Submission to the Maritime Area Regulatory Authority

Maritime Usage Licence application MUL260006 (Uisce Éireann): marine and intertidal site investigations, Liscannor Bay and Inagh River, Co. Clare

Calluragh Cregg Lahinch Wastewater Action Group (CCLWAG)

Item	Detail
To	licence@mara.gov.ie, quoting MUL260006
Deadline	17.30 on 26 October 2026 (MARA public notice dated 24 September 2026)
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	Signed on behalf of the Calluragh Cregg Lahinch Wastewater Action Group [redacted]

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1. Introduction

Calluragh Cregg Lahinch Wastewater Action Group (CCLWAG) is a group of residents, landholders and businesses in the Calluragh, Cregg and Lahinch area. The group recognises that modern wastewater treatment is needed for Lahinch and Ennistymon and is not opposed to necessary infrastructure in principle. However, CCLWAG's position is that the surveys should be licensed only if they are properly assessed, appropriately conditioned, scoped to inform a genuine assessment of alternative discharge locations, and supported by a baseline sufficient for MARA to reach the certainty the law requires.

The focus of this submission is therefore on the surveys for which a licence is sought and the documentation supporting that application upon which MARA's determination will rest. CCLWAG does not ask MARA to provide comment on or to decide on the merits of the proposed treatment plant, which will be subject to a separate approval process. We are simply concerned with whether the survey works have been properly assessed, whether a licence can lawfully be granted on the baseline now before MARA, and whether the survey area is justified, given that it was drawn around a single outfall location at Cregg chosen without published reasons.

CCLWAG believes that the applicants documents upon which MARA is relying are deficient in a number of areas and these deficiencies are set out later in this submission. However, in summary, CCLWAG submits that: the boomer or sparker, the loudest noise source associated with the proposed works, has not been assessed, and the proposed mitigation departs from NPWS guidance for seismic sources. In addition, the screening for appropriate assessment and NIS relies on a description of the works that omits the intertidal excavations at Cregg; the available seal, otter, fish, bird and reef evidence has not been analysed, and no site-specific survey of the Cregg foreshore or acoustic modelling has been carried out; and the survey area covers only one of the five discharge locations originally identified, with no explanation of why the others were dropped or of what will happen if Cregg proves unsuitable.

2. Community Concerns

CCLWAG wishes to raise the following concerns with respect to the application for a Maritime Usage Licence (MUL260006) for proposed marine and intertidal site investigations, Liscannor Bay and Inagh River, Co. Clare.

2.1 Statutory Consultees

The observations of Inland Fisheries Ireland (26 March 2026) and of the Department of Housing, Local Government and Heritage, including NPWS and the National Monuments Service (8 April 2026), predate both MARA's Stage 2 determination (7 August 2026) and the revised NIS (August 2026). The Department's referral records that "NPWS supports" the conclusion then advanced, that the surveys could be screened out at Stage 1. MARA has since required Stage 2 assessment, and no record has been identified showing that NPWS has reviewed the revised NIS. CCLWAG wrote to the NPWS Development Applications Unit on 24 September 2026 (resent on 26 September) on whether its April advice remains current, and on 25 September 2026 on underwater noise.

The Department acknowledged receipt on 28 September 2026 and stated that it had forwarded the emails to the relevant personnel. On 30 September 2026 it replied that its role on MUL applications is advisory, that the decision is a matter for MARA, and that concerns should be raised with MARA. The reply did not state whether NPWS has reviewed the revised NIS, or whether its April 2026 observations remain current. CCLWAG responded on 5 October 2026 with five specific questions on the Department's own advice, which the Department acknowledged the same day, stating that, as this is a live application, it is not in a position to comment further. The questions therefore remain unanswered.

CCLWAG requests that MARA clarify whether it has sought the observations of NPWS and IFI on the revised NIS and, if not, how it will satisfy itself on those matters without them; and that any updated advice be published before determination.

2.2 Public Participation and Access to Information on the Environment

Under the Aarhus Convention, the public has a right of Access to Information on the Environment (AIE) and to participate in decision-making regarding environmental matters. CCLWAG has sought, under AIE, the reasons for selecting a single outfall location at Cregg and details of the alternatives considered. No satisfactory response has been received. This is directly relevant to the MUL because the survey area has been drawn around that single location. If the surveys show Cregg to be unsuitable, they will have gathered no data on any alternative, and a further round of surveys, licensing and assessment would be needed. Without the reasons for choosing Cregg, MARA cannot judge whether the survey area applied for is appropriate, or whether the application is premature.

With respect to public participation, while CCLWAG acknowledges the opportunity to make a submission on the application for the MUL, there was no opportunity for the public to participate before the licence application was lodged. The local community only became aware of the proposed surveys in August 2026, when Uisce Éireann approached landowners. The general public was first notified of the MUL application by the statutory public notice dated 24 September 2026, although Uisce Éireann submitted the application in January 2026 (briefing to elected representatives, 18 September 2026, slide 15). Uisce Éireann's own progress summary records no public engagement in between, although it told MARA it would hold "*targeted consultations with marine stakeholders*" (MAC application form, section 8.2). This approach is not consistent with the principle that the public should be able to participate early, when all options are open (Aarhus Convention, Article 6(4)), and does not give the community confidence in Uisce Éireann's approach to public participation.

2.3 Scope of the surveys and alternative discharge points

Uisce Éireann's pre-application form of July 2025 identifies five discharge locations within Liscannor Bay. However, Uisce Éireann's January 2026 MUL application retained only a single location at Cregg Beach. Records obtained by CCLWAG under AIE do not explain why or how this decision was made[1]. The Uisce Éireann Site Selection Report[2] contains no assessment of the suitability of the marine receiving environment at each of the five locations and scored discharge to the sea favourably because it would be "*unlikely to require nutrient removal*". CCLWAG submits that MARA should not grant the MUL without a full explanation from Uisce Éireann of why the alternative locations were dropped. The survey area (Area A) is drawn around the single Cregg location. If the surveys show that Cregg is not a feasible outfall location, for example because of the shallow coastal shelf and poor mixing that Clare County Council has warned of, or because of reef habitat at the landfall, the licensed surveys will have produced no data on any alternative. A second round of surveys, licensing and appropriate assessment would then be needed, with further disturbance to the same species and habitats. The reasons for selecting Cregg are therefore part of the evidence MARA needs to decide whether the survey area is properly scoped.

Uisce Éireann's own practice elsewhere has been to survey before choosing the outfall location. For Falcarragh, Co. Donegal (MUL230038), its application stated that the surveys would support dispersion modelling so that "the best location for the proposed WWTP outfall will be chosen". For Newport, Co. Mayo (MUL230037), the surveys were "required to inform the location of a new outfall". In Liscannor Bay, the outfall location was fixed before the surveys that should inform it.

The recast Urban Wastewater Treatment Directive (Directive (EU) 2024/3019) must be transposed by 31 July 2027 (Article 33(1)). Annex I, Part B, point 7 requires that the points of discharge be

[1] MARA, AIE_006_2026
[2] October 2025, released under AIER469

chosen, as far as possible, so as to minimise harmful effects on receiving waters, a requirement carried over from Directive 91/271/EEC. Under Article 15(4), a Member State constructing or expanding a plant to treat increased domestic loads is considered to comply with the environmental objectives of Article 4 of the Water Framework Directive only if four conditions are all met. One of those conditions is that the plant's benefits cannot, for reasons of technical feasibility or disproportionate cost, be achieved by other means, including the consideration of alternative points of discharge. If the plant is consented after the transposition date, as appears likely, reliance on Article 15(4) will depend on evidence that alternative discharge points were properly considered. The survey area for this application is confined to Cregg and will gather no data on any other location. The application therefore treats the Cregg outfall as already decided, before any comparison of alternatives has been made, and should be refused on that basis.

The application does not set out the reasons for selecting a single discharge location at Cregg, or the evidence supporting that choice. It does not explain what would happen if the surveys showed Cregg to be unsuitable. The proposed survey area would not provide coverage to assess any alternative location, including those at the northern end of the bay identified in Uisce Éireann's pre-application form of July 2025, or the wider area that Clare County Council asked to be surveyed (observations of 17 April 2026). These are not gaps that conditions can remedy. They show that the application rests on a discharge location chosen before alternatives were assessed. CCLWAG therefore asks MARA to refuse the licence.

2.4 Annex IV Marine Mammal Risk Assessment

CCLWAG's members include environmental educators and citizen scientists who regularly submit biological records to the National Biodiversity Data Centre (NBDC). The NBDC holds records for the area from Callura to Cregg that include bottlenose dolphin (25 records, most recent 17 July 2024), common dolphin (25, 28 August 2023), harbour porpoise (9, 8 January 2020) and minke whale (4, 3 May 2020), all Annex IV species, together with loggerhead turtle (Annex II and IV; 1 record, 5 July 2025) and leatherback turtle (Annex IV; 4 records, 24 September 2022). These records show that Annex IV cetaceans and marine turtles use the wider bay and may be susceptible to the effects of the proposed survey works.

The Annex IV report states only that vessel speeds will be limited (page 32). The June 2026 response describes survey workboat speeds of around 3 to 5 knots during data capture but potentially 15 to 20 knots in transit, depending on sea state (page 8), and crew-transfer RIB speeds potentially of 20 to 25 knots, depending on vessel type, sea state and passenger numbers (page 11). These are indicative speeds rather than licence limits.

The application documents list a towed boomer or sparker among the survey equipment (Natura Impact Statement, Table 2-2). The noise impact assessment names drills, sediment sampling and core collection, bathymetric surveys, vessel engines and jack-up barge drilling as the noise sources (sections 3.2.1 and 3.2.1.2). The Annex IV report lists the boomer or sparker (Table 1-2, page 7) but does not assess it. It states that the geophysical systems, including sub-bottom profilers, operate at about 100 to 600 kHz (pages 12 to 13), although boomer and sparker systems are low-frequency sources. Its mitigation is stated to apply "for drilling and vibrocore operations" (section 4.2, page 28).

