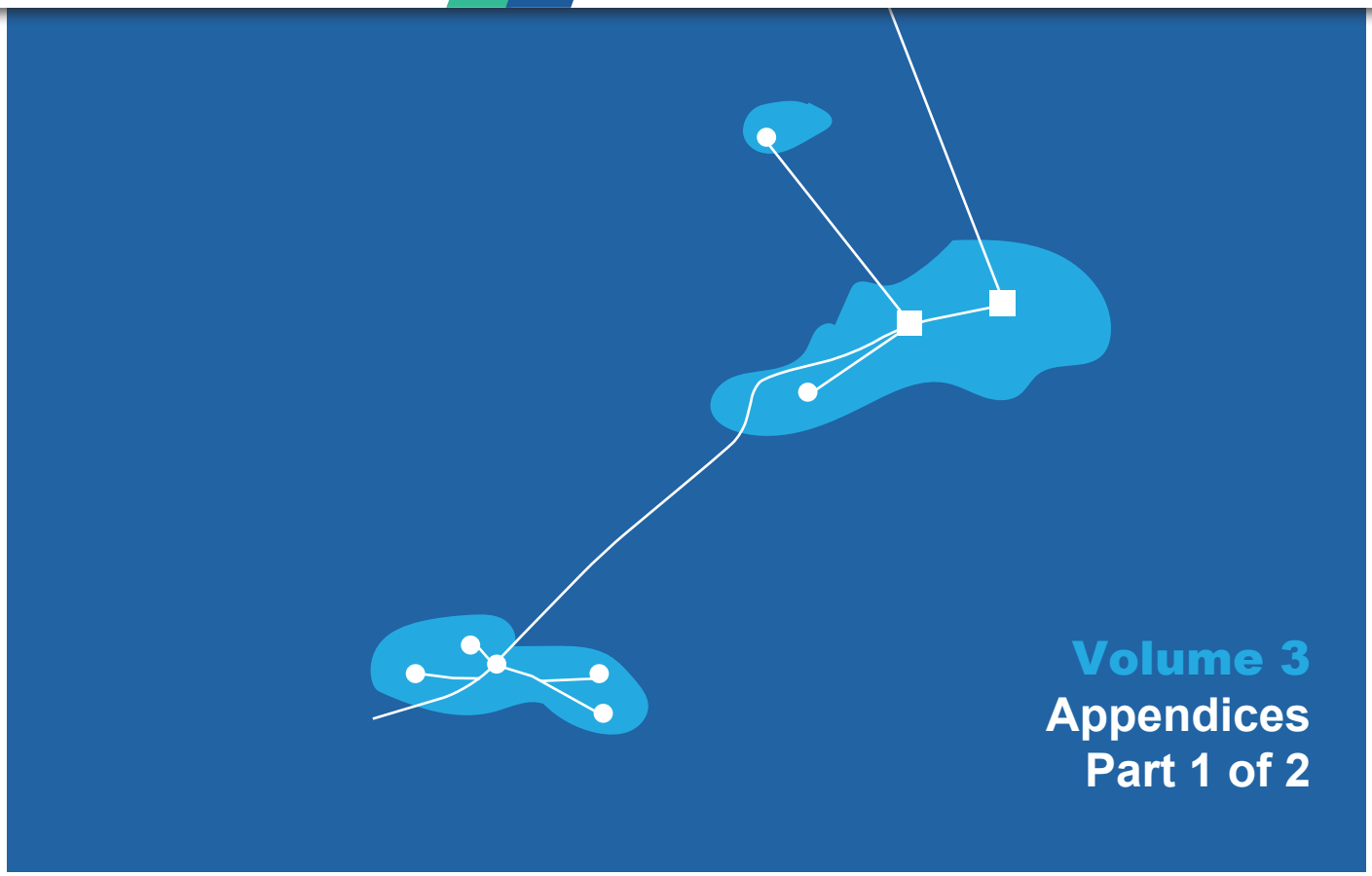
KINSALE ENERGY

Kinsale Area Decommissioning Project

Environmental Impact Assessment Report



Volume 3
Appendices
Part 1 of 2

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ARUP

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KINSALE ENERGY

Kinsale Area Decommissioning Project

Appendix A

International and European Legislation

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A1.1 Relevant International Conventions and European Legislation

Table A1 below summarises the key international conventions and European legislation relevant to the KADP. **Section A1.2** and **Section A1.3** provide further detail.

Table A1: Key International legislation relevant to the KADP

Relevant Legislation	Consents / requirements for Decommissioning
OSPAR Convention (1992)	The KADP shall take all possible steps to prevent and eliminate pollution and apply the necessary measures to protect the maritime area against the adverse effects of human activities during works. Under paragraph 2 of the Decisions 98/3, the dumping, and leaving wholly or partly in place, of disused offshore installations is prohibited within the OSPAR maritime area – Kinsale Area platforms and subsea structures to be removed as part of the KADP.
MARPOL Convention, International Maritime Organisation (1978)	Ireland ratified the Convention, the requirements of which are transposed in Sea Pollution Act, 1991 (No. 27 of 1991). The Convention will apply to all shipping operations associated with the KADP ensure the prevention of pollution of the marine environment.
UN Convention on the Law of the Sea (1982)	The Convention will apply to the granting by the competent authority of an authorisation for the KADP.
Basel Convention	Any waste generated by the KADP, which has to be exported from Ireland, will be subject to the Convention.
Espoo Convention	Assessment required of the potential for the proposed activity to result in significant transboundary effects.
OECD Decision on the Control of Transboundary Movements of Waste	Any waste generated by the KADP, which will be exported from Ireland, will be subject to the OECD Decision.
Ballast Water Convention	All vessels associated with the KADP are required to manage their ballast water and sediments to a certain standard, according to a ship-specific ballast water management plan. All ships vessels also have to carry a ballast water record book and an international ballast water management certificate
Water Framework Directive (2000/60/EC)	The Water Framework Directive, EC (2000), sets the objectives for water protection for the future and applies to inland surface waters, groundwater, transitional waters and coastal waters. Most of the KADP activities will be located outside 'coastal waters', as defined in the Directive. The Directive requirements will apply only to near shore and onshore decommissioning activities.
Marine Strategy Framework Directive (2008/56/EC)	The Directive aims to achieve good environmental status for the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. Most of the KADP activities will be located within the marine area, to which the Directive applies. The Directive requirements will apply to KADP activities.
Waste Framework Directive (2008/98/EC)	Waste activities arising from the KADP must comply with the Directive.

Relevant Legislation	Consents / requirements for Decommissioning
Commission Decision 2000/532/EC on the list of wastes, as amended by Commission Decision 2014/955/EU	Waste, arising from the KADP, must be classified in accordance with the Decision.
Regulation (EC) No 1013/2006 on Shipments of Waste	The management of waste, arising from the KADP, must comply with the requirements of the Regulation.
Aarhus Convention (Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters) (1998)	The relevant requirements of the Aarhus Convention, in relation to public participation in decision making on environmental matters, have been incorporated into the EIA Directive 2011/92/EU.

A1.2 Relevant International Conventions

MARPOL Convention

MARPOL Convention, International Maritime Organisation (1978), is the main international convention covering prevention of pollution of the marine environment. It was developed in an effort to minimise pollution of the oceans and seas and to preserve the marine environment. Its aim is to eliminate planned discharge of pollutants to the marine environment and to minimise accidental spillage of deleterious substances.

The MARPOL Protocol was developed and adopted in 1978 in response to a number of tanker accidents in 1976 and 1977. As the 1973 Convention had not yet entered into force, the 1978 Protocol absorbed the parent Convention. It entered into force in 1983 and was updated by amendments over the years. In 1997, a new Protocol was adopted to amend the Convention and a new Annex VI added.

The Convention includes regulations aimed at preventing and minimising pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes.

Ireland ratified the Convention, the requirements of which are transposed in Sea Pollution Act, 1991 (No. 27 of 1991).

The Convention will apply to all shipping operations associated with the KADP.

UN Convention on the Law of the Sea (1982)

The UN Convention on the Law of the Sea (UNCLOS), UN (1982), defines the exclusive economic zone (not greater than 200 nautical miles from the low water mark) where the rights and jurisdiction of the coastal State are governed by the Convention. Within the exclusive economic zone, the convention gives a State the sovereign right to the exploitation of resources and exclusive jurisdiction over authorisation and regulation of any installations or structures (refer to Article 56, paragraph 1(a) and 1(b) and Article 60, paragraph 1 and 2).

Article 193 of UNCLOS further references the granting of exclusive rights to Coastal States to explore and exploit the natural (non-living) resources and states the following with regard to environmental protection:

"States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment".

With regard to disused installations or structures, Article 60, paragraph 3, states the following:

"Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization [such as the International Maritime Organisation (IMO)]*. Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed".*

The ambiguity between the requirement to remove abandoned or disused installations and reference to publicity for structures not entirely removed has led to debate and different interpretations of the decommissioning requirements of UNCLOS.

UNCLOS also makes provision for the protection and preservation of the marine environment (Part XII, Articles 192 to 237 inclusive).

Coastal states are obliged to adopt national laws and take measures to prevent, reduce and control pollution of the marine environment, arising from, or in connection with, the exploration or exploitation of the natural resources of the seabed and subsoil, and from dumping within their jurisdiction.

A number of other articles are relevant to the proposed KADP, including the following:

- Article 194 – Measures to Prevent, Reduce and Control Pollution of the Marine Environment.
- Article 206 – Assessment of Potential Effects of Activities.
- Article 208 – Pollution from seabed activities subject to national jurisdiction
- Article 210 – Pollution by Dumping.
- Article 214 – Enforcement with respect to pollution from seabed activities.

Ireland and the European Union have ratified the Convention.

The Convention will apply to the granting by the competent authority of an authorisation for the KADP.

Basel Convention (1989)

The Basel Convention, UN (1989), is a comprehensive global environmental agreement on the management of hazardous and other wastes. The Convention aims to protect human health and the environment against the adverse effects resulting from the generation, management, transboundary movement and disposal of hazardous and other wastes. The Basel Convention was adopted in 1989 and entered into force in 1992. Ireland has ratified the Convention.

The Convention regulates the transboundary movements of hazardous and other wastes by applying the "Prior Informed Consent" procedure (shipments made without consent are illegal). The Convention obliges its Parties to ensure that hazardous and other wastes are managed and disposed of in an environmentally sound manner. To this end, Parties are expected to minimise the quantities that are moved across borders, to treat and dispose of wastes as close as possible to their place of generation, and to prevent or minimise the generation of wastes at source. Strong controls have to be applied from the moment of generation of a hazardous waste to its storage, transport, treatment, reuse, recycling, recovery and final disposal.

In 1995, an amendment to the Basel Convention ("the Ban Amendment") was adopted. The amendment provided for the prohibition of:

- All transboundary movements to States, which are not included in Annex VII, of hazardous wastes covered by the Convention that are intended for final disposal, and
- All transboundary movements to States, which are not included in Annex VII, of hazardous wastes covered by paragraph 1 (a) of Article 1 of the Convention that are destined for reuse, recycling or recovery operations.

In 1998, Annexes VIII and IX were added to provide further elaboration as to the wastes regulated by the Convention as listed in Annexes I and III. Since then, various changes to these Annexes VIII and IX have also been adopted.

The Basel Convention has been implemented in European Union and Irish legislation.

Any waste generated by the KADP, which has to be exported from Ireland, will be subject to the Convention.

Espoo Convention (Convention on Environmental impact Assessment in a Transboundary Context) (1991)

Ireland is a Contracting Party to the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo 1991) and thus an assessment is needed of the potential for the proposed activity to result in significant transboundary effects. The relevant requirements of the Espoo Convention, in relation to the environmental assessment of transboundary effects, have been incorporated into the EIA Directive 2011/92/EU.

OECD Decision on the Control of Transboundary Movements of Waste

Since March 1992, transboundary movements of wastes destined for recovery operations between member countries of the Organisation for Economic Co-operation and Development (OECD) have been supervised and controlled according to Decision C (92)39 on the Control of Transfrontier Movements of Wastes, OECD (1992). The 1992 decision was revised in 2001 and amended in 2002, 2004, 2005 and 2008, OECD (2001). The OECD Decision provided a framework for the OECD member countries to control transboundary movements of recoverable wastes within the OECD area in an environmentally sound and economically efficient manner. Compared to the Basel Convention, it gave a simplified and more explicit means of controlling such movements of wastes.

It also facilitated transboundary movements of recoverable wastes between OECD member countries in the case where an OECD member country is not a Party to the Basel Convention.

The OECD Decision includes lists of wastes, which have been harmonised to a large extent with the lists of wastes of the Basel Convention.

Ireland is a member of the OECD. OECD Council Decisions are legally binding for member countries.

Any waste generated by the KADP, which will be exported from Ireland, will be subject to the OECD Decision.

OSPAR Convention (1992)

The OSPAR Convention, OSPAR (1992), is the current legislative instrument regulating international cooperation on environmental protection in the North-East Atlantic. It replaces the 1972 Oslo Convention on dumping waste at sea and the 1974 Paris Convention on land-based sources of marine pollution. Ireland has ratified the Convention.

The Convention applies to the internal waters and the territorial seas of the Contracting Parties, the sea beyond and adjacent to the territorial sea under the jurisdiction of the coastal State to the extent recognised by international law, and to the high seas, including the bed of all those waters and its subsoil, situated within specified limits of the Atlantic and Arctic Oceans.

The convention requires all parties to take all possible steps to prevent and eliminate pollution and apply the necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve maritime ecosystems and, when practicable, restore marine areas which have been adversely affected. Parties are required to, individually and jointly, adopt programmes and measures and to harmonise policies and strategies.

In addition, in order to meet their obligations, Article 2, paragraph 2(a) and 2(b) states that Parties to the Convention must apply the following two principles:

- *"the precautionary principle, by virtue of which preventive measures are to be taken when there are reasonable grounds for concern that substances or energy introduced, directly or indirectly, into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects;*
- *the polluter pays principle, by virtue of which the costs of pollution prevention, control and reduction measures are to be borne by the polluter."*

Annex II of the convention, which specifically addresses the prevention and elimination of pollution by dumping or incineration, states that *"No disused offshore installation or disused offshore pipeline shall be dumped and no disused offshore installation shall be left wholly or partly in place in the maritime area without a permit issued by the competent authority"* (Article 5, paragraph 1). The Annex further states that such permits shall not be issued if substances, which are likely to represent a hazard, are present (paragraph 2).

