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SALTMARSH MONITORING PROJECT 2017-2018

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An Roinn Cultúir, Oidhreachta agus Gaeltachta
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Front cover, small photographs from top row:

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Main photograph: **Saltmarsh**, Kinvarra Co. Galway, John Brophy

Saltmarsh Monitoring Project 2017-2018

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Executive summary

This report presents details of a monitoring survey conducted in the period 2017-2018 to assess the conservation status of four EU Habitats Directive Annex I saltmarsh habitats: *Salicornia* and other annuals colonizing mud and sand (Natura code 1310), Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330), Mediterranean salt meadows (*Juncetalia maritimi*) (1410) and Mediterranean & thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) (1420).

The survey methodology used in the baseline Saltmarsh Monitoring Project (SMP) was revised in light of the work carried out by the Saltmarsh Angiosperm Assessment Tool for Ireland (SMAATIE) project in order to collect data that could be used to assess the Annex I habitats under the Habitats Directive, while also assessing the Ecological Status of the saltmarsh angiosperm Biological Quality Element for reporting under the Water Framework Directive.

A total of 85 saltmarsh sites was surveyed and assessed as part of the current project, from all coasts of Ireland. This comprised 61 sites that were surveyed in the baseline SMP and 24 sites that had not previously been surveyed. A total of 29.60 km^2 of saltmarsh habitat, including non-Annex I habitat, was surveyed. This included 0.14 km^2 of habitat 1310, 10.95 km^2 of habitat 1330, 3.61 km^2 of habitat 1410 and <0.01 km^2 of habitat 1420. The recorded habitat areas represent 12% (1310), 40% (1330), 38% (1410) and 84% (1420) of the target habitats mapped in Ireland.

The national conservation assessments were carried out for each of the four target Annex I habitats using the results of the current survey, combined with other data sources including the SMP and Saltmarsh Function and Human Impacts in Relation to Ecological Status (SAMFHIRES). The Overall conservation assessment for 1310 was assessed as Favourable, however the Future prospects for Structure and functions was assessed as Poor at many sites due to the threat posed by potential the spread of *Spartina anglica*, which competes for the same niche. Therefore the extent of *Spartina anglica* should be closely monitored to ensure that this species is not expanding. The Overall conservation assessment for 1330 was assessed as Unfavourable-Inadequate. Area loss was recorded for 1330, mostly in the form of infilling/reclamation for a range of uses, while Structure and functions has primarily been negatively impacted by livestock grazing, most commonly cattle - an impact that is likely to continue into the future. The Overall conservation assessment for 1410 was Unfavourable-Inadequate. While Structure and functions of 1410 was assessed as Favourable, Area was assessed as Unfavourable-Inadequate due to habitat loss attributable mainly to infilling/reclamation. Losses in area are expected to continue into the future. For 1420, the Overall conservation assessment was Unfavourable-Bad. This was due to an Area assessment of Unfavourable-Bad, with area loss caused by smothering of the habitat under algal mats whose growth has been promoted by the eutrophication of the associated waterbody. Structure and functions was assessed as Unfavourable-Inadequate due to the spread of *Spartina anglica* at one site and the complete loss of the habitat at another.

The report concludes with a discussion of the results for each of the target Annex I habitats and recommendations for conservation actions required to improve the status of saltmarsh habitats in Ireland. The conservation actions focus on the potential for control of the alien invasive species *Spartina anglica*, the implementation of agri-environment schemes, and managed realignment as a tool to combat some of the impacts of sea-level rise. Recommendations are also made for the refinement of the survey and assessment methodology and for areas of future research.

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1 Introduction

1.1 EU Annex I saltmarsh habitats in Ireland

Annex I of the EU Habitats Directive (HD) (92/43/EEC) lists habitats of community interest for which Special Areas of Conservation must be designated for their conservation. Under Article 17 of the HD, all Member States have a legal obligation to report on the conservation status of the Annex I habitats that occur within their boundaries. These national conservation status assessment reports are produced every six years. The recent round of reporting, covering the period 2013-2018, was submitted in April 2019. This is the third round of reporting carried out under Article 17.

Of the saltmarsh habitats listed under Annex I of the HD, four are considered to occur in Ireland:

- *Salicornia* and other annuals colonizing mud and sand (1310)
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330)
- Mediterranean salt meadows (*Juncetalia maritimi*) (1410)
- Mediterranean & thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) (1420)

A fifth, '*Spartina* swards (*Spartinion maritimae*) (1320)', was originally considered to be present in Ireland, but further investigation deemed that this habitat was the result of species introduction, and *Spartina anglica* and its hybrids should be considered invasive alien species in Ireland (McCorry & Ryle, 2009). For this reason, *Spartina* swards were removed as a qualifying interest (QI) from a number of Special Areas of Conservation (SAC) around Ireland.

The following descriptions of the four target Annex I habitats are adapted from the National Conservation Status Assessments of National Parks and Wildlife Service [NPWS] (2013):

'***Salicornia* and other annuals colonising mud and sand (1310)**' is a pioneer saltmarsh community that may occur on muddy sediment seaward of established saltmarsh, or form patches within other saltmarsh communities where the elevation is suitable and there is regular tidal inundation(Figure 1).