The NPWS guidance (DAHG, 2014, section 4.3.4) treats boomers and sparkers as seismic sources, for which the default monitored zone is 1,000 m. The proposed 500 m is the default distance only for multibeam, side-scan and chirp systems. The boomer or sparker is therefore neither assessed nor mitigated in line with national guidance. Table 1 below sets out a comparison of the submitted Annex IV Risk Assessment with the cited NPWS guidance.

The NIS applies a 500 m monitoring zone to the survey, although the NPWS 2014 guidance sets a 1,000 m zone for seismic sources such as a boomer or sparker. No site-specific sound propagation evidence is offered to justify the smaller zone, and there is no record that the departure was agreed with NPWS.

The Annex IV report states only that vessel speeds “will be limited” (page 32). The applicant’s response of 26 June 2026 describes workboat transit speeds of around 15 to 20 knots and crew-transfer RIB speeds of around 20 to 25 knots (pages 8 and 11). Neither the NIS nor the Annex IV report assesses collision risk at those speeds or on the transit and crew-transfer routes.

The Annex IV report concludes that no derogation licence is required under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011 (page 33). That conclusion rests on an acoustic assessment that does not cover the boomer or sparker. The Department noted on 8 April 2026 that a derogation for Annex IV species may be required, and has since said it cannot comment further on the live application.

MARA therefore has no assessed basis for concluding that the survey will not disturb strictly protected species.

Table 1: ***Comparison of Annex IV Risk Assessment with Cited Guidance***

AQUAFACT (2026) Risk Assessment for Annex IV Species, Ref. P18559, Final, 08/01/2026 (Attachment 4.4 to MUL260006), Lahinch and Ennistymon WWTP

Guidance requirement	**What the Annex IV risk assessment does**	**Gap**
DAHG (2014) Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters		
Risk assessment based on each sound source's characteristics (frequency, source level, pulse rate, duty cycle)	Gives no source levels or frequencies for any equipment; says all geophysical systems operate at about 100 to 600 kHz (pages 12 to 13)	Not characterised; the boomer/sparker sub-bottom profiler is low-frequency and high-source-level, so the ZoI rationale is wrong for it
Geophysical surveys, including boomer/sparker, assessed and mitigated	Section 4.2 assesses vessels, jack-ups, drilling, vibrocores and CPTs only; Section 5 and Table 5-1 refer to sonar	Sub-bottom profiling never actually assessed; noise sources inconsistent between sections
Mitigation applied to the acoustic survey sources	MMO, pre-start check and soft-start tied to "drilling and vibrocore operations" (Section 4.2)	Not applied explicitly to geophysical survey
500 m monitoring zone covering all marine mammals	500 m zone, but start-up delayed only "if dolphins are observed"	Porpoise, whales and seals omitted from the trigger
30-minute pre-start watch; start only 30 minutes after the last sighting	30-minute watch; delay "until animals have left, or a 30-minute clearance period has elapsed"	Ambiguous wording could allow start before 30 minutes from the last sighting
Ramp-up of at least 20 and no more than 40 minutes (non-seismic geophysical sources)	Ramp-up/soft-start mentioned, no duration	Duration not specified

Guidance requirement	What the Annex IV risk assessment does	Gap
Repeat pre-start monitoring after a break in sound output over 30 minutes	Applies only to drilling pauses	Not applied to acoustic survey sources
Commence only in daylight with effective visual monitoring	Allows night or poor-visibility operation once started	No commencement conditions
MMO records and a report to NPWS	None	Reporting requirement missing
Consideration of timing relative to sensitive periods	24-month MUL sought; no seasonal assessment	Overlap with minke whale season not addressed: peak June to October (NPWS 2009, p. 67); inshore off Loop Head September to October (RPS 2025, p. 43).
EC (2021) Guidance on the strict protection of animal species of Community interest under the Habitats Directive		
Article 12 prohibitions apply regardless of effect on conservation status (post Skydda Skogen, C-473/19 and C-474/19)	Compliance tied to no “significant disturbance”, no “population-level effects” and conservation status (Sections 4.2, 4.3, 5 and 7)	Applies an outdated test
Broad reading of “deliberate”, including accepting the foreseeable possibility of an effect	Accepts that behavioural responses “cannot be entirely excluded” but treats them as not engaging Article 12	Inconsistent with the guidance’s interpretation

2.5 Natura Impact Statement

Article 6(3) of the Habitats Directive requires that "*AA contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the proposed works on European sites*" (Duffy v An Bord Pleanála [2024] IEHC 558, para. 37, Holland J.). This reflects the case law of the Court of Justice, including Sweetman (C-258/11) and Holohan (C-461/17). Holohan also requires the assessment to catalogue all habitats and species for which a site is protected, and to examine effects on species and habitats outside the site boundaries where these could affect the site's conservation objectives. It follows that a competent authority may authorise a plan or project only where it has made certain, on the basis of the best scientific knowledge, that it will not adversely affect the integrity of the European sites concerned. Where data are missing or reasonable scientific doubt remains, the licence cannot lawfully be granted on the basis of that assessment.

The adequacy of the baseline is central to this application. An appropriate assessment must be based on the best scientific knowledge in the field (Waddenzee, C-127/02) and cannot have lacunae (Sweetman, C-258/11; Kelly v An Bord Pleanála [2014] IEHC 400). For the survey works now proposed, the NIS relies on desk study and database records for seals, otter, wintering and diving birds, fish and intertidal reef, with no site-specific survey of the Cregg foreshore, access routes or seal haul-outs, and no acoustic modelling for Liscannor Bay. Where the baseline does not establish which species and habitats are present within reach of the survey works, MARA cannot be certain that those works will not adversely affect site integrity, and a licence cannot lawfully be granted if there is any such doubt. Mitigation whose effectiveness is uncertain cannot fill that gap (Grace and Sweetman, C-164/17). The same applies to the strict protection of Annex IV species: whether a derogation licence is needed cannot be decided without knowing which species are present.

Finally, the NIS states that the database search underpinning its in-combination assessment was completed in September 2025, a year before the revised NIS was submitted (section 2.7). CCLWAG asks for the search to be updated to the date of determination.

The revised NIS concludes that there is "*no reasonable scientific doubt*" that the surveys will not adversely affect European sites (section 3.5). CCLWAG asks MARA to require evidence where the NIS relies on assumed absence, and to resolve the specific gaps set out in this document before any determination.

2.5.1 Project Description

Appropriate assessment must address a defined project and its worst-case scenario. The applicant's response to MARA's request for further information (26 June 2026), the revised NIS (August 2026) and MARA's screening report describe the works differently[3]:

Item	June 2026 response	Revised NIS	MARA screening report
Area B	6,045.98 m²	6,430.28 m²	6,430.28 m²

[3] Sources: applicant's response of 26 June 2026, pages 2 and 7 to 12; revised NIS, sections 1.1 and 2.4.1 and Table 2-1; MARA Appropriate Assessment Screening and Determination Report (5 August 2026), pages 2 to 5.

Item	June 2026 response	Revised NIS	MARA screening report
Cone penetration tests	Up to 20; 20 m	Up to 10	Up to 10; 44 mm; 70 m
Vibrocores	Up to 20; 10 m	Up to 15	Up to 15; 106 mm; 6 m
Boreholes	Up to 20; 150 to 200 mm; 30 m	Up to 20	Up to 20; 102 mm; 70 m
Marine plant	Workboat, jack-up platform, tug, RIB and a vibrocore workboat	Pollution screening refers to a single vessel	A number of vessels, including jack-up barge
Intertidal probing (mini rig)	Not required in the maritime area	Up to 4	Up to 4; mini boring rig

The public notice for this consultation, dated 24 September 2026, still shows Area B as 6,430.28 m². The public has therefore been consulted on the earlier Area B, not the area described in the June 2026 response. These differences matter as they change the extent of seabed disturbance, suspended sediment, spill and collision risk, and underwater sound exposure that must be assessed.

The NIS supports its small-footprint conclusion with grab samples of under 0.1 m², narrow cores and point disturbance (section 2.4.3, page 24). It does not quantify the full ground-contact footprint: jack-up legs and repeated platform positioning, any anchors, machinery movements on the foreshore, and the placement and reinstatement of excavated material. Short duration alone does not provide sufficient evidence that every habitat affected will recover rapidly. Biogenic reef, for example, recovers far more slowly than mobile sand.

The surveys are provisionally scheduled for Q4 2026 to Q1 2027, but the licence is sought for 24 months to allow for contingencies (NIS, section 2.2). The assessment must therefore either cover the full period in which the licence would permit activity, or be matched by clearly defined seasonal operating limits. The assessment assumes winter working, yet the winter window itself coincides with grey seal pupping (August to December, peaking in October and November) and moult (November to April), as the NIS records (section 2.6.1, page 44), and with wintering shorebirds such as sanderling (September to April; Table 2-5, page 32). A 24-month licence would also allow work in the seabird breeding season and the bathing season (1 June to 15 September). The assessment should cover every season in which work could take place, and the licence should set seasonal restrictions accordingly.

CCLWAG requests that MARA require the applicant to provide a single consolidated schedule that sets out the programme of works including the maximum number, dimensions, depths, locations, duration and equipment for every borehole, cone penetration test, vibrocore, grab and trial pit. Ecological survey, monitoring and avoidance requirements should be set for intrusive work at each location; and either seasonal operating limits or an assessment covering the full 24-month licence period.

2.5.2 Underwater noise

The Department's Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (January 2014) applies section 4.3.4(i) to "*all seismic surveys (including ... sparkers, boomers ...) in inshore and offshore Irish waters*". The comparison between guidance and the NIS (as revised) is as follows.