Article 8 of Annex II reinforces this, stating that "*No placement of a disused offshore installation or a disused offshore pipeline in the maritime area for a purpose other than that for which it was originally designed or constructed shall take place without authorisation or regulation by the competent authority of the relevant Contracting Party*".

For the purposes of the convention 'dumping' and 'wastes or other matter' are defined as follows:

Article 1 – Definitions

"(f) "Dumping" means

(i) any deliberate disposal in the maritime area of wastes or other matter

(1) from vessels or aircraft;

(2) from offshore installations;

(ii) any deliberate disposal in the maritime area of

(1) vessels or aircraft;

(2) offshore installations and offshore pipelines."

"(g) "Dumping" does not include:

(i) the disposal in accordance with the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, or other applicable international law, of wastes or other matter incidental to, or derived from, the normal operations of vessels or aircraft or offshore installations other than wastes or other matter transported by or to vessels or aircraft or offshore installations for the purpose of disposal of such wastes or other matter or derived from the treatment of such wastes or other matter on such vessels or aircraft or offshore installations;

(ii) placement of matter for a purpose other than the mere disposal thereof, provided that, if the placement is for a purpose other than that for which the matter was originally designed or constructed, it is in accordance with the relevant provisions of the Convention; and

(iii) for the purposes of Annex III, the leaving wholly or partly in place of a disused offshore installation or disused offshore pipeline, provided that any such operation takes place in accordance with any relevant provision of the Convention and with other relevant international law."

"(o) "Wastes or other matter" does not include:

(i) human remains;

(ii) offshore installations;

(iii) offshore pipelines;

(iv) unprocessed fish and fish offal discarded from fishing vessels."

OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations

Decisions 98/3, OSPAR (1998), amended the Convention in 1998. Under paragraph 2 of the Decisions 98/3, the dumping, and leaving wholly or partly in place, of disused offshore installations is prohibited within the OSPAR maritime area. However, paragraph 3 of the Decision provides a derogation to the paragraph 2 prohibition, providing that following an assessment, the competent authority of the relevant Contracting Party may give permission to leave disused installations or parts of disused installations in place.

The categories where derogations may be considered are outlined in Annex 1 to the Decision, which states the following:

"The following categories of disused offshore installations, excluding their topsides, are identified for the purpose of paragraph 3:

a) steel installations weighing more than ten thousand tonnes in air [and placed in the maritime area before 9th February 1999]*;*

b) gravity based concrete installations;

c) floating concrete installations;

d) any concrete anchor-base which results, or is likely to result, in interference with other legitimate uses of the sea."

A disused offshore installation is defined as an offshore installation, which is neither *"(a) serving the purpose of offshore activities for which it was originally placed within the maritime area, nor (b) serving another legitimate purpose in the maritime area authorised or regulated by the competent authority of the relevant Contracting Party*".

The definition of disused offshore installation does not include "*(c) any part of an offshore installation which is located below the surface of the sea-bed, or (d) any concrete anchor-base associated with a floating installation which does not, and is not likely to, result in interference with other legitimate uses of the sea*." OSPAR Decision 98/3 also does not refer to subsea pipelines, umbilicals and their protective materials and therefore are not covered by Decision 98/3.

Decision 98/3 is reviewed every 5 years. The most recent review, in 2013, made no change to the information outlined above.

The Kinsale Area platform jackets, Alpha and Bravo, each weigh less than 10,000 tonnes. Consequently, the derogation will not be applicable.

International Convention for the Control and Management of Ships' Ballast Water and Sediments

The Ballast Water Management Convention, adopted in 2004 and entered into force in September 2017, aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships' ballast water and sediments. Under the Convention, all ships in international traffic are required to manage their ballast water and sediments to a certain standard, according to a ship-specific ballast water management plan. All ships will also have to carry a ballast water record book and an international ballast water management certificate.

A1.3 Relevant European Legislation

Water Framework Directive (2000/60/EC)

The Water Framework Directive, EC (2000), sets the objectives for water protection for the future and applies to inland surface waters, groundwater, transitional waters and coastal waters. Coastal waters are defined in the Directive as *'surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters'*.

The aim of the directive is to prevent and reduce pollution, promote sustainable water use, protect the aquatic environment, improve the status of aquatic ecosystems and mitigate the effects of floods and droughts. The directive addresses the management of water quality and water resources and affects conservation, fisheries, flood defence, development planning and environmental monitoring. It requires Member States to control all impacts, including physical, polluting or otherwise, on our water resource.

The Directive has been transposed in Irish legislation through a number of measures, including the European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003).

Most of the KADP activities will be located outside 'coastal waters', as defined in the Directive. The Directive requirements will apply only to near shore and onshore decommissioning activities.

Marine Strategy Framework Directive (2008/56/EC)

The 'Marine Strategy Framework Directive' was adopted in 2008, EC (2008a).

The Directive aims to achieve good environmental status for the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. It is the first EU legislative instrument related to the protection of marine biodiversity, as it contains the explicit regulatory objective that "biodiversity is maintained by 2020", as the cornerstone for achieving good environmental status.

In order to achieve its goal, the Directive establishes European marine regions and sub-regions on the basis of geographical and environmental criteria.

In order to achieve good environmental status by 2020, each Member State is required to develop a strategy for its marine waters, which will be updated every six years.

The Directive applies to water on the seaward side of the baseline to the outmost reach of the area where a Member State has rights, under UNCLOS i.e. 200 nautical miles. The geographical scope of the Marine Spatial Framework Directive overlaps with the Water Framework Directive by one nautical mile.

The Marine Strategy Framework Directive has been transposed into Irish legislation by a number of measures, including the European Communities (Marine Strategy Framework) Regulations (S.I. No. 249 of 2011).

Most of the KADP activities will be located within the marine area, to which the Directive applies. The Directive requirements will apply to KADP activities.

Waste Framework Directive (2008/98/EC)

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (known as the Waste Framework Directive) has been effective since 12 December 2010, EC (2008b). The new Directive repealed the codified Directive 2006/12/EC on Waste, the Hazardous Waste Directive (91/689/EEC) and the Waste Oils Directive (75/439/EEC).

The Directive seeks to implement the provisions of the Basel Convention, sets the basic concepts and definitions related to waste management and lays down the following waste management principles:

- The "polluter pays principle" which requires costs of waste management to be borne by the original waste producer or by current or previous waste holders; and
- The "waste hierarchy" which is a five-step hierarchy of waste management options which must be applied by Member States when developing their national waste policies, as follows:
    - Waste prevention (preferred option);
    - Re-use;
    - Recycling;
    - Recovery (including energy recovery); and
    - Safe disposal, as a last resort.

The Directive defines ‘waste’ as *“any substance or object which the holder discards or intends or is required to discard”* (Article 3 (1)).

The Directive also addresses when waste ceases to be waste and becomes a secondary raw material and how to distinguish between waste and ‘by-products’ and includes recycling and recovery targets.

Article 6 of the Directive provides that certain specified waste can cease to be waste when it has undergone a recovery operation and complies with certain criteria. Regulation No 333/2001 establishes criteria determining when iron, steel and aluminium scrap, including aluminium alloy scrap, ceases to be waste.

Article 13 requires Member States to take the necessary measures to ensure that waste management is carried out without endangering human health, without harming the environment.

Article 23 specifies that Member States shall require any establishment or undertaking intending to carry out waste treatment to obtain a permit from the competent authority. Treatment is defined in Article 3 (14) as *“recovery or disposal operations, including preparation prior to recovery or disposal”.*

The provisions of the Waste Framework Directive have been transposed into Irish Law through the Waste Management Act, 1996 (No. 10 of 1996) as amended and associated regulations.

Waste activities arising from the KADP must comply with the Directive.

Commission Decision 2000/532/EC on the list of wastes, as amended by Commission Decision 2014/955/EU

Commission Decision 2000/532/EC established a list of wastes, in support of the implementation of the Waste Framework Directive. Decision 2000/532/EC has been amended several times. The most recent amendment was by Commission Decision 2014/955/EU, EU (2014b). This Decision establishes the classification system for wastes, including a distinction between hazardous and non-hazardous wastes.

Waste, arising from the KADP, must be classified in accordance with the Decision.

Regulation (EC) No 1013/2006 on Shipments of Waste

Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste (as amended) specifies conditions under which waste can be shipped between/through Member States and other countries. Its aim is to strengthen and simplify procedures for controlling waste shipments in order to improve environmental protection and reduce the risk of uncontrolled shipments. The Regulation addresses all types of wastes, with the exception of radioactive waste or waste types subject to separate control regimes. It controls procedures for two classes of waste, as follows:

- The 'Green listed' procedure applies to non-hazardous waste intended for recovery; and
- The 'Amber list' notification procedure applies to shipments of all waste intended for disposal and hazardous waste intended for recovery.

This Regulation is transposed into Irish legislation by the Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007).

The management of waste, arising from the KADP, must comply with the requirements of the Regulation.

Aarhus Convention (Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters) (1998)

The Public Participation Directive (Directive 2003/35/EC) Directive implements the 1998 Aarhus Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters. The Convention and Directive are intended to improve public access to environmental information and greater participation in the environmental decision-making process. The relevant requirements of the Aarhus Convention, in relation to public participation in decision making on environmental matters, have been incorporated into the EIA Directive 2011/92/EU.

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Appendix B1

Seabed Features & Habitats

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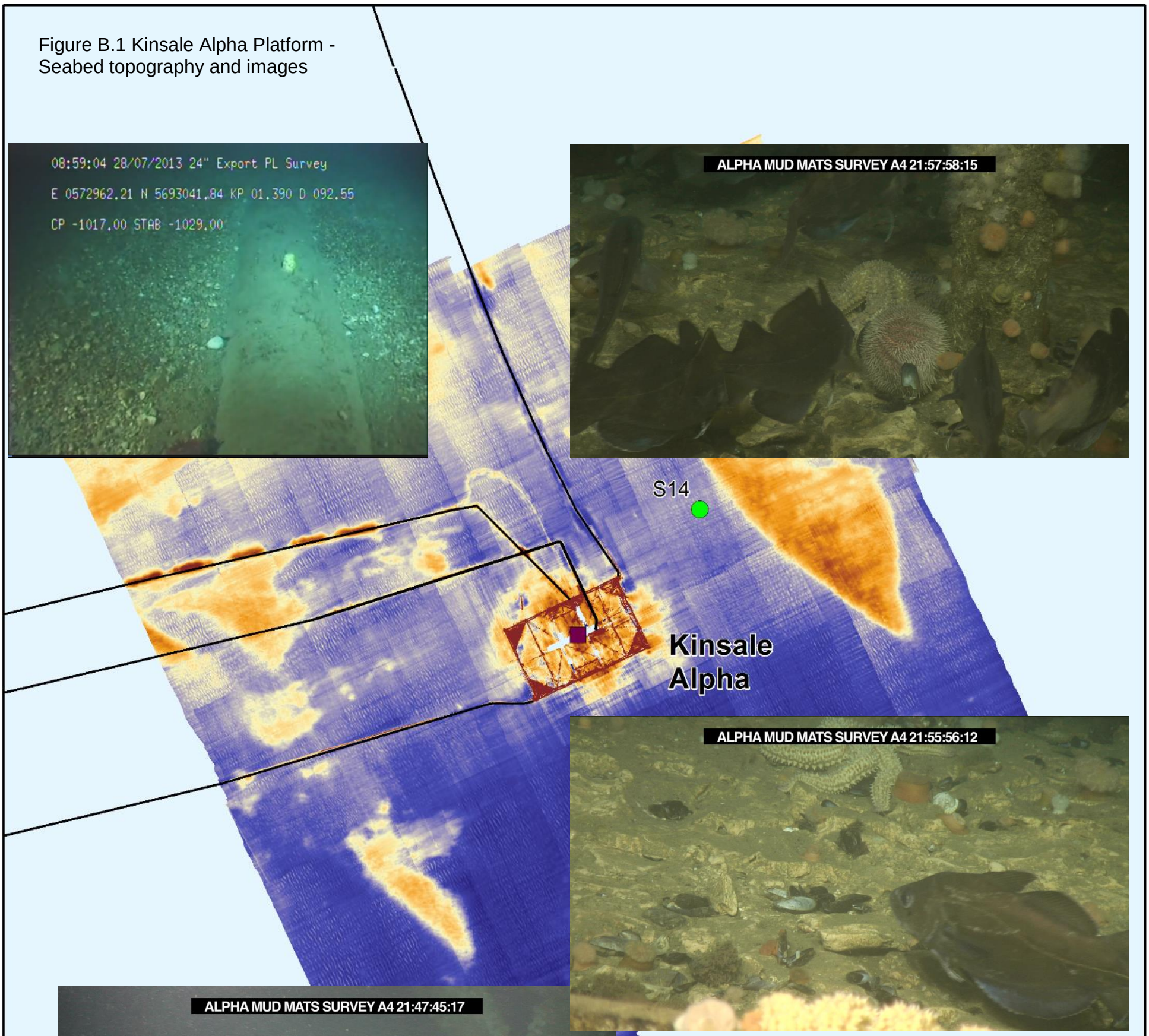
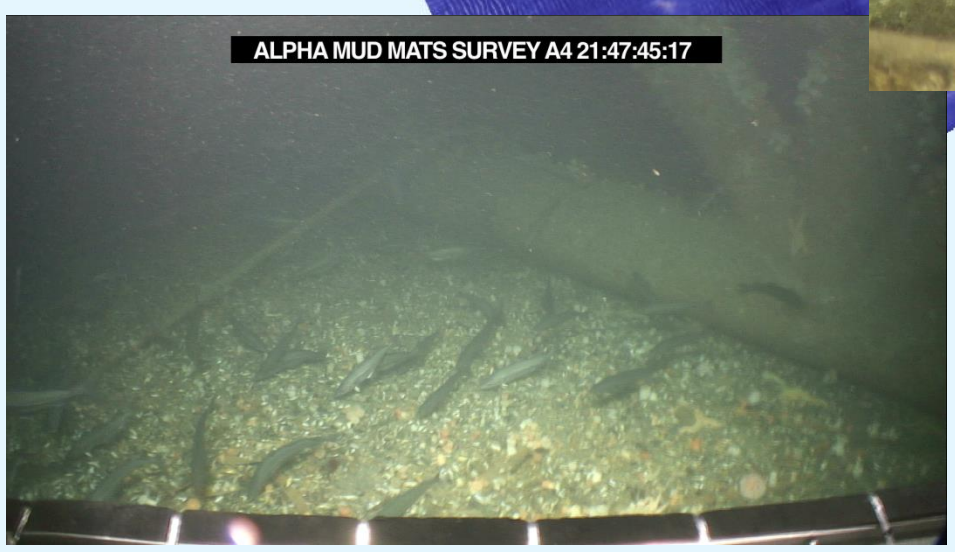
Figure B.1 Kinsale Alpha Platform - Seabed topography and images





The seabed at the Kinsale Alpha platform is relatively flat (varying by only a metre) and comprises outcropping chalk bedrock (images above) and gravelly sand sediment (image right). Visible fauna includes Pouting (*Trisopterus luscus*), saithe (*Pollachius virens*), blue mussel (*Mytilus edulis*) shells – fallen from the jacket legs, plumose anemone (*Metridium senile*), dead man's fingers (*Alcyonium digitatum*), sea urchin (*Echinus esculentus*) and starfish (*Marthasterias glacialis*). The image top left shows the 24" export pipeline with a whelk (*Buccinum undatum*) egg cluster.