The Interpretation Manual of EU Habitats (European Commission [EC], 2013) defines *Salicornia* and other annuals colonising mud and sand (1310) as annuals belonging mainly to the genus *Salicornia* that colonise periodically inundated muds and sands of marine or interior salt marshes and belong to the phytosociological classes: *Thero-Salicornietea*, *Frankenietea pulverulentae* and *Saginetea maritimae*. Only vegetation from the first and third class is known in Ireland. There are several sub-types listed and four British National Vegetation Classification plant communities (Rodwell, 2000) are listed: "SM7 *Arthrocnemum perenne* stands", "SM8 Annual *Salicornia* saltmarsh", "SM9 *Suaeda maritima* saltmarsh" and "SM27 Ephemeral saltmarsh vegetation with *Sagina maritima*". In Ireland, three sub-types are recognised: (1) *Salicornia* type (2) *Suaeda* type and (3) the much rarer *Sagina* type. Mono-specific swards of *Salicornia* spp. growing on muddy sediments are the most common plant community belonging to this Annex I habitat type found in Ireland. According to the Irish Vegetation Classification (IVC) (Perrin, 2018a), the Annex I habitat 1310 equates to the community SM1A *Salicornia* agg. saltmarsh.

The plant community "SM7 *Arthrocnemum perenne* stands" is characteristic of a different Annex I saltmarsh community: Mediterranean and thermo-Atlantic halophilous scrubs (1420). This habitat has a very restricted distribution and area, and is not considered part of the 1310 *Salicornia* mud habitat.

As this habitat is dominated by annuals it can be ephemeral or transient in nature and is highly susceptible to erosion. Its distribution can vary considerably from year to year and it can move in response to changing conditions, e.g. in estuaries with shifting river channels.

Figure 1 *Salicornia* mud (1310) at Rathmelton (SMP0028), Co. Donegal. Photo by Kristi Leyden.

'Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330)' generally occupy the widest part of the saltmarsh gradient (Figure 2). They also contain a distinctive topography with an intricate network of creeks and salt pans occurring on the medium to large sized saltmarshes. Atlantic salt meadows contain several distinctive zones that are related to elevation and submergence frequency. The lowest part along the tidal zone is generally dominated by Common Saltmarsh-grass (*Puccinellia maritima*) with species like Glasswort (*Salicornia* spp.), Annual Sea-blite (*Suaeda maritima*) and Lax-flowered Sea-lavender (*Limonium humile*) also important. The invasive Common Cord-grass (*Spartina anglica*) can be locally abundant in this habitat. The mid-marsh zones are generally characterised by Thrift (*Armeria maritima*) and or Sea Plantain (*Plantago maritima*). This zone is generally transitional to an upper marsh herbaceous community with Red Fescue (*Festuca rubra*), Saltmarsh Rush (*Juncus gerardii*) and Creeping Bent (*Agrostis stolonifera*). This habitat is also important for other wildlife including wintering waders and wildfowl. Atlantic salt meadows are distributed around most of the coastline of Ireland. The intricate topography of the Irish coastline with many inlets has created an abundance of sites that are sheltered and allow muddy sediments to accumulate, leading to the development of saltmarsh.

Atlantic salt meadows can comprise a number of plant communities, including communities from the following groups from the IVC: SM2 *Puccinellia maritima – Spergularia media*, SM3 *Plantago maritima – Armeria maritima*, SM4 *Festuca rubra – Seriphidium maritimum*, SM6 *Agrostis stolonifera – Juncus gerardii* (Perrin, 2018a).

'Mediterranean salt meadows (*Juncetalia maritimi*) (1410)' occupy the upper zone of saltmarshes and usually occur adjacent to the boundary with terrestrial habitats (Figure 3). They are widespread on the Irish coastline; however, they are not as extensive as Atlantic salt meadows. The habitat is distinguished from Atlantic salt meadows by the presence of rushes such as Sea Rush (*Juncus maritimus*) and/or, less commonly, Sharp Rush (*Juncus acutus*), along with a range of species typically found in Atlantic salt meadows; including Sea Aster (*Aster tripolium*), Sea Purslane (*Atriplex portulacoides*), Sea-milkwort (*Glaux maritima*), Saltmarsh Rush (*Juncus gerardii*), Parsley Water-dropwort (*Oenanthe lachenalii*), Sea Plantain (*Plantago maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*).

Mediterranean salt meadows can comprise plant communities SM5A *Juncus maritimus – Festuca rubra* saltmarsh and SM5B *Juncus maritimus – Plantago maritima* saltmarsh in the IVC (Perrin, 2018a).

Figure 2 Atlantic salt meadows (1330) in Ballysadare Bay (SMP0117), Co. Sligo. Photo by Marcin Penk.

Figure 3 Mediterranean salt meadows (1410) at Annagh Island (SMP0019), Co. Mayo. Photo by John Brophy.