Measure	**Revised NIS (sections 3.2.1.3 and 3.3)**	**NPWS 2014, section 4.3.4(i)**
Monitored zone	500 m pre-start watch, applied to all activities	1,000 m, unless site-specific sound propagation data exist and a modification is agreed with the regulator
Ramp-up	"Soft start", no duration stated	40 minutes, from the lowest electric discharge for sparkers and boomers
Breaks in output	Pre-start monitoring repeated after pauses over 30 minutes	MMO check after 5 to 10 minutes; full pre-start monitoring and ramp-up after any break over 10 minutes
Start-up conditions	Not stated; work may continue at night once started	Start only in daylight with effective visual monitoring (also section 4.2(iv))
Direction of survey	Not stated	Begin at the innermost part of a bay and work outwards

The NIS states that its marine mammal measures are "*To mitigate potential disturbance to harbour porpoise and bottlenose populations*", yet start-up is delayed only "*if dolphins are observed" (section 3.2.1.3, page 63; also Annex IV report, section 6), so a harbour porpoise within 500 m would not stop work*. The summary in section 3.3 adds seals, but still not porpoise. The trigger should be the presence of any marine mammal within the monitored zone, and the NIS and Annex IV report should be corrected to reflect this.

The NIS gives no site-specific evidence for 500 m for any of the equipment, and the 2014 guidance requires that "*in cases of uncertainty, it must be assumed that the effect of the introduced sound source(s) could be significant*". In the absence of any evidence to support the lesser distance in the NIS the 1,000 m zone should apply to the boomer or sparker and documents should be corrected to reflect this.

2.5.3 Extent of effect and absence of modelling

MARA's own Appropriate Assessment Screening and Determination Report sets the in-combination zone of influence at 6 km, based on the maximum distance of underwater noise from the survey equipment and the harbour porpoise Effective Deterrence Range. Measured on the applicant's own Map 3 (CCLWAG measurements), Access Point B at Cregg is about 2.6 km from the Inagh River mouth and about 3.2 km from Liscannor Harbour. Both lie well within the 6 km zone used in MARA's own screening.

No site-specific acoustic modelling has been provided for Liscannor Bay. The NIS concludes that permanent injury and temporary threshold shift are not expected, but provides no source levels,

received levels, propagation calculation, exposure thresholds or impact radii to support that conclusion. The equipment datasheets attached to the applicant's June 2026 response include a manufacturer’s datasheet listing the Applied Acoustics AA201 at a typical source level of 212 dB re 1 µPa at 1 m with 200 J, and the AA301 at 215 dB with 300 J (PDF page 142). These are illustrative specifications rather than confirmed project settings; MARA should require confirmation of the proposed equipment, operating energy, acoustic metrics and maximum source levels.

A recent study of a sparker survey spread in Danish North Sea waters (Pace, Robinson, Lumsden and Martin, 2026, in The Effects of Noise on Aquatic Life IV, Springer, doi:10.1007/978-3-031-94229-7_108-1) estimated, by extrapolation from measurements, that porpoise-weighted sound could remain above 100 dB re 1 µPa out to about 11 km from the vessel. The authors also found that simplified propagation assumptions would substantially misestimate impact zones. The equipment and site differ from Liscannor Bay, so the figure is not a predicted impact boundary here. It shows why site-specific modelling is needed.

The NIS assesses jack-up barge drilling as a source of underwater noise and applies mitigation to it (section 3.2.1.2, page 63). However, its in-combination scheduling commitments refer to "*active acoustic survey operations*" or "*active underwater acoustic operations*" and do not expressly name drilling (pages 66 to 68).

The applicant's Annex IV report (January 2026) limits the acoustic zone of influence to "*no more than a few hundred metres*" on the basis that the geophysical systems operate at high frequencies of about 100 to 600 kHz that attenuate rapidly (pages 12 to 13), and concludes that no derogation licence under Regulation 54 is required (page 33). The same report lists a boomer or sparker for sub-bottom profiling (page 4). MARA's own screening used a 6 km scope for in-combination effects of survey noise. These distances serve different purposes, but the application does not explain how they fit together. Boomer plates operate at low frequencies; for example, the AA201 boomer plate produces a pulse in the 1 to 6 kHz range (US Geological Survey equipment description).

The applicant asked MARA to confirm that "alternative equipment with equal or lower impact" could be used without further assessment (letter of 15 May 2026, item 2), and MARA confirmed that this approach was acceptable (19 May 2026). The June 2026 response names the boomer as an Applied Acoustics AA201 "or similar alternative" (page 2).

CCLWAG requests that MARA asks the applicant to provide site-specific acoustic modelling for the boomer or sparker before determination, and, if it determines that the modelling is sufficiently robust to grant the licence then appropriate conditions based on the site specific modelling should be attached. CCLWAG also asks that MARA confirm that any separation or scheduling measure for in-combination underwater noise applies to every noise-generating activity, including jack-up barge drilling and other geotechnical works, and not only to acoustic survey equipment. Finally, CCLWAG asks that MARA requires the acoustic assumptions in the Annex IV report, the NIS and MARA's screening be reconciled using the actual proposed equipment and its operating characteristics, and that the conclusion that no derogation licence is required be revisited on that basis.

2.5.4 Seals

The applicant carried out no seal survey. The NIS describes its baseline as "a desk-based review of available records" (section 1.3, page 12), relying on Ó Cadhla et al. (2007) and database records. It does not analyse the IWDG's Liscannor Bay Seal Surveys 2025, which comprised six surveys between June and September 2025, using UAV video and images over known or suspected haul-out sites, with some sites such as Bar Trá and Coolrone surveyed by binoculars. The survey lists 116 records of two species. Records are not a count of individual seals, but the survey directly addresses haul-out use of Liscannor Bay. The NIS refers to this work only as an initiative (section 2.7.5) and does not analyse its results.

NBDC records for the area from Callura to Cregg also include grey seal (5 records, most recent 4 December 2023) and harbour seal (1 record, 22 August 2016), both Annex II species. The most recent grey seal record falls within the pupping and moult period.

On 18 October 2026, within the grey seal pupping period the NIS itself records, a grey seal was photographed and filmed hauled out on a rock at low tide below the cliffs between Cregg and Bartra, within sight of Cregg Beach, where the intertidal trial pits and shore access are proposed (photographs and video available on request). The seal was photographed by Richie O'Shea who lives in the locality.

CCLWAG requests that MARA require the applicant to analyse the Liscannor Bay Seal Surveys 2025 data and the October 2026 observation in a revised NIS, and that any licence issued restrict noise-producing survey work to outside the grey seal pupping and moult periods, which the 24-month licence term makes practicable.

2.5.5 Otter

The NIS screens otter out, stating that otters "*may occur sporadically along the wider west Clare coastline*" (page 50), although section 2.4.3 accepts that vessel presence and noise may cause temporary avoidance. The applicant's Annex IV report (January 2026), citing the National Otter Survey 2023 to 2024 (Reid *et al.,* 2025), states that otters frequently use rocky shorelines and intertidal zones within Liscannor Bay, and records otters along the Inagh River, Lahinch Estuary and the coastal margins of the bay (pages 13 to 14).

The Annex IV report states that no holts, couches or other resting or breeding sites occur within or adjacent to the works, but does not identify a dated, site-specific otter survey supporting that conclusion; the most recent NBDC evidence of otter activity it cites for the area dates from 2010 (page 14).

The NIS also screens otter out on the basis that the surveys are "*confined to subtidal and offshore environments*" (page 50), although its own Table 2-1 includes up to four intertidal trial pits and four probing positions at the Cregg landfall, beside the mouth of the Clooneyogan North River.

Otter is strictly protected under Annex IV of the Habitats Directive. The Department noted in April 2026 a possible requirement for a derogation licence for Annex IV species.

CCLWAG requests that MARA seeks further information from the applicant requiring a dedicated otter survey of the shoreline access points for otter signs, couches and holts and that on that basis MARA clarifies the requirement for a derogation licence.

2.5.6 Fish

MARA's screening for appropriate assessment lists salmon and sea and river lamprey as qualifying interests of the Lower River Shannon SAC and records no significant source-pathway-receptor link. The revised NIS does not mention these species at all, and contains no fish receptor (Table 3-1). The Marine Institute's observations note that coastal areas here are used by commercial fish species for spawning and nursery.

Inland Fisheries Ireland (IFI) (26 March 2026) identified the absence of appropriate assessment screening for sea lamprey, river lamprey and Atlantic salmon, recommended that they be screened in and considered in mitigation, noted that the Article 17 status of sea lamprey and salmon is bad and of river lamprey inadequate, and noted that European eel is critically endangered and present in freshwater, transitional and coastal waters. IFI recommended soft start and ramp-up for all sound-generating works, daily and after any stoppage, as a licence condition.

CCLWAG contacted IFI on 4 October 2026 to ask whether the revised NIS addressed this. IFI replied on 19 October 2026 that it was "*disappointing that the documents were not updated to include the fish species in the screening assessment*", while stating that "*the mitigation measures implemented for the site investigation surveys for marine mammals will also be sufficient for the fish species*" (email to CCLWAG). Mitigation cannot be relied on at the screening stage (People Over Wind, C-323/17). IFI's view that mitigation is needed for these species is itself a reason to screen them in, so that they are assessed in the NIS. MARA, as competent authority, should consider the IFI submission and IFI's email to CCLWAG before making its determination.

CCLWAG would also request that IFI's recommendations on fish migration be addressed in a revised assessment, and that IFI's recommended soft start and ramp-up for all sound-generating works, daily and after any stoppage, be attached as a licence condition to protect both marine mammals and fish.