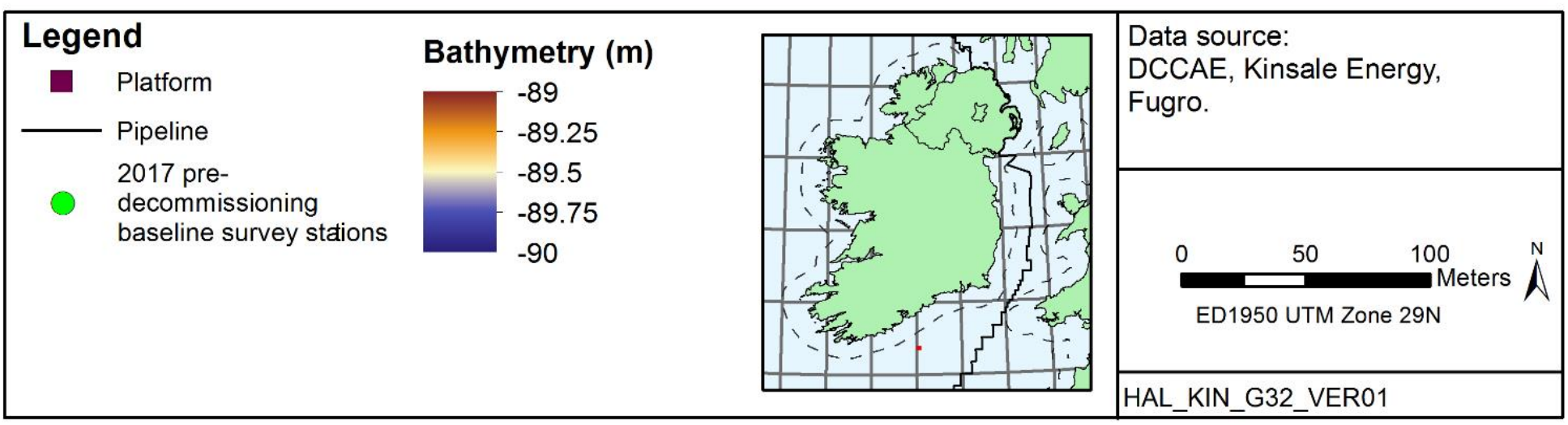
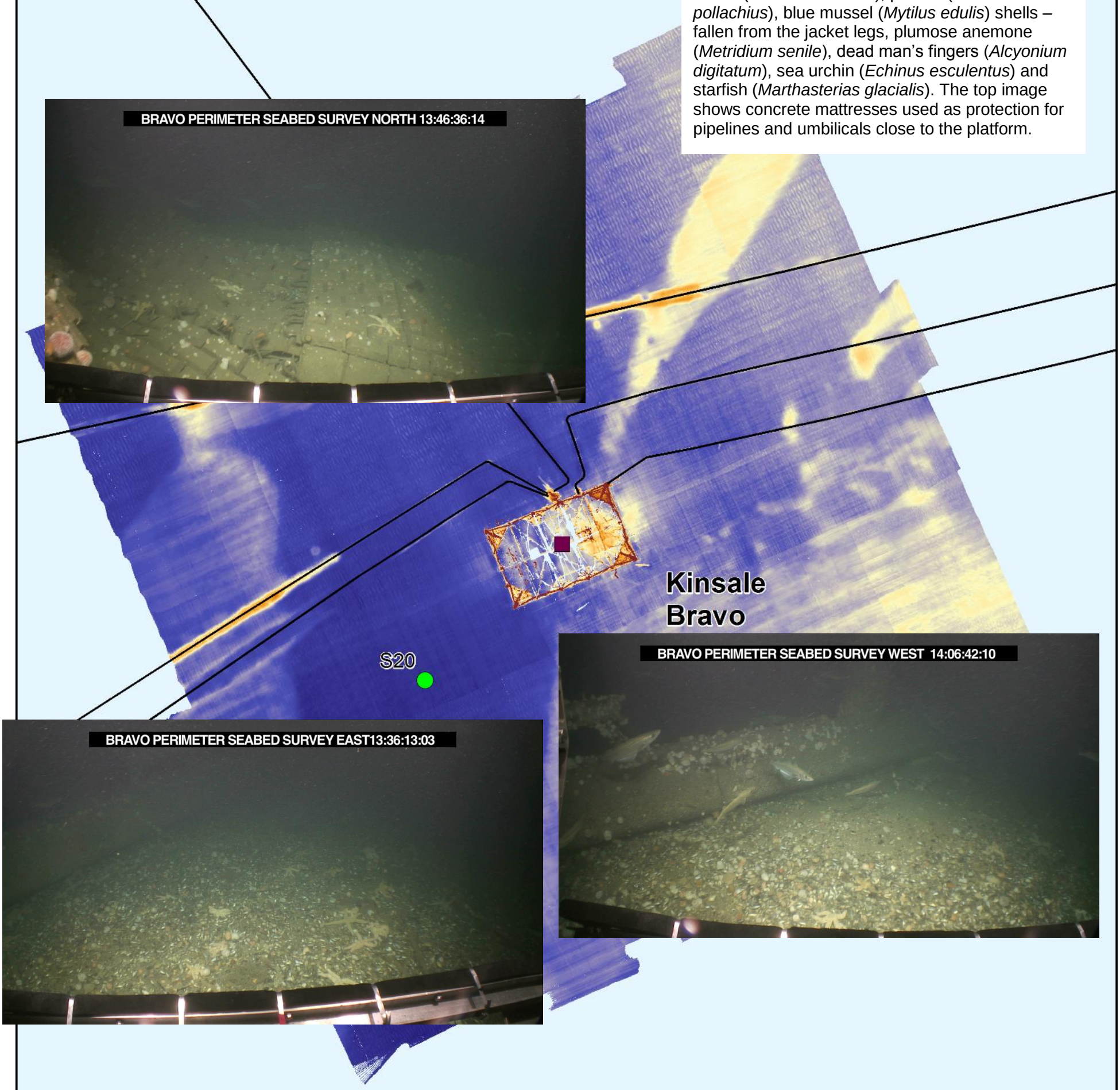


Figure B.2 Kinsale Bravo Platform – Seabed topography and images

The seabed at the Kinsale Bravo platform is relatively flat (varying by only 2m) and comprises gravelly sand sediment. Visible fauna includes saithe (*Pollachius virens*), pollack (*Pollachius pollachius*), blue mussel (*Mytilus edulis*) shells – fallen from the jacket legs, plumose anemone (*Metridium senile*), dead man's fingers (*Alcyonium digitatum*), sea urchin (*Echinus esculentus*) and starfish (*Marthasterias glacialis*). The top image shows concrete mattresses used as protection for pipelines and umbilicals close to the platform.

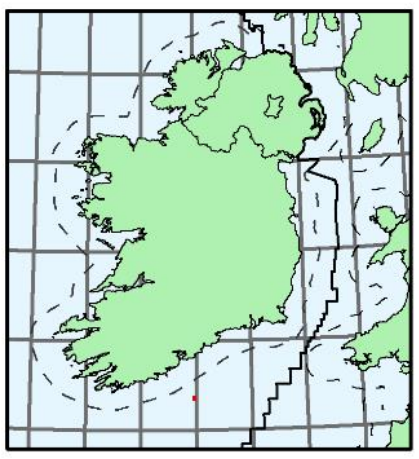


Legend

- Platform
- Pipeline
- 2017 pre-decommissioning baseline survey stations

Bathymetry (m)

89.5
-90
-90.5
-91
-91.5



Data source:
DCCAE, Kinsale Energy, Fugro.

0 50 100 Meters

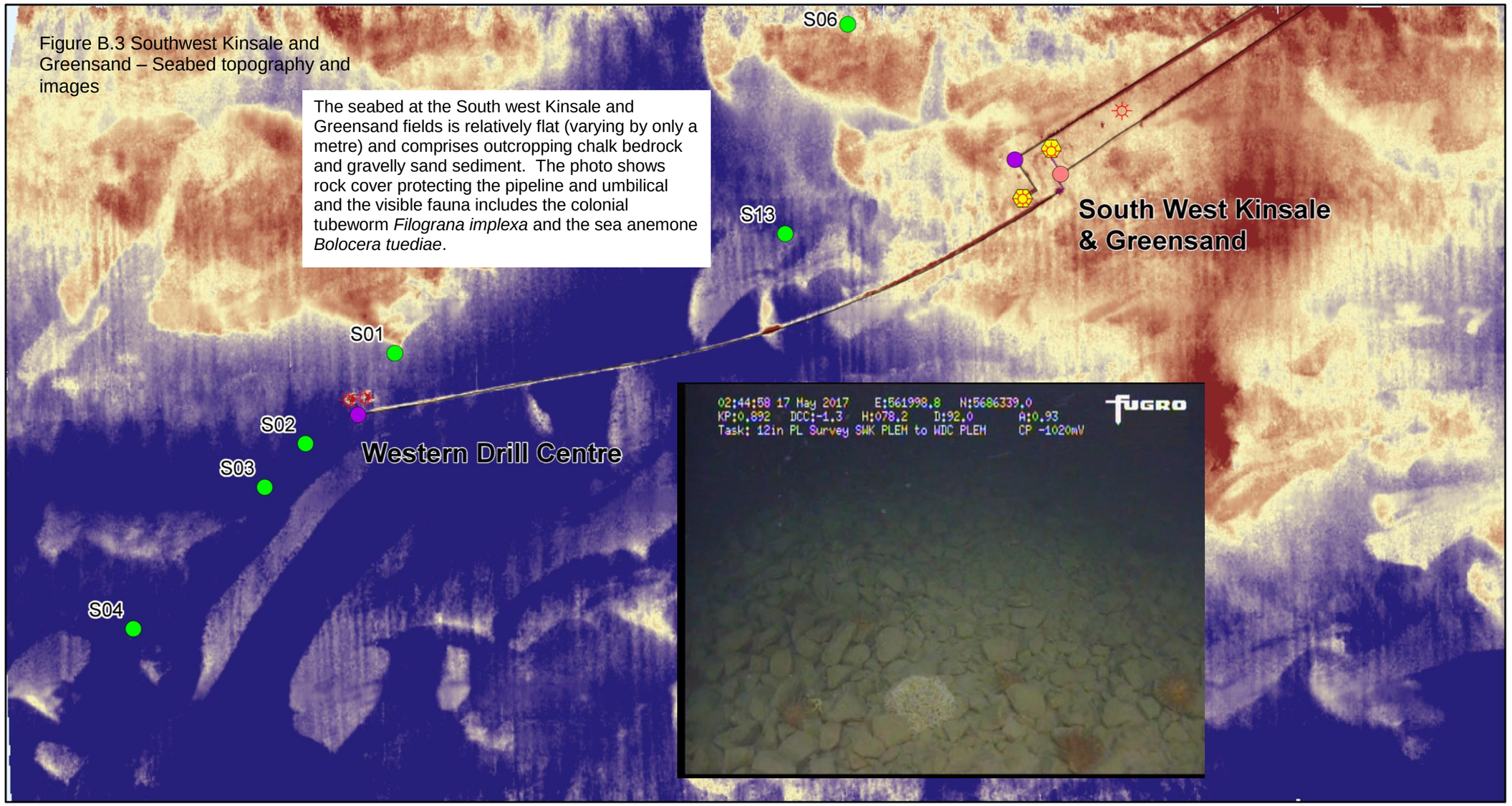
N

ED1950 UTM Zone 29N

HAL_KIN_G31_VER01

Figure B.3 Southwest Kinsale and Greensand – Seabed topography and images

The seabed at the South west Kinsale and Greensand fields is relatively flat (varying by only a metre) and comprises outcropping chalk bedrock and gravelly sand sediment. The photo shows rock cover protecting the pipeline and umbilical and the visible fauna includes the colonial tubeworm *Filograna implexa* and the sea anemone *Bolocera tuediae*.

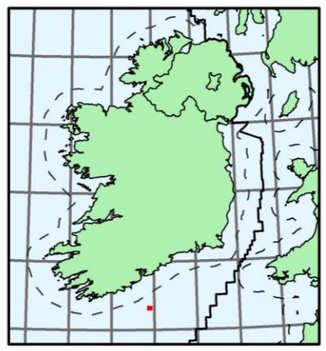


Legend

- Manifold
- PLEM
- Valve skid
- 2017 pre-decommissioning baseline survey stations
- Well
- Pipeline

Bathymetry (m)

-92
-92.25
-92.5
-92.75
-93



Data source:
DCCAE, Kinsale Energy, Marine Institute.

