

Biological analyses of underwater video from research cruises in marine protected areas and renewable energy locations around Scotland in 2014





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COMMISSIONED REPORT

Commissioned Report No. 819

**Biological analyses of underwater video
from research cruises in marine protected
areas and renewable energy locations
around Scotland in 2014**

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COMMISSIONED REPORT

Summary

Biological analyses of underwater video from research cruises in marine protected areas and renewable energy locations around Scotland in 2014

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Benthos; biotope; PMF; MPA; protected feature; renewable; energy; video; Loch Alsh; Wester Ross; Fetlar to Haroldswick; Mousa to Boddam; Noss Head; Loch Eishort; Loch Slapin; Armadale; Fraserburgh; Cruden Bay; Kincardine.

Background

Scottish Natural Heritage (SNH) and the Joint Nature Conservation Committee (JNCC) have generated a focused list of habitats and species to target nature conservation action in Scottish waters - the Priority Marine Features (PMFs). A subset of these biological features, together with a list of large-scale features of functional importance to Scotland's seas (collectively termed MPA search features) have driven the identification of a network of 30 areas in Scottish waters designated by the Scottish Government as Nature Conservation MPAs in 2014. To ensure that the network meets the legislative obligations for MPAs, other features representative of Scotland's seas more generally have also been identified as conservation targets for these new sites. The combination of MPA search features and representative features within an MPA are collectively referred to as protected features (PFs).

The aim of the present investigation was to improve knowledge of the occurrence and distribution of species and habitats of recognised conservation importance in 11 locations through the analysis of seabed video and still photographic imagery collected during research cruises undertaken primarily by Marine Scotland Science (MSS) and SNH in 2014. The conservation importance of features has been assessed through consideration of not only PFs and other PMFs, but also taking cognisance of other published importance measures. Survey areas included Loch Alsh (within the Lochs Duich, Long and Alsh MPA), the approaches to Ullapool (within the Wester Ross MPA), north-east Shetland Islands (within the Fetlar to Haroldswick MPA), south-east Shetland Islands (within the Mousa to Boddam MPA) and east of Wick in the North Sea (within and around the Noss Head MPA). Two sea lochs on the south of Skye (Lochs Eishort and Slapin) were also examined. Additional surveys were carried out at a number of proposed renewable energy locations including off Armadale on the north Scottish coast and at a number of North Sea locations in the Moray Firth and off Fraserburgh, Peterhead (Cruden Bay) and Aberdeen (Kincardine).

Main findings

- The Loch Eishort/Loch Slapin system on the south of Skye was found to support a rich suite of PMFs. Eleven PMF biotopes included widely distributed maerl beds with some exhibiting dense live maerl, an eelgrass bed, and moderately rich burrowed mud communities. Kelp and seaweed communities on sublittoral sediment were widely recorded, although they appeared to be of relatively low diversity. Several examples of the northern sea fan and sponge community habitat were also recorded, although the fauna was not rich, with the characterising species, *Swiftia pallida*, only present at low density.
- Seven PMF biotopes were recorded within Loch Alsh. This included pockets of the burrowed mud protected feature, supporting the tall sea pen *Funiculina quadrangularis* in places. The survey extended the known western boundary of the very large Kyle Akin flame shell bed (another protected feature of the Lochs Duich, Long and Alsh MPA) by around 1 km. Other PMFs noted included a maerl bed with a fairly high level of live maerl but apparently low epibiotic diversity, some poor examples of kelp and seaweed communities on sublittoral sediment, a tide-swept kelp forest on mixed substrata, and the presence of a low density population of crinoids, probably *Leptometra celtica*, at one site.
- Burrowed mud was also recorded in the Wester Ross MPA, together with its component species, *Funiculina quadrangularis* and *Pachycerianthus multiplicatus*. One burrowed mud site appeared to support a dense aggregation of *Leptometra celtica*, also a protected feature of the MPA. Other PMF / PF habitats observed in 2014 included maerl beds and kelp and seaweed communities on sublittoral sediment.
- The survey of the Fetlar to Haroldswick MPA recorded the widespread presence of the circalittoral sand and coarse sediment communities protected feature and a rich example of a deep maerl bed - another protected feature.
- The Noss Head survey confirmed the presence of dense *Modiolus modiolus* at a number of sites within the predicted extent of the horse mussel bed (the protected feature of the Noss Head MPA) and contributed to the definition of the western and eastern margins of the bed locally.
- The only indication of the presence of a PMF species in the areas of proposed renewable energy locations was the widespread distribution of emergent siphons strongly resembling those of *Arctica islandica*, as well as empty shells of the species, off Armadale.
- Off Fraserburgh and Cruden Bay most of the survey sites lay beyond the 12 nm limits of territorial waters, with the majority ascribed to offshore subtidal sand and gravel biotopes.
- Most of the Fraserburgh sites and the single Moray Firth site lay within the area of the Southern Trench MPA proposal, where the proposed protected features include one benthic habitat, burrowed mud. A tentative example of this was recorded at the Moray Firth site.

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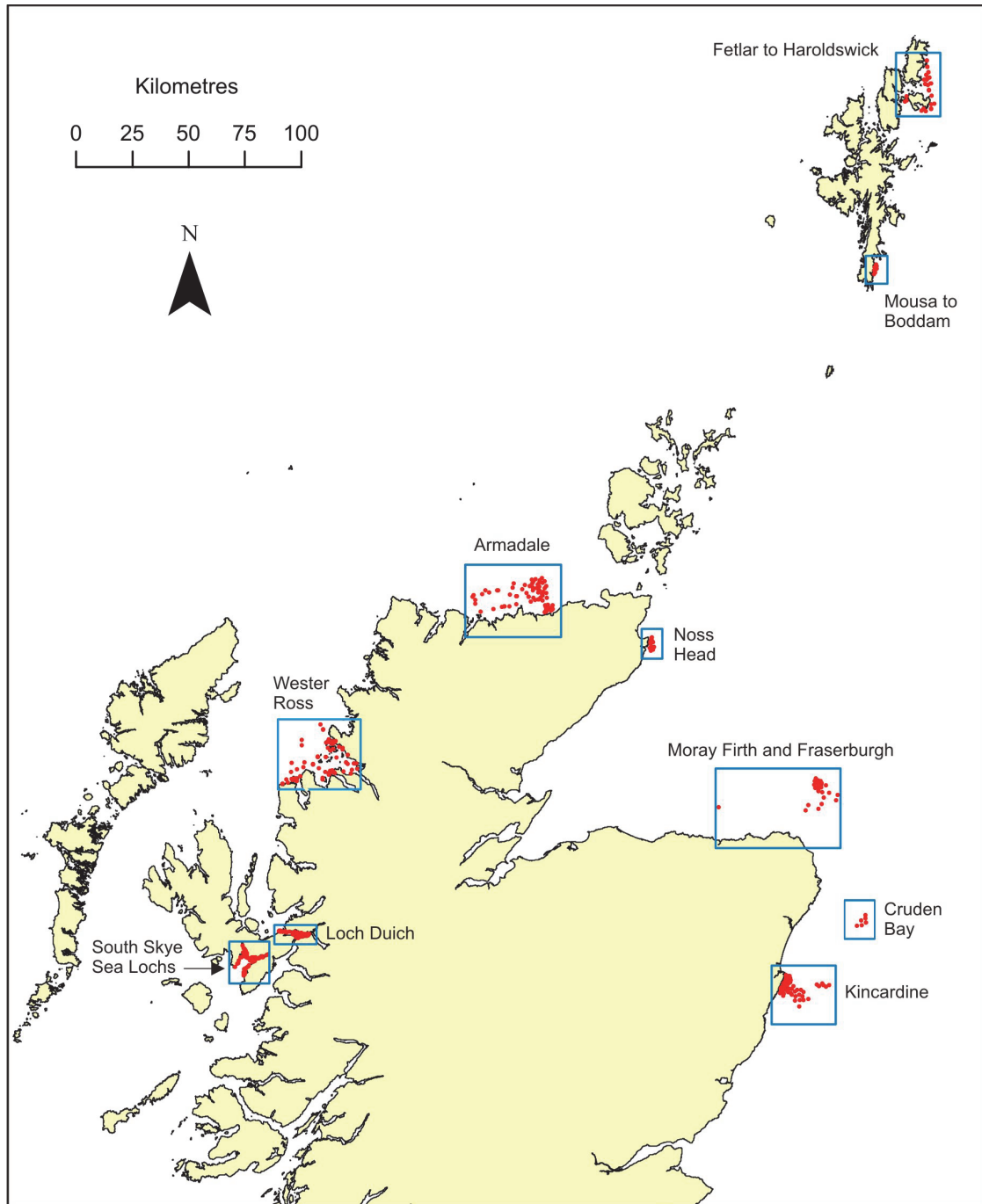
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1. INTRODUCTION

Provisions to designate new Marine Protected Areas (MPAs) within Scottish waters have been introduced through the Marine (Scotland) Act 2010 and the UK Marine and Coastal Access Act 2009. Scottish Natural Heritage (SNH) and the Joint Nature Conservation Committee (JNCC) have generated a focused list of habitats and species of importance in Scottish waters - the Priority Marine Features (PMFs) (SNH & JNCC, 2014), which are regarded as priorities for conservation action in Scottish waters.



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Figure 1. Distribution of survey locations (blue boxes) and sites (red dots).

A subset of these biological features, together with a list of large-scale features of functional importance to Scotland's seas (collectively termed MPA search features - see Marine Scotland, 2011 for list) have driven the identification of a network of 30 areas in Scottish waters designated by the Scottish Government as Nature Conservation MPAs in 2014. To ensure that the network meets the legislative obligations for MPAs, other features representative of Scotland's seas more generally have also been identified as conservation targets for these new sites. The combination of MPA search features and representative features within an MPA are collectively referred to as protected features (PFs). Annex 1 shows details of the PFs for the five MPAs covered in this report.

The aim of the present investigation was to improve knowledge of the occurrence and distribution of species and habitats of recognised conservation importance in eleven locations through the analysis of seabed video and still photographic imagery collected during research cruises by Marine Scotland Science (MSS), SNH, Scottish Wildlife Trust (SWT) and the Kyle and Lochalsh Community Trust (KLCT) in 2014 (Figure 1). The conservation importance of features has been assessed through consideration of not only PFs and other PMFs, but also taking cognisance of other published importance measures. Survey areas included Loch Alsh (within the Lochs Duich, Long and Alsh MPA), the approaches to Ullapool (within the Wester Ross MPA), north-east Shetland Islands (within the Fetlar to Haroldswick MPA), south-east Shetland Islands (within the Mousa to Boddam MPA) and east of Wick in the North Sea (within and around the Noss Head MPA). Two sea lochs on the south of Skye (Lochs Eishort and Slapin) were also examined, although they currently do not hold any conservation area designation. Surveys were also carried out at a number of proposed renewable energy locations including off Armadale on the north Scottish coast and at a number of North Sea locations in the Moray Firth and off Fraserburgh, Peterhead (Cruden Bay) and Aberdeen (Kincardine). Reasons for survey location selections are summarised in Table 1.

2. METHODS

Survey details are given in Table 1. Video images were obtained from dropdown video drifts. For cruises 0614S, 0614A and 1214A the camera frame also carried a vertically-orientated, digital stills camera, which took photographs of the seabed at intervals, and a laser scaling system. Track and depth data were displayed on a video overlay system for these cruises and for cruise 1414A. All depths were converted to depth below chart datum, employing TotalTide software (Admiralty, Taunton) to determine tidal rise at the most appropriate secondary port. The images were used to describe the nature of the seabed in terms of the physical structure and the species assemblages. Species present were, as far as possible, identified and quantified using the semi-quantitative MNCR SACFOR scale (Hiscock, 1996). Based on the physical and biological attributes, biotopes were allocated (Connor *et al.*, 2004). Runs traversing a sequence of biotopes were split into corresponding segments; with the transition points recorded using the time, position and depth. Segmentation of runs was not practicable in the case of mosaics of recurring biotopes, in which case all biotopes observed were simply listed.

Table 1. Survey location details. The survey area code is the abbreviation employed in Table 2.

Survey	Organis- ation	Vessel	Cruise	Date(s)	No. sites	Site prefix	Survey area code	Interest
South Skye Sea Lochs	SNH	<i>Aphrodite</i>	N/A	28- 30/05/2014	65	V	SSSL	PMF presence
Loch Alsh	SNH	<i>Sir John Murray</i>	N/A	25- 26/03/2014	52	LA, EX	LA	MPA
Loch Alsh	SNH/KLCT	<i>Shuna</i>	N/A	08/12/2014	6	KL	WES	MPA
Wester Ross	SNH/MSS	<i>MRV Alba na Mara</i>	1414A	9- 12/08/2014	27	WES	WES	MPA
Wester Ross	SNH/SWT	<i>Lady Nicola</i>	N/A	8-9/11/2014	49	WR	WES	MPA
Armadale	MSS	<i>MRV Scotia</i>	0614S	16- 30/05/2014	63	ARM	ARM	Renewable energy
Fetlar to Haroldswick	SNH/MSS	<i>MRV Alba na Mara</i>	1414A	15- 16/08/2014	21	FTH	FTH	MPA
Mousa to Boddam	SNH/MSS	<i>MRV Alba na Mara</i>	1414A	17/08/2014	7	MTB	MTB	MPA
Noss Head	MSS	<i>MRV Alba na Mara</i>	0614A	11/05/2014	4	NH	NH	MPA
Noss Head	SNH/MSS	<i>MRV Alba na Mara</i>	1414A	21/08/2014	13	NH	NH	MPA
Moray Firth	MSS	<i>MRV Alba na Mara</i>	1214A	19/07/2014	1	MF	MF	Renewable energy
Fraserburgh	MSS	<i>MRV Alba na Mara</i>	1214A	17- 18/07/2014	23	FRB	FRB	Renewable energy
Cruden Bay	MSS	<i>MRV Alba na Mara</i>	1214A	16/07/2014	6	CB	CB	Renewable energy
Kincardine	MSS	<i>MRV Alba na Mara</i>	1214A	8- 15/07/2014	55	KC, KCA	KC	Renewable energy

Runs and run segments were assessed for the presence of PFs and other PMFs, as well as for the presence of species and habitats of recognised conservation importance according to a number of additional criteria, including citation on the following lists: the IUCN Red List of Threatened Species (lower risk category) (IUCN, 2014), the OSPAR List of Threatened and/or Declining Species and Habitats (OSPAR, 2008) and the Scottish Biodiversity List (Scottish Government, 2013).

3. RESULTS

The presence and distribution of habitats, biotopes and species in each survey area is summarised in this section but presented in detail for each site in Annex 3, with site location data in Annex 2. In this section PMF biotopes and species are highlighted using red text. Annex 4 provides an inventory of the biotopes recorded, as well as PF species, together with illustrative photographs and lists of their occurrence.

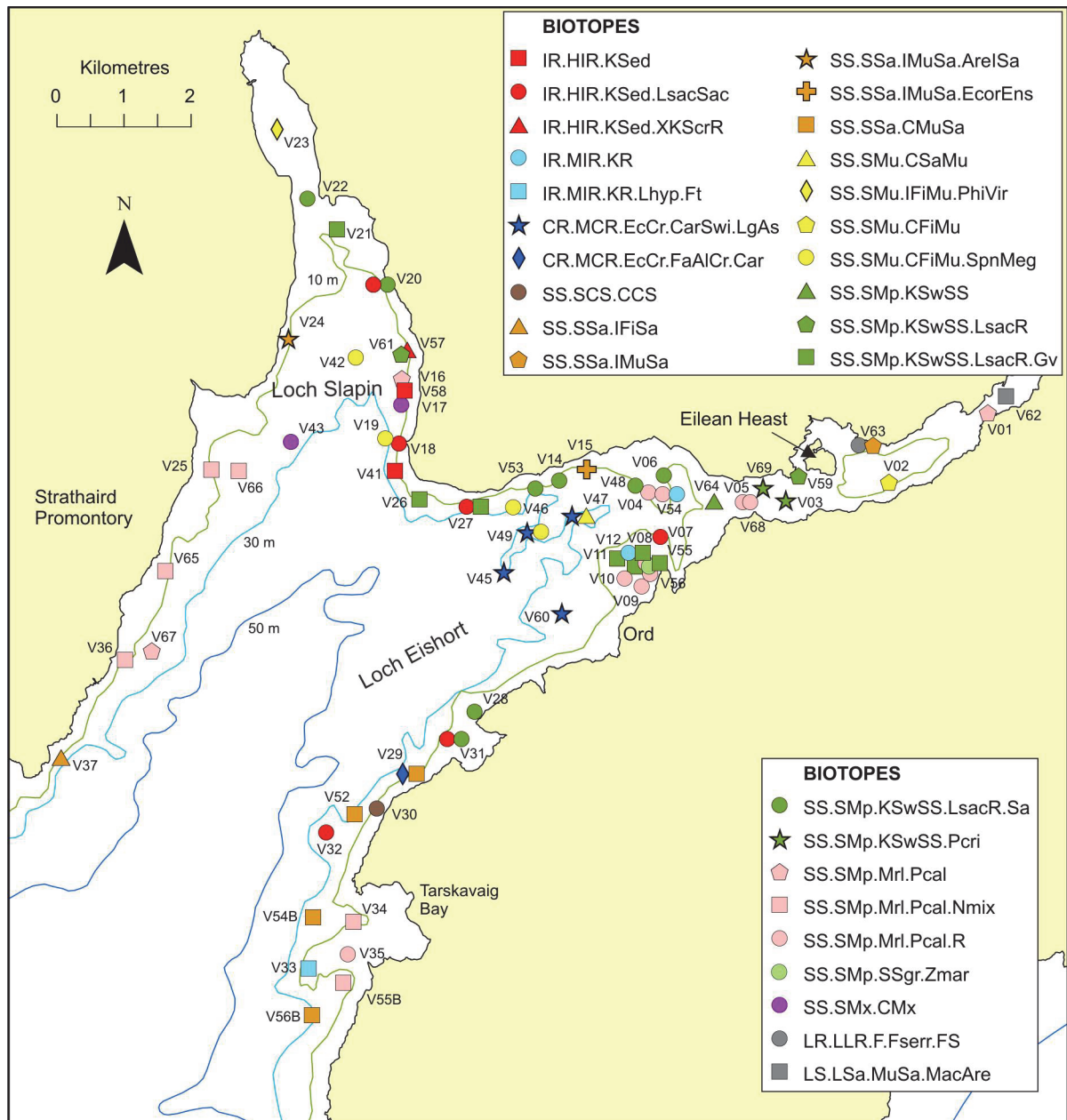
3.1 South Skye sea lochs (Figure 2)

The video survey revealed the widespread presence of maerl beds in Loch Eishort. It is likely that *Phymatolithon calcareum* was the dominant maerl form in every case. Beds were found along an extensive stretch of coastline off the Strathaird Promontory in the form of waves of maerl gravel with live maerl largely restricted to narrow bands in the wave troughs (**SS.SMp.Mrl.Pcal.Nmix**). This biotope was also recorded at the mouth of Tarskavaig Bay. The biotope is characterised by the coarse nature of the substrate, the paucity of the red algal flora and its occurrence in the lower infralittoral; however, in Loch Eishort, whilst most records were from depths of 8 - 19 m, at one site (V65) it was found as shallow as 4 m. However, at most upper infralittoral sites (at depths of 0 - 10 m) a flatter maerl habitat supported a richer algal turf, generally including significant quantities of red algae (**SS.SMp.Mrl.Pcal.R**). This biotope was found off Tarskavaig Bay but was also widely distributed amongst the skerries north of Ord, where live maerl was locally abundant and supported dense concentrations of crinoids in places. Patches of abundant *Zostera marina* were also recorded here on a substrate of dead maerl (**SS.SMp.SSgr.Zmar**). Dense live maerl was also recorded in the shallow channel entrance to the innermost basin of Loch Eishort, but here the accompanying algal flora was very sparse (**SS.SMp.Mrl.Pcal**). Two examples of deep water maerl beds (17 - 24 m) were also assigned to this latter biotope. Off the eastern coastline of Loch Slapin and off the Strathaird Promontory sparse live maerl was recorded on a muddy sediment.

The most widely recorded habitat type during the 2014 survey was kelp and seaweed communities on sublittoral sediments (**SS.SMp.KSwSS** biotopes), being found at 19 sites over a depth range of 0 - 15 m. The principal location was north of Ord where *Saccharina latissima* and a patchy algal turf occurred on a substrate of sand (**SS.SMp.KSwSS.LsacR.Sa**) or gravel (often dead maerl) (**SS.SMp.KSwSS.LsacR.Gv**). In the channel south of Eilean Heast there appears to be patches of dense *Phyllophora crispa* and so the habitat has been ascribed to **SS.SMp.KSwSS.Pcri**, a biotope recorded in the same area in 1980 by Dipper (1981).

The Admiralty chart indicates that much of the outer parts of Loch Eishort and Loch Slapin consists of deep muds below the 30 m depth contour and extending to around 60 m. This region was not sampled during the 2014 survey and appears not to have been examined by previous surveys (Dipper and Johnston, 2005; EMODnet, 2015). Fairly well-burrowed mud was recorded at four sites at depths of around 30 m in 2014 (**SS.SMu.CFiMu.SpnMeg**), with the principal megafaunal species being *Nephrops norvegicus* and *Calocaris macandreae*, accompanied by low densities of *Virgularia mirabilis*. Mud lacking megafaunal burrowers was recorded at 18 m depth in the upper region of Loch Eishort (**SS.SMu.CFiMu**) and at 7 m in the upper basin of Loch Slapin where it supported dense *Philine aperta* (**SS.SMu.IFiMu.PhiVir**). In the more exposed outer region of the loch in the vicinity of Tarskavaig Bay muddy sands were recorded at four sites at depths of around 30 m (**SS.SSa.CMuSa**). Other sedimentary biotopes were poorly represented with single uncertain records of shallow medium sand (**SS.SSa.IFiSa**) and shallow muddy sand biotopes (**SS.SSa.IMuSa**, **IMuSa.AreISa** and **IMuSa.EcorEns**). Two sites of rather different character at the mouth of Loch Slapin, one with a thin gravel veneer on muddy sediment and the other, a mixed muddy gravelly sandy sediment with scattered stones, were ascribed to

SS.SMx.CMx. The survey also sampled an intertidal site at the head of Loch Eishort where muddy fine sand was populated by dense *Arenicola marina* (**LS.LSa.MuSa.MacAre**).



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Figure 2. Distribution of biotope records in the South Skye sea lochs.

Infralittoral reef biotopes were recorded along the east coast of Loch Slapin, in the region north of Ord in Loch Eishort, and near the mouth of the loch system off Tarskavaig Bay. The dominant habitat sampled appeared to be sand-scoured rock supporting a dense red algal turf. Scoured cobbles and boulders with very sparse *Saccharina latissima* have been ascribed to **IR.HIR.KSed**, bedrock, cobbles and boulders with a kelp forest or park of *S. latissima* to **IR.HIR.KSed.LsacSac**, and a mixed kelp forest of *Laminaria hyperborea* and *S. latissima* to **IR.HIR.KSed.XKScrR**. Dense *L. hyperborea* kelp forests were recorded at two sites: at the mouth of the loch system, where a rich red algal understory was visible

(**IR.MIR.KR.Lhyp.Ft**), and to the north of Ord, where little detail below the kelp canopy was discernible (**IR.MIR.KR**).

Circalittoral rock was recorded at four sites to the northwest of Ord at depths of 17 - 30 m. The silt-covered substrate of bedrock, boulders and cobbles generally supported dense *Caryophyllia smithii*, as well as axinellid sponges, solitary and colonial ascidians (especially *Ascidia virginea* and *Diazona violacea*) and sparse *Swiftia pallida*. These sites have all been referred to **CR.MCR.EcCr.CarSwi.LgAs**, as the habitat was very similar, although not all the above-mentioned species were recorded at all sites. As *S. pallida* was at most sparse, they are not good examples of the biotope. Rock supporting *C. smithii* and sparse solitary ascidians was also recorded near the mouth of the loch system north of Tarskavaig (**CR.MCR.EcCr.FaAICr.Car**).

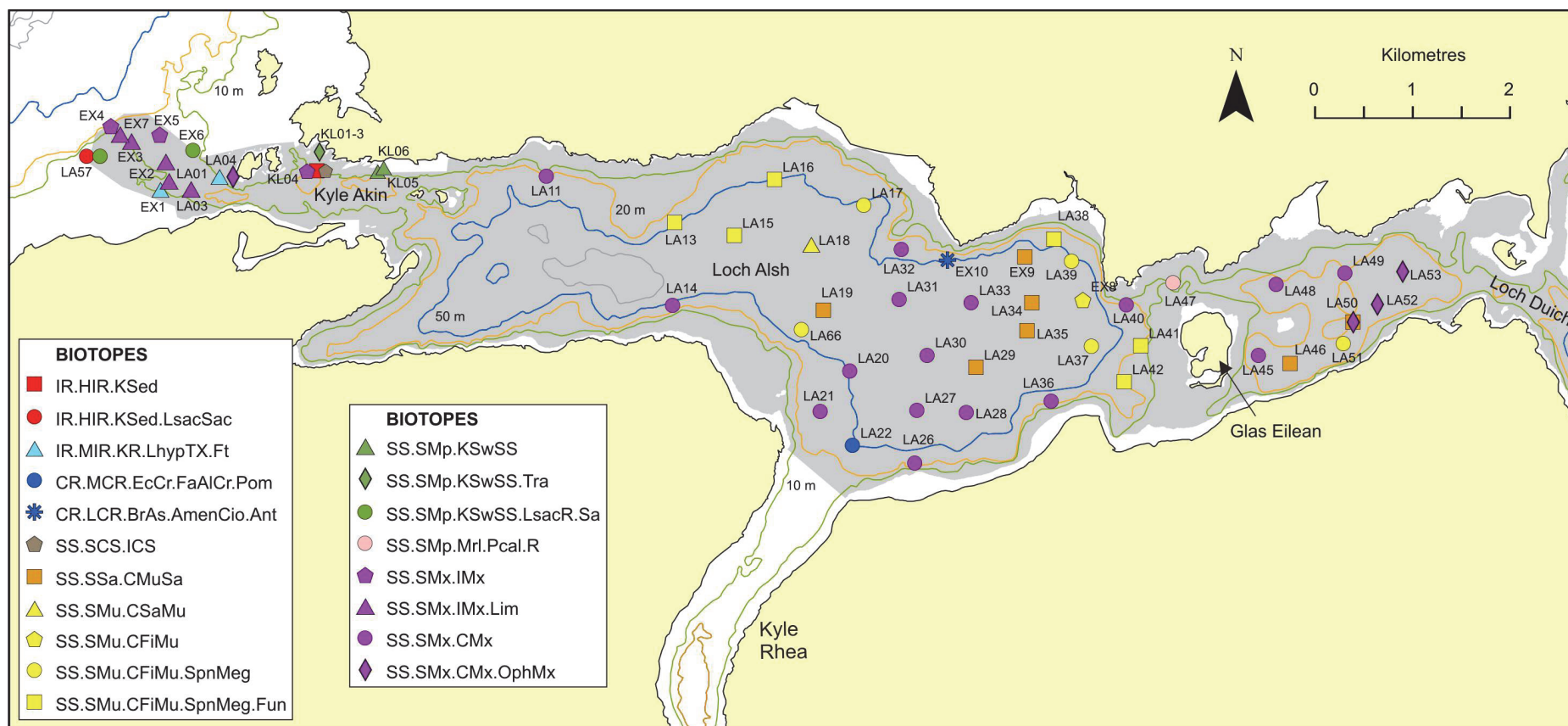
3.2 Loch Alsh (Figure 3)

The video imagery revealed that the *Limaria hians* bed, which occupies much of Kyle Akin (Moore *et al.*, 2013), extends into the western approaches to Loch Alsh. In this region at depths of 8 - 12 m, the tide-swept, mixed substrate of sand, stones and shell material was found to exhibit a layer of byssus turf covering more than 50% of the seabed over a distance of around one kilometre (**SS.SMx.IMx.Lim**). The byssal habitat supported a red algal turf and dense *Laminaria hyperborea*. Mixed substrates were also recorded to either side of the *Limaria* bed tongue, supporting a tide-swept *L. hyperborea* forest where the current was stronger (**IR.MIR.KR.LhypTX.Ft**). At lower current velocities *L. hyperborea* was replaced by *Saccharina latissima* (**IR.HIR.KSed.LsacSac** and **SS.SMp.KSwSS.LsacR.Sa**), although the kelp material was largely dead below a depth of 14 m (**SS.SMx.IMx**). **SS.SMp.KSwSS** biotopes were also recorded at six sites off the northern shore of Kyle Akin, characterised largely by patchy algal mats (**KSwSS.Tra**).

In the central region of Loch Alsh an extensive area of seabed north-east of Kyle Rhea and probably subject to enhanced tidal currents was found to be floored by mixed substrates of sand or muddy sand with varying concentrations of gravel, pebbles and cobbles (**SS.SMx.CMx**). The visible fauna was not rich. Stones were encrusted with serpulid worms and typically supported low densities of crinoids and *Urticina* sp., and provided protection for *Munida rugosa*. With progression eastwards and westwards from this region, mixed sediments gave way to muddy sand (**SS.SSa.CMuSa**) and sandy mud (**SS.SMu.CSaMu**), and then burrowed muds. The megafaunal burrowing community was not well developed, with relatively low densities of *Nephrops norvegicus* and *Calocaris macandreae*. Sea pen numbers were also generally low and represented by sparse *Pennatula phosphorea* and, at most sites, frequent *Funiculina quadrangularis*. Sites have been ascribed to either **SS.SMu.CFiMu.SpnMeg** or **SS.SMu.CFiMu.SpnMeg.Fun** depending on the absence or presence of *F. quadrangularis*.

A fairly rich maerl bed was recorded in the tide-swept channel north of Glas Eilean, with live *Phymatolithon calcareum* assessed as common (**SS.SMp.Mrl.Pcal.R**). Apart from the presence of dense kelp (*Laminaria hyperborea* and *Saccharina latissima*), the algal flora appeared sparse.

Between Glas Eilean and Loch Duich mostly mixed sediments of sand with gravel and pebbles were recorded (**SS.SMx.CMx**) supporting a fauna similar to that of the same biotope to the north-east of Kyle Rhea, although dense ophiuroids dominated the community in the approaches to the narrowed channel entrance to Loch Duich (**SS.SMx.CMx.OphMx**).

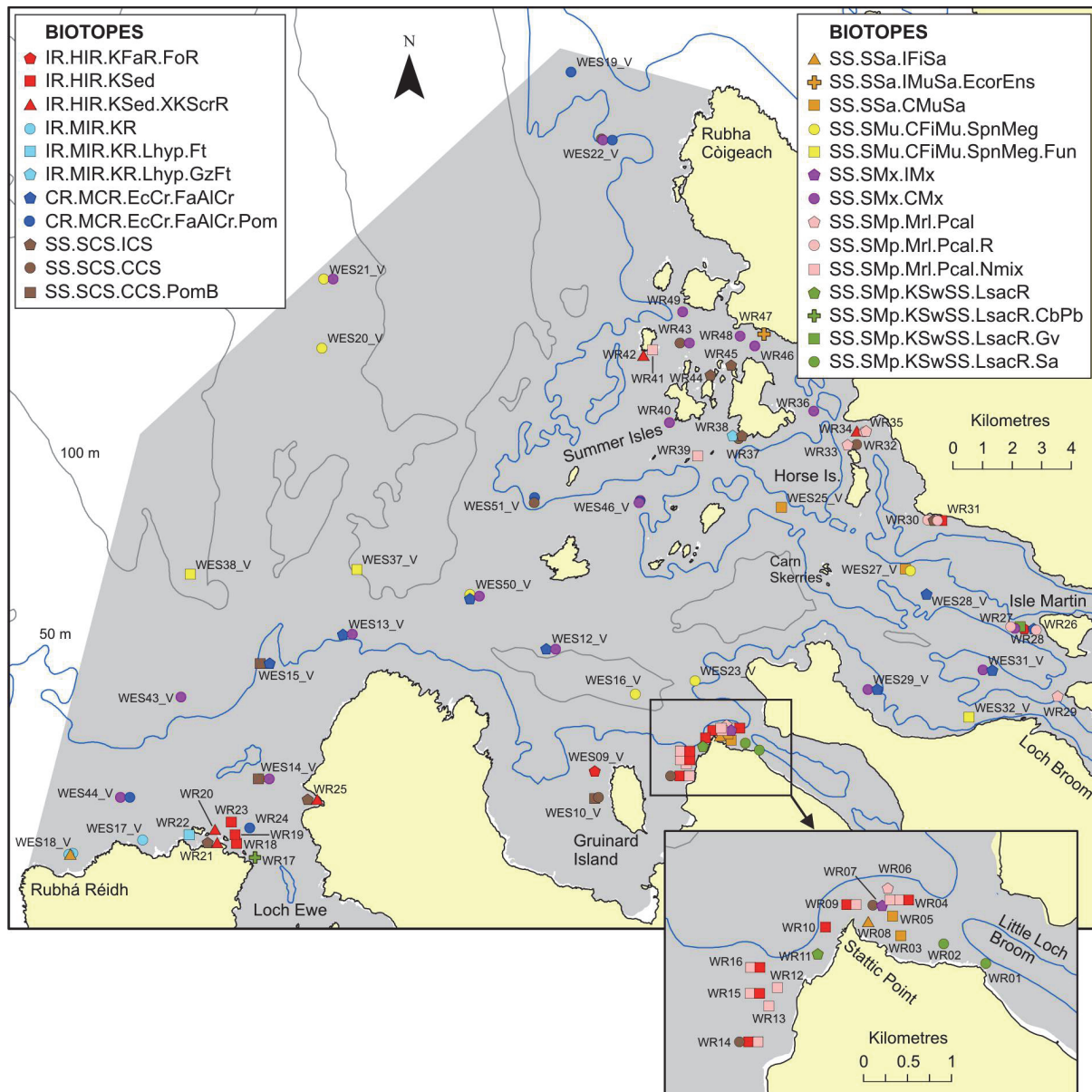


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Figure 3. Distribution of biotope records in Loch Alsh. Grey area indicates extent of Lochs Duich, Long and Alsh MPA.

3.3 Wester Ross (Figure 4)

Rocky reef habitats were widely recorded over the surveyed area. They took the form of bedrock or varying mixtures and densities of boulders and cobbles, often on a mixed sediment substrate and consequently difficult to distinguish from mixed sediment biotopes. At most reef sites over the depth range 18 - 85 m the rock supported an encrusting fauna of *Spirobranchus* spp., *Parasmittina trispinosa* and, above 50 m depth, pink coralline algae (**CR.MCR.EcCr.FaAICr.Pom**), with sites displaying a relatively sparse cover of serpulid worms ascribed to **CR.MCR.EcCr.FaAICr**. The motile fauna was dominated by echinoderms, such as *Echinus esculentus* and *Porania pulvillus*, and *Munida rugosa*. Some of the deeper sites supported low density populations of axinellid sponges.



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Figure 4. Distribution of biotope records off Wester Ross. Grey area indicates extent of the Wester Ross MPA.

Infralittoral reef biotopes displaying rich red algal turfs were widely recorded, mostly in the form of sand-scoured cobbles and boulders (particularly off the mouths of Little Loch Broom and Loch Ewe). These sites have been generally ascribed to **IR.HIR.KSed** and **KSed.XKScrR**, except where the evidence of scour was less clear (**IR.HIR.KFaR.FoR**). Non-scoured *Laminaria hyperborea* forests on boulders and bedrock were recorded chiefly to the west of Loch Ewe (**IR.MIR.KR**, **IR.MIR.KR.Lhyp.Ft**).

At many of the reef sites there was a gradation from dense cobbles and boulders (**CR.MCR.EcCr.FaAICr.Pom**) to scattered gravel, pebbles, cobbles and occasional boulders on sandy sediments where the biotope **SS.SMx.CMx** was recognised, although the fauna was generally similar. Some sites with probably mobile pebbles and cobbles on sand supporting a sparse fauna strongly dominated by *Spirobranchus* spp. have been referred to **SS.SCS.CCS.PomB**, although the distinction between this and **SS.SMx.CMx** is not clear-cut.

Waves of coarse sand and gravel (**SS.SCS.CCS**) were recorded at eight sites at depths of 15 - 65 m, predominantly around the Summer Isles and off Gruinard Island. There was little visible evidence of life apart from the encrusting community on scattered stones. Shallower examples (8 - 16 m) of coarse sand, often with shell gravel, were also recorded, mainly around the Summer Isles and at the mouth of Loch Ewe, again supporting little visible life apart from sparse foliose and filamentous red algae (**SS.SCS.ICS**). Muddy sands (**SS.SSa.CMuSa**) were observed at four sites off Stattic Point and in the vicinity of Carn Skerries, where the biotope has been previously recorded (Moore, 2014). A single specimen of *Pachycerianthus multiplicatus* was observed at one of these sites. Burrowed mud habitats were present at nine sites spread widely over the survey area at depths of 40 - 119 m. The dominant megafaunal burrowers appeared to be *Calocaris macandreae* and *Nephrops norvegicus*, both of which were found at high concentrations at some sites. Sea pens were generally not observed (**SS.SMu.CFiMu.SpnMeg**), although frequent - common *Funiculina quadrangularis* was recorded at three of the deeper sites (**SS.SMu.CFiMu.SpnMeg.Fun**). One of the burrowed mud sites (WES50_V) supported a dense field of crinoids, almost certainly *Leptometra celtica*.

Maerl beds were observed at 18 sites, with wide coverage off Stattic Point and further examples extending from the Summer Isles to the mouth of Loch Broom. The predominant biotope recorded was **SS.SMp.Mrl.Pcal.Nmix** over a depth range of 14 - 30 m, generally in the form of waves of maerl with concentrations of live *Phymatolithon calcareum* in the troughs. Shallower maerl beds (10 - 15 m) supported a richer algal component, dominated by filamentous reds which bound the maerl thalli together (**SS.SMp.Mrl.Pcal.R**). Although live maerl density was common at most of these shallower sites, the visual impression was of low species diversity, which may be a consequence of the winter timing of the survey. A third maerl biotope, **SS.SMp.Mrl.Pcal**, was recognised where superficial maerl overlay substrates of sand or rock, or where the algal component was intermediate between the other maerl biotopes.

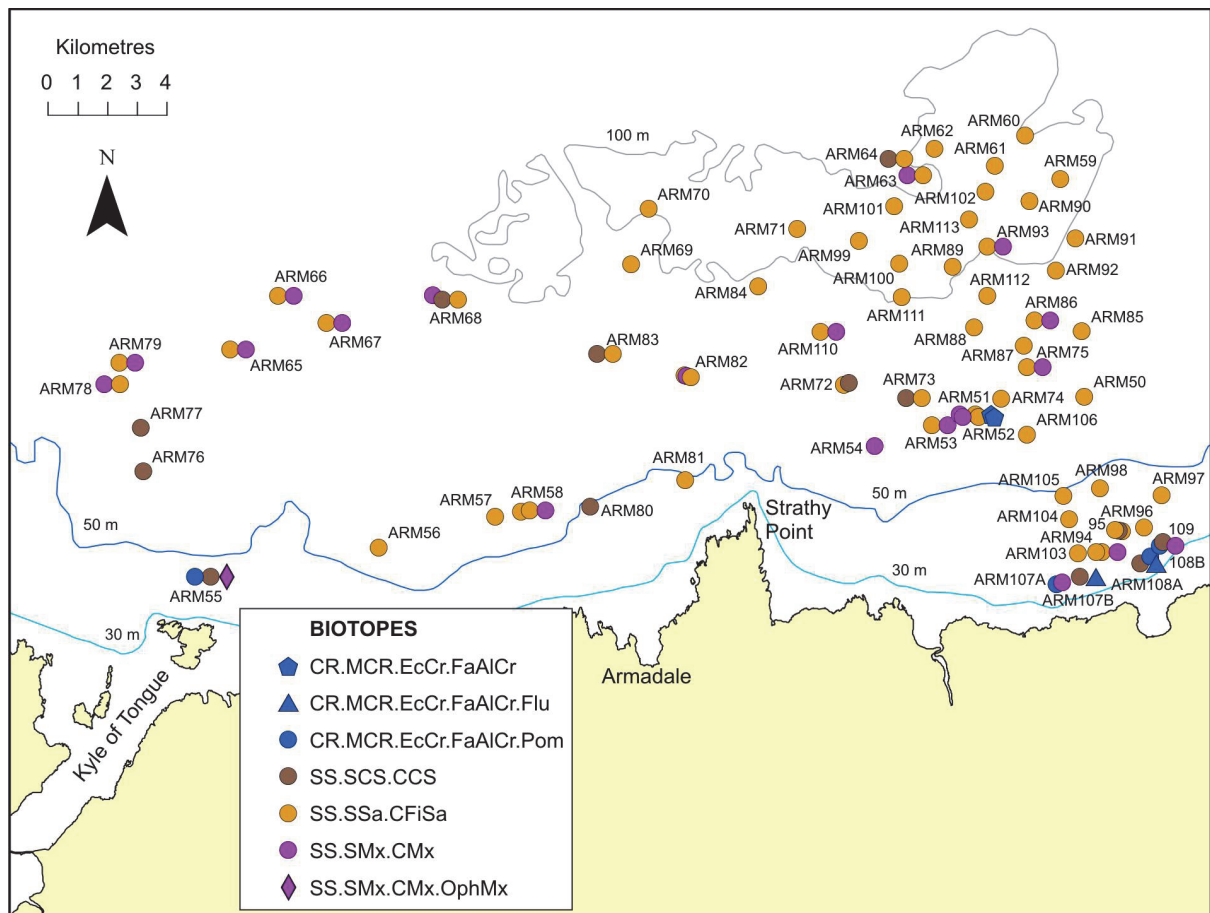
Examples of scattered algae on sediments were recorded at five sites and were tentatively assigned to **SS.SMp.KSwSS.LsacR** biotopes. Off Stattic Point and to the west of Isle Martin algal abundance was atypically low, although this may be related to the winter timing of the survey. Only at the mouth of Loch Ewe were algae found to be common, attached to pebbles, cobbles and boulders on coarse sand (**.LsacR.CbPb**).

3.4 Armadale (Figure 5)

The strongly dominant habitat type throughout the survey area was rippled fine sand, which was recorded over a very wide depth range of 42 - 115 m (**SS.SSa.CFiSa**). The nature of the sand varied with depth, with clean, well-rippled, coarser sand present in shallower water and finer, slightly silty, less distinctly rippled sand in deeper water. The visible fauna was generally sparse, although scattered stones and shells provided a substrate for *Alcyonium digitatum* and patches of hydroids. The motile fauna was dominated numerically by hermit crabs, which were accompanied by occasional flatfish, dogfish, rays and dragonets. The infauna became more conspicuous in the deeper, siltier sediments and was represented by emergent tubes, polychaete casts and bivalve siphons, most of which resembled those of *Arctica islandica*, whose empty shells were widely distributed on the sediment surface. Some of these deeper stations (beyond 70 m) could possibly be alternatively attributed to **SS.SSa.OSa** (see section 3.9 for a similar difficulty in biotope ascription for the east coast sites). Coarse sand was also widely recorded over the survey area from 42 - 98 m in the form of waves with coarser material, including shell and stones, concentrated in the troughs (**SS.SCS.CCS**). At several sites the video runs traversed alternating bands of coarse sand waves and rippled fine sand.

Rocky reef habitats were recognised chiefly in shallow water (35 - 44 m depth, with a single record in 69 m) in the form of boulders and cobbles encrusted with bryozoans, pink coralline algae and dense *Spirobranchus* (**CR.MCR.EcCr.FaAICr.Pom**), in places accompanied by dense *Flustra foliacea* (**CR.MCR.EcCr.FaAICr.Flu**). The higher biotope **CR.MCR.EcCr.FaAICr** was assigned to two runs (ARM51 and ARM52) where only short clips sampled from the full video runs were available.

Mixed substrates consisting of varying proportions of scattered stones (including gravel, pebbles, cobbles and boulders) and shell material on sand were widely recorded from 41 - 93 m. These have been assigned to the biotope **SS.SMx.CMx**, although there is a gradual gradation from sedimentary habitats to dense cobbles and boulders, and so biotope boundaries are difficult to delineate. The stones supported a similar fauna to that of the reef biotopes, although there was a greater proportion of scour-tolerant forms, such as *Urticina felina*, *Polymastia boletiformis* and *Flustra foliacea*.



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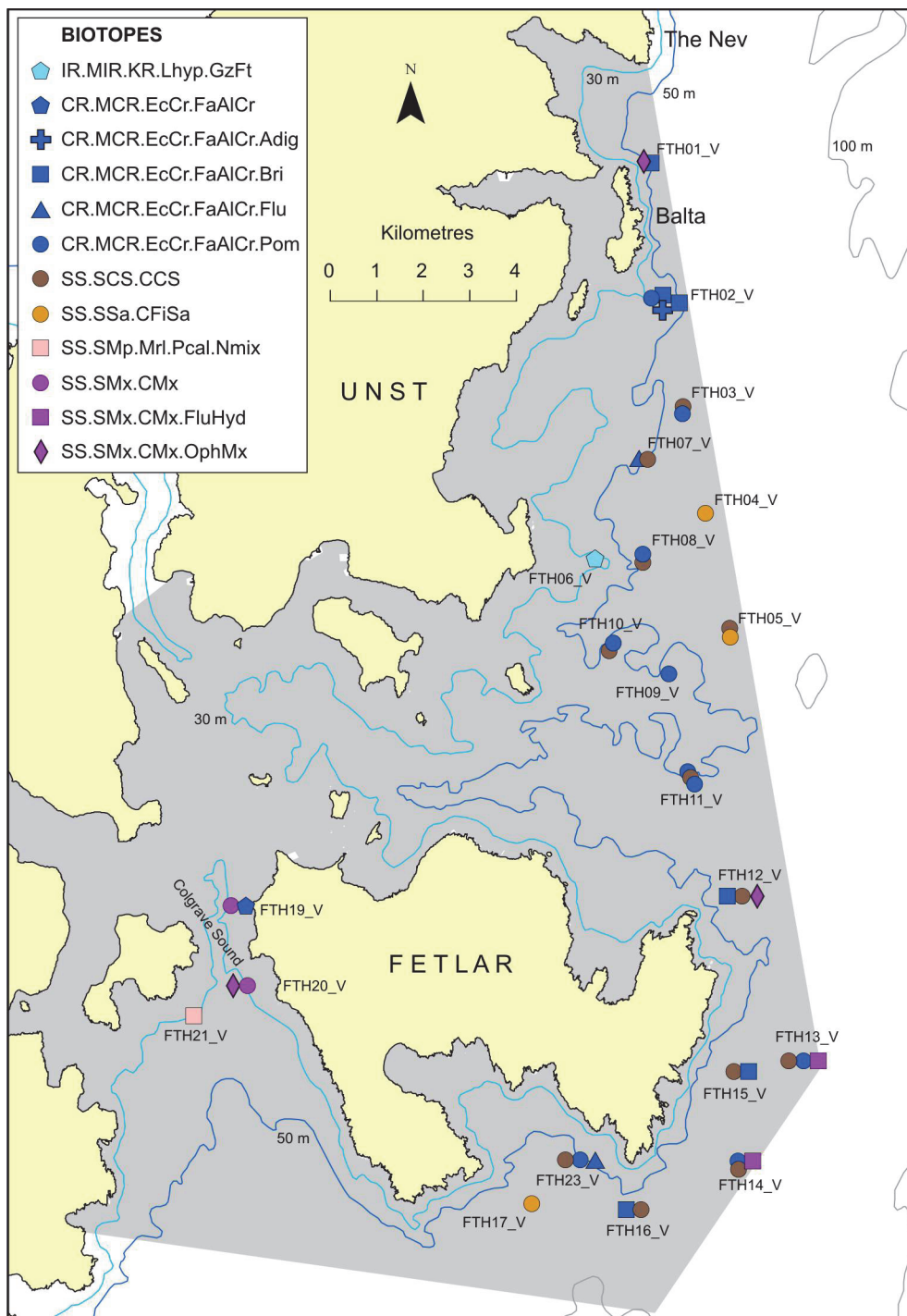
Figure 5. Distribution of biotope records off Armadale.

