are detailed in Section 5.3 below for each monitoring location.

Table 2
Summary of Measured Noise Levels

Location	Date	Time	Measured (1hr) L _{Aeq} , dB(A)	Measured (1hr) L _{A10} , dB(A)	Measured (1hr) L _{A90} , dB(A)
Location1	14/04/14	9:19-10:19	48	49	45
Location2	14/04/14	10:27-11:27	59	63	48
Location3	14/04/14	11:30-13:30	41	41	32
Location4	14/04/14	12:35-13:35	44	45	37
Location5	14/04/14	14:20-14:10	48	51	43

5.3 Observations during Noise Monitoring

5.3.1 Monitoring Location 1

The noise monitoring Location 1 was positioned at the shoreline of the Great Island SAC and/or the Cork Harbour SPA. At the time of survey noise levels at this location were influenced by concrete block yard operations, concrete batching plant operations (including reversing signals of plant operating at the concrete yard and concrete batching plant) and natural noises of wildlife.

5.3.2 Monitoring Location 2

The noise monitoring Location 2 was positioned at the shoreline of the Great Island SAC and/or the Cork Harbour SPA. At the time of survey noise levels at this location were influenced by concrete batching plant operations.

5.3.3 Monitoring Location 3

The noise monitoring Location 3 was positioned at the shoreline of the Great Island SAC and/or the Cork Harbour SPA. At the time of survey noise levels at this location were influenced by natural noises of wildlife, loading activities from boat yard located across the channel and tractors ploughing surrounding fields. Rossmore Quarry activities were not audible at this location during noise survey.

5.3.4 Monitoring Location 4

The noise monitoring Location 4 was positioned at the shoreline of the Great Island SAC and/or the Cork Harbour SPA. At the time of survey noise levels at this location were influenced by natural noises of wildlife, loading activities from boat yard located across the channel and tractors ploughing surrounding fields. Asphalt plant operating at the adjacent Lagan cement plant also influenced the recorded noise levels at this location. Rossmore Quarry activities were not audible at this location during noise survey.

5.3.5 Monitoring Location 5

The noise monitoring Location 5 was positioned at the shoreline of the Great Island SAC and/or the Cork Harbour SPA across the channel from the Rossmore Quarry boundary. At the time of survey noise levels at this location were influenced by natural noises of wildlife, loading activities from boat yard and tractors ploughing surrounding fields. Concrete batching plant operating as Rosmmore Quarry also influenced the recorded noise levels at this location.

6.0 AQTAG09 -GUIDANCE ON THE EFFECTS OF INDUSTRIAL NOISE ON WILDLIFE

AQTAG09 provides guidance to assist planning officers in UK involved with PPC applications for installations with relevant noise emissions and relate these to the requirements of the Habitats Regulations. There is no existing relevant guidance in ROI.

The Habitats Directive (92/43/EEC) specifies that, where specific noise from industry, measured at the habitat/nest site is below the levels in Table 3, it is considered unlikely that it will have an adverse impact on designated species. Where noise levels are exceeded further, more detailed assessment will be required.

Table 3
Specific Noise Levels at Habitat/Nest Site

Parameter	Noise Level, dB
L _{Amax,F}	80
L _{Aeq,1hr}	55

7.0 CONCLUSIONS

Noise levels recorded at Location 1, Location 3, Location 4 and Location 5 are below the noise limit of 55 dB(A) L_{Aeq} (1 hour) recommended in the AQTAG09.

Noise levels recorded at Location 2 are above the noise limit of 55 dB(A) L_{Aeq} (1 hour) recommended in the AQTAG09. However, it should be noted that noise levels at Location 5 across the channel from Location 2, 245 m away from Location 2 were below the noise limit of 55 dB(A) L_{Aeq} (1 hour) recommended in the AQTAG09.

8.0 CLOSURE

This report has been prepared by SLR Consulting Ireland with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Cemex (ROI) Limited, no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

Figure 1
Noise Monitoring Locations



WATER QUALITY MONITORING RESULTS 2013

Summary of Water Quality Monitoring Results at Quarry Sump 2013

Parameters	Units	Environmental Limit Value (ELV) ³⁴	Environmental Quality Standards (EQS) ³⁵	29/05/13	12/06/13	28/06/13	12/07/13	28/07/13	09/08/13
pH	pH unit	7 - 9	-	7.01	7.48	7.4	8.36	7.66	7.54
BOD	mg/l	-	≤4.0	3	2.8	2.7	3.68	3.2	1
COD	mg/l	-	-	10	19	47	55	10	40
Suspended Solids (Total)	mg/l	-	-	35.2	47	92	79.5	50	93.5
Total Nitrogen (as N)	mg/l	-	-	15	9	9	3.7	7	12
Orthophosphate (as P)	mg/l	-	-	<0.01	0.003	0.22	<0.01	0.43	<0.01
Conductivity	µS/cm	-	-	10000	10000	17100	14100	6800	12100
Oils, Fats and Greases	mg/l	-	-	<1	2.5	<1	1	<1	13.5
Nitrate (as NO ₃)	mg/l	-	-	45.1	38.1	16.7	20.11	21.52	30.9
Nitrate (as NO ₂)	mg/l	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Petrol Range Organics	mg/l	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Diesel Range Organics	mg/l	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Hydrocarbons	mg/l	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	µg/l	40	-	<1	<1	<1	<1	<1	<1
Copper	µg/l	10	5	15	<1	17	12	<1	7
Lead	µg/l	20	25	<1	<1	<1	<1	<1	<1
Nickel	µg/l	50	30	2	<1	<1	<1	<1	<1
Cadmium	µg/l	5	-	<1	<1	<1	<1	<1	<1
Chromium	µg/l	30	15	<1	<1	<1	<1	4	9
Mercury	µg/l	0.4	<1	<1	<1	<1	<1	<1	<1

³⁴ Irish Statutory Instruments, S.I. 268 of 2006 – European Communities (Quality of Shellfish Waters) Regulations 2006.