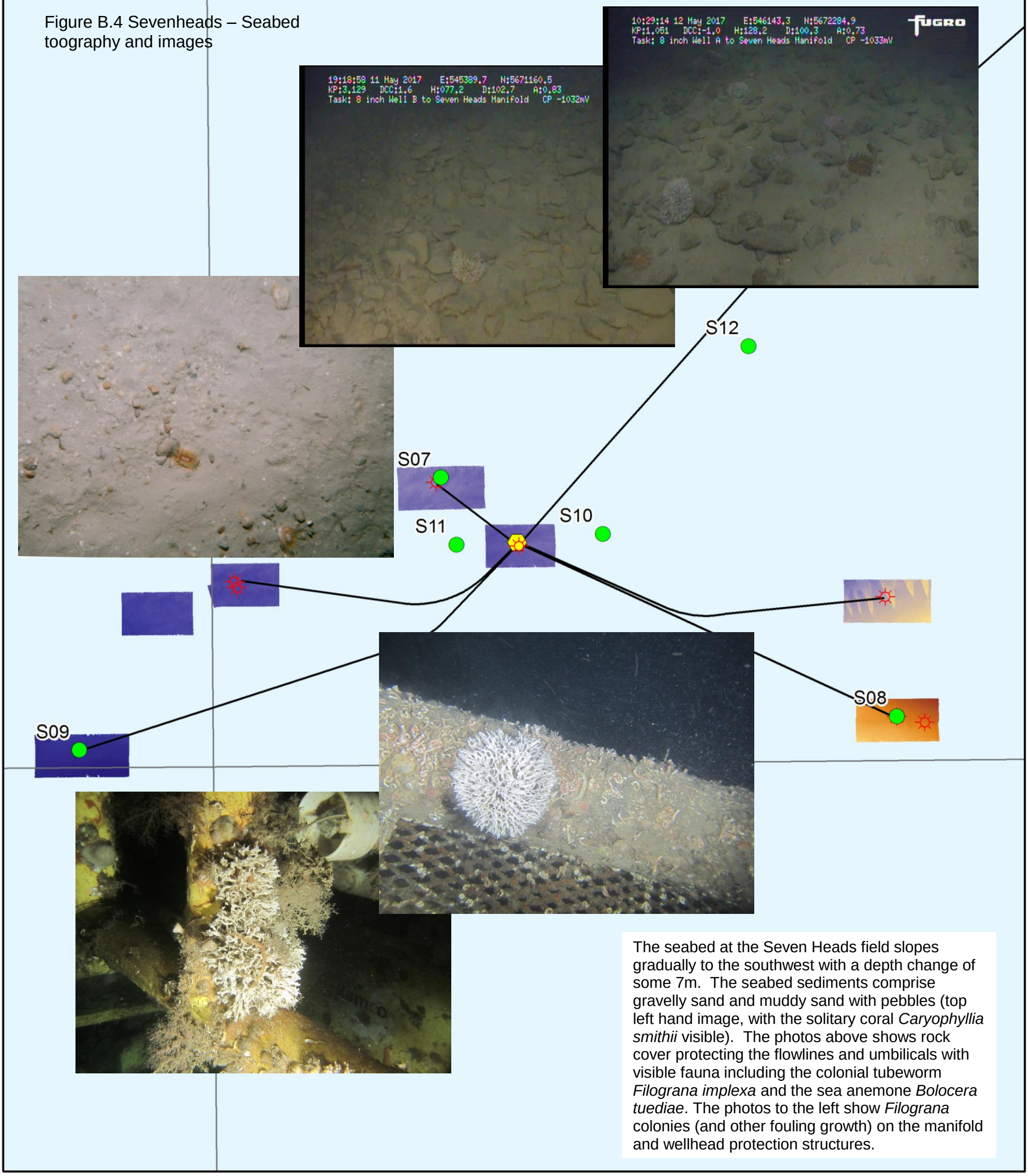
0 0.15 0.3 Km

N

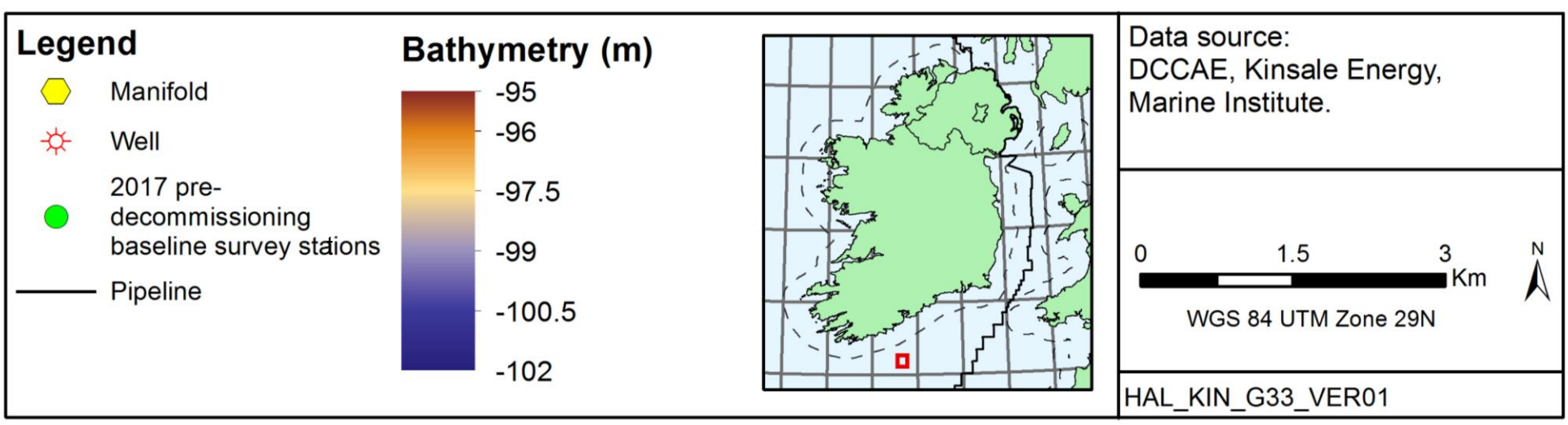
WGS 84 UTM Zone 29N

HAL_KIN_G33_VER02

Figure B.4 Sevenheads – Seabed toography and images



The seabed at the Seven Heads field slopes gradually to the southwest with a depth change of some 7m. The seabed sediments comprise gravelly sand and muddy sand with pebbles (top left hand image, with the solitary coral *Caryophyllia smithii* visible). The photos above shows rock cover protecting the flowlines and umbilicals with visible fauna including the colonial tubeworm *Filograna implexa* and the sea anemone *Bolocera tuediae*. The photos to the left show *Filograna* colonies (and other fouling growth) on the manifold and wellhead protection structures.



KINSALE ENERGY

Kinsale Area Decommissioning Project

Appendix B2

Archaeological Assessments

Hartley Anderson
FOR ENVIRONMENTAL MANAGEMENT & SCIENCE

ARUP

Archaeological Assessment Records		
Year	Report	Relevant Section
1989	Ballycotton Development – Environmental Report	Section 4.5 Archaeological Sites
1995	Southwest Kinsale – Environmental Impact Assessment	Section 4.3.3 Coastal Activities
2003	SWK Greensand – Environmental Impact Statement	Section 4.7.7 Wrecks & Archaeological Features
2003	Seven Heads – Environmental Impact Statement	Section 4.7.10 Wrecks & Archaeological
2010	Gas Storage Project – Archaeological Impact Assessment – Moore Marine Report M10C05 - Inch Terminal Extension Study	Full Report
2011	Gas Storage Project – Archaeological Impact Assessment – Moore Marine Nearshore Pipeline Route Survey	Full Report
2011	Gas Storage Project - Archaeological Impact Assessment – Moore Marine Offshore Pipeline Route Survey	Full Report

External Pipeline Surveys Conducted					
Survey Year	Type of Survey	Contractor	Time of Year	Line Surveyed	Additional Equipment Used/Notes
1974	ROV	Hunting Surveys Ltd.	Aug	A-B / A-Inch	Pre Lay -
1977	ROV	Hunting Surveys Ltd.	July	A-B / A-Inch	Post Lay -
1990	Side Scan Sonar	Seaway Technology Ltd.	March	Ballycotton Route Survey	Sub Bottom Profiler
1991	ROV	Marconi-UDI	May	24" A-B / A-Inch	
1993	Near-shore survey	Caledonian Geotech	Sept	24" Near / Inshore/ Beach & Land	Electromagnetic
1994	ROV	Fugro Ltd	April	A-B / A-Inch / BC & BCU	
1996	ROTV (SSS)	Svitzer-Britsurvey	May	A-B / A-Inch / BC & BCU	
1997	ROTV (SSS)	Svitzer-Britsurvey	May	A-B / A-Inch / BC & BCU	
1998	ROTV (SSS)	Britsurvey Ltd.	June	A-B / A-Inch / BC & BCU	
1999	ROTV (SSS)	Britsurvey Ltd.	June	A-B / A-Inch / BC & BCU	
2001	ROV	RovTech Ltd.	March	A-B/A-Inch/BC+BCU/SWK	
2002	Side Scan Sonar	Svitzer Ltd.	Sept	WDC Wells & 12" Inter-P Route	Sub Bottom Profiler
2002	Side Scan Sonar	Svitzer Ltd.	Sept	Greensand Well Location & Route	Sub Bottom Profiler
2003	ROTV	Svitzer Ltd.	July	A-B/A-Inch/BC+BCU/SWK	
2004	Side Scan Sonar	Caledonian Geotech	June	All Lines in KHGF & SHGF	
2005	Side Scan Sonar	Marine Institute	May	All Lines in KHGF & SHGF	

External Pipeline Surveys Conducted					
Survey Year	Type of Survey	Contractor	Time of Year	Line Surveyed	Additional Equipment Used/Notes
2006	Side Scan Sonar	Marine Institute	April	All Lines in KHGF & SHGF	
2007	ROV	Fugro Ltd	May	Line in KHGF & SHGF	Exception BC & BCU
2008	ROTV (SSS)	Marine Institute	July	All Lines in KHGF & SHGF	
2009	ROV	Fugro-RovTech	Aug	All Lines in KHGF & SHGF	
2012	Side Scan Sonar	Marine Institute	March	All Lines in KHGF & SHGF	
2013	ROV	Marine Institute	Sept	All Lines in KHGF & SHGF	
2014	Near-shore survey	Irish Hydrodata Ltd	Nov	24" Export Pipeline Inshore	Side Scan Sonar
2017	ROV	Fugro Ltd.	May	All Lines in KHGF & SHGF	

Abbreviations:

A-B	*Alpha to Bravo*
A-Inch	*Alpha to Inch Beach*
KHGF	*Kinsale Head Gas Field*
SHGF	*Seven Heads Gas Field*
BC	*Ballycotton*
BCU	*Ballycotton Umbilical*
Inter-P	*Inter-Platform A to B*

KINSALE ENERGY

Kinsale Area Decommissioning Project

Appendix C1

Characteristics of the Terrestrial Environment - Biodiversity

Hartley Anderson
FOR ENVIRONMENTAL MANAGEMENT & SCIENCE

ARUP

Table C1.1: Recorded terrestrial bird species and conservation status

Species		Birds Directive Annex			BOCCI	
		I	II	III	Red List	Amber List
Columba palumbus	Woodpigeon		X	X		
Erithacus rubecula	Robin					X
Carduelis cannabina	Linnet					X
Turdus merula	Blackbird					
Corvus frugilegus	Rook					
Corvus monedula	Jackdaw					
Carduelis carduelis	Goldfinch					
Anthus pratensis	Meadow pipit				X	
Pica pica	Magpie					
Prunella modularis	Dunnock					
Parus caeruleus	Blue Tit					
Troglodytes troglodytes	Wren					
Phasianus colchicus	Pheasant					
Parus major	Great tit					
Corvus cornix	Hooded Crow					
Turdus philomelos	Song Thrush					
Fringilla coelebs	Chaffinch					
Pyrrhula pyrrhula	Bullfinch					
Carduelis chloris	Greenfinch				X	
Larus argentatus	Herring Gull					X
Hirundo rustica	Barn Swallow				X	
Sylvia communis	Whitethroat					

Symbol	Description
I	Annex 1: species and sub-species are particularly threatened. Member States must designate Special Protection Areas (SPAs) for their survival and all migratory bird species.
II	Annex 2: bird species can be hunted. However, the hunting periods are limited and hunting is forbidden when birds are at their most vulnerable: during their return migration to nesting areas, reproduction and the raising of their chicks.
III	Annex 3: overall, activities that directly threaten birds, such as their deliberate killing, capture or trade, or the destruction of their nests, are banned. With certain restrictions, Member States can allow some of these activities for species listed here.

KINSALE ENERGY

Kinsale Area Decommissioning Project

Appendix C2

Characteristics of the Terrestrial Environment - Archaeology

Hartley Anderson
FOR ENVIRONMENTAL MANAGEMENT & SCIENCE

ARUP

C.2.1 Cartographic and Placename Evidence

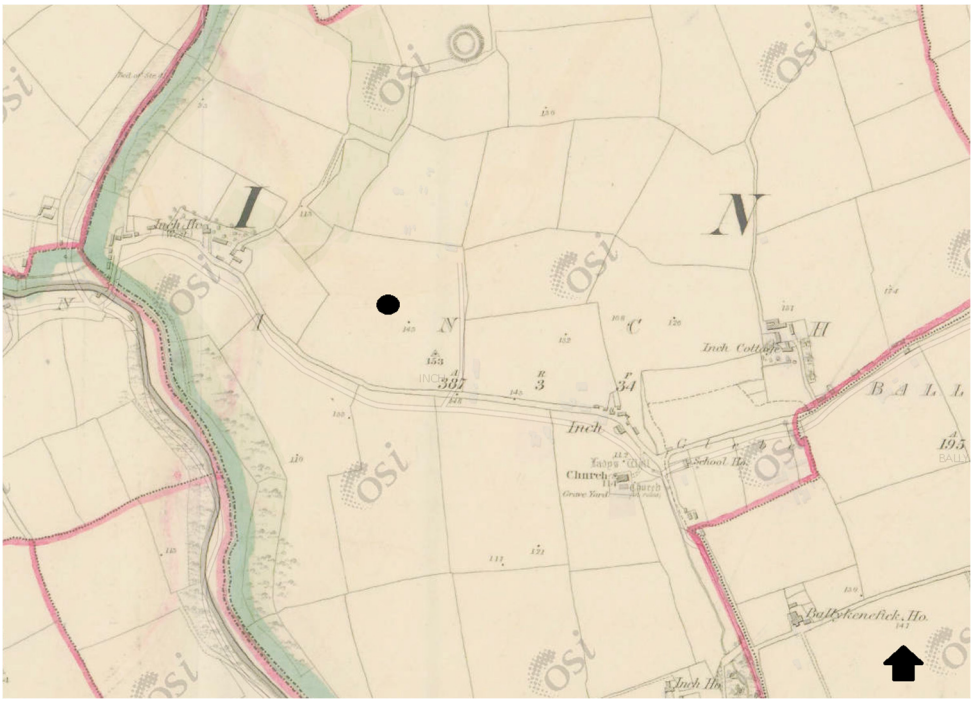
C.2.1.1 Cartographic Evidence

First Edition Ordinance Survey

This extract from the First Edition Ordnance Survey (Sheet CO:100 surveyed in 1842) depicts the terminal site in much the same manner as it is found today. The field units are broadly similar; the site is still surrounded by agricultural land. Inch House West, still appears in much the same manner as it was depicted in 1842.