3.5 Fetlar to Haroldswick (Figure 6)

The seabed of most of the surveyed area, to the north, east and west of Fetlar, consisted of coarse sand and bedrock, with both habitats often present at the same sites. Coarse sands were recorded over a depth range of 48 - 87 m, generally formed into waves, and exhibiting little visibly discernible life (**SS.SCS.CCS**). Areas of rocky reef were recorded over a similar depth range of 38 - 86 m and supported faunal, and in shallower waters, algal crusts, dominated by pink coralline algae, *Spirobranchus* spp. and *Parasmittina trispinosa* with a motile fauna principally of the echinoderms *Echinus esculentus*, *Stichastrella rosea*, *Luidia ciliaris*, *Porania pulvillus* and *Crossaster papposus*. All reefs were ascribed to the biotope complex **CR.MCR.EcCr.FaAlCr**, with most sites exhibiting abundant *Spirobranchus* spp. (**CR.MCR.EcCr.FaAlCr.Pom**). Dense ophiuroids coated the reefs to the east of Fetlar and Balta (**CR.MCR.EcCr.FaAlCr.Bri**), with dense *Alcyonium digitatum* also being recorded at this latter location (**CR.MCR.EcCr.FaAlCr.Adig**). *Flustra foliacea* characterised sand-scoured reefs at two locations (**CR.MCR.EcCr.FaAlCr.Flu**) and mixed substrates of scattered stones on sand at a further two locations to the east of Fetlar (**SS.SMx.CMx.FluHyd**). A single specimen of ling (*Molva molva*) was tentatively recorded at one of the reef sites to the east of Fetlar. Rippled fine sand with little life visible was recorded at two sites in deep water (71 - 91 m) in the northern region of the surveyed area between Fetlar and Balta (**SS.SSa.CFiSa**).

The two video runs in Colgrave Sound traversed mostly mixed substrates of pebbles and gravel on sand (**SS.SMx.CMx**), supporting dense ophiuroids for much of the run at one of

the sites (**SS.SMx.CMx.OphMx**). Site FTH21_V in the southern approach to Colgrave Sound exhibited a rich example of a deep maerl bed (30 - 32 m), with dense live maerl concentrated in the troughs of coarse sediment waves (**SS.SMp.Mrl.Pcal.Nmix**).

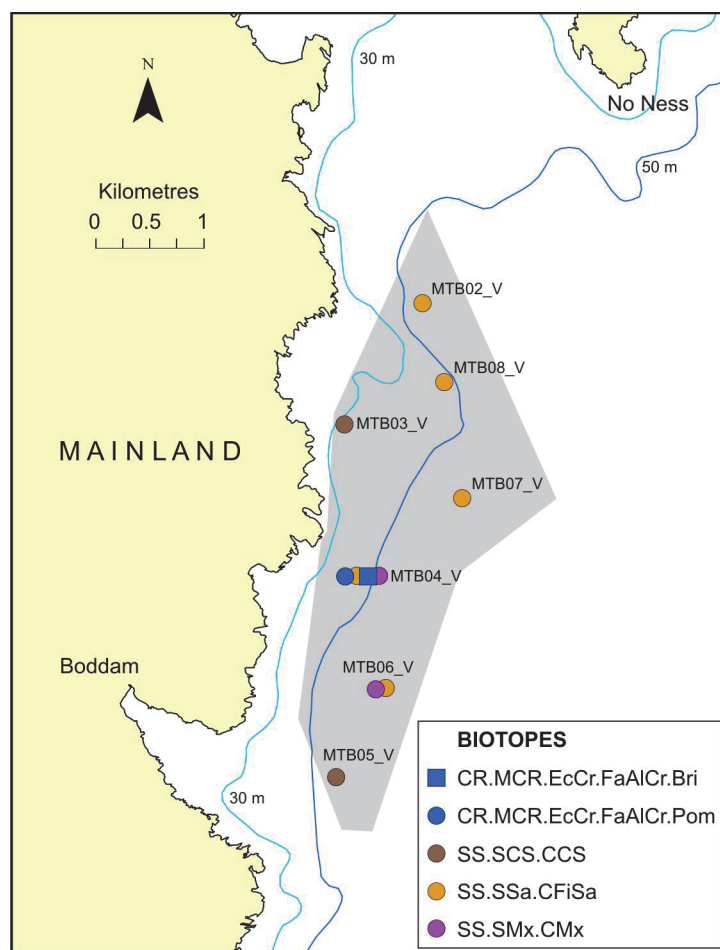


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Figure 6. Distribution of biotope records off Fetlar, Shetland Islands. Grey area indicates extent of the Fetlar to Haroldswick MPA.

3.6 Mousa to Boddam (Figure 7)

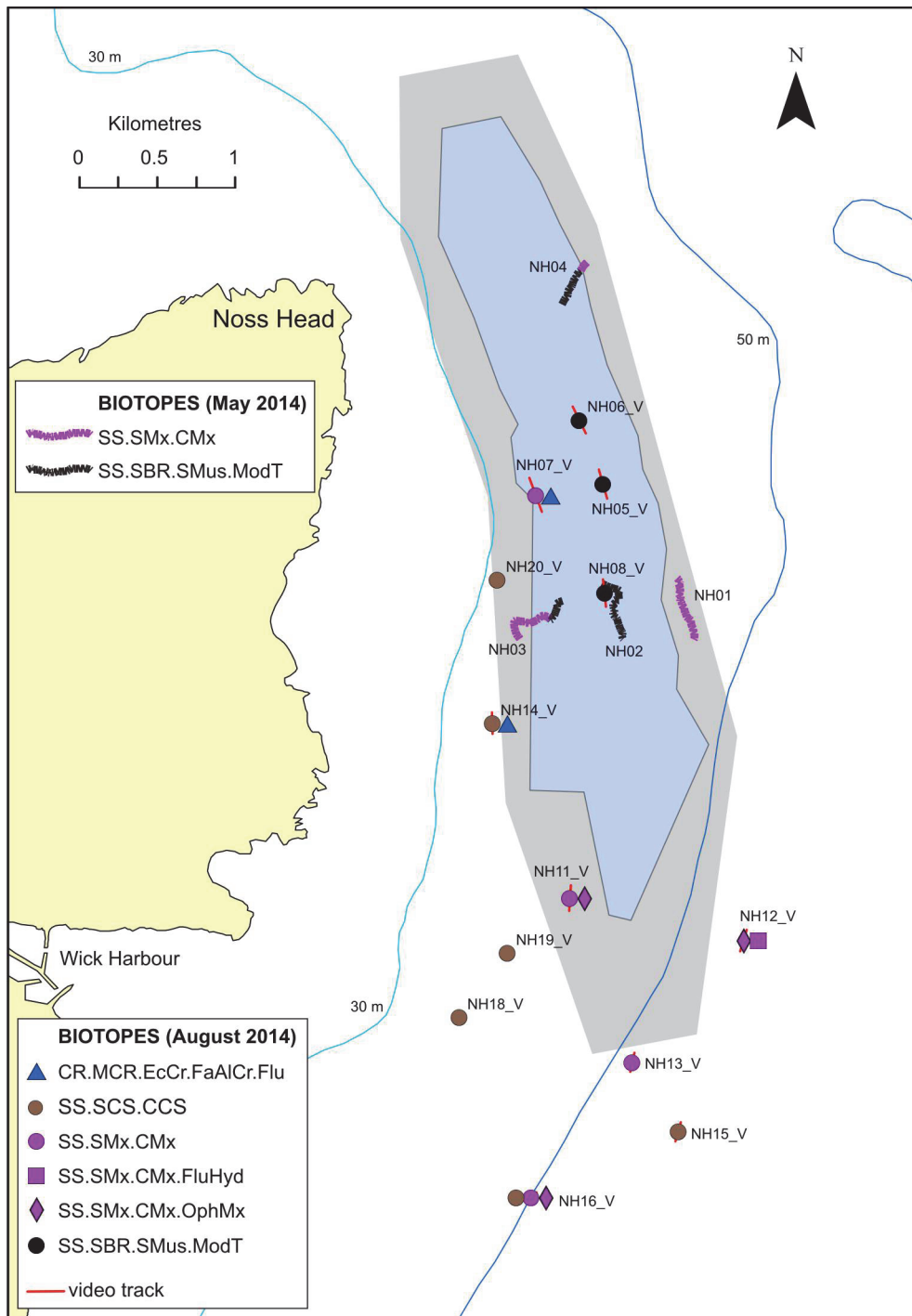
Sandy sediments dominated the area, with shelly fine-medium sand, faintly rippled in places, being recorded at most sites at depths of 45 - 66 m. These records have been assigned to **SS.SSa.CFiSa**, although infaunal and granulometric data would be necessary for confirmation of this ascription. Little evidence of life was discernible, apart from small holes and emergent infaunal tubes and occasional cephalopods. At two of these sites scattered gravel, pebbles and cobbles on the sand were sufficiently dense to recognise the biotope **SS.SMx.CMx**. Stones were encrusted with serpulid worms and supported sparse *Alcyonium digitatum*. At one of these sites (MTB04_V) there was also a patch of sand-scoured bedrock encrusted with pink coralline algae, *Parasmittina trispinosa* and dense *Spirobranchus* spp. (**CR.MCR.EcCr.FaAlCr.Pom**), with abundant *Ophiocomina nigra* locally (**CR.MCR.EcCr.FaAlCr.Bri**). Coarse sand was recorded at two sites, together with shell gravel at at least one of them (**SS.SCS.CCS**). The fauna included hermit crabs and frequent flatfish at one of the sites. No PMFs were recorded.



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Figure 7. Distribution of biotope records off Boddam, Shetland Islands. Grey area indicates extent of the southern section of the Mousa to Boddam MPA.

3.7 Noss Head (Figure 8)



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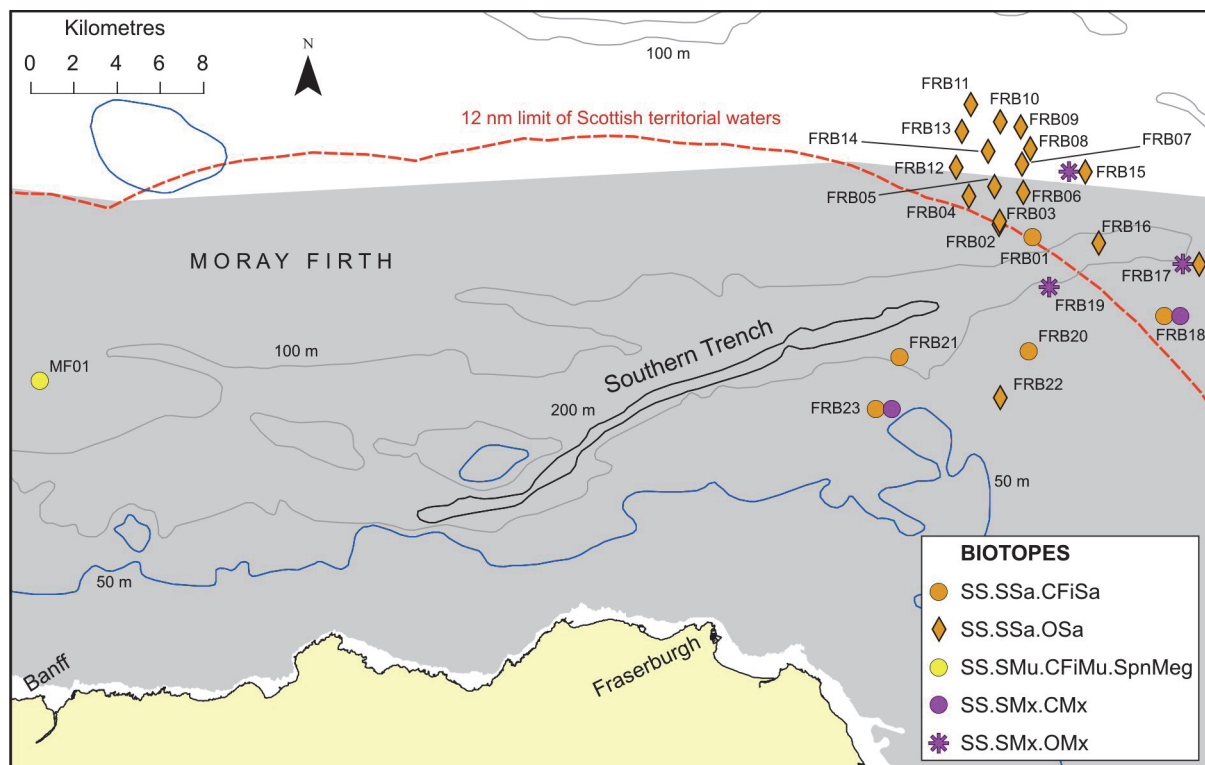
Figure 8. Distribution of biotope records from two surveys off Noss Head. Tracks colour-coded for biotopes for the markedly longer May survey video runs. Grey area indicates extent of the Noss Head MPA and blue polygon extent of the *Modiolus* bed based on video and multibeam surveys (from Hirst et al., 2012).

Six of the 17 video runs traversed a seabed of abundant - superabundant live *Modiolus modiolus* at depths of 41 - 46 m supporting a dense hydroid turf and a motile fauna dominated by large numbers of *Echinus esculentus*, *Asterias rubens* and *Ophiothrix fragilis*

(**SS.SBR.SMus.ModT**). All of these sites lay within the Noss Head MPA boundary and within the mapped extent of the *Modiolus* bed based on previous video and multibeam surveys (Hirst *et al.*, 2012). Two video runs traversed the eastern and western boundaries of the bed. At NH04 the recorded position of the boundary coincided (within c. 10 m) with the presumed boundary, whereas at NH03 the recorded position was around 120 m inside the presumed boundary. Here there was a very sharp transition to a raised bank of very dense live mussels. Sites just outside the bed boundary mostly displayed sediments of *Modiolus* shell material with gravel and sand supporting a considerably sparser epibiota (**SS.SMx.CMx**), except off the southern end of the bed, where dense ophiuroids were observed (**SS.SMx.CMx.OphMx**) and scattered stones supported a hydroid/bryozoan turf (**SS.SMx.CMx.FluHyd**). Coarse sand and gravel sediments, locally formed into waves, were recorded at five sites inshore of and to the south of the *Modiolus* bed at depths of 31 - 60 m (**SS.SCS.CCS**). The sparse visible fauna included scattered tufts of hydroids and bryozoans including *Flustra foliacea*. Patches of scoured bedrock and boulders were noted at two sites supporting patchy turfs of hydroids and bryozoans, including *F. foliacea* at least at one of the sites (**CR.MCR.EcCr.FaAlCr.Flu**).

3.8 Moray Firth (Figure 9)

A single site was examined in the Moray Firth, 15 km north of Banff. The muddy sediment at a depth of 79 - 85 m was perforated by small holes and burrows, including possibly those of thalassinidean shrimps and has been tentatively assigned to the biotope **SS.SMu.CFiMu.SpMmeg**.



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Figure 9. Distribution of biotope records in the Moray Firth and off Fraserburgh. Grey area indicates extent of the Southern Trench MPA proposal.

3.9 Note on distinguishing North Sea sandy biotopes

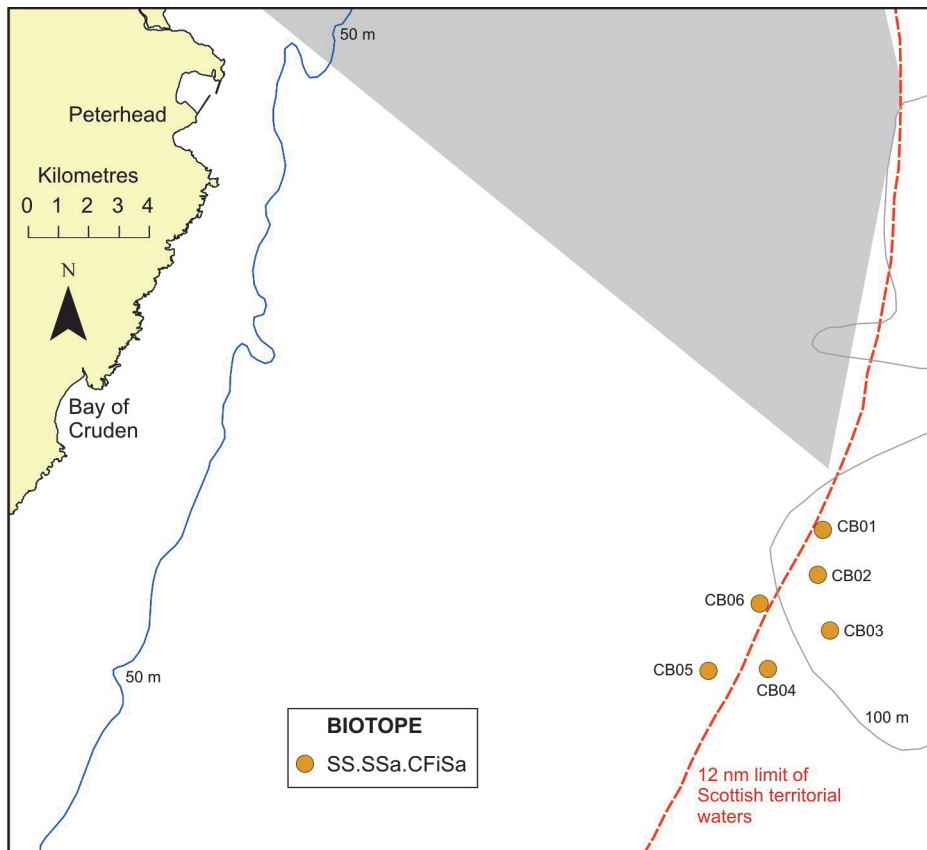
The sites examined off the east coast of Scotland at Fraserburgh, Cruden Bay and Kincardine ranged in depth between 21 and 135 m and were very largely composed of fine sand. The distinction between circalittoral and offshore sandy sediments is determined principally by the depth of the wave base, with identification of component biotopes based on mud content and infaunal composition. The lack of data on these aspects made ascription of sites to biotopes difficult, permitting at best the adoption of higher biotope classes, although even these are generally tentative. Shallower, well-rippled sands exhibiting characteristic symmetrical and sharp-crested, wave-induced ripple morphologies have been ascribed to **SS.SSa.CFiSa**. This biotope is characterised by clean sands, although sands with a sparse, patchy cover of silt (often just in the ripple troughs) have also been assigned to the biotope. Shallow, significantly more silty, circalittoral sediments, generally with subdued or absent rippling, have been assigned to **SS.SSa.CMuSa**. The distinction between **SS.SSa.CFiSa** and **SS.SSa.OSa** was found to be particularly difficult, as rippled sands were encountered to a depth of 135 m and the relative importance of wave action in ripple formation was generally unclear, resulting in part from the often poor visibility. Well-rippled sandy sediments with little or no silt content have been assigned to **SS.SSa.CFiSa** (which has been reported as extending to 140 m in British waters by Connor *et al.*, (2004)) whereas silty sediments displaying no or slight rippling at depths of over 70 m have been ascribed to **SS.SSa.OSa**. These latter sediments generally show more evidence of the infaunal community in the form of casts, emergent tubes and small holes. Although a degree of correlation was apparent between depth and biotope allocation, **SS.SSa.CFiSa** was recorded as deep as 110 m and **SS.SSa.OSa** as shallow as 72 m. **SS.SSa.CFiSa** was found to extend deeper than predicted by the EUNIS seabed habitat model for this region of the North Sea (EMODnet, 2015).

3.10 Fraserburgh (Figure 9)

The seabed in this region was composed predominantly of fine sand. The more southerly inshore sites (ranging mostly from 52 - 84 m depth, but with one site at 110 m) exhibited relatively clean, rippled, fine sand (**SS.SSa.CFiSa**). Scattered stones, dense in places and constituting the biotope, **SS.SMx.CMx**, supported a sessile fauna of large anemones including *Urticina* sp. and possibly *Bolocera tuediae*, as well as *Alcyonium digitatum*, *Alcyonidium diaphanum*, hydroids and *Flustra foliacea*. The more northerly offshore sites tended to be deeper (74 - 135 m) and the sand siltier, with rippling absent or slight. Scattered stones supported a similar sessile fauna to that of the inshore sites, with the sediment exhibiting infaunal holes and emergent tubes, as well as sparse *Pennatula phosphorea* at some sites (**SS.SSa.OSa**). Patches of mixed substrate here, consisting of silty sand with gravel, pebbles, cobbles and boulders, have been assigned to **SS.SMx.OMx**.

3.11 Cruden Bay (Figure 10)

Six sites were examined 23 km east of Cruden Bay, which is located just south of Peterhead. The sediments at depths of 97 - 108 m were all rippled fine sands with a slight silt content supporting a sparse visible fauna including occasional flatfish and echinoderms such as *Luidia ciliaris*. All sites have been assigned to **SS.SSa.CFiSa**, although they also show affinity with **SS.SSa.OSa**.



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Figure 10. Distribution of biotope records off the Bay of Cruden. Grey area indicates extent of the Southern Trench MPA proposal.

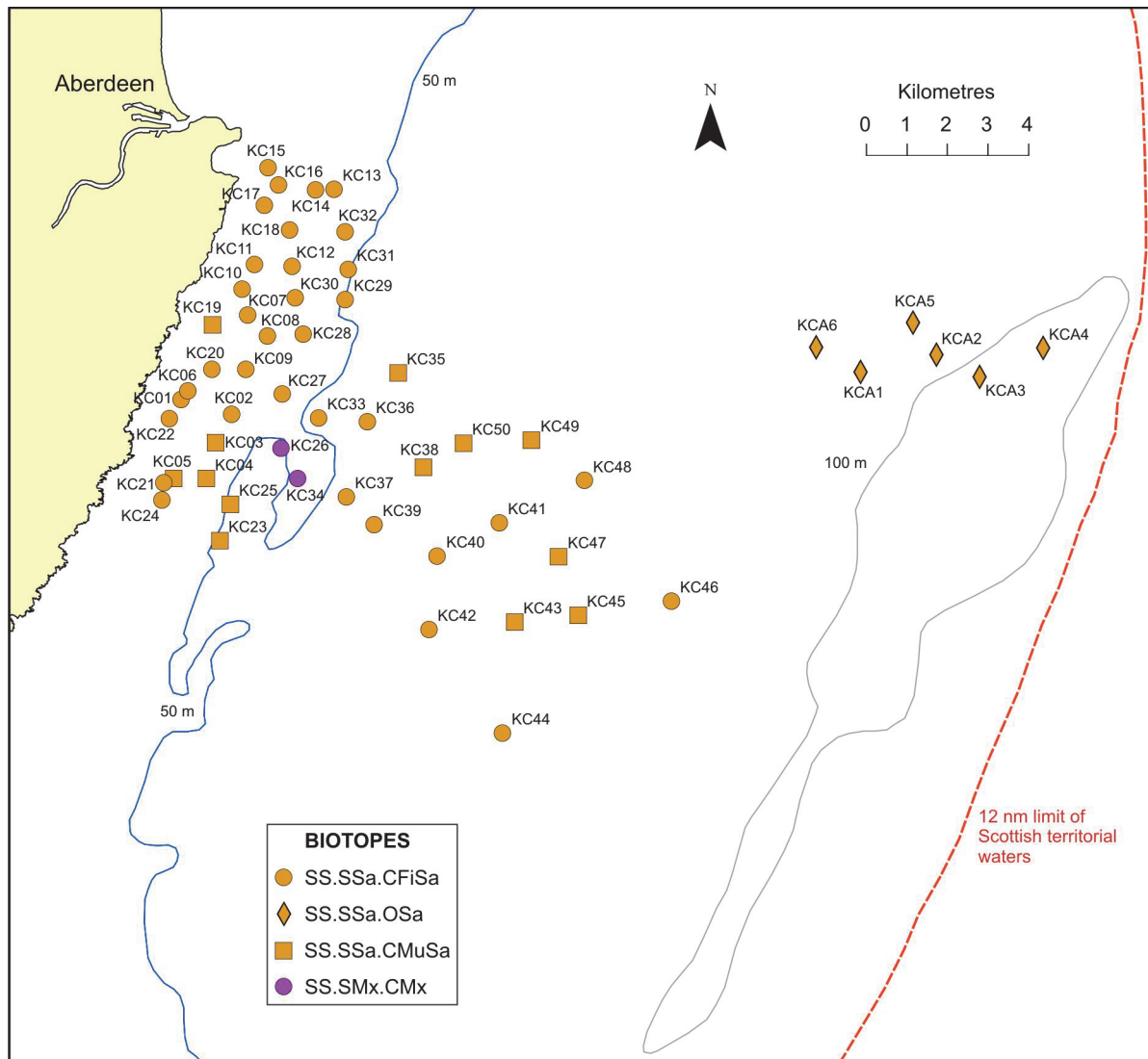
3.12 Kincardine (Figure 11)

Two areas were surveyed east of Aberdeen, with an offshore grouping of six sites (KCA1-6) and an inner, widely spread array of 50 sites (KC01-50). The outer six sites at depths of 92 - 126 m displayed sediments of silty, flat or slightly rippled fine sand with scattered spatangid tests and many small burrows, possibly those of spatangids. The epibiotic fauna included anemones including *Urticina* sp, as well as *Alcyonium digitatum*, clumps of hydroids and *Flustra foliacea*, and motile forms including the echinoderms *Astropecten irregularis*, *Asterias rubens* and *Luidia ciliaris*, and occasional flatfish (**SS.SSa.OSa**).

Most of the 50 inshore sites displayed sediments of rippled, clean fine sand, or with a slight silt content in the form of concentrations of silt material in ripple troughs or a light, patchy dusting on apparently clean sand. This habitat was recorded from 21 to 69 m depth (**SS.SSa.CFiSa**). Scattered cobbles and boulders provided substrates for a similar sessile epibiotic community to that of the outer sites. Occasional *Luidia ciliaris* and flatfish were recorded at several sites, but the most conspicuous motile element of the community was *Asterias rubens*, which was present at high density at several of the shallower sites.

Scattered amongst the clean sand sites were clusters of sites displaying silty fine sand sediments with generally little or no rippling. These have been assigned to the biotope **SS.SSa.CMuSa**, although the distinction between these and the sites referred to **SS.SSa.CFiSa** was in several cases not clear-cut. The visible fauna was very similar to that of the **SS.SSa.CFiSa** sites. Although scattered cobbles and boulders were widely distributed on sandy sediments amongst the inshore 50 sites, mixed gravelly sediments with

cobbles and boulders were recorded at two adjacent sites. One of the sites (KC26) harboured a similar epibiotic fauna to that present elsewhere, but the high density of boulders and cobbles at the other site (KC34) provided support for a dense field of *Alcyonium digitatum* and a habitat for large numbers of *Echinus esculentus* and *Munida rugosa*. Both these sites have been assigned to the biotope **SS.SMx.CMx**, although the latter site is also close to **CR.MCR.EcCr.FaAlCr.Adig** in places. No PMFs were recorded during the Kincardine surveys.



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Figure 11. Distribution of biotope records off Kincardine (Aberdeen).

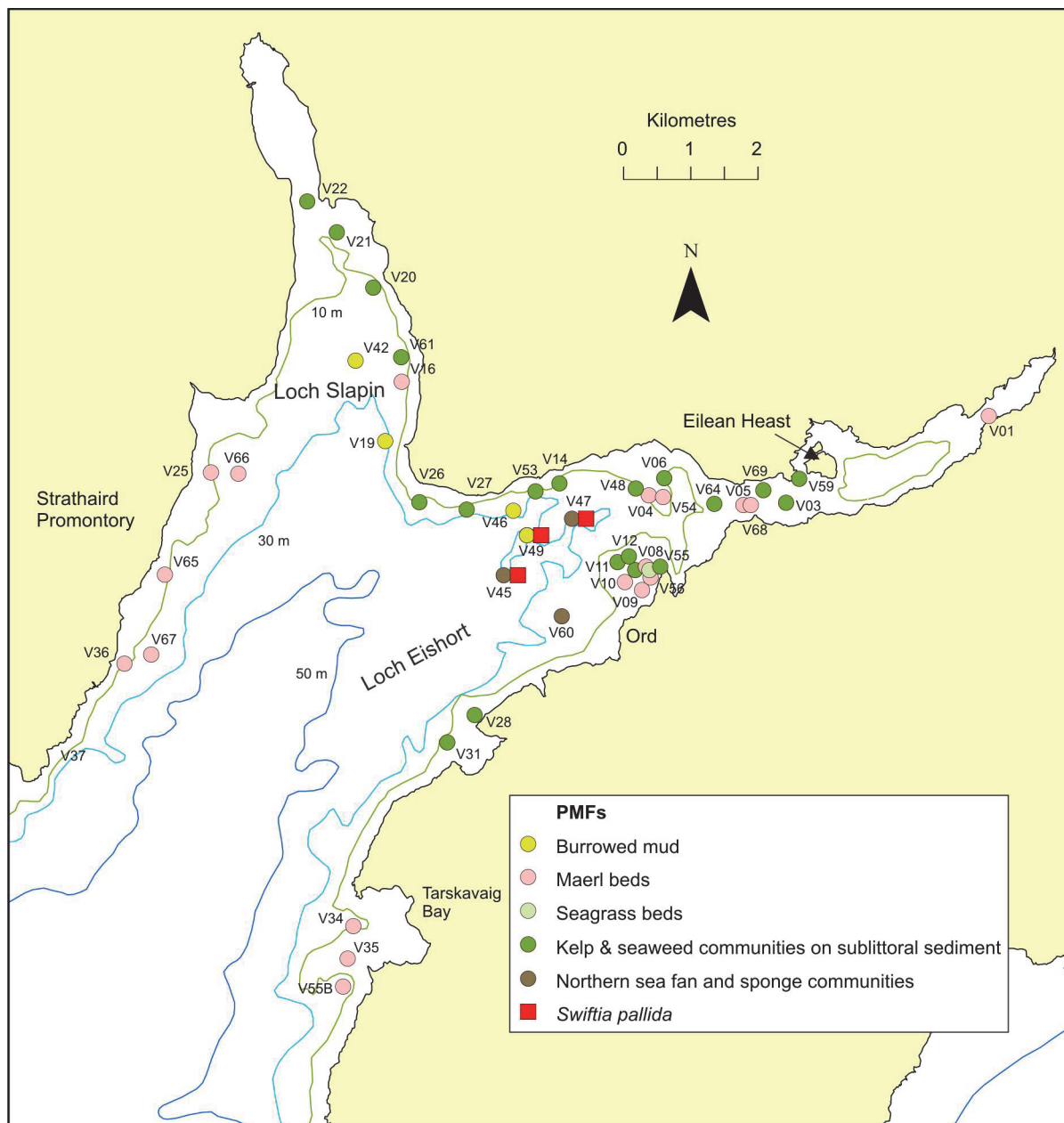
4. DISCUSSION

Table 2. Species and biotopes recorded during the surveys of recognised conservation importance and their frequency of occurrence in each survey location. Importance indicators are SBL = Scottish Biodiversity List of Habitats and Species, Osp = OSPAR List of Threatened and/or Declining Species and Habitats, IUCN = IUCN Red List of Threatened Species, PMF = Priority Marine Feature, SF = MPA Search Feature, PF = Protected Feature. Frequencies in red indicate PF survey locations. See Table 1 for survey area codes.

Biotope/species	Importance indicators						Survey area code										
	SBL	Osp	IUCN	PMF	SF	PF	SSSL	LA	WES	ARM	FTH	MTB	NH	MF	FRB	CB	KC
IR.MIR.KR.LhypTX.Ft	•			•	•			2									
CR.MCR.EcCr.CarSwi.LgAs	•			•	•		4										
<i>Swiftia pallida</i>	•			•	•		3										
SS.SMu.CFiMu.SpnMeg	•	•		•	•	•	4	5	6					1			
SS.SMu.CFiMu.SpnMeg.Fun	•	•		•	•	•		6	3								
<i>Funiculina quadrangularis</i>	•			•	•	•		6	3								
<i>Pachycerianthus multiplicatus</i>	•			•	•	•			1								
SS.SMx.IMx.Lim	•			•	•	•		5									
SS.SMp.Mrl.Pcal	•	•		•	•	•	3		4								
SS.SMp.Mrl.Pcal.R	•	•		•	•	•	9	1	5								
SS.SMp.Mrl.Pcal.Nmix	•	•		•	•	•	6		9		1						
SS.SMp.KSwSS	•			•	•	•	1	2									
SS.SMp.KSwSS.LsacR	•			•	•	•	2		1								
SS.SMp.KSwSS.LsacR.CbPb	•			•	•	•			1								
SS.SMp.KSwSS.LsacR.Gv	•			•	•	•	7		1								
SS.SMp.KSwSS.LsacR.Sa	•			•	•	•	8	2	2								
SS.SMp.KSwSS.Pcri	•			•	•		2										
SS.SMp.SSgr.Zmar	•			•	•		1										
SS.SBR.SMus.ModT	•	•		•	•	•							6				
<i>Leptometra celtica?</i>				•				1	1								
<i>Leptometra celtica</i> agg.?				•	•	•			1								
<i>Arctica islandica?</i>		•		•						17							
<i>Molva molva?</i>	•			•							1						
SS.SSa.CMuSa	•					•	4	7	4								13
SS.SSa.OSa	•														17		6
SS.SMx.OMx	•														3		
SS.SCS.ICS	•							1	6								
SS.SCS.CCS	•					•	1		8	13	12	2	6				
SS.SCS.CCS.PomB	•								3								
SS.SSa.IFiSa	•						1		2								
SS.SSa.CFiSa	•					•			1	56	3	5			5	6	35
SS.SMu.CSaMu	•						1	1									
SS.SMx.CMx.FluHyd	•										2		1				
SS.SMx.CMx.OphMx	•							4		1	3		3				
<i>Phymatolithon calcareum</i>	•						20	1			1						
<i>Echinus esculentus</i>			•				12	19	41	9	19	1	13		2		1

This section considers the conservation importance of the species and habitats encountered during the surveys, while also providing a summary appraisal of the distribution of PFs and any other PMFs. The conservation importance of species and habitats and their occurrence in each of the survey locations is summarised in Table 2. A number of biotopes listed in the lower part of the table fall within broad habitat types included in the Scottish Biodiversity List (Scottish Government, 2013) but are generally of wide occurrence.

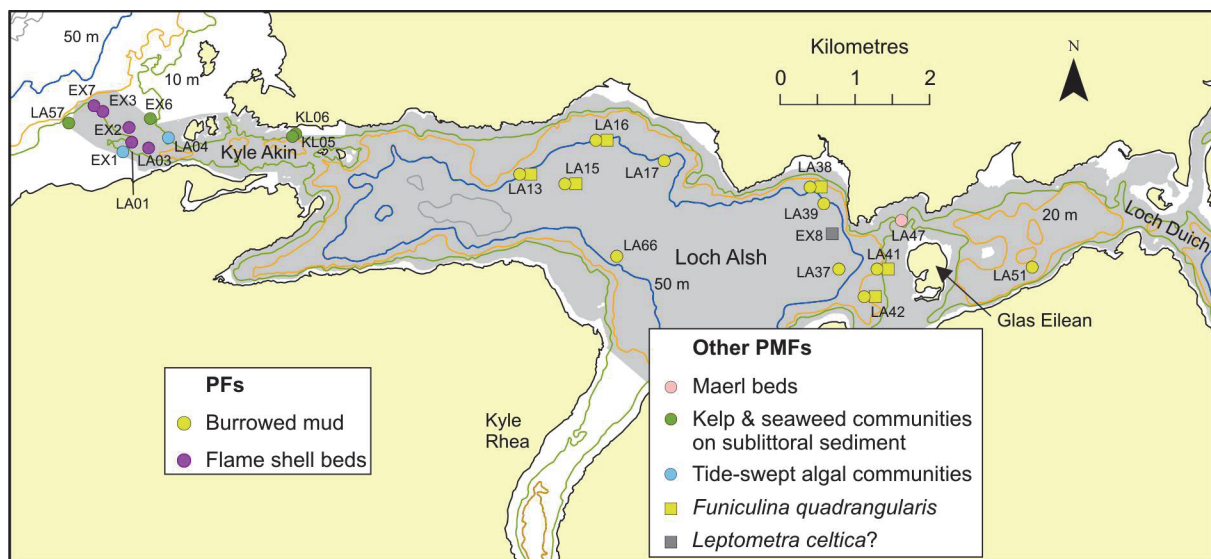
Only one non-PMF species, *Echinus esculentus*, has been afforded any formal conservation status, being included on the IUCN Red List of Threatened Species as a near-threatened species (IUCN, 2014). However, *Echinus esculentus* was widely recorded, reflecting its healthy status in Scottish waters.



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Figure 12. Distribution of PMF records in the South Skye sea lochs.

Eleven PMF biotopes were observed within the Loch Eishort/Slapin system (Figure 12). Maerl was widely distributed with three biotopes recorded: **SS.SMp.Mrl.Pcal**, **Mrl.Pcal.R** and **Mrl.Pcal.Nmix**, with rich examples of live maerl in the case of the first two. A patchy eelgrass bed (**SS.SMp.SSgr.Zmar**) was also recorded on dead maerl at one site. However, the most widely recorded PMF within the study area was kelp and seaweed communities on sublittoral sediment, represented by the biotopes, **SS.SMp.KSwSS**, **KSwSS.LsacR**, **KSwSS.LsacR.Sa**, **KSwSS.LsacR.Gv** and **KSwSS.Pcri**. Although the video quality made discernment of detail difficult, these habitats gave the appearance of relatively low diversity. Burrowed mud (**SS.SMu.CFiMu.SpnMeg**), generally with a moderately rich megafaunal burrowing community but fairly sparse sea pens, was recorded at four sites, although the survey did not cover the extensive deeper areas of the loch system, where this PMF might be expected to occur. Loch Eishort was found to contain some fairly poor examples of the northern sea fan and sponge community PMF biotope, **CR.MCR.EcCr.CarSwi.LgAs**, with the component species, *Swiftia pallida*, present at low density at three sites.



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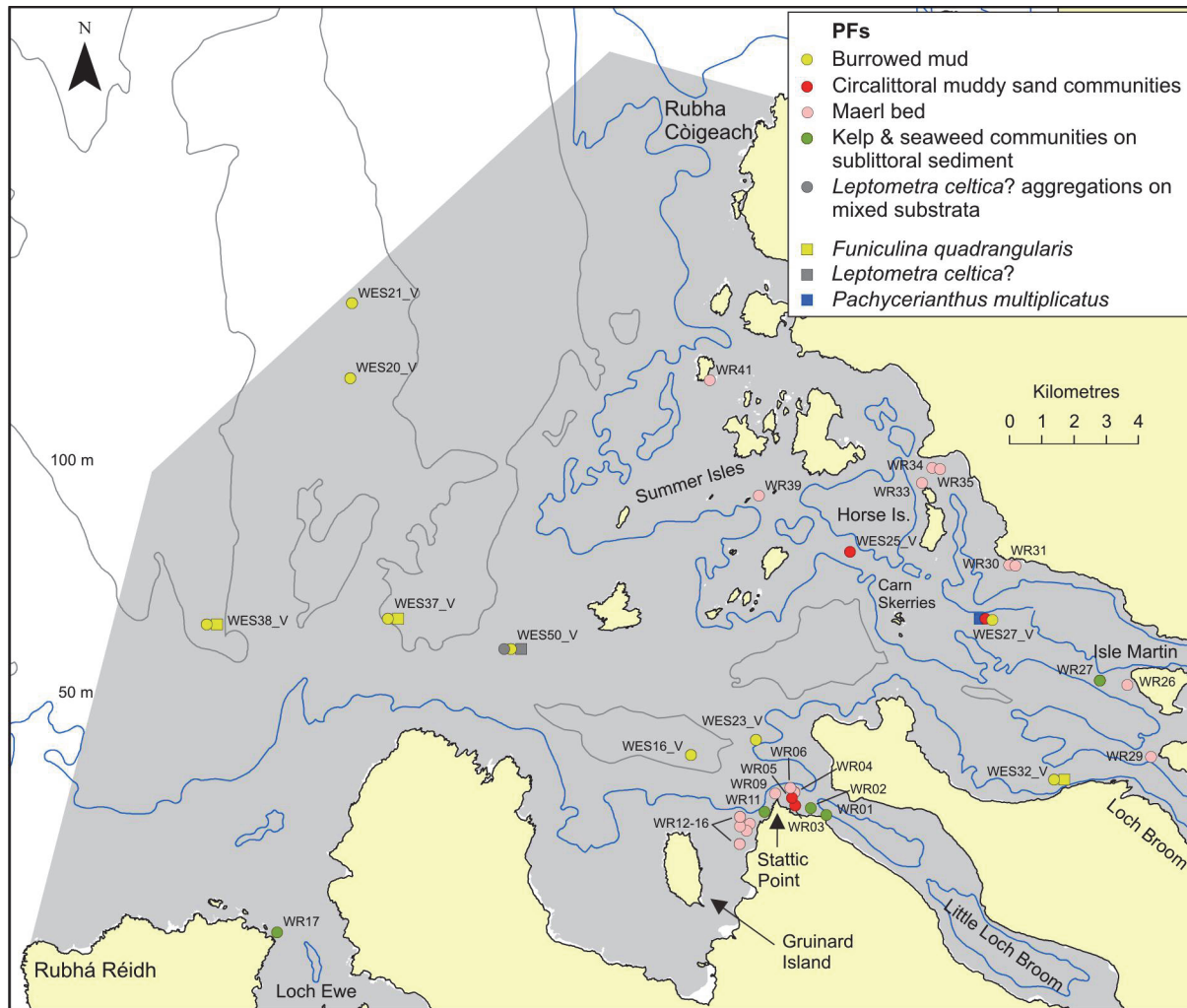
Figure 13. Distribution of protected feature (PF) and other PMF records in Loch Alsh. Grey area indicates extent of Lochs Duich, Long and Alsh MPA.

Seven PMF biotopes and one (possibly two) PMF species were recorded during the Loch Alsh survey (Figure 13). Although pockets of burrowed mud were found (**SS.SMu.CFiMu.SpnMeg** and **SS.SMu.CFiMu.SpnMeg.Fun**), they were not good examples of the type, with lower densities of megafaunal burrowers and sea pens (including *Funiculina quadrangularis*), than can be found, for example, in Loch Duich (Moore *et al.*, 2013). Burrowed mud and flame shell *Limaria hians* beds are designated as protected features within the Lochs Duich, Long and Alsh MPA. The 2014 video survey extended the western boundary of the Kyle Akin *Limaria* bed by around one kilometre. Two kelp PMF habitats were also recorded here in the western approaches to Kyle Akin, **IR.MIR.KR.LhypTX.Ft** in tide-swept conditions and **SS.SMp.KSwSS.LsacR.Sa** in areas of weaker currents; however, the latter was a poor representation of the type, with low epibiotic abundance and diversity. **SS.SMp.KSwSS** was also recorded at two adjacent sites off the north shore of Kyle Akin, although they may represent examples of the non-PMF biotope **KSwSS.Tra**.

A maerl bed with a relatively high level of living maerl material was recorded north of Glas Eilean. This appeared to support a low diversity epibiotic community but this may be a

consequence of the survey being carried out early in the algal growth season. However, an MNCR survey here in 1988 also recorded a relatively low level of diversity here (Connor, 1989).

Crinoids were widely recorded in Loch Alsh but the quality of the imagery frustrated specific identification. However, at one non-burrowed mud site (**SS.SMu.CFiMu**) some of the specimens appeared to be the PMF species, *Leptometra celtica*, and this may have been more widely distributed.