'**Mediterranean & thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) (1420)'** are defined by the EU Habitats Interpretation Manual (EC, 2013) as perennial vegetation of saline muds that belongs to the phytosociological class (*Sarcocornetea fruticosi*) (Figure 4). Three British NVC communities listed include the "SM21 *Suaeda vera-Limonium binervosum* saltmarsh community", "SM25 *Suaeda vera* saltmarsh community" and "SM7 *Arthrocnemum perenne* stands" (Rodwell, 2000). Irish vegetation corresponds somewhat with the community *Arthrocnemum perenne* stands (SM7).

This habitat is characterized in Ireland by the presence of a single species, Perennial Glasswort (*Sarcocornia perennis*, previously known as *Arthrocnemum perenne*) on saltmarsh. This fleshy, slightly woody perennial can grow up to 30 cm tall and often extends to form tussocks up to 1m in diameter. Davy *et al.* (2006) described the main habitat of *Sarcocornia perennis* as being gravelly or sandy foreshores and relatively well-drained sediments of coastal saltmarshes. This species is very rare in Ireland and is

listed on the Flora Protection Order (Anonymous, 2015). It is also listed in the Vascular Plant Red List as 'Vulnerable' (Wyse Jackson *et al.*, 2016). Consequently, this habitat is the rarest Annex I saltmarsh habitat found in Ireland and has been recorded from only seven saltmarsh sites in the south-east coast of Ireland. *Sarcocornia perennis* was only recorded quite recently in Ireland (Ferguson 1962, 1964).

Perennial Glasswort is generally found in the mid-lower saltmarsh zone, often with Common Saltmarsh-grass (*Puccinellia maritima*) and Lax-flowered Lavender (*Limonium humile*). It also occurs with Glasswort species (*Salicornia* spp.) and amongst clumps of Common Cord-grass (*Spartina anglica*). The 1420 habitat does not constitute a distinctive vegetation community within the Irish Vegetation Classification (IVC) (Perrin, 2018a), but is most likely to be included within the SM2 *Puccinellia maritima* – *Spergularia media* group.

Figure 4 Halophilous scrub (1420) in Fethard (SMP0047), Co. Wexford. Photo by Marcin Penk.

Of the four target habitats, doubts were raised by McCorry & Ryle (2009) about the validity of Mediterranean salt meadows (1410) and Halophilous scrub (1420) in Ireland. A re-evaluation of both habitats was recommended for the following reasons:

- Mediterranean salt meadows (1410) – For phytosociological reasons, Mediterranean salt meadows were not considered to be present in the UK (McLeod *et al.*, 2005) and vegetation dominated by *Juncus maritimus* is considered Atlantic salt meadow. The habitat continues to be recognised in Ireland, but uncertainty remains for similar phytosociological reasons.
- Halophilous scrub (1420) – While *Sarcocornia perennis* is present in a small number of locations in the southeast of Ireland, it does not form a significant part of the vegetation and may be better described as a rare plant population rather than a habitat.

In the current survey, both habitats were surveyed on the assumption that their presence in Ireland is valid. However, it is proposed that the presence of either *Carex divisa* or *Puccinellia fasciculata* should not be viewed as indicative of Mediterranean salt meadows (1410). For a discussion of the reasoning behind this, see Section 1.2.

The National Parks and Wildlife Service (NPWS) of the Department of Culture, Heritage and the Gaeltacht commissioned BEC Consultants Ltd to carry out the Saltmarsh Monitoring Project 2017-2018, a two-year survey to monitor and assess the four Annex I saltmarsh habitats for reporting under Article 17 of the Habitats Directive.

1.2 Review of survey methodology and assessment for the 2013-2018 reporting period

The survey and assessment methodology used in the Saltmarsh Monitoring Project (SMP) (McCorry, 2007; McCorry & Ryle, 2009) was reviewed and updated. As a first step, the recommendation to re-evaluate the validity of Mediterranean salt meadows (1410) and Mediterranean & thermo-Atlantic halophilous scrubs (1420) in Ireland was addressed. The new survey and assessment methodology is presented in Section 2.

1.2.1 Re-evaluation of Mediterranean salt meadows habitat (1410) in Ireland

McCorry & Ryle (2009) queried the recognition of Mediterranean salt meadows (1410) as an Annex I habitat in Ireland, stating:

> The use of Mediterranean salt meadows as an Annex I habitat classification in Ireland should also be re-evaluated. The phytosociological classification of tall rush communities dominated by Sea Rush [i]n Ireland is somewhat uncertain.
>
> There is no saltmarsh habitat classified as MSM [Mediterranean salt meadows] in the UK, even though Britain does contain similar vegetation dominated by Sea Rush…This Annex I habitat type is not considered to occur in Britain although the JNCC indicate that there was considerable debate and examination of phytosociological literature and discussion with specialists prior to decisions on NATURA habitat classifications (McLeod *et al.*, 2005)…These communities have been classified as ASM [Atlantic salt meadows 1330] in Britain. (McCorry & Ryle, 2009, p. 109)

The reason of the uncertainty with regards the occurrence of this Annex I habitat in the UK and Ireland was viewed as follows by McCorry & Ryle (2009):