A number of topographical variations have been identified since this map was drawn. This map depicts the field boundary immediately to the south of Inch Ringfort as having the southern section of the Ringfort incorporated into the field boundary. This is no longer the case. This map does not record the presence of any previously unrecorded features of cultural heritage significance. Refer to **Figure 5.15** in the main Environmental Report for the First Edition Ordnance Survey mapping.

Figure C.2.1: Extract from the First Edition Ordnance Survey (Sheet CO:100 surveyed in 1842)

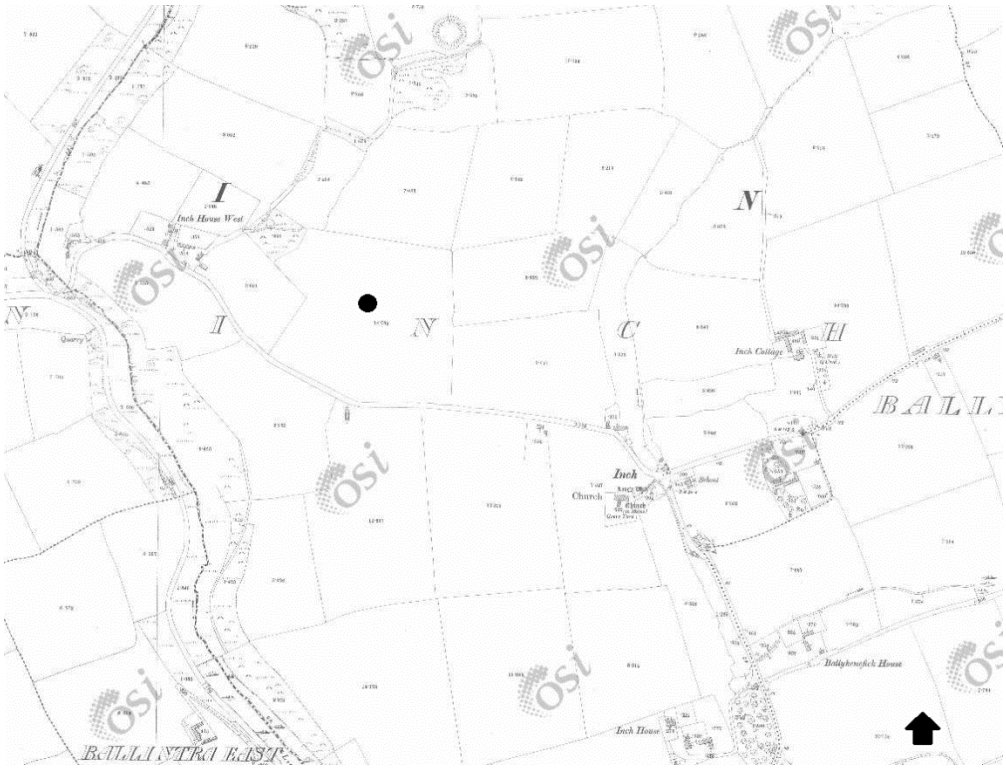


Second Edition Ordinance Survey

This extract from the Second Edition Ordnance Survey (Sheet CO:100 surveyed in 1882) depicts the terminal site in much the same manner as it is found today. The field units are broadly similar, the site is still surrounded by agricultural land and the northern boundary of the assessment area still defines the northern boundary of Inch townland. Inch House West, still appears in much the same manner as it was depicted in 1882.

A number of topographical variations have been identified since the previous edition of this map. This map now depicts the field boundary immediately to the south of Inch Ringfort as being in the same place as it is today. It no longer incorporates the southern section of Inch Ringfort. Also, the northern and southern section of the area along the eastern townland boundary are depicted as marginal wetland areas. This depiction would appear to co-relate with current conditions. This map does not however record the presence of any previously unrecorded features of cultural heritage significance. Refer to **Figure 5.16** in the main Environmental Report for the Second Edition Ordnance Survey mapping.

Figure C.2.2: Extract from Second Edition Ordnance Survey (surveyed 1882)



C.2.1.2 Placename Evidence

The name Inch derives from the Irish ‘Inse’ meaning river-meadow or moist smooth pasture along a stream. This is an obvious reference to the nearby Inch stream. The name Lahard derives from the Irish ‘Leath- Ard’ meaning half height. It was often used to denote a diminution of the usual condition, where by half height would mean a gentle slope. This nomenclature makes reference to the local topography which slopes towards the sea.

The name Ballintra (East & West) derives from the Irish ‘Baile an tra’ meaning town beside the beach. This name refers to the location of the clóchan adjacent to the nearby beach. The names Ballykefenick, Ballyshane, Ballybranagan, Ballytibbott all derive from old English family manes which were incorporated into townland names. The name Tullaheen derives from the Irish ‘Tullach ean’ meaning hillock of the bird.

C.2.2 Archaeological and historical background

Mesolithic

The Mesolithic (middle stone age) people were the first inhabitants of Ireland, arriving about 9000 years ago. Unlike many other areas of the country, where there is little evidence of Mesolithic and Neolithic cultures, there is a considerable amount of evidence for both in the area from Roche's Point to Power Head and further east. Much of this evidence was gathered by a research project carried out by University College Cork under the directorship of Prof. Peter Woodman in the 1980s (Power, 1994). The programme carried out a number of field surveys, examining recently ploughed fields for evidence of Mesolithic and early Neolithic activity.

Typically this evidence took the form of discarded stone tools and debris from their manufacture, and provided evidence for Mesolithic occupation of the area. Collectively termed as 'flint or lithic scatters', one of these sites was identified in the field immediately to the north of Inch beach. The townlands where these flint scatters were recorded include Ballintra West, Ballybranagan, Ballycroneen East, Ballycroneen West, Ballykenefick, Inch, Lahard and Trabolgan.

Evidence of Mesolithic seafaring or its technology is inferred in the fact that Ireland has a Mesolithic culture. As with today, prehistoric Ireland was separated from both mainland Eurpor and Britain by a stretch of sea. The only way that the Mesolithic culture could have arrived to Ireland was via some form of seafaring technology, namely a boat or raft (Blackwell, 1992, Breen and Forsythe 2004).

The coastal emphasis of much of the recorded Mesolithic settlement in southern Ireland (Guileen & Doonpower Head Co. Cork and Ferriters Cove Co. Kerry) and the discovery of seafood remains at many of these sites would appear to indicate that there was a reliance on the sea for food. The remains of a Mesolithic poplar dug-out log discovered at Carrigdirty Rock, in the Shannon Estuary proves that there was seafaring capabilities at this time (O Sullivan, 2001).

Although it could be argued that the discovery of such a number of Mesolithic sites in this area was as a result of deliberate targeting, and that similar numbers of sites could be identified in other areas if targeted field survey was carried out. It still remains that the recording of such a preponderance of flint scatters in such a confined geographic area would appear to indicate this is one of the few areas of the country where there is a confirmed and obviously sustainable Mesolithic population with a very obvious focus on exploitation of marine resources.

Neolithic

Similar to the Mesolithic discoveries, the University College Cork field surveys recorded the presence of a number of Neolithic sites in this area. A number of these sites can be identified as transition sites, from

Mesolithic to Neolithic. Megalithic tombs are a characteristic feature of Neolithic cultures both in Ireland and in Western Europe. They typically comprise of one of four tomb types, where collective burial was carried out in stone tombs. There are only two megalithic structures, (Rostellan RMP CO:88:10 and Castlemary RMP CO:88:15) in the broader vicinity of the proposed development. Both are situated close to the coast, adjacent to the town of Cloyne almost 8km from the subject site.

Again, although there is no recorded evidence of any Neolithic activity at the site of the nearshore survey, the presence of contemporary features on the adjacent coastal fringe infers that these cultures must have visited this area.

Bronze Age

While some communal megalithic monuments, particularly wedge tombs continued to be used, the Bronze Age is characterised by a movement towards single burial and the production of prestige items and weapons, suggesting that society was increasingly stratified and warlike.

Bronze Age occupation of the area surrounding the subject site is represented by the presence of a possible standing stone (RMP CO:100:055), located in the townland of Ballycroneen West. This 3.3m (11 ft) tall monolith is associated with a similar structures from the region. The practice of Bronze Age cultures erecting megalithic structures such as this on their lands is largely restricted to two distinct regions in Ireland, south Munster and mid Ulster. It is in this south Munster series that this monolith is classed (O Nualainn, 1991). The erection of this stone pillar in the area is believed to have been of considerable significance to the local

community. The fact that it belongs to a wider regional cultural tradition indicates that there was communication between contemporary Bronze Age communities.

The exact means and methods of communication appear to have been lost but it must be considered that waterbourne communication was practiced in the region. All the boat finds for this period in Ireland consist exclusively of logboats (Breen and Forsythe, 2004). None were recovered from the region surrounding the subject site as the area is too dynamic to provide favourable preservation conditions.

A boat recovered from a bog in Lurgan Co. Galway, is considered by some to be an unfinished seagoing vessel which measures over 15m in length, and was fitted for outriggers. Its discovery would appear to indicate that coastal travel was being carried out at this time.

Iron Age

In late Bronze Age Ireland the use of the metal reached a high point with the production of high quality decorated weapons, ornament and instruments, often discovered from hoards or ritual deposits. The Iron Age however is known as a 'dark age' in Irish prehistory. Iron objects are found rarely, but there is no evidence for the warrior culture of the rest of Europe, although the distinctive La Tène style of art with animal motifs and spirals was adopted. Life in Iron Age in Ireland seems to have been much as it was in the early historic period – mixed farmers living in or around small defended settlements known as ringforts or stone cashels.

Monuments indicative of human habitation during the Iron Age include promontory forts, cashels and fulacht fiadh. Unsurprisingly considering the continued occupation of this area since the Mesolithic period, there is considerable evidence for Iron Age activity in the vicinity of the proposed development. This evidence takes the form of two coastal Promontory Forts at Lahard (RMP CO100:01702) and Ballyrobin South (RMP CO100A1:002). Two Fulacht Fiadh are recorded on the subject site (RMP CO:100:1101 & 02), with a number of additional sites in the general vicinity.

With regard to maritime communication, archaeological evidence indicates that there was extensive local, national and international trade being carried out. The discovery of the skull of an African Barbary Ape in Navan Fort, Co. Armagh and the mentioning of Ireland (Hibernia) in a number of Phonecian, Roman and

Egyptian text and maps indicates that international travel was being carried out at this time.

Again, although there is no recorded evidence of any Bronze Age activity at the site of the nearshore survey, the presence of contemporary features on the adjacent coastal fringe infers that these cultures must have visited and exploited this area.

Early Christian Period

The Early Medieval Period represented a time of considerable change. Christianity appears to have arrived in this area sometime around 560, when St. Colman founded his monastery in nearby Cloyne. Colman, son of Lenin, lived from 522 to 604 A.D. He had been a poet and bard at the court of Caomh, King of Munster at Cashel. It was St. Brendan of Clonfert that induced Colman to become Christian. He embraced his new faith eagerly and studied at the monastery of St. Jarleth in Tuam. He later preached in East Cork and established his own monastic settlement at Cloyne about 560 A.D. His feast day is celebrated on November 24th. Cloyne was later to become the centre of an extensive diocese in Munster and for eight centuries, it was the residence of the Bishops of Cloyne and the site of his Cathedral.

At this time, Ireland had already developed laws with which the country would be governed fairly, many of these dealt exclusively with marine subjects. In the 3rd century, Cormac Mac Art was reputed to have compiled a book of rights. In it, he mentions that an annual tribute of ten ships with beds were to be paid to the Ard Ri. Later legal tracts called the Muir Brethra or Sea Laws, elaborated this and defined the rights and duties of foreign trading vessels. The later Brehon Laws, were even more detailed, describing the fee payable to a boat owner in the event that their boat was damaged. They went even went so far as to classify boat types according to their length. The laws also indicated the place in society which a boat builder occupied and his honour price.

The fact that these laws were in place bears testament to the fact that a considerable amount of maritime activity must have been taking place. Sadly the full extent of the trade links were not fully recorded.

The coming of Christianity heralded a change in Irish society, not only were small proto towns and markets being established around monasteries but we also read first hand accounts of ocean going travel in manuscripts such as the Brendan Voyage and annals detailing the establishment of monasteries on outpost

island sites such as Skellig Micheal, Co. Kerry, Tory island Co. Donegal and High Island, Co. Galway. They also tell of sea journeys taken by the monks to outposts such as Iona and Lindisfarne.

The Inch Terminal site is located in the southern boundary of Imokilly Barony. Evidence for Early Christian activity abounds in this area. The presence of 5 Ringforts within 2 km of the beach landfall indicates that there was extensive contemporary rural settlement in this area.

Again, although there is no recorded evidence of any Early Christian activity at the site of the nearshore survey, the presence of contemporary features on the adjacent coastal fringe infers that these cultures must have visited and exploited this area.

Viking Period

The early years of Viking contact comprised mainly of seasonal raids, whereby high status sites would be plundered by the visiting Viking. These raiders would travel from their native homeland of Norway and Denmark to Ireland performing hit and run raids on monasteries and other high status sites. Annalistic sources indicate that the first recorded attack on the monastery at Corcach Mór na Mumhan (Cork City) occurred in 820 AD (Valante 2008).

It is widely recorded that these visiting raiders were very proficient in seamanship and that most of their plunder sites were reached via boat. Consequently, although there is no direct historical or archaeological evidence to confirm, it must be assumed that the visiting Vikings must have passed by Power Head and Inch Beach on their approach to Cork.

It is however very unlikely that they would have camped, visited or established any form of settlement in this area as it is located on an exposed section of coastline. Conditions such as these would have been very unfavourable to Viking settlement. Additionally, considering the detail and extent of contemporary records, any Viking settlement in this area would almost definitely have been mentioned in some of the written sources.

The arrival of the Vikings to Ireland did ultimately lead to greater trade links with foreign towns. The monks in the Saint Finnbarr's monastery (Cork) recorded that one could get a boat from Cork to mainland Europe.

Wine was imported for church use while salt was imported for the preservation of meat. The exact source of these commodities is unknown; remaining documentary evidence suggests that the trading network reached across to Britain and France. In terms of exports, it is likely that the principle exports were sheep's wool, hides and meat from cattle and fish. It is also probable that an internal trading system had been established between the Cork Viking port and other nearby Viking ports such as Youghal, Kinsale and Waterford.