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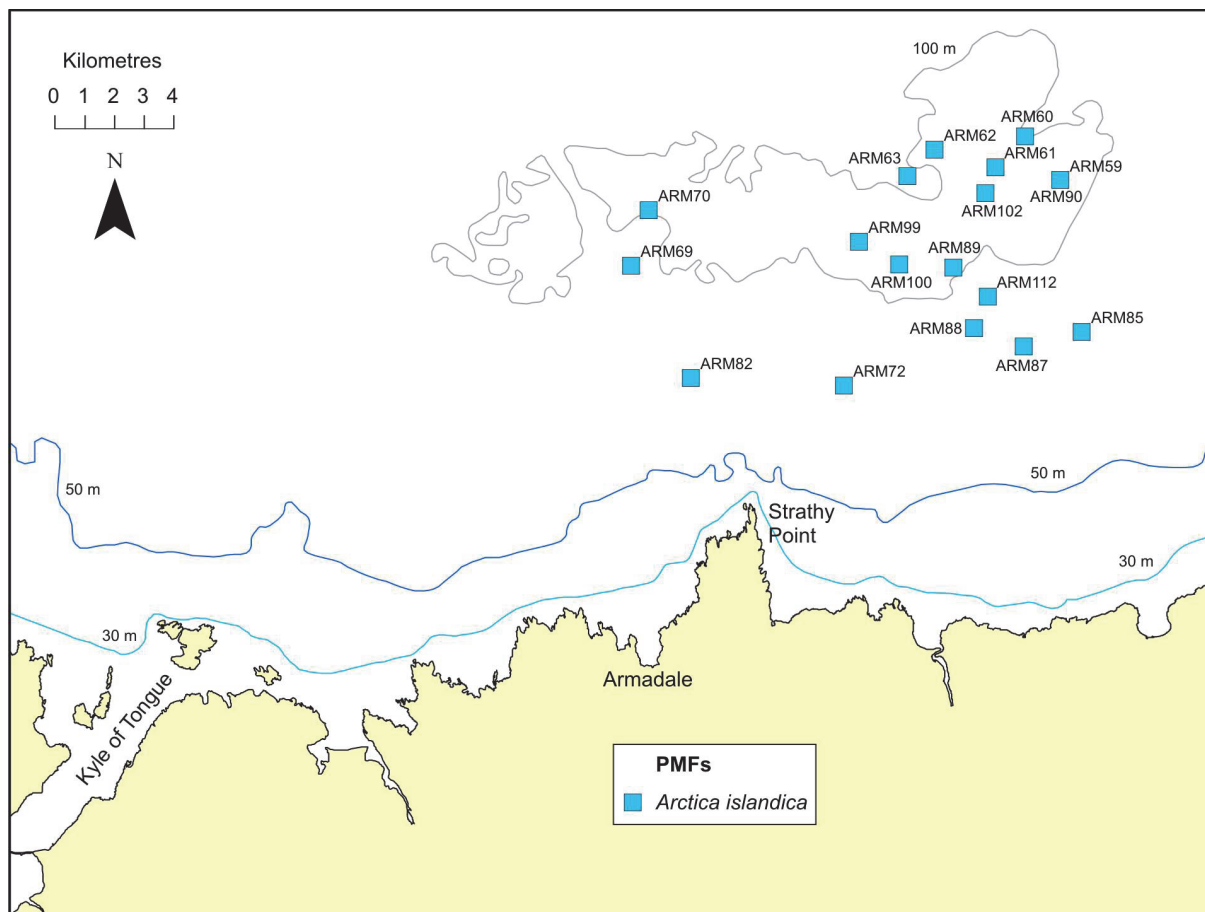
Figure 14. Distribution of protected feature (PF) records off Wester Ross. Grey area indicates extent of the Wester Ross MPA.

The 77 sites surveyed within the Wester Ross MPA included three PMF / PF habitats. Burrowed mud was recorded at nine sites spread widely over the MPA, largely in the form of **SS.SMu.CFiMu.SpNMeg**. **SS.SMu.CFiMu.SpNMeg.Fun**, with its component PMF species *Funiculina quadrangularis*, was present at three of the sites (Figure 14). Maerl beds (including the biotopes **SS.SMp.Mri.Pcal**, **Pcal.R** and **Pcal.NMix**) were recorded at 18 sites, with extensive development of the habitat around Statlic Point and scattered beds from the Summer Isles to the mouth of Loch Broom. Kelp and seaweed communities on sublittoral sediment were observed at five sites around Statlic Point, in the mouth of Loch Ewe and off Isle Martin, in the form of **SS.SMp.KSwSS.LsacR**, **LsacR.CbPb**, **LsacR.Gv** and **LsacR.Sa**. Other PMF species recorded included *Pachycerianthus multiplicatus* and almost certainly

Leptometra celtica, both at single sites. The aggregation of *L. celtica* observed also constitutes an example of the MPA search feature and is also, together with the three PMF habitats and four records of **SS.SSa.CMuSa**, an MPA protected feature.

Off Armadale the widespread presence of the dead shells of *Arctica islandica* and the recording of siphons bearing a close similarity with that of the species at 17 of the 64 video sites is indicative of the widespread presence of this PMF species (Figure 15). It was recorded in the finer, siltier sediments in deeper water (77 - 116 m), where the siphons were often common. This was the only PMF observed off Armadale.

All video survey sites off the north-east of the Shetland Islands lay within the Fetlar to Haroldswick MPA, where the protected features include circalittoral sand and coarse sediment communities and maerl beds. Examples of the sand feature were widely recorded with representation at 15 of the 21 surveyed sites, mainly in the form of coarse sands (13 records of **SS.SCS.CCS**), but also as fine sands (three records of **SS.SSa.CFiSa**). Two instances of PMFs were observed: a rich example of a deep maerl bed (**SS.SMp.Mrl.Pcal.Nmix**) at the southern entrance to Colgrave Sound and a tentative sighting of ling off the east of Fetlar. The presence of ling was also recorded in the same region during a Marine Scotland Science survey in 2011 (Moore, 2012).



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Figure 15. Distribution of PMF records off Armadale.

Modiolus beds are on the OSPAR list of threatened and/or declining habitats (OSPAR, 2008). The Noss Head MPA was established to afford protection to the largest known

Modiolus bed in British waters. The protected feature and PMF, **SS.SBR.SMus.ModT**, was observed along six of the 11 video runs within the MPA, with dense populations of live mussels recorded or indicated at all of these sites. The 2014 survey results contribute to the refining of the eastern and western boundaries of the mussel bed.

The Fraserburgh survey spanned the 12 nm territorial limit, with the 14 northernmost stations lying in offshore waters. The biotope **SS.SSa.OSa** was recorded at 13 of these sites and **SS.SSa.CFiSa** at one of the sites. Finer resolution biotopes within these biotopes complexes may represent PMFs in offshore waters. Most of the Fraserburgh sites and the single Moray Firth site lie within the area of the Southern Trench MPA proposal (SNH, 2014), where the proposed protected features include one benthic habitat, burrowed mud. A tentative example of this was recorded at the Moray Firth site.

No PMFs were recorded during the Mousa to Boddam MPA and Kincardine surveys. However, the sediments at most of the sites off Boddam are likely to support the protected feature, sandeels, and they also lie within the Shetland carbonate production area, encompassed by the protected geodiversity feature, Marine Geomorphology of the Scottish Shelf Seabed (Brooks *et al.*, 2013).

5. REFERENCES

- Brooks, A.J., Kenyon, N.H., Leslie, A., Long, D. & Gordon, J.E. 2013. Characterising Scotland's marine environment to define search locations for new Marine Protected Areas. Part 2: The identification of key geodiversity areas in Scottish waters. *Scottish Natural Heritage Commissioned Report No. 432*. Available from http://www.snh.org.uk/pdfs/publications/commissioned_reports/432.pdf
- Connor, D.W. 1989. Survey of Loch Duich, Loch Long and Loch Alsh. *Nature Conservancy Council, CSD Report, No. 977*.
- Connor, D.W., Allen, J.H., Golding, N., Howell, K.L., Lieberknecht, L.M., Northen, K.O. & Reker, J.B. 2004. *The National Marine Habitat Classification for Britain and Ireland. Version 04.05*. Peterborough: Joint Nature Conservation Committee. ISBN: 1 861 07561 8 (internet version). Available from <http://jncc.defra.gov.uk/page-1584>
- Dipper, F. 1981. Report of a sublittoral survey of south Skye, Inner Hebrides. *Nature Conservancy Council, CSD Report, No. 342*.
- Dipper, F.A. & Johnston, C.M. 2005. *Marine Nature Conservation Review Sectors 15 and 3. Sealochs in north-west Scotland: area summaries*. Peterborough: Joint Nature Conservation Committee.
- EMODnet. 2015. Seabed Habitats. Interactive map & metadata catalogue. <http://www.emodnet-seabedhabitats.eu/default.aspx?page=1934>. [Accessed on 10/02/2015].
- Hirst, N.E., Clark, L. & Sanderson, W.G. 2012. The distribution of selected MPA search features and Priority Marine Features off the NE coast of Scotland. *Scottish Natural Heritage Commissioned Report No. 500*. Available from http://www.snh.org.uk/pdfs/publications/commissioned_reports/500.pdf
- Hiscock, K. (ed). 1996. *Marine Nature Conservation Review: Rationale and Methods*. Peterborough: Joint Nature Conservation Committee.
- IUCN. 2014. *IUCN Red List of Threatened Species. Version 2014.3* [online]. Available from <http://www.iucnredlist.org>. [Accessed on 10/02/2015].
- Marine Scotland. 2011. *Marine Protected Areas in Scotland's Seas. Guidelines on the selection of MPAs and development of the MPA network*. [online] Available from <http://www.scotland.gov.uk/Resource/Doc/295194/0114024.pdf>. [Accessed on 10/02/2015].
- Moore, C.G. 2012. An assessment of the conservation importance of benthic epifaunal species and habitats identified during a series of research cruises around NW Scotland and Shetland in 2011. *Scottish Natural Heritage Commissioned Report No. 507*. Available from http://www.snh.org.uk/pdfs/publications/commissioned_reports/507.pdf
- Moore, C.G. 2014. Biological analyses of underwater video from proposed marine protected areas, renewable energy sites and spoil grounds around Scotland. *Scottish Natural Heritage Commissioned Report No. 746*. Available from http://www.snh.org.uk/pdfs/publications/commissioned_reports/746.pdf
- Moore, C.G., Harries, D.B., Cook, R.L., Hirst, N.E., Saunders, G.R., Kent, F.E.A., Trigg, C. & Lyndon, A.R. 2013. The distribution and condition of selected MPA search features within Lochs Alsh, Duich, Creran and Fyne. *Scottish Natural Heritage Commissioned Report No. 566*. Available from http://www.snh.org.uk/pdfs/publications/commissioned_reports/566.pdf

OSPAR. 2008. *List of Threatened and/or Declining Species and Habitats*. Reference Number: 2008-6. [online] Available from: http://www.ospar.org/documents/dbase/decrecs/agreements/08-06e_ospar%20list%20species%20and%20habitats.doc [Accessed on 10/02/2015].

Scottish Government. 2013. *Scottish Biodiversity List*. [online] Available from <http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL>. [Accessed on 13/02/2015].

SNH. 2014. Further advice to Scottish Government on the selection of Nature Conservation Marine Protected Areas for the development of the Scottish MPA network. *Scottish Natural Heritage Commissioned Report No. 780*. Available from http://www.snh.org.uk/pdfs/publications/commissioned_reports/780.pdf

SNH & JNCC. 2014. *Priority Marine Features in Scotland's seas*. [online] Available from <http://www.snh.gov.uk/docs/A1327320.pdf> [Accessed on 17/06/2015].

ANNEX 1: PROTECTED BIODIVERSITY FEATURES (PFS) OF THE FIVE MPAS COVERED IN THIS REPORT

MPA	Protected features	Component biotopes or species
Lochs Duich, Long and Alsh	Burrowed mud	SS.SMu.CFiMu.SpnMeg <i>Funiculina quadrangularis</i> <i>Pachycerianthus multiplicatus</i>
	Flame shell beds	SS.SMx.IMx.Lim
Wester Ross	Burrowed mud	SS.SMu.CFiMu.SpnMeg <i>Funiculina quadrangularis</i> <i>Pachycerianthus multiplicatus</i>
	Circalittoral muddy sand communities	SS.SSa.CMuSa
	Flame shell beds	SS.SMx.IMx.Lim
	Kelp and seaweed communities on sublittoral sediment	SS.SMp.KSwSS
	Maerl beds	SS.SMp.Mrl
	Maerl or coarse shell gravel with burrowing sea cucumbers	SS.SCS.CCS.Nmix
	Northern feather star aggregations on mixed substrata	<i>Leptometra celtica</i>
Fetlar to Haroldswick	Kelp and seaweed communities on sublittoral sediment	SS.SMp.KSwSS
	Maerl beds	SS.SMp.Mrl
	Horse mussel beds	SS.SBR.SMus.ModT
	Circalittoral sand and coarse sediment communities	SS.SCS.CCS SS.SSa.CFiSa
	Shallow tide-swept coarse sands with burrowing bivalves	SS.SCS.ICS.MoeVen
	Black guillemot	<i>Cepphus grylle</i>
Mousa to Boddam	Sandeels	<i>Ammodytes</i> spp.
Noss Head	Horse mussel beds	SS.SBR.SMus.ModT

ANNEX 2: POSITIONAL AND TEMPORAL DETAILS OF VIDEO SEQUENCES RECORDED DURING THE SURVEYS. WHERE THERE IS MORE THAN ONE ENTRY FOR A SITE, THIS REFLECTS SPLITTING OF THE VIDEO RUN AMONGST DIFFERENT HABITAT TYPES

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
South Skye Sea Lochs	V01	29/05/2014	57.18088	-5.85426	57.18137	-5.85282	3.6	2.4	15:57:00	16:01:00
South Skye Sea Lochs	V02	29/05/2014	57.17129	-5.87743	57.17131	-5.87683	19.0	18.3	15:45:00	15:49:00
South Skye Sea Lochs	V03	29/05/2014	57.16826	-5.90283	57.16838	-5.90177	8.4	11.5	15:21:00	15:25:00
South Skye Sea Lochs	V04	28/05/2014	57.16884	-5.93621	57.16819	-5.93609	5.7	7.5	14:09:00	14:12:00
South Skye Sea Lochs	V05	29/05/2014	57.16753	-5.91472	57.16798	-5.91094	9.6	9.0	15:07:00	15:15:00
South Skye Sea Lochs	V06	28/05/2014	57.17093	-5.93204	57.17080	-5.93315	3.0	2.2	14:24:00	14:27:00
South Skye Sea Lochs	V07	28/05/2014	57.16245	-5.93272	57.16281	-5.93282	5.1	8.2	15:04:00	15:11:00
South Skye Sea Lochs	V08	30/05/2014	57.15823	-5.93896	57.15870	-5.93844	-0.4	0.5	15:16:00	15:19:00
South Skye Sea Lochs	V09	30/05/2014	57.15568	-5.93703	57.15605	-5.93656	1.4	1.1	14:39:00	14:43:00
South Skye Sea Lochs	V10	30/05/2014	57.15663	-5.94124	57.15710	-5.94094	1.5	0.7	14:49:00	14:53:00
South Skye Sea Lochs	V11	30/05/2014	57.15930	-5.94334	57.15961	-5.94285	3.0	4.8	14:58:00	15:01:00
South Skye Sea Lochs	V12	30/05/2014	57.16010	-5.94072	57.16054	-5.94006	2.9	3.1	15:05:00	15:09:00
South Skye Sea Lochs	V12	30/05/2014	57.16010	-5.94072	57.16054	-5.94006	2.9	3.1	15:05:00	15:09:00
South Skye Sea Lochs	V14	28/05/2014	57.16989	-5.95825	57.16936	-5.95831	9.8	12.7	14:41:00	14:45:00
South Skye Sea Lochs	V15	28/05/2014	57.17158	-5.95159	57.17099	-5.95168	8.8	13.0	14:33:00	14:37:00
South Skye Sea Lochs	V16	28/05/2014	57.18259	-5.99775	57.18200	-5.99825	16.7	17.8	11:13:00	11:19:00
South Skye Sea Lochs	V17	28/05/2014	57.17904	-5.99784	57.17859	-5.99799	16.3	16.5	11:22:00	11:26:00
South Skye Sea Lochs	V18	28/05/2014	57.17381	-5.99803	57.17344	-5.99792	12.2	9.8	11:41:00	11:44:00
South Skye Sea Lochs	V19	28/05/2014	57.17443	-6.00151	57.17400	-6.00137	33.4	32.3	11:33:00	11:37:00
South Skye Sea Lochs	V20	28/05/2014	57.19490	-6.00598	57.19444	-6.00604	11.0	11.4	10:48:00	10:52:00
South Skye Sea Lochs	V20	28/05/2014	57.19490	-6.00598	57.19444	-6.00604	11.0	11.4	10:48:00	10:52:00
South Skye Sea Lochs	V21	29/05/2014	57.20162	-6.01536	57.20192	-6.01583	3.7	3.2	14:07:00	14:10:00
South Skye Sea Lochs	V22	28/05/2014	57.20610	-6.02330	57.20536	-6.02313	11.3	9.3	10:34:00	10:41:00
South Skye Sea Lochs	V23	28/05/2014	57.21524	-6.03177	57.21452	-6.03132	7.2	7.9	10:25:00	10:28:00
South Skye Sea Lochs	V24	30/05/2014	57.18683	-6.02650	57.18712	-6.02638	9.5	8.9	10:17:00	10:20:00
South Skye Sea Lochs	V25	30/05/2014	57.16867	-6.04439	57.16934	-6.04330	7.7	11.0	10:55:00	11:01:00
South Skye Sea Lochs	V26	28/05/2014	57.16642	-5.99216	57.16610	-5.99253	12.5	13.8	12:01:00	12:06:00

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
South Skye Sea Lochs	V27	28/05/2014	57.16561	-5.98037	57.16561	-5.98107	14.2	12.0	12:14:00	12:19:00
South Skye Sea Lochs	V27	28/05/2014	57.16561	-5.98037	57.16561	-5.98107	14.2	12.0	12:14:00	12:19:00
South Skye Sea Lochs	V28	30/05/2014	57.13807	-5.97688	57.13843	-5.97615	7.0	5.6	14:15:00	14:18:00
South Skye Sea Lochs	V29	30/05/2014	57.12941	-5.99396	57.12958	-5.99330	27.7	26.8	13:58:00	14:02:00
South Skye Sea Lochs	V30	30/05/2014	57.12458	-5.99981	57.12480	-5.99937	15.8	15.2	13:42:00	13:45:00
South Skye Sea Lochs	V31	30/05/2014	57.13426	-5.98338	57.13448	-5.98258	12.2	11.5	14:07:00	14:11:00
South Skye Sea Lochs	V31	30/05/2014	57.13426	-5.98338	57.13448	-5.98258	12.2	11.5	14:07:00	14:11:00
South Skye Sea Lochs	V32	30/05/2014	57.12111	-6.01201	57.12127	-6.01140	14.2	14.3	13:19:00	13:23:00
South Skye Sea Lochs	V33	30/05/2014	57.10279	-6.01443	57.10300	-6.01475	8.0	4.9	12:07:00	12:09:00
South Skye Sea Lochs	V34	30/05/2014	57.10929	-6.00421	57.10954	-6.00388	11.4	11.7	12:20:00	12:23:00
South Skye Sea Lochs	V35	30/05/2014	57.10496	-6.00529	57.10505	-6.00498	7.4	7.1	12:13:00	12:16:00
South Skye Sea Lochs	V36	30/05/2014	57.14287	-6.06301	57.14331	-6.06301	10.6	8.4	11:17:00	11:22:00
South Skye Sea Lochs	V37	30/05/2014	57.12961	-6.07782	57.12976	-6.07756	8.7	8.6	11:38:00	11:40:00
South Skye Sea Lochs	V41	28/05/2014	57.17010	-5.99862	57.16974	-5.99877	14.9	15.8	11:50:00	11:53:00
South Skye Sea Lochs	V42	28/05/2014	57.18504	-6.00947	57.18456	-6.00987	27.8	29.1	10:58:00	11:03:00
South Skye Sea Lochs	V43	30/05/2014	57.17301	-6.02487	57.17344	-6.02451	24.0	24.9	10:25:00	10:30:00
South Skye Sea Lochs	V45	30/05/2014	57.15696	-5.97119	57.15712	-5.97060	27.8	30.3	15:59:00	16:05:00
South Skye Sea Lochs	V46	28/05/2014	57.16608	-5.96895	57.16535	-5.96950	28.1	27.6	12:25:00	12:31:00
South Skye Sea Lochs	V47	29/05/2014	57.16466	-5.95523	57.16533	-5.95432	23.5	25.0	14:48:00	14:57:00
South Skye Sea Lochs	V48	28/05/2014	57.16972	-5.93950	57.16895	-5.93943	10.3	11.6	13:59:00	14:05:00
South Skye Sea Lochs	V49	28/05/2014	57.16272	-5.96541	57.16227	-5.96599	29.8	27.8	14:51:00	14:56:00
South Skye Sea Lochs	V49	28/05/2014	57.16272	-5.96541	57.16227	-5.96599	29.8	27.8	14:51:00	14:56:00
South Skye Sea Lochs	V52	30/05/2014	57.12381	-6.00508	57.12384	-6.00466	33.0	32.4	13:32:00	13:36:00
South Skye Sea Lochs	V53	28/05/2014	57.16862	-5.96386	57.16821	-5.96405	10.9	14.5	12:39:00	12:43:00
South Skye Sea Lochs	V54	28/05/2014	57.16838	-5.93246	57.16844	-5.93267	0.3	0.4	14:18:00	14:21:00
South Skye Sea Lochs	V54B	30/05/2014	57.10976	-6.01434	57.10972	-6.01365	26.5	27.9	13:07:00	13:14:00
South Skye Sea Lochs	V55	28/05/2014	57.15916	-5.93591	57.15892	-5.93613	2.3	2.4	15:16:00	15:19:00
South Skye Sea Lochs	V55B	30/05/2014	57.10113	-6.00613	57.10130	-6.00578	18.0	18.8	11:58:00	12:02:00

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
South Skye Sea Lochs	V56	28/05/2014	57.15764	-5.93473	57.15758	-5.93498	1.3	0.8	15:23:00	15:25:00
South Skye Sea Lochs	V56B	30/05/2014	57.09668	-6.01340	57.09678	-6.01309	28.2	26.0	11:50:00	11:53:00
South Skye Sea Lochs	V57	29/05/2014	57.18611	-5.99717	57.18620	-5.99711	9.5	8.8	14:19:00	14:21:00
South Skye Sea Lochs	V58	29/05/2014	57.18067	-5.99717	57.18071	-5.99720	12.9	13.0	14:35:00	14:38:00
South Skye Sea Lochs	V59	29/05/2014	57.17140	-5.89984	57.17173	-5.89900	0.1	0.0	15:29:00	15:36:00
South Skye Sea Lochs	V60	30/05/2014	57.15169	-5.95669	57.15214	-5.95578	17.2	20.6	14:25:00	14:30:00
South Skye Sea Lochs	V61	29/05/2014	57.18544	-5.99843	57.18560	-5.99834	14.5	13.8	14:25:00	14:28:00
South Skye Sea Lochs	V62	29/05/2014	57.18335	-5.84937	57.18345	-5.84891	-0.4	-0.5	16:04:00	16:05:00
South Skye Sea Lochs	V63	29/05/2014	57.17600	-5.88522	57.17614	-5.88459	1.2	-0.8	16:18:00	16:22:00
South Skye Sea Lochs	V63	29/05/2014	57.17600	-5.88522	57.17614	-5.88459	1.2	-0.8	16:18:00	16:22:00
South Skye Sea Lochs	V64	29/05/2014	57.16759	-5.92056	57.16788	-5.91938	10.3	10.6	16:30:00	16:36:00
South Skye Sea Lochs	V65	30/05/2014	57.15495	-6.05424	57.15539	-6.05388	4.3	4.7	11:07:00	11:11:00
South Skye Sea Lochs	V66	30/05/2014	57.16872	-6.03726	57.16937	-6.03698	8.2	9.0	10:37:00	10:41:00
South Skye Sea Lochs	V67	30/05/2014	57.14419	-6.05687	57.14465	-6.05641	23.0	23.8	11:26:00	11:32:00
South Skye Sea Lochs	V68	30/05/2014	57.16708	-5.91365	57.16854	-5.90827	6.3	8.0	15:27:00	15:38:00
South Skye Sea Lochs	V69	30/05/2014	57.16970	-5.90866	57.16999	-5.90749	8.2	7.7	15:41:00	15:45:00
Loch Alsh	EX1	25/03/2014	57.27597	-5.75498	57.27700	-5.75570	8.7		13:16:31	13:20:55
Loch Alsh	EX2	26/03/2014	57.27898	-5.75417	57.27918	-5.75522	11.7		07:45:02	07:52:50
Loch Alsh	EX3	26/03/2014	57.28073	-5.76039	57.28090	-5.76088	11.8		07:56:35	08:01:52
Loch Alsh	EX4	26/03/2014	57.28215	-5.76387	57.28213	-5.76456	14.8		08:04:50	08:10:18
Loch Alsh	EX5	26/03/2014	57.28148	-5.75556	57.28153	-5.75615	15.8		08:14:43	08:20:10
Loch Alsh	EX6	26/03/2014	57.28010	-5.74963	57.28034	-5.75055	13.9		08:25:57	08:31:00
Loch Alsh	EX7	26/03/2014	57.28152	-5.76221	57.28138	-5.76299	11.9		08:36:26	08:41:44
Loch Alsh	EX8	26/03/2014	57.26968	-5.59862	57.26963	-5.59747	72.4		16:00:10	16:05:38
Loch Alsh	EX9	26/03/2014	57.27354	-5.60889	57.27330	-5.60735	69.5		16:13:26	16:18:56
Loch Alsh	EX10	26/03/2014	57.27304	-5.62177	57.27257	-5.62077	37.5		16:25:50	16:32:17
Loch Alsh	LA01	25/03/2014	57.27680	-5.75340	57.27782	-5.75462	7.8		12:54:16	12:58:16
Loch Alsh	LA03	25/03/2014	57.27589	-5.74943	57.27745	-5.75087	11.8		13:04:29	13:11:15
Loch Alsh	LA04	25/03/2014	57.27749	-5.74546	57.27833	-5.74539	9.7		13:27:14	13:32:26

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Loch Alsh	LA11	25/03/2014	57.27880	-5.69015	57.27951	-5.68965	23.7		17:25:40	17:31:22
Loch Alsh	LA13	25/03/2014	57.27482	-5.66910	57.27585	-5.66652	59.6		14:18:50	14:24:35
Loch Alsh	LA14	25/03/2014	57.26768	-5.66758	57.26769	-5.66763	38.5		17:08:27	17:13:57
Loch Alsh	LA15	25/03/2014	57.27397	-5.65869	57.27478	-5.65660	77.6		14:31:36	14:36:51
Loch Alsh	LA16	25/03/2014	57.27964	-5.65145	57.27975	-5.65088	50.3		16:49:13	16:50:52
Loch Alsh	LA17	25/03/2014	57.27728	-5.63592	57.27791	-5.63582	63.2		16:33:09	16:38:47
Loch Alsh	LA18	25/03/2014	57.27335	-5.64532	57.27417	-5.64369	77.7		14:45:32	14:50:49
Loch Alsh	LA19	25/03/2014	57.26759	-5.64248	57.26805	-5.64146	75.9		15:55:02	16:00:31
Loch Alsh	LA20	26/03/2014	57.26223	-5.63635	57.26245	-5.63788	60.9		09:21:52	09:27:12
Loch Alsh	LA21	26/03/2014	57.25833	-5.64157	57.25870	-5.64226	35.8		09:33:21	09:38:49
Loch Alsh	LA22	26/03/2014	57.25469	-5.63745	57.25632	-5.63483	22.8		09:45:36	09:50:01
Loch Alsh	LA26	26/03/2014	57.25422	-5.62630	57.25399	-5.62477	31.7		09:58:28	10:03:53
Loch Alsh	LA27	26/03/2014	57.25896	-5.62589	57.25894	-5.62507	90.7		10:11:54	10:17:35
Loch Alsh	LA28	26/03/2014	57.25914	-5.61704	57.25873	-5.61721	75.3		11:02:37	11:07:59
Loch Alsh	LA29	26/03/2014	57.26317	-5.61583	57.26305	-5.61560	77.4		10:51:16	10:56:29
Loch Alsh	LA30	26/03/2014	57.26372	-5.62395	57.26436	-5.62418	100.6		10:25:44	10:31:03
Loch Alsh	LA31	25/03/2014	57.26886	-5.62937	57.26929	-5.62910	83.8		15:37:50	15:43:07
Loch Alsh	LA32	25/03/2014	57.27334	-5.62929	57.27394	-5.62905	47.8		15:24:47	15:30:07
Loch Alsh	LA33	26/03/2014	57.26908	-5.61743	57.26891	-5.61658	89.5		10:38:51	10:44:11
Loch Alsh	LA34	26/03/2014	57.26934	-5.60711	57.26914	-5.60620	77.0		11:35:21	11:40:47
Loch Alsh	LA35	26/03/2014	57.26670	-5.60767	57.26655	-5.60686	62.2		11:17:12	11:22:51
Loch Alsh	LA36	26/03/2014	57.26071	-5.60312	57.25982	-5.60246	36.3		12:54:29	13:00:02
Loch Alsh	LA37	26/03/2014	57.26560	-5.59700	57.26529	-5.59560	80.2		13:08:43	13:14:04
Loch Alsh	LA38	26/03/2014	57.27511	-5.60415	57.27518	-5.60252	41.9		11:49:33	11:55:00
Loch Alsh	LA39	26/03/2014	57.27330	-5.60085	57.27301	-5.59958	57.8		12:04:31	12:10:36
Loch Alsh	LA40	26/03/2014	57.26930	-5.59166	57.26944	-5.58963	37.8		13:54:07	13:59:37
Loch Alsh	LA41	26/03/2014	57.26561	-5.58850	57.26569	-5.58723	22.9		13:38:24	13:43:50
Loch Alsh	LA42	26/03/2014	57.26252	-5.59125	57.26205	-5.58964	20.0		13:26:12	13:31:56
Loch Alsh	LA45	26/03/2014	57.26509	-5.56798	57.26525	-5.56772	64.4		15:38:27	15:44:20

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Loch Alsh	LA46	26/03/2014	57.26473	-5.56261	57.26436	-5.56232	61.4		15:27:45	15:33:28
Loch Alsh	LA47	26/03/2014	57.27130	-5.58413	57.27181	-5.58159	9.7		14:04:09	14:09:49
Loch Alsh	LA48	26/03/2014	57.27174	-5.56563	57.27182	-5.56504	34.6		14:19:08	14:24:39
Loch Alsh	LA49	26/03/2014	57.27283	-5.55412	57.27322	-5.55330	20.6		14:30:00	14:35:38
Loch Alsh	LA50	26/03/2014	57.26862	-5.55256	57.26847	-5.55149	23.4		15:01:27	15:07:03
Loch Alsh	LA50	26/03/2014	57.26862	-5.55256	57.26847	-5.55149	23.4		15:01:27	15:07:03
Loch Alsh	LA51	26/03/2014	57.26663	-5.55379	57.26652	-5.55323	41.1		15:16:07	15:21:54
Loch Alsh	LA52	26/03/2014	57.27025	-5.54868	57.27030	-5.54734	54.5		14:51:17	14:56:40
Loch Alsh	LA53	26/03/2014	57.27322	-5.54471	57.27352	-5.54330	35.5		14:40:23	14:46:11
Loch Alsh	LA57	25/03/2014	57.27853	-5.76754	57.28000	-5.76858	6.8		12:42:00	12:47:00
Loch Alsh	LA66	25/03/2014	57.26584	-5.64624	57.26606	-5.64498	69.0		16:07:54	16:13:25
Loch Alsh	KL01	08/12/2014	57.28088	-5.72872	57.28052	-5.72808	4.2	2.2	10:08:00	10:15:00
Loch Alsh	KL02	08/12/2014	57.28070	-5.72902	57.27990	-5.72817	2.4	6.4	10:17:00	10:25:00
Loch Alsh	KL03	08/12/2014	57.28048	-5.72978	57.27967	-5.72865	1.5	8.5	10:27:00	10:41:00
Loch Alsh	KL04	08/12/2014	57.27945	-5.73020	57.27842	-5.72813	6.8	12.8	10:43:00	10:54:00
Loch Alsh	KL05	08/12/2014	57.27895	-5.71822	57.27872	-5.71832	9.0	16.0	11:01:00	11:07:00
Loch Alsh	KL06	08/12/2014	57.27922	-5.71712	57.27903	-5.71823	9.1	11.1	11:09:00	11:16:00
Wester Ross	WES09_V	10/08/2014	57.89690	-5.48955	57.89707	-5.49040	24.9	27.8	06:50:29	06:55:29
Wester Ross	WES10_V	10/08/2014	57.88863	-5.48917	57.88897	-5.48938	25.1	25.4	06:31:38	06:35:02
Wester Ross	WES10_V	10/08/2014	57.88897	-5.48938	57.88917	-5.48952	25.4	25.6	06:35:02	06:37:09
Wester Ross	WES12_V	10/08/2014	57.93343	-5.51965	57.93343	-5.52080	52.3	52.0	07:56:47	08:01:56
Wester Ross	WES13_V	10/08/2014	57.93582	-5.63653	57.93523	-5.63630	58.2	56.6	08:34:50	08:40:08
Wester Ross	WES14_V	10/08/2014	57.89088	-5.68008	57.89087	-5.68078	38.4	38.2	09:27:34	09:30:07
Wester Ross	WES14_V	10/08/2014	57.89087	-5.68078	57.89072	-5.68175	38.2	37.4	09:30:07	09:32:56
Wester Ross	WES15_V	10/08/2014	57.92593	-5.68310	57.92572	-5.68275	49.6	48.8	08:59:26	09:04:54
Wester Ross	WES16_V	10/08/2014	57.92077	-5.46803	57.92085	-5.46890	121.0	121.6	07:19:02	07:24:14
Wester Ross	WES17_V	10/08/2014	57.87113	-5.74475	57.87065	-5.74677	17.8	15.7	09:57:16	10:01:23
Wester Ross	WES18_V	10/08/2014	57.86603	-5.78450	57.86565	-5.78612	15.0	18.8	10:15:17	10:17:43
Wester Ross	WES18_V	10/08/2014	57.86565	-5.78612	57.86548	-5.78710	18.8	19.5	10:17:43	10:19:01

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Wester Ross	WES18_V	10/08/2014	57.86548	-5.78710	57.86543	-5.78747	19.5	19.0	10:19:01	10:19:28
Wester Ross	WES19_V	09/08/2014	58.10898	-5.51865	58.10867	-5.51787	42.3	38.6	14:22:15	14:28:01
Wester Ross	WES20_V	09/08/2014	58.02185	-5.65562	58.02237	-5.65375	93.2	90.6	16:43:12	16:48:33
Wester Ross	WES21_V	09/08/2014	58.04273	-5.65585	58.04322	-5.65467	87.3	86.0	16:19:00	16:24:33
Wester Ross	WES22_V	09/08/2014	58.08890	-5.49997	58.08863	-5.49902	64.9	63.0	14:46:12	14:48:32
Wester Ross	WES22_V	09/08/2014	58.08863	-5.49902	58.08828	-5.49788	63.0	61.2	14:48:32	14:51:23
Wester Ross	WES23_V	12/08/2014	57.92563	-5.43558	57.92550	-5.43390	75.1	71.4	08:37:36	08:41:57
Wester Ross	WES25_V	10/08/2014	57.97910	-5.38930	57.97897	-5.38833	45.5	46.3	14:57:26	15:02:37
Wester Ross	WES27_V	10/08/2014	57.96190	-5.31718	57.96132	-5.31637	37.8	40.2	15:25:14	15:28:21
Wester Ross	WES27_V	10/08/2014	57.96132	-5.31637	57.96122	-5.31553	40.2	41.4	15:28:21	15:30:35
Wester Ross	WES28_V	10/08/2014	57.95425	-5.30362	57.95440	-5.30493	26.4	25.9	16:20:56	16:26:02
Wester Ross	WES29_V	12/08/2014	57.92513	-5.33688	57.92445	-5.33518	37.4	35.7	07:50:16	07:55:33
Wester Ross	WES31_V	10/08/2014	57.93150	-5.27052	57.93205	-5.27112	28.2	36.3	16:44:03	16:49:12
Wester Ross	WES32_V	12/08/2014	57.91732	-5.27888	57.91748	-5.27668	86.7	86.9	07:17:16	07:22:36
Wester Ross	WES37_V	10/08/2014	57.95590	-5.62980	57.95503	-5.63005	107.7	104.7	12:58:25	13:03:41
Wester Ross	WES38_V	10/08/2014	57.95237	-5.72450	57.95157	-5.72508	119.0	115.7	12:13:47	12:19:08
Wester Ross	WES43_V	10/08/2014	57.91502	-5.72777	57.91420	-5.72690	64.8	62.2	11:39:48	11:45:06
Wester Ross	WES44_V	10/08/2014	57.88367	-5.75823	57.88343	-5.76062	29.9	30.2	11:03:59	11:09:03
Wester Ross	WES46_V	10/08/2014	57.97975	-5.46967	57.97958	-5.46975	48.7	49.2	14:26:54	14:27:47
Wester Ross	WES46_V	10/08/2014	57.97958	-5.46975	57.97905	-5.47003	49.2	51.8	14:27:47	14:30:21
Wester Ross	WES46_V	10/08/2014	57.97905	-5.47003	57.97858	-5.47030	51.8	52.9	14:30:21	14:32:26
Wester Ross	WES50_V	10/08/2014	57.94957	-5.56475	57.94900	-5.56475	92.2	88.7	13:29:30	13:32:01
Wester Ross	WES50_V	10/08/2014	57.94900	-5.56475	57.94842	-5.56478	88.7	88.6	13:32:01	13:34:30
Wester Ross	WES50_V	10/08/2014	57.94842	-5.56478	57.94818	-5.56480	88.6	86.9	13:34:30	13:35:24
Wester Ross	WES51_V	10/08/2014	57.97967	-5.53002	57.97950	-5.53007	37.5	37.7	13:59:48	14:00:34
Wester Ross	WES51_V	10/08/2014	57.97950	-5.53007	57.97930	-5.53013	37.7	40.0	14:00:34	14:01:32
Wester Ross	WES51_V	10/08/2014	57.97930	-5.53013	57.97907	-5.53020	40.0	37.3	14:01:32	14:02:37
Wester Ross	WES51_V	10/08/2014	57.97907	-5.53020	57.97853	-5.53030	37.3	38.5	14:02:37	14:05:04
Wester Ross	WR01	08/11/2014	57.90508	-5.39623	57.90553	-5.39682	12.3	20.3	08:56:00	09:01:00

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Wester Ross	WR02	08/11/2014	57.90698	-5.40423	57.90728	-5.40518	18.4	20.4	09:08:00	09:14:00
Wester Ross	WR03	08/11/2014	57.90763	-5.41267	57.90795	-5.41325	23.5	25.5	09:20:00	09:25:00
Wester Ross	WR04	08/11/2014	57.91120	-5.41333	57.91167	-5.41367	18.7	13.7	09:31:00	09:35:00
Wester Ross	WR04	08/11/2014	57.91120	-5.41333	57.91167	-5.41367	18.7	13.7	09:31:00	09:35:00
Wester Ross	WR05	08/11/2014	57.90963	-5.41442	57.90983	-5.41490	28.8	27.8	09:41:00	09:44:00
Wester Ross	WR06	08/11/2014	57.91187	-5.41537	57.91332	-5.41625	18.0	22.0	09:49:00	10:03:00
Wester Ross	WR07	08/11/2014	57.91042	-5.41862	57.91112	-5.41842	23.3	23.3	10:11:00	10:17:00
Wester Ross	WR07	08/11/2014	57.91042	-5.41862	57.91112	-5.41842	23.3	23.3	10:11:00	10:17:00
Wester Ross	WR08	08/11/2014	57.90898	-5.41930	57.90925	-5.41940	13.5	14.5	10:21:00	10:26:00
Wester Ross	WR09	08/11/2014	57.91038	-5.42363	57.91115	-5.42340	18.6	29.6	10:32:00	10:37:00
Wester Ross	WR10	08/11/2014	57.90805	-5.42760	57.90872	-5.42732	20.8	19.8	10:44:00	10:48:00
Wester Ross	WR11	08/11/2014	57.90525	-5.42905	57.90612	-5.42845	16.1	19.1	10:57:00	11:02:00
Wester Ross	WR12	08/11/2014	57.90153	-5.43645	57.90258	-5.43600	15.3	17.3	11:12:00	11:17:00
Wester Ross	WR13	08/11/2014	57.89960	-5.43782	57.90065	-5.43773	16.5	16.5	11:23:00	11:27:00
Wester Ross	WR14	08/11/2014	57.89588	-5.44128	57.89692	-5.44142	16.7	18.7	11:34:00	11:40:00
Wester Ross	WR14	08/11/2014	57.89588	-5.44128	57.89692	-5.44142	16.7	18.7	11:34:00	11:40:00
Wester Ross	WR14	08/11/2014	57.89588	-5.44128	57.89692	-5.44142	16.7	18.7	11:34:00	11:40:00
Wester Ross	WR15	08/11/2014	57.90093	-5.44138	57.90180	-5.44145	18.9	16.9	11:45:00	11:50:00
Wester Ross	WR16	08/11/2014	57.90323	-5.44165	57.90468	-5.44145	18.1	27.1	11:55:00	12:03:00
Wester Ross	WR16	08/11/2014	57.90323	-5.44165	57.90468	-5.44145	18.1	27.1	11:55:00	12:03:00
Wester Ross	WR17	08/11/2014	57.86642	-5.68125	57.86745	-5.68162	22.6	24.6	13:32:00	13:35:00
Wester Ross	WR18	08/11/2014	57.87083	-5.69228	57.87118	-5.69230	20.7	21.7	13:45:00	13:49:00
Wester Ross	WR19	08/11/2014	57.87337	-5.69338	57.87382	-5.69337	17.7	17.7	13:55:00	13:59:00
Wester Ross	WR20	08/11/2014	57.87482	-5.70493	57.87505	-5.70497	17.6	18.6	14:08:00	14:12:00
Wester Ross	WR21	08/11/2014	57.87090	-5.70838	57.87087	-5.70920	10.5	10.5	14:20:00	14:25:00
Wester Ross	WR22	08/11/2014	57.87275	-5.71933	57.87318	-5.71958	14.4	15.4	14:33:00	14:36:00
Wester Ross	WR23	08/11/2014	57.87735	-5.69587	57.87742	-5.69563	22.2	23.2	14:54:00	14:59:00
Wester Ross	WR24	08/11/2014	57.87577	-5.68533	57.87578	-5.68495	28.0	28.0	15:05:00	15:10:00
Wester Ross	WR25	08/11/2014	57.88508	-5.65247	57.88540	-5.65315	15.7	14.7	15:25:00	15:30:00

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Wester Ross	WR26	09/11/2014	57.94433	-5.24080	57.94457	-5.24130	15.3	15.3	09:22:00	09:27:00
Wester Ross	WR27	09/11/2014	57.94517	-5.25518	57.94548	-5.25607	15.3	15.3	09:35:00	09:40:00
Wester Ross	WR27	09/11/2014	57.94517	-5.25518	57.94548	-5.25607	15.3	15.3	09:35:00	09:40:00
Wester Ross	WR28	09/11/2014	57.94475	-5.24773	57.94495	-5.24840	17.5	22.5	09:45:00	09:50:00
Wester Ross	WR28	09/11/2014	57.94475	-5.24773	57.94495	-5.24840	17.5	22.5	09:45:00	09:50:00
Wester Ross	WR29	09/11/2014	57.92443	-5.22695	57.92492	-5.22810	15.6	16.6	10:05:00	10:10:00
Wester Ross	WR30	09/11/2014	57.97662	-5.30460	57.97685	-5.30560	12.2	12.2	10:43:00	10:47:00
Wester Ross	WR30	09/11/2014	57.97662	-5.30460	57.97685	-5.30560	12.2	12.2	10:43:00	10:47:00
Wester Ross	WR31	09/11/2014	57.97647	-5.30307	57.97670	-5.30367	14.5	9.5	11:05:00	11:08:00
Wester Ross	WR31	09/11/2014	57.97647	-5.30307	57.97670	-5.30367	14.5	9.5	11:05:00	11:08:00
Wester Ross	WR32	09/11/2014	57.99865	-5.34695	57.99923	-5.34745	19.9	24.9	11:33:00	11:38:00
Wester Ross	WR33	09/11/2014	57.99847	-5.35183	57.99898	-5.35295	15.2	24.2	11:44:00	11:52:00
Wester Ross	WR34	09/11/2014	58.00297	-5.34738	58.00310	-5.34737	12.5	11.5	12:03:00	12:07:00
Wester Ross	WR35	09/11/2014	58.00265	-5.34317	58.00298	-5.34325	13.6	13.6	12:10:00	12:15:00
Wester Ross	WR36	09/11/2014	58.00843	-5.37200	58.00900	-5.37253	18.9	20.9	12:28:00	12:33:00
Wester Ross	WR37	09/11/2014	57.99927	-5.41460	57.99943	-5.41480	15.2	15.2	12:50:00	12:54:00
Wester Ross	WR38	09/11/2014	58.00038	-5.41833	58.00050	-5.41822	11.3	8.3	12:57:00	13:00:00
Wester Ross	WR39	09/11/2014	57.99325	-5.43770	57.99402	-5.43792	17.5	17.5	13:11:00	13:18:00
Wester Ross	WR40	09/11/2014	58.00333	-5.45442	58.00358	-5.45475	24.7	24.7	13:28:00	13:32:00
Wester Ross	WR41	09/11/2014	58.02510	-5.46585	58.02558	-5.46563	14.9	14.9	13:49:00	13:54:00
Wester Ross	WR42	09/11/2014	58.02357	-5.47110	58.02375	-5.47085	17.9	17.9	14:00:00	14:04:00
Wester Ross	WR43	09/11/2014	58.02778	-5.45032	58.02795	-5.45022	18.0	18.0	14:19:00	14:23:00
Wester Ross	WR44	09/11/2014	58.01863	-5.43230	58.01847	-5.43218	11.0	11.0	14:36:00	14:40:00
Wester Ross	WR45	09/11/2014	58.02175	-5.42048	58.02165	-5.42070	9.9	9.9	14:53:00	14:56:00
Wester Ross	WR46	09/11/2014	58.02775	-5.40812	58.02750	-5.40650	18.8	18.8	15:05:00	15:10:00
Wester Ross	WR47	09/11/2014	58.03140	-5.40250	58.03147	-5.40238	20.7	20.7	15:19:00	15:24:00
Wester Ross	WR48	09/11/2014	58.03053	-5.41618	58.03062	-5.41575	20.6	20.6	15:33:00	15:38:00
Wester Ross	WR49	09/11/2014	58.03743	-5.44965	58.03732	-5.44903	24.3	24.3	15:51:00	15:56:00
Armada	ARM50	16/05/2014	58.63538	-3.82620	58.63538	-3.82622	80.2	81.2	09:34:00	09:44:00