2.5.6.1 Flapper Skate

Flapper skate (*Dipturus intermedius*) is listed as Critically Endangered on the IUCN Red List (Inland Fisheries Ireland). The NBDC holds 5 records for the area from Callura to Cregg, the most recent dated 16 April 2021. In summer 2025, Ken O'Sullivan photographed an egg case on Cregg Beach, which he identified as flapper skate (photograph with coin for scale, Appendix II). "*Rare skate eggs*" were also among the finds recorded at a public shore event in Liscannor Bay on 19 August 2026, run by BannerGleo with the Irish Whale and Dolphin Group and supported by the Local Biodiversity Action Fund through Clare County Council.

Skate lay their eggs on the seabed. Egg cases washed ashore show that the species is present in the bay, although they do not in themselves indicate that a nursery is present within Liscannor Bay. However, the boreholes, vibrocores, grab sampling and jack-up operations proposed in Area A would disturb the seabed where such grounds could occur and thus effects on the flapper skate due to the proposed works cannot be discounted without investigation. CCLWAG submits that MARA cannot exclude effects on this critically endangered species unless the applicant first establishes, through appropriate survey of the seabed, whether flapper skate egg-laying grounds are present within Area A.

2.6 Birds

2.6.1 Chough

Chough is amber listed (breeding) on Birds of Conservation Concern in Ireland (BoCCI)[4] and is an Annex I species under the Birds Directive. The coast at Cregg includes low sea cliffs and coastal grassland of the type used by chough, and chough has been recorded on the Lahinch coast. Fourteen chough were recorded on 16 September 2006, and there are species records for Lahinch Golf Club in May and August 2007 (Clare Bird Reports 2006 and 2007, BirdWatch Ireland Clare branch). The National Biodiversity Data Centre holds 71 chough records for the area from Callura to Cregg, the most recent dated 13 November 2024.

Even if the chough using Cregg are not part of an SPA population, chough is an amber-listed Annex I species known to use the coastal grassland at Cregg, and potential disturbance from the proposed works should be considered. CCLWAG asks that Uisce Éireann are required to provide an assessment of potential disturbance to this species arising from the proposed survey works.

2.6.2 Guillemot, razorbill and puffin

Guillemots, razorbills, and puffins are all members of the auk family (Alcidae) with a mean foraging range of approximately 25 to 39 km from the breeding colony. NBDC records for the area from Callura to Cregg include guillemot (55 records, most recent 1 July 2024), razorbill (73, 2 October 2024) and puffin (21, 22 June 2024).

The NIS accepts that these species may forage in Liscannor Bay beyond the boundaries of the SPA where they are qualifying interests. Because auks dive underwater to feed, they could be affected by underwater noise as acknowledged in the NIS (sections 3.2.1 and 3.2.1.2). However, mitigation for auk species is limited to avoiding unnecessary operation of acoustic equipment, efficient survey lines and soft start "*where technically feasible*" (section 3.3). No observer role, timing restriction or stop-work trigger is proposed for these birds.

[4] https://birdwatchireland.ie/app/uploads/2021/04/BOCCI4-leaflet-2-1.pdf (last accessed 20 October 2026)

CCLWAG requests that Uisce Éireann be required to assess in more detail the use of Liscannor Bay by auks and other diving seabirds during the period when the survey works would take place. The NIS should be updated with site-specific seabird data sufficient to assess the effects of underwater noise and vessel activity from the survey works.

2.6.3 Shorebirds and the intertidal works

NBDC records for the area from Callura to Cregg include oystercatcher (293 records), curlew (233), ringed plover (160), redshank (155), turnstone (147), dunlin (98), golden plover (Annex I; 55), sanderling (34), purple sandpiper (20) and bar-tailed godwit (Annex I; 18). For nine of these ten species the most recent record falls between October and December 2024. Curlew, oystercatcher, redshank, dunlin, golden plover, purple sandpiper and bar-tailed godwit are on the Red List of Birds of Conservation Concern in Ireland.

The NIS screens out sanderling because there are "*no activities within the intertidal zone*", and purple sandpiper, dunlin and turnstone on the basis that the activities are offshore or have no interaction with intertidal habitat (Table 2-6, pages 41 to 42), yet its own Table 2-1 lists up to four intertidal trial pits and four intertidal probing positions at Cregg (page 21). The screening conclusions rest on a description of the works that the project description itself contradicts. This is a defect in the screening, and it is carried forward into the NIS.

CCLWAG submits that the screening wrongly excludes these species because it omits the intertidal works. CCLWAG therefore requests that MARA require the screening and NIS to be revised on the complete works programme, including intertidal excavations, probing and machinery access, and that the Cregg foreshore be surveyed for bird use during the proposed works period, before MARA can be satisfied that there will be no likely significant effect on intertidal birds and the integrity of Natura 2000 sites will not be adversely affected.

2.7 Honeycomb Worm Reef

NBDC records for the area from Callura to Cregg include 13 honeycomb worm records, the most recent dated 21 June 2025, and eelgrass (*Zostera marina*; 2 records, most recent 18 June 2025). These records show that the species is present in the wider area of Liscannor Bay, but they do not locate the reef at Cregg.

Biogenic reefs of honeycomb worm (*Sabellaria alveolata*) fall within the Annex I habitat type “Reefs” (1170), and NPWS identifies the species as one of the main biogenic reef-formers in Irish near-shore waters (Irish Wildlife Manuals No. 150, 2024). The surveys proposed at this location include intertidal trial pits and probing, shore access by vehicles and personnel, and jack-up barge operations.

On 6 October 2026, CCLWAG commissioned marine ecologist Aisha O’Connor to survey and map the reef. A Phase 1 habitat survey was carried out at low spring tide on 10 and 12 October 2026, and the report (22 October 2026) is provided with this submission (Appendix I). It is thought to be the first survey of the reef at Cregg. The survey recorded 60 reef occurrences along the northern and southern boundaries of Cregg Beach: on bedrock to the north, and on boulders and cobbles to the south, where the reef was thickest. Twenty-four occurrences (about 40%) had reef cover of 80% or more and were considered well established. The largest area, estimated at about 130 m by 50 m on the mid to lower shore, had 70 to 80% cover. The ecologist describes the extent of the reef as “*substantia*l” and recommends further survey to establish its extent below the low water mark.

The report cites the MarLIN sensitivity assessment for the species (Jackson, 2008), which found it highly intolerant of substratum loss, with moderate recoverability. The applicant’s response of 26 June 2026 gives the intertidal trial pits as 1.5 m by 3 m and up to 4 m deep (page 7), while the NIS describes the equipment as “low-impact equipment for sensitive zone” (Table 2-1). The application does not map the trial pit and probing positions or the access routes against the reef, so direct loss of reef habitat cannot be ruled out based on the information provided by the applicant to date. MARA should request that the applicant carry out a survey to map the extent of the habitat and

overlay the proposed trial pits, probing locations and machinery access routes on the reef habitat before determining the application.

CCLWAG requests that all trial pit and probing positions and machinery access routes be mapped against the reef and approved before the commencement of any works, and that a stop-work protocol apply if reef habitat is encountered. The reef is also directly relevant to the choice of outfall route and construction method, and to the assessment of alternative discharge points.

2.8 EU Bathing Water Directive

The Bathing Water Directive (2006/7/EC) sets standards for bathing waters, which are also protected areas under the WFD. Member States are required to monitor and assess the bathing water quality using two faecal indicator bacteria (E. coli and intestinal enterococci). They must also inform the public about bathing water quality and beach management. The EPA is the bathing water quality regulator and annual reports are published on Bathing Water Status in Ireland, while the EU provides a summary report for all member states.[5] The European Environment Agency provides an interactive map[6] where the bathing water quality for all European Member States can be viewed.

CCLWAG asks MARA to confirm whether the applicant will be required under the MUL to inform the public, in line with the public-information provisions of the Bathing Water Directive, in advance of its works in the intertidal and beach area at Cregg. At a minimum, this should be a condition of any licence.

2.9 Water Framework Directive

The WFD requires assessment of the ecological status and chemical status of surface waters. Ecological status is defined in the Directive as an expression of the quality of the structure and functioning of aquatic ecosystems associated with surface waters (WFD, Article 2(21)). It reflects the combined effect of pressures such as pollution and habitat degradation, and the Directive aims for all water bodies to achieve at least good status.[7]

WFD chemical status and assessment is based on a list of priority substances. EU-wide standards are set for these substances.

The WFD requires that the ecological and chemical status of waterbodies must be protected or restored to reach good status and to prevent deterioration. The fact that the WFD ecological status of a waterbody is currently good cannot be taken to mean that sediment release, spills or other pressures from the survey works are acceptable. Deterioration is a factor that must be examined in relation to individual quality elements. The Court of Justice of the European Union has confirmed that there is deterioration of the status of a body of surface water as soon as the status of at least one of the quality elements falls by one class, even if that fall does not result in a fall in the classification of the body of surface water as a whole (Case C-461/13, Weser, 1 July 2015).

The applicant's Water Framework Directive assessment states that "*Sediment classification of Liscannor Bay was not available at the time of writing the report*" (Attachment 4.5, page 3), yet anticipates negligible disturbance and no deterioration in ecological or chemical status.

CCLWAG asks for the evidence supporting those conclusions to be explained, for sediment resuspension, transport and deposition at sensitive receptors (including the bathing water and reef)

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[5] https://environment.ec.europa.eu/topics/water/bathing-water_en#reports (last accessed 29 September 2026)

[6] https://www.eea.europa.eu/en/analysis/maps-and-charts/state-of-bathing-waters-in-2025 (last accessed 29 September 2026)

[7] https://water.europa.eu/freshwater/freshwater/europe-freshwater/water-framework-directive/ecological-status-of-surface-water (last accessed 30 September 2026)

to be assessed, and for MARA to consider whether preliminary characterisation or a phased investigation is needed before drilling, coring and excavation.