Although there was a marked increase in local, national and international maritime trade during the Viking Period, none of this appears to have been centred around Power Head and Inch. It is most likely that this area was simply a transit hinterland and promontory.

Historic Period

At around the period the Anglo-Normans arrived in Ireland one of the dominant families in the area was the Uí Meic Tire. Infighting between the Uí Meic Tíre family facilitated the Anglo-Norman conquest of Imokilly. It is recorded that in 1177, King Henry II granted the Kingdom of Cork to Robert Fitz-Stephen and Milo de Cogan, two Anglo-Norman adventurers who had played prominent roles in the conquest of Ireland.

In the subsequent division of lands, Imokilly came into the possession of Robert FitzStephen, and FitzStephen's land was parcelled out among his friends and kinsmen in accordance with the Anglo-Norman land system and they then held it by feudal tenure. Two of the main foeffees of Robert FitzStephen, were the Fitzgeralds and the Carews. They ranked amongst the earliest Anglo Norman settlers in East Cork and their arrival effectively put an end to the era of Gaelic chieftains in Ireland.

During the period between the plantation of Munster and the Confederate wars, Cork had become one of the primary trading ports in the Country. The already well established trade links between the traditional English trading families of Cork City and the nearby Continent were being expanded on and smaller ports such as Youghal and Kinsale were expanding rapidly, so much so that in the 1630s Kinsale was the foremost tobacco importer in the Country (Dickson, 2005).

The suppression of the confederates, brought a change to this dynamic. Older, more established, merchant families had their assets and lands stripped and they were expelled from the walled town. New opportunities then arose for the new settlers.

The newly arrived protestant settlers did not waste any time in establishing trade links with mainland Britain, Europe and also the burgeoning colonies in the west (Caribbean and America). The recent arrival meant that their allegiance to their homeland, England was still strong, however their religious diversity meant that they had deeper and wider religious origins which could be exploited for trade purposes.

Britain at this time was almost as powerful as the Dutch and the colonies were exporting huge amounts of tobacco. Figures indicate that between 1665 and 1685 Irish imports of tobacco doubled, and the majority of this was imported through Cork. The diversity of this new trade could be seen in 1686 import figures for Cork City, where only 25% of direct trade was with England, 18% was with Holland, 22% with France, 14% with Southern Europe and 20% from transatlantic sales (Dickson, 2005). This was a trend that was to remain for the next almost 75 years.

The location of the safe deepwater port of Cork as one of the last stops on the transatlantic route meant it was ideally suited to take advantage of the this new trade. Additionally, its sheltered and easily defended location afforded it the unrivalled ability to provide shelter to the large naval fleets assembled during the American War of Independence and later during the Napoleonic Wars.

Another major factor in the expansion of Cork was the adoption of the Port by the Royal Navy as a victualing station. High quality salted beef, butter and other supplies were goods that could be easily acquired from the hinterland around Cork.

It is precisely this reason that the provision of high quality goods generated such wealth for the town's merchants. The close links of Cork's economic prosperity to the war economy and the export of salted goods were weaknesses that were exposed in the period of peace following the Napoleonic Wars.

The textile industries in Cork also flourished during this period. The demand for linen for sailcloth helped the growth of the Douglas sailcloth factory which was the biggest such factory in Europe by 1726.

The late 1700s saw the tanning, brewing, and distilling industries flourish. The Beamish and Crawford brewery established in 1792 became the biggest of its kind in Ireland.

19th Century

Cor The early decades of nineteenth century saw a marked decline in the economic fortunes of Cork City. The ending of the Napoleonic Wars was a major factor in the economic slump. Cork Harbour no longer regularly hosted fleets of the Royal Navy and this caused a major decline in the provisions trade. Since the Act of Union in 1800, Ireland had been protected from the full force of British competition but a change of law in 1824 saw Irish industry exposed to competition from the far more developed British economy. The combined impact of these developments was catastrophic for the traditional textile industry and the provisions trade.

Not all of the city's industries were equally affected by the economic decline of the first half of the 1800s. Shipbuilding, brewing, distilling, tanning and the butter trade still flourished. Cork Harbour did however remain a major port for trans-Atlantic trade.

Samuel Lewis in his Topographical Dictionary of Ireland, 1837 describes the area surrounding Inch as "a parish, in the barony of Imokilly, county of Cork, and province of Munster 5 miles (S. by W.) from Cloyne, on the road to Poer Head; containing 1854 inhabitants. It comprises 3761 statute acres, about two-thirds of which are under tillage, and the remainder in pasture: the soil, which rests on clay-slate, is light and indifferently cultivated. The seats are Castle Mary, the residence of the Rev. R. Longfield, standing in an extensive and well-wooded demesne; Woodview, of the Rev. J. P. Lawless; and the very pretty residence of Mr Fitzgerald, proprietor of the extensive limestone quarries at Carrigacrump. These quarries supplied stone for the works on Hawlbowling and Spike Islands and the Martello towers near Cove; also for the court-house, quays, and custom-house of Cork. The coast around Poer Head, which is a coast-guard station, is very bold, and is composed of schistose rocks with thin layers of argillaceous grit intermingled.

The living is a rectory and vicarage, in the diocese of Cloyne, and in the gift of the Crown: prior to 1835 it formed part of the union of Aghada, which was held in commendam by the bishops of Cloyne. The tithes amount to £524. 8. There is no glebe-house; the glebe comprises 10 acres. The church was erected by aid of a gift of £600 from the late Board of First Fruits, in 1831. In the R. C. divisions the parish forms part of the union or district of Aghada. The male and female parochial schools were erected by Bishop Brinkley, in 1828; and there is a school in connection with the National Board. In Castle Mary demesne are the remains of a cromlech; and near Poer Head, on the top of the cliff, are the extensive ruins of a fortress, erected by order of Queen Elizabeth in 1595, but destroyed by the Earl of Desmond soon after, when the garrison was either put to the sword or thrown over the cliff".

Between the years 1845-1850 Ireland experienced a great famine. During this period Cork City was one of the main convergence points for people wishing to flee the horrors of this catastrophe. Consequently, the city and surrounding villages witnessed scenes of horror and destitution.

Cork in World War One

During the first quarter of the twentieth century, the main route for shipping from the USA to southern English ports passed the southern coast of Cork. At this time Britain was reliant on the importation of a large amount of its foodstuffs from Ireland and North America. The Declaration of War, by the British on Germany on 4th August 1914, meant that these imports were now at risk.

After the Declaration of War, Britain confirmed that Cork would be one of the main Naval bases for the Atlantic campaign. Cork Harbour was a natural choice for a base of warships charged with the protection of these waters. In the period 1914 to 1918 Queenstown was a base for tugs, sloops, armed trawlers, armed yachts, Q-ships, motorboats and from April 1917, a fleet of U.S. destroyers. The harbour itself was protected by anti-submarine devices and the entrance was regularly swept for mines which were laid overnight by German submarines, more commonly known as Uboats.

In February 1917, an order was issued by the Admiral Hennin Van Holtzendorff, Germany's Chief of Naval Staff, for the navy to begin unrestricted naval warfare against all vessels, including those of neutral nations. The U-boats were highly efficient in this task, at the peak of their success in 1917 they sunk 603,000 tons of merchant shipping in March alone.

The U.S. declared war on Germany in April 1917. It was around this time that Irish fishing vessels off the Cork coast began to be targeted by the U-boats, reputedly for supplying the British with food.

A fleet of American destroyers set sail for Queenstown upon the U.S. declaration of war. They would be based in Queenstown for the remainder of the war and provided long range protection for Allied shipping. From 1917 onward inbound vessels were met and escorted by warships from a point about 60 miles west of The Fastnet. An escorted convoy system for trans-Atlantic crossings of merchant ships, war ships and troop ships came into effect later in 1917 and the u-boats strangle hold on western Europe began to lift.

Cork in the Second World War

Ireland had put a bitter civil war behind her and was a recently emerged nation when the Second World War (WWII) broke out in 1939. Still nominally a dominion of the British Empire and a member of the Commonwealth, Ireland had gained de facto independence from the United Kingdom after the Anglo-Irish War, and the Anglo-Irish Treaty of 1921 declared Ireland to be a 'sovereign, independent, democratic state'. A new constitution had been adopted by the Irish Parliament in 1937. The Statute of Westminster meant that unlike in World War I, Britain's entry into the war no longer automatically included its dominions. Dáil Éireann voted for neutrality at the outbreak of hostilities in Europe and this neutrality was maintained throughout until the end of the war in 1946. In comparison to the previous war there was less hostile activity off the Cork coast for the duration of the Second World War. Intense battles between escorted convoys and packs of Uboats took place in the mid-Atlantic and off the south coast of Greenland in 1942. The submarines still took their toll; in a period from January 1942 to May 1943 submarines accounted for 6,808,000 tons of Allied shipping sunk in the North Atlantic alone (Smith, 2008).

Military weapons technology experienced rapid advances during World War II. Naval warfare had changed dramatically, the aircraft carrier was now the premier vessel of the fleet.

Submarines had advanced and were now held used by both the Allied and Axis forces (Smith, 2008). The German U-boats were once again put into action against merchant shipping crossing the Atlantic. This time the U-boats were used in groups, so called 'wolf packs', to counter the effect of the convoy system which had proved successful in the First World War. To counter the threat of the German submarines the Allied forces now carried shipboard and aircraft radar and some of the first acoustic listening devices, or sonar.

C.2.3 Record of Monuments and Places

Table C.2.1: Recorded monuments within 2km of study area

Record Number:	Classification:	Description:
CO088-040	Redundant record	Listed as a 'potential site – aerial photo' in the SMR (1988) and the RMP (1998) based on a feature visible on an aerial photo (GSI W255). The current evidence is not sufficient to warrant accepting this as the location of an archaeological monument.
CO088-052	Fulacht fia	In pasture, on S side of stream. Spread of burnt material (L c. 18m; Wth c.18m). Noted as dark soil mark on aerial photograph (GSAP, W255). The above description is derived from the published 'Archaeological Inventory of County Cork. Volume 2: East and South Cork' (Dublin: Stationery Office, 1994). In certain instances the entries have been revised and updated in the light of recent research.
CO088-116	Standing stone	In pasture, atop hill, overlooking stream to N. Subrectangular stone aligned NW-SE (H 2m; 0.65m x 0.28m). (pers. comm. Joan Rockley) The above description is derived from the published 'Archaeological Inventory of County Cork. Volume 2: East and South Cork' (Dublin: Stationery Office, 1994). In certain instances the entries have been revised and updated in the light of recent research.
CO100-024	Moated site	In pasture, on N-facing slope. Square enclosure (38m N-S; 37.6m E-W) defined by earthen bank (max. int. H 1.2m); stone-faced to N; exterior fosse and parallel field fence (H 1m) to W. Gaps to NE (Wth 5m) and SW (Wth 2.6m). Partially overgrown. The above description is derived from the published 'Archaeological Inventory of County Cork. Volume 2: East and South Cork' (Dublin: Stationery Office, 1994). In certain instances the entries have been revised and updated in the light of recent research.
CO100-025	Enclosure	In tillage, on level ground. Depicted as subrectangular enclosure on 1842 OS 6-inch map; roadway running NNW-SSE, crosses SW quadrant. Levelled; slight rise to E may mark line of bank. According to Power (1940, 105) ' one small lios (almost obliterated) on Cashman's farm'. The above description is derived from the published 'Archaeological Inventory of County Cork. Volume 2: East and South Cork' (Dublin: Stationery Office, 1994). In certain instances the entries have been revised and updated in the light of recent research.
CO100-026	Ringfort - rath	In tillage, land slopes gently to E. Shown on 1842 OS 6-inch map as hachured semi-circle S->N (c. 35m N-S), truncated by N-S field fence; Levelled; earthen stone-faced bank retained in N field fence (max. H c. 1m). According to Power (1940, 103) 'There were formerly four lioses, only one of which...survives. One of the destroyed specimens...was double ramparted - though of no great size'. The above description is derived from the published 'Archaeological Inventory of County Cork. Volume 2: East and South Cork' (Dublin: Stationery Office, 1994). In certain instances the entries have been revised and updated in the light of recent research.
CO100-023001	Souterrain	In a levelled rath (CO100-023----). This earth-cut souterrain was discovered in June 2003 when the ground collapsed during ploughing. The collapsed opening (0.75m x 0.7m) revealed two passages, one leading to the SSW and the second to the E. The former (min. L 1.1m) had a rounded roof, 0.6m below ground level and was inaccessible due to collapsed earth. The second passage (min. L 1.6m) slopes steeply down to the E into a possible chamber that was also inaccessible.
CO100-023	Ringfort - rath	Cropmark (GSI, W255) shows circular univallate enclosure (diam. c. 35m); possibly one of the two 'lioses' referred to by Power (1940, 103) as having 'been demolished long since'. In June 2003 a souterrain (CO100-023001-) was discovered here after the ground collapsed under the weight of a tractor. While the landowner was not aware of any rath or souterrain here, the placename 'Lios na gCruach' is associated with this area. The class for this record has therefore been changed to rath
CO100-012	Ringfort - rath	In pasture, on W-facing slope. Circular area (35.5m N-S; 34.3m E-W) enclosed by earthen bank (H 1m) with external fosse (max. D 2m), shallow to W; counterscarp