> The main phytosociological unit 'Juncetalia maritimi' used by European Commission (2003) [to define 1410 Mediterranean salt meadows] was not recognised as a phytosociological unit by any of the main studies of vegetation or saltmarsh classification in Britain and Ireland (White & Doyle, 1982; Wymer, 1984; Adam, 1990; Rodwell 2000). (McCorry & Ryle, 2009, p. 109)

McCorry & Ryle (2009) concluded that the literature did not support the recognition of 1410 Mediterranean salt meadows in Ireland:

> Associations dominated by Sea Rush (Junco-maritimi-Oenanthetum lachenalii) were placed within alliance Armerion maritimae (order Glauco-Puccinellietalia) by White and Doyle (1982), Wymer (1984) and Rodwell (2000), which would mean this vegetation should be classified as [1330] Atlantic salt meadows. (McCorry & Ryle, 2009, p. 109)

A further recommendation made by McCorry & Ryle (2009) in regard to habitat 1410 was that:

> The use of species such as Borrer's Saltmarsh-grass and Divided Sedge as an indicator of MSM should be re-evaluated. (McCorry & Ryle, 2009, p. 109)

As part of the current project, the occurrence and definition of 1410 in Ireland were re-evaluated with reference to recent research and the following points are made:

(1) The EU Habitats Interpretation Manual (EC, 2013) defines 1330 as comprising "Salt meadows of Baltic, North Sea, English Channel and Atlantic shores" (p. 21), whereas it defines 1410 as comprising "Various Mediterranean and western Pontic (Black Sea) communities of the *Juncetalia maritimi*." (p. 22). Restriction of these habitats to the stated respective geographical regions would render any phytosociological discussion of the current issue moot. Indeed, application of the habitat categories 1330 and 1410 by Member States has largely adhered to the geographic regions mentioned above. A notable exception, however, is that France, like Ireland, recognises 1410 within the Atlantic biogeographic region although the UK does not.

(2) The title of habitat 1330 refers to the order *Glauco-Puccinellietalia maritimae*. In the recent major synthesis of European phytosociology using the Braun-Blanquet approach, this order is regarded as synonymous with the *Puccinellio maritimae – Salicornietalia* (Mucina *et al.*, 2016). Alliances within this order include the *Armerion maritimae* to which UK and Irish vegetation dominated by *Juncus maritimus* has previously been classified (Rodwell, 2000; Wymer, 1984). However, these alliances are now described by Mucina *et al.* (2016) as "Vegetation of grass-rich saline swards…" (p. 168) or "Vegetation of grass- and chamaephyte rich saline swards…" (p. 168) of Atlantic coasts. Rush-dominated vegetation is not mentioned. Therefore the inclusion of *Juncus maritimus* beds within the *Armerion maritimae* can now be clearly questioned. However, EC (2013) specifically lists palaearctic habitat 15.33 (Atlantic upper schorre communities) under habitat 1330. Although *Juncus maritimus* is not listed as a characteristic species of 15.33 by EC (2013), this habitat does include a sub-division 15.33A Atlantic *Juncus maritimus* beds. There is, therefore, an apparent lack of conformity between the two classification schemes used by EC (2013) at least in terms of contemporary interpretation.

(3) The title of 1410 refers to the order *Juncetalia maritimi*, an order retained by Mucina *et al.* (2016). One of the alliances within this order is the *Juncion maritimi* described as "Mediterranean and thermo-Atlantic coastal saline rush marsh vegetation under prolonged flooding regime" (p. 167). This alliance is synonymous with the *Glauco maritimae – Juncion maritimi*, to which the IVC, and Devaney and Perrin (2015a), informally classified Irish *Juncus maritimus* beds. EC (2013) also lists several palaearctic habitats under 1410. The one relevant here is 15.51 (Mediterranean tall rush saltmarshes), which EC (2013) describes as "tall rush saltmarshes of *Juncus maritimus* and/or *Juncus acutus*" (p. 22). There is therefore some support for Irish *Juncus maritimus* beds to be included under 1410 although it could be questioned whether the Irish coastline qualifies as thermo-Atlantic.

(4) It is assumed that McCorry & Ryle (2009) used *Carex divisa* as an indicator of 1410 because it is listed by EC (2013) as a characteristic plant of palaearctic habitat 15.52 (Mediterranean short rush, sedge, barley and clover), listed under 1410 and described by EC (2013) as "short rush, sedge and clover saltmarshes (*Juncion maritimi*) and humid meadows behind the littoral, rich in annual plant species and in *Fabacea* (*Trifolion squamosi*)" (p. 22). It is likewise assumed that McCorry & Ryle (2009) used *Puccinellia fasciculata* as an indicator of 1410 because it is listed by EC (2013) as a characteristic plant of palaearctic habitat 15.54 (Interior Iberian salt pan meadows) described by EC (2013) as "Iberian salt meadows (*Puccinellion fasciculatae*)" (p. 22). Based on these descriptions and the other characteristic species listed (most of which do not occur in Ireland) it does not appear that these sub-types occur in Ireland.