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Armadale	ARM51	16/05/2014	58.62955	-3.88943	58.62955	-3.88945	67.4	68.4	10:15:00	10:30:00
Armadale	ARM52	16/05/2014	58.62890	-3.88750	58.62890	-3.88750	67.1	69.1	11:18:00	11:34:00
Armadale	ARM53	16/05/2014	58.62615	-3.91453	58.62615	-3.91453	69.5	70.5	11:47:00	12:00:00
Armadale	ARM54	16/05/2014	58.61967	-3.94733	58.61967	-3.94735	65.8	67.8	12:15:00	12:30:00
Armadale	ARM55	17/05/2014	58.57677	-4.32290	58.57658	-4.33745	41.5	42.1	11:50:41	12:10:07
Armadale	ARM56	17/05/2014	58.58685	-4.23070	58.58607	-4.23562	52.8	52.6	12:46:37	12:56:03
Armadale	ARM57	17/05/2014	58.59553	-4.16917	58.59703	-4.16315	58.0	57.6	13:24:23	13:35:11
Armadale	ARM58	17/05/2014	58.59803	-4.15232	58.59813	-4.15062	58.5	58.2	13:48:53	13:51:23
Armadale	ARM58	17/05/2014	58.59813	-4.15062	58.59858	-4.14207	58.2	59.4	13:51:23	14:05:05
Armadale	ARM59	18/05/2014	58.70090	-3.83580	58.70085	-3.84772	107.2	106.1	11:50:33	12:10:21
Armadale	ARM60	18/05/2014	58.71425	-3.85660	58.71383	-3.86860	103.5	107.1	12:29:03	12:50:05
Armadale	ARM61	18/05/2014	58.70600	-3.87907	58.70307	-3.88042	114.2	115.9	13:05:47	13:15:11
Armadale	ARM62	18/05/2014	58.71008	-3.91095	58.70900	-3.91940	102.6	105.1	13:36:29	13:51:11
Armadale	ARM63	18/05/2014	58.70145	-3.92507	58.70100	-3.93628	84.9	93.9	14:08:03	14:27:17
Armadale	ARM64	18/05/2014	58.70597	-3.94652	58.70655	-3.93662	92.8	98.4	14:42:15	15:00:15
Armadale	ARM65	19/05/2014	58.64562	-4.33032	58.64517	-4.31283	86.8	87.0	08:13:41	08:37:13
Armadale	ARM66	19/05/2014	58.66212	-4.28852	58.66142	-4.30015	93.3	93.4	09:04:59	09:24:11
Armadale	ARM67	19/05/2014	58.65362	-4.26123	58.65440	-4.27040	84.8	88.1	10:00:11	10:17:45
Armadale	ARM68	20/05/2014	58.66308	-4.20610	58.66257	-4.20355	87.3	86.9	09:03:19	09:08:23
Armadale	ARM68	20/05/2014	58.66257	-4.20355	58.66075	-4.19437	86.9	84.9	09:08:23	09:25:07
Armadale	ARM69	20/05/2014	58.67360	-4.08618	58.67273	-4.09368	98.2	92.4	10:05:31	10:19:11
Armadale	ARM70	20/05/2014	58.68948	-4.07612	58.69047	-4.08475	100.9	104.3	11:15:11	11:30:13
Armadale	ARM71	20/05/2014	58.68520	-3.98922	58.68420	-3.99863	107.1	111.7	12:07:01	12:26:13
Armadale	ARM72	25/05/2014	58.63768	-3.96782	58.63830	-3.96367	87.0	87.6	09:09:41	09:16:03
Armadale	ARM72	25/05/2014	58.63830	-3.96367	58.63865	-3.96162	87.6	87.0	09:16:03	09:20:09
Armadale	ARM73	25/05/2014	58.63447	-3.93235	58.63415	-3.92662	81.3	77.7	09:43:41	09:53:41
Armadale	ARM74	25/05/2014	58.63498	-3.87643	58.63387	-3.87232	76.4	76.6	10:22:03	10:32:09
Armadale	ARM75	25/05/2014	58.64455	-3.86243	58.64348	-3.85697	76.4	75.9	10:50:24	11:00:09
Armadale	ARM76	25/05/2014	58.60855	-4.37377	58.60755	-4.36727	64.0	62.9	13:29:25	13:40:11

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Armadale	ARM77	25/05/2014	58.62155	-4.37588	58.62098	-4.36848	71.9	72.1	14:02:57	14:13:33
Armadale	ARM78	25/05/2014	58.63485	-4.39692	58.63340	-4.39132	78.4	77.6	14:38:11	14:48:29
Armadale	ARM79	25/05/2014	58.64127	-4.38830	58.64010	-4.38265	87.9	85.4	15:10:59	15:21:05
Armadale	ARM80	26/05/2014	58.60048	-4.11418	58.59932	-4.10883	49.7	47.4	10:05:23	10:15:35
Armadale	ARM81	26/05/2014	58.60830	-4.05833	58.60832	-4.05497	43.6	43.2	10:43:07	10:48:15
Armadale	ARM82	26/05/2014	58.64015	-4.05837	58.64002	-4.05755	78.6	78.3	11:25:31	11:26:59
Armadale	ARM82	26/05/2014	58.64002	-4.05755	58.63982	-4.05660	78.3	78.4	11:26:59	11:28:41
Armadale	ARM82	26/05/2014	58.63982	-4.05660	58.63917	-4.05222	78.4	77.1	11:28:41	11:35:43
Armadale	ARM83	26/05/2014	58.64673	-4.11117	58.64553	-4.10625	88.9	86.6	12:03:27	12:13:35
Armadale	ARM84	26/05/2014	58.66773	-4.01953	58.66667	-4.01295	94.5	90.1	12:44:35	12:54:41
Armadale	ARM85	27/05/2014	58.65463	-3.82523	58.65547	-3.83115	82.6	84.8	08:52:41	09:03:05
Armadale	ARM86	27/05/2014	58.65768	-3.85298	58.65857	-3.85852	83.2	88.1	09:22:53	09:33:05
Armadale	ARM87	27/05/2014	58.64995	-3.85905	58.65082	-3.86453	80.7	81.5	09:54:29	10:04:29
Armadale	ARM88	27/05/2014	58.65560	-3.88745	58.65610	-3.89378	93.1	93.4	10:24:47	10:35:03
Armadale	ARM89	27/05/2014	58.67352	-3.90667	58.67453	-3.90013	104.8	105.5	10:56:17	11:06:27
Armadale	ARM90	27/05/2014	58.69490	-3.86192	58.69315	-3.85698	108.1	108.9	14:54:45	15:04:53
Armadale	ARM91	27/05/2014	58.68398	-3.83422	58.68180	-3.83075	94.4	90.2	15:27:11	15:37:21
Armadale	ARM92	27/05/2014	58.67395	-3.84618	58.67233	-3.84152	100.5	91.5	16:00:49	16:10:59
Armadale	ARM93	27/05/2014	58.68060	-3.88662	58.67977	-3.88055	101.6	102.1	16:36:17	16:46:21
Armadale	ARM94	28/05/2014	58.58828	-3.81317	58.58837	-3.81718	47.1	46.0	09:58:41	10:04:21
Armadale	ARM94	28/05/2014	58.58837	-3.81718	58.58848	-3.81983	46.0	44.9	10:04:21	10:09:03
Armadale	ARM95	28/05/2014	58.59460	-3.80250	58.59480	-3.80428	43.1	44.7	10:27:47	10:30:45
Armadale	ARM95	28/05/2014	58.59480	-3.80428	58.59498	-3.80630	44.7	45.0	10:30:45	10:34:43
Armadale	ARM95	28/05/2014	58.59498	-3.80630	58.59507	-3.80850	45.0	44.5	10:34:43	10:38:05
Armadale	ARM96	28/05/2014	58.59498	-3.79242	58.59695	-3.78930	43.8	43.4	11:15:21	11:25:23
Armadale	ARM97	28/05/2014	58.60528	-3.78358	58.60615	-3.77793	42.3	43.6	11:39:39	11:49:47
Armadale	ARM98	28/05/2014	58.60697	-3.81898	58.60837	-3.81392	47.8	48.2	12:13:17	12:23:23
Armadale	ARM99	28/05/2014	58.68208	-3.96063	58.68073	-3.95560	110.8	112.6	15:34:41	15:44:41
Armadale	ARM100	28/05/2014	58.67525	-3.93715	58.67398	-3.93233	108.8	107.3	16:02:33	16:12:35

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Armadale	ARM101	28/05/2014	58.69252	-3.94062	58.69137	-3.93525	112.6	114.7	16:49:09	16:59:00
Armadale	ARM102	28/05/2014	58.69645	-3.88818	58.69675	-3.88240	110.9	112.1	17:24:41	17:34:43
Armadale	ARM103	29/05/2014	58.58718	-3.83073	58.58873	-3.82675	43.2	43.8	05:53:19	06:03:25
Armadale	ARM104	29/05/2014	58.59707	-3.83418	58.59943	-3.83417	43.8	44.8	06:22:17	06:32:23
Armadale	ARM105	29/05/2014	58.60408	-3.83838	58.60647	-3.83695	47.2	49.2	06:43:43	06:53:47
Armadale	ARM106	29/05/2014	58.62337	-3.85792	58.62402	-3.86058	72.7	73.5	07:20:25	07:27:25
Armadale	ARM107A	29/05/2014	58.57838	-3.84262	58.57888	-3.83937	35.2	40.5	11:10:59	11:15:49
Armadale	ARM107A	29/05/2014	58.57888	-3.83937	58.57923	-3.83648	40.5	41.9	11:15:49	11:19:49
Armadale	ARM107B	29/05/2014	58.57990	-3.83312	58.58185	-3.82180	-3.3	-3.3	11:25:00	11:45:00
Armadale	ARM108A	29/05/2014	58.58482	-3.79358	58.58552	-3.79177	-2.7	-2.7	12:03:01	12:07:59
Armadale	ARM108B	29/05/2014	58.58613	-3.78852	58.58830	-3.78547	-2.7	-2.7	12:12:49	12:22:56
Armadale	ARM109	29/05/2014	58.58993	-3.78277	58.59113	-3.78063	43.6	-2.4	12:30:30	12:36:04
Armadale	ARM109	29/05/2014	58.59113	-3.78063	58.59227	-3.77898	-2.4	-2.4	12:36:04	12:40:54
Armadale	ARM110	30/05/2014	58.65388	-3.97947	58.65388	-3.97945	83.4	83.4	05:55:56	06:06:00
Armadale	ARM111	30/05/2014	58.66465	-3.93270	58.66465	-3.93270	97.9	94.3	06:28:35	06:38:39
Armadale	ARM112	30/05/2014	58.66538	-3.88312	58.66538	-3.88312	99.5	100.5	07:02:14	07:14:17
Armadale	ARM113	30/05/2014	58.68832	-3.89452	58.68832	-3.89452	114.2	115.2	07:36:27	07:46:35
Fetlar to Haroldswick	FTH01_V	15/08/2014	60.76070	-0.78207	60.76128	-0.78328	47.8	51.9	14:52:21	14:56:59
Fetlar to Haroldswick	FTH01_V	15/08/2014	60.76128	-0.78328	60.76135	-0.78347	51.9	51.6	14:56:59	14:57:32
Fetlar to Haroldswick	FTH02_V	15/08/2014	60.73548	-0.77762	60.73535	-0.77768	38.5	38.9	14:30:06	14:31:32
Fetlar to Haroldswick	FTH02_V	15/08/2014	60.73535	-0.77768	60.73498	-0.77792	38.9	38.3	14:31:32	14:33:48
Fetlar to Haroldswick	FTH02_V	15/08/2014	60.73498	-0.77792	60.73475	-0.77817	38.3	39.1	14:33:48	14:35:13
Fetlar to Haroldswick	FTH03_V	15/08/2014	60.71417	-0.77115	60.71365	-0.77127	81.6	80.9	14:07:20	14:09:15
Fetlar to Haroldswick	FTH03_V	15/08/2014	60.71365	-0.77127	60.71283	-0.77137	80.9	81.7	14:09:15	14:12:26
Fetlar to Haroldswick	FTH04_V	15/08/2014	60.69408	-0.76355	60.69205	-0.76373	88.8	91.2	13:42:56	13:47:58
Fetlar to Haroldswick	FTH05_V	15/08/2014	60.67028	-0.75588	60.66987	-0.75568	79.9	79.7	12:56:33	12:57:41
Fetlar to Haroldswick	FTH05_V	15/08/2014	60.66987	-0.75568	60.66835	-0.75538	79.7	77.2	12:57:41	13:01:32
Fetlar to Haroldswick	FTH06_V	16/08/2014	60.68392	-0.80842	60.68637	-0.80693	22.0	28.5	07:40:35	07:45:45
Fetlar to Haroldswick	FTH07_V	15/08/2014	60.70435	-0.78918	60.70417	-0.78942	50.3	49.9	16:01:49	16:03:42

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Fetlar to Haroldswick	FTH07_V	15/08/2014	60.70417	-0.78942	60.70385	-0.78973	49.9	50.6	16:03:42	16:06:54
Fetlar to Haroldswick	FTH08_V	16/08/2014	60.68468	-0.78888	60.68490	-0.78892	58.2	59.4	07:22:42	07:23:20
Fetlar to Haroldswick	FTH08_V	16/08/2014	60.68490	-0.78892	60.68648	-0.78873	59.4	61.7	07:23:20	07:27:44
Fetlar to Haroldswick	FTH09_V	16/08/2014	60.66160	-0.78047	60.66335	-0.78010	36.2	40.9	07:01:13	07:06:06
Fetlar to Haroldswick	FTH10_V	16/08/2014	60.66765	-0.80285	60.66832	-0.80225	51.5	45.6	08:00:57	08:03:02
Fetlar to Haroldswick	FTH10_V	16/08/2014	60.66832	-0.80225	60.66918	-0.80120	45.6	39.8	08:03:02	08:05:53
Fetlar to Haroldswick	FTH11_V	15/08/2014	60.64328	-0.77365	60.64252	-0.77320	46.3	50.0	12:31:27	12:34:21
Fetlar to Haroldswick	FTH11_V	15/08/2014	60.64252	-0.77320	60.64227	-0.77307	50.0	52.2	12:34:21	12:35:09
Fetlar to Haroldswick	FTH11_V	15/08/2014	60.64227	-0.77307	60.64190	-0.77285	52.2	51.8	12:35:09	12:36:25
Fetlar to Haroldswick	FTH12_V	15/08/2014	60.62025	-0.75592	60.61807	-0.75307	66.2	69.3	12:05:03	12:10:08
Fetlar to Haroldswick	FTH13_V	15/08/2014	60.58780	-0.73235	60.58625	-0.73275	83.2	84.9	11:30:48	11:35:54
Fetlar to Haroldswick	FTH14_V	15/08/2014	60.56850	-0.75973	60.56772	-0.75943	85.5	86.2	10:13:57	10:16:48
Fetlar to Haroldswick	FTH14_V	15/08/2014	60.56772	-0.75943	60.56712	-0.75927	86.2	87.0	10:16:48	10:19:11
Fetlar to Haroldswick	FTH15_V	15/08/2014	60.58612	-0.75962	60.58495	-0.76035	67.4	68.2	11:07:10	11:12:21
Fetlar to Haroldswick	FTH16_V	15/08/2014	60.56008	-0.80432	60.55892	-0.80362	66.6	59.8	09:50:53	09:56:07
Fetlar to Haroldswick	FTH17_V	15/08/2014	60.56165	-0.84118	60.56083	-0.84092	70.8	72.0	09:14:33	09:19:48
Fetlar to Haroldswick	FTH19_V	16/08/2014	60.61942	-0.95595	60.62160	-0.95443	26.5	21.8	09:24:42	09:30:02
Fetlar to Haroldswick	FTH20_V	16/08/2014	60.60447	-0.95598	60.60590	-0.95467	34.9	35.1	09:44:08	09:49:12
Fetlar to Haroldswick	FTH21_V	16/08/2014	60.59863	-0.97190	60.60043	-0.97017	32.0	30.1	10:00:43	10:07:09
Fetlar to Haroldswick	FTH23_V	15/08/2014	60.56972	-0.82218	60.56910	-0.82083	47.5	52.5	09:33:25	09:39:21
Mousa to Boddam	MTB02_V	17/08/2014	59.95463	-1.23920	59.95477	-1.24127	55.7	54.7	10:09:36	10:14:36
Mousa to Boddam	MTB03_V	17/08/2014	59.94475	-1.25300	59.94483	-1.25438	34.3	32.7	08:04:23	08:09:41
Mousa to Boddam	MTB04_V	17/08/2014	59.93223	-1.25183	59.93215	-1.25282	52.4	49.0	08:22:12	08:25:11
Mousa to Boddam	MTB04_V	17/08/2014	59.93215	-1.25282	59.93208	-1.25332	49.0	48.6	08:25:11	08:26:55
Mousa to Boddam	MTB04_V	17/08/2014	59.93208	-1.25332	59.93202	-1.25357	48.6	48.5	08:26:55	08:27:44
Mousa to Boddam	MTB05_V	17/08/2014	59.91560	-1.25585	59.91542	-1.25740	60.0	57.7	08:41:59	08:47:02
Mousa to Boddam	MTB06_V	17/08/2014	59.92288	-1.24780	59.92272	-1.24952	70.3	68.7	09:00:08	09:04:29
Mousa to Boddam	MTB06_V	17/08/2014	59.92272	-1.24952	59.92268	-1.24980	68.7	68.8	09:04:29	09:05:12
Mousa to Boddam	MTB07_V	17/08/2014	59.93807	-1.23388	59.93870	-1.23510	67.8	64.8	09:23:29	09:28:20

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Mousa to Boddam	MTB08_V	17/08/2014	59.94802	-1.23562	59.94825	-1.23828	53.1	49.1	09:55:35	10:00:32
Noss Head	NH01	11/05/2014	58.45887	-3.01078	58.46243	-3.01255	46.9	45.8	16:12:41	16:34:10
Noss Head	NH02	11/05/2014	58.45892	-3.01853	58.46212	-3.02092	44.5	42.4	16:48:28	17:13:38
Noss Head	NH03	11/05/2014	58.45893	-3.02990	58.46007	-3.02655	36.4	41.4	17:26:54	17:44:01
Noss Head	NH03	11/05/2014	58.46007	-3.02655	58.46117	-3.02498	41.4	41.6	17:44:01	17:52:09
Noss Head	NH04	11/05/2014	58.47815	-3.02528	58.48010	-3.02332	44.8	45.7	18:12:40	18:22:16
Noss Head	NH04	11/05/2014	58.48010	-3.02332	58.48083	-3.02253	45.7	47.2	18:22:16	18:26:01
Noss Head	NH05_V	21/08/2014	58.46868	-3.02118	58.46703	-3.02030	42.6	42.3	06:49:10	06:54:15
Noss Head	NH06_V	21/08/2014	58.47230	-3.02405	58.47078	-3.02265	42.7	42.1	07:20:08	07:25:14
Noss Head	NH07_V	21/08/2014	58.46822	-3.02880	58.46625	-3.02745	37.6	37.2	07:03:08	07:08:33
Noss Head	NH08_V	21/08/2014	58.46235	-3.02070	58.46078	-3.02037	41.8	42.8	07:35:32	07:40:35
Noss Head	NH11_V	21/08/2014	58.44473	-3.02425	58.44325	-3.02443	46.4	44.7	08:05:29	08:10:52
Noss Head	NH12_V	21/08/2014	58.44217	-3.00490	58.44095	-3.00562	55.7	55.7	08:38:29	08:43:33
Noss Head	NH13_V	21/08/2014	58.43508	-3.01727	58.43398	-3.01768	50.4	51.7	08:52:53	08:57:44
Noss Head	NH14_V	21/08/2014	58.45470	-3.03292	58.45347	-3.03283	35.4	35.5	07:50:26	07:55:21
Noss Head	NH15_V	21/08/2014	58.43108	-3.01218	58.43000	-3.01272	59.1	60.3	09:06:43	09:11:39
Noss Head	NH16_V	21/08/2014	58.42705	-3.02802	58.42640	-3.02915	47.9	47.7	09:22:56	09:27:54
Noss Head	NH18_V	21/08/2014	58.43720	-3.03623	58.43707	-3.03675	38.7	37.9	09:40:33	09:45:27
Noss Head	NH19_V	21/08/2014	58.44100	-3.03095	58.44068	-3.03145	42.0	42.2	09:54:18	09:59:11
Noss Head	NH20_V	21/08/2014	58.46205	-3.03187	58.46257	-3.03278	32.6	31.3	10:14:21	10:19:21
Moray Firth	MF01	19/07/2014	57.80183	-2.52097	57.80248	-2.52518	82.6	88.8	11:03:57	11:14:06
Fraserburgh	FRB01	17/07/2014	57.85562	-1.74993	57.85728	-1.74478	81.4	77.0	07:42:13	07:52:17
Fraserburgh	FRB02	17/07/2014	57.86168	-1.77425	57.86270	-1.77278	100.2	97.9	08:18:44	08:23:45
Fraserburgh	FRB03	17/07/2014	57.86223	-1.77298	57.86467	-1.77300	97.4	99.0	11:12:08	11:22:35
Fraserburgh	FRB04	17/07/2014	57.87307	-1.79678	57.87542	-1.79657	90.6	88.0	11:41:42	11:51:48
Fraserburgh	FRB05	17/07/2014	57.87747	-1.77783	57.87872	-1.77577	76.0	76.0	12:09:47	12:19:53
Fraserburgh	FRB06	17/07/2014	57.87510	-1.75558	57.87593	-1.75303	83.6	81.4	12:38:10	12:48:18
Fraserburgh	FRB07	17/07/2014	57.88677	-1.75613	57.88788	-1.75343	74.1	75.6	13:10:13	13:20:31
Fraserburgh	FRB08	17/07/2014	57.89462	-1.74945	57.89242	-1.74712	74.1	73.3	13:32:27	13:42:42

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Fraserburgh	FRB09	17/07/2014	57.90335	-1.75778	57.90188	-1.75285	84.7	82.1	14:04:37	14:14:48
Fraserburgh	FRB10	17/07/2014	57.90537	-1.77353	57.90450	-1.76927	88.0	88.7	14:31:12	14:41:21
Fraserburgh	FRB11	17/07/2014	57.91335	-1.79612	57.91140	-1.79173	88.3	87.1	15:00:14	15:10:26
Fraserburgh	FRB12	18/07/2014	57.88568	-1.80522	57.88725	-1.80695	81.8	83.1	07:40:29	07:50:35
Fraserburgh	FRB13	18/07/2014	57.90028	-1.80007	57.90212	-1.80213	87.6	87.9	08:09:33	08:19:41
Fraserburgh	FRB14	18/07/2014	57.89200	-1.77942	57.89363	-1.78278	78.2	79.4	08:42:28	08:53:06
Fraserburgh	FRB15	18/07/2014	57.88263	-1.71610	57.88485	-1.71988	73.9	72.3	09:22:45	09:32:52
Fraserburgh	FRB16	18/07/2014	57.85237	-1.69335	57.85487	-1.69833	135.1	129.5	10:01:33	10:11:40
Fraserburgh	FRB17	18/07/2014	57.84203	-1.62852	57.84633	-1.63222	75.4	102.1	11:13:08	11:23:18
Fraserburgh	FRB18	18/07/2014	57.82075	-1.64653	57.82483	-1.64523	63.6	64.1	11:54:35	12:04:47
Fraserburgh	FRB19	18/07/2014	57.83452	-1.73338	57.83683	-1.73643	92.2	96.7	12:41:00	12:51:09
Fraserburgh	FRB20	18/07/2014	57.80853	-1.75188	57.81010	-1.75210	83.5	83.7	13:29:54	13:40:03
Fraserburgh	FRB21	18/07/2014	57.80752	-1.85170	57.80775	-1.85408	109.9	110.3	14:22:53	14:33:06
Fraserburgh	FRB22	18/07/2014	57.79067	-1.77867	57.78990	-1.77152	94.8	90.1	15:03:54	15:14:02
Fraserburgh	FRB23	18/07/2014	57.78752	-1.87567	57.78503	-1.86823	60.3	51.5	16:04:07	16:17:20
Cruden Bay	CB01	16/07/2014	57.36222	-1.44288	57.36552	-1.44238	108.4	108.4	11:33:18	11:43:26
Cruden Bay	CB02	16/07/2014	57.34975	-1.44565	57.35123	-1.44602	105.4	105.4	12:08:47	12:18:57
Cruden Bay	CB03	16/07/2014	57.33375	-1.43973	57.33405	-1.44032	107.8	107.4	12:42:36	12:52:50
Cruden Bay	CB04	16/07/2014	57.32383	-1.47352	57.32217	-1.47502	96.6	98.6	13:15:35	13:28:52
Cruden Bay	CB05	16/07/2014	57.32375	-1.50693	57.32162	-1.50720	100.3	98.4	13:50:08	14:00:21
Cruden Bay	CB06	16/07/2014	57.34388	-1.47775	57.34085	-1.47833	104.4	103.3	14:25:18	14:35:36
Kincardine	KC01	11/07/2014	57.07917	-2.07370	57.08160	-2.07153	29.0	28.7	06:30:08	06:40:32
Kincardine	KC02	11/07/2014	57.07622	-2.05268	57.07757	-2.05125	43.1	43.2	06:56:48	07:07:28
Kincardine	KC03	11/07/2014	57.07033	-2.06017	57.07097	-2.05763	41.9	43.2	07:23:42	07:35:54
Kincardine	KC04	11/07/2014	57.06280	-2.06465	57.06247	-2.06103	43.4	46.0	07:50:44	08:01:29
Kincardine	KC05	11/07/2014	57.06333	-2.07773	57.06217	-2.07443	34.9	37.6	08:17:14	08:28:29
Kincardine	KC06	11/07/2014	57.08322	-2.07123	57.08140	-2.06837	27.9	30.1	08:49:18	09:00:25
Kincardine	KC07	11/07/2014	57.10015	-2.04565	57.09777	-2.04415	34.8	37.2	09:25:03	09:34:35
Kincardine	KC08	11/07/2014	57.09523	-2.03657	57.09313	-2.03757	41.3	42.0	09:44:09	09:54:27

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Kincardine	KC09	11/07/2014	57.08855	-2.04630	57.08520	-2.04603	39.4	41.8	10:06:59	10:17:14
Kincardine	KC10	11/07/2014	57.10605	-2.04582	57.10342	-2.04860	30.6	31.1	11:09:59	11:20:24
Kincardine	KC11	11/07/2014	57.11127	-2.04045	57.10915	-2.04320	30.1	29.9	11:40:03	11:49:09
Kincardine	KC12	11/07/2014	57.11077	-2.02565	57.10840	-2.02773	37.5	38.6	12:10:36	12:21:13
Kincardine	KC13	12/07/2014	57.12420	-2.01000	57.12892	-2.00827	40.0	40.0	06:28:50	06:39:07
Kincardine	KC14	12/07/2014	57.12457	-2.01785	57.12852	-2.01508	36.5	35.7	06:54:33	07:05:21
Kincardine	KC15	12/07/2014	57.13032	-2.03663	57.13277	-2.03495	20.9	21.9	07:24:24	07:33:50
Kincardine	KC16	12/07/2014	57.12640	-2.03272	57.12905	-2.03063	25.9	26.3	07:46:57	07:57:53
Kincardine	KC17	12/07/2014	57.12275	-2.03855	57.12363	-2.03640	24.3	26.1	08:12:29	08:22:05
Kincardine	KC18	12/07/2014	57.11772	-2.02757	57.11768	-2.02697	31.8	32.3	08:36:49	08:42:13
Kincardine	KC19	12/07/2014	57.09732	-2.05958	57.09638	-2.05895	30.6	31.6	09:02:32	09:12:16
Kincardine	KC20	12/07/2014	57.08788	-2.05927	57.08615	-2.06050	32.0	31.9	09:21:30	09:32:26
Kincardine	KC21	12/07/2014	57.06362	-2.07925	57.06017	-2.08082	34.0	33.7	09:55:03	10:05:45
Kincardine	KC22	12/07/2014	57.07690	-2.07662	57.07537	-2.07817	28.8	29.5	10:26:39	10:32:53
Kincardine	KC23	12/07/2014	57.04928	-2.05585	57.04820	-2.05922	57.6	55.6	14:09:43	14:19:49
Kincardine	KC24	12/07/2014	57.05828	-2.07952	57.05772	-2.08252	35.0	32.6	14:36:33	14:46:24
Kincardine	KC25	12/07/2014	57.05750	-2.05138	57.05608	-2.05483	56.5	54.6	15:03:53	15:14:17
Kincardine	KC26	13/07/2014	57.06708	-2.03303	57.07157	-2.03108	54.5	51.9	07:06:54	07:17:29
Kincardine	KC27	13/07/2014	57.07932	-2.03232	57.08320	-2.03062	49.1	47.2	07:30:53	07:41:22
Kincardine	KC28	13/07/2014	57.09275	-2.02318	57.09635	-2.02195	45.1	44.9	07:56:00	08:07:12
Kincardine	KC29	13/07/2014	57.10077	-2.00528	57.10323	-2.00525	52.2	51.9	08:21:41	08:31:53
Kincardine	KC30	13/07/2014	57.10182	-2.02600	57.10350	-2.02488	42.3	41.8	08:49:58	09:00:26
Kincardine	KC31	13/07/2014	57.10847	-2.00318	57.10910	-2.00437	51.7	50.2	09:16:33	09:27:03
Kincardine	KC32	13/07/2014	57.11783	-2.00413	57.11645	-2.00537	42.6	44.2	09:43:19	09:53:05
Kincardine	KC33	14/07/2014	57.07640	-2.01505	57.07535	-2.01835	56.0	55.1	15:03:11	15:13:21
Kincardine	KC34	14/07/2014	57.06153	-2.02505	57.06323	-2.02603	41.2	45.0	16:18:03	16:28:18
Kincardine	KC35	14/07/2014	57.08440	-1.98413	57.08668	-1.98405	63.9	63.3	16:50:37	17:00:50
Kincardine	KC36	15/07/2014	57.07442	-1.99750	57.07527	-1.99607	59.3	60.8	07:02:40	07:07:35
Kincardine	KC37	15/07/2014	57.05578	-2.00707	57.06050	-2.00472	63.7	62.0	07:28:29	07:38:39

Annex 2 continued

Survey	Site D	Date	Start latitude	Start longitude	End latitude	End longitude	Depth CD start (m)	Depth CD end (m)	Time start (UTC)	Time end (UTC)
Kincardine	KC38	15/07/2014	57.06215	-1.97588	57.06705	-1.97277	60.2	61.5	07:58:52	08:09:06
Kincardine	KC39	15/07/2014	57.04932	-1.99637	57.05445	-1.99318	59.5	59.1	08:35:29	08:45:36
Kincardine	KC40	15/07/2014	57.04250	-1.97122	57.04687	-1.96708	60.3	60.8	09:09:17	09:19:32
Kincardine	KC41	15/07/2014	57.04977	-1.94587	57.05392	-1.94168	68.6	70.1	09:36:11	09:46:25
Kincardine	KC42	15/07/2014	57.02725	-1.97543	57.02947	-1.97055	61.2	62.5	10:16:05	10:26:27
Kincardine	KC43	15/07/2014	57.02945	-1.93962	57.03010	-1.93663	65.0	64.5	11:14:05	11:24:24
Kincardine	KC44	15/07/2014	57.00563	-1.94487	57.00477	-1.94248	63.8	63.0	11:48:24	11:58:39
Kincardine	KC45	15/07/2014	57.03178	-1.91288	57.03020	-1.91152	64.1	65.4	12:23:15	12:33:18
Kincardine	KC46	15/07/2014	57.03532	-1.87422	57.03255	-1.87427	66.8	1.6	12:53:08	13:03:19
Kincardine	KC47	15/07/2014	57.04585	-1.91860	57.04232	-1.92078	62.4	63.3	13:31:38	13:41:50
Kincardine	KC48	15/07/2014	57.06325	-1.90733	57.05875	-1.91027	68.8	65.3	14:07:59	14:18:06
Kincardine	KC49	15/07/2014	57.07238	-1.92898	57.06807	-1.93098	72.3	71.4	14:42:24	14:52:35
Kincardine	KC50	15/07/2014	57.07197	-1.95692	57.06760	-1.95878	60.4	60.9	15:10:50	15:20:57
Kincardine Site A	KCA1	08/07/2014	57.08428	-1.79650	57.08400	-1.79465	96.5	96.3	11:23:45	11:35:28
Kincardine Site A	KCA2	08/07/2014	57.08732	-1.76595	57.08817	-1.76342	104.7	103.1	12:06:57	12:20:03
Kincardine Site A	KCA3	08/07/2014	57.08255	-1.74842	57.08272	-1.74607	108.9	110.0	12:40:33	12:53:03
Kincardine Site A	KCA4	08/07/2014	57.08830	-1.72000	57.08935	-1.72222	126.3	123.7	13:26:38	13:38:07
Kincardine Site A	KCA5	08/07/2014	57.09345	-1.77273	57.09632	-1.77498	95.1	91.9	14:09:32	14:21:59
Kincardine Site A	KCA6	08/07/2014	57.08833	-1.81168	57.09140	-1.81535	94.3	94.3	14:45:57	14:59:07

ANNEX 3: PHYSICAL AND BIOLOGICAL DESCRIPTIONS OF THE SURVEY SITES. SITE ID CODES CORRESPOND WITH THOSE IN ANNEX 2. PMF CODES IN BLACK, PF CODES IN RED. CODES USED ARE AS FOLLOWS: HABITATS - BM (BURROWED MUD), CCS (CIRCALITTORAL SAND AND COARSE SEDIMENT COMMUNITIES), CMS (CIRCALITTORAL MUDDY SAND COMMUNITIES), HM (HORSE MUSSEL BEDS), KS (KELP AND SEAWEED COMMUNITIES ON SUBLITTORAL SEDIMENT), MB (MAERL BEDS), NS (NORTHERN SEA FAN AND SPONGE COMMUNITIES), SG (SEAGRASS BEDS); SPECIES - AI (*ARCTICA ISLANDICA*), FQ (*FUNICULINA QUADRANGULARIS*), LA (*LEPTOMETRA CELTICA* AGGREGATIONS ON MIXED SUBSTRATA), LC (*L. CELTICA*), MM (*MOLVA MOLVA*), PM (*PACHYCERIANTHUS MULTIPLICATUS*), SP (*SWIFTIA PALLIDA*)

Site ID	Substrate	Biota	Biotope	PMF/PF
V01	Maerl with pebbles, shells and latterly occasional cobbles, boulders and possibly bedrock outcrop.	Live <i>Phymatolithon calcareum</i> (A for most of run, tailing off towards the end). Algal turf generally very sparse but with patches of <i>Desmarestia</i> spp. and <i>Halidrys siliquosa</i> . Pectinidae sp. (O), <i>Henricia</i> sp.? (O)	SS.SMp.Mrl.Pcal	MB
V02	Mud.	Small holes and sparse emergent infaunal tubes but no megafaunal burrows evident. Paguridae spp. (F), Crinoidea sp. (O), Gobiidae sp. (O).	SS.SMu.CFiMu	
V03	Scattered coarse sand on silty sand.	Patchy but dense turf or mat of red algae, possibly <i>Phyllophora crispa</i> . Ascidians (F, possibly <i>Asciella aspersa</i>), <i>Asterias rubens</i> (F), <i>Chaetopterus variopedatus</i> (O),	SS.SMp.KSwSS.Pcri	KS
V04	Maerl.	Dense live <i>Phymatolithon calcareum</i> (A) with dense <i>Saccharina latissima</i> (A) and <i>Desmarestia aculeata</i> (P).	SS.SMp.Mrl.Pcal.R	MB
V05	Maerl with coarse sand, pebbles and shells.	Rich site with live maerl possibly only F overall but C-A in patches and supporting dense <i>Antedon</i> spp. (A) and algal turf, probably largely red (C). <i>Saccharina latissima</i> (R), <i>Cerianthus lloydii</i> (P), <i>Asterias rubens</i> (F), <i>Luidia ciliaris</i> (O), Pectinidae sp. (P).	SS.SMp.Mrl.Pcal.R	MB
V06	Scattered dead maerl on sand.	<i>Saccharina latissima</i> (A). Some live maerl possibly present.	SS.SMp.KSwSS.LsacR.Sa	KS
V07	Sand-scoured bedrock.	<i>Saccharina latissima</i> (A) supporting <i>Antedon</i> sp. (C) and with an understorey of filamentous and foliose red algae (A) and <i>Desmarestia aculeata</i> (P). <i>Ulva</i> sp. (R), <i>Necora puber</i> (P), <i>Asterias rubens?</i> (P), <i>Echinus esculentus</i> (F).	IR.HIR.KSed.LsacSac	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
V08	Maerl gravel.	Bed of predominantly dead maerl, with live <i>Phymatolithon calcareum</i> (R). <i>Zostera marina</i> locally abundant. <i>Chorda filum</i> (S), <i>Saccharina latissima</i> (F), algal turf (C).	SS.SMp.KSwSS.LsacR.Gv SS.SMp.SSgr.Zmar	KS SG
V09	Maerl.	Fairly rich live maerl bed with <i>Phymatolithon calcareum</i> (C). Dense algal cover including <i>Saccharina latissima</i> (A), Ectocarpaceae sp. (P) and <i>Chorda filum</i> (P). <i>Anemonia viridis</i> (P), <i>Hyas</i> sp. (P).	SS.SMp.Mrl.Pcal.R	MB
V10	Maerl.	Fairly rich live maerl bed with <i>Phymatolithon calcareum</i> (C) and <i>Lithothamnion glaciale</i> possibly present. Dense algal cover including <i>Saccharina latissima</i> (A), Ectocarpaceae sp. (P), <i>Desmarestia aculeata</i> (P) and <i>Chorda filum</i> (P).	SS.SMp.Mrl.Pcal.R	MB
V11	Maerl gravel.	Bed of predominantly dead maerl, with live <i>Phymatolithon calcareum</i> (R-O). <i>Saccharina latissima</i> (O), algal turf (S), apparently largely Ectocarpaceae sp.	SS.SMp.KSwSS.LsacR.Gv	KS
V12	Bedrock and pebbles and cobbles.	Dense forest of <i>Laminaria hyperborea</i> (A) supporting <i>Anemonia viridis</i> (P) and Ectocarpaceae sp. (P).	IR.MIR.KR	
V12	Small waves of coarse sand and maerl gravel.	Algal turf (A) concentrated in wave troughs and apparently dominated by Ectocarpaceae sp. <i>Cerianthus lloydii</i> (C). <i>Phymatolithon calcareum</i> (R), <i>Saccharina latissima</i> (O).	SS.SMp.KSwSS.LsacR.Gv	KS
V14	Sand with scattered gravel and <i>Ensis</i> shells.	Fairly rich patchy algal turf (A) and scattered <i>Saccharina latissima</i> (F). <i>Marthasterias glacialis</i> (P), bivalve siphons (P).	SS.SMp.KSwSS.LsacR.Sa	KS
V15	Fine-medium sand with surface scatter of coarse sand particles and gravel and <i>Ensis</i> shells.	Patchy and sparse algal turf (F), although some and possibly most appears to be drift material, including <i>Saccharina latissima</i> (R). Emergent infaunal tubes (P).	SS.SSa.IMuSa.EcorEns	
V16	Thin maerl veneer on muddy sediment.	Live <i>Phymatolithon calcareum</i> (F, at least in first half of run). Sediment perforated by many small holes or burrows. <i>Cerianthus lloydii</i> (P).	SS.SMp.Mrl.Pcal	MB
V17	Thin gravel veneer on muddy sediment.	Sediment supporting dense <i>Cerianthus lloydii</i> (C) and perforated by many small holes.	SS.SMx.CMx	
V18	Sand-scoured cobbles and boulders.	Forest of <i>Saccharina latissima</i> (A) with understorey of foliose red algae (A). <i>Echinus esculentus</i> (F), <i>Asterias rubens</i> (P).	IR.HIR.KSed.LsacSac	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
V19	Mud.	Well-burrowed mud with some burrows characteristic of small <i>Nephrops norvegicus</i> and <i>Calocaris macandreae</i> , as well as many small holes. Some polychaete casts, <i>Virgularia mirabilis</i> (O)	SS.SMu.CFiMu.SpnMeg	BM
V20	Cobbles and boulders on sand.	Rock supports <i>Saccharina latissima</i> (C) and dense patches of red algae (A). <i>Asterias rubens</i> (P).	IR.HIR.KSed.LsacSac	
V20	Sand with scattered gravel and pebbles.	Algal patches, apparently mostly filamentous reds (F) with scattered <i>Saccharina latissima</i> (F). Paguridae sp. (P).	SS.SMp.KSwSS.LsacR.Sa	KS
V21	Coarse sand with gravel and pebbles.	<i>Saccharina latissima</i> (C). Much algal drift material including kelp. Sparse algal turf including Ectocarpaceae sp.?	SS.SMp.KSwSS.LsacR.Gv	KS
V22	Silty sand with scattered gravel and pebbles.	<i>Saccharina latissima</i> (F, locally A), algal clumps (apparently mostly red - F), <i>Antedon bifida</i> (O), <i>Chaetopterus variopedatus?</i> (P), <i>Marthasterias glacialis</i> (P).	SS.SMp.KSwSS.LsacR.Sa	KS
V23	Soft mud.	<i>Philine aperta</i> (C, locally A), <i>Ascidia mentula?</i> (O), Paguridae spp. (O), <i>Asterias rubens</i> (P)	SS.SMu.IFiMu.PhiVir	
V24	Silty sand.	<i>Saccharina latissima</i> (O) and smaller algae (O) but possibly much of it drift material. Sediment with many small holes and <i>Arenicola marina</i> casts (P), <i>Cerianthus lloydii</i> (P).	SS.SSa.IMuSa.AreISa	
V25	Waves of maerl.	Live <i>Phymatolithon calcareum</i> initially largely confined to wave troughs (where F) but becoming more widely distributed and locally C or A later. <i>Saccharina latissima</i> initially fairly sparse but becoming A, with other algae including <i>Desmarestia</i> sp. following similar trend; however, the algae appears to be largely drift material. <i>Cerianthus lloydii</i> (P), <i>Asterias rubens</i> (P).	SS.SMp.Mrl.Pcal.NMix	MB
V26	Small waves of coarse sand with occasional boulders and gravel and some pebbles concentrated in troughs.	Stones support sparse algal clumps, apparently mostly reds (F) and <i>Saccharina latissima</i> (O). <i>Echinus esculentus</i> (P), <i>Marthasterias glacialis</i> (P), burrowing anemones (P).	SS.SMp.KSwSS.LsacR.Gv	KS
V27	Cobbles and boulders	Stones support patchy but locally dense foliose and filamentous red algal turf (C-A) and scattered <i>Saccharina latissima</i> (F). <i>Desmarestia aculeata</i> (P), <i>Echinus esculentus</i> (C).	IR.HIR.KSed.LsacSac	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
V27	Gravel and pebbles on silty sand.	Algal patches, apparently mostly filamentous reds (F-C) with scattered <i>Saccharina latissima</i> (O). <i>Echinus esculentus</i> (P), many emergent infaunal tubes and holes.	SS.SMp.KSwSS.LsacR.Gv	KS
V28	Fine-medium sand with surface scatter of coarse sand and shells, especially <i>Ensis</i> .	<i>Saccharina latissima</i> (F), <i>Chorda filum</i> (P) and patchy algal turf (A) including red algae (C), browns and <i>Ulva</i> sp. (P). <i>Asterias rubens</i> (P). Sediment perforated by small holes and with emergent infaunal tubes.	SS.SMp.KSwSS.LsacR.Sa	KS
V29	Bedrock and boulders and areas of muddy sand.	Rock encrusted with pink coralline algae and supporting <i>Caryophyllia smithii</i> (F, locally C), Ascidiacea sp. (O) and <i>Brachyura</i> sp. (O). Sediment perforated by small holes and with sparse burrows, probably those of small <i>Nephrops norvegicus</i> (F). <i>Asterias rubens</i> (O), <i>Turritella communis</i> shells (P).	CR.MCR.EcCr.FaAlCr.Car SS.SSa.CMuSa	
V30	Waves of coarse sand with concentrations of gravel and sparser pebbles in the troughs.	<i>Cerianthus lloydii</i> (C), small tufts of algae (O). Stones encrusted with pink coralline algae (R).	SS.SCS.CCS	
V31	Sand-scoured cobbles and boulders on coarse sand.	<i>Saccharina latissima</i> (F) and red algal turf (A); pink coralline algae (O). <i>Asterias rubens</i> (O), <i>Echinus esculentus</i> (O).	IR.HIR.KSed.LsacSac	
V31	Fine-medium sand with surface scatter of coarse sand and gravel.	Sediment perforated by many small holes and covered by patchy red algal turf (C). <i>Saccharina latissima</i> (O), <i>Pecten maximus</i> ? (O).	SS.SMp.KSwSS.LsacR.Sa	KS
V32	Sand-scoured bedrock.	<i>Saccharina latissima</i> (A) with rich understorey (A) of filamentous and foliose red algae. <i>Asterias rubens</i> ? (P), <i>Echinus esculentus</i> (P), pink coralline algae (P).	IR.HIR.KSed.LsacSac	
V33	Cobbles, boulders and bedrock.	Dense forest of <i>Laminaria hyperborea</i> (A) with red algal understorey (A). <i>Echinus esculentus</i> (P).	IR.MIR.KR.Lhyp.Ft	
V34	Waves of maerl.	Live <i>Phymatolithon calcareum</i> possibly C but A locally in troughs of waves. Patchy algal cover including sparse <i>Saccharina latissima</i> and <i>Laminaria hyperborea</i> and thin turf of smaller algae (C) including various reds and browns.	SS.SMp.Mrl.Pcal.Nmix	MB

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
V35	Maerl.	Live <i>Phymatolithon calcareum</i> possibly C. Thin algal turf (C) including reds and browns; <i>Saccharina latissima</i> (F), <i>Desmarestia</i> sp. (P). <i>Asterias rubens</i> (O)	SS.SMp.Mrl.Pcal.R	MB
V36	Waves of coarse sand and maerl gravel with sparse shells and pebbles in troughs.	Live <i>Phymatolithon calcareum</i> O-F overall but C in small bands within wave troughs. <i>Saccharina latissima</i> (F) but possibly drift material. <i>Cerianthus lloydii</i> (P), <i>Marthasterias glacialis</i> (O), emergent infaunal tubes including bivalve siphons (P).	SS.SMp.Mrl.Pcal.Nmix	MB
V37	Slightly shelly medium? sand with scattered shells including <i>Ensis</i> .	Sparse red and brown algal clumps (F) including <i>Saccharina latissima</i> (O). <i>Cerianthus lloydii</i> (P), emergent infaunal tubes (P).	SS.SSa.IFiSa	
V41	Dense cobbles and boulders on coarse sand with gravel.	Stones encrusted with pink coralline algae and supporting dense filamentous and foliose red algal turf (A) and very sparse <i>Saccharina latissima</i> (R). <i>Luidia ciliaris</i> (P), <i>Echinus esculentus</i> (P).	IR.HIR.KSed	
V42	Soft mud.	Fairly well-burrowed mud with evidence of the burrows of <i>Nephrops norvegicus</i> , <i>Calocaris macandreae</i> and possibly <i>Callianassa subterranea</i> . <i>Virgularia mirabilis</i> (O), <i>Turritella communis</i> ? (P).	SS.SMu.CFiMu.SpnMeg	BM
V43	Mixed muddy gravelly sandy sediment with scattered pebbles, cobbles and boulders.	Fairly impoverished visible life. Stones encrusted with pink coralline algae (O) and serpulid worms (F). Sediment perforated by small holes. Galatheidae sp. (P), <i>Marthasterias glacialis</i> (P), <i>Modiolus modiolus</i> ? (R).	SS.SMx.CMx	
V45	Silted bedrock and boulders, cobbles and pebbles on gravelly silty sediment.	Rock encrusted with pink coralline algae (F) and serpulid worms (O) and supporting <i>Axinella infundibuliformis/Phakellia ventilabrum</i> (O, locally F), <i>Caryophyllia smithii</i> (C), <i>Diazona violacea</i> (F), <i>Ascidia virginea</i> (P), <i>Ascidia conchilega</i> ? (P), hydroid clumps (R) and <i>Swiftia pallida</i> (O). <i>Munida rugosa</i> (P), <i>Asterias rubens</i> (F), <i>Marthasterias glacialis</i> (P), <i>Luidia ciliaris</i> (O), <i>Echinus esculentus</i> (F).	CR.MCR.EcCr.CarSwi.LgAs	NS SP
V46	Mud.	Fairly well-burrowed mud with evidence of the burrows of small <i>Nephrops norvegicus</i> (C) and <i>Calocaris macandreae</i> and many smaller holes. <i>Virgularia mirabilis</i> (F), <i>Munida rugosa</i> (O), <i>Pecten maximus</i> (O), <i>Asterias rubens</i> (P).	SS.SMu.CFiMu.SpnMeg	BM