³⁵ Water Quality Standards for the Protection of Saltwater Life for List II Substances (<http://www.ukmarinesac.or.uk/activities/water-quality>)

APPENDIX C

Summary of Water Quality Monitoring Results of Intertidal Waters at the Quarry at Rossmore

Parameters	Units	Environmental Limit Value (ELV)	Environmental Quality Standards (EQS)	29/05/13	12/06/13	28/06/13	12/07/13	28/07/13	09/08/13
pH	pH unit	7 - 9	-	7.09	8.14	7.96	8.77	8.08	8.11
BOD	mg/l	-	≤4.0	<1	3.5	3.4	3.48	2.5	1.64
COD	mg/l	-	-	90	100	105	170	1670	2170
Suspended Solids (Total)	mg/l	-	-	288	263.5	311	313.5	400.5	196
Total Nitrogen (as N)	mg/l	-	-	<1	3	2	<0.1	<1	<1
Orthophosphate (as P)	mg/l	-	-	<0.01	0.01	0.09	<0.01	0.27	<0.01
Conductivity	μS/cm	-	-	48000	49000	46700	50800	45400	44700
Oils, Fats and Greases	mg/l	-	-	<1	3	<1	<1	<1	<1
Nitrate (as NO ₃)	mg/l	-	-	2.6	14.5	2.92	4.67	3.16	11.98
Nitrate (as NO ₂)	mg/l	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Petrol Range Organics	mg/l	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Diesel Range Organics	mg/l	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Hydrocarbons	mg/l	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	μg/l	40	-	<1	<1	<1	<1	<1	<1
Copper	μg/l	10	5	12	<6	13	8	<1	8
Lead	μg/l	20	25	<1	<1	<1	<1	<1	<1
Nickel	μg/l	50	30	2	<1	<1	<1	<1	<1
Cadmium	μg/l	5	-	<1	<1	<1	<1	<1	<1
Chromium	μg/l	30	15	<1	<1	<1	<1	9	9
Mercury	μg/l	0.4	<1	<1	<1	<1	<1	<1	<1

**WATER QUALITY MONITORING RESULTS AT SW1 (QUARRY
SUMP) for 2015**

SW1 - Sump

Parameters	Units	Environmental Limit Value (ELV)	Environmental Quality Standards (EQS)	03/02/15	31/03/15	22/04/15	26/05/15
BOD	mg/l	-	≤4.0	0.000	0.000	0.000	0.000
COD	mg/l	-	-	680.00	52.00	40.00	100.00
Suspended Solids	mg/l	-	-	<10	11.00	<10.0	<10.0
pH	pH Units	7 - 9	-	6.2	7.2	7.6	7.7
Ortho-phosphate, as P	mg/l	-	≤0.6	0.05	0.05	0.03	0.04
Nitrates, as N	mg/l	-	-	7.3	6.8	6.6	6.7
Ammonium, as N	mg/l	-	-	<0.05	0.733	<0.05	<0.05
Total Petroleum Hydrocarbons	µg/l	-	-	<10	50.00	10.00	4800.00
BTEX Compounds	µg/l	-	-	<1.0	<1.0	<1.0	<1.0

**WATER QUALITY MONITORING RESULTS AT SW2 (END OF
DISCHARGE PIPE) for 2015-16**



Certificate of Analysis for 1602/9

Emission point data

Client: Kilsaran Build
Site: Rossmore
Site code: RA
Emission point: SW2
Licence type: Planning Application
Licence No.:
Analysed by: SAL Ltd
Sample type: Water

Sampling data

Results for monthly monitoring period starting: 01/06/2015
Date sample collected: 30/06/2015
Time sample collected: 11:00:00
Sample collection: Method statement 1602-01
Sample type: Surface water
Date first/last analysis: 30/06/2015 - 14/07/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/litre	none	Respirometric
COD	110	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	8.3	N/S	pH	none	Probe
Ortho Phosphate as P	0.03	N/S	mg/litre	none	Ascorbic Acid
Nitrate as N	5.7	N/S	mg/l	none	IC
Ammonium as N	0.1886	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydroc a	10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	5500	N/S	mg/l	UKAS	Discrete Analyser
Salinity	9.8	N/S	%	none	Probe
Conductivity	13	N/S	µs/cm	none	Probe

Signed (Lab Manager) *R. Sutcliffe*

Email: energy@enviro-consult.com www.enviro-consult.com
Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
Directors: Robert B. Sutcliffe, Ronan T. Sutcliffe

Environmental Services for Industry Including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