In conclusion, there is no clear resolution to this issue. Depending upon whether greater weighting is given to geographical definitions or vegetation composition, cases could be made for Irish saltmarsh vegetation dominated by *Juncus maritimus* to be included as Annex I habitat 1330 or 1410 or indeed neither. On balance, and considering practical implications and the distinctive nature of this vegetation, we feel that there is insufficiently clear reasoning to cease regarding this vegetation as 1410. However, we do propose that presence of either *Carex divisa* or *Puccinellia fasciculata* should not be viewed as indicative of 1410, as discussed above under point (4).

1.2.2 Re-evaluation of Halophilous scrub (1420) in Ireland

McCorry & Ryle (2009) queried the current approach to 1420 Halophilous scrub recommending:

> The value of using the Halophilous scrub (1420) classification for conservation designations and as qualifying interests for cSACs in Ireland should be re-evaluated. While the one [sic] of the primary indicator species Perennial Glasswort is present, it is not a prominent part of the saltmarsh vegetation

> over most of its distribution, becoming frequent on only a few small areas. (McCorry & Ryle, 2009, p. 108)

This recommendation was based on the following observations:

> Issues with mapping and defining this habitat, which is based on one species, should also be considered, as these has [sic] a huge potential to affect the total habitat area. The habitat was generally mapped by drawing boundaries around clusters of individual plants noted by GPS. There was potential to significantly change the mapped area of Halophilous scrubs by either dividing clusters of plants into separate patches of habitat or including them in one patch of habitat and increasing the area significantly. This issue is exacerbated by the fact that the national total for this habitat is so small, so even relatively small changes in the way the habitat is mapped can have significant impacts on the overall total. (McCorry & Ryle, 2009, p. 82)

> Perennial Glasswort was rarely frequent or abundant in cover in quadrats surveyed by McCorry (2007) and from this project and is mainly found at low cover values less than 5%. The saltmarsh vegetation where this species was found would be classified as mainly ASM [1330] or *Spartina* swards if Perennial Glasswort was not present. (McCorry & Ryle, 2009, p. 82)

> Due to its rarity in Ireland, no distinctive vegetation communities have developed and Perennial Glasswort is associated with several different communities, some of which approximate to vegetation communities described in other countries. (McCorry & Ryle, 2009, p. 82)

The IVC and Devaney and Perrin (2015a) did not describe a distinctive community in which *Sarcocornia perennis* was a dominant or indicative species, thus supporting the opinion of McCorry & Ryle (2009). In the absence of such as community, designation and assessment of category 1420 equates more to rare species conservation than habitat conservation. We propose introducing a minimum level of *Sarcocornia* cover or a minimum density of *Sarcocornia* plants to define the Annex I habitat and ensure that a genuine vegetation community, rather than a plant population, is being mapped and assessed. A similarly revised approach has been recently applied to mapping and monitoring of habitat 5130 Juniper scrub in Ireland (O'Neill & Martin, 2018). The thresholds will be set based on existing data and empirical observation in the field. Cover scores for *Sarcocornia* from 1420 plots recorded by McCorry & Ryle (2009) vary from 1% to 50-75%. This approach may reduce the mapped area of this habitat, which is already regarded as rare.

1.2.3 Expansion of the definition of Atlantic salt meadows (1330)

According to EC (2013), habitat 1330 includes palaearctic habitat 15.35 (Atlantic saltmarsh rough grass communities) and lists the characteristic species *Elymus pycnanthus* (Sea Couch, =*Agropyron pungens*, =*Elymus atherica*) and *Elytrigia repens* (Common Couch). Indeed, habitat 15.35 includes specific sub-divisions 15.351 Saltmarsh Sea Couch beds and 15.352 Saltmarsh Common Couch beds.

We consider that it is clearly intended for *Elytrigia* swards to be included within habitat 1330, unlike the current Irish (or UK) definition of this Annex I habitat. We regarded these swards as Annex I habitat during the current monitoring project and revised assessment procedures accordingly.

According to EC (2013), habitat 1330 also includes palaearctic habitat 15.36 (Atlantic saltmarsh driftline communities) and lists the characteristic species *Atriplex littoralis*, *Atriplex hastata* (=*Atriplex prostrata*), *Beta maritima* (= *Beta vulgaris* ssp. *maritima*) and *Matricaria maritima* (=*Tripleurospermum maritimum*), all of which are native Irish species.

There were few data available on this community, so we recorded this vegetation community during the current monitoring project for the purposes of inclusion within the Annex I habitat 1330. Driftline vegetation at the back of saltmarshes does not appear to have been included within the definition for Ireland of habitat 1210 Driftlines, which focuses on annual vegetation of sandy or shingly beaches; therefore there should not be any overlap.