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
V47	Silted bedrock and boulders with adjacent muddy sediment with surface scattering of coarse sand, gravel and shell material and locally pebbles.	Sediment perforated by many holes and with some emergent infaunal tubes; Paguridae sp. (P), <i>Pecten maximus</i> (O), <i>Raja</i> sp. (P). Rock encrusted with pink coralline algae (C) and supporting dense <i>Caryophyllia smithii</i> (C) and <i>Ascidia virginea</i> (C), as well as <i>Swiftia pallida</i> ? (R), <i>Diazona violacea</i> (P), Crinoidea sp. (O), small <i>Asterias rubens</i> ? (F), <i>Echinus esculentus</i> (O), <i>Suberites carnosus</i> (O).	CR.MCR.EcCr.CarSwi.LgAs SS.SMu.CSaMu	NS SP?
V48	Scattered coarse sand and gravel on silty sand with occasional cobbles and boulders.	Sediment perforated by small holes and supporting a patchy turf of red and brown algae (F) and <i>Saccharina latissima</i> (F). <i>Luidia ciliaris</i> (P).	SS.SMp.KSwSS.LsacR.Sa	KS
V49	Silted flat bedrock, latterly with boulders and cobbles	Rock encrusted with pink coralline algae (O), orange bryozoans (R) and serpulid worms (O) and supporting <i>Caryophyllia smithii</i> (F, locally C) and <i>Axinella infundibuliformis/Phakellia ventilabrum</i> (O, locally F), <i>Swiftia pallida</i> (R), hydroid clumps (O), Crinoidea sp. (R) and ascidians including <i>Ascidia virginea</i> (P).	CR.MCR.EcCr.CarSwi.LgAs	NS SP
V49	Mud with scattered shell material.	Mud fairly sparsely burrowed by small <i>Nephrops norvegicus</i> (1 seen). <i>Turritella communis</i> (P).	SS.SMu.CFiMu.SpnMeg	BM
V52	Muddy sand.	Sediment perforated by many small holes including those of bivalve siphons, with emergent infaunal tubes, polychaete casts and small mounds (C). <i>Turritella communis</i> shells (C), with some probably occupied judging by tracks. Possible small <i>Nephrops norvegicus</i> burrow.	SS.SSa.CMuSa	
V53	Scattering of coarse sand and shell material on silty sand.	Sand perforated by small holes and emergent tubes and with patchy algal turf of mostly reds (A), as well as sparse <i>Saccharina latissima</i> (O). <i>Luidia ciliaris</i> (P),	SS.SMp.KSwSS.LsacR.Sa	KS
V54	Bedrock or boulders with adjacent maerl.	Rock supports <i>Laminaria hyperborea</i> forest (A), with <i>Halidrys siliquosa</i> (P).. Maerl bed contains live <i>Phymatolithon calcareum</i> (C) and patchy algal turf, largely brown (C) including <i>Chorda filum</i> (P) and Ectocarpaceae sp.? (P). <i>Cerianthus lloydii</i> (P).	SS.SMp.Mrl.Pcal.R IR.MIR.KR	MB
V54B	Muddy sand.	Sediment perforated by small holes and with emergent infaunal tubes and small mounds, including low, multiperforate ones of the giant foraminiferan, <i>Toxisarcon alba</i> ?. <i>Turritella communis</i> shells (P), <i>Liocarcinus</i> sp. (P)	SS.SSa.CMuSa	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
V55	Maerl gravel and coarse sand.	Patchy algal turf (A) apparently largely brown, including Ectocarpaceae sp. (P) and <i>Desmarestia</i> spp. (P). <i>Saccharina latissima</i> (C, but A locally). <i>Chorda filum</i> (A), Gobiidae sp. (P), Paguridae sp. (P), emergent infaunal tubes (P). Scattered live <i>Phymatolithon calcareum</i> (R overall, but C in patches).	SS.SMp.Mrl.Pcal.RSS.SMp.K SwSS.LsacR.Gv	MBKS
V55B	Waves of coarse sand with some maerl gravel.	Sparse live <i>Phymatolithon calcareum</i> overall but locally F in troughs.	SS.SMp.Mrl.Pcal.Nmix	MB
V56	Maerl and dense shells.	Algal turf (S) apparently largely brown, including Ectocarpaceae sp. (P). <i>Saccharina latissima</i> (C, but A locally), <i>Chorda filum</i> (A), <i>Necora puber</i> (P). Live <i>Phymatolithon calcareum</i> present but density unclear.	SS.SMp.Mrl.Pcal.R	MB
V56B	Muddy sand with surface scatter of gravel, shell material, pebbles, cobbles and boulders.	Stones encrusted with serpulid worms (P). Sediment perforated by small holes and with emergent infaunal tubes and small mounds. <i>Turritella communis</i> shells (P), <i>Ophiura albida?</i> (P)	SS.SSa.CMuSa	
V57	Boulders on mixed substrate with sand, gravel and pebbles.	Mixed kelp forest, seemingly sand-scoured. <i>Saccharina latissima</i> (C), <i>Laminaria hyperborea</i> (F-C) with red algal understorey (C). Encrusting pink coralline algae (P).	IR.HIR.KSed.XKScrR	
V58	Dense cobbles and boulders on coarse sand with gravel.	Stones encrusted with pink coralline algae (C) and supporting dense filamentous and foliose red algal turf (A) and very sparse <i>Saccharina latissima</i> (R). <i>Echinus esculentus</i> (O), Ascidiacea sp.? (P), Paguridae sp. (P).	IR.HIR.KSed	
V59	Mixed substrate of sand with gravel, pebbles, shells including <i>Ensis</i> sp. and scattered cobbles.	<i>Saccharina latissima</i> (F) with patchy algal turf (C), apparently largely brown. <i>Halidrys siliquosa</i> (O), <i>Chorda filum</i> (O), pink encrusting algae (P), <i>Sabella pavonina</i> (O), <i>Carcinus meanas?</i> (P), Crinoidea sp. (P), <i>Asterias rubens</i> (P).	SS.SMp.KSwSS.LsacR	KS
V60	Bedrock and cobbles and boulders on mixed gravelly muddy sand.	Rock encrusted with pink coralline algae (O) and supporting sparse red algal tufts. <i>Metridium senile</i> (R), <i>Diazona violacea</i> (F), <i>Clavelina lepadiformis?</i> (P), <i>Ascidia virginea</i> (F, locally C), hydroid clumps (R), yellow encrusting sponge (R), <i>Suberites carnosus</i> (P). <i>Asterias rubens</i> (O), <i>Luidia ciliaris</i> (O), Crinoidea sp. (R), <i>Ophiura</i> sp. (P).	CR.MCR.EcCr.CarSwi.LgAs	NS
V61	Gravelly sand with scattered shells.	Patchy red algal turf (C). Emergent infaunal tubes (P).	SS.SMp.KSwSS.LsacR	KS

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
V62	Muddy fine sand.	<i>Arenicola marina</i> (A), patches of <i>Fucus serratus</i> (P). Sediment with small holes.	LS.LSa.MuSa.MacAre	
V63	Bedrock and boulders.	Dense <i>Fucus serratus</i> (S), some <i>Halidrys siliquosa</i> (P).	LR.LLR.F.Fserr.FS	
V63	Silty sand with pebbles and shells, very dense locally.	Patches of drift fucoids including <i>Fucus serratus</i> and <i>F. vesiculosus</i> . <i>Chorda filum</i> (O), <i>Halidrys siliquosa</i> (R).	SS.SSa.IMuSa	
V64	Silty sand with surface scatter of coarse sand, gravel and shells.	Algal cover (C) including <i>Saccharina latissima</i> (O) possibly largely drift material. Much of it may be <i>Phyllophora crispa</i> . Crinoidea sp. (O), <i>Asciidiella aspersa</i> (P), <i>Marthasterias glacialis</i> (F)	SS.SMp.KSwSS	KS
V65	Waves of maerl gravel.	Live <i>Phymatolithon calcareum</i> overall sparse (R) but possibly F, at least locally, in troughs. Algal turf fairly sparse, but concentrated in troughs (F) - apparently dominated by Ectocarpaceae sp.; <i>Saccharina latissima</i> (F). <i>Cerianthus lloydii</i> (P), <i>Astropecten irregularis</i> (P), bivalve siphons (P).	SS.SMp.Mrl.Pcal.Nmix	MB
V66	Waves of maerl gravel and coarse sand.	Live <i>Phymatolithon calcareum</i> overall sparse (O) but C locally in troughs. Algal turf sparse (O-F), including <i>Desmarestia aculeata?</i> (P), <i>Ulva</i> sp. and reds; <i>Saccharina latissima</i> (F, locally A), but probably drift material. Emergent infaunal tubes (P).	SS.SMp.Mrl.Pcal.Nmix	MB
V67	Muddy sand with surface scatter of maerl, dense in places.	Live <i>Phymatolithon calcareum</i> overall R but possibly F in patches. Sediment with holes, emergent tubes and small mounds. <i>Saccharina latissima</i> (O), Ascidiacea sp. (R), <i>Cerianthus lloydii</i> (F).	SS.SMp.Mrl.Pcal	MB
V68	Maerl on silty sand.	Live <i>Phymatolithon calcareum</i> (C). <i>Saccharina latissima</i> (F) and algal turf of brown and red algae (C-A). <i>Macropodia</i> sp. (P), Pectinidae sp. (P), <i>Antedon</i> spp. (C), <i>Asterias rubens</i> (O), <i>Luidia ciliaris</i> (O), <i>Crossaster papposus</i> (P), <i>Marthasterias glacialis</i> (P).	SS.SMp.Mrl.Pcal.R	MB
V69	Scatter of gravel and coarse sand on silty sand.	Dense patches of <i>Phyllophora crispa?</i> (A). <i>Saccharina latissima</i> (F but probably mostly drift). <i>Asciidiella aspersa</i> (P), <i>Aequipecten opercularis</i> (P).	SS.SMp.KSwSS.Pcri	KS
EX1	Coarse sand with dense pebbles and sparse cobbles and boulders.	<i>Laminaria hyperborea</i> (A), <i>Saccharina latissima</i> (R), <i>Alaria esculenta</i> (R). <i>Echinus esculentus</i> (F, locally C), <i>Asterias rubens</i> (F).	IR.MIR.KR.LhypTX.Ft	TS

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
EX2	Substrate largely obscured but patches of apparently coarse sand visible and pebbles and shell material.	Byssal turf of <i>Limaria hians</i> with coverage of c. 90% (probably A). Turf supports <i>Laminaria hyperborea</i> (C), a red algal turf (A), and brown algae including <i>Desmarestia aculeata</i> (P). Kelp stipes well-epiphytised with red algae. <i>Saccharina latissima</i> present, but possibly drift material. <i>Echinus esculentus</i> (P).	SS.SMx.IMx.Lim	FS
EX3	Substrate largely obscured but patches of apparently coarse sand visible and pebbles and shell material.	Byssal turf of <i>Limaria hians</i> with coverage of c. 90% (probably A). Turf supports <i>Laminaria hyperborea</i> (C, locally A), a red algal turf (A), and brown algae including <i>Desmarestia aculeata</i> (C). Kelp stipes well-epiphytised with red algae, and with <i>Halichondria panicea</i> (R). <i>Asterias rubens</i> (O), <i>Hyas</i> sp. (P).	SS.SMx.IMx.Lim	FS
EX4	Mixed substrate of sand with varying concentrations of gravel, pebbles, cobbles, boulders and shells.	Much dead kelp material. Stones probably scoured and mobile and apparently supporting little life apart from pink coralline algae (P). <i>Munida rugosa</i> (R), <i>Asterias rubens</i> (P), <i>Luidia ciliaris</i> (P), <i>Echinus esculentus</i> (O).	SS.SMx.IMx	
EX5	Mixed substrate of sand with gravel, pebbles, shells and occasional cobbles.	Kelp material largely dead but a few fronds of small, live <i>Saccharina latissima</i> (O). Stones encrusted with pink coralline algae (O). <i>Asterias rubens</i> (P), <i>Crossaster papposus</i> (P), Ophiuroidea sp. (R).	SS.SMx.IMx	
EX6	Sand with scattered gravel, pebbles and shells.	Much dead kelp material but also live <i>Saccharina latissima</i> (F). Stones encrusted with pink coralline algae (P). <i>Asterias rubens</i> (P), <i>Echinus esculentus</i> (P), Crinoidea sp. (R). Small patch of ophiuroids (probably <i>Ophiocomina nigra</i> - overall R)	SS.SMp.KSwSS.LsacR.Sa	KS
EX7	Substrate largely obscured but patches of apparently coarse sand visible and pebbles and shell material.	Byssal turf of <i>Limaria hians</i> with coverage of c. 90% (probably A). Turf supports <i>Laminaria hyperborea</i> (C, locally A), a red algal turf (A), and brown algae including <i>Desmarestia aculeata</i> (C). Kelp stipes well-epiphytised with red algae. <i>Asterias rubens</i> (P), <i>Marthasterias glacialis</i> (P).	SS.SMx.IMx.Lim	FS
EX8	Mud.	Crinoidea spp. (F) including possibly <i>Leptometra celtica</i> (dominant) and <i>Antedon</i> sp. (P). <i>Munida rugosa</i> (O), Paguridae sp. (O), <i>Liocarcinus</i> sp.? (O), <i>Ophiura</i> sp. (O), Very sparse small burrows.	SS.SMu.CFiMu	LC?

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
EX9	Muddy sand with scattered gravel, pebbles and shell material.	Bonelliidae sp. (O), Paguridae sp. (O), <i>Munida rugosa</i> (O), <i>Ophiura</i> sp. (O), <i>Asterias rubens</i> (F).	SS.SSa.CMuSa	
EX10	Pebbles, cobbles and boulders on gravelly sand.	Stones support <i>Antedon</i> spp. (C) and ascidians including <i>Ciona intestinalis</i> (locally A). <i>Munida rugosa</i> (O), <i>Echinus esculentus</i> (P), <i>Crossaster papposus</i> (P).	CR.LCR.BrAs.AmenCio.Ant	
LA01	Highly mixed substrate of sand, gravel and pebbles.	Byssal turf of <i>Limaria hians</i> with coverage >90% (probably A). Turf supports a forest of <i>Laminaria hyperborea</i> (C-A) and a red algal turf (C). Kelp stipes well-epiphytised with red algae. <i>Asterias rubens</i> (P), <i>Hyas</i> sp. (P).	SS.SMx.IMx.Lim	FS
LA03	Substrate largely obscured but probably mixed sand, gravel, pebbles and shells.	Byssal turf of <i>Limaria hians</i> with coverage >90% (probably A). Turf supports <i>Laminaria hyperborea</i> (C), a red algal turf (A), and brown algae including <i>Desmarestia aculeata</i> (P). Kelp stipes well-epiphytised with red algae. <i>Asterias rubens</i> (P), <i>Crossaster papposus?</i> (P), <i>Luidia ciliaris</i> (O), <i>Echinus esculentus</i> (P).	SS.SMx.IMx.Lim	FS
LA04	Coarse sand with pebbles and scattered cobbles and boulders.	<i>Laminaria hyperborea</i> (C-A), <i>Saccharina latissima</i> (F), pink coralline algae (P on larger stones), <i>Asterias rubens</i> (O), <i>Porania pulvillus</i> (P), <i>Echinus esculentus</i> (C), <i>Hyas</i> sp. (P). <i>Ophiocomina nigra</i> (A, locally S).	IR.MIR.KR.LhypTX.Ft SS.SMx.CMx.OphMx	TS
LA11	Muddy sand with gravel and pebbles and sparse cobbles.	Stones encrusted with serpulid worms (F) and pink coralline algae (R) and with patchy filamentous red algal turf (O). <i>Virgularia mirabilis</i> (O), Bonelliidae sp. (O), <i>Asterias rubens</i> (O), <i>Porania pulvillus</i> (R), <i>Aequipecten opercularis</i> (F).	SS.SMx.CMx	
LA13	Muddy sediment with scattered pebbles, cobbles and shells.	Stones support occasional crinoids. The mud is very sparsely burrowed, possibly by <i>Calocaris macandreae</i> (O). <i>Funiculina quadrangularis</i> (F, locally C), <i>Pennatula phosphorea</i> (O), <i>Munida rugosa</i> (O), <i>Echinus esculentus</i> (P), <i>Porania pulvillus</i> (R).	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
LA14	Muddy sand with gravel and dense pebbles and some small cobbles	Sediment perforated by small holes and with emergent infaunal tubes. Stones encrusted with serpulid worms (C). <i>Munida rugosa</i> (F), <i>Cerianthus lloydii?</i> (P).	SS.SMx.CMx	
LA15	Soft mud.	Mud burrowed by <i>Calocaris macandreae</i> (F) and <i>Nephrops norvegicus</i> (C, 8 animals seen). <i>Funiculina quadrangularis</i> (F), <i>Pennatula phosphorea</i> (F), Paguridae sp. (R).	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
LA16	Soft mud.	Mud burrowed by <i>Calocaris macandreae</i> (F) and <i>Nephrops norvegicus</i> (C, 4 animals seen). <i>Funiculina quadrangularis</i> (F).	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
LA17	Mud.	Lightly burrowed by <i>Nephrops norvegicus</i> (F, 1 animal seen) and smaller species including <i>Calocaris macandreae</i> (P). <i>Liocarcinus</i> sp. (O), Paguridae spp. (O), <i>Cancer pagurus</i> (P), <i>Ophiura</i> sp. (O), <i>Turritella communis</i> (P), Teleostei sp. (P).	SS.SMu.CFiMu.SpnMeg	BM
LA18	Sandy mud or possibly muddy sand with scattered shells.	<i>Pennatula phosphorea</i> (R), <i>Munida rugosa</i> (R), Paguridae sp. (R), <i>Ophiura</i> sp. (P), <i>Aequipecten opercularis</i> ? (R), <i>Scylliorhinus</i> sp. (P). One tyre.	SS.SMu.CSaMu	
LA19	Muddy sand.	<i>Munida rugosa</i> (R), <i>Liocarcinus</i> sp. (R), Paguridae spp. (O), <i>Hyas</i> sp. (R), Crinoidea sp. (R), <i>Ophiura</i> sp. (O), <i>Turritella communis</i> (R), <i>Scylliorhinus</i> sp. (P), Teleostei sp. (P).	SS.SSa.CMuSa	
LA20	Coarse sand, gravel, pebbles and shells.	Stones encrusted with serpulid worms (C). Otherwise sparse visible fauna including <i>Urticina felina</i> (F), <i>Echinus esculentus</i> (F), <i>Asterias rubens</i> (O), <i>Munida rugosa</i> (O).	SS.SMx.CMx	
LA21	Sand with gravel, pebbles and cobbles.	Stones encrusted with serpulid worms (P) and supporting crinoids (F). <i>Cerianthus lloydii</i> (O), <i>Urticina</i> sp. (R), <i>Asterias rubens</i> (P), <i>Luidia ciliaris</i> (P), <i>Liocarcinus</i> sp. (R), <i>Munida rugosa</i> (O).	SS.SMx.CMx	
LA22	Dense cobbles and boulders on sand.	Rock encrusted with <i>Spirobranchus</i> spp. (A) and supporting <i>Alcyonium digitatum</i> (R, but F locally) and <i>Urticina</i> sp. (F, locally C). <i>Echinus esculentus</i> (C), <i>Crossaster papposus</i> (P).	CR.MCR.EcCr.FaAlCr.Pom	
LA26	Dense pebbles and cobbles on muddy sand.	Stones support Crinoidea sp. (F). <i>Cerianthus lloydii</i> (O), <i>Asterias rubens</i> (O), <i>Luidia ciliaris</i> (P), <i>Pecten maximus</i> (R).	SS.SMx.CMx	
LA27	Dense cobbles and pebbles, with some boulders, on coarse sand.	Stones encrusted with serpulid worms (C) and a yellow sponge (R) and support Crinoidea sp. (O), <i>Alcyonium digitatum</i> (R) and <i>Urticina</i> sp. (F). <i>Munida rugosa</i> (F), <i>Liocarcinus</i> sp. (R), Brachiura sp. (R), Caridea sp. (R), <i>Echinus esculentus</i> (P), <i>Crossaster papposus</i> (P), <i>Cerianthus lloydii</i> (P).	SS.SMx.CMx	
LA28	Muddy sand with scattered gravel, pebbles and occasional cobbles.	Bonelliidae sp. (P), <i>Urticina</i> sp. (R), <i>Liocarcinus</i> sp. (R), <i>Munida rugosa</i> (O), <i>Pecten maximus</i> (O), <i>Asterias rubens</i> (O), Rajidae sp. (P).	SS.SMx.CMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
LA29	Silty sand with dusting of shell gravel.	Sparse visible life. Paguridae sp. (R), <i>Cerianthus lloydii</i> (R).	SS.SSa.CMuSa	
LA30	Dense shells (especially <i>Mytilus</i>) and some pebbles on gravelly? substrate.	<i>Munida rugosa</i> (O), <i>Urticina</i> sp. (F), <i>Cerianthus lloydii</i> (R), Paguridae spp. (R), <i>Asterias rubens</i> (P), serpulid worms on pebbles (P).	SS.SMx.CMx	
LA31	Mixed gravelly sand with dense pebbles and sparse cobbles.	Stones encrusted with serpulid worms (C) and supporting <i>Urticina</i> sp. (F). <i>Munida rugosa</i> (O), <i>Ophiura</i> sp. (P), <i>Asterias rubens</i> (P), <i>Hyas</i> sp. (R).	SS.SMx.CMx	
LA32	Muddy sand with gravel and pebbles and sparse cobbles.	<i>Virgularia mirabilis</i> (O), Bonelliidae sp. (O), <i>Munida rugosa</i> (O), Crinoidea sp. (O), <i>Asterias rubens</i> (P), <i>Liocarcinus</i> sp. (R).	SS.SMx.CMx	
LA33	Dense gravel and pebbles on sand.	<i>Urticina</i> sp. (O), <i>Munida rugosa</i> (O), Paguridae sp. (R), <i>Scyliorhinus</i> sp. (P), <i>Trisopterus</i> sp. (P).	SS.SMx.CMx	
LA34	Muddy sand or possibly sandy mud with sparsely scattered shells.	Slightly emergent infaunal tubes (P), <i>Urticina</i> sp. (R), <i>Munida rugosa</i> (R), Paguridae sp. (R), <i>Liocarcinus</i> sp. (R), <i>Pecten maximus</i> (R), <i>Luidia ciliaris</i> (P), <i>Ophiura</i> sp. (R).	SS.SSa.CMuSa	
LA35	Muddy sand.	One large burrow, probably <i>Nephrops norvegicus</i> . Paguridae spp. (O), <i>Brachyura</i> sp. (R), infaunal emergent tubes (P), <i>Buccinum undatum</i> (R), <i>Turritella communis</i> (R), <i>Pecten maximus</i> (R), <i>Callionymus lyra</i> (R).	SS.SSa.CMuSa	
LA36	Muddy sand with scattered pebbles and cobbles.	Stones lightly encrusted with serpulid worms (F) and support Crinoidea sp. (F). <i>Cerianthus lloydii</i> (F), emergent infaunal tubes (P), <i>Munida rugosa</i> (O), <i>Echinus esculentus</i> (P), <i>Asterias rubens</i> (P), <i>Pecten maximus</i> (O),	SS.SMx.CMx	
LA37	Sandy mud.	Mud lightly burrowed by <i>Nephrops norvegicus</i> (P) and smaller species, and with sparse emergent faunal tubes and many small holes including probably those of bivalve siphons. <i>Munida rugosa</i> (O), <i>Ophiura</i> sp. (O).	SS.SMu.CFiMu.SpnMeg	BM
LA38	Mud.	Mud lightly burrowed by <i>Nephrops norvegicus</i> (F, 2 animals seen) and <i>Calocaris macandreae</i> (F) and with sparse emergent faunal tubes. <i>Funiculina quadrangularis</i> (F), <i>Munida rugosa</i> (O), Paguridae sp. (O), <i>Asterias rubens</i> (P), <i>Turritella communis</i> shells (P, possibly all empty).	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
LA39	Sandy mud.	Mud lightly burrowed by <i>Nephtys norvegicus</i> (F, 3 animals seen) and smaller species probably including <i>Calocaris macandreae</i> (P), and with sparse emergent faunal tubes. <i>Cerianthus lloydii</i> (P), <i>Munida rugosa</i> (O), <i>Liocarcinus</i> sp. (O), Paguridae sp. (O), <i>Asterias rubens</i> (P), Crinoidea sp. (O), <i>Turritella communis</i> shells (P, some possibly occupied), <i>Aequipecten opercularis</i> (O).	SS.SMu.CFiMu.SpnMeg	BM
LA40	Gravel, pebbles and cobbles with occasional boulders.	Rock surfaces encrusted with serpulid worms (C) and pink coralline algae (R) and supporting Crinoidea sp. (F). <i>Munida rugosa</i> (O), <i>Echinus esculentus</i> (F), <i>Asterias rubens</i> (F), <i>Luidia ciliaris</i> (P), <i>Pecten maximus</i> (O), Teleostei sp. (P)	SS.SMx.CMx	
LA41	Sandy mud.	Mud lightly burrowed, probably by <i>Nephtys norvegicus</i> (P) and smaller species including <i>Calocaris macandreae</i> ? (P), and perforated by small holes. <i>Funiculina quadrangularis</i> (P - 1 seen), <i>Pennatula phosphorea</i> (O), <i>Cerianthus lloydii</i> (O), <i>Carcinus maenas</i> ? (O), <i>Asterias rubens</i> (P).	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
LA42	Mud with shell debris.	Mud lightly burrowed, probably by <i>Nephtys norvegicus</i> (P) and smaller species including <i>Calocaris macandreae</i> ? (P), and perforated by small holes. <i>Funiculina quadrangularis</i> (F), <i>Munida rugosa</i> (O), Crinoidea sp. (O).	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
LA45	Dense pebbles and gravel on sand.	Stones encrusted with serpulid worms (C). <i>Munida rugosa</i> (C), <i>Liocarcinus</i> sp.? (O), <i>Pecten maximus</i> (O), Crinoidea sp. (O), <i>Asterias rubens</i> ? (P),	SS.SMx.CMx	
LA46	Muddy sand with sparsely scattered pebbles and shell material.	Sediment perforated by small holes and with some emergent infaunal tubes. <i>Cerianthus lloydii</i> (O), Bonelliidae sp. (O), <i>Munida rugosa</i> (F), <i>Liocarcinus</i> sp. (O), Brachyura sp. (O), <i>Carcinus maenas</i> ? (O), <i>Turritella communis</i> (P), Teleostei sp. (P)	SS.SSa.CMuSa	
LA47	Maerl, with occasional cobbles and increasing amounts of pebbles and gravel	Live <i>Phymatolithon calcareum</i> (C) supporting sparse red algal turf (R) (but early in season). <i>Saccharina latissima</i> (C), <i>Laminaria hyperborea</i> (C), <i>Echinus esculentus</i> (C), <i>Asterias rubens</i> (P), <i>Luidia ciliaris</i> (P).	SS.SMp.Mrl.Pcal.R	MB
LA48	Sand with dense gravel and pebbles.	Stones encrusted with serpulid worms (C). <i>Asterias rubens</i> (P), <i>Pecten maximus</i> (O), <i>Munida rugosa</i> ? (O), hydroid? clumps (R).	SS.SMx.CMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
LA49	Sand with dense pebbles and cobbles.	Stones encrusted with serpulid worms (F) and pink coralline algae (R) and supporting sparse hydroid clumps (R) and Crinoidea sp. (F). <i>Asterias rubens</i> (F), <i>Echinus esculentus</i> (F), <i>Solaster endeca</i> (O), <i>Munida rugosa</i> (O), <i>Aequipecten opercularis</i> (F).	SS.SMx.CMx	
LA50	Muddy sand with scattered pebbles and shells.	<i>Virgularia mirabilis</i> (O), <i>Brachyura</i> sp. (O).	SS.SSa.CMuSa	
LA50	Muddy sand with shell material.	Ophiuroid bed apparently dominated by <i>Ophiocomina nigra</i> (S), with patches of <i>Ophiothrix fragilis</i> (P). <i>Virgularia mirabilis</i> (O), <i>Urticina</i> sp. (O), <i>Aequipecten opercularis</i> (O), <i>Crossaster papposus</i> (P).	SS.SMx.CMx.OphMx	
LA51	Mud.	Mud fairly lightly burrowed by <i>Nephrops norvegicus</i> (C, 1 animal seen) and smaller forms including probably <i>Calocaris macandreae</i> (P). <i>Pennatula phosphorea</i> (O), <i>Turritella communis</i> shells include some occupied by pagurids and some possibly by the mollusc. <i>Caridea</i> sp. (P), <i>Liocarcinus</i> sp. (O), <i>Aequipecten opercularis</i> (F), <i>Asterias rubens</i> (P), <i>Aphrodita aculeata</i> (O), <i>Callionymus lyra</i> (P).	SS.SMu.CFiMu.SpnMeg	BM
LA52	Gravelly sand with pebbles.	<i>Ophiocomina nigra</i> (A), <i>Crossaster papposus</i> (F), <i>Asterias rubens</i> (F), <i>Astropecten irregularis</i> ? (P), <i>Echinus esculentus</i> (F), <i>Munida rugosa</i> (P), <i>Aequipecten opercularis</i> (O).	SS.SMx.CMx.OphMx	
LA53	Sand with gravel and pebbles.	Dense ophiuroid bed (S) including <i>Ophiothrix fragilis</i> , <i>Ophiocomina nigra</i> and possibly <i>Ophiopholis aculeata</i> . <i>Echinus esculentus</i> (F), <i>Crossaster papposus</i> (F), <i>Munida rugosa</i> (O), <i>Aequipecten opercularis</i> (O), <i>Urticina</i> sp. (O).	SS.SMx.CMx.OphMx	
LA57	Basically sandy with varying proportions of boulders, cobbles (dense in places), pebbles, gravel and shells.	Areas of denser cobbles and boulders supporting dense <i>Saccharina latissima</i> (C, locally A) and <i>Saccorhiza polyschides</i> (P), with larger stones encrusted with pink coralline algae (P) and serpulid worms (P). Small clumps of algae also present (O), probably largely filamentous reds. <i>Echinus esculentus</i> (O), <i>Asterias rubens</i> (O).	IR.HIR.KSed.LsacSacSS.SM p.KSwSS.LsacR.Sa	KS
LA66	Mud.	Lightly burrowed by <i>Nephrops norvegicus</i> (C, 4 animals seen) and smaller species including <i>Calocaris macandreae</i> (P). <i>Pennatula phosphorea</i> (R), emergent infaunal tubes (P), <i>Liocarcinus</i> sp. (R). Possibly one small <i>Funiculina quadrangularis</i> at very start of run. Possible creel drag scar at 00:02:26.	SS.SMu.CFiMu.SpnMeg	BM

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
KL01	Shelly sand with scattered pebbles and occasional cobbles.	Patchy algal mat dominated by loose filamentous red algal clumps (possibly <i>Trailiella</i>) (A overall but S locally), <i>Ulva</i> sp. (F) and <i>Saccharina latissima</i> (C, but possibly largely drift material). <i>Arenicola marina</i> (F), Paguridae sp. (P), <i>Carcinus maenas</i> (P), <i>Crossaster papposus</i> (P).	SS.SMp.KSwSS.Tra	
KL02	Shelly sand with scattered gravel, pebbles and occasional cobbles.	Patchy algal mat dominated by loose filamentous red algal clumps (possibly <i>Trailiella</i>) (A overall but S locally), <i>Ulva</i> sp. (F) and <i>Saccharina latissima</i> (C, but possibly largely drift material); <i>Desmarestia aculeata</i> (R). <i>Liocarcinus</i> sp. (P), <i>Carcinus maenas</i> ? (P), Teleostei sp. (P).	SS.SMp.KSwSS.Tra	
KL03	Mostly fine-medium sand with coarse gravelly sand initially. Scattered cobbles and boulders, locally dense.	Patchy algal mat dominated by loose filamentous red algal clumps (possibly <i>Trailiella</i>) (S overall); <i>Ulva</i> sp. (O), <i>Saccharina latissima</i> (F, but possibly largely drift material), <i>Desmarestia aculeata</i> (R); boulders with <i>Sacchoriza polyschides</i> (R) and pink coralline algae (R). Terebellidae sp. (P), <i>Munida rugosa</i> (O), <i>Liocarcinus</i> sp. (P), <i>Carcinus maenas</i> ? (P), <i>Asterias rubens</i> (P), <i>Luidia ciliaris</i> (P).	SS.SMp.KSwSS.Tra	
KL04	Medium - coarse sand with areas of admixture with dense gravel, pebbles and shells and areas of boulders and cobbles and occasional small rock outcrops.	Rock supports mixed kelps of <i>Laminaria hyperborea</i> (locally C) and <i>Saccharina latissima</i> (P), pink coralline algae (P), filamentous red algae (O) and <i>Spirobranchus</i> spp. (P). <i>Ulva</i> sp. (R), <i>Urticina</i> sp. (R), <i>Munida rugosa</i> (R), <i>Antedon</i> sp. (P), <i>Echinus esculentus</i> (C locally), <i>Asterias rubens</i> (O), <i>Luidia ciliaris</i> (O), <i>Ophiura albida</i> (P)	IR.HIR.KSed SS.SCS.ICCS SS.SMx.IMx	
KL05	Fine-medium sand with scattered gravel, pebbles and shell and occasional boulders and small patches of exposed bedrock.	Patchy algal turf (A), possibly largely mat, dominated by filamentous reds (A), with <i>Ulva</i> sp. (R) and <i>Saccharina latissima</i> (O). <i>Antedon</i> sp. (C locally), <i>Asterias rubens</i> (O), <i>Lanice conchilega</i> ? (P), Serpulidae spp. (P).	SS.SMp.KSwSS	KS
KL06	Silty fine-medium sand with scattered shell gravel locally.	Patchy algal turf (C, locally S), possibly largely mat, dominated by filamentous reds (C), with <i>Ulva</i> sp. (R) and <i>Saccharina latissima</i> (O). <i>Antedon</i> sp. (P), Terebellidae sp. (P).	SS.SMp.KSwSS	KS
WES09_V	Dense cobbles and boulders on mixed sandy gravel substrate.	Stones encrusted with pink coralline algae (O) and <i>Spirobranchus</i> spp. (C) and supporting turf of foliose and filamentous red algae (A). Hydroids (P), <i>Munida rugosa</i> (P), <i>Porania pulvillus</i> (F), <i>Marthasterias glacialis</i> (C), <i>Echinus esculentus</i> (F), <i>Luidia ciliaris</i> (P), Teleostei spp.(O).	IR.HIR.KFaR.FoR	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WES10_V	Dense pebbles and cobbles on gravelly sand.	Stones encrusted with pink coralline algae (C) and <i>Spirobranchus</i> spp. (C-A). <i>Liocarcinus</i> sp. (P), <i>Porania pulvillus</i> (P).	SS.SCS.CCS.PomB	
WES10_V	Waves of coarse sand with pebbles and shells, and initially cobbles, in troughs.	Stones encrusted with pink coralline algae (P) and serpulid worms (P). <i>Liocarcinus</i> sp. (P).	SS.SCS.CCS	
WES12_V	Varying concentrations of gravel, pebbles, cobbles and boulders on muddy sandy sediment with areas of slightly silted bedrock.	Rock encrusted with <i>Parasmittina trispinosa</i> (R), serpulid worms (F-C) and possibly pink coralline algae (though possibly pink rock) and supporting sparse <i>Axinella infundibuliformis/Phakellia ventilabrum</i> (R) and <i>Porella compressa?</i> (P). <i>Munida rugosa</i> (P), <i>Liocarcinus</i> sp. (P), <i>Asterias rubens?</i> (P), <i>Porania pulvillus</i> (O), <i>Echinus esculentus</i> (C), Teleostei spp. (R).	CR.MCR.EcCr.FaAlCr SS.SMx.CMx	
WES13_V	Pebbles and cobbles on gravelly sand with areas of boulders and cobbles.	Rock encrusted with <i>Parasmittina trispinosa</i> (R), serpulid worms (C), yellow sponge (R) and <i>Hymedesmia paupertas?</i> (R)) and supporting sparse <i>Axinella infundibuliformis/Phakellia ventilabrum</i> (R), <i>Polymastia boletiformis</i> (R), a beige sponge (R), <i>Porella compressa?</i> (R). <i>Munida rugosa</i> (F), <i>Porania pulvillus</i> (O), <i>Marthasterias glacialis?</i> (O), <i>Luidia ciliaris</i> (O), <i>Stichastrella rosea</i> (O), Ascidiacea spp. (O), <i>Echinus esculentus</i> (C), Teleostei spp. (R).	CR.MCR.EcCr.FaAlCr SS.SMx.CMx	
WES14_V	Faintly rippled fine sand with patches of scattered gravel, pebbles and cobbles on sand.	Stones encrusted with pink coralline algae (R), <i>Parasmittina trispinosa</i> (R) and serpulid worms (P) and supporting sparse hydroid clumps (R). <i>Munida rugosa</i> (O), <i>Echinus esculentus</i> (O), Cephalopoda sp. (P).	SS.SSa.CFiSaSS.SMx.CMx	
WES14_V	Dense cobbles and pebbles on sand.	Stones encrusted with pink coralline algae (O), <i>Parasmittina trispinosa</i> (R) and <i>Spirobranchus</i> spp. (A). <i>Munida rugosa</i> (O), <i>Echinus esculentus</i> (C), <i>Marthasterias glacialis</i> (F), <i>Porania pulvillus</i> (P), <i>Luidia ciliaris</i> (F), <i>Stichastrella rosea?</i> (P).	SS.SCS.CCS.PomB	
WES15_V	Gravelly sand with pebbles, cobbles and occasional boulders.	Stones encrusted with <i>Parasmittina trispinosa</i> (R) and <i>Spirobranchus</i> spp. (A). <i>Munida rugosa</i> (F), <i>Echinus esculentus</i> (F), <i>Porania pulvillus</i> (O), <i>Luidia ciliaris</i> (O), <i>Stichastrella rosea?</i> (O), <i>Asterias rubens?</i> (O), <i>Pecten maximus?</i> (P).	SS.SCS.CCS.PomB CR.MCR.EcCr.FaAlCr	
WES16_V	Soft mud.	Mud densely burrowed by <i>Calocaris macandreae</i> (C) and <i>Nephrops norvegicus</i> (P). Teleostei spp. (P).	SS.SMu.CFiMu.SpMmeg	BM