2.9.1 Water Quality Monitoring

The applicant proposes water quality sampling in Area A over a full spring and neap tidal cycle to inform dispersion modelling (response of 26 June 2026, Response 5, page 8). If sampling is confined to the Q4 2026 to Q1 2027 window, the baseline will exclude the bathing season and the summer peak in recreational use. Because the sampling is itself one of the activities to be licensed, MARA can set its scope and timing as a licence condition.

Clare County Council told MARA that the area is "*frequently used by surfers, swimmers*", and that the bathymetry may show a shallow coastal shelf at Cregg with modelling indicating a lack of mixing (observations of 17 April 2026). The applicant's Response 5 describes sampling over a spring and neap tidal cycle but leaves the number and timing of sampling events to later optimisation and does not specify the parameters to be measured (page 8).

The applicant's own consultation record notes that a surf school raised concerns about "*sand flow and beach usability*" (MAC application form, section 8.1). Surfers use the bay throughout the year, including in winter when bathing water monitoring does not apply, and spend longer in the water than most bathers. A winter-only sampling campaign therefore matters for this group as well as for bathers.

The EPA classified Lahinch bathing water as Excellent for 2022, 2023 and 2024, and as Good for 2025 (EPA classification table, beaches.ie, 2026). Any baseline and future assessment should use the current classification.

CCLWAG requests that MARA require the applicant to provide a detailed water quality sampling programme setting out the parameters (including bathing water indicators such as E. coli and intestinal enterococci), sampling locations, sampling frequency, seasonal coverage (including the bathing season) and the guidance followed in designing it, and that all baseline data be published. The applicant should also be asked to describe how it will protect water users during the survey work.

2.9.2 Dispersion and Hydrodynamic Modelling

In its outfall consent application, Uisce Éireann stated: "*Hydrodynamic marine modelling has been completed which will be submitted with the proposed planning application for the scheme, outlining that the proposed discharge will not impact on the designated bathing area at Lahinch or the other known recreational area at Cregg Beach*"[8]. There is no hydrodynamic marine modelling on the MUL260006 file, nothing on the public record indicates that Clare County Council has seen it, and MARA has confirmed that it holds no copy of that modelling[9]. Yet in September 2026 Uisce Éireann still listed among its design objectives to "*Identify the most appropriate treated wastewater discharge location through detailed environmental studies and modelling*" (Elected Representative Briefing, 18 September 2026, slide 7) and in its June 2026 response to MARA proposes water sampling to inform dispersion modelling (Response 5, page 8). It is not clear how modelling described as complete in January 2026 can still be needed to identify the discharge location in September 2026.

The Council asked MARA to expand Area A "*further out into the bay*", warning of "a shallow coastal shelf in Cregg Beach area" and "*the modelling which may indicate a lack of mixing in this area*" (observation, 17 April 2026). Uisce Éireann's own consultant expected that, at Liscannor, "*the length of the outfall would be far less than that of the Lahinch options in order to achieve the same level of dilutions*" (Site Selection Report, page 68). That report, which recommended the discharge to Liscannor Bay, does not mention hydrodynamic modelling at all. The applicant's response of 26

[8] MAC application form, section 7.2, released under AIE_006_2026
[9] AIE_006_2026, 5 October 2026

June 2026 does not address the Council's request, and the only boundary change it describes is to Area B (Response 1, page 2). The modelling statement also refers only to Lahinch and Cregg Beach, not to Barrtra, where people have bathed off the rocks for generations and surfers enter the water today.

MARA's report on the outfall consent (MAC260002, June 2026, Schedule 5 criterion 9) quotes the applicant's statement that hydrodynamic modelling "*has been completed*" and shows no impact on Lahinch bathing water or Cregg Beach, and accepts it as preparatory work. MARA's AIE decision of 5 October 2026 (AIE_006_2026) states that MARA holds no hydrodynamic modelling, plume or dispersion records for that application. The record therefore indicates that MARA accepted Uisce Éireann's statement that the modelling had been completed without having seen the modelling or any supporting documentation.

CCLWAG requests that MARA clarify what hydrodynamic modelling was available to it when it determined MAC260002, whether it reviewed that modelling, and whether it will rely on it when determining MUL260006; and, if so, how it is satisfied that the modelling supported Uisce Éireann's decision to reduce the candidate discharge locations to a single option at Cregg Beach. CCLWAG also asks that the applicant show whether the proposed survey area would allow an alternative location to be modelled if Cregg proves unsuitable.

CCLWAG also requests that MARA publish the hydrodynamic modelling to the public file, as CCLWAG has been unable to obtain it despite AIE requests to MARA and Uisce Éireann.

2.10 Archaeology

The National Monuments Service notes that the Wreck Inventory of Ireland Database records numerous wrecking events within and around the survey areas, of which one (W18527) has been located, and that unrecorded wreck sites may exist (Department of Housing, Local Government and Heritage, letter of 8 April 2026). Beside the Cregg landfall, the Historic Environment Viewer records two ring-barrows in Calluragh South (CL023-060001 and CL023-060002), known locally as a stone fort. Neither appears in the Service's list of recorded monuments near the survey areas.

The application also takes no account of the remains of an ancient oak forest buried in the shore at Cregg, within Area A (NIS, Figure 1-1). The tree remains are exposed at low spring tides and have been seen by local people many times over the years. They were photographed in 2016 by geologist Eamon Doyle (Appendix III), who notes that similar remains near Quilty have been dated to between 5,000 and 7,000 years old. Trial pits up to 4 metres deep and tracked machinery on this shore would destroy them.

The survey design has not been informed by any of these features. An assessment that omits a recorded monument beside the landfall and an ancient forest within the intertidal works area cannot support a decision to grant.

3. Requested Outcome

CCLWAG contends that the documentation as submitted does not provide a sufficient basis for the competent authority to complete its appropriate assessment and conclude with the certainty required by Article 6(3) of the Habitats Directive. The location of the works beside Natura 2000 sites, and the large zone of influence of underwater noise for marine mammals, require robust baseline information, evidence and mitigation to support any conclusion that the works will not adversely affect the integrity of Natura 2000 sites within that zone of influence.

CCLWAG also believes that the ecological effects of the proposed survey works, taken together and in combination with other plans and projects, have not been properly assessed and that the Annex IV Risk Assessment does not fully assess the risk to marine mammals. The deficiencies identified in this submission cannot be cured by conditions attached to the MUL.

CCLWAG are concerned that the proposed survey works have not been fully described or properly assessed as a result. We query whether a licence can lawfully be granted on the baseline now before MARA, and whether the survey area is justified, given that it was drawn around a single outfall location at Cregg chosen without published reasons.

CCLWAG therefore asks MARA to examine the information submitted from the applicant in light of the matters identified throughout this submission. If the deficiencies identified are not addressed and thus reasonable scientific doubt remains or the degree of certainty required by Article 6(3) of the Habitats Directive is not met then CCLWAG believe that MARA as the competent authority must refuse the licence application MUL260006.

4. References

- MARA file MUL260006 (maritimeregulator.ie): application documents; revised Supporting Information for Screening for Appropriate Assessment and NIS (AQUAFACT, August 2026); Appropriate Assessment Screening and Determination Report (decision 7 August 2026); public notice (24 September 2026); observations of Inland Fisheries Ireland (26 March 2026), DHLGH including NPWS and National Monuments Service (8 April 2026), Clare County Council (17 April 2026), the Marine Institute, and DAFM Marine Divisions.
- Duffy v An Bord Pleanála [2024] IEHC 558; Court of Justice of the EU, Sweetman v An Bord Pleanála (C-258/11). Summaries: Courts Service, EU Relevant Case Summaries: Consolidated Overview (courts.ie).
- Applicant's response to MARA request for further information (26 June 2026) and attachments; Risk Assessment for Annex IV Species (Attachment 4.4).
- National Biodiversity Data Centre, Local Biodiversity Action Fund database: Liscannor Bay Seal Surveys 2025 (Survey 1820).
- EPA, Table of Identified Bathing Waters Classifications 2022 to 2025 (beaches.ie).
- Court of Justice of the EU: Waddenzee (C-127/02); People Over Wind (C-323/17).
- Department of Arts, Heritage and the Gaeltacht (2014), Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters.
- Pace, F., Robinson, C., Lumsden, E. and Martin, B. (2026), Underwater Sound Signatures from Geophysics Survey Spread: Case Study from the North Sea Energy Island, Denmark, in The Effects of Noise on Aquatic Life IV, Springer, doi:10.1007/978-3-031-94229-7_108-1.
- NPWS (2024), Reef Habitat in Irish Intertidal and Near-shore Waters, Irish Wildlife Manuals No. 150.
- BirdWatch Ireland Clare branch, Clare Bird Reports 2006 and 2007 (clarebirdwatching.com).
- Uisce Éireann, Lahinch and Ennistymon Sewerage Scheme: Elected Representative Briefing, 18 September 2026.
- MARA, MAC Report, MAC260002 (final report 18 June 2026).
- Uisce Éireann / Mott MacDonald, Assessment of Impacts of the Maritime Usage reports for MUL230038 (Falcarragh) and MUL230037 (Newport).
- MARA, Public Notice for MUL260006, dated 24 September 2026, and section 117(6)(b) notice to the applicant, 9 September 2026.
- MARA, AIE decision AIE_006_2026 (5 October 2026) and released records 1 to 23, including the MAC pre-application form (July 2025), MAC application form (8 January 2026), requests for additional information and responses, and site inspection reports for Areas A and B (3 May 2026).
- Court of Justice of the EU: Holohan (C-461/17); Grace and Sweetman (C-164/17); Weser (C-461/13); Skydda Skogen (C-473/19 and C-474/19). High Court: Kelly v An Bord Pleanála [2014] IEHC 400.
- O'Connor, A. (2026), Sabellaria alveolata (Honeycomb) Reef Survey at Cregg Beach, Co. Clare, 22 October 2026, prepared for the Calluragh Cregg Lahinch Wastewater Action Group (Appendix I).