1.3 Water Framework Directive

In addition to containing habitats listed under Annex I of the HD, saltmarshes fall under the angiosperm Biological Quality Element (BQE) of the Water Framework Directive (WFD) (2000/60/EC). The WFD was introduced to protect the groundwaters and surface waters of Member States, including transitional and coastal waters. The approach of the Directive included determining the biological, chemical and morphological status of defined waterbodies. Depending on the waterbody type, the biological assessment could include a range of BQEs, such as phytoplankton, macroalgae, benthic invertebrates, fish and angiosperms. In its original interpretation, the assessment of angiosperms in transitional and coastal waters covered only the lower intertidal and subtidal, effectively limiting it to sea-grass beds (*Zostera* spp.). As the Directive gives no guidance on the landward extent of transitional and coastal waterbodies, the intertidal zone was subsequently considered to extend from the highest to the lowest astronomical tide (European Commission [EC], 2003). This definition of the extent of a waterbody brought saltmarshes into the angiosperm element of the assessment and thus it was necessary to develop tools for the assessment of this biological element and to intercalibrate with other Member States.

The development of an assessment tool for saltmarsh in Ireland under the WFD was undertaken by BEC Consultants Ltd through the EPA-funded Saltmarsh Angiosperm Assessment Tool for Ireland (SMAATIE) project (Devaney & Perrin, 2015a; 2015b). This project gathered existing data from Irish saltmarshes, reviewed existing assessment tools developed by other Member States in the Northeast Atlantic Geographical Intercalibration Group (NEA-GIG), selected metrics for use in the tool and applied the finalised tool to selected Irish waterbodies containing saltmarsh habitat in order to calculate Ecological Quality Ratio (EQR) values for these waterbodies. Further testing and refinement of SMAATIE was undertaken as part of the Saltmarsh Function and Human Impacts in Relation to Ecological Status (SAMFHIRES) project. SAMFHIRES was a 36 month EPA-funded multi-disciplinary collaboration between BEC Consultants and the Department of Botany, Trinity College Dublin (TCD).

At the time of the development of SMAATIE, Ireland lacked a coherent national-scale, community-level vegetation classification system, comparable, for example, to the British National Vegetation Classification (NVC). As saltmarsh zonation has been used by a number of Member States in the assessment of saltmarsh for the WFD, SMAATIE developed a statistically robust, tiered vegetation classification for Irish saltmarsh vegetation broadly similar to the NVC (Rodwell, 1995; 2000). This vegetation classification, started as part of SMAATIE, has been further developed by adding other habitats, such as grasslands, uplands and woodlands, and now forms the Irish Vegetation Classification (IVC), which is available online through the National Biodiversity Data Centre (Perrin, 2018a).

Given that saltmarsh habitats now falls under both the HD and the WFD, and both require regular monitoring and reporting to the EU, the opportunity exists for the objectives of both to be met through the same survey, thus avoiding duplication of work. For this reason, in commissioning this project, the NPWS collaborated with the Environmental Protection Agency (EPA) to monitor and assess saltmarsh habitats and to collect data in a manner that was suitable to assess the saltmarsh habitats listed under Annex I of the HD, and also allow for the assessment of saltmarsh as a part of the angiosperm BQE using SMAATIE.

1.4 Previous saltmarsh surveys in Ireland

1.4.1 Inventory of saltmarshes

An inventory of Irish saltmarshes was prepared by Curtis and Sheehy-Skeffington (1998) to address this gap in knowledge of Irish habitat distribution. The inventory listed 250 saltmarsh sites around the island of Ireland, with information on their location, type and substratum. The inventory was based on a desk study and site visits, and formed a fundamental base for future research on Irish saltmarshes.

1.4.2 Saltmarsh Monitoring Project 2006-2008

A detailed baseline for saltmarsh habitat in Ireland was established by the NPWS-funded Saltmarsh Monitoring Project (SMP) reported in McCorry (2007) and McCorry & Ryle (2009). This project was based on a selection of sites identified by Curtis & Sheehy-Skeffington (1998), with additional sites added through a desk study and during fieldwork. The survey methodology was adapted from the *Common Standards Monitoring Guidance for Saltmarsh Habitats* (Joint Nature Conservation Committee [JNCC], 2004). The outputs of the SMP included site reports for each of the saltmarsh sites surveyed, which described the site, the saltmarsh habitats present, the impacts and activities affecting the site and an assessment of the conservation status of the Annex I habitats. A range of GIS shapefiles were produced, which allowed the creation of maps for the site reports and recorded spatial and other data in an accessible format.

1.5 Main project aims

The main aims of the current project are:

1. Update the field survey methodologies outlined in McCorry & Ryle (2009) and survey 84 saltmarsh sites. The updates to the methodologies are to streamline the collection of data for the Habitats Directive assessment and the WFD angiosperm assessment using SMAATIE.
2. Refine assessment methodologies provide an accurate and repeatable assessment of the conservation status of Irish saltmarsh habitat.
3. Write an Irish Wildlife Manual for the project and prepare short site reports for each of the surveyed saltmarsh sites.
4. Update the Coastal Access database with all data, and provide associated GIS and photograph files.
5. Complete a National Conservation Status Assessment and audit trail for each of the four target Annex I habitats.
6. Prepare the WFD assessment of the angiosperm BQE for each waterbody using SMAATIE.