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WES17_V	Coarse sediment with boulders, cobbles and probably bedrock.	Dense kelp forest dominated by <i>Laminaria hyperborea</i> (A), with <i>Saccharina latissima</i> (locally A). <i>Laminaria</i> fronds support <i>Membranipora membranacea</i> and dense <i>Obelia geniculata</i> (locally A). Rich red algal understory (A). <i>Echinus esculentus</i> (C), <i>Asterias rubens?</i> (P), <i>Luidia ciliaris</i> (P).	IR.MIR.KR	
WES18_V	Boulders.	Dense kelp forest dominated by <i>Laminaria hyperborea</i> (A), with <i>Saccharina latissima</i> (P). <i>Laminaria</i> fronds support <i>Membranipora membranacea</i> and dense <i>Obelia geniculata</i> (locally A). Rich red algal understory (A).	IR.MIR.KR	
WES18_V	Fine-medium sand.	<i>Saccharina latissima</i> (R but possibly drift).	SS.SSa.IFiSa	
WES18_V	Outcropping bedrock and boulders surrounded by fine-medium sand.	Kelp forest dominated by <i>Laminaria hyperborea</i> (A). <i>Laminaria</i> fronds support <i>Membranipora membranacea</i> and dense <i>Obelia geniculata</i> (locally A). Rich red algal understory (A) and <i>Alcyonium digitatum</i> (R). <i>Echinus esculentus</i> (P).	IR.MIR.KR	
WES19_V	Dense cobbles and boulders.	Stones encrusted with pink coralline algae (F), <i>Parasmittina trispinosa</i> (O, locally F), red bryozoans (R) and <i>Spirobranchus</i> spp. (A) and supporting sparse hydroid clumps (R). <i>Munida rugosa</i> (P), <i>Ascidia mentula</i> (R), yellow sponge? (R), <i>Echinus esculentus</i> (C), <i>Porania pulvillus</i> (P), <i>Asterias rubens</i> (F), <i>Stichastrella rosea</i> (F), Teleostei spp. (R), <i>Labrus mixtus</i> (O).	CR.MCR.EcCr.FaAlCr.Pom	
WES20_V	Mud with scattered boulders and cobbles.	Mud burrowed by <i>Calocaris macandreae</i> (C for much of the run) and <i>Nephtys norvegicus</i> (P). Stones support sparse hydroids (R), crinoids (R), <i>Metridium senile?</i> (R) and <i>Porania pulvillus</i> (R). <i>Munida</i> sp. (F), Teleostei spp. (O).	SS.SMu.CFiMu.SpnMeg	BM
WES21_V	Mud with patches of scattered silted boulders and cobbles on sandy mud.	Muddier areas burrowed by <i>Calocaris macandreae</i> (F, locally C) and <i>Nephtys norvegicus</i> and with sparse unidentifiable sea pens (R). Stones support a sparse fauna of <i>Phakellia ventilabrum?</i> (O, locally F), hydroids (R), <i>Porella compressa?</i> (R) and <i>Porania pulvillus</i> (R). <i>Munida</i> sp. (F), Pleuronectiformes sp. (P), Teleostei spp. indet. (O).	SS.SMu.CFiMu.SpnMegSS.S Mx.CMx	BM
WES22_V	Waves of coarse sand/gravel with shell material in troughs.	No clearly discernible biota seen.	SS.SCS.CCS	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WES22_V	Mixed sand and gravel substrate with varying concentrations of pebbles cobbles and boulders, locally dense.	Stones encrusted with <i>Parasmittina trispinosa</i> (R, locally O) and <i>Spirobranchus</i> spp. (A) and supporting sparse <i>Porella compressa?</i> (R), <i>Asciacea</i> sp. (R) and <i>Axinella infundibuliformis/Phakellia ventilabrum?</i> (R). <i>Echinus esculentus</i> (C locally), <i>Porania pulvillus?</i> (P), <i>Stichastrella rosea</i> (F), <i>Luidia ciliaris?</i> (O).	SS.SMx.CMx CR.MCR.EcCr.FaAICr.Pom	
WES23_V	Mud.	Fairly dense <i>Nephrops norvegicus</i> burrows (C, 6 animals seen), as well as those of <i>Calocaris macandreae</i> (P). Emergent infaunal tubes (P), <i>Munida</i> sp. (O), Teleostei sp. (P).	SS.SMu.CFiMu.SpnMeg	BM
WES25_V	Silty sand with scattered gravel and shell material.	<i>Munida rugosa</i> (F), <i>Porania pulvillus?</i> (R), Asteroidea sp. (R), emergent infaunal tubes (P), <i>Callionymus</i> sp. (R), Pleuronectiformes sp. (R).	SS.SSa.CMuSa	
WES27_V	Muddy sand with scattered gravel, pebbles, cobbles and boulders.	Stones encrusted with pink coralline algae (P) and serpulid worms (P). <i>Pachycerianthus multiplicatus</i> (1 specimen seen), <i>Munida rugosa</i> (F), Paguridae spp. (R), <i>Echinus esculentus</i> (F), <i>Porania pulvillus</i> (P), <i>Asterias rubens</i> (F), Crinoidea sp.? (R), Teleostei spp. (O).	SS.SSa.CMuSa	PM CMS
WES27_V	Sandy mud with sparsely scattered cobbles and boulders.	<i>Nephrops norvegicus</i> burrows (F, 1 animal seen), <i>Munida rugosa</i> (F), <i>Porania pulvillus?</i> (O), pink coralline algae on stones (P).	SS.SMu.CFiMu.SpnMeg	BM
WES28_V	Cobbles and boulders on sand with pebbles.	Stones encrusted with pink coralline algae (F), <i>Parasmittina trispinosa</i> (R) and <i>Spirobranchus</i> spp. (C) and supporting occasional patches of hydroids (O) and red algae (R). <i>Munida rugosa</i> (P), <i>Echinus esculentus</i> (C), <i>Porania pulvillus</i> (F), <i>Asterias rubens</i> (F), Teleostei spp. (P).	CR.MCR.EcCr.FaAICr	
WES29_V	Silty shelly sand with scattered gravel, pebbles, cobbles and boulders, some large.	Stones encrusted with pink coralline algae (F), <i>Parasmittina trispinosa</i> (R) and <i>Spirobranchus</i> spp. (C) and supporting patches of hydroids (R) and <i>Ascidia mentula</i> (R). <i>Munida rugosa</i> (F), <i>Liocarcinus</i> spp. (O), <i>Echinus esculentus</i> (F), <i>Porania pulvillus</i> (O), <i>Marthasterias glacialis</i> (O), <i>Asteroidea</i> sp. (P), Teleostei spp. (O).	SS.SMx.CMx CR.MCR.EcCr.FaAICr	
WES31_V	Shelly sand, latterly silty, with scatter of shell, gravel, pebbles, cobbles and boulders, with cobbles and boulders dense in places.	Stones encrusted with pink coralline algae (F) and <i>Spirobranchus</i> spp. (C) and supporting patches of hydroids (R). <i>Munida rugosa</i> (F), <i>Liocarcinus</i> spp. (O), <i>Echinus esculentus</i> (F), <i>Porania pulvillus</i> (O), <i>Asterias rubens</i> (O), Asteroidea sp. (P), <i>Aequipecten opercularis</i> (P).	SS.SMx.CMxCR.MCR.EcCr. FaAICr	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WES32_V	Soft mud with trawl scars in several places.	Mud fairly heavily burrowed by <i>Calocaris macandreae</i> (C) and <i>Nephrops norvegicus</i> (C). <i>Funiculina quadrangularis</i> (C) including one recently uprooted in trawl track (00:02:29). <i>Cerianthus lloydii</i> (P), <i>Liocarcinus</i> spp. (O), small teleosts (O), Pleuronectiformes sp. (O).	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
WES37_V	Soft mud.	Mud fairly heavily burrowed by <i>Nephrops norvegicus</i> (C, 14 animals seen); <i>Calocaris macandreae</i> (F). <i>Funiculina quadrangularis</i> (F), spatangid tests (P), Teleostei spp. (O)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
WES38_V	Soft mud.	Mud fairly heavily burrowed by <i>Nephrops norvegicus</i> (C, 1 animal seen); <i>Calocaris macandreae</i> (F). <i>Funiculina quadrangularis</i> (F), spatangid tests (P), Teleostei sp. (P)	SS.SMu.CFiMu.SpnMeg.Fun	BM FQ
WES43_V	Silty gravelly sand with sparsely scattered cobbles and boulders.	Stones encrusted with <i>Spirobranchus</i> spp. (P) and <i>Parasmittina trispinosa</i> (R) and supporting sparse solitary ascidians (O) including <i>Ascidia mentula</i> (O) and possibly <i>Ascidia virginea</i> (O). <i>Munida rugosa</i> (F, locally C), <i>Cancer pagurus</i> (O), <i>Aequipecten opercularis</i> (P), <i>Echinus esculentus</i> (P), <i>Porania pulvillus</i> (O), <i>Asterias rubens</i> (O), <i>Stichastrella rosea</i> (R), small teleosts (P).	SS.SMx.CMx	
WES44_V	Gravelly sand with varying concentrations of pebbles, cobbles and boulders.	Stones encrusted with pink coralline algae (C), red algae (O), <i>Parasmittina trispinosa</i> (O, locally F) and <i>Spirobranchus</i> spp. (A). <i>Munida rugosa</i> (P), <i>Cancer pagurus</i> (O), <i>Necora puber?</i> (P), <i>Echinus esculentus</i> (C), <i>Porania pulvillus</i> (P), <i>Asterias rubens</i> (F), <i>Luidia ciliaris</i> (F).	SS.SMx.CMx CR.MCR.EcCr.FaAICr.Pom	
WES46_V	Mixed substrate of sand with gravel, pebbles, cobbles and occasional boulders.	Larger stones encrusted with <i>Parasmittina trispinosa</i> (R) and <i>Spirobranchus</i> spp. (C, locally A). <i>Asterias rubens</i> (C), <i>Echinus esculentus</i> (F), <i>Munida rugosa</i> (F), Teleostei sp. (P).	SS.SMx.CMx	
WES46_V	Largely bedrock and boulders, slightly silted, with transitional areas to adjacent biotopes.	Rock encrusted with <i>Spirobranchus</i> spp. (C-A) and <i>Parasmittina trispinosa</i> (R) and supporting sparse <i>Axinella infundibuliformis/Phakellia ventilabrum?</i> (R) and <i>Porella compressa?</i> (P). <i>Munida rugosa</i> (F, locally C), <i>Echinus esculentus</i> (C), <i>Porania pulvillus</i> (O), Crinoidea sp.? (R), small teleosts (R).	CR.MCR.EcCr.FaAICr.Pom	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WES46_V	Mixed substrate of sand with gravel and shell and sparsely scattered pebbles, cobbles and occasional boulders.	Stones encrusted with <i>Spirobranchus</i> spp. (locally A). <i>Asterias rubens</i> (P), <i>Echinus esculentus</i> (P), <i>Porania pulvillus</i> (P), <i>Munida rugosa</i> (P), Ascidiacea sp. (R).	SS.SMx.CMx	
WES50_V	Muddy sand.	Mud fairly lightly burrowed, although <i>Nephrops norvegicus</i> burrows possibly C (2 animals seen); <i>Calocaris macandreae</i> ? (P). <i>Munida rugosa</i> (F), <i>Porania pulvillus</i> (R), Teleostei spp. (O), emergent infaunal tubes (P).	SS.SMu.CFiMu.SpnMeg	BM
WES50_V	Bedrock and boulders and areas of scattered gravel, pebbles, cobbles and occasional boulders on muddy sand.	Rock surfaces encrusted with serpulid worms (C) and supporting sparse Actiniaria spp. (R), <i>Ascidia mentula</i> (R), <i>Porella compressa</i> ? (P) and Crinoidea sp.? (R). <i>Munida</i> sp. (F), <i>Echinus esculentus</i> (O), <i>Porania pulvillus</i> (R), Asteroidea sp. (R), teleosts (R)	CR.MCR.EcCr.FaAICr SS.SMx.CMx	
WES50_V	Mud, initially with scattered cobbles.	Mud fairly lightly burrowed by <i>Nephrops norvegicus</i> (P) and <i>Calocaris macandreae</i> (P). <i>Munida rugosa</i> (F), Teleostei sp. (P). Field of <i>Leptometra celtica</i> ? (locally C) at start of run segment.	SS.SMu.CFiMu.SpnMeg	BM LA?
WES51_V	Waves of coarse sand/gravel with shell, pebbles and cobbles in troughs and occasional boulders.	Boulders with <i>Spirobranchus</i> spp. (C), <i>Parasmittina trispinosa</i> (P) and <i>Flustra foliacea</i> (P).	SS.SCS.CCS	
WES51_V	Bedrock and boulders.	Rock encrusted with <i>Parasmittina trispinosa</i> (R), <i>Spirobranchus</i> spp. (A) and pink coralline algae (C) and supporting sparse <i>Porella compressa</i> ? (P). <i>Echinus esculentus</i> (C), <i>Luidia ciliaris</i> (O), <i>Stichastrella rosea</i> (R), <i>Labrus mixtus</i> (O).	CR.MCR.EcCr.FaAICr.Pom	
WES51_V	Waves of coarse sand/gravel.	No biota seen.	SS.SCS.CCS	
WES51_V	Mostly bedrock, boulders and cobbles; some patches of coarse sand.	Rock encrusted with <i>Parasmittina trispinosa</i> (R), <i>Spirobranchus</i> spp. (A) and pink coralline algae (C). <i>Munida rugosa</i> (P), <i>Pecten maximus</i> (P), <i>Echinus esculentus</i> (C), <i>Luidia ciliaris</i> (O), <i>Porania pulvillus</i> (R), <i>Crossaster papposus</i> (O).	CR.MCR.EcCr.FaAICr.Pom	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WR01	Fine-medium sand with scattered gravel, shell and pebbles.	Fairly sparse algal clumps (F, at least initially), mostly filamentous reds, with foliose reds (R). Pink coralline algae (R), <i>Cerianthus lloydii</i> (F), <i>Chaetopterus variopedatus?</i> (R), <i>Marthasterias glacialis</i> (P).	SS.SMp.KSwSS.LsacR.Sa	KS
WR02	Fine-medium sand with gravel, shell, pebbles and occasional cobbles.	Sparse algal clumps (O), mostly filamentous reds (O); <i>Phyllophora crispa?</i> (R), <i>Saccharina latissima</i> (O). Stones encrusted with pink coralline algae (P) and serpulid worms (P). <i>Cerianthus lloydii</i> (F), <i>Myxicola infundibulum</i> (P), <i>Lanice conchilega</i> (P), <i>Cancer pagurus</i> (P), <i>Pecten maximus</i> (R).	SS.SMp.KSwSS.LsacR.Sa	KS
WR03	Silty, shelly fine-medium sand.	Sparse kelp and smaller algae although probably predominantly drift material; foliose reds (R), filamentous reds (R), pink coralline algae (R). <i>Toxisarcon alba</i> (P), <i>Cerianthus lloydii</i> (P), Serpulidae spp. (R), <i>Munida rugosa</i> (R)	SS.SSa.CMuSa	CMS
WR04	Waves of maerl.	Dense live <i>Phymatolithon calcareum</i> concentrated in wave troughs (F overall).	SS.SMp.Mrl.Pcal.Nmix	MB
WR04	Mostly bedrock with areas of boulders and coarse sand patches.	Rock supports rich red algal turf (A) dominated by filamentous reds (A), with foliose reds (O) and sparse kelp: <i>Laminaria hyperborea</i> (O), <i>Saccharina latissima</i> (O). Rock encrusted with pink coralline algae (F) and <i>Balanus</i> spp. (O) and supporting <i>Ascidia virginea</i> (P). <i>Munida rugosa</i> (R), <i>Echinus esculentus</i> (F), <i>Antedon</i> sp. (P), <i>Asterias rubens</i> (O), <i>Luidia ciliaris</i> (O), <i>Marthasterias glacialis</i> (P), <i>Porania pulvillus</i> (R). Some sand patches with live <i>Phymatolithon calcareum</i> (F locally).	IR.HIR.KSed SS.SMp.Mrl.Pcal.Nmix	MB
WR05	Silty, fine-medium sand with scattered gravel and pebbles.	Stones encrusted with pink coralline algae (R) and serpulid worms (P). Drift algal material but possibly some attached filamentous red algae (R). <i>Toxisarcon alba</i> (P), polychaete casts (P).	SS.SSa.CMuSa	CMS
WR06	Maerl gravel on sand with scattered cobbles and boulders towards end of run.	Dense live <i>Phymatolithon calcareum</i> (C-A), locally concentrated into troughs of sediment waves. Maerl supports thin algal turf of filamentous reds (C) and <i>Phyllophora crispa</i> (O). Stones with pink coralline algae (P), serpulid worms (P) and <i>Balanus</i> spp. (P). <i>Cancer pagurus</i> (P), <i>Brachyura</i> sp. (P), <i>Luidia ciliaris</i> (P), <i>Marthasterias glacialis</i> (O), <i>Porania pulvillus</i> (F).	SS.SMp.Mrl.Pcal	MB
WR07	Waves of silty coarse sand and shell gravel.	Scattered shell material encrusted by pink coralline algae (R) and serpulid worms (F). <i>Pecten maximus</i> (P).	SS.SCS.CCS	
WR07	Silt sand with patchy cover of gravel, dead maerl, pebbles, cobbles and occasional boulders.	Stones encrusted by pink coralline algae (O) and serpulid worms (C) and <i>Balanus</i> spp. (P) and supporting sparse red algae including <i>Phyllophora crispa</i> (O) and filamentous forms (O). Live <i>Phymatolithon calcareum</i> (R), <i>Munida rugosa</i> (R), <i>Ophiura albida</i> (P).	SS.SMx.IMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WR08	Medium sand with scattered shell material.	Shell material encrusted with serpulid worms (P). Sparse filamentous red algae (R), <i>Cerianthus lloydii</i> (C).	SS.SSa.IFiSa	
WR09	Boulders and cobbles with patches of coarse sand, gravel and pebbles with dead maerl, becoming scattered dead maerl on silty sand.	Rock surfaces support a dense turf of filamentous red algae (S), with foliose reds also present; sparse kelp material, probably drift. Rock encrusted with pink coralline algae (O) and serpulid worms (P). Live <i>Phymatolithon calcareum</i> present between the stones (locally F) and then over silty sand (locally F). <i>Cancer pagurus</i> (P), <i>Gibbula</i> sp. (P), <i>Luidia ciliaris</i> (P), <i>Asterias rubens?</i> (P), <i>Echinus esculentus</i> (P), <i>Porania pulvillus</i> (P).	IR.HIR.KSed SS.SMp.Mrl.Pcal.Nmix	MB
WR10	Boulders and cobbles with small, interstitial patches of sand, shell gravel, stone gravel and pebbles.	Stones encrusted with pink coralline algae (O), serpulid worms (P) and <i>Balanus</i> spp. (P) and supporting fairly dense turf of foliose and filamentous red algae (A). <i>Munida rugosa</i> (P), <i>Luidia ciliaris</i> (P), <i>Marthasterias glacialis</i> (O), <i>Porania pulvillus</i> (R), <i>Echinus esculentus</i> (O), <i>Corella parallelogramma</i> (P).	IR.HIR.KSed	
WR11	Initially medium sand with gravel scatter becoming mixed substrate of gravel, pebbles and cobbles on shelly sand.	Stones encrusted with serpulid worms (P), <i>Balanus</i> spp. (P) and pink coralline algae (R, locally O), Scattered tufts of filamentous (O) and foliose (O) red algae, including <i>Phyllophora crista</i> (O); <i>Saccharina latissima</i> (O). <i>Munida rugosa?</i> (P), <i>Luidia ciliaris</i> (P), <i>Porania pulvillus</i> (R).	SS.SMp.KSwSS.LsacR	KS
WR12	Maerl gravel with scattered shells.	Patchy live <i>Phymatolithon calcareum</i> (F). Scattered <i>Saccharina latissima</i> (F), possibly largely drift material, foliose red algae initially R but becoming F in second half of run. <i>Marthasterias glacialis</i> (O), <i>Asterias rubens</i> (P), <i>Luidia ciliaris</i> (P), serpulid worms (P).	SS.SMp.Mrl.Pcal.Nmix	MB
WR13	Waves of maerl gravel with shells and stone gravel in troughs.	Live <i>Phymatolithon calcareum</i> (F) concentrated in troughs. Drift <i>Saccharina latissima</i> (P), filamentous red algae (R), serpulid worms ((P), <i>Marthasterias glacialis</i> (O), <i>Asterias rubens</i> (P)	SS.SMp.Mrl.Pcal.Nmix	MB
WR14	Boulders and cobbles on shell gravel with patches of shell gravel.	Stones supporting <i>Balanus</i> spp. (P), pink coralline algae and a turf of filamentous and foliose red algae (A); juvenile <i>Saccharina latissima</i> (R). <i>Asterias rubens</i> (P), <i>Marthasterias glacialis</i> (P), <i>Echinus esculentus</i> (F), small teeosts (P).	IR.HIR.KSed SS.SCS.CCS	
WR14	Waves of shell gravel with shells and small pebbles in troughs.	Pink coralline algae (R), <i>Phymatolithon calcareum</i> (R).	SS.SCS.CCS	
WR14	Waves of shell gravel with shells in troughs.	Pink coralline algae (R), Patchy <i>Phymatolithon calcareum</i> in troughs (possibly locally F in small patches).	SS.SMp.Mrl.Pcal.Nmix	MB

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WR15	Waves of maerl gravel with scattered boulders and smaller stones towards end of run.	Live <i>Phymatolithon calcareum</i> F in troughs and pink coralline algae (R) on shells. Boulders and smaller stones support foliose red algae (A), <i>Balanus</i> spp. (P) and <i>Saccharina latissima</i> (locally C). <i>Marthasterias glacialis</i> (P).	SS.SMp.Mrl.Pcal.Nmix IR.HIR.KSed	MB
WR16	Scattered boulders and cobbles on maerl gravel.	Stones support dense filamentous red algae (S), pink coralline algae (O), serpulid worms (P) and <i>Balanus</i> spp. (P). Live <i>Phymatolithon calcareum</i> F locally.	SS.SMp.Mrl.Pcal.Nmix IR.HIR.KSed	MB
WR16	Maerl gravel with scattered shells, possibly in waves, becoming scattered maerl gravel on silty sand.	Live <i>Phymatolithon calcareum</i> (O-F, C in patches). Filamentous red algae (R), pink coralline algae (R), serpulid worms (P), <i>Cerianthus lloydii</i> (F locally), <i>Marthasterias glacialis</i> (O), <i>Porania pulvillus</i> (R), <i>Luidia ciliaris</i> (P), <i>Ophiura</i> sp. (R).	SS.SMp.Mrl.Pcal.Nmix	MB
WR17	Cobbles, pebbles and occasional boulders on coarse sand.	Stones encrusted with pink coralline algae (O), serpulid worms (C) and <i>Parasmittina trispinosa</i> (R) and supporting filamentous and foliose red algae (C). <i>Crossaster papposus</i> (P), <i>Marthasterias glacialis</i> (P), <i>Echinus esculentus</i> (F).	SS.SMp.KSwSS.LsacR.CbPb	KS
WR18	Cobbles, pebbles and occasional boulders on coarse sand.	Stones encrusted with pink coralline algae (O), serpulid worms (C) and <i>Balanus</i> spp. (P) and supporting filamentous and foliose red algae (A-S) and occasional <i>Laminaria hyperborea</i> and possibly <i>Saccharina latissima</i> . <i>Ophiura</i> sp. (R), <i>Crossaster papposus</i> (P), <i>Marthasterias glacialis</i> (P), <i>Echinus esculentus</i> (O).	IR.HIR.KSed	
WR19	Flat bedrock and dense cobbles and boulders with interstitial sand.	Rock encrusted with pink coralline algae (O) and serpulid worms (P) and supporting filamentous and foliose red algae (A-S) and frequent <i>Saccharina latissima</i> and occasional <i>Laminaria hyperborea</i> . <i>Echinus esculentus</i> (F), Asteroidea spp. (O), small teleosts (P).	IR.HIR.KSed	
WR20	Boulders with patches of coarse sand, some extensive, with pebbles and cobbles.	Boulders encrusted with pink coralline algae (C) and supporting a thin forest of <i>Laminaria hyperborea</i> (C) and understorey of filamentous and foliose red algae (A); <i>Saccharina latissima</i> (O). <i>Echinus esculentus</i> (C), <i>Marthasterias glacialis</i> (O), serpulid worms (P).	IR.HIR.KSed.XKScrR	
WR21	Coarse sand with some shell gravel and scattered boulders.	Boulders with <i>Laminaria hyperborea</i> and understorey of red algae (P) and <i>Halichondria panicea</i> ? (P); <i>Desmarestia aculeata</i> (R). Dense kelp and red algae locally but probably drift material. <i>Cancer pagurus</i> (P).	SS.SCS.ICS IR.HIR.KSed.XKScrR	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WR22	Dense boulders and cobbles with interstitial coarse sand.	Rocks encrusted with pink coralline algae (O) and serpulid worms (P) and supporting a forest of <i>Laminaria hyperborea</i> (A) and understory of filamentous and foliose red algae (C) including <i>Odonthalia dentata</i> (P). <i>Gibbula cineraria</i> (P) on kelp fronds, <i>Echinus esculentus</i> (C), <i>Marthasterias glacialis</i> (P), <i>Asterias rubens</i> (O).	IR.MIR.KR.Lhyp.Ft	
WR23	Heavily sand-dusted flat bedrock with boulders.	Rock encrusted with pink coralline algae (F) and <i>Parasmittina trispinosa</i> (R) and supporting filamentous and foliose red algae (A). <i>Munida rugosa</i> (P), <i>Necora puber?</i> (P), <i>Marthasterias glacialis</i> (P), <i>Asterias rubens?</i> (P), <i>Luidia ciliaris</i> (P), <i>Echinus esculentus</i> (C), small teleosts (P), <i>Labrus mixtus</i> (F), <i>Ctenolabrus rupestris</i> (P).	IR.HIR.KSed	
WR24	Boulders, cobbles and pebbles with some sand.	Rock encrusted with pink coralline algae (F), <i>Parasmittina trispinosa</i> (O, locally C), red bryozoans (R), <i>Spirobranchus</i> spp. (C, locally A) and <i>Balanus balanus</i> (P) and supporting <i>Ascidia virginea</i> (P), <i>A. mentula</i> (P) and very sparse filamentous and foliose red algae (R). <i>Echinus esculentus</i> (C), <i>Labrus mixtus</i> (P)	CR.MCR.EcCr.FaAICr.Pom	
WR25	Coarse sand with sparsely scattered sand-scoured boulders, cobbles and pebbles.	Stones encrusted with pink coralline algae (P) and serpulid worms (P) and supporting a park of mixed kelp with <i>Saccharina latissima</i> (F) and <i>Laminaria hyperborea</i> (F) and sparse filamentous and foliose red algae (P). <i>Chaetopterus variopedatus</i> (R), <i>Necora puber</i> (P), <i>Marthasterias glacialis</i> (P).	SS.SCS.ICS IR.HIR.KSed.XKScrR	
WR26	Thin layer of maerl on silty sand.	Live <i>Phymatolithon calcareum</i> (O-F, locally C), bound together by filamentous red alga (A); foliose algae (O) including <i>Phyllophora crispa</i> (O), <i>Saccharina latissima</i> (P). <i>Inachus</i> sp. (P), <i>Liocarcinus</i> sp.? (R), <i>Necora puber</i> (R), <i>Marthasterias glacialis</i> (P), <i>Porania pulvillus?</i> (R), pink encrusting algae (R).	SS.SMp.Mrl.Pcal.R	MB
WR27	Thin layer of maerl gravel on silty sand.	Patchy, sparse maerl bed with live <i>Phymatolithon calcareum</i> (O, locally F), bound together by filamentous red alga (F-C); foliose algae (O). <i>Cerianthus lloydii</i> (P).	SS.SMp.Mrl.Pcal.R	MB
WR27	Thin layer of maerl gravel on silty sand with scattered boulders, cobbles, pebbles and shells.	Live <i>Phymatolithon calcareum</i> (R), filamentous red algae (O); foliose red algae (R), <i>Saccharina latissima</i> (O). Stones encrusted with pink coralline algae (P) and serpulid worms (P). <i>Cerianthus lloydii</i> (F), <i>Inachus</i> sp. (P), <i>Cancer pagurus</i> (P), <i>Porania pulvillus</i> (R), <i>Echinus esculentus</i> (O),	SS.SMp.KSwSS.LsacR.Gv	KS

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WR28	Boulders and cobbles on sand and shell gravel.	Stones encrusted with pink coralline algae (O) and serpulid worms (C) and supporting a patchy turf of foliose red algae (C) and sparse hydroids (R). <i>Munida rugosa</i> (O), <i>Antedon</i> sp. (P), <i>Asterias rubens</i> ? (P), <i>Echinus esculentus</i> (F), <i>Porania pulvillus</i> (O), small teleosts (P).	IR.HIR.KFaR.FoR	
WR28	Boulders, cobbles and pebbles on gravelly sand becoming scattered pebbles and cobbles on shelly sand.	Stones encrusted with pink coralline algae (F) and serpulid worms (F) with very sparse foliose red algae (R). <i>Lanice conchilega</i> (R), <i>Munida rugosa</i> (F), <i>Necora puber</i> (P), <i>Echinus esculentus</i> (P), <i>Porania pulvillus</i> (R).	CR.MCR.EcCr.FaAlCr SS.SMx.CMx	
WR29	Thin cover of maerl gravel on silty sand with occasional boulders.	No lights so little detail discernible. Live <i>Phymatolithon calcareum</i> (O, locally F in small patches), Kelp material present but apparently drift. <i>Cerianthus lloydii</i> (C), hydroids (R), <i>Munida rugosa</i> (R), <i>Asterias rubens</i> (O), <i>Porania pulvillus</i> (R), <i>Echinus esculentus</i> (O).	SS.SMp.Mrl.Pcal	MB
WR30	Thin cover of maerl gravel on silty sand.	Maerl bed with live <i>Phymatolithon calcareum</i> (C), bound together by filamentous red algae (A); foliose red algae (O), <i>Desmarestia aculeata</i> ? (R); <i>Saccharina latissima</i> present but probably drift material. Shells with pink coralline algae (R) and serpulid worms (P), <i>Cerianthus lloydii</i> (F), <i>Inachus</i> sp. (P), <i>Luidia ciliaris</i> ? (P), <i>Ophiura</i> sp. (P), <i>Ascidella aspersa</i> (O).	SS.SMp.Mrl.Pcal.R	MB
WR30	Coarse sand and shell gravel.	Small patches of foliose red algae (O) and much drift weed including <i>Saccharina latissima</i> with associated <i>Ascidella aspersa</i> (F). <i>Cerianthus lloydii</i> (F), Live <i>Phymatolithon calcareum</i> (R).	SS.SCS.ICS	
WR31	Thin cover of maerl gravel on silty sand.	Maerl bed with live <i>Phymatolithon calcareum</i> (C), bound together by filamentous red algae (A); foliose red algae (O); <i>Saccharina latissima</i> present but probably largely drift material. Shells with pink coralline algae (R) and serpulid worms (P), <i>Asterias rubens</i> (O), <i>Porania pulvillus</i> (R), <i>Ascidella aspersa</i> (O).	SS.SMp.Mrl.Pcal.R	MB
WR31	Flat sand-dusted bedrock.	Rock encrusted with pink coralline algae (R) and supporting thin patchy turf of filamentous red algae (C) and sparse <i>Saccharina latissima</i> (O). <i>Necora puber</i> ? (R), <i>Echinus esculentus</i> (O).	IR.HIR.KSed	
WR32	Medium-coarse sand with shell gravel and scattered shells and occasional gravel and pebbles.	<i>Cerianthus lloydii</i> (F). Shells and small stones encrusted with pink coralline algae (R), serpulid worms (R) and support very sparse foliose red algae (R). <i>Inachus</i> sp. (P), <i>Cancer pagurus</i> (P), <i>Antedon</i> sp. (R), <i>Ascidella aspersa</i> (R).	SS.SCS.CCS	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WR33	Thin cover of maerl gravel and scattered shells on silty sand.	Maerl bed with live <i>Phymatolithon calcareum</i> (F overall but A in patches). Shells with sparse algae (R-O) including <i>Phyllophora crispa</i> (R) and filamentous reds (R) and encrusted with pink coralline algae (R) and serpulid worms (R). <i>Cerianthus lloydii</i> (F, C locally), <i>Myxicola infundibulum</i> (R), <i>Cancer pagurus</i> (P), <i>Luidia ciliaris</i> (P), <i>Porania pulvillus</i> (R), <i>Echinus esculentus</i> (P), <i>Asciidiella aspersa</i> (O)	SS.SMp.Mrl.Pcal	MB
WR34	Flat sand-dusted bedrock with pockets of probably superficial maerl and shell gravel.	Rock encrusted with pink coralline algae (R), brown algae (R) and <i>Balanus balanus</i> (P) and with patchy turf of foliose red algae (C) and kelp park including <i>Laminaria hyperborea</i> (F) and <i>Saccharina latissima</i> (O), which carry aggregations of <i>Antedon</i> sp. (P). Live <i>Phymatolithon calcareum</i> abundant in patches. <i>Luidia ciliaris</i> (P), <i>Echinus esculentus</i> (F).	IR.HIR.KSed.XKScrR SS.SMp.Mrl.Pcal	MB
WR35	Thin cover of maerl gravel and scattered shells on silty sand.	Maerl bed with live <i>Phymatolithon calcareum</i> (C), bound together by filamentous red algae (A); foliose red algae (R); <i>Saccharina latissima</i> present (O) but possibly drift material. Shells with pink coralline algae (R) and serpulid worms (R), <i>Cerianthus lloydii</i> (F), <i>Cancer pagurus</i> (P), <i>Necora puber</i> (R), <i>Pecten maximus</i> (P), <i>Pholis gunnellus</i> (P).	SS.SMp.Mrl.Pcal.R	MB
WR36	Shelly sand with scattered gravel, pebbles, cobbles and occasional boulders.	Stones encrusted with pink coralline algae (O), <i>Parasmittina trispinosa</i> (R), <i>Balanus balanus</i> (P) and serpulid worms (P) and supporting very sparse foliose red algae (R). <i>Cerianthus lloydii</i> (O), <i>Munida rugosa</i> (R), Paguridae sp. (R), <i>Inachus</i> sp. (R), <i>Cancer pagurus</i> (P), <i>Pecten maximus</i> (P), <i>Asterias rubens</i> (O), <i>Ophiura albida</i> (P), <i>Echinus esculentus</i> (O).	SS.SMx.CMx	
WR37	Coarse sand and maerl gravel with scattered shells.	Live <i>Phymatolithon calcareum</i> (R, possibly O in small patches). Shells encrusted with serpulid worms (P) and pink coralline algae (R). <i>Phyllophora crispa</i> (R), <i>Porania pulvillus</i> (R), drift weed.	SS.SCS.CCS	
WR38	Bedrock and boulders with patches of shelly medium-coarse sand.	Rock with forest of <i>Laminaria hyperborea</i> (A) supporting <i>Membranipora membranacea</i> and clumps of <i>Antedon</i> sp. Rock encrusted with pink coralline algae and with sparse clumps of red algae (O); <i>Saccharina latissima</i> (R). <i>Echinus esculentus</i> (C), <i>Cancer pagurus</i> (P), <i>Asterias rubens</i> (P), <i>Luidia ciliaris</i> (P), <i>Porania pulvillus</i> (R), <i>Ophiura</i> sp. (P) Labridae sp. (P).	IR.MIR.KR.Lhyp.GzFt SS.SCS.ICS	
WR39	Waves of maerl gravel with scattered shells.	Live <i>Phymatolithon calcareum</i> (F overall but C locally, especially in wave troughs). Shells encrusted with serpulid worms (R) and pink coralline algae (R) and support tufts of filamentous red algae (O-F) and sparse foliose red algae (R). Paguridae sp. (P), <i>Marthasterias glacialis</i> (P), <i>Porania pulvillus</i> (R).	SS.SMp.Mrl.Pcal.Nmix	MB

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WR40	Dense pebbles, gravel and shell material with coarse sand and occasional cobbles.	Stones and shell encrusted with serpulid worms (A), pink encrusting algae (F) and <i>Balanus balanus</i> (though possibly all dead) and supporting sparse hydroids (O) and filamentous red algae (R). <i>Chaetopterus variopedatus</i> (R), <i>Ophiura albida</i> (P).	SS.SMx.CMx	
WR41	Maerl and shell gravel with scattered shells.	Dense maerl bed with live <i>Phymatolithon calcareum</i> (C overall but S locally in patches, some large). Shells encrusted with serpulid worms (P) and pink coralline algae (P). Drift weed present but live material includes fairly sparse filamentous red algae (O), foliose red algae (R) and <i>Desmarestia</i> sp.? (O). <i>Cancer pagurus</i> (P), <i>Asterias rubens</i> (P), <i>Luidia ciliaris</i> (P), <i>Echinus esculentus</i> (P), <i>Asciella aspersa?</i> (R).	SS.SMp.Mrl.Pcal.Nmix	MB
WR42	Sand-dusted bedrock with patches of shell gravel and coarse sand and scattered cobbles and boulders.	Rock with kelp forest and park of <i>Laminaria hyperborea</i> (C, locally A) supporting <i>Membranipora membranacea</i> on fronds (P) and undestorey of dense filamentous and foliose red algae (A) with pink coralline algae (F); <i>Saccharina latissima</i> (P). <i>Echinus esculentus</i> (F), <i>Luidia ciliaris</i> (O), <i>Asciella aspersa?</i> (F locally).	IR.HIR.KSed.XKScrR	
WR43	Shell gravel with scattered shells, pebbles and cobbles (locally dense) and occasional boulders.	Stones encrusted with pink coralline algae (P) and serpulid worms (P) and supporting very sparse filamentous and foliose red algae (R); much drift kelp. <i>Echinus esculentus</i> (O), <i>Asterias rubens?</i> (P), <i>Ophiura albida</i> (P).	SS.SCS.CCS SS.SMx.CMx	
WR44	Coarse sand with some shell gravel, stone gravel and scattered shells.	Shells support sparse filamentous red algae (R) and serpulid worms (R). Drift weed.	SS.SCS.ICS	
WR45	Shell gravel and coarse sand with scattered shell material, locally dense.	Shells encrusted with pink coralline algae (R) and serpulid worms (R) and support sparse filamentous red algae (R) and foliose red algae (R) including <i>Scinaia interrupta</i> . <i>Cerianthus lloydii?</i> (R), drift weed.	SS.SCS.ICS	
WR46	Shell gravel with medium sand, stone gravel and scattered shells, pebbles and occasional cobbles and boulders.	Stones encrusted with pink coralline algae (O), <i>Balanus balanus</i> (possibly all dead) and serpulid worms (P) and support sparse filamentous red algae (R) and hydroids (R) including <i>Halecium halecinum?</i> . <i>Cerianthus lloydii?</i> (C), <i>Lanice conchilega</i> (R), <i>Munida rugosa</i> (R), <i>Echinus esculentus</i> (O), <i>Porania pulvillus</i> (R). Scattered thalli of live <i>Phymatolithon calcareum</i> throughout (R-O).	SS.SMx.CMx	
WR47	Slightly silty, shelly, fine-medium sand with surface shell gravel and scattered shells.	Shell supports sparse filamentous red algae (R). Sediment with small holes, <i>Cerianthus lloydii</i> (F) and <i>Myxicola infundibulum</i> (P). <i>Liocarcinus depurator</i> (P).	SS.SSa.IMuSa.EcorEns	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
WR48	Shelly, fine-medium sand with surface shell gravel and scattered stone gravel, pebbles, cobbles and shells.	Stones and shells encrusted with pink coralline algae (R), <i>Balanus balanus</i> (possibly dead) and serpulid worms (P) and support sparse filamentous red algae (R), foliose red algae (R) and hydroids (R). <i>Cerianthus lloydii</i> (P), <i>Munida rugosa</i> (R), <i>Aequipecten opercularis</i> (R), <i>Asterias rubens</i> (P), <i>Ophiura</i> sp. (P), Sparse thalli of live <i>Phymatolithon calcareum</i> (R).	SS.SMx.CMx	
WR49	Medium sand with shell and stone gravel, pebbles, cobbles and shells.	Stones and shells encrusted with pink coralline algae (O), <i>Balanus balanus</i> (possibly dead) and serpulid worms (C) and support sparse filamentous red algae (R). <i>Chaetopterus variopedatus</i> (R), <i>Munida rugosa</i> (R), <i>Inachus</i> sp.? (R), <i>Astropecten irregularis</i> (R), <i>Porania pulvillus</i> (R).	SS.SMx.CMx	
ARM50	Rippled fine sand.	No biota discernible, though only a clip of the full video run was available.	SS.SSa.CFiSa	
ARM51	Rippled fine sand with patches of sand with scattered gravel, pebbles, cobbles and boulders.	Stones supporting <i>Alcyonium digitatum</i> (P), a hydroid turf (P), <i>Urticina felina</i> (P), <i>Porella compressa</i> (P) and serpulid worms (P). <i>Callionymus</i> sp. (P). Only a clip of the full video run available.	SS.SSa.CFiSaCR.MCR.EcCr .FaAlCrSS.SMx.CMx	
ARM52	Rippled fine sand with patches of scattered gravel, pebbles, cobbles and boulders in varying proportions and concentrations.	Stones encrusted with serpulid worms including <i>Spirobranchus</i> spp. (locally A) and <i>Parasmittina trispinosa</i> (P) and supporting <i>Alcyonium digitatum</i> (locally A), hydroids (P), <i>Caryophyllia smithii</i> (P), <i>Securiflustra securifrons</i> (P) and <i>Polymastia boletiformis</i> (P). Galatheidae sp. (P), Paguridae spp. (P), <i>Callionymus</i> sp. (P), Teleostei sp. indet. (P). Only a clip of the full video run available.	SS.SSa.CFiSa CR.MCR.EcCr.FaAlCr SS.SMx.CMx	
ARM53	Rippled fine sand with patches of scattered gravel, pebbles, cobbles and boulders in varying proportions and concentrations.	Stones encrusted with serpulid worms (P) and <i>Parasmittina trispinosa</i> (R) and supporting a hydroid turf (C locally) including <i>Halecium</i> sp. (P) and <i>Tubularia</i> sp.?, <i>Axinella infundibuliformis</i> (P), <i>Caryophyllia smithii</i> (P), <i>Porella compressa</i> (C locally) and colonial ascidians (P). The motile fauna includes <i>Pagurus prideauxi</i> with <i>Adamsia carciniopados</i> (P), Paguridae spp. (P), <i>Coryphella</i> sp. (P), <i>Calliostoma zizyphinum</i> (P) and <i>Crossaster papposus</i> (P). Infaunal signs include emergent tubes and polychaete casts. Only a clip of the full video run available.	SS.SSa.CFiSa SS.SMx.CMx	
ARM54	Scattered gravel, pebbles, cobbles and boulders on sand.	Stones encrusted with serpulid worms including <i>Spirobranchus</i> spp. (locally A) and <i>Parasmittina trispinosa</i> (P) and supporting <i>Alcyonium digitatum</i> (P), hydroids (P), <i>Caryophyllia smithii</i> (P) and <i>Flustra foliacea</i> (P). Only a clip of the full video run available.	SS.SMx.CMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
ARM55	Predominantly waves of coarse sand and gravel, often with pebbles in troughs, interrupted by patches of mixed substrates with varying proportions of sand, gravel, pebbles, cobbles and boulders.	Sediment waves with few visible animals, although scattered boulders support clumps of <i>Flustra foliacea</i> (R); <i>Luidia ciliaris</i> (O). Mixed areas with stones encrusted with <i>Spirobranchus</i> spp. (C, locally A) and <i>Parasmittina trispinosa</i> (R) and supporting <i>Alcyonium digitatum</i> (R), <i>Flustra foliacea</i> (R), <i>Urticina felina</i> (R) and hydroid clumps (P). <i>Asterias rubens</i> (P), <i>Echinus esculentus</i> (O). Dense <i>Ophiocomina nigra</i> (locally A) towards start of run.	SS.SCS.CCS SS.SMx.CMx.OphMx CR.MCR.EcCr.FaAlCr.Pom	
ARM56	Slightly rippled fine-medium sand becoming medium sand.	Bivalve siphons (P).	SS.SSa.CFiSa	
ARM57	Rippled fine sand.	Emergent infaunal tubes (P).	SS.SSa.CFiSa	
ARM58	Rippled fine sand.	No visible life.	SS.SSa.CFiSa	
ARM58	Rippled fine-medium sand with patches of scattered gravel, pebbles, cobbles and boulders in varying proportions and concentrations.	Stones encrusted with serpulid worms (O) including <i>Spirobranchus</i> spp. (locally A) and <i>Parasmittina trispinosa</i> (R) and supporting <i>Alcyonium digitatum</i> (R), hydroid patches (R) including <i>Tubularia indivisa</i> , and <i>Flustra foliacea</i> (R). <i>Pecten maximus</i> (P), <i>Crossaster papposus</i> (O), Asteroidea spp. indet. (O), <i>Ophiopholis aculeata?</i> (P).	SS.SSa.CFiSa SS.SMx.CMx	
ARM59	Rippled fine sand with sparsely scattered pebbles, cobbles and boulders towards the end of the run.	Sediment with emergent infaunal tubes and bivalve siphons including possibly those of <i>Arctica islandica</i> (locally C). Paguridae spp. (R), Buccinidae sp. (R), <i>Alcyonium digitatum</i> (R).	SS.SSa.CFiSa	AI?
ARM60	Rippled fine sand with sparsely scattered shells and small stones.	Sediment with emergent infaunal tubes and bivalve siphons including probably those of <i>Arctica islandica</i> (locally A). Patchy sparse tufts of hydroids (locally F) including <i>Nemertesia antennina</i> (R), <i>Alcyonium digitatum</i> (R), <i>Tethya aurantium?</i> (R), <i>Flustra foliacea</i> (R), Paguridae spp. (P) including <i>Pagurus bernhardus</i> (R), Buccinidae sp. (R).	SS.SSa.CFiSa	AI?
ARM61	Rippled fine sand.	Sediment with emergent infaunal tubes and bivalve siphons - probably those of <i>Arctica islandica</i> (locally C). Sparse hydroid tufts (R) and <i>Alcyonium digitatum</i> (R).	SS.SSa.CFiSa	AI?