Appendix I

Report on *Sabellaria alveolata* (Honeycomb) Reef Survey at Cregg Beach, Co. Clare

Sabellaria alveolata (Honeycomb) Reef Survey at Cregg Beach, Co. Clare

22.10.2026

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[redacted]

Contact details:

[redacted]

Cover photo corresponds to SA51

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Introduction

First recorded in Cork and Youghal Harbours, respectively, in 1845, *Sabellaria alveolata* reef is now recorded on all coasts of Ireland through Biodiversity Maps (NBDC; accessed 15/10/2026). While the importance of this reef habitat is recognised locally, the full extent of the reef at Cregg Beach is unknown. A Phase 1 Habitat Survey was conducted of the *Sabellaria* reef to map its boundaries and extent.

Located south of the famous Lahinch Beach in Co. Clare, Cregg Beach is a stretch of fine sand, bordered by biogenic reef and rocky outcrops to the north and south. This biogenic reef, commonly known as honeycomb reef due to its distinct appearance, is protected under Annex I of the EU Habitats Directive (92/43/EEC) (*Reefs* [1170]) as it is composed of the polychaete worm *S. alveolata*.

Sabellaria alveolata are tube-forming polychaete worms that occur in marine environments from the mid to lower shore, and sometimes extend subtidally to 10m. Favouring bedrock, boulders and cobbles, *S. alveolata* occur where sand and shell fragments are readily available as they construct their tubes from these materials (Jackson, 2008). In 2020, the conservation status for *Reefs* [1170] habitat overall was assessed as Favourable in IWM 118 (Scally *et al.* 2020).

A MarLIN sensitivity assessment was conducted on *S. alveolata* to assess its tolerance, recoverability, and sensitivity to physical, chemical, and biological pressures based on available data. The sensitivity assessment found that *S. alveolata* are highly intolerant to substratum loss and display moderate levels of both recoverability and sensitivity towards this pressure. *Sabellaria alveolata* had a very high level of recoverability and very low sensitivity to increases in suspended sediment locally. No data were available on the effects of changes in nutrient levels on *S. alveolata*. The biological pressure of extraction of the species was assessed as having an intermediate level of intolerance but high recoverability, given less than 50% of the species was removed from a given area (Jackson, 2008).

This report was produced for the Calluragh Cregg Lahinch Wastewater Action Group.

Methods

A brief desktop search of existing records and data on *Sabellaria* reef at Cregg Beach was conducted (**Figure 1**). A review of recommended survey methods and main ecological parameters to record was undertaken (NRW, 2024).

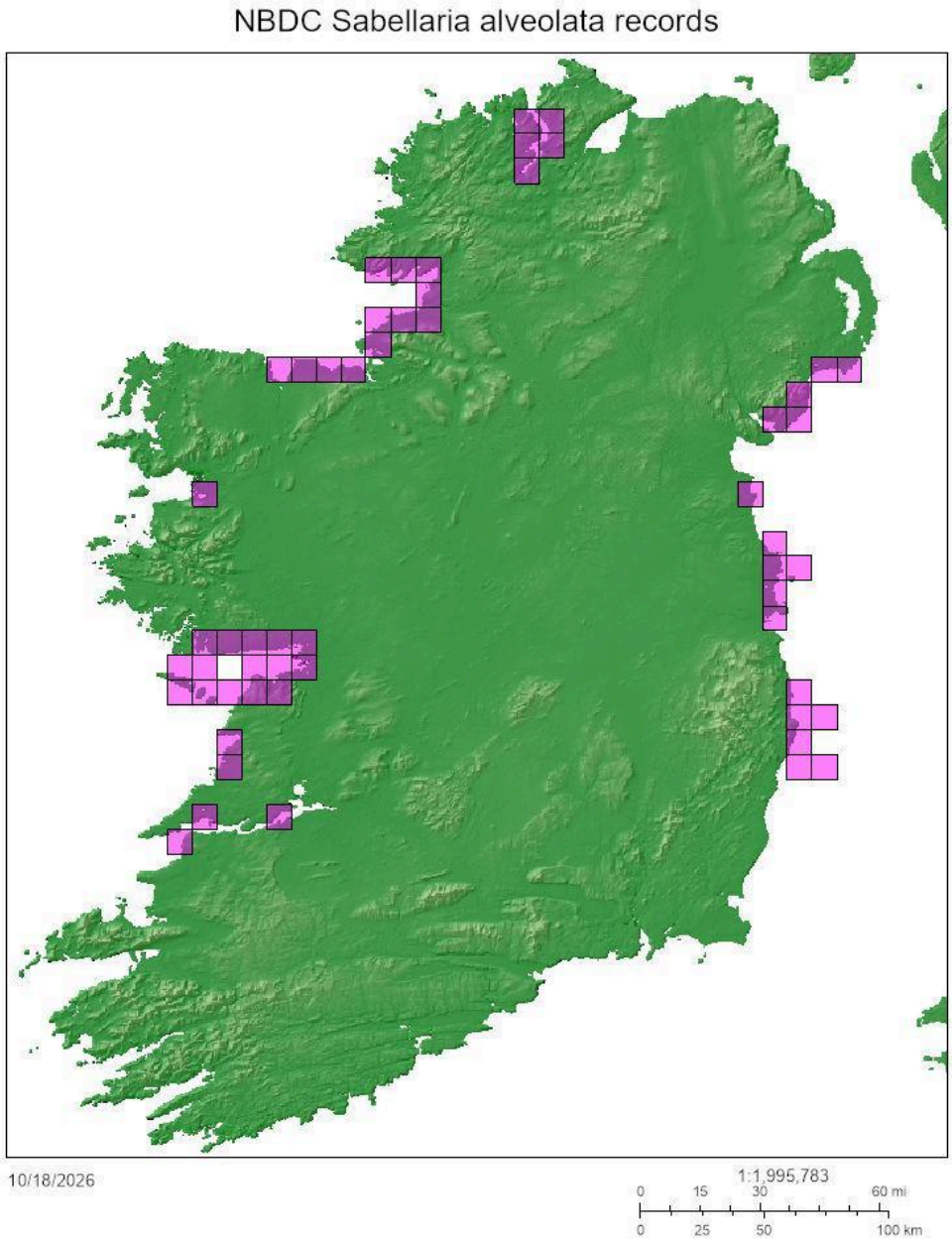

Figure 1: Map of Ireland showing all records of *Sabellaria alveolata* reef through the Biodiversity Maps section of the National Biodiversity Data Centre (NBDC) webpage.

Field survey days were chosen based on the next spring tide occurrence as a low spring tide allows for the lower shore to become uncovered and therefore, adequately surveyed. The wind and swell forecasts were also reviewed; optimal intertidal survey conditions are less than force 4 wind, dry, and low swell.

A Phase 1 Habitat Survey was conducted at Cregg Beach during a low spring tide period on the 10th and 12th of October, when the low tidal height was approximately 0.3m. The field survey was carried out over two low tide periods due to the wind conditions being sub-optimal on the first survey day and due to the extent of the *Sabellaria* reef. Essentially, a walkover survey was done targeting the reef areas that form the north and south borders of Cregg Beach (**Figure 2**); see **Figure 3** for overview photo of the north survey area.



Figure 2: Map of *Sabellaria alveolata* reef survey areas at Cregg Beach, Co. Clare,outlined in green (north area, *c*. 4.97 ha) and pink (south area, *c*. 1.27 ha). Inset map shows location of survey along the Clare coastline.



Figure 3: Overview of Cregg Beach north shore survey area of *Sabellaria alveolata* reef.

An open licence tracking app,Outdoor Active (version 3.23.20; 5134226) was used to digitally log the *Sabellaria* reef boundaries and occurrences. Any isolated patches, less than 1m approximately, were logged as point data. All areas of *Sabellaria* reef greater than 1m length or width were recorded in polygon format; the approximate boundary of the reef was walked to record the perimeter on the tracking app.

For most of the larger *Sabellaria* reef areas, the boundaries were not distinct and had to be approximated and/or divided for the purposes of recording the reef. Where the reef did not form a continuous habitat, the percent abundance or cover of *S. alveolata* within an area was estimated. The presence of the green alga, *Ulva sp.*, was a strong indicator for *S. alveolata* presence, however *S. alveolata* was not limited to co-occurring with this alga only. The lower eulittoral zone posed challenges due to the uneven substratum, prevalence of rockpools, and dense covering by the brown seaweeds *Fucus serratus* and *Fucus vesiculosus*, which are both slippery to walk on and obstruct the view of the *Sabellaria* reef.

Each *Sabellaria* reef occurrence, whether point or polygon data, were assigned a unique label in the form of 'SA#', with the number increasing for each record. Descriptive details on the approximate width of the reef, elevation from the substratum, and abundance in a given area were recorded (see **Appendix**). Representative photographs of each *Sabellaria* reef occurrence were captured. Associated flora and fauna species were observed.

Post-survey, the spatial data was collated from the two survey days. The record name and descriptive details were transcribed to a spreadsheet. Record names were relabelled post-survey to give a continuous format from 1-58 and a column was added to denote

whether the record was a point or polygon, *i.e.* waypoint or track, respectively. The spatial data were then used to create maps (see **Results** section) showing the extent and distribution of the *Sabellaria* reef across Cregg Beach using the mapping software QGIS Desktop version 3.44.12. The size and abundance of two polygon areas were estimated as they were too large and complex to map by walking a perimeter. These are denoted 'estimated track' in the maps below.

Results

A total of 60 spatial data points, including two estimated tracks, were recorded from the field survey of *Sabellaria* reef (**Figure 4**).