- ▶ ISO14001:2004 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/11

Emission point data

Client: Kilsaran Build
Site: Rossmore
Site code: RA
Emission point: SW2
Licence type: Planning Application
Licence No.:
Analysed by: SAL Ltd
Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/07/2015
Date sample collected 21/07/2015
Time sample collected 13:26:00
Sample collection Method statement 1602-01
Sample type Surface water
Date first/last analysis 21/07/2015 - 31/07/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	1	N/S	mg/litre	none	Respirometric
COD	98	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	7.8	N/S	pH	none	Probe
Ortho Phosphate as P	<0.02	N/S	mg/litre	none	Ascorbic Acid
Nitrate as N	5.6	N/S	mg/l	none	IC
Ammonium as N	0.31	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydroc	10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	5200	N/S	mg/l	UKAS	Discrete Analyser
Salinity	9	N/S	%	none	Probe
Conductivity	9.4	N/S	µs/cm	none	Probe

Signed (Lab Manager) *R. Sutcliffe*

Email: energy@enviro-consult.com www.enviro-consult.com
Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
Directors: Robert B. Sutcliffe, Ronan T. Sutcliffe

Environmental Services for Industry Including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

- ▶ ISO14001:2004 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/13

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW2
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/08/2015

Date sample collected: 17/08/2015
 Time sample collected: 12:43:00
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 17/08/15 - 06/10/2015

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	3	N/S	mg/litre	none	Respirometric
COD	91	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	6	N/S	pH	none	Probe
Ortho Phosphate as P	0.03	N/S	mg/litre	none	Ascorbic Acid
Nitrate as N	3.5	N/S	mg/l	UKAS	Discrete Analyser
Ammonium as N	0.16	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydroc	6800	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	5300	N/S	mg/l	UKAS	Discrete Analyser
Salinity	6.6	N/S	%	none	Probe
Conductivity	10	N/S	µs/cm	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sutcliffe, Roman T. Sutcliffe

Environmental Services for Industry including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

Affiliations & Accreditations

- ▶ ISO 14001:2004 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise





Certificate of Analysis for 1602/15

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW2
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/09/2015
 Date sample collected: 01/09/2015
 Time sample collected:
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 01/09/2015 - 10/09/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/litre	none	Respirometric
COD	94	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	7.5	N/S	pH	none	Probe
Ortho Phosphate as P	0.03	N/S	mg/litre	none	Ascorbic Acid
Nitrate as N	5.5	N/S	mg/l	none	IC
Ammonium as N	1.968	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydroc	20	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	5500	N/S	mg/l	UKAS	Discrete Analyser
Salinity	10	N/S	%	none	Probe
Conductivity	18	N/S	µs/cm	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sutcliffe, Roman T. Sutcliffe

Environmental Services for Industry including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

Affiliations & Accreditations

- ▶ ISO 14001:2004 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise





Certificate of Analysis for 1602/17

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW2
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/10/2015
 Date sample collected: 14/10/2015
 Time sample collected: 13:40
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 14/10/15 - 21/10/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	98	N/S	mg/l	none	Colorimetry
Suspended Solids	10	N/S	mg/l	none	Grav
pH	7.8	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/l	none	Ascorbic Acid
Nitrate as N	5.4	N/S	mg/l	none	IC
Ammonium as N	0.1968	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydroc	10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	5400	N/S	mg/l	UKAS	Discrete Analyser
Salinity	11000	N/S	%	none	Probe
Conductivity	17	N/S	µs/cm	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sutcliffe, Roman T. Sutcliffe

Environmental Services for Industry including –
 ▶ Air, Noise & Water Monitoring
 ▶ Bund Testing
 ▶ Environmental Management Systems to ISO 14001
 ▶ Air & Noise Modelling

Affiliations & Accreditations

▶ ISO 14001:2004 Registration No. 2012/1427
 ▶ MCERTS Certified personnel for stack testing
 ▶ Member of Royal Society for Prevention of Accidents
 ▶ Member Environmental Services Association
 ▶ EMPI Membership

▶ Energy & Water use reduction
 ▶ IPPC/Waste Licence Compliance
 ▶ EIS & Planning
 ▶ Occupational Dust & Noise





Certificate of Analysis for 1602/19

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW2
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/11/2015

Date sample collected: 05/11/2015
 Time sample collected: 14:10
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 06/11/15 - 11/11/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/litre	none	Respirometric
COD	140	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	8.1	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/litre	none	Ascorbic Acid
Nitrates as N	3.3	N/S	mg/l	UKAS	Discrete Analyser
Ammonium as N	<0.05	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydroc	180	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	4500	N/S	mg/l	UKAS	Discrete Analyser
Salinity	9.2	N/S	%	none	Probe
Conductivity	0.016	N/S	µs/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Guinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sutcliffe, Roman T. Sutcliffe

Environmental Services for Industry Including –

- ▶ Air, Noise & Water Monitoring
- ▶ Dams Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

- ▶ ISO 14001:2004 Registration No. 2012/1427
- ▶ NCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/22

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW2
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/12/2015
 Date sample collected: 30/11/2015
 Time sample collected: 14:00
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 30/11/15 - 06/12/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	110	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	7.9	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/l	none	Ascorbic Acid
Nitrates as N	4.7	N/S	mg/l	none	IC
Ammonium as N	0.1155	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	80	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	5700	N/S	mg/l	UKAS	Discrete Analyser
Salinity	10	N/S	%	none	Probe
Conductivity	1400	N/S	us/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sulcliffe, Roman T. Sulcliffe

Environmental Services for Industry including –
 ► Air, Noise & Water Monitoring
 ► Bund Testing
 ► Environmental Management Systems to ISO 14001
 ► Air & Noise Modelling

► Energy & Water use reduction
 ► IPPC/Waste Licence Compliance
 ► EIS & Planning
 ► Occupational Dust & Noise