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
ARM62	Rippled fine sand.	Bivalve siphons (P), possibly including those of <i>Arctica islandica</i> , and polychaete casts. Sparse hydroid tufts (R), Paguridae spp.? (P), <i>Astropecten irregularis</i> ? (R), <i>Scyliorhinus</i> sp. (P).	SS.SSa.CFiSa	AI?
ARM63	Scattered gravel, pebbles, cobbles and boulders in varying proportions and concentrations on sand, with small patches of rippled fine sand.	Stones encrusted with serpulid worms (P) and <i>Parasmittina trispinosa</i> (R) and supporting a hydroid turf (C locally) including <i>Halecium</i> sp.? (P), <i>Thuiaria thuja</i> (P) and <i>Tubularia</i> sp.?, <i>Axinella infundibuliformis</i> (O), <i>Porella compressa</i> (P), <i>Securiflustra securifrons</i> ? (P) and colonial ascidians (P). The motile fauna includes <i>Pagurus prideauxi</i> with <i>Adamsia carciniopados</i> (P), Paguridae spp. (P), <i>Coryphella</i> sp. (P), <i>Crossaster papposus</i> (P) and <i>Porania pulvillus</i> ? (P). Infaunal signs include bivalve siphons (possibly <i>Arctica islandica</i>) and polychaete casts.	SS.SMx.CMx SS.SSa.CFiSa	AI?
ARM64	Alternating patches of gravel, sand and shell material with rippled fine sand.	Hydroid clumps (R), infaunal tubes (P), Paguridae spp. (P), <i>Luidia ciliaris</i> (O).	SS.SCS.CCS SS.SSa.CFiSa	
ARM65	Predominantly rippled fine sand but patches of scattered gravel, pebbles, cobbles and boulders on sand.	Sediment with polychaete casts. Stones encrusted with serpulid worms (P) and <i>Parasmittina trispinosa</i> (R) and support <i>Polymastia boletiformis</i> (R), <i>Alcyonium digitatum</i> (R), hydroid clumps (R), <i>Urticina felina</i> (P) and <i>Securiflustra securifrons</i> (R). <i>Stichastrella rosea</i> ? (R), <i>Marthasterias glacialis</i> ? (R).	SS.SSa.CFiSaSS.SMx.CMx	
ARM66	Slightly rippled fine sand with scattered pebbles, cobbles and occasional boulders.	Stones encrusted with serpulid worms (P) and support <i>Polymastia boletiformis</i> (R), <i>Alcyonium digitatum</i> (R, locally F), hydroid clumps (P), <i>Urticina felina</i> ? (P), <i>Flustra foliacea</i> (R) and <i>Securiflustra securifrons</i> (R). <i>Pagurus prideauxi</i> with <i>Adamsia carciniopados</i> (P), <i>Buccinum undatum</i> ? (P), <i>Stichastrella rosea</i> ? (R), <i>Echinus esculentus</i> (R).	SS.SSa.CFiSa SS.SMx.CMx	
ARM67	Fine-medium sand (coarseness varies along run), rippled in places, and with patches of scattered gravel, pebbles and cobbles, sometimes dense.	Stones encrusted with serpulid worms (P) and <i>Parasmittina trispinosa</i> , and supporting <i>Polymastia boletiformis</i> (R), hydroid clumps (P) including <i>Thuiaria thuja</i> ?, <i>Porella compressa</i> (P), and <i>Securiflustra securifrons</i> (P). <i>Paguridae</i> sp. (P), <i>Astropecten irregularis</i> ? (P), <i>Echinus esculentus</i> (R), <i>Callionymus</i> sp. (P).	SS.SSa.CFiSa SS.SMx.CMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
ARM68	Sand with scattered gravel, pebbles, cobbles and occasional boulders.	Stones encrusted with serpulid worms (P) and <i>Parasmittina trispinosa</i> (R) and supporting hydroid clumps (P) and <i>Porella compressa</i> (P). <i>Porania pulvillus</i> (O).	SS.SMx.CMx	
ARM68	Predominantly coarse sand but patches of rippled fine sand with dusting of coarse sand.	Sparse visible life. <i>Urticina felina?</i> (P), Paguridae sp. (R), Buccinidae sp. (R), <i>Astropecten irregularis</i> (R), <i>Crossaster papposus</i> (R), Holothuroidea sp. (P).	SS.SCS.CCS SS.SSa.CFiSa	
ARM69	Fine sand, rippled in places, with light dusting of coarse sand.	Patchy hydroid turf (F, locally C) including <i>Nemertesia ramosa</i> (P) and <i>N. antennina</i> (P) on unknown substrate (possibly buried shell or stone). Other sessile forms include <i>Polymastia boletiformis</i> (R) and <i>Alcyonium digitatum</i> (R). Motile species include Paguridae spp. (R), <i>Luidia ciliaris</i> (O), <i>Stichastrella rosea?</i> (R) and <i>Astropecten irregularis</i> (R). Sediment with emergent infaunal tubes (P) and bivalve siphons, probably including <i>Arctica islandica</i> (locally C).	SS.SSa.CFiSa	AI?
ARM70	Rippled fine sand with sparsely scattered shells, pebbles and cobbles.	Patchy hydroid turf (F) including <i>Halecium</i> sp.? (P) and <i>Nemertesia ramosa</i> (P) on apparently buried substrata. Other sessile forms include <i>Polymastia boletiformis</i> (R), <i>Alcyonium digitatum</i> (R) and <i>Urticina felina?</i> (R). Sediment with emergent infaunal tubes (P) and bivalve siphons, probably including <i>Arctica islandica</i> (locally C).	SS.SSa.CFiSa	AI?
ARM71	Rippled fine sand with sparsely scattered shells, pebbles, cobbles and occasional boulders.	Patchy hydroid turf (F, locally C) including <i>Nemertesia antennina</i> (P) and <i>N. ramosa</i> (P). Other sessile forms include <i>Polymastia boletiformis</i> (O), <i>Alcyonium digitatum</i> (R) and <i>Urticina felina?</i> (P). Sediment with emergent infaunal tubes (P) and polychaete casts (P). Paguridae spp. (O), <i>Brachyura</i> sp. (P), <i>Aporrhais pespelecani?</i> (P), Asteroidea sp. indet. (R).	SS.SSa.CFiSa	
ARM72	Rippled fine sand with a sparse scatter of gravel and shell material in places.	Bivalve siphons, including possibly <i>Arctica islandica</i> (locally C), Buccinidae spp. (O), <i>Astropecten irregularis</i> (O).	SS.SSa.CFiSa	AI?
ARM72	Coarse sand with sparsely scattered pebbles, cobbles and shells in places.	Stones with hydroid clumps (R) and <i>Alcyonium digitatum?</i> (R). <i>Luidia ciliaris</i> (O), Pleuronectiformes sp. (O).	SS.SCS.CCS	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
ARM73	Waves of silty coarse sand with shell material especially in troughs, interrupted by patches of silty fine sand with sparsely scattered cobbles and boulders.	Stones support hydroid clumps (R), <i>Alcyonium digitatum</i> (R) and <i>Urticina felina?</i> (R). Paguridae spp. (O), <i>Astropecten irregularis</i> (R).	SS.SCS.CCS SS.SSa.CFiSa	
ARM74	Slightly rippled fine sand.	Paguridae spp. (R), <i>Astropecten irregularis</i> (R), Asteroidea sp. indet. (R)	SS.SSa.CFiSa	
ARM75	Slightly rippled fine sand interrupted by small patches of scattered gravel, pebbles, cobbles and occasional boulders on sand..	Stones with hydroid clumps (R) and <i>Alcyonium digitatum</i> (R). Sediment with emergent infaunal tubes. Motile fauna includes Paguridae spp. (R), <i>Cancer pagurus</i> (O), <i>Astropecten irregularis</i> (R), <i>Callionymus</i> sp. (R) and small shoal of teleost fry.	SS.SSa.CFiSa SS.SMx.CMx	
ARM76	Waves of coarse sand with dense shell material in the troughs.	Small Brachyura sp. (P). Large numbers of <i>Palliolum</i> shells in the wave troughs, some of which may be living.	SS.SCS.CCS	
ARM77	Coarse sand and shell.	<i>Palliolum</i> shells present, some of which may be living. <i>Alcyonium digitatum</i> (R) but probably drift material. Teleost fry.	SS.SCS.CCS	
ARM78	Patchy seabed. Fine-medium sand, in places rippled, elsewhere admixed with dense gravel and pebbles or with a surface scatter of gravel, pebbles, cobbles and occasional boulders.	Stones encrusted with serpulid worms (P) and <i>Parasmittina trispinosa</i> (R) and supporting hydroids (P) and <i>Urticina felina</i> (R). Paguridae spp. (R), <i>Porania pulvillus</i> (R), Asteroidea sp. indet. (R), shoal of teleost fry (P).	SS.SMx.CMx SS.SSa.CFiSa	
ARM79	Rippled fine sand with sparsely scattered shell material and small stones. One small patch of denser small stones with large boulder.	Stones and shells supporting tufts of hydroids (R) including <i>Nemertesia antennina</i> , <i>Alcyonium digitatum</i> (R), <i>Polymastia boletiformis</i> (R) and Bryozoa spp. indet. Sediment with emergent infaunal tubes (P) and bivalve siphons (P). Motile fauna includes <i>Asterias rubens?</i> (O), <i>Porania pulvillus</i> (R), Rajidae sp. (O) and small teleost fry (P).	SS.SSa.CFiSa SS.SMx.CMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
ARM80	Flat plain of medium-coarse sand.	No distinct signs of life.	SS.SCS.CCS	
ARM81	Rippled fine-medium sand.	No signs of life, apart from drift material.	SS.SSa.CFiSa	
ARM82	Rippled fine sand with scattered shell.	Paguridae sp.? (P), <i>Porania pulvillus</i> (P).	SS.SSa.CFiSa	
ARM82	Sand with dense cover of shell material, gravel and pebbles, with occasional cobbles and boulders.	Stones and shell provide support for serpulid worms (F), <i>Urticina felina?</i> (P) and <i>Alcyonium digitatum</i> (R). Asteroidea sp. (O)	SS.SMx.CMx	
ARM82	Rippled fine sand with scattered shell.	<i>Alcyonium digitatum</i> (R), <i>Flustra foliacea</i> (R), bivalve siphons - probably <i>Arctica islandica</i> (P), Pleuronectiformes sp. (P).	SS.SSa.CFiSa	AI?
ARM83	Alternating patches of coarse sand and rippled fine sand. Some scattered cobbles locally.	Stones support hydroid clumps (R) and <i>Alcyonium digitatum?</i> (R). <i>Cancer pagurus</i> (O), <i>Brachyura</i> sp. (P), <i>Luidia ciliaris</i> (O), teleost fry (P).	SS.SCS.CCSSL.SSa.CFiSa	
ARM84	Fine sand with scattered pebbles, cobbles and boulders.	Stones encrusted with serpulid worms (P) and <i>Parasmittina trispinosa</i> (R) and supporting clumps of hydroids (locally F) including <i>Halecium</i> sp.? (P) and <i>Nemertesia ramosa</i> (P), <i>Polymastia boletiformis</i> (O), an orange encrusting sponge (R) and <i>Alcyonidium diaphanum?</i> (P). Motile species include Paguridae spp. (O), <i>Asterias rubens</i> (R), <i>Luidia ciliaris</i> (O) and Pleuronectiformes spp. (O).	SS.SSa.CFiSa	
ARM85	Fine sand with sparsely scattered shells, pebbles and cobbles.	Stones supporting clumps of hydroids (R) and <i>Alcyonium digitatum</i> (R). Motile species include Paguridae spp. (O), <i>Asteroidea</i> sp (R) and teleost fry (P). Sediment with emergent infaunal tubes (P) and bivalve siphons including possibly <i>Arctica islandica</i> (P).	SS.SSa.CFiSa	AI?
ARM86	Fine sand with sparsely scattered pebbles and cobbles, although dense concentrations locally, with boulders.	Stones supporting clumps of hydroids (O-R) and <i>Alcyonium digitatum</i> (R). Motile species include Paguridae spp. (P), <i>Asteroidea</i> sp (R) and Pleuronectiformes sp. (R). Sediment with emergent infaunal tubes (P).	SS.SSa.CFiSa SS.SMx.CMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
ARM87	Rippled fine sand.	Sediment supporting emergent infaunal tubes, polychaete casts and bivalve siphons (locally C - possibly <i>Arctica islandica</i>). <i>Alcyonium digitatum</i> (R), Paguridae spp. (O), <i>Flustra foliacea</i> (R - but possibly drift), <i>Asterias rubens</i> (O).	SS.SSa.CFiSa	AI?
ARM88	Rippled fine sand.	Sediment supporting emergent infaunal tubes, polychaete casts and bivalve siphons (locally C - possibly <i>Arctica islandica</i>). <i>Alcyonium digitatum</i> (R), Paguridae spp. (O) including <i>Pagurus bernhardus</i> (P), serpulid worms (R).	SS.SSa.CFiSa	AI?
ARM89	Rippled fine sand.	Sediment supporting emergent infaunal tubes, polychaete casts and bivalve siphons (P - possibly <i>Arctica islandica</i>). <i>Alcyonium digitatum</i> (R), hydroids? (R), <i>Flustra foliacea</i> (R - but possibly drift), <i>Alcyonidium diaphanum</i> (R), <i>Scyliorhinus</i> sp.? (P).	SS.SSa.CFiSa	AI?
ARM90	Rippled fine sand.	Sediment with emergent tubes and perforated with small holes (P). <i>Alcyonium digitatum</i> (R), Paguridae spp.? (P), <i>Luidia ciliaris</i> (O), Asteroidea sp. indet. (R).	SS.SSa.CFiSa	
ARM91	Slightly rippled fine sand with scattered shell.	Patchy hydroid turf (F) including <i>Nemertesia ramosa</i> (locally C) presumably largely on shell material. Other sessile forms include <i>Polymastia boletiformis</i> ? (R), <i>Alcyonium digitatum</i> (R), serpulid worms (P) and <i>Alcyonidium diaphanum</i> (P). Paguridae spp. (P), Buccinidae spp. (P), <i>Coryphella</i> sp.? (P), emergent infaunal tubes (P).	SS.SSa.CFiSa	
ARM92	Rippled fine sand.	Sparse tufts of hydroids (R-O) and possibly bryozoans (P), as well as <i>Alcyonium digitatum</i> (R). Paguridae spp. (O), emergent infaunal tubes (P) and holes (P).	SS.SSa.CFiSa	
ARM93	Rippled fine sand with scattered shells and small stones, with small patch of dense shell, pebbles and cobbles on sand.	Sparse tufts of hydroids (O) including <i>Nemertesia ramosa</i> (R), and possibly bryozoans (P), as well as <i>Alcyonium digitatum</i> (R) and <i>Polymastia boletiformis</i> (R). Paguridae spp. (P), <i>Callionymus</i> sp. (P), <i>Scyliorhinus</i> sp. (O), Pleuronectiformes sp. (O). Sediment with emergent infaunal tubes (P), small holes (P) and polychaete casts.	SS.SSa.CFiSa SS.SMx.CMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
ARM94	Rippled fine sand with small patches of dense gravel, pebbles cobbles and boulders.	Stones encrusted with serpulid worms (C) and <i>Parasmittina trispinosa</i> (R) and supporting <i>Alcyonium digitatum</i> (O, locally C) and hydroid/bryozoan patches (O). Stony areas with <i>Echinus esculentus</i> (F), <i>Luidia ciliaris</i> (F) and <i>Ophiocomina nigra</i> (locally A). Sediment with small teleost fry (P) and <i>Lepidorhombus whiffiagonis</i> (O).	SS.SSa.CFiSa SS.SMx.CMx	
ARM94	Rippled fine sand.	No clear signs of living biota.	SS.SSa.CFiSa	
ARM95	Rippled fine sand.	No clear signs of living biota.	SS.SSa.CFiSa	
ARM95	Waves of coarse sand with dense shell in troughs.	Asteroidea sp. (R).	SS.SCS.CCS	
ARM95	Rippled fine sand.	No clear signs of living biota.	SS.SSa.CFiSa	
ARM96	Rippled fine sand.	No clear signs of living biota.	SS.SSa.CFiSa	
ARM97	Rippled fine-medium sand.	<i>Callionymus lyra</i> (R), Paguridae sp. (R).	SS.SSa.CFiSa	
ARM98	Rippled fine sand.	<i>Callionymus</i> sp. (R), Pleuronectiformes sp. (R), teleost fry (P).	SS.SSa.CFiSa	
ARM99	Rippled fine sand with sparsely scattered shells.	Scattered patches of hydroids (R-O) including <i>Halecium</i> sp. (P), as well as <i>Alcyonium digitatum</i> (R), <i>Alcyonidium diaphanum</i> (R) and <i>Polymastia boletiformis</i> (R). Paguridae spp. (O) including <i>Pagurus bernhardus</i> (P), <i>Callionymus</i> sp. (R), Pleuronectiformes sp. (R). Sediment with emergent infaunal tubes, polychaete casts (P) and bivalve siphons including possibly <i>Arctica islandica</i> (locally C).	SS.SSa.CFiSa	AI?
ARM100	Rippled fine sand with sparsely scattered shells.	Shells provide substrates for sparsely scattered hydroids (R) and <i>Alcyonium digitatum</i> (R). Paguridae spp. (O), <i>Luidia ciliaris</i> (O), <i>Cancer pagurus</i> (O). Sediment with bivalve siphons including probably <i>Arctica islandica</i> (P).	SS.SSa.CFiSa	AI?
ARM101	Rippled slightly silty fine sand.	<i>Alcyonium digitatum</i> (R), hydroids (R) including <i>Halecium</i> sp.? , Paguridae spp. (R), <i>Cancer pagurus</i> (O), <i>Callionymus</i> sp.? (R), polychaete casts (P).	SS.SSa.CFiSa	
ARM102	Slightly rippled silty fine sand with sparsely scattered shells.	<i>Alcyonium digitatum</i> (R), hydroids (R), Paguridae spp. (R), <i>Sepia officinalis</i> (R). Sediment with emergent infaunal tubes, polychaete casts (P) and bivalve siphons including possibly <i>Arctica islandica</i> (P).	SS.SSa.CFiSa	AI?
ARM103	Rippled fine sand.	<i>Cancer pagurus</i> (O), Pleuronectiformes sp. (O).	SS.SSa.CFiSa	
ARM104	Rippled fine sand.	<i>Paguridae</i> sp. (R), <i>Callionymus</i> sp. (O), Rajidae sp. (O).	SS.SSa.CFiSa	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
ARM105	Rippled fine sand.	<i>Paguridae</i> sp. (O), <i>Asteroidea</i> sp. (R), <i>Callionymus</i> sp. (O), <i>Pleuronectiformes</i> sp. (O).	SS.SSa.CFiSa	
ARM106	Rippled fine sand.	Much drift hydroid and possibly bryozoan material, with some hydroids attached to shell (P). <i>Paguridae</i> spp. (R)	SS.SSa.CFiSa	
ARM107A	Cobbles and boulders.	Rock encrusted with <i>Parasmittina trispinosa</i> (F), red bryozoans (R), pink coralline algae (O) and <i>Spirobranchus</i> spp. (A) and supporting sparse <i>Alcyonium digitatum</i> (R) and hydroid patches (P). <i>Echinus esculentus</i> (C), <i>Crossaster papposus</i> (O), <i>Asteroidea</i> spp. indet. (O).	CR.MCR.EcCr.FaAlCr.Pom	
ARM107A	Scattered pebbles and cobbles, and initially some boulders, on sand.	Stones encrusted with <i>Parasmittina trispinosa</i> (R), pink coralline algae (R) and serpulid worms (P) and supporting sparse <i>Alcyonium digitatum</i> (R) and hydroid patches (P). <i>Echinus esculentus</i> (P), <i>Crossaster papposus</i> (O).	SS.SMx.CMx	
ARM107B	Waves of medium-coarse sand with gravel locally, and shell, gravel, pebbles and cobbles in troughs, interrupted by varying concentrations of cobbles and boulders on sand.	Stones encrusted with <i>Parasmittina trispinosa</i> (R), red bryozoans (R), pink coralline algae (R) and <i>Spirobranchus</i> spp. (locally A) and supporting <i>Caryophyllia smithii</i> (locally F), <i>Flustra foliacea</i> (locally A) and sparse <i>Alcyonium digitatum</i> (R, locally C) and hydroid patches (locally C). <i>Cancer pagurus</i> (O), <i>Echinus esculentus</i> (locally C), <i>Crossaster papposus</i> (O), <i>Scyliorhinus</i> sp. (O), <i>Rajidae</i> sp. (O), <i>Pleuronectiformes</i> sp. (O). Sediment with emergent infaunal tubes (P).	SS.SCS.CCS CR.MCR.EcCr.FaAlCr.Flu	
ARM108A	Waves of coarse sand and gravel with gravel and pebbles in troughs, and scattered cobbles and boulders on sand, locally dense.	Stones encrusted with <i>Parasmittina trispinosa</i> (locally O), pink coralline algae (R) and <i>Spirobranchus</i> spp. (locally C) and supporting <i>Caryophyllia smithii</i> (locally F), <i>Flustra foliacea</i> (locally F) and sparse <i>Alcyonium digitatum</i> (R).	SS.SCS.CCSCR.MCR.EcCr. FaAlCr.Flu	
ARM108B	Cobbles and boulders.	Stones encrusted with <i>Parasmittina trispinosa</i> (O, locally F), red bryozoans (R), pink coralline algae (R) and <i>Spirobranchus</i> spp. (C, locally A) and supporting <i>Caryophyllia smithii</i> (locally F), <i>Flustra foliacea</i> (R) and sparse <i>Alcyonium digitatum</i> (R, locally O) and hydroid patches (locally F). <i>Munida rugosa</i> ? (P), <i>Echinus esculentus</i> (C), <i>Crossaster papposus</i> (O), <i>Asterias rubens</i> (O), <i>Henricia</i> sp. (P), <i>Porania pulvillus</i> (P), <i>Clavelina lepadiformis</i> (P), <i>Scyliorhinus</i> sp. (O).	CR.MCR.EcCr.FaAlCr.Pom	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
ARM109	Rippled fine sand with patches of dense cobbles and boulders and areas of scattered pebbles and cobbles on sand.	Stones encrusted with <i>Parasmittina trispinosa</i> (O) and <i>Spirobranchus</i> spp. (C, locally A) and supporting <i>Caryophyllia smithii</i> (locally F), <i>Flustra foliacea</i> (R) and sparse <i>Alcyonium digitatum</i> (R) and hydroid patches (P). <i>Echinus esculentus</i> (F), <i>Ophiocomina nigra</i> (P), <i>Crossaster papposus</i> (O). <i>Callionymus</i> sp. (O).	CR.MCR.EcCr.FaAlCr.Pom SS.SMx.CMx	
ARM109	Waves of coarse sand with shell material and gravel in the troughs.	<i>Luidia ciliaris</i> (O).	SS.SCS.CCS	
ARM110	Mixed seabed with areas of rippled fine sand and areas of varying concentrations of gravel, pebbles, cobbles and boulders on sand.	Stones encrusted with <i>Parasmittina trispinosa</i> (P), red bryozoans (P) and serpulid worms including <i>Spirobranchus</i> spp. (locally A), and supporting <i>Flustra foliacea</i> (R), <i>Securiflustra securifrons</i> (R), <i>Porella compressa</i> (P), <i>Alcyonium digitatum</i> (R), <i>Urticina felina</i> (R), <i>Filograna implexa?</i> (R), a yellow cushion sponge (R) and hydroid patches (P) including <i>Halecium</i> sp.? and <i>Thuiaria thuja</i> . Paguridae spp. (O), <i>Munida rugosa</i> (P), <i>Macropodia</i> sp. (P), <i>Echinus esculentus</i> (F), <i>Crossaster papposus</i> (O), <i>Asterias rubens</i> (O), Asteroidea spp. (R), Pleuronectiformes sp. (O).	SS.SSa.CFiSa SS.SMx.CMx	
ARM111	Faintly rippled silty fine sand with sparsely scattered pebbles, cobbles and shells and occasional boulders.	Stones and shell support hydroid clumps R, locally O) including <i>Nemertesia ramosa</i> (R), and <i>Alcyonium digitatum</i> (R). Paguridae spp. (O), teleost sp. (R). Sediment with emergent infaunal tubes (P) and polychaete casts (P).	SS.SSa.CFiSa	
ARM112	Rippled silty fine sand.	Sediment with emergent infaunal tubes (P), polychaete casts (P) and bivalve siphons (locally C - possibly <i>Arctica islandica</i>). <i>Alcyonium digitatum</i> (R), hydroid clumps (R), <i>Neptunea antiqua?</i> (R), Paguridae spp. (O) including <i>Pagurus bernhardus</i> (P), Pleuronectiformes sp. (O).	SS.SSa.CFiSa	AI?
ARM113	Rippled silty fine sand.	Sediment with emergent infaunal tubes (P) and polychaete casts (P). <i>Alcyonium digitatum</i> (R), hydroid clumps (R), Paguridae spp. (O) including <i>Pagurus bernhardus</i> (P).	SS.SSa.CFiSa	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
FTH01_V	Uneven bedrock with small coarse sand pockets.	Rock encrusted with pink coralline algae (A) and <i>Spirobranchus</i> spp. (A) and supporting dense <i>Ophiothrix fragilis</i> (A, locally S). <i>Echinus esculentus</i> (C), <i>Crossaster papposus</i> (O), <i>Stichastrella rosea</i> (F), <i>Luidia ciliaris</i> (F), shoal of small teleosts (P)	CR.MCR.EcCr.FaAlCr.Bri	
FTH01_V	Gravel and pebbles on sand.	Dense ophiuroids (S) including <i>Ophiocomina nigra</i> (P). <i>Echinus esculentus</i> (F), <i>Luidia ciliaris</i> (P).	SS.SMx.CMx.OphMx	
FTH02_V	Dense boulders and cobbles on sand.	Stones encrusted with pink coralline algae (C) and <i>Spirobranchus</i> spp. (A) and supporting dense <i>Ophiocomina nigra</i> (A), <i>Alcyonium digitatum</i> (R) and <i>Ascidia/Ascidiella</i> sp. (P). <i>Echinus esculentus</i> (C), <i>Crossaster papposus</i> (O), <i>Stichastrella rosea</i> (P).	CR.MCR.EcCr.FaAlCr.Bri	
FTH02_V	Bedrock and boulders.	Rock encrusted with pink coralline algae (C) and <i>Spirobranchus</i> spp. (A) and supporting dense <i>Alcyonium digitatum</i> (A) and a patchy bryozoan/hydroid turf (O), including <i>Flustra foliacea</i> (R), sparse red foliose algae (R) and juvenile <i>Laminaria hyperborea?</i> (O). <i>Echinus esculentus</i> (C), <i>Stichastrella rosea</i> (P). <i>Porania pulvillus</i> (P), <i>Ophiocomina nigra</i> (P).	CR.MCR.EcCr.FaAlCr.Adig	
FTH02_V	Bedrock and boulders.	Rock encrusted with pink coralline algae (C), brown algae (O), <i>Parasmittina trispinosa</i> (R) and <i>Spirobranchus</i> spp. (A) and supporting dense <i>Ophiocomina nigra</i> (A) in places, foliose red algae (R), juvenile <i>Laminaria hyperborea?</i> (O) and patches of hydroid/bryozoan turf (O). <i>Echinus esculentus</i> (C), <i>Stichastrella rosea?</i> (P), Teleostei sp. (P).	CR.MCR.EcCr.FaAlCr.Pom CR.MCR.EcCr.FaAlCr.Bri	
FTH03_V	Waves of coarse sand with gravel and shell material in troughs and occasional small areas of outcropping bedrock and sparse boulders.	Teleostei sp. (O).	SS.SCS.CCS	CCS
FTH03_V	Bedrock and boulders with some pockets of coarse sand.	Rock encrusted with <i>Parasmittina trispinosa</i> (O) and <i>Spirobranchus</i> spp. (A). <i>Axinella infundibulum/Phakellia ventilabrum?</i> (R), <i>Munida</i> sp. (P), <i>Cancer pagurus</i> (O), <i>Echinus esculentus</i> (F), <i>Stichastrella rosea</i> (F-C), <i>Luidia ciliaris</i> (O), <i>Crossaster papposus</i> (O), <i>Porania pulvillus</i> (R), <i>Hippasteria phrygiana?</i> (R), <i>Scyliorhinus</i> sp. (O), Teleostei spp. (O).	CR.MCR.EcCr.FaAlCr.Pom	
FTH04_V	Rippled fine sand.	No clearly discernible life. Fast drift.	SS.SSa.CFiSa	CCS

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
FTH05_V	Waves of coarse sand with shell material in troughs.	No clearly discernible life. Fast drift.	SS.SCS.CCS	CCS
FTH05_V	Rippled fine sand, locally with surface scatter of coarse sand.	No clearly discernible life. Fast drift.	SS.SSa.CFiSa	CCS
FTH06_V	Uneven bedrock with gullies.	Fairly thin <i>Laminaria hyperborea</i> forest (A), with plants supporting <i>Membranipora membranacea</i> (P). Red algal understorey appears fairly sparse in general (perhaps O) but fairly dense in patches (locally C). Pink coralline algae (A), <i>Echinus esculentus</i> (C).	IR.MIR.KR.Lhyp.GzFt	
FTH07_V	Sand-scoured bedrock.	Rock encrusted with pink coralline algae (F), <i>Parasmittina trispinosa</i> (F) and <i>Spirobranchus</i> spp. (A) and supporting patches of <i>Flustra foliacea</i> (O). <i>Echinus esculentus</i> (F), <i>Stichastrella rosea</i> ? (P), <i>Luidia ciliaris</i> (P), <i>Porania pulvillus</i> (R).	CR.MCR.EcCr.FaAlCr.Flu	
FTH07_V	Coarse sand.	Dense pairs of siphon holes (A), <i>Porania pulvillus</i> (P), <i>Echinus esculentus</i> (P), <i>Crossaster papposus</i> (P).	SS.SCS.CCS	CCS
FTH08_V	Waves of coarse sand with shell material in troughs and scattered cobbles and pebbles at start of run.	Teleostei sp. (P).	SS.SCS.CCS	CCS
FTH08_V	Sand-scoured bedrock and boulders with coarse sand.	Rock encrusted with pink coralline algae (F), <i>Parasmittina trispinosa</i> (O), <i>Polymastia boletiformis</i> ? (R) and <i>Spirobranchus</i> spp. (A) and supporting sparse patches of <i>Flustra foliacea</i> (R), <i>Urticina</i> sp. (R), <i>Caryophyllia smithii</i> (locally F) and <i>Axinella infundibulum/Phakellia ventilabrum</i> (O). <i>Echinus esculentus</i> (C), <i>Stichastrella rosea</i> (C), <i>Luidia ciliaris</i> (O), <i>Porania pulvillus</i> (O), <i>Pecten maximus</i> ? (P), Teleostei spp. (O), <i>Labrus mixtus</i> (P).	CR.MCR.EcCr.FaAlCr.Pom	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
FTH09_V	Bedrock and boulders with sand pockets.	Rock encrusted with pink coralline algae (A), red algae (O), <i>Parasmittina trispinosa</i> (O, locally F), red bryozoans (R) and <i>Spirobranchus</i> spp. (A) and supporting large patches of <i>Alcyonium digitatum</i> (where C, but O overall) and occasional patches of hydroids (P). <i>Echinus esculentus</i> (C), <i>Stichastrella rosea</i> (F), <i>Luidia ciliaris</i> (O), <i>Porania pulvillus</i> (R), Teleostei spp. (O).	CR.MCR.EcCr.FaAlCr.Pom	
FTH10_V	Waves of coarse sand with shell material in troughs.	<i>Echinus esculentus</i> (O), Asteroidea sp. (O).	SS.SCS.CCS	CCS
FTH10_V	Bedrock and boulders with sand pockets.	Rock encrusted with pink coralline algae (A), red algae (O), <i>Parasmittina trispinosa</i> (O), red bryozoans (R) and <i>Spirobranchus</i> spp. (A) and patches of hydroids (P). <i>Echinus esculentus</i> (C), <i>Stichastrella rosea</i> (O), <i>Porania pulvillus</i> (R), Teleostei spp. (O).	CR.MCR.EcCr.FaAlCr.Pom	
FTH11_V	Bedrock with sand pockets and cobbles and boulders on sand..	Rock encrusted with pink coralline algae (F), <i>Parasmittina trispinosa</i> (F, locally C) and <i>Spirobranchus</i> spp. (A). <i>Echinus esculentus</i> (C), <i>Stichastrella rosea</i> (O), <i>Porania pulvillus</i> (R), clumps of <i>Antedon</i> sp.? (R), Teleostei spp. (O).	CR.MCR.EcCr.FaAlCr.Pom	
FTH11_V	Waves of coarse sand with shell material and pebbles and cobbles in troughs.	Stones with hydroid/bryozoan tufts (R), shoal of small teleosts (P).	SS.SCS.CCS	CCS
FTH11_V	Bedrock and boulders.	Rock encrusted with pink coralline algae (C), <i>Parasmittina trispinosa</i> (O, locally F), red bryozoans (R) and <i>Spirobranchus</i> spp. (C, locally A). <i>Flustra foliacea</i> (R), <i>Echinus esculentus</i> (C), <i>Stichastrella rosea</i> (O), <i>Porania pulvillus</i> (R), <i>Luidia ciliaris</i> ? (O), clumps of hydroids (P).	CR.MCR.EcCr.FaAlCr.Pom	
FTH12_V	Areas of coarse sand, coarse sand with dense shell material and sand-scoured bedrock and boulders.	Dense ophiuroids (A, locally S) for much of the run on rock and mixed sediments. <i>Echinus esculentus</i> (locally C), <i>Stichastrella rosea</i> (O), <i>Luidia ciliaris</i> ? (O), <i>Crossaster papposus</i> (O), <i>Porania pulvillus</i> (R), <i>Callionymus</i> sp.? (P).	SS.SCS.CCS SS.SMx.CMx.OphMx CR.MCR.EcCr.FaAlCr.Bri	CCS

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
FTH13_V	Patchy seabed of bedrock and dense boulders and cobbles, areas of gravel, pebbles and cobbles on sand and patches of coarse? sand locally with gravel and shell material.	Bedrock and larger stones encrusted with <i>Parasmittina trispinosa</i> (O) and <i>Spirobranchus</i> spp. (A) and with <i>Echinus esculentus</i> (C), <i>Stichastrella rosea</i> (O), Asteroidea sp. (P) and <i>Porania pulvillus</i> (R). <i>Flustra foliacea</i> (O in more mixed areas), yellow sponge? (R), Teleostei sp. (R).	CR.MCR.EcCr.FaAlCr.PomS S.SMx.CMx.FluHydSS.SCS. CCS	CCS
FTH14_V	Bedrock and boulders and areas of scattered gravel, pebbles cobbles and occasional boulders on medium-coarse sand.	Bedrock and larger stones encrusted with <i>Parasmittina trispinosa</i> (O) and <i>Spirobranchus</i> spp. (A) and with <i>Echinus esculentus</i> (C). <i>Flustra foliacea</i> (O) and hydroid tufts (P) in more mixed areas, <i>Crossaster papposus</i> (O), <i>Porania pulvillus</i> (R), Teleostei sp. (R).	CR.MCR.EcCr.FaAlCr.Pom SS.SMx.CMx.FluHyd	
FTH14_V	Coarse sand with some gravel and shell material and sparsely scattered small stones.	No sediment biota discerned.	SS.SCS.CCS	CCS
FTH15_V	Waves of coarse sand with shell material in troughs. Area of low, sand-scoured, outcropping bedrock.	Rock encrusted with <i>Spirobranchus</i> spp. (P) and <i>Parasmittina trispinosa</i> (P) and with dense cover of ophiuroids (S); <i>Echinus esculentus</i> (C), <i>Crossaster papposus</i> (P), <i>Flustra foliacea</i> (F), possible specimen of <i>Molva molva</i> . Sediment with sparse ophiuroids (R), Asteroidea sp. (R) and small teleosts (R).	SS.SCS.CCS CR.MCR.EcCr.FaAlCr.Bri	MM? CCS
FTH16_V	Mostly bedrock but with areas of coarse sand waves with shell in troughs.	Rock encrusted with <i>Spirobranchus</i> spp. and supporting dense ophiuroids, mostly <i>Ophiocomina nigra</i> (A) but with patches of <i>Ophiothrix fragilis</i> (locally S); <i>Luidia ciliaris</i> (F), <i>Stichastrella rosea</i> (F), <i>Asterias rubens</i> (O), <i>Porania pulvillus</i> (F), <i>Crossaster papposus</i> (F), <i>Echinus esculentus</i> (C), <i>Cancer pagurus</i> (O), teleosts (P). Sandy areas with sparse ophiuroids (R) and <i>Luidia ciliaris</i> (F).	CR.MCR.EcCr.FaAlCr.Bri SS.SCS.CCS	CCS
FTH17_V	Faintly rippled shelly fine sand with scattered shells.	<i>Luidia ciliaris</i> (O), drift algae.	SS.SSa.CFiSa	CCS

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
FTH19_V	Mostly fairly dense gravel and pebbles with some cobbles and shells on coarse sandy sediment, with outcrop of low, sand-scoured, flat bedrock towards the end.	Stones encrusted with pink coralline algae (P) and supporting patchy turf of hydroids/bryozoans (R but F locally); <i>Asterias rubens</i> (F), <i>Echinus esculentus</i> (P). Bedrock with pink coralline algae (A) and patchy hydroid/bryozoan turf (F); <i>A rubens</i> (P).	SS.SMx.CMxCR.MCR.EcCr. FaAlCr	
FTH20_V	Dense pebbles on sand.	Pebbles encrusted with pink coralline algae (C) and supporting dense ophiuroids for much of the run (S), though initially sparse. <i>Asterias rubens</i> (C), <i>Echinus esculentus</i> (C), <i>Luidia ciliaris</i> (F), <i>Crossaster papposus</i> (F).	SS.SMx.CMx.OphMx SS.SMx.CMx	
FTH21_V	Waves of coarse sediment becoming flatter towards end of run.	Good example of deep maerl bed with dense live <i>Phymatolithon calcareum</i> in wave troughs (where A, but C overall). Maerl more evenly distributed towards end of run. <i>Asterias rubens</i> (F), <i>Echinus esculentus</i> (F).	SS.SMp.Mrl.Pcal.Nmix	MB
FTH23_V	Uneven bedrock and boulders with patches of coarse sand, formed into waves in places.	Rock encrusted with pink coralline algae (O), <i>Parasmittina trispinosa</i> (O, locally F) and <i>Spirobranchus</i> spp. (A) and supporting <i>Metridium senile</i> ? (R), hydroids (R) and dense patches of <i>Antedon</i> sp. on verticals (locally S), with lower, sand-scoured rock supporting dense patches of <i>Flustra foliacea</i> (P). <i>Echinus esculentus</i> (C), <i>Stichastrella rosea</i> (F), <i>Porania pulvillus</i> (O), <i>Luidia ciliaris</i> (O), <i>Asterias rubens</i> ? (P), <i>Scyliorhinus</i> sp. (P), shoal of small teleosts. Sand with <i>Luidia ciliaris</i> (O)	CR.MCR.EcCr.FaAlCr.Pom CR.MCR.EcCr.FaAlCr.Flu SS.SCS.CCS	CCS
MTB02_V	Faintly rippled shelly medium sand.	Little visible life. Emergent infaunal tubes (P), Cephalopoda sp. (P).	SS.SSa.CFiSa	
MTB03_V	Waves of coarse sand.	Pleuronectiformes spp. (F) including <i>Pleuronectes platessa</i> ? (P), <i>Callionymus</i> sp? (O), Paguridae sp. (O).	SS.SCS.CCS	
MTB04_V	Faintly rippled medium sand with areas of scattered gravel, pebbles and cobbles.	Stones support serpulid worms (P) and <i>Alcyonium digitatum</i> (R). <i>Callionymus</i> sp. (O).	SS.SSa.CFiSa SS.SMx.CMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
MTB04_V	Sand-scoured bedrock.	Rock encrusted with pink coralline algae (F), <i>Parasmittina trispinosa</i> (O) and <i>Spirobranchus</i> spp. (A). <i>Urticina</i> sp. (R), <i>Alcyonium digitatum</i> (R), hydroid tufts? (R), <i>Echinus esculentus</i> (C), <i>Crossaster papposus</i> ? (O), <i>Ophiocomina nigra</i> (locally A), Teleostei sp. (R)	CR.MCR.EcCr.FaAlCr.Pom CR.MCR.EcCr.FaAlCr.Bri	
MTB04_V	Medium sand with areas of scattered gravel, pebbles and cobbles.	Stones support serpulid worms (P), <i>Parasmittina trispinosa</i> (R) and <i>Alcyonium digitatum</i> (R). <i>Callionymus</i> sp. (O).	SS.SSa.CFiSaSS.SMx.CMx	
MTB05_V	Coarse sand and shell gravel.	Paguridae sp. (P), Teleostei sp. (P), emergent infaunal tubes (P).	SS.SCS.CCS	
MTB06_V	Shelly slightly rippled fine-medium sand.	Sediment with emergent infaunal tubes (P), Cephalopoda sp. (O), <i>Callionymus</i> sp. (O).	SS.SSa.CFiSa	
MTB06_V	Dense shell and gravel on sand.	No distinct living biota seen.	SS.SMx.CMx	
MTB07_V	Shelly fine-medium sand.	Sediment perforated by small holes.	SS.SSa.CFiSa	
MTB08_V	Shelly medium sand with denser shell material locally.	Cephalopoda sp.? (O).	SS.SSa.CFiSa	
NH01	Dense <i>Modiolus</i> shell material with gravel and sand.	Apparently barren plain of dead shells. Shells support serpulid worms (C) but possibly dead. <i>Asterias rubens</i> (O), <i>Crossaster papposus</i> (O), <i>Echinus esculentus</i> (O), small teleosts (R).	SS.SMx.CMx	
NH02	Dense live <i>Modiolus</i> with small patches of dead shell material with gravel and sand.	Apart from small patches of barren dead shell material, the run largely traversed very dense live <i>Modiolus modiolus</i> (S) supporting a dense hydroid turf (S) including <i>Sertularia</i> sp. (P), serpulid worms (C) and a bed of <i>Ophiothrix fragilis</i> (S). The motile fauna was strongly dominated by echinoderms, with <i>Echinus esculentus</i> (C), <i>Asterias rubens</i> (C), <i>Henricia</i> sp. (C) and Holothuroidea sp. (P). <i>Alcyonium digitatum</i> (R), yellow Porifera spp. indet. (R), <i>Calliostoma zizyphinum</i> (locally F), Teleostei sp.(O).	SS.SBR.SMus.ModT	HM

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
NH03	<i>Modiolus</i> shell material and gravel with occasional small patches of outcropping bedrock.	Barren-looking substrate apart from sparse clumps of hydroids (R, locally O). <i>Asterias rubens</i> (O), Paguridae sp. (R). Small rock outcrops encrusted with pink coralline algae (R).	SS.SMx.CMx	
NH03	<i>Modiolus</i> shell material and gravel.	Live <i>Modiolus modiolus</i> initially relatively sparse (C) with a sparse epibiota but sharp transition at 58.46037 N 3.02605 W (00:20:52) to raised bank of dense live animals (A, locally S) supporting dense hydroid turf (A-S), serpulid worms (C) and yellow Porifera spp. indet. (R). <i>Echinus esculentus</i> (C), <i>Asterias rubens</i> (F), <i>Henricia</i> sp. (P), <i>Ophiothrix fragilis</i> (locally A).	SS.SBR.SMus.ModT	HM
NH04	Dense live <i>Modiolus</i> with dead shell material.	Live <i>Modiolus modiolus</i> (S, locally A) and supporting dense hydroid turf (S) including <i>Sertularia</i> sp. (P), <i>Ophiothrix fragilis</i> (S), <i>Alcyonium digitatum</i> (R) and serpulid worms (C). <i>Echinus esculentus</i> (A), <i>Asterias rubens</i> (C), <i>Crossaster papposus</i> (O), <i>Henricia</i> sp. (P), <i>Calliostoma zizyphinum</i> (P), <i>Scyliorhinus canicula</i> egg cases (P).	SS.SBR.SMus.ModT	HM
NH04	<i>Modiolus</i> shell material with gravel and sand.	Sparse epibiota visible. Shell material supports serpulid worms (C) but possibly dead, and hydroids (O). <i>Asterias rubens</i> (O, but C at first in proximity to <i>Modiolus</i> bed), <i>Henricia</i> sp. (P), <i>Cancer pagurus</i> (O), Pleuronectiformes sp. (O).	SS.SMx.CMx	
NH05_V	<i>Modiolus</i> shells and shell material.	Few live <i>Modiolus modiolus</i> seen due to speed of run but the shell density and associated fauna indicates dense live material (A-S). Shells support dense hydroid turf (A-S), <i>Ophiothrix fragilis</i> (A-S) and serpulid worms (P). <i>Echinus esculentus</i> (C), <i>Asterias rubens</i> (C), <i>Henricia</i> sp.? (P), Paguridae sp. (P), <i>Cancer pagurus</i> (P).	SS.SBR.SMus.ModT	HM
NH06_V	<i>Modiolus</i> shells and shell material.	No live <i>Modiolus modiolus</i> seen due to speed of run but the shell density and associated fauna indicates dense live material (A-S). Shells support dense hydroid turf (A-S), <i>Ophiothrix fragilis</i> (S, at least locally) and a yellow sponge? (R). <i>Echinus esculentus</i> (C), <i>Asterias rubens</i> (C).	SS.SBR.SMus.ModT	HM