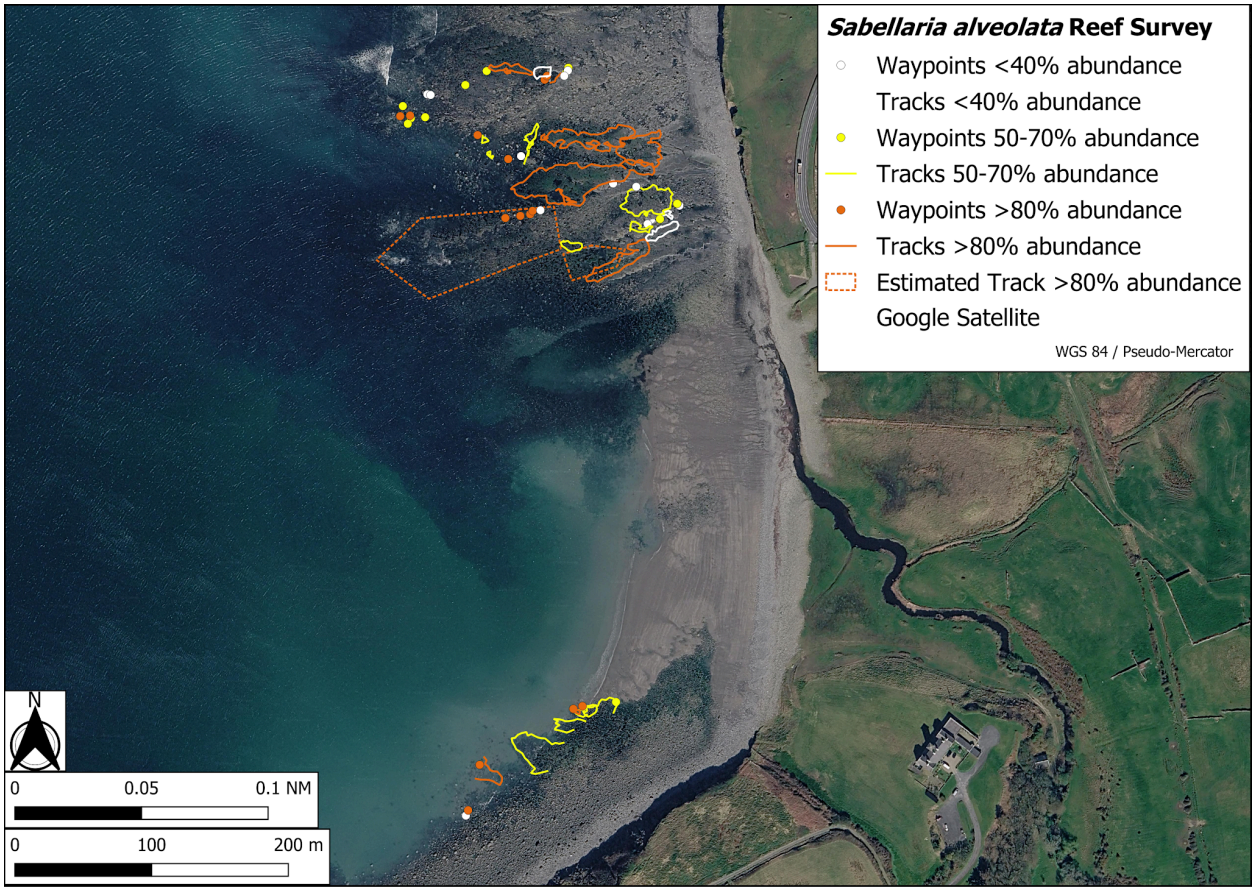

Figure 4: Overview of all tracks and waypoints recorded during the *Sabellaria alveolata* reef survey at Cregg Beach, Co. Clare.



Figure 5: Photo on the left shows SA29 and demonstrates the extent of the *Sabellaria alveolata* reef in some places. Photo on the right of SA26 shows the variety of substrate the reef occurs among on the north shore of Cregg Beach.

Of the 60 spatial data points recorded, 24 had abundances of 80% or more, 21 had abundances of 50-70%, and 15 had abundances of 40% or less. The majority of spatial data points were recorded in the north survey area, which primarily had a bedrock substrate (**Figure 5-7**). The points recorded in the south survey area occurred on boulders and cobbles (**Figure 8 & 9**).



Figure 6: *Sabellaria alveolata* reef (SA41) under overhanging rock, demonstrating the variety of microhabitats where the reef occurs and some associated flora and fauna.

There were a number of associated flora and fauna species observed throughout the reef survey. Below is a snapshot list of just some of these.

Flora	**Fauna**
Ulva sp.	*Semibalanus balanoides*
Fucus spiralis; vesiculosus; serratus	*Actinia equina*
Chondrus crispus	*Anemonia viridis*
Corralina officinalis	*Patella sp.*
Ascophyllum nodosum	*Littorina littorea*

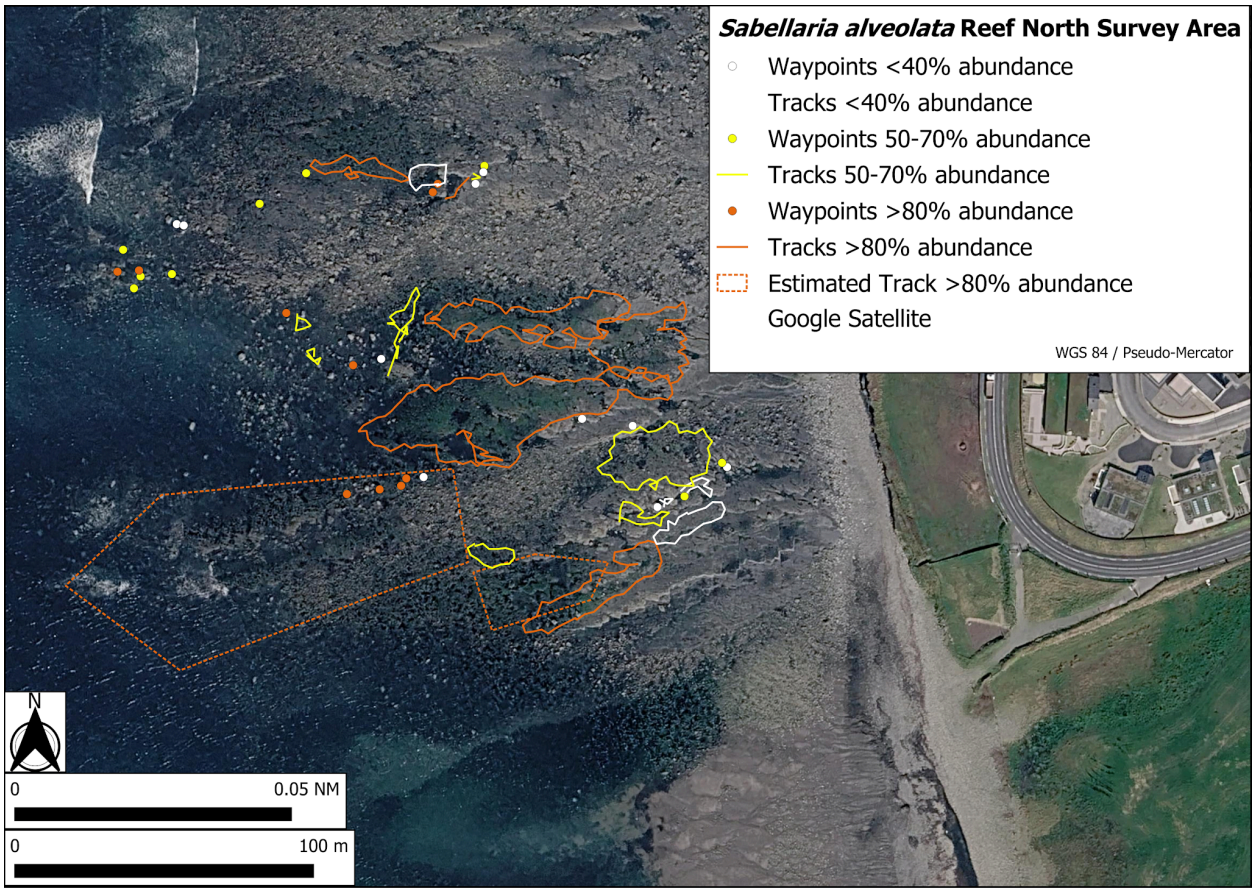

Figure 7: All tracks and waypoints recorded from the north survey area during the *Sabellaria alveolata* reef survey at Cregg Beach, Co. Clare.



Figure 8: *Sabellaria alveolata* hummocks (SA58 on left and SA47 on right) on cobbles and boulders on the south side of Cregg Beach and associated flora (*Fucus vesiculosus* and *Ulva sp.*, respectively).