Affiliations & Accreditations

► ISO14001:2004 Registration No. 2012/1427
 ► MCERTS Certified personnel for stack testing
 ► Member of Royal Society for Prevention of Accidents



- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/27

Emission point data

Client:	Kilsaran
Site:	Rossmore A
Site code:	RA
Emission point	SW2
Licence type	Planning application Licence
Licence No.	
Analysed by:	SAL Ltd
Sample type:	Water

Sampling data

Results for monthly monitoring period starting 01/02/2016	
Date sample collected	12/02/2016
Time sample collected	11:30
Sample collection	Method statement
Sample type	Surface water
Date first/last analysis	12/02/16 - 17/02/16

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	130	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	8.2	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/l	none	Ascorbic Acid
Nitrates as N	10	N/S	mg/l	none	IC
Ammonium as N	0.12	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	3400	N/S	mg/l	UKAS	Discrete Analyser
Salinity	5.5	N/S	%	none	Probe
Conductivity	10000	N/S	us/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
Registered Office: Parnell House, 19 Guinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
Directors: Robert B. Sutcliffe, Ronan T. Sutcliffe

- Environmental Services for Industry** Including –
- ▶ Air, Noise & Water Monitoring
 - ▶ Sound Testing
 - ▶ Environmental Management Systems to ISO 14001
 - ▶ Air & Noise Modelling
 - ▶ Energy & Water use reduction
 - ▶ IPPC/Waste Licence Compliance
 - ▶ EIS & Planning
 - ▶ Occupational Dust & Noise

- Affiliations & Accreditations**
- ▶ ISO14001:2004 Registration No. 2012/1427
 - ▶ NCERTS Certified personnel for stack testing
 - ▶ Member of Royal Society for Prevention of Accidents
 - ▶ Member Environmental Services Association
 - ▶ EMPI Membership





Certificate of Analysis for 1602/34

Emission point data

Client:	Kilsaran
Site:	Rossmore A
Site code:	RA
Emission point	SW2
Licence type	Planning application Licence
Licence No.	
Analysed by:	SAL Ltd
Sample type:	Water

Sampling data

Results for monthly monitoring period starting 01/03/2016	
Date sample collected	09/03/2016
Time sample collected	08:00
Sample collection	Method statement
Sample type	Surface water
Date first/last analysis	09/03/16 - 15/03/16

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	56	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	8.4	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/l	none	Ascorbic Acid
Nitrates as N	5.7	N/S	mg/l	none	IC
Ammonium as N	0.23	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	<10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	4000	N/S	mg/l	UKAS	Discrete Analyser
Salinity	5.7	N/S	%	none	Probe
Conductivity	11000	N/S	us/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe

Signed (Lab Manager)



Certificate of Analysis for 1602/37

Emission point data

Client:	Kilsaran
Site:	Rossmore A
Site code:	RA
Emission point	SW2
Licence type	Planning application Licence
Licence No.	
Analysed by:	SAL Ltd
Sample type:	Water

Sampling data

Results for monthly monitoring period starting 01/04/2016	
Date sample collected	06/04/2016
Time sample collected	14:38
Sample collection	Method statement
Sample type	Surface water
Date first/last analysis	06/04/16 - 11/04/16

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/litre	none	Respirometric
COD	69	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	8.1	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/litre	none	Ascorbic Acid
Nitrates as N	5.6	N/S	mg/l	none	IC
Ammonium as N	0.09	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	0.06	N/S	mg/l	none	Colorimetry
Salinity	5.5	N/S	%	none	Probe
Conductivity	11000	N/S	us/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Guinabara Road, Bray, Co. Wicklow Registered Number 243 412
 Directors: Robert B. Sutcliffe, Ronan T. Sutcliffe

<p>Environmental Services for Industry including –</p> <ul style="list-style-type: none"> ▶ Air, Noise & Water Monitoring ▶ Bund Testing ▶ Environmental Management Systems to ISO 14001 ▶ Air & Noise Modelling <p>Accreditations & Certifications</p> <ul style="list-style-type: none"> ▶ ISO 14001:2004 Registration No. 2012/1427 ▶ MCERTS Certified personnel for stack testing ▶ Member of Royal Society for Prevention of Accidents ▶ Member Environmental Services Association ▶ EMPI Membership 	<ul style="list-style-type: none"> ▶ Energy & Water use reduction ▶ IPPC/Waste Licence Compliance ▶ EIS & Planning ▶ Occupational Dust & Noise  
--	--

**WATER QUALITY MONITORING RESULTS AT SW3 (SURFACE
WATER LAGOON RECEIVING THE DISCHARGE) for 2015-16**



Certificate of Analysis for 1602/10

Emission point data

Client: Kilsaran Build
Site: Rossmore
Site code: RA
Emission point: SW3
Licence type: Planning Application
Licence No.:
Analysed by: SAL Ltd
Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/06/2015
Date sample collected 30/06/2015
Time sample collected 11:15:00
Sample collection Method statement 1602-01
Sample type Surface water
Date first/last analysis 30/06/2015 - 14/07/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
Chloride	5200	N/S	mg/l	UKAS	Discrete Analyser
Salinity	9.3	N/S	%	none	Probe
COD	97	N/S	mg/l	none	Colorimetry
BOD	0	N/S	mg/litre	none	Respirometric
Dissolved Oxygen	11	N/S	mg/l	none	Probe
pH	8.7	N/S	pH	none	Ascorbic Acid
Conductivity	12	N/S	µs/cm	none	Probe
temperature	21.4	N/S	Celsius	none	Probe