1.6 Digital files accompanying this report

This report is accompanied by several digital files, as follows:

- ESRI-compatible shapefiles in ITM projection of monitoring stops and habitat polygons.
- MS-Access database containing all new and existing data relating to the Saltmarsh Monitoring Project 2017-2018.
- Turboveg database containing monitoring and species data from plots recorded during this survey.
- Photographs (*.jpg), mostly of monitoring stops and surrounding habitat, and Image catalogue (Microsoft® (MS) Excel spreadsheet) detailing the photographs taken during the survey.
- MS-Excel spreadsheet of other rare or notable species data recorded during this survey for transfer to Recorder database.
- Individual site reports, including a PDF map showing habitat distribution and plot location.

2 Methodology

The current saltmarsh survey methodology was developed based on McCorry (2007), McCorry & Ryle (2009), which in turn was based on the JNCC guidance (JNCC, 2004), while incorporating elements used in the SMAATIE project (Devaney & Perrin, 2015a; 2015b). The methodology for attributing percentage habitat/community cover to surveyed polygons is based on the National Survey of Upland Habitats (Perrin *et al.*, 2014). The survey collected data at a number of scales, namely at plot, polygon and site level.

2.1 Site selection

Sites for survey were selected by NPWS and comprised sites surveyed as part of the Saltmarsh Monitoring Project 2007-2009, as well as inventory sites (Curtis & Sheehy-Skeffington, 1998) and areas identified as potential saltmarsh from the interpretation of aerial photography. A total of 84 sites were selected for survey across 13 counties (Table 1) ranging in size from 2 ha to 325 ha and representing both estuarine and marine saltmarshes. The distribution of the survey sites is presented in Figure 1, numbered by the Map ID of Table 1.

Table 1 Saltmarsh sites selected for survey in the Saltmarsh Monitoring Project 2017-2018.

SMP code	Map ID	Site name	WFD Waterbody*	County
SMP0009	15	Tawin Island	Inner Galway Bay North/Inner Galway Bay South	Galway
SMP0013	10	Rosmurrevagh	Inner Clew Bay	Mayo
SMP0017	11	Caraholly	Westport Bay	Mayo
SMP0018	11	Killadangan	Westport Bay	Mayo
SMP0019	11	Annagh Island	Westport Bay	Mayo
SMP0023	8	Bartragh Island	Killala Bay/Moy Estuary	Mayo
SMP0025	8	Rusheens	Moy Estuary	Mayo
SMP0028	2	Rathmelton	Swilly Estuary	Donegal
SMP0029	2	Green Hill	Swilly Estuary	Donegal
SMP0030	2	Lower Lough Swilly	Swilly Estuary	Donegal
SMP0031	2	Fahan	Swilly Estuary	Donegal
SMP0034	41	Mornington	Boyne Estuary	Meath
SMP0038	39	Castlebridge	Lower Slaney Estuary	Wexford
SMP0039	39	Ferrycarrig	Lower Slaney Estuary	Wexford
SMP0040	38	Rosslare	Wexford Harbour	Wexford
SMP0041	36	Bannow Island	Bannow Bay	Wexford
SMP0043	37	Taulaght	Bannow Bay	Wexford
SMP0045	34	Gorteens	Bannow Bay	Wexford
SMP0046	35	Grange	Bannow Island	Wexford
SMP0047	33	Fethard	Eastern Celtic Sea (HAs 13;17)	Wexford
SMP0049	32	Killowen	New Ross Port	Wexford
SMP0050	32	Rochestown	New Ross Port	Kilkenny
SMP0052	31	Little Island	Lower Suir Estuary (Little Island - Cheekpoint)	Waterford
SMP0054	30	Kinsalebeg	Lower Blackwater M Estuary/Youghal Harbour	Waterford