Record Number:	Classification:	Description:
		bank to NW. Gap (Wth 6m) in bank to W. Just inside and parallel to bank is low ridge NE->SSE
CO088-038001	Ringfort - rath	In tillage, on E-facing slope. Shown on 1842 and 1902 OS 6-inch maps as circular enclosure (diam. c. 30m), cut to N and W by trackways. S bank conjoined to another possible ringfort (CO088-03802-). According to Power (1940, 17) '...on the townland is a conjoint lios, of two parts - both double-ramparted'. No visible surface trace.
CO088-038002	Ringfort - rath	In tillage, on E-facing slope. Shown on 1842 OS 6-inch map as irregular enclosure (diam. c. 35m N-S) cut to W by trackway; N bank conjoined to possible ringfort (CO088-03801-). According to Power (1940, 17), '...on the townland is a conjoint lios, of two parts - both double-ramparted'. No visible surface trace.
CO088-118	Church	In Ballincrostig. Cruciform church (long axis E-W); pointed window opes; sash windows with switch line tracery. Date stone on N transpet ...'Built in 1830. The other part July 1804'. Bellcote on W gable.
CO088-039	Ringfort - rath	In pasture, on E-facing slope. Roughly circular area (c. 33m E-W; c. 32m N-S) enclosed by earthen bank (int. H 1.3m) to S, W and N; scarp to E; shallow external fosse to S and W.
CO100-011001	Fulacht fia	In pasture, on W-facing slope. Low oval mound (19.2m NW-SE; 12.9m NE-SW; H 1m) of burnt material. Stream to W. Second fulacht fiadh (CO100-01102-) c. 40m to SE.
CO100-011002	Fulacht fia	In pasture, on W-facing slope. Grass-covered spread of burnt material c. 40m SE of another fulacht fiadh (CO100-11101-). Stream to S.
CO100-037	House - vernacular house	Roadside. Front (E) of 3 bays; central doorway. Gable-ended, thatched roof; chimneys on gables. Occupied.
CO100-009003	House - vernacular house	Roadside. Front (NW) of 2-bays; off-centre doorway to left. Hipped-roof of thatch, partially collapsed. Off-centre chimney to right. Abandoned. A short distance to SW is second similar structure, now roofless.
CO100-009002	Souterrain	In ringfort (CO100-00901-). According to local information, collapse occurred in interior of fort after ploughing. No visible surface trace.
CO100-008	Ringfort - rath	In tillage, on SE-facing slope, overlooking Gyleen Bay to SSE. Excavated by O'Flaherty (1982, 129-31) prior to levelling. Circular area (max. diam. 35m) defined by bank (max. H 2m); bank heavily denuded on N side. Excavation revealed bank constructed of re-deposited boulder clay; also presence of external fosse. Partially stone-lined drain in interior; no evidence for occupation. Interpreted as cattle corral. According to Power (1940, 100) 'There were, at least, five lioses....; of these, three have been prostrated' (CO100-00901-; CO100-01001-; CO100-050---; CO100-051---).
CO100-010001	Ringfort - rath	In tillage. Shown on 1842 OS 6-inch map as circular enclosure (diam. c. 30m). According to Power (1940, 100) 'There were, at least, five lioses....of these, three have been destroyed' (CO100-008---; CO100-00901-; CO100-050---; CO100-051---). No visible surface trace. Souterrain (CO100-01002-) in interior.
CO100-007	Religious house - unclassified	Shown only on first edition map as rectangular area defined by dotted line and named 'Site of Old Building'. Lewis (1837, vol. 1, 429) refers to 'extensive ruins, supposed to have belonged to a religious establishment' in this field. It is not included in Gwynn and Hadcock's list of religious houses in Ireland (1988). No visible surface trace.
CO100-034	Settlement cluster	Coastal village overlooking Powerhead Bay, which retains several houses shown on 1842 OS 6-inch map. All are 1-storey and many are or were thatched, mainly with hipped roofs. Fronts range from 3-5 bays with central doorway. According to local information there were three shops and two public houses in the past; one public house survives.

Record Number:	Classification:	Description:
CO100-042	Prehistoric site - lithic scatter	On E side of Gyleen village, on cliff overlooking sea to S. Identified during field study (1983-5). 'Flint artefacts were scattered throughout much of the field with two main concentrations... one of these produced...uni-plane cores... larger flakes and blades resembleing later Mesolithic material... the second concentration produced uniformly smaller flakes, blades and cores... not diagnostic of any particular lithic industry' (Johnson 1987, 14); excavation in 1986 produced 'no features or any evidence for an undisturbed 'occupation' level' (ibid.).
CO100-035	House - vernacular house	Front (E) of 5 bays; off-central doorway to left. Hipped-roof of thatch; two off-centre chimneys. Demolished in 1988.
CO100-036	House - indeterminate date	Overlooking Powerhead Bay. Rectangular (long axis E-W) 2-storey double gable-ended structure. Front (S) of 5 bays; central doorway; sash windows with glazing bars; chimneys on gables. E gable is weather-slated. Second building to N is a long, gable-ended, 2-storey structure divided into three separate residential units.
CO100-043	Prehistoric site - lithic scatter	In pasture overlooking sea. Found during field walking. "Small scatter of flint including some Later Mesolithic" (pers. comm. Prof. P. Woodman, UCC).
CO100-015	Redundant record	Listed as a 'potential site – aerial photo' in the SMR (1988) and the RMP (1998). The evidence is not sufficient to warrant accepting this as the location of an archaeological monument.
CO100-038	House - vernacular house	In settlement cluster, named Lahard, on 1842 OS 6-inch map of which little else remains. Front of 3 bays; central doorway. Hipped-roof of thatch. Off-centre chimney to right. Occupied.
CO100-014	Ringfort - rath	In tillage, on SSE-facing slope. Depicted as D-shaped area (c. 30m N-S; c.20m E-W), with straight edge to E defined by field boundary, on 1842 OS 6-inch map. Field boundary removed; marked sharp drop to stream valley. Enclosure levelled; no visible surface trace.
CO100-056	Prehistoric site - lithic scatter	Concentration of flint found in ploughed field contained 'several small, well made scrapers - post-mesolithic in date' (Woodman 1984, 9).
CO100-018	Enclosure	Cropmark (GSI, W254) shows univallate circular enclosure; possibly one of the two 'lioses' referred to by Power (1940, 103) as having 'been demolished long since'.
CO100-019	Redundant record	Listed as a 'potential site – aerial photo' in the SMR (1988) and the RMP (1998) based on a feature visible on an aerial photograph (GSI W254). The evidence is not sufficient to warrant accepting this as the location of an archaeological monument.
CO100-020001	Ringfort - rath	In pasture, on level patch of ground, on S-facing slope. Depicted on 1842 OS 6-inch map as hachured circular enclosure (diam. c. 22m) conjoined on SW side to circular enclosure (CO100-02002-). Earthen bank (H 0.8m), with external fosse, survives from SSE to junction with conjoined enclosure at SSW.
CO100-020002	Ringfort - rath	In pasture, on level patch of ground, on S-facing slope. Depicted on 1842 OS 6-inch map as hachured circular enclosure conjoined on NE side to circular enclosure (CO100-02001-). Interior (23m E-W; 24.5m N-S) defined by earthen bank (int. H 1.2m) NE->WNW; external fosse to E (max. D 1.25m). Levelled elsewhere.
CO100-021	Redundant record	Listed as a 'potential site – aerial photo' in the SMR (1988) and the RMP (1998) based on a semi-circular feature visible on an aerial photograph (GSIAP W254/5). On the current edition of the OS 6-inch map this area is defined on the N (L 35m E-W), E (L 31m N-S) and W side by linear field boundaries. The linear field boundary at W (L 85m N-S) has a slightly curved kink along its length. This area forming the NW corner of a field is cut off from the rest of the field by a slightly concave broken line (L 78m). The interior of this area is indicated as rough ground. The evidence is not sufficient to warrant accepting this as the location of an archaeological monument.

Record Number:	Classification:	Description:
CO100-022	Ringfort - rath	In tillage, on level ground. Circular area (35.4m N-S) enclosed by earthen bank (max. int. H 1.4m) SE->NE, with external fosse; outer earthen bank (H 1.2m) S->NE, incorporated into field fence system, insubstantial to N.
CO100-039	House - vernacular house	Roadside. Front (W) of 4 bays; off-centre doorway to left. Thatched roof partially collapsed, gabled to left, hipped to right. Two off-centre chimneys to right.
CO100-027	House - vernacular house	Roadside. Front (E) of 4 bays; off-centre doorway to left; hipped-roof of thatch. End chimney to right. Occupied.
CO100-013002	Church	Near centre of graveyard (CO100-01301-), just to S of C of I church (CO100-013003-), overgrown courses of wall run E-W for c. 11m; no trace of return at either end; probably remains of N wall of ancient parish church of Inch, which was in ruins by 1615 (Brady 1863, vol. 2, 232).
CO100-013003	Church	At N end of graveyard (CO100-01301-). C of I church built 1831 (Brady 1863, vol. 2, 233): plain rectangular gabled structure; roof intact; perpendicular tracery in E window, switchline tracery in lancets in S and N walls; bellcote on W gable added 1898, gabled vestry at W end is also late addition.
CO100-013001	Graveyard	Approached by short passage from crossroads to E; roughly square graveyard (c. 50m N-S; c. 50m E-W), still in use. Earliest headstone noted dates to 1725 and is decorated with first occurence in Imokilly of 'Circle around the Cross and Sacred Monogram' (O'Shea 1988, 70). Near centre, remains of parish church of Inch (CO100-01302-). At N end, C of I church built 1831 (Brady 1863, vol. 2, 233): plain rectangular gabled structure; roof intact; perpendicular tracery in E window, switchline tracery in lancets in S and N walls; bellcote on W gable added 1898, gabled vestry at W end is also late addition.
CO100-013004	Ritual site - holy well	In field by roadside. Well enclosed by circular stone structure (H 1m; diam. 1.5m). Roofed with slabs and cement; hole in roof. Pipe at base carries water away; pumphouse nearby. According to Power (1940, 104) 'No devotions are now performed at the reputed holy well'.

KINSALE ENERGY

Kinsale Area Decommissioning Project

Appendix D

Positive, Minor or Negligible Impacts

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ARUP

Appendix D: Positive, Minor or Negligible Issues

From the identification process (see **Section 6.2** of the EIAR), a number of environmental interactions were identified, with associated issues being judged to have positive, minor or negligible effects. The impacts identified have been scored based on their likelihood and severity using the scale shown in **Table D.1**, the definitions for which are the same as those used in **Section 6.2**. The identified impacts are accompanied by a brief consideration of their potential level of impact and any related mitigation or controls of relevance in **Table D.2**.

Table D.1 Scoring of positive, minor or negligible effects

Consequence		Likelihood				
		Definite	Likely	Possible	Unlikely	Remote
		5	4	3	2	1
Severe	**A**	A5	A4	A3	A2	A1
Major	**B**	B5	B4	B3	B2	B1
Moderate	**C**	C5	C4	C3	C2	C1
Negligible	**D**	D5	D4	D3	D2	D1
Positive	**E**	E5	E4	E3	E2	E1
None foreseen		-	-	-	-	-

Table D.2 Assessment of positive, minor or negligible effects

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Consent Application 1				
Well decommissioning (platform and subsea wells)				
Fugitive emissions from fuel & chemical storage (platform and subsea well decommissioning)	**Land, soil, water, air, climate**: Air & climate	D4	Fugitive emissions may be generated from cement tanks, mudpits, diesel storage and cooling/refrigeration systems and may comprise emissions and dust/particulates, VOCs, HFCs etc. dependent on source. Such emissions are minor in the context of that from combustion of fuel for power generation and in view of the location and prevailing meteorological conditions, these emissions are not considered to be a significant source of air pollutants.	**Mitigation**: No mitigation proposed.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Drainage, sewage, treated seawater and other well decommissioning related discharges (platform and subsea well decommissioning)	**Biodiversity**: Plankton, Fish & shellfish **Land, soil, water, air, climate:** Water quality	D4	Liquid discharges from the rig include those from domestic effluent (sewage and grey water – catering, sink and shower wastes) which will contain soluble and particulate organic matter and detergent residues, and surface drainage from decks and non-contained drainage areas. Surface drainage may contain small quantities of rigwash detergent. The rig will have a personnel complement of around 100 persons and will be in the Kinsale Area for approximately 159 days, including contingency. Should a LWIV be used, the crew levels will not be substantially different (between 70 and 100), though the time in the field for the well abandonment will be shorter (~99 days). Additional accommodation on KB will be provided by a temporary accommodation module providing up to 24 beds, with up to 11 persons per shift required for platform well abandonment over 155 days (including a 25% contingency). It is not expected that there will be any substantial difference in the manning numbers on KA compared with routine operation. In the water depth (90-100m) and tidal currents (~0.5m/s) of the area, discharges are not expected to have detectable effects.	**Mitigation**: No additional mitigation is proposed. **Legally required standards & controls**: The rig and any vessels used in the well decommissioning will meet MARPOL requirements (e.g. in relation to Annex I and Annex IV on the prevention of pollution by oil and sewage from ships respectively under the *Sea Pollution Act 1991* as amended). Vessels and drilling rigs are required to hold a Shipboard Oil Pollution Emergency Plan (SOPEP) which is in accordance with guidelines issued by the Marine Environment Protection Committee of the International Maritime Organisation. Where relevant[1], ships will also carry an International Sewage Pollution Prevention Certificate (see the *Sea Pollution (Prevention of Pollution by Sewage from Ships) Regulations 2006*). Kinsale Energy will ensure that plans are in place as part of standard contractor management.