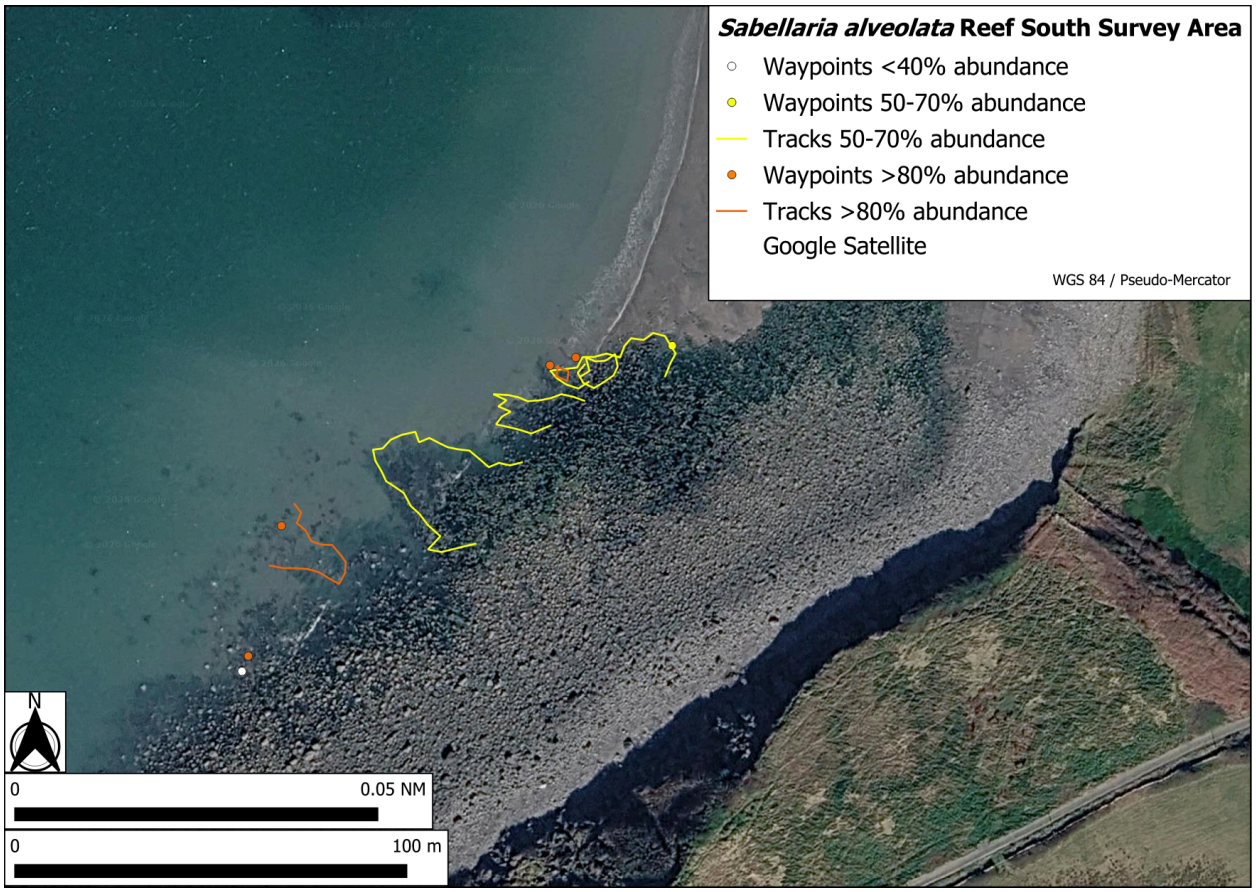

Figure 9: All tracks and waypoints recorded from the south survey area during the *Sabellaria alveolata* reef survey at Cregg Beach, Co. Clare.

Discussion & Conclusion

Cregg Beach, Co. Clare falls under the Fossitt habitat classification of LR2 moderately exposed rocky shores with Annex I protected habitat *Reefs* [1170]. This survey successfully mapped the presence and distribution of *S. alveolata* reef habitat at Cregg Beach. It is thought to be the first survey of the reef in this locality, therefore forming an important baseline for future surveys and monitoring of the reef to progress on.

While *S. alveolata* reef was known locally to be present along the bedrock on the northern part of Cregg Beach, the extent to which it actually occurs has been shown to be substantial. The north and south reef areas surveyed covered *c.* 4.97 ha and 1.27 ha, respectively. Though the precise extent of each individual track and spatial data point were not measured (this would require more resources to accomplish), using these values and the mapped data presented above (**Figure 4, 7, 9**) provides an indication as to the area

covered by *S. alveolata* reef at Cregg Beach. Approximately 40% of the spatial data recorded *S. alveolata* abundances of 80% or more, and these reef areas were considered well-established, and a further 35% had abundances of 50-70%. What was unexpected was the presence of *S. alveolata* reef on boulders and cobbles along the southern boundary of Cregg Beach. These hummocks of *S. alveolata* reef displayed the greatest elevation or thickness compared to the northern reef. Similar to the reef in the lower eulittoral zone at the northern end of the beach, the *S. alveolata* on the boulders to the south were predominantly covered in *Fucus serratus* making it difficult to traverse and observe the reef *in situ*.

As this is likely the first survey of *S. alveolata* reef at Cregg Beach, and considering it is an Annex I protected habitat, it is recommended to repeat the survey annually to capture any changes in the reef extent and elevation. A trial of other survey methods, as mentioned above, namely drone and snorkel surveys, to further map and monitor the *S. alveolata* reef may give a greater picture of the reef extent, particularly subtidally.

A dedicated survey of the flora and fauna species and other habitats, if present, at Cregg Beach would be beneficial in providing a greater understanding of the habitat surrounding the *S. alveolata* reef and the overall biodiversity of this beach.

In line with advancing Ireland's data repository of ecological data, the species and habitats recorded during this survey will be submitted to the NBDC.

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Appendix

Field survey notes showing reef name/reference and description of the extent, elevation, and abundance of each data point. The table has been colour-coded to correspond to the maps above, where white indicates an abundance of <40%, yellow represents abundances of 50-70%, and orange indicates *S. alveolata* abundances of >80%.

Name	Waypoint or Track	Description
SA1	W	50cm wide, 10cm elev., patchy 40%
SA2	W	30-40cm wide, <10cm elev., 30% patchy
SA3	W	80cm wide, 25 cm elev., 50%
SA4	T	spread over 1.5m area, up to 15cm elev., patchy, 50%
SA5	T	throughout rock pool, locally abundant in patches, throughout *Corallina officinalis*, *F. spiralis*, spread over 4m area, thin layer to <10cm elev. 80%
SA6	T	5x5m area, in each rock crevice, locally abundant, overall 30-40% , elevation <10-10cm
SA7	W	30cm wide 100% over elevation to 20cm
SA8	W	patches to10cm wide <5cm elevation dense locally
SA9	T	area of approx. 6x7m, patchy but covers 80% area elevation <10-30cm, associated with green seaweed and *F. vesiculosus*
SA10	W	40cm wide, <5cm elevation, 60-70%
SA11	W	1-1.2m wide, <5-10cm elevation, patchy, 50-60%
SA12	W	in 1m2 area, elevation <5cm, patchy 30% lower shore
SA13	W	same as 12
SA14	W	3m2 area, elevation <10cm patchy 60% very lower shore
SA15	W	2m2 area patchy-denser, <10cm elevation 80%
SA16	W	1m2 area <10cm elevation 70%

SA17	W	2m2 80-90% 10cm
SA18	W	small patch locally dense 70%
SA19	W	1m2 dense >90%
SA20	W	60cm <5 50%
SA21	T	2x3m patchy 60%
SA22	T	underestimated due to *Fucus serratus* cover patchy, 40-60%
SA23	W	1m2 patchy 30%
SA24	T	2m2 intermittent among rocks and *F. serratus/vesiculosus,* 60-70%
SA25	W	area 5x5 abundant but in patches, 80%
SA26	T	10-15mx3-4 highly abundant 100% less developed on periphery, underest. in same areas due to cobbles and *Fucus*, green algae indicator of reef presence, elevation to 30cm
SA27	T	12x6m dense with some smaller patches 80% elevation <10-10/20cm
SA28	T	20mx6m dense abundant >90% to 30cm elevation
SA29	W	in 2m2 patchy <5 elevaiton 30%
SA30	W	patchy over 5-6m2 area 20-30%
SA31	T	15mx5m abundant to patchy, elevation 20cm, 70%
SA32	W	day 2 survey 2x2m area 40% covered in *F. vesiculosus* so likely underestimated.
SA33	W	60cm dense >20cm elevation
SA34	W	1m long dense between rocks, under *F. vesiculosus* & *F.serratus* >10cm elevation
SA35	W	80cm dense- moderately elevation 20cm
SA36	W	2-3m stretch dense between rocks and fucus
SA37	T	12x5m moderate elevation to 20cm 50%

SA38	T	rockpool habitat, 8mx2m moderate/patchy to dense. 70%
SA39	W	70cm elevation 10-15cm patchy 40%
SA40	T	patchy upper shore 40%
SA41	W	upper shore, under overhanging rock moderate 40-50%
SA42	T	upper shore among rockpool and flat rock sparse (beginning to form) to dense patches 40%
SA43	W	among rock crevices and rockpools elevation <5cm-20cm 40-50%
SA44	W	small patch in upper shore rockpool 20%
SA45	T	upper shore flat rock, 20-30m x 2.5m sparse-moderate patches 30%
SA46	T	extending from lower upper to mid/lower shore, dense 70-80%
SA47	T	on S side, on rocks, well established, 20-30elev 80% 2m long
SA48	W	on sand & rock small patch but well established 20-30cm elev 80cm width 80-90%
SA49	W	on rock 30cm elevation 80cm wide 80%
SA50	T	on rocks among sand and *Fucus*, mid shore 60%
SA51	W	lower shore on rocks outcrop 90-100% 3mx2m
SA52	W	approx S limit on cregg
SA53	W	area of 15x10m coverage on rocks/boulders approx.40%
SA54	T	area 10x5m on boulders sand in between lower shoreline 70-80%
SA55	T	20mx7m 60-70% on rocks/boulders under *Fucus serratus*
SA56	T	area 10x7m 40-50%
SA57	T	10-15m x 5m 60%
SA58	W	1.5mx0.5m patchy-dense 60-70%
Estimated	T	smaller track 40mx20m, throughout rockpools & under *Fucus* canopy, 80% coverage

Estimated	T	bigger track 130mx50m from mid-lower shore, throughout rockpools & under *Fucus* canopy, 70-80%

Appendix II

Photos of Flapper Skate Egg Cases







Appendix III

Photos of oak forest buried in the shore at Cregg