SMP code	Map ID	Site name	WFD Waterbody*	County
SMP0061	29	Rock Castle, Bandon Estuary	Upper Bandon Estuary/Lower Bandon Estuary	Cork
SMP0064	28	Ballybrack	Roaring Water Bay	Cork
SMP0066	28	Barley Cove	Roaring Water Bay	Cork
SMP0070	27	Tahilla	Outer Kenmare River/Drongawn Lough, Sneem	Kerry
SMP0071	27	West Cove	Outer Kenmare River	Kerry
SMP0072	25	Rossbehy	Castlemaine Harbour	Kerry
SMP0073	25	Cromane	Castlemaine Harbour	Kerry
SMP0074	25	Whitegate, Fybagh	Castlemaine Harbour	Kerry
SMP0075**	25	Inch	Castlemaine Harbour	Kerry
SMP0078	20	Carrigafoyle	Lower Shannon Estuary	Kerry
SMP0079	20	Barrigone, Aughinish	Lower Shannon Estuary	Limerick
SMP0081	18	Bunratty	Upper Shannon Estuary	Clare
SMP0082	19	Shepperton, Fergus Estuary	Fergus Estuary	Clare
SMP0083	19	Inishdea, Owenshere	Fergus Estuary	Clare
SMP0084	19	Killadysert, Inishcorker	Fergus Estuary	Clare
SMP0085	20	Knock	Lower Shannon Estuary	Clare
SMP0086	21	Querrin	Mouth of the Shannon (HAs 23;27)	Clare
SMP0087	21	Rinevella Bay	Mouth of the Shannon (HAs 23;27)	Clare
SMP0089	17	Kinvarra-West	Kinvarra Bay	Galway
SMP0092	15	Kilcaimin	Inner Galway Bay North	Galway
SMP0094	16	Roscam West and South	Corrib Estuary	Galway
SMP0095	15	Seaweed Point	Inner Galway Bay North	Galway
SMP0096	15	Barna	Inner Galway Bay North	Galway
SMP0098	13	Teeranea	Kilkieran Bay	Galway
SMP0099	13	Lettermullan West	Kilkieran Bay	Galway
SMP0100	13	Lettermore South	Kilkieran Bay	Galway
SMP0101	13	Bealadangan	Kilkieran Bay/Loch Fhada Upper Pools/Loch an Ghadai	Galway
SMP0102	14	Kinavarra	Camus Bay	Galway
SMP0110	9	Doona	Tullaghan Bay	Mayo
SMP0111	9	Aughness	Tullaghan Bay	Mayo
SMP0112	9	Tullaghan Bay	Tullaghan Bay	Mayo
SMP0117	7	Ballysadare Bay	Ballysadare Estuary/Portavaud East, Ballysadare Bay	Sligo
SMP0119	6	Cummeen Strand	Garavoge Estuary	Sligo
SMP0126	4	Glen Bay	Northwestern Atlantic Seaboard (HAs 37;38)	Donegal
SMP0128	5	Roshin Point	Gweebarra Estuary	Donegal
SMP0129	4	Keadew	Gweedore Bay	Donegal
SMP0130	4	Dooey	Ballyness Bay	Donegal
SMP0134	39	Lower Slaney Estuary	Lower Slaney Estuary	Wexford
SMP0135	40	Broad Lough	Broad Lough	Wicklow
SMP0136	30	Tourig Hall	Lower Blackwater M Estuary/Youghal Harbour	Waterford/ Cork

SMP code	Map ID	Site name	WFD Waterbody*	County
SMP0137	30	Lower Blackwater M Estuary	Lower Blackwater M Estuary/Youghal Harbour	Waterford/ Cork
SMP0138	18	Shannon Airport	Upper Shannon Estuary	Clare
SMP0139	19	Rineanna Point	Fergus Estuary	Clare
SMP0140	6	Garavoge Estuary	Garavoge Estuary	Sligo
SMP0141	16	Lough Atalia	Corrib Estuary	Galway
SMP0142	18	Upper Shannon Estuary	Upper Shannon Estuary	Clare/Limerick
SMP0143	20	Lower Shannon Estuary	Lower Shannon Estuary	Clare/Limerick /Kerry
SMP0144	19	Islandavanna	Fergus Estuary	Clare
SMP0145	21	Poulnasherry Bay	Mouth of the Shannon (HAs 23;27)	Clare
SMP0146	26	Ballinskelligs Bay	Ballinskelligs Bay	Kerry
SMP0147	24	Derrymore Island	Inner Tralee Bay	Kerry
SMP0148	23	Annagh	Lee K Estuary	Kerry
SMP0149	22	Blennerville	Lee K Estuary	Kerry
SMP0150	1	Trawbreaga Bay	Trawbreaga Bay	Donegal
SMP0151	3	Lunniagh	Gweedore Bay	Donegal
SMP0152	5	Lettermacaward	Gweebarra Estuary	Donegal
SMP0153	19	Inishmacnaghtan	Fergus Estuary	Clare
SMP0154	12	Carna-Mweenish	Aran Islands, Galway Bay, Connemara (Has 29;31)	Galway
SMP0155	19	Fergus Estuary	Fergus Estuary	Clare
SMP0156	31	Lower Suir Estuary	Lower Suir Estuary (Little Island - Cheekpoint)	Waterford/ Kilkenny

* Some sites extend across more than one waterbody

** Only 6% of the saltmarsh habitat at Inch (SMP0075) could be accessed due to issues with permission, so the site was not carried forward for assessment.

A number of sites had changes made to their spelling as compared to the SMP in order to reflect the name used by Ordnance Survey Ireland. These changes are presented in Table 2.

Table 2 Changes in site name spelling between SMP and current project.

SMP code	SMP name	Current project name
SMP0018	Kiladangan	Killadangan
SMP0086	Querin	Querrin
SMP0087	Rinevalla Bay	Rinevella Bay
SMP0094	Roscom West and South	Roscam West and South
SMP0099	Lettermullen-West	Lettermullan West
SMP0101	Bealandangain	Bealadangan

Two additional sites not listed in in Table 1 were surveyed:

i) Castlemaine Harbour (SMP0157), Co. Kerry was surveyed in place of Inch due to issues with permission to access the site at Inch. The Castlemaine Harbour site was created from potential saltmarsh areas identified in the SMP and is located within the same waterbody.

ii) Strandhill (SMP0118), Co. Sligo was surveyed along with the extensive Ballysadare Bay (SMP0117).

Therefore, a total of 85 sites were surveyed and assessed as part of the project. The small areas of 1330 and 1410 surveyed at Inch (SMP0075) were included in the Area figures for completeness, but the site was not assessed.