Signed (Lab Manager) *R. Sutcliffe*

Email: energy@enviro-consult.com www.enviro-consult.com
Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
Directors: Robert B. Sutcliffe, Ronan T. Sutcliffe

Environmental Services for Industry Including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling
- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

- ▶ ISO14001:2004 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/12

Emission point data

Client: Kilsaran Build
Site: Rossmore
Site code: RA
Emission point: SW3
Licence type: Planning Application
Licence No.:
Analysed by: SAL Ltd
Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/07/2015
Date sample collected 21/07/2015
Time sample collected 13:26:00
Sample collection Method statement 1602-01
Sample type Surface water
Date first/last analysis 21/07/2015 - 31/07/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
Chloride	4500	N/S	mg/l	UKAS	Discrete Analyser
Salinity	9	N/S	%	none	Probe
COD	97	N/S	mg/l	none	Colorimetry
BOD	0	N/S	mg/litre	none	Respirometric
Dissolved Oxygen	8.3	N/S	mg/l	none	Probe
pH	7.7	N/S	pH	none	Ascorbic Acid
Conductivity	9.5	N/S	µs/cm	none	Probe
temperature	16.2	N/S	Celsius	none	Probe

Signed (Lab Manager) *R. Sutcliffe*

Email: energy@enviro-consult.com www.enviro-consult.com
Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
Directors: Robert B. Sutcliffe, Ronan T. Sutcliffe

Environmental Services for Industry Including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

- ▶ ISO14001:2004 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/14

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW3
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/08/2015

Date sample collected: 17/08/2015
 Time sample collected: 12:39:00
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 17/08/2015 - 23/08/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
Chloride	5500	N/S	mg/l	UKAS	Discrete Analyser
Salinity	6700	N/S	%	none	Probe
COD	99	N/S	mg/l	none	Colorimetry
BOD	0	N/S	mg/litre	none	Respirometric
Dissolved Oxygen	11	N/S	mg/l	none	Probe
pH	8.4	N/S	pH	none	Ascorbic Acid
Conductivity	10	N/S	µs/cm	none	Probe
temperature	10.1	N/S	Celsius	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sutcliffe, Roman T. Sutcliffe

Environmental Services for Industry Including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

- ▶ ISO 14001:2004 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/16

Emission point data

Client:	Kilsaran
Site:	Rossmore A
Site code:	RA
Emission point	SW3
Licence type	Planning application Licence
Licence No.	
Analysed by:	SAL Ltd
Sample type:	Water

Sampling data

Results for monthly monitoring period starting 01/09/2015

Date sample collected	01/09/2015
Time sample collected	
Sample collection	Method statement
Sample type	Surface water
Date first/last analysis	01/09/15 - 07/09/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
Chloride	5600	N/S	mg/l	UKAS	Discrete Analyser
Salinity	10	N/S	%	none	Probe
COD	99	N/S	mg/l	none	Colorimetry
BOD	6	N/S	mg/litre	none	Respirometric
Dissolved Oxygen	9.7	N/S	mg/l	none	Probe
pH	8	N/S	pH	none	Ascorbic Acid
Conductivity	18	N/S	µs/cm	none	Probe
temperature	17	N/S	Celcius	none	Probe

Signed (Lab Manager)



Certificate of Analysis for 1602/18

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW3
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/10/2015
 Date sample collected: 14/10/2015
 Time sample collected:
 Sample collection: 13:40:00
 Sample type: 0
 Date first/last analysis: 00/01/1900

Results

Parameter	Result	ELV	Units	Accred.	Technique
Chloride	5500	N/S	mg/l	UKAS	Discrete Analyser
Salinity	11	N/S	%	none	Probe
COD	110	N/S	mg/l	none	Colorimetry
BOD	0	N/S	mg/l	none	Respirometric
Dissolved Oxygen	11	N/S	mg/l	none	Probe
pH	7.9	N/S	pH	none	Ascorbic Acid
Conductivity	17	N/S	µs/cm	none	Probe
temperature	13	N/S	Celsius	none	Probe

Signed (Lab Manager)



Certificate of Analysis for 1602/20

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW3
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/11/2015

Date sample collected: 05/11/2015
 Time sample collected: 14:10:00
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 05/11/15 - 11/11/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/litre	none	Respirometric
COD	95	N/S	mg/l	none	Colorimetry
pH	7.9	N/S	pH	none	Ascorbic Acid
Chloride	5800	N/S	mg/l	UKAS	Discrete Analyser
Salinity	11	N/S	%	none	Probe
Conductivity	0.018	N/S	µs/cm	none	Probe
Dissolved Oxygen	9.5	N/S	mg/l	none	Probe
temperature	19.3	N/S	Celsius	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sultoffs, Roman T. Sultoffs

Environmental Services for Industry Including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

- ▶ ISO 14001:2004 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/23

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW3
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/12/2015
 Date sample collected: 30/11/2015
 Time sample collected: 14:10:00
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 30/11/15 - 06/12/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	110	N/S	mg/l	none	Colorimetry
pH	8	N/S	pH	none	Ascorbic Acid
Chloride	5300	N/S	mg/l	UKAS	Discrete Analyser
Salinity	10	N/S	%	none	Probe
Conductivity	1700	N/S	us/cm	none	Probe
Dissolved Oxygen	9.7	N/S	mg/l	none	Probe
temperature	16.6	N/S	Celsius	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sutcliffe, Roman T. Sutcliffe