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
NH07_V	Mostly mixed substrate of <i>Modiolus</i> shells, shell material and gravel but large patches of scoured bedrock and boulders.	Mixed areas support patchy hydroids (F) with <i>Echinus esculentus</i> (F), <i>Asterias rubens</i> (F) and serpulid worms (P). Live <i>Modiolus modiolus</i> may be present but no reasonable evidence of their presence at high abundance. Rock encrusted with pink coralline algae (F) and <i>Parasmittina trispinosa</i> (R) and supporting a patchy hydroid turf (A, locally S), possibly including bryozoans, and a sparse red algal turf (R), with <i>E. esculentus</i> (C, locally A) and <i>A. rubens</i> (C).	SS.SMx.CMx CR.MCR.EcCr.FaAlCr.Flu	
NH08_V	<i>Modiolus</i> shells and shell material.	No live <i>Modiolus modiolus</i> seen due to speed of run but the shell density and associated fauna indicates dense live material (A-S). Shells support dense hydroid turf (A-S) and a yellow sponge? (R). No ophiuroids seen but may be present at high density. <i>Echinus esculentus</i> (C), <i>Asterias rubens</i> (C).	SS.SBR.SMus.ModT	HM
NH11_V	<i>Modiolus</i> shells and shell material with occasional cobbles and boulders.	Shell material and stones support sparse hydroids (O) and serpulid worms (P). <i>Echinus esculentus</i> (F), <i>Asterias rubens</i> (O), <i>Crossaster papposus</i> (O), Teleostei sp. (R), <i>Ophiothrix fragilis</i> (locally S, possibly over extensive area)	SS.SMx.CMx SS.SMx.CMx.OphMx	
NH12_V	Mixed substrate of sand and gravel, with scattered pebbles, cobbles and boulders.	Patchy hydroid/bryozoan turf (C), including hydroids (P) and possibly <i>Flustra foliacea</i> (P). <i>Echinus esculentus</i> (O), <i>Asterias rubens</i> (O), Teleostei sp. (O). Dense ophiuroids (S) for at least the first part of the run.	SS.SMx.CMx.OphMxSS.SMx .CMx.FluHyd	
NH13_V	Mixed gravelly substrate with scattered pebbles, cobbles and boulders.	Scattered tufts of hydroids/bryozoans (O-F). <i>Echinus esculentus</i> (C), <i>Asterias rubens</i> (F).	SS.SMx.CMx	
NH14_V	Waves of coarse sand with small patches of outcropping bedrock.	Rock patches encrusted with pink coralline algae (S) and supporting patchy turf of hydroids (C) and <i>Flustra foliacea</i> (locally S), with <i>Asterias rubens</i> (O). No life seen on sand.	SS.SCS.CCS CR.MCR.EcCr.FaAlCr.Flu	
NH15_V	Coarse sand and gravel with sparsely scattered pebbles, cobbles and boulders.	Scattered tufts of hydroids and bryozoans (O-F) including <i>Flustra foliacea</i> (R). <i>Parasmittina trispinosa</i> (R), <i>Echinus esculentus</i> (F), <i>Asterias rubens</i> (F), <i>Luidia ciliaris</i> (O).	SS.SCS.CCS	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
NH16_V	Cobbles and boulders on coarse sand with patches of outcropping bedrock and patches of coarse sand.	Stones support serpulid worms (C) and <i>Alcyonium digitatum</i> (O). <i>Echinus esculentus</i> (C), <i>Asterias rubens</i> (P), <i>Crossaster papposus</i> (F). Dense patches of ophiuroids (locally S).	SS.SMx.CMx SS.SMx.CMx.OphMx SS.SCS.CCS	
NH18_V	Coarse shell and gravel including shell gravel.	Sparse small hydroid tufts (R), Paguridae sp. (P).	SS.SCS.CCS	
NH19_V	Coarse shell and gravel including shell gravel.	Tufts of hydroids and bryozoans (collectively F) including <i>Flustra foliacea</i> (R) and <i>Alcyonidium diaphanum?</i> (P).	SS.SCS.CCS	
NH20_V	Waves of coarse sand.	Sparse visible fauna. Paguridae spp. (O).	SS.SCS.CCS	
MF01	Mud.	Mud perforated by small holes and burrows, possibly including those of thalassinidean shrimps (F). <i>Munida</i> sp. (P), Actiniaria sp.? (P), hydroids (R), Teleostei sp. (P).	SS.SMu.CFiMu.SpnMeg	BM?
FRB01	Silty fine sand with shell, soon becoming rippled fine sand with sparsely scattered shell material, cobbles and occasional boulders.	Hydroids (R), Asteroidea sp. (R), Teleostei spp. (O), emergent infaunal tubes (P).	SS.SSa.CFiSa	
FRB02	Slightly rippled silty fine sand.	Sediment perforated by small holes and with emergent arms of <i>Amphiura</i> sp? (P)	SS.SSa.OSa	
FRB03	Slightly rippled silty fine sand.	Sediment perforated by small holes and with polychaete casts (P). Hydroids (R), <i>Asterias rubens?</i> (R), <i>Hippasteria phrygiana?</i> (R), Pleuronectiformes sp. (R), Teleostei sp. (R).	SS.SSa.OSa	
FRB04	Slightly rippled silty fine sand.	Sediment perforated by small holes and with emergent infaunal tubes (P). Hydroids (R), <i>Urticina</i> sp. (O), Paguridae spp. (R).	SS.SSa.OSa	
FRB05	Slightly rippled silty fine sand with sparsely scattered pebbles, cobbles and boulders.	Sediment perforated by small holes and with emergent infaunal tubes (P) and polychaete casts (P). Hydroids (R), <i>Ophiura</i> sp. (P).	SS.SSa.OSa	
FRB06	Silty fine sand with occasional pebbles, cobbles and boulders.	Stones support hydroids (R), <i>Alcyonium digitatum</i> (R) and Actiniaria spp. (R). Sediment perforated by small holes. Paguridae sp. (R).	SS.SSa.OSa	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
FRB07	Silty fine sand, rippled for much of run.	Sediment perforated by small holes and with emergent infaunal tubes (P). Hydroids (R), <i>Urticina</i> sp. (O), Paguridae sp.? (P), <i>Callionymus</i> sp.? (P)	SS.SSa.OSa	
FRB08	Rippled silty fine sand with occasional cobbles.	Sediment with emergent infaunal tubes (P) and small bivalve siphons (P). Hydroids (R), <i>Alcyonium digitatum</i> ? (R), <i>Urticina</i> sp. (O), <i>Teleostei</i> sp. (O)	SS.SSa.OSa	
FRB09	Silty fine sand, rippled for at least part of run, with large boulder towards end.	Sediment perforated by small holes and with emergent infaunal tubes (P) and supporting sparse <i>Pennatula phosphorea</i> (R). <i>Urticina</i> sp.? (P), Crangonidae sp. (P), Paguridae spp. (R). Boulder with <i>Urticina</i> sp.? (P), <i>Metridium senile</i> ? (P) and hydroids (P).	SS.SSa.OSa	
FRB10	Rippled silty fine sand.	Sediment perforated by small holes and with emergent infaunal tubes (P) and supporting <i>Pennatula phosphorea</i> (O). <i>Ophiura</i> sp. (P), Rajidae sp. (O), <i>Teleostei</i> sp.? (R)	SS.SSa.OSa	
FRB11	Slightly rippled silty fine sand.	Sediment perforated by small holes and burrows and with emergent infaunal tubes (P) and supporting <i>Pennatula phosphorea</i> (O). Actiniaria sp. (R), <i>Teleostei</i> sp. (R)	SS.SSa.OSa	
FRB12	Slightly rippled silty fine sand.	<i>Urticina</i> sp. ((O), <i>Pennatula phosphorea</i> ? (P), <i>Alcyonium digitatum</i> (R), <i>Teleostei</i> spp. (O), Pleuronectiformes spp. (F).	SS.SSa.OSa	
FRB13	Muddy sand.	Poor visibility but apparently many small burrows. <i>Urticina</i> sp. (O), <i>Pennatula phosphorea</i> (F), <i>Ophiura</i> sp. (P), <i>Teleostei</i> spp. (O).	SS.SSa.OSa	
FRB14	Muddy sand.	Actiniaria spp. (O) including <i>Bolocera tuediae</i> ? (P), hydroids (R on boulder), Paguridae sp. (R), <i>Munida</i> sp. (R), <i>Ophiura</i> sp. (P), Pleuronectiformes spp. (O), <i>Teleostei</i> spp. indet. (P).	SS.SSa.OSa	
FRB15	Silty sand with gravel, pebbles and occasional cobbles and boulders. Patches of silty slightly rippled fine sand.	Stones support hydroids (R) and <i>Alcyonium digitatum</i> ? (R). Paguridae spp. (O), <i>Munida</i> sp. (R), <i>Cancer pagurus</i> (O), <i>Hippasteria phrygiana</i> (R), <i>Luidia ciliaris</i> (O), <i>Echinus esculentus</i> (O), <i>Teleostei</i> spp. (O).	SS.SMx.OMxSS.SSa.OSa	
FRB16	Slightly rippled silty fine sand.	Sediment with emergent infaunal tubes (P). Hydroid clumps (R) including <i>Nemertesia ramosa</i> , <i>Urticina</i> sp./ <i>Bolocera tuediae</i> (O), Paguridae spp. (O), <i>Hippasteria phrygiana</i> (R), <i>Luidia ciliaris</i> (O), Rajidae sp. (O), Gadidae sp. (O), Pleuronectiformes sp. (O)	SS.SSa.OSa	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
FRB17	Silty sand with gravel, pebbles and occasional cobbles and boulders. Small patches of silty fine sand.	Sediment with emergent infaunal tubes and possibly <i>Pennatula phosphorea</i> (R). Stones support hydroids (R) and Actiniaria sp., possibly <i>Bolocera tuediae</i> (O). Paguridae spp. (P), <i>Cancer pagurus</i> (O), <i>Hippasteria phrygiana?</i> (O), <i>Asterias rubens</i> (O), <i>Luidia ciliaris</i> (O), <i>Ophiura</i> sp. (P), small Teleostei spp. (F).	SS.SMx.OMx SS.SSa.OSa	
FRB18	Rippled fine sand with scattered gravel (dense in places), pebbles and occasional cobbles and boulders.	Stones with sparse patches of hydroids (R), <i>Spirobranchus</i> spp. (locally A) and <i>Flustra foliacea</i> (R), Actiniaria sp. (possibly <i>Bolocera tuediae</i>) and <i>Alcyonidium diaphanum</i> (R). Paguridae sp. (P), <i>Munida rugosa</i> (P), <i>Luidia ciliaris</i> (O), <i>Hippasteria phrygiana?</i> (O), Teleostei spp. (P).	SS.SSa.CFiSa SS.SMx.CMx	
FRB19	Silty sand with gravel, pebbles and occasional cobbles.	Stones with patches of hydroids (R) including <i>Nemertesia antennina</i> , <i>Alcyonium digitatum</i> (O) and <i>Flustra foliacea</i> (R), Actiniaria sp. (O, possibly <i>Bolocera tuediae</i>). Paguridae sp. (P), <i>Munida rugosa</i> (P), Teleostei spp. (O).	SS.SMx.OMx	
FRB20	Rippled fine sand with comminuted shell in the troughs.	Paguridae spp. (R), hydroids (R), <i>Ophiura</i> sp. (P), <i>Alcyonidium diaphanum</i> (R), <i>Asterias rubens?</i> (R), small teleosts (R).	SS.SSa.CFiSa	
FRB21	Rippled fine sand.	Actiniaria sp. (O, locally F, possibly including <i>Bolocera tuediae</i> and/or <i>Urticina</i> sp.). <i>Astropecten irregularis</i> (R), <i>Callionymus</i> sp.? (O), Pleuronectiformes sp. (O), Teleostei spp. (O).	SS.SSa.CFiSa	
FRB22	Silty fine sand, slightly rippled in places.	Scattered stones with Actiniaria sp. (O, possibly including <i>Bolocera tuediae</i> and/or <i>Urticina</i> sp.), hydroids (R), <i>Alcyonium digitatum</i> (R), <i>Flustra foliacea?</i> (R). Paguridae spp. (O), <i>Luidia ciliaris</i> (O), Asteroidea sp. (R), Teleostei spp. (R).	SS.SSa.OSa	
FRB23	Mostly rippled fine sand but mixed substrate patches of sand with varying concentrations of gravel, shell, pebbles cobbles and boulders.	Stones support hydroids (R) including <i>Thuiaria thuja</i> , <i>Alcyonium digitatum</i> (R), Actiniaria spp. (<i>Urticina</i> spp./ <i>Bolocera tuediae</i>) and <i>Flustra foliacea</i> (R). <i>Munida rugosa</i> (R), <i>Echinus esculentus</i> (O), Asteroidea sp. (R), small teleosts (R)	SS.SSa.CFiSaSS.SMx.CMx	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
CB01	Rippled slightly silty fine sand.	Infauna represented by emergent shells of <i>Antalis entalis</i> (P). Motile epifauna includes <i>Luidia ciliaris</i> (O), Pleuronectiformes spp. (O), <i>Callionymus</i> sp.? (P), Teleostei spp. indet. (P). Mysids/euphausiids in water column.	SS.SSa.CFiSa	
CB02	Rippled slightly silty fine sand with scattered, silted cobbles and small boulders.	Stones support a hydroid turf (P). Paguridae spp. (R), <i>Amphiura</i> sp.? (P), <i>Ophiura</i> sp.? (P), <i>Luidia ciliaris</i> (O), <i>Callionymus</i> sp.? (O), Pleuronectiformes spp. (O), Teleostei spp. indet.(O).	SS.SSa.CFiSa	
CB03	Rippled slightly silty fine sand with scattered, silted cobbles and small boulders.	Stones support a hydroid turf (P) and <i>Alcyonium digitatum</i> ? (R). Paguridae spp. (R), Asteroidea sp. (R). Sediment perforated by small holes.	SS.SSa.CFiSa	
CB04	Rippled slightly silty fine sand.	Pleuronectiformes sp. (O), Teleostei sp. indet. (O). Mysids/euphausiids in water column.	SS.SSa.CFiSa	
CB05	Rippled slightly silty fine sand.	Pleuronectiformes sp. (O), Mysids/euphausiids in water column.	SS.SSa.CFiSa	
CB06	Rippled slightly silty fine sand.	No clearly discernible biota observed.	SS.SSa.CFiSa	
KC01	Rippled fine sand with some black anaerobic marbling.	<i>Asterias rubens</i> (C).	SS.SSa.CFiSa	
KC02	Rippled fine sand.	<i>Asterias rubens</i> (O), spatangid tests on sand surface.	SS.SSa.CFiSa	
KC03	Slightly rippled fine sand with some silt cover.	<i>Pagurus bernhardus</i> (R), small holes in sand and spatangid tests on sand surface.	SS.SSa.CMuSa	
KC04	Silt covered fine sand	Pleuronectiformes sp. (O), Teleostei sp. (O).	SS.SSa.CMuSa	
KC05	Faintly rippled silty fine sand.	<i>Asterias rubens</i> (C), <i>Pagurus bernhardus</i> (O).	SS.SSa.CMuSa	
KC06	Rippled fine sand.	<i>Asterias rubens</i> (C), spatangid tests on sand surface.	SS.SSa.CFiSa	
KC07	Rippled fine sand.	<i>Asterias rubens</i> (C), Pleuronectiformes sp. (O), spatangid tests? on sand surface.	SS.SSa.CFiSa	
KC08	Rippled fine sand.	<i>Luidia ciliaris</i> (O), Pleuronectiformes sp. (O), Teleostei sp. (R), spatangid tests on sand surface.	SS.SSa.CFiSa	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
KC09	Rippled fine sand.	<i>Asterias rubens</i> (F but C in shallower part of run), spatangid tests on sand surface.	SS.SSa.CFiSa	
KC10	Rippled fine sand.	<i>Asterias rubens</i> (F), spatangid tests on sand surface.	SS.SSa.CFiSa	
KC11	Rippled fine sand.	<i>Asterias rubens</i> (F), spatangid tests on sand surface.	SS.SSa.CFiSa	
KC12	Rippled fine sand.	<i>Asterias rubens</i> (F), <i>Callionymus</i> sp.? (R), Pleuronectiformes sp. (O), spatangid tests on sand surface.	SS.SSa.CFiSa	
KC13	Rippled fine sand with sparsely scattered boulders.	<i>Alcyonium digitatum</i> (R), <i>Luidia ciliaris</i> (O), Teleostei spp. (O).	SS.SSa.CFiSa	
KC14	Rippled fine-medium sand.	<i>Asterias rubens</i> (F), <i>Luidia ciliaris</i> (O).	SS.SSa.CFiSa	
KC15	Rippled fine-medium sand.	<i>Asterias rubens</i> (F).	SS.SSa.CFiSa	
KC16	Rippled fine-medium sand with silt in troughs.	<i>Asterias rubens</i> (F), Paguridae sp. (R).	SS.SSa.CFiSa	
KC17	Rippled fine-medium sand with silt in troughs.	<i>Asterias rubens</i> (C).	SS.SSa.CFiSa	
KC18	Fine-medium sand with patchy, thin silt cover	Visibility poor. <i>Asterias rubens</i> (F).	SS.SSa.CFiSa	
KC19	Silty fine sand with scattered boulders.	<i>Asterias rubens</i> (C). Boulders support <i>Alcyonium digitatum</i> (R), hydroids (R) and Actiniaria sp. (O) including <i>Urticina</i> sp.	SS.SSa.CMuSa	
KC20	Slightly silty rippled fine sand.	<i>Asterias rubens</i> (C), spatangid tests on sand surface.	SS.SSa.CFiSa	
KC21	Slightly rippled fine sand.	Visibility very poor. <i>Asterias rubens</i> (C).	SS.SSa.CFiSa	
KC22	Slightly rippled fine sand.	Visibility very poor. <i>Asterias rubens</i> (C).	SS.SSa.CFiSa	
KC23	Complexly-rippled, silty fine sand.	Emergent infaunal tubes (P), <i>Alcyonium digitatum</i> ? (R), Actiniaria spp.? (R), <i>Pleuronectes platessa</i> (O), Teleostei spp. (O).	SS.SSa.CMuSa	
KC24	Rippled fine sand with patchy silt cover.	<i>Asterias rubens</i> (C), <i>Liocarcinus</i> sp.? (P), Pleuronectiformes sp. (O).	SS.SSa.CFiSa	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
KC25	Silty fine sand.	<i>Alcyonium digitatum</i> (R), <i>Pagurus bernhardus</i> (R), <i>Liocarcinus</i> sp.? (R), Actiniaria spp. (O), Pleuronectiformes sp. (O). 1 <i>Nephrops norvegicus</i> seen.	SS.SSa.CMuSa	
KC26	Silty sandy gravel with sparsely scattered cobbles and boulders.	Stones support <i>Alcyonium digitatum</i> (R), hydroids (P), possibly bryozoans (P) and Actiniaria spp. (O). <i>Munida rugosa</i> (R), mollusc egg string? (P), <i>Luidia ciliaris</i> (O), Teleostei sp. (R).	SS.SMx.CMx	
KC27	Slightly rippled fine sand.	<i>Alcyonium digitatum</i> (R), <i>Luidia ciliaris</i> ? (O)	SS.SSa.CFiSa	
KC28	Rippled fine sand.	No biota observed. Visibility poor, but epibiota clearly sparse.	SS.SSa.CFiSa	
KC29	Rippled fine sand with sparse boulders.	Boulders support <i>Alcyonium digitatum</i> (R). <i>Luidia ciliaris</i> (O), Asteroidea sp. (R).	SS.SSa.CFiSa	
KC30	Rippled fine sand with silt collecting in troughs and occasional boulders.	Boulders support <i>Alcyonium digitatum</i> (R) and Actiniaria spp. (R) including <i>Urticina</i> sp. <i>Luidia ciliaris</i> (O), <i>Asterias rubens</i> (O), Asteroidea sp. (R). Spatangid tests? on sand.	SS.SSa.CFiSa	
KC31	Rippled fine sand with occasional boulders.	Emergent infaunal tubes (P), <i>Alcyonium digitatum</i> (R), <i>Cancer pagurus</i> (O), <i>Homarus gammarus</i> (O), <i>Luidia ciliaris</i> (O), Spatangidae sp.? (P), <i>Pholis gunnellus</i> (R), Teleostei spp. (R)	SS.SSa.CFiSa	
KC32	Rippled fine sand with scattered boulders.	Boulders support patches of bryozoans and/or hydroids (R) and <i>Alcyonium digitatum</i> (R). Actiniaria sp.? (R), Paguridae sp. (R).	SS.SSa.CFiSa	
KC33	Rippled fine sand with occasional pebbles and cobbles.	<i>Alcyonium digitatum</i> (R) and sparse hydroids (R) including <i>Hydrallmania falcata</i> . Actiniaria spp. (O), <i>Pagurus bernhardus</i> (R), Teleostei sp. (R).	SS.SSa.CFiSa	
KC34	Cobbles and pebbles, dense in places, on silty sandy gravel.	Stones support dense <i>Alcyonium digitatum</i> (C) serpulid worms (C) and patchy hydroid turf (P). <i>Munida rugosa</i> (C), <i>Cancer pagurus</i> (O), <i>Echinus esculentus</i> (C), <i>Asterias rubens</i> (O), <i>Luidia ciliaris</i> (O), Teleostei spp. (O).	SS.SMx.CMx	
KC35	Fine sand with silt cover and occasional cobbles and boulders.	<i>Alcyonium digitatum</i> (R) and sparse hydroids (R) and possibly bryozoans (R). Actiniaria spp. (R), <i>Munida rugosa</i> (R), <i>Pagurus bernhardus</i> (R), <i>Astropecten irregularis</i> (R), Pleuronectiformes sp. (O), Teleostei sp. (O).	SS.SSa.CMuSa	
KC36	Rippled fine sand.	Visibility extremely poor. <i>Alcyonium digitatum</i> (P).	SS.SSa.CFiSa	
KC37	Rippled fine sand.	Visibility poor. <i>Alcyonium digitatum</i> (R, locally O).	SS.SSa.CFiSa	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
KC38	Muddy sand, slightly rippled towards end of run.	<i>Alcyonium digitatum</i> (R) and sparse hydroids (R) and possibly bryozoans (R). Actiniaria spp. (R) including <i>Urticina</i> sp.	SS.SSa.CMuSa	
KC39	Rippled fine sand with isolated boulder.	<i>Alcyonium digitatum</i> (R).	SS.SSa.CFiSa	
KC40	Rippled fine sand.	<i>Alcyonium digitatum</i> (R) and sparse hydroids (R) and/or bryozoans (R). <i>Astropecten irregularis</i> ? (R), Teleostei spp. (O).	SS.SSa.CFiSa	
KC41	Rippled fine sand with occasional cobbles and boulders.	<i>Alcyonium digitatum</i> (R) and sparse hydroids (R) and Actiniaria spp. (R). Teleostei spp. (P).	SS.SSa.CFiSa	
KC42	Rippled fine sand.	<i>Alcyonium digitatum</i> (R) and Actiniaria spp.? (R). Teleostei spp. (O).	SS.SSa.CFiSa	
KC43	Silt-covered fine sand.	<i>Alcyonium digitatum</i> (R), hydroids (R) and Actiniaria spp.? (O) including <i>Urticina</i> sp. (P). Asteroidea sp. (O), <i>Asterias rubens</i> (O), <i>Astropecten irregularis</i> ? (R), Pleuronectiformes sp. (O), Teleostei spp. (O).	SS.SSa.CMuSa	
KC44	Well-rippled fine sand with light dusting of silt.	<i>Alcyonium digitatum</i> (R), sparse clumps of hydroids (R) and/or bryozoans (R). Teleostei sp. (R).	SS.SSa.CFiSa	
KC45	Muddy sand?	Visibility very poor. <i>Alcyonium digitatum</i> (R) and apparently sparse hydroids (R) and/or bryozoans (R); Actiniaria sp. (P).	SS.SSa.CMuSa	
KC46	Rippled fine sand with occasional cobbles.	<i>Alcyonium digitatum</i> (R) and sparse clumps of hydroids (R) and probably bryozoans (R) including <i>Flustra foliacea</i> , and possibly Actiniaria sp. (R). Paguridae sp. (R), <i>Munida rugosa</i> (R), Asteroidea sp. (R), Teleostei sp. (R).	SS.SSa.CFiSa	
KC47	Muddy sand?	Visibility very poor. <i>Alcyonium digitatum</i> (R) and apparently sparse hydroids (R) and possibly bryozoans (R); Actiniaria sp. (R), possibly <i>Urticina</i> sp.. Paguridae sp. (R), Asteroidea sp. (R), <i>Luidia ciliaris</i> (O), Teleostei sp. (O).	SS.SSa.CMuSa	
KC48	Rippled fine sand.	Visibility poor. <i>Alcyonium digitatum</i> (R) and apparently sparse bryozoans (R) including <i>Flustra foliacea</i> ?, and possibly hydroids (R); Actiniaria sp.? (R). Paguridae sp. (R), <i>Luidia ciliaris</i> (O), Teleostei sp. (O).	SS.SSa.CFiSa	
KC49	Slightly rippled silty fine sand and occasional cobbles and boulders.	Visibility poor. <i>Alcyonium digitatum</i> (R, locally O) and sparse bryozoans (R) including <i>Flustra foliacea</i> , and hydroids (R) including <i>Nemertesia antennina</i> ; Actiniaria spp. (R) including <i>Urticina</i> sp.?. <i>Cancer pagurus</i> (O), <i>Astropecten irregularis</i> ? (R), Teleostei spp. (O).	SS.SSa.CMuSa	




Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
KC50	Silty sand with occasional boulders and cobbles.	Poor visibility. <i>Alcyonium digitatum</i> (R) and sparse bryozoans? (R) and/or hydroids (R); Actiniaria spp. (O) including <i>Urticina</i> sp.?. Paguridae spp. (P), <i>Asterias rubens</i> (P).	SS.SSa.CMuSa	
KCA1	Silty fine sand, slightly rippled in places.	Sediment with infaunal tubes (P), polychaete casts (P) and many small burrows, which may be those of spatangids (scattered tests on surface). Scattered clumps of hydroids (R) and bryozoans including <i>Flustra foliacea</i> (R); <i>Alcyonium digitatum</i> (R) and Actiniaria spp. (O) including <i>Urticina</i> sp. (P). <i>Luidia ciliaris</i> (O), <i>Asterias rubens</i> (O).	SS.SSa.OSa	
KCA2	Silty fine sand, slightly rippled.	Sediment with polychaete casts (P) and many small burrows, which may be those of spatangids (scattered tests on surface and possibly 1 spatangid burrowing). Scattered clumps of hydroids (R) and bryozoans including <i>Flustra foliacea</i> (R); <i>Alcyonium digitatum</i> (R) and Actiniaria spp. (O) including <i>Urticina</i> sp. (P). <i>Liocarcinus</i> sp.? (R), <i>Astropecten irregularis</i> ? (R), <i>Asterias rubens</i> (O), Pleuronectiformes spp. (O), small teleosts (R)	SS.SSa.OSa	
KCA3	Silty fine sand, slightly rippled.	Sediment with many small burrows, which may be those of spatangids (scattered tests on surface and possibly 1 spatangid burrowing). Scattered clumps of hydroids? (R) and bryozoans including <i>Flustra foliacea</i> (R); <i>Alcyonium digitatum</i> (R) and Actiniaria spp. (O) including <i>Urticina</i> sp. (P). <i>Astropecten irregularis</i> ? (R), <i>Asterias rubens</i> (F), Pleuronectiformes spp. (O).	SS.SSa.OSa	
KCA4	Silty fine sand, slightly rippled.	Sediment with polychaete casts (P) and small burrows, which may be those of spatangids (scattered tests on surface). Scattered hydroids (R) and bryozoans including <i>Flustra foliacea</i> (R); <i>Alcyonium digitatum</i> (R) and Actiniaria spp. (O) including <i>Urticina</i> sp.? (P). <i>Astropecten irregularis</i> (R), <i>Asterias rubens</i> (F), Pleuronectiformes spp. (O), small teleosts (R)	SS.SSa.OSa	
KCA5	Silty fine sand.	Sediment with small burrows, which may be those of spatangids. Scattered clumps of hydroids (R) and bryozoans including <i>Flustra foliacea</i> (R); <i>Alcyonium digitatum</i> (R, locally O) and Actiniaria spp. (O) including <i>Urticina</i> sp. (P). Paguridae sp. (R), <i>Asterias rubens</i> (F), Pleuronectiformes spp. (O), small teleosts (R).	SS.SSa.OSa	

Annex 3 continued

Site ID	Substrate	Biota	Biotope	PMF/PF
KCA6	Faintly rippled silty fine sand.	Sediment with small burrows, which may be those of spatangids (spatangid test material on surface). Scattered clumps of hydroids (R) and bryozoans including <i>Flustra foliacea</i> (R); <i>Alcyonium digitatum</i> (R) and Actinaria spp. (O) including <i>Urticina</i> sp. (P). <i>Luidia ciliaris</i> (O), Pleuronectiformes spp. (O), small teleosts (R).	SS.SSa.OSa	

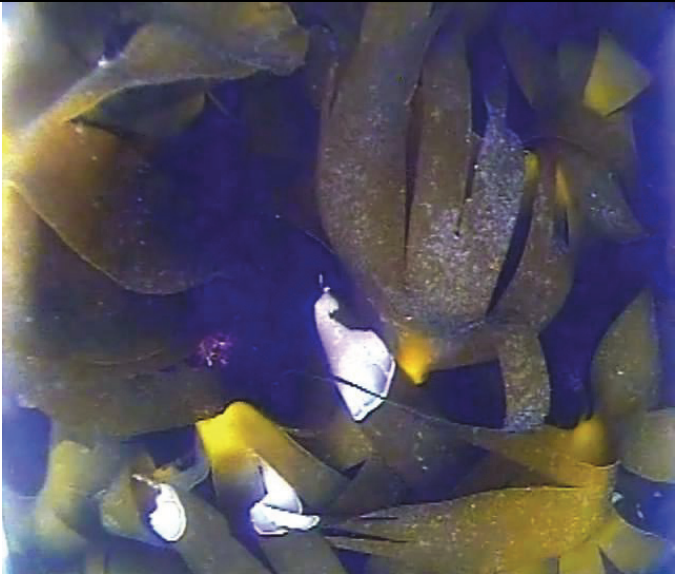


ANNEX 4: BIOTOPES AND PF SPECIES RECORDED WITH SITES OF OCCURRENCE AND ILLUSTRATIVE PHOTOGRAPH OR VIDEO FRAME GRAB. BIOTOPE CODES AND SPECIES IN RED ARE PFS AT SITES ALSO IN RED. ITALICISED SITES INDICATE PROVENANCE OF IMAGE. SEE CONNOR *ET AL.* (2004) FOR FULL BIOTOPE DESCRIPTION

<p>LR.LLR.F.Fserr.FS</p> <p>Dense <i>Fucus serratus</i> on moderately exposed to very sheltered full salinity lower eu littoral rock</p> <p>V63</p>	
<p>IR.HIR.KFaR.FoR</p> <p>Foliose red seaweeds on exposed lower infralittoral rock</p> <p><i>WES09_V</i>, WR28</p>	
<p>IR.HIR.KSed</p> <p>Sand or gravel-affected or disturbed kelp and seaweed communities</p> <p>V41, V58, KL04, WR04, WR09, WR10, WR14, WR15, WR16, WR18, WR19, WR23, WR31</p>	




Annex 4 continued

<p>IR.HIR.KSed.LsacSac</p> <p><i>Laminaria saccharina</i> and/or <i>Saccorhiza polyschides</i> on exposed infralittoral rock</p> <p>LA57, V07, V18, V20, V27, V31, V32</p>	
<p>IR.HIR.KSed.XKScrR</p> <p>Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured or sand-covered infralittoral rock</p> <p>V57, WR20, WR21, WR25, WR34, WR42</p>	
<p>IR.MIR.KR</p> <p>Kelp with red seaweeds (moderate energy infralittoral rock)</p> <p>V12, V54, WES17_V, WES18_V, WES18_V</p>	<p>09:59:56 10/08/2014 57°52.246N 05°44.757W 12.8m</p> 




Annex 4 continued

<p>IR.MIR.KR.Lhyp.Ft</p> <p><i>Laminaria hyperborea</i> forest and foliose red seaweeds on moderately exposed upper infralittoral rock</p> <p>V33, WR22</p>	
<p>IR.MIR.KR.Lhyp.GzFt</p> <p>Grazed <i>Laminaria hyperborea</i> forest with coralline crusts on upper infralittoral rock</p> <p>FTH06_V, WR38</p>	<p>07:42:26 16/08/2014 60°41.086N 00°48.474W 22.2m</p> 
<p>IR.MIR.KR.LhypTX.Ft</p> <p><i>Laminaria hyperborea</i> forest and foliose red seaweeds on tide-swept, upper infralittoral mixed substrata</p> <p>EX1, LA04</p>	<p>25/03/2014 Loch A'ish LA04</p> 




Annex 4 continued

<p>CR.MCR.EcCr.CarSwi.LgAs</p> <p><i>Caryophyllia smithii</i>, <i>Swiftia pallida</i> and large solitary ascidians on exposed or moderately exposed circalittoral rock</p> <p>V45, V47, V49, V60</p>	
<p>CR.MCR.EcCr.FaAICr</p> <p>Faunal and algal crusts on exposed to moderately wave-exposed circalittoral rock</p> <p>ARM51, ARM52, FTH19_V, WES12_V, WES13_V, WES15_V, WES28_V, WES29_V, WES31_V, WES50_V, WR28</p>	
<p>CR.MCR.EcCr.FaAICr.Adig</p> <p><i>Alcyonium digitatum</i>, <i>Pomatoceros triqueter</i>, algal and bryozoan crusts on wave-exposed circalittoral rock</p> <p>FTH02_V</p>	




Annex 4 continued

<p>CR.MCR.EcCr.FaAlCr.Bri</p> <p>Brittlestar bed on faunal and algal encrusted, exposed to moderately wave-exposed circalittoral rock</p> <p>FTH01_V, FTH02_V, FTH02_V, FTH12_V, FTH15_V, FTH16_V, MTB04_V</p>	
<p>CR.MCR.EcCr.FaAlCr.Car</p> <p><i>Caryophyllia smithii</i> with faunal and algal crusts on moderately wave-exposed circalittoral rock</p> <p>V29</p>	
<p>CR.MCR.EcCr.FaAlCr.Flu</p> <p><i>Flustra foliacea</i> on slightly scoured silty circalittoral rock</p> <p>ARM107B, ARM108A, FTH07_V, FTH23_V, NH07_V, NH14_V</p>	

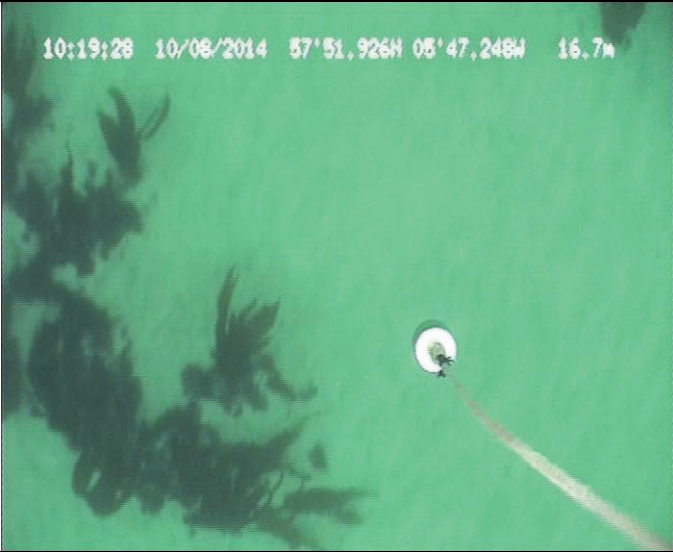


Annex 4 continued

<p>CR.MCR.EcCr.FaAlCr.Pom</p> <p>Faunal and algal crusts with <i>Pomatoceros triqueter</i> and sparse <i>Alcyonium digitatum</i> on exposed to moderately wave-exposed circalittoral rock</p> <p>ARM107A, ARM108B, ARM109, ARM55, FTH02_V, FTH03_V, FTH08_V, FTH09_V, FTH10_V, FTH11_V, FTH11_V, FTH13_V, FTH14_V, FTH23_V, LA22, MTB04_V, WES19_V, WES22_V, WES44_V, WES46_V, WES51_V, WES51_V, WR24</p>	 <p>© Crown copyright, Marine Scotland Science 2014 ARM TV107_4437</p>
<p>CR.LCR.BrAs.AmenCio.Ant</p> <p>Solitary ascidians, including <i>Ascidia mentula</i> and <i>Ciona intestinalis</i> with <i>Antedon</i> spp. on wave-sheltered circalittoral rock</p> <p>EX10</p>	<p>26/03/2014 Loch Alsh EX10</p> 
<p>LS.LSa.MuSa.MacAre</p> <p><i>Macoma balthica</i> and <i>Arenicola marina</i> in littoral muddy sand</p> <p>V62</p>	

Annex 4 continued

<p>SS.SCS.ICS</p> <p>Infralittoral coarse sediment</p> <p>KL04, WR21, WR25, WR30, WR38, WR44, WR45</p>	
<p>SS.SCS.CCS</p> <p>Circalittoral coarse sediment</p> <p>ARM107B, ARM108A, ARM109, ARM55, ARM64, ARM68, ARM72, ARM73, ARM76, ARM77, ARM80, ARM83, ARM95, FTH03_V, FTH05_V, FTH07_V, FTH08_V, FTH10_V, FTH11_V, FTH12_V, FTH13_V, FTH14_V, FTH15_V, FTH16_V, FTH23_V, MTB03_V, MTB05_V, NH14_V, NH15_V, NH16_V, NH18_V, NH19_V, NH20_V, V30, WES10_V, WES22_V, WES51_V, WES51_V, WR07, WR14, WR32, WR37, WR43</p>	 <p><small>© Crown copyright, Marine Scotland Science 2014</small></p> <p><small>ARM TV 76_4144</small></p>
<p>SS.SCS.CCS.PomB</p> <p><i>Pomatoceros triqueter</i> with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles</p> <p>WES10_V, WES14_V, WES15_V</p>	 <p>09:29:02 10/08/2014 57°53.454N 05°40.828W 36.8m</p>

Annex 4 continued

<p>SS.SSa.IFiSa Infralittoral fine sand V37, WES18_V, WR08</p>	
<p>SS.SSa.IMuSa Infralittoral muddy sand V63</p>	
<p>SS.SSa.IMuSa.AreISa <i>Arenicola marina</i> in infralittoral fine sand or muddy sand V24</p>	

Annex 4 continued

SS.SSa.IMuSa.EcorEns

Echinocardium cordatum and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand

V15, WR47



SS.SSa.CFiSa

Circalittoral fine sand




ARM100, ARM101, ARM102, ARM103, ARM104, ARM105, ARM106, ARM110, ARM111, ARM112, ARM113, ARM50, ARM51, ARM52, ARM53, ARM56, ARM57, ARM58, ARM58, ARM59, ARM60, ARM61, ARM62, ARM63, ARM64, ARM65, ARM66, ARM67, ARM68, ARM69, ARM70, ARM71, ARM72, ARM73, ARM74, ARM75, ARM78, ARM79, ARM81, ARM82, ARM82, ARM83, ARM84, ARM85, ARM86, ARM87, ARM88, ARM89, ARM90, ARM91, ARM92, ARM93, ARM94, ARM94, ARM95, ARM95, ARM96, ARM97, ARM98, ARM99, CB01, CB02, CB03, CB04, CB05, CB06, FRB01, FRB18, FRB20, FRB21, FRB23, **FTH04_V**, **FTH05_V**, **FTH17_V**, KC01, KC02, KC06, KC07, KC08, KC09, KC10, KC11, KC12, KC13, KC14, KC15, KC16, KC17, KC18, KC20, KC21, KC22, KC24, KC27, KC28, KC29, KC30, KC31, KC32, KC33, KC36, KC37, KC39, KC40, KC41, KC42, KC44, KC46, KC48, MTB02_V, MTB04_V, MTB04_V, MTB06_V, MTB07_V, MTB08_V, WES14_V






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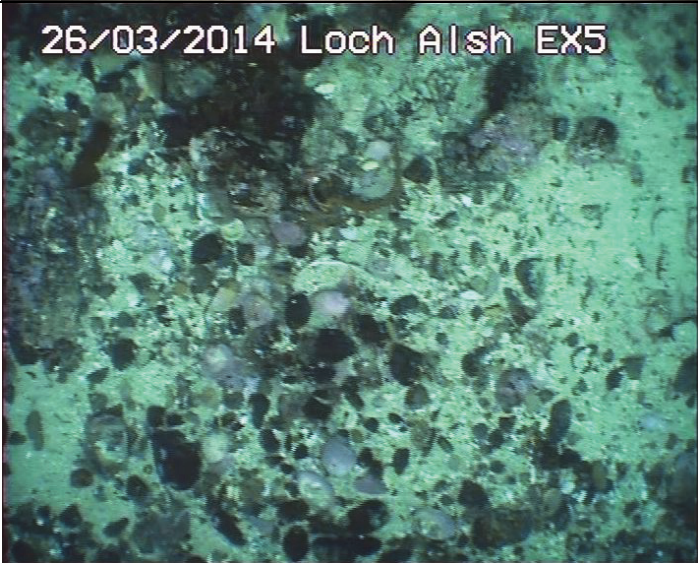

Annex 4 continued

<p>SS.SSa.CMuSa</p> <p>Cirralittoral muddy sand</p> <p>EX9, KC03, KC04, KC05, KC19, KC23, KC25, KC35, KC38, KC43, KC45, KC47, KC49, KC50, LA19, LA29, LA34, LA35, LA46, LA50, V29, V52, V54B, V56B, WES25_V, WES27_V, WR03, WR05</p>	 <p>© Crown copyright, Marine Scotland Science 2014</p> <p>KINCSS TV23 4999</p>
<p>SS.SSa.OSa</p> <p>Offshore cirralittoral sand</p> <p>FRB02, FRB03, FRB04, FRB05, FRB06, FRB07, FRB08, FRB09, FRB10, FRB11, FRB12, FRB13, FRB14, FRB15, FRB16, FRB17, FRB22, KCA1, KCA2, KCA3, KCA4, KCA5, KCA6</p>	 <p>© Crown copyright, Marine Scotland Science 2014</p> <p>KINCA TV1 4767</p>
<p>SS.SMu.IFiMu.PhiVir</p> <p><i>Philine aperta</i> and <i>Virgularia mirabilis</i> in soft stable infralittoral mud</p> <p>V23</p>	

Annex 4 continued

<p>SS.SMu.CSaMu</p> <p>Circolittoral sandy mud</p> <p>LA18, V47</p>	<p>25/03/2014 Loch Alsh LA18</p> 
<p>SS.SMu.CFiMu</p> <p>Circolittoral fine mud</p> <p>EX8, V02</p>	<p>26/03/2014 Loch Alsh EX08</p> 
<p>SS.SMu.CFiMu.Spnmeg</p> <p>Seapens and burrowing megafauna in circolittoral fine mud</p> <p>LA17, LA37, LA39, LA51, LA66, MF01, V19, V42, V46, V49, WES16_V, WES20_V, WES21_V, WES23_V, WES27_V, WES50_V, WES50_V</p>	<p>25/03/2014 Loch Alsh LA17</p> 

Annex 4 continued

<p>SS.SMu.CFiMu.SpMmeg.Fun</p> <p>Seapens, including <i>Funiculina quadrangularis</i>, and burrowing megafauna in undisturbed circalittoral fine mud</p> <p>LA13, LA15, LA16, LA38, LA41, LA42, WES32_V, WES37_V, WES38_V</p>	
<p>SS.SMx.IMx</p> <p>Infralittoral mixed sediment</p> <p>EX4, EX5, KL04, WR07</p>	
<p>SS.SMx.IMx.Lim</p> <p><i>Limaria hians</i> beds in tide-swept sublittoral muddy mixed sediment</p> <p>EX2, EX3, EX7, LA01, LA03</p>	

Annex 4 continued

SS.SMx.CMx

Circalittoral mixed sediment

ARM107A, ARM109, ARM110,
ARM51, ARM52, ARM53, ARM54,
ARM58, ARM63, ARM65, ARM66,
ARM67, ARM68, ARM75, ARM78,
ARM79, ARM82, ARM86, ARM93,
ARM94, FRB18, FRB23, FTH19_V,
FTH20_V, KC26, KC34, LA11, LA14,
LA20, LA21, LA26, LA27, LA28,
LA30, LA31, LA32, LA33, LA36,
LA40, LA45, LA48, LA49, MTB04_V,
MTB04_V, MTB06_V, NH01, NH03,
NH04, NH07_V, NH11_V, NH13_V,
NH16_V, V17, V43, WES12_V,
WES13_V, WES14_V, WES21_V,
WES22_V, WES29_V, WES31_V,
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WES46_V, WES50_V, WR28,
WR36, WR40, WR43, WR46, WR48,
WR49



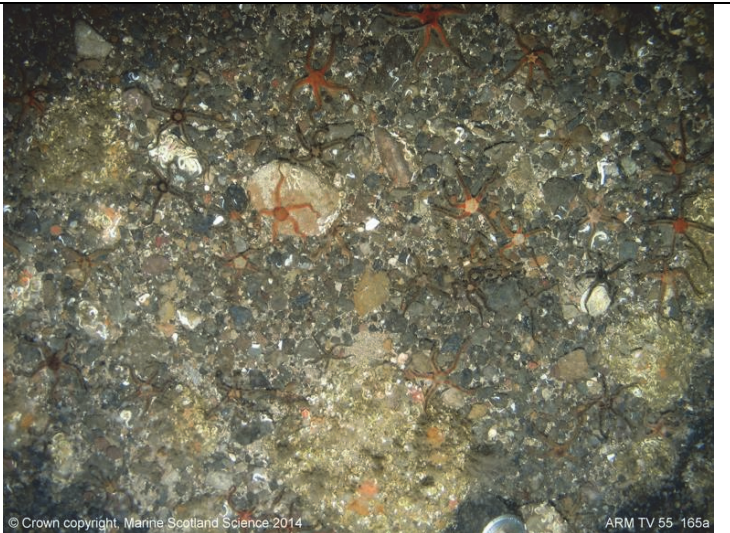


SS.SMx.CMx.FluHyd

Flustra foliacea and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment




FTH13_V, FTH14_V, NH12_V





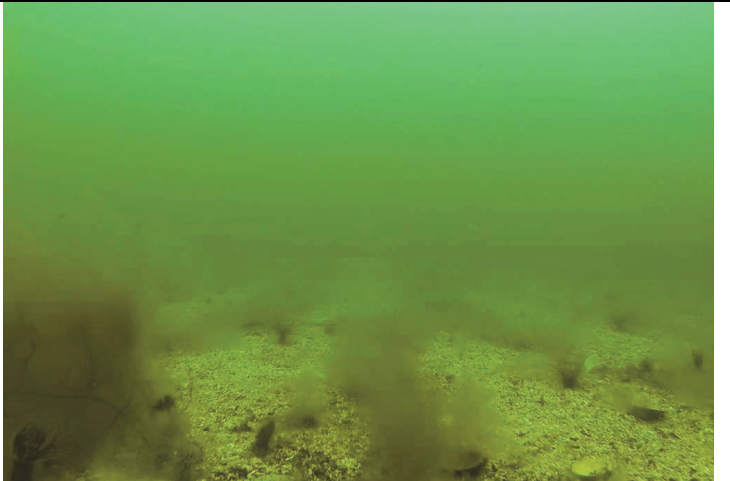
Annex 4 continued

<p>SS.SMx.CMx.OphMx</p> <p><i>Ophiothrix fragilis</i> and/or <i>Ophiocomina nigra</i> brittlestar beds on sublittoral mixed sediment</p> <p>ARM55, FTH01_V, FTH12_V, FTH20_V, LA04, LA50, LA52, LA53, NH11_V, NH12_V, NH16_V</p>	 <p>© Crown copyright, Marine Scotland Science 2014 ARM TV 55 165a</p>
<p>SS.SMx.OMx</p> <p>Offshore circalittoral mixed sediment</p> <p>FRB15, FRB17, FRB19</p>	 <p>© Crown copyright, Marine Scotland Science 2014 FRBGH TV17 5471</p>
<p>SS.SMp.Mrl.Pcal</p> <p><i>Phymatolithon calcareum</i> maerl beds in infralittoral clean gravel or coarse sand</p> <p>V01, V16, V67, WR06, WR29, WR33, WR34</p>	

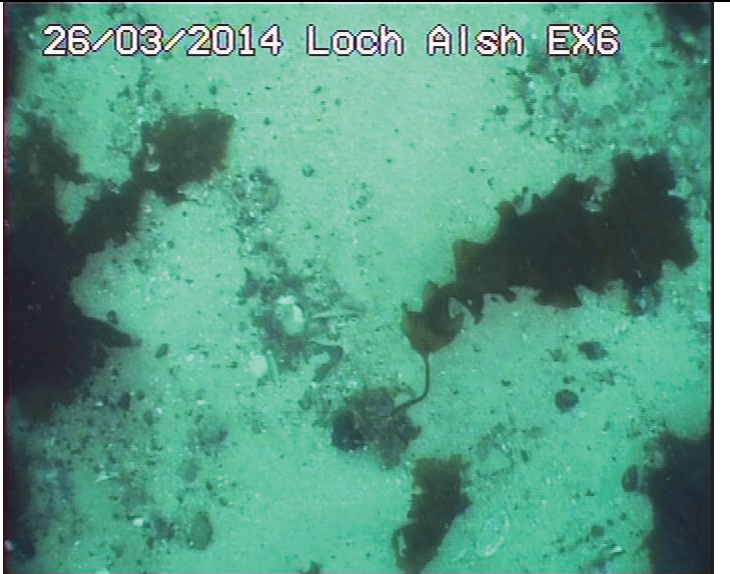


Annex 4 continued

<p>SS.SMp.Mrl.Pcal.R</p> <p><i>Phymatolithon calcareum</i> maerl beds with red seaweeds in shallow infralittoral clean gravel or coarse sand</p> <p>LA47, V04, V05, V09, V10, V35, V54, V55, V56, V68, WR26, WR27, WR30, WR31, WR35</p>	
<p>SS.SMp.Mrl.Pcal.Nmix</p> <p><i>Phymatolithon calcareum</i> maerl beds with <i>Neopentadactyla mixta</i> and other echinoderms in deeper infralittoral clean gravel or coarse sand</p> <p>FTH21_V, V25, V34, V36, V55B, V65, V66, WR04, WR09, WR12, WR13, WR14, WR15, WR16, WR39, WR41</p>	
<p>SS.SMp.KSwSS</p> <p>Kelp and seaweed communities on sublittoral sediment</p> <p>V64, KL05, KL06</p>	




Annex 4 continued

<p>SS.SMp.KSwSS.LsacR</p> <p><i>Laminaria saccharina</i> and red seaweeds on infralittoral sediments</p> <p>V59, V61, WR11</p>	 An underwater photograph showing a seabed covered with a dense layer of brownish-green Laminaria saccharina and various red seaweeds. The sediments appear to be a mix of fine sand and small pebbles.
<p>SS.SMp.KSwSS.LsacR.CbPb</p> <p>Red seaweeds and kelps on tide-swept mobile infralittoral cobbles and pebbles</p> <p>WR17</p>	 An underwater photograph showing a seabed with a mix of sand, small pebbles, and larger cobbles. The seabed is covered with various red seaweeds and kelps, including some with white, branching structures.
<p>SS.SMp.KSwSS.LsacR.Gv</p> <p><i>Laminaria saccharina</i> and robust red algae on infralittoral gravel and pebbles</p> <p>V08, V11, V12, V21, V26, V27, V55, WR27</p>	 An underwater photograph showing a seabed covered with a dense layer of brownish-green Laminaria saccharina and various red seaweeds. The sediments appear to be a mix of fine sand and small pebbles.



Annex 4 continued

<p>SS.SMp.KSwSS.LsacR.Sa</p> <p><i>Laminaria saccharina</i> and filamentous red algae on infralittoral sand</p> <p>EX6, LA57, V06, V14, V20, V22, V28, V31, V48, V53, WR01, WR02</p>	<p>26/03/2014 Loch Alish EX6</p> 
<p>SS.SMp.KSwSS.Pcri</p> <p>Loose-lying mats of <i>Phyllophora crispa</i> on infralittoral muddy sediment</p> <p>V03, V69</p>	
<p>SS.SMp.KSwSS.Tra</p> <p>Mats of <i>Tralliella</i> on infralittoral muddy gravel</p> <p>KL01, KL02, KL03</p>	

Annex 4 continued

<p>SS.SMp.SSgr.Zmar</p> <p><i>Zostera marina/angustifolia</i> beds on lower shore or infralittoral clean or muddy sand</p> <p>V08</p>	 An underwater photograph showing a dense bed of green seagrass (Zostera marina/angustifolia) growing on a sandy substrate. The water is clear, and the seagrass blades are visible extending upwards. A thin, dark branch or stick is visible in the upper right corner of the frame.
<p>SS.SBR.SMus.ModT</p> <p><i>Modiolus modiolus</i> beds with hydroids and red seaweeds on tide-swept circalittoral mixed substrata</p> <p>NH02, NH03, NH04, NH05_V, NH06_V, NH08_V</p>	 An underwater photograph showing a dense bed of Modiolus modiolus (cockles) on a mixed substrate. The substrate is covered with small rocks, shells, and organic matter. Several red, bushy hydroids are visible among the shells. A blue and white tool is visible in the lower center of the frame.
<p>Fireworks anemone</p> <p>(<i>Pachycerianthus multiplicatus</i>)</p> <p>WES27_V</p>	<p>15:28:02 10/08/2014 57°57.682N 05°18.987W 38.7m</p>  An underwater photograph showing a Fireworks anemone (Pachycerianthus multiplicatus) on a sandy substrate. The anemone has a distinctive fan-like structure with many fine, radiating tentacles. A white circular object is visible in the lower right corner, and a red laser line is visible in the lower left corner. The background is a dark, sandy seabed.

Annex 4 continued

<p>Tall sea pen <i>(Funiculina quadrangularis)</i></p> <p>LA13, LA15, LA16, LA38, LA41, LA42, WES32_V, WES37_V, WES38_V</p> <p>Uprooted specimen in trawl track</p>	 <p>07:19:36 12/08/2014 57°55.040N 05°16.691W 87.4m</p>
<p>Northern feather star aggregations on mixed substrata</p> <p><i>(Leptometra celtica)</i></p> <p>WES50_V</p>	 <p>13:34:41 10/08/2014 57°56.901N 05°33.887W 84.9m</p>

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