[1] See Marine Notice No. 44 of 2008: http://www.dttas.ie/maritime/english/marine-notice-no-44-2008-compliance-marpol-annex-iv-sewage-pollution-prevention

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Rig surface noise and light	**Biodiversity**: Water & seabirds, Conservation sites	D4	Light and noise generated by rigs and vessels associated with the decommissioning activities may potentially cause displacement and/or other behavioural responses in birds. Most species from relevant SPAs within foraging range of the Kinsale Area have been judged to have a low to moderate sensitivity to disturbance by shipping traffic (e.g. gannet, fulmar, kittiwake, gulls, auks; Old Head of Kinsale SPA 25km distant; Saltee Islands SPA 116km distant; see Garthe & Hüppop 2004). No SPAs designated for more sensitive species, e.g. divers, scoters which generally forage in coastal waters of ≤20m depth (Fox *et al*. 2003) are located near the Kinsale Area (all are ≥ 400km distant). While rafting birds may move in response to vessels in transit, such effects are of low magnitude and short duration, and will represent negligible additional disturbance over routine vessel movements. The potential effects of light on birds have been raised in connection with offshore oil and gas for several decades (e.g. Hope Jones 1980; Weise *et al*. 2001; Montevecchi 2006; Bruinzeel & van Belle 2010). Of most concern is attraction to infrastructure resulting in direct mortality from collisions and flare interaction, or subsequent mortality associated with exhaustion from prolonged disoriented flying (see review by Runcinid *et al*. 2015, and references therein). Although the issue remains poorly studied, evidence suggests that migrating passerines are those most likely to be impacted, particularly thrushes, with mass collision events (i.e. tens to hundreds of bird fatalities) being episodic and coinciding with large numbers of migrating birds and increasingly adverse weather conditions (e.g. Hüppop *et al*. 2016). Although the offshore decommissioning activities may occur during periods of bird migration, significant effects from rig and vessel lights are considered to be unlikely. The scale and duration of the KADP well operations will be small in relation to the existing presence of the Kinsale platforms (up to 159 days, see above).	**Mitigation**: No mitigation proposed.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Platform surface noise and light	**Biodiversity**: Water & seabirds, Conservation sites	D2	While noting the above effects in relation to surface noise and lighting in relation to rig presence, lighting on the platforms will not be significantly different to existing light levels which have been present since the installation of KA and KB, and their removal will eliminate a source of potential light-induced disturbance.	**Mitigation**: No mitigation proposed.
Venting (platform and subsea well decommissioning)	**Land, soil, water, air, climate**: Air & climate	D4	A small quantity of gas may be vented during the well decommissioning process. These will be minor in the context of wider KADP decommissioning emissions.	**Mitigation**: No mitigation proposed.
Offshore facilities preparation: topsides, pipeline degassing and displacement of umbilical contents				
Flushing and cleaning of topsides	**Biodiversity**: Plankton **Land, soil, water, air, climate:** Air & climate, Water Quality, Soils & Seabed **Material assets, cultural heritage and landscape**: Waste Treatment & Landfill resource	D2	The platform topsides piping will be flushed and cleaned prior to decommissioning work commencing. This will reduce the potential for the loss of any chemicals or residual hydrocarbons to sea once decommissioning activities commence. The nature of the produced hydrocarbons (dry gas with limited condensate – see Section 3.1 of the EAR) limits the potential for any hydrocarbon residues to be present and therefore lost. All remaining inventories of fuels and chemicals will be retained and returned to shore.	**Mitigation**: No mitigation proposed.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Removal of WEEE	**Material assets, cultural heritage and landscape**: Waste Treatment & Landfill resource	D2	All wastes returned to shore will be handled, recycled and disposed of in accordance with relevant waste legislation and the waste hierarchy.	**Mitigation**: No mitigation proposed **Legally required standards & controls**: All regulatory and company procedures for segregation, transport and disposal, as set out in the project Resource and Waste Management Strategy, will be strictly adhered to and only fully permitted and licensed waste facilities will be used for recycling or disposal. Should disposal take place outside Ireland, this will be undertaken in accordance with the relevant legislation and requirements (e.g. relevant to the transfrontier shipment of waste).
Displacement of contents of pipelines and umbilicals	**Biodiversity: Plankton, F**ish & shellfish **Land, soil, water, air, climate:** Water quality	D2	Pipeline contents and umbilical chemical lines will be displaced by seawater to subsea/platform wells from Kinsale Alpha. The 24" Kinsale Head export pipeline (and possibly the 18" Seven Heads export pipeline) will be filled with ~15,800m^3 (~21,500m^3 for both export lines) of inhibited water to preserve these for potential future uses during the timescale of the decommissioning works. The displacement of these pipelines does not involve any marine discharges such that no effects are foreseeable. Note that any release of inhibited water, either as part of future use scenarios or in the event that no other use is identified, are considered further in **Section 7**.	**Mitigation:** No mitigation proposed.
Cutting, welding and rigging of structures to be lifted	**Land, soil, water, air, climate** :Air & climate	D2	Depending on the chosen topside removal option, some additional material may be required for strengthening, rigging and seafastening for removal and transport which will generate a small increment to atmospheric emissions. The quantity of material required will be subject to detailed design, but will be small in relation to the main steel components of the topsides to be returned to shore, and ultimately recycled. Some airborne noise will be generated; though this will be some distance from the shore (at least 40km).	**Mitigation:** No mitigation proposed.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Utilities preparation and temporary accommodation on Kinsale Bravo	**Land, soil, water, air, climate:** Water quality **Material assets, cultural heritage and landscape**: Waste Treatment & Landfill resource	D2	Additional accommodation will be required on KB during the well abandonment phase and preparation work for topside removal, with existing accommodation facilities being used on KA. Increased personnel levels on KB (up to ~24 persons) will result in a small increment to the discharge of domestic waste to that associated with historical field operation, and as part of the wider Kinsale Area decommissioning works. It is expected that preparatory work for topside removal will take between 48 and 70 days for both KA and KB, for the reverse-installation and single lift removal methods respectively. Given the water depths (90-100m) and tidal currents (~0.5m/s) in the area, discharges are not expected to have detectable effects.	**Mitigation:** No mitigation proposed.
Consent Application 2				
Jacket removal				
Surface lighting	**Biodiversity**: Water & seabirds, Conservation sites	D5	As noted above in relation to rig and vessel presence, light associated with the decommissioning activities has the potential to cause displacement and/or other behavioural responses in birds. Aids to navigation added to platform jackets, should they be placed in “lighthouse mode”, will include lighting which could be in place for up to 10 years. This will not add to existing lighting levels associated with the platforms.	**Mitigation**: No mitigation proposed.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Relevant to Consent Applications 1 & 2				
Socio-economic effects	**Population & human health**	D5	Loss of *ca*. 60 permanent jobs (on- and offshore) and related contributions to local economy.	**Mitigation**: No mitigation proposed.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Support and other vessels associated with the decommissioning				
Drainage, sewage & other discharges	**Biodiversity:** Plankton, Fish and shellfish **Land, soil, water, air, climate:** Water quality	D4	Additional vessel numbers from the wider Kinsale Area decommissioning works may result in a small increment to the discharge of domestic waste compared to that from existing field operation. Such waste is treated to MARPOL Annex IV standards.	**Mitigation**: No mitigation proposed **Legally required standards & controls:** Any vessels used in decommissioning the Kinsale Area faculties will meet MARPOL requirements (e.g. in relation to Annex I and Annex IV on the prevention of pollution by oil and sewage from ships respectively, under the *Sea Pollution Act 1991* as amended). Vessels are required to hold a Shipboard Oil Pollution Emergency Plan (SOPEP) which is in accordance with guidelines issued by the Marine Environment Protection Committee of the International Maritime Organisation. Where relevant, ships will also carry an International Sewage Pollution Prevention Certificate (see the *Sea Pollution (Prevention of Pollution by Sewage from Ships) Regulations 2006)*. Kinsale Energy will ensure that plans are in place as part of standard contractor management.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Litter	**Biodiversity:** Marine Reptiles Marine Mammals **Land, soil, water, air, climate:** Water quality Soils & Seabed	D4	Any litter produced during the decommissioning works will be retained on the vessel, as their discharge is prohibited under MARPOL Annex V.	**Mitigation**: No mitigation proposed **Legally required standards & controls:** All vessels used in the decommissioning of the Kinsale Area facilities will meet MARPOL Annex V requirements. This includes the implementation of a Garbage Management Plan (under the *Sea Pollution Act 1991* as amended and the Sea *Pollution (Prevention of Pollution by Garbage from Ships) Regulations 2012* as amended) which details specific waste management procedures, documents the segregation and safe handling and storage of waste and waste reduction measures. Litter will be disposed of a suitable reception facility on return to shore. Kinsale Energy will ensure that such management plans are in place as part of standard contractor management.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Airborne noise and lighting	**Population & human health** **Biodiversity**: Water and seabirds **Material assets, cultural heritage and landscape**: Landscape/seascape	D4	Light and noise generated by vessels associated with the decommissioning activities may potentially cause displacement and/or other behavioural responses in birds. Most species from relevant SPAs within foraging range of the Kinsale Area have been judged to have a low to moderate sensitivity to disturbance by shipping traffic (e.g. gannet, fulmar, kittiwake, gulls, auks; Old Head of Kinsale SPA 25km distant; Saltee Islands SPA 116km distant; see Garthe & Hüppop 2004). No SPAs designated for more sensitive species, e.g. divers, scoters which generally forage in coastal waters of ≤20m depth (Fox *et al*. 2003) are located near the Kinsale Area (all are ≥ 400km distant). While rafting birds may move in response to vessels in transit, such effects are of low magnitude and short duration, and will represent negligible additional disturbance over routine vessel movements. The scale and duration of the KADP operations will be small in relation to the existing presence of the Kinsale platforms, and their removal will eliminate a source of potential light-induced disturbance.	**Mitigation**: No mitigation proposed.
Potential for introduction of alien species in ballast	**Biodiversity**: Benthic fauna, Plankton	C1	The vessels to be used during the campaign will most likely come from a North Sea location and therefore the potential for introduction of alien species will be limited.	**Mitigation**: No mitigation proposed **Legally required standards & controls:** As part of the contractor management process, Kinsale Energy will ensure that the vessels used as part of the campaign have procedures in place as part of ship specific ballast water management plans, to limit the potential spread of alien species. Such plans are now a requirement for ships in international traffic under the International Convention for the Control and Management of Ships' Ballast Water and Sediments.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Onshore (Decommissioning of offshore structures)				
Refurbishment and reuse	**Land, soil, water, air, climate:** Air & climate **Material assets, cultural heritage and landscape**: Other Uses & Resources Waste Treatment & Landfill Resources	E4	The refurbishment and reuse of equipment can reduce the overall emissions from the KADP by deferring those generated during recycling and the loss of any materials to landfill that cannot be recycled. Reuse potential will be explored as part of a waste hierarchy approach, however where no reuse function can be established, materials will be preferentially recycled.	Opportunities for reuse will be explored through a waste hierarchy approach and in accordance with the waste management strategy.
Covered in site planning permission; not relevant to Decommissioning Plan consent applications				
Onshore (Decommissioning of Inch Terminal)				
Lighting and noise associated with dismantling works	**Population & human health** **Biodiversity**: Onshore habitats & species **Material assets, cultural heritage and landscape**: Landscape/seascape	D4	A preliminary assessment of the terminal demolition works has been undertaken, with noise impacts considered at the nearest sensitive receptors to the proposed works. Worst-case noise levels are predicted to occur at the two nearest sensitive receptors to the main demolition works, with the nearest residence being approx. 200 m distant (there is a residence located southwest of the site boundary and a residence located southeast of the site boundary). The results of the construction assessment indicate that the construction daytime noise limit of 70dB L_{Aeq} can be complied with at both nearby noise sensitive locations.	**Mitigation**: In the unlikely event that demolition works will occur during winter, limited time will be spent working in darkness where temporary lighting would be required. **Legally required standards & controls**: Compliance with Transport Infrastructure Ireland (TII) noise limits & the recommendations set out in appropriate codes of practice (BS5228).

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Vehicle emissions and dust	**Population & human health** **Biodiversity**: Onshore habitats & species **Land, soil, water, air, climate:** Air & climate	D2	The UK Highways Agency Design Manual for Roads and Bridges (DMRB, 2007) states that if daily traffic flows change by <1,000 annual average daily traffic (AADT) or Heavy Duty Vehicle (HDV) flows change by <200 AADT then the impact on air quality can be considered neutral. The predicted change in traffic volumes for the demolition phase is less than the DMRB criteria. Therefore, no significant impact on air quality is envisaged. CO_2 emissions from the decommissioning of Inch Terminal are in the order of 110t CO_2eq., an increment of some 0.05% on overall estimated offshore KADP emissions. Significance criteria was adopted from the TII air quality guidelines for the assessment of the potential impact of construction dust off site. The potential for dust emissions will only arise during demolition, site clearance and excavation in dry weather, and during such activities the levels of dust are likely to be small. In accordance with TII guidance, the impact of the proposed development is deemed to be of a minor scale, with soiling impacts predicted at distances up to 25m from the site works and potential for PM_{10} and vegetation effects within 10m. As there are no sensitive receptors within 25m of the works, no construction dust impacts are likely.	**Mitigation**: Mitigation of the impacts of the demolition activities will be achieved through the implementation of measures to minimise construction dust emissions and exhaust emissions from plant use. The mitigation measures will take into account best available techniques such as those outlined in the document 'Control of Dust from Construction and Demolition Activities' (BRE/DTI, 2003). A dust minimisation plan will be prepared and implemented by the Contractor.
Road transport of waste/materials	**Population & human health** **Land, soil, water, air, climate:** Air & climate	D3	The surrounding road network is lightly trafficked. It is estimated that c. 11 HGV movements per day, for a short period, will be generated by the demolition works. This is considered a minor increase which will not have significant impact on the operation of the surrounding road network.	**Mitigation**: A demolition management plan will be prepared and implemented which will provide designated traffic routes, timing and parking arrangements. Only permitted waste hauliers will be used.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Materials recycling/recovery	**Land, soil, water, air, climate:** Climate/air quality **Material assets, cultural heritage and landscape**: Waste treatment & landfill resource	D2	It is estimated that the main waste types generated from the terminal demolition works are concrete and hardcore (c.5,339 tonnes) and steel (c.110 tonnes). No significant impact envisaged from waste associated with the demolition works.	**Mitigation**: A Demolition Resource and Waste Management Plan will be developed by the contractor prior to commencement of the works with material reuse, recycling and recovery undertaken where possible. Wastes generated on site will be source segregated into recyclables, biodegradable and residual fractions to facilitate recycling. All wastes generated during demolition works will be transported off site to a suitably approved facility by a valid waste collection holder. Where feasible all wastes will be recycled. The demolition contractor will maintain a log of materials removed from site. This log will include contractors used for recovery or disposal, the ultimate destination of the waste and details of the permits required for transportation and recovery or disposal activities.

Activity/Source of Potential Impact	Relevant Environmental Factor and related receptor	Impact score	Narrative to Assessment	Environmental Management Commitments and Mitigation Measures
Landfill of residual waste	**Material assets, cultural heritage and landscape**: Landscape/seascape Waste treatment & Landfill resource	D2	It is estimated that the main waste types generated from the Inch terminal demolition works are concrete and hardcore (c.5,339 tonnes) and steel (c. 110 tonnes). No significant impact envisaged from waste associated with the demolition works.	**Mitigation**: A Demolition Resource and Waste Management Plan will be developed by the contractor prior to commencement of the works. The Contractor will minimise waste disposal so far as is reasonably practicable. Waste from the proposed scheme will be transported by authorised waste collectors in accordance with the *Waste Management (Collection Permit) Regulations, 2007* as amended. Waste from the proposed scheme will be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996-2016
Reinstatement to original land condition	**Population & human health** **Biodiversity**: Onshore habitats & species **Material assets, cultural heritage and landscape**: Landscape/seascape	E5	The terminal site will be returned to grassland, in keeping with the natural surrounds. This is a positive long term impact.	**Mitigation**: No mitigation proposed
Accidental events				
Hydraulic fluid loss from subsea tools and Equipment	**Biodiversity**: Plankton Fish and shellfish **Land, soil, water, air, climate:** Water quality	D2	Hydraulic fluid usage will be monitored.	**Mitigation**: The accidental discharge of hydraulic fluid, like other chemical losses, is largely preventable through provision of appropriate equipment, maintenance, procedures and training. Mitigation will be provided through appropriate contractor audit and management.