Environmental Services for Industry including –
 ▶ Air, Noise & Water Monitoring
 ▶ Bund Testing
 ▶ Environmental Management Systems to ISO 14001
 ▶ Air & Noise Modelling

Affiliations & Accreditations

▶ ISO 14001:2004 Registration No. 2012/1427
 ▶ MCERTS Certified personnel for stack testing
 ▶ Member of Royal Society for Prevention of Accidents
 ▶ Member Environmental Services Association
 ▶ EMPI Membership

▶ Energy & Water use reduction
 ▶ IPPC/Waste Licence Compliance
 ▶ EIS & Planning
 ▶ Occupational Dust & Noise





Certificate of Analysis for 1602/29

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW3
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/02/2016

Date sample collected: 12/02/2016
 Time sample collected: 11:35:00
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 12/02/2016 - 17/02/2016

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	140	N/S	mg/l	none	Colorimetry
pH	8.1	N/S	pH	none	Ascorbic Acid
Chloride	3000	N/S	mg/l	UKAS	Discrete Analyser
Salinity	5300	N/S	%	none	Probe
Conductivity	9600	N/S	us/cm	none	Probe
Dissolved Oxygen	9.4	N/S	mg/l	none	Probe
temperature	14.1	N/S	Celsius	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sutcliffe, Roman T. Sutcliffe

Environmental Services for Industry Including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

- ▶ ISO 14001:2004 Registration No. 2012/1427
- ▶ MCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/35

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW3
 Licence type: Planning application Licence
 Licence No.
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/03/2016
 Date sample collected: 09/03/2016
 Time sample collected: 08:00:00
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 09/03/16 - 15/03/16

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	44	N/S	mg/l	none	Colorimetry
pH	8.3	N/S	pH	none	Ascorbic Acid
Chloride	3400	N/S	mg/l	UKAS	Discrete Analyser
Salinity	5.3	N/S	%	none	Probe
Conductivity	9800	N/S	us/cm	none	Probe
Dissolved Oxygen	9.6	N/S	mg/l	none	Probe
temperature	13.5	N/S	Celsius	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sutcliffe, Roman T. Sutcliffe

Environmental Services for Industry Including –
 ▶ Air, Noise & Water Monitoring
 ▶ Bund Testing
 ▶ Environmental Management Systems to ISO 14001
 ▶ Air & Noise Modelling

Affiliations & Accreditations

▶ ISO 14001:2004 Registration No. 2012/1427
 ▶ MCERTS Certified personnel for stack testing
 ▶ Member of Royal Society for Prevention of Accidents
 ▶ Member Environmental Services Association
 ▶ EMPI Membership

▶ Energy & Water use reduction
 ▶ IPPC/Waste Licence Compliance
 ▶ EIS & Planning
 ▶ Occupational Dust & Noise





Certificate of Analysis for 1602/38

Emission point data

Client:	Kilsaran
Site:	Rossmore A
Site code:	RA
Emission point	SW3
Licence type	Planning application Licence
Licence No.	
Analysed by:	SAL Ltd
Sample type:	Water

Sampling data

Results for monthly monitoring period starting 01/04/2016

Date sample collected	06/04/2016
Time sample collected	14:37:00
Sample collection	Method statement
Sample type	Surface water
Date first/last analysis	06/04/16 - 11/04/2016

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/litre	none	Respirometric
COD	71	N/S	mg/l	none	Colorimetry
pH	8	N/S	pH	none	Ascorbic Acid
Chloride	<0.05	N/S	mg/l	none	Colorimetry
Salinity	5.4	N/S	%	none	Probe
Conductivity	11000	N/S	us/cm	none	Probe
Dissolved Oxygen	8.2	N/S	mg/l	none	Probe
temperature	11.4	N/S	Celsius	none	Probe

Signed (Lab Manager)

**WATER QUALITY MONITORING RESULTS AT SW4 (INTERTIDAL
WATERS) for 2015-16**



Certificate of Analysis for 1602/21

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW4
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/11/2015
 Date sample collected: 19/11/2015
 Time sample collected: 14:10
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 19/11/15 - 25/11/2015

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/litre	none	Respirometric
COD	530	N/S	mg/l	none	Colorimetry
Suspended Solids	31	N/S	mg/l	none	Grav
pH	7.9	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/litre	none	Ascorbic Acid
Nitrates as N	1.6	N/S	mg/l	none	IC
Ammonium as N	0.97	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydroc	10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	13000	N/S	mg/l	UKAS	Discrete Analyser
Salinity	0.01	N/S	%	none	Probe
Conductivity	32000	N/S	uS/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Gainsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sutcliffe, Ronan T. Sutcliffe

Environmental Services for Industry Including -

- ▶ Air, Noise & Water Monitoring
- ▶ Ound Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling

- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

- ▶ ISO 14001:2004 Registration No. 2012/1427
- ▶ NCERTS Certified personnel for stack testing
- ▶ Member of Royal Society for Prevention of Accidents
- ▶ Member Environmental Services Association
- ▶ EMPI Membership





Certificate of Analysis for 1602/24

Emission point data

Client: Kilsaran
 Site: Rossmore A
 Site code: RA
 Emission point: SW4
 Licence type: Planning application Licence
 Licence No.:
 Analysed by: SAL Ltd
 Sample type: Water

Sampling data

Results for monthly monitoring period starting 01/12/2015
 Date sample collected: 17/12/2015
 Time sample collected: 16:15
 Sample collection: Method statement
 Sample type: Surface water
 Date first/last analysis: 17/12/15 - 23/12/15

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	300	N/S	mg/l	none	Colorimetry
Suspended Solids	200	N/S	mg/l	none	Grav
pH	8.1	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/l	none	Ascorbic Acid
Nitrates as N	2.7	N/S	mg/l	UKAS	Discrete Analyser
Ammonium as N	0.65	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	8900	N/S	mg/l	UKAS	Discrete Analyser
Salinity	15	N/S	%	none	Probe
Conductivity	2600	N/S	us/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
 Registered Office: Parnell House, 19 Quinsboro Road, Bray, Co. Wicklow. Registered Number 243 412
 Directors: Robert B. Sulcliffe, Roman T. Sulcliffe

Environmental Services for Industry including –
 ▶ Air, Noise & Water Monitoring
 ▶ Bund Testing
 ▶ Environmental Management Systems to ISO 14001
 ▶ Air & Noise Modelling

▶ Energy & Water use reduction
 ▶ IPPC/Waste Licence Compliance
 ▶ EIS & Planning
 ▶ Occupational Dust & Noise

Affiliations & Accreditations

▶ ISO14001:2004 Registration No. 2012/1427
 ▶ MCERTS Certified personnel for stack testing
 ▶ Member of Royal Society for Prevention of Accidents





Certificate of Analysis for 1602/25

Emission point data

Client:	Kilsaran
Site:	Rossmore A
Site code:	RA
Emission point	SW4
Licence type	Planning application Licence
Licence No.	
Analysed by:	SAL Ltd
Sample type:	Water

Sampling data

Results for monthly monitoring period starting 01/01/2016

Date sample collected	06/01/2016
Time sample collected	12:20
Sample collection	Method statement
Sample type	Surface water
Date first/last analysis	06/01/16 - 13/01/2016

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	180	N/S	mg/l	none	Colorimetry
Suspended Solids	27	N/S	mg/l	none	Grav
pH	7.1	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/l	none	Ascorbic Acid
Nitrates as N	2.4	N/S	mg/l	none	IC
Ammonium as N	0.69	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	<10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	8000	N/S	mg/l	UKAS	Discrete Analyser
Salinity	13	N/S	%	none	Probe
Conductivity	22000	N/S	us/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe



Certificate of Analysis for 1602/30

Emission point data

Client:	Kilsaran
Site:	Rossmore A
Site code:	RA
Emission point	SW4
Licence type	Planning application Licence
Licence No.	
Analysed by:	SAL Ltd
Sample type:	Water

Sampling data

Results for monthly monitoring period starting

Date sample collected	12/02/2016
Time sample collected	11:40
Sample collection	Method statement
Sample type	Surface water
Date first/last analysis	12/02/16 - 17/02/16

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	610	N/S	mg/l	none	Colorimetry
Suspended Solids	<10.0	N/S	mg/l	none	Grav
pH	7.9	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/l	none	Ascorbic Acid
Nitrates as N	0.84	N/S	mg/l	none	IC
Ammonium as N	0.7238	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	7500	N/S	mg/l	UKAS	Discrete Analyser
Salinity	25	N/S	%	none	Probe
Conductivity	41000	N/S	us/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe



Certificate of Analysis for 1602/36

Emission point data

Client:	Kilsaran
Site:	Rossmore A
Site code:	RA
Emission point	SW4
Licence type	Planning application Licence
Licence No.	
Analysed by:	SAL Ltd
Sample type:	Water

Sampling data

Results for monthly monitoring period starting 01/03/2016	
Date sample collected	09/03/2016
Time sample collected	08:00
Sample collection	Method statement
Sample type	Surface water
Date first/last analysis	09/03/16 - 15/03/16

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	220	N/S	mg/l	none	Colorimetry
Suspended Solids	4900	N/S	mg/l	none	Grav
pH	7.8	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/l	none	Ascorbic Acid
Nitrates as N	1.6	N/S	mg/l	none	IC
Benzene	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Ammonium as N	0.7708	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	20	N/S	ug/l	none	Calc
Chloride	13000	N/S	mg/l	UKAS	Discrete Analyser
Salinity	21	N/S	%	none	Probe
Conductivity	8800	N/S	us/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe

Signed (Lab Manager)



Certificate of Analysis for 1602/39

Emission point data

Client:	Kilsaran
Site:	Rossmore A
Site code:	RA
Emission point	SW4
Licence type	Planning application Licence
Licence No.	
Analysed by:	SAL Ltd
Sample type:	Water

Sampling data

Results for monthly monitoring period starting 01/04/2016	
Date sample collected	06/04/2016
Time sample collected	14:55
Sample collection	Method statement
Sample type	Surface water
Date first/last analysis	06/04/16 - 11/04/16

Results

Parameter	Result	ELV	Units	Accred.	Technique
BOD	0	N/S	mg/l	none	Respirometric
COD	390	N/S	mg/l	none	Colorimetry
Suspended Solids	240	N/S	mg/l	none	Grav
pH	8.2	N/S	pH	none	Probe
Ortho Phosphate as P	<0.0200	N/S	mg/l	none	Ascorbic Acid
Nitrates as N	1.2	N/S	mg/l	none	IC
Ammonium as N	1.4	N/S	mg/l	UKAS	Discrete Analyser
Total Petroleum Hydrocarbons	10	N/S	ug/l	none	Calc
BTEX Compounds	<1.0	N/S	ug/l	UKAS	GC/MS (Headspace)
Chloride	<0.05	N/S	mg/l	none	Colorimetry
Salinity	21	N/S	%	none	Probe
Conductivity	37000	N/S	us/cm	none	Probe
Temperature	11	N/S	DegC	none	Probe

Signed (Lab Manager)

Email: energy@enviro-consult.com www.enviro-consult.com
Registered Office: Parnell House, 19 Quiltsboro Road, Bray, Co. Wicklow. Registered Number 243 412
Directors: Robert B. Sutcliffe, Ronan T. Sutcliffe

Environmental Services for Industry including –

- ▶ Air, Noise & Water Monitoring
- ▶ Bund Testing
- ▶ Environmental Management Systems to ISO 14001
- ▶ Air & Noise Modelling
- ▶ Energy & Water use reduction
- ▶ IPPC/Waste Licence Compliance
- ▶ EIS & Planning
- ▶ Occupational Dust & Noise

Affiliations & Accreditations

▶ ISO14001:2004 Registration No. 2012/1427
▶ NICERTS Certified personnel for stack testing
▶ Member of Royal Society for Prevention of Accidents
▶ Member Environmental Services Association
▶ EMPI Membership



ABERDEEN

214 Union Street,
Aberdeen AB10 1TL, UK
T: +44 (0)1224 517405

AYLESBURY

7 Wornal Park, Menmarsh Road,
Worminghall, Aylesbury,
Buckinghamshire HP18 9PH, UK
T: +44 (0)1844 337380

BELFAST

Suite 1 Potters Quay, 5 Ravenhill Road,
Belfast BT6 8DN, UK, Northern Ireland
T: +44 (0)28 9073 2493

BRADFORD-ON-AVON

Treenwood House, Rowden Lane,
Bradford-on-Avon, Wiltshire BA15 2AU,
UK
T: +44 (0)1225 309400

BRISTOL

Langford Lodge, 109 Pembroke Road,
Clifton, Bristol BS8 3EU, UK
T: +44 (0)117 9064280

CAMBRIDGE

8 Stow Court, Stow-cum-Quy,
Cambridge CB25 9AS, UK
T: + 44 (0)1223 813805

CARDIFF

Fulmar House, Beignon Close, Ocean
Way, Cardiff CF24 5PB, UK
T: +44 (0)29 20491010

CHELMSFORD

Unit 77, Waterhouse Business Centre,
2 Cromar Way, Chelmsford, Essex
CM1 2QE, UK
T: +44 (0)1245 392170

DUBLIN

7 Dundrum Business Park, Windy
Arbour, Dundrum, Dublin 14 Ireland
T: + 353 (0)1 2964667

EDINBURGH

4/5 Lochside View, Edinburgh Park,
Edinburgh EH12 9DH, UK
T: +44 (0)131 3356830

EXETER

69 Polsloe Road, Exeter EX1 2NF, UK
T: + 44 (0)1392 490152

GLASGOW

4 Woodside Place, Charing Cross,
Glasgow G3 7QF, UK
T: +44 (0)141 3535037

GRENOBLE

BuroClub, 157/155 Cours Berriat,
38028 Grenoble Cedex 1, France
T: +33 (0)4 76 70 93 41

GUILDFORD

65 Woodbridge Road, Guildford
Surrey GU1 4RD, UK
T: +44 (0)1483 889 800

LEEDS

Suite 1, Jason House, Kerry Hill,
Horsforth, Leeds LS18 4JR, UK
T: +44 (0)113 2580650

LONDON

83 Victoria Street,
London, SW1H 0HW, UK
T: +44 (0)203 691 5810

MAIDSTONE

19 Hollingworth Court, Turkey Mill,
Maidstone, Kent ME14 5PP, UK
T: +44 (0)1622 609242

MANCHESTER

8th Floor, Quay West, MediaCityUK,
Trafford Wharf Road,
Manchester M17 1HH, UK
T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE

Sailors Bethel, Horatio Street,
Newcastle-upon-Tyne NE1 2PE, UK
T: +44 (0)191 2611966

NOTTINGHAM

Aspect House, Aspect Business Park,
Bennerley Road, Nottingham NG6 8WR,
UK
T: +44 (0)115 9647280

SHEFFIELD

Unit 2 Newton Business Centre,
Thornccliffe Park Estate, Newton
Chambers Road, Chapeltown,
Sheffield S35 2PW, UK
T: +44 (0)114 2455153

SHREWSBURY

2nd Floor, Hermes House, Oxon
Business Park, Shrewsbury SY3 5HJ,
UK
T: +44 (0)1743 239250

STAFFORD

8 Parker Court, Staffordshire Technology
Park, Beaconside, Stafford ST18 0WP,
UK
T: +44 (0)1785 241755

STIRLING

No. 68 Stirling Business Centre,
Wellgreen, Stirling FK8 2DZ, UK
T: +44 (0)1786 239900

WORCESTER

Suite 5, Brindley Court, Gresley Road,
Shire Business Park, Worcester WR4
9FD, UK
T: +44 (0)1905 751310

www.slrconsulting.com



Industry



Infrastructure



Mining & Minerals



Oil & Gas



Planning & Development



Renewable & Low Carbon



Waste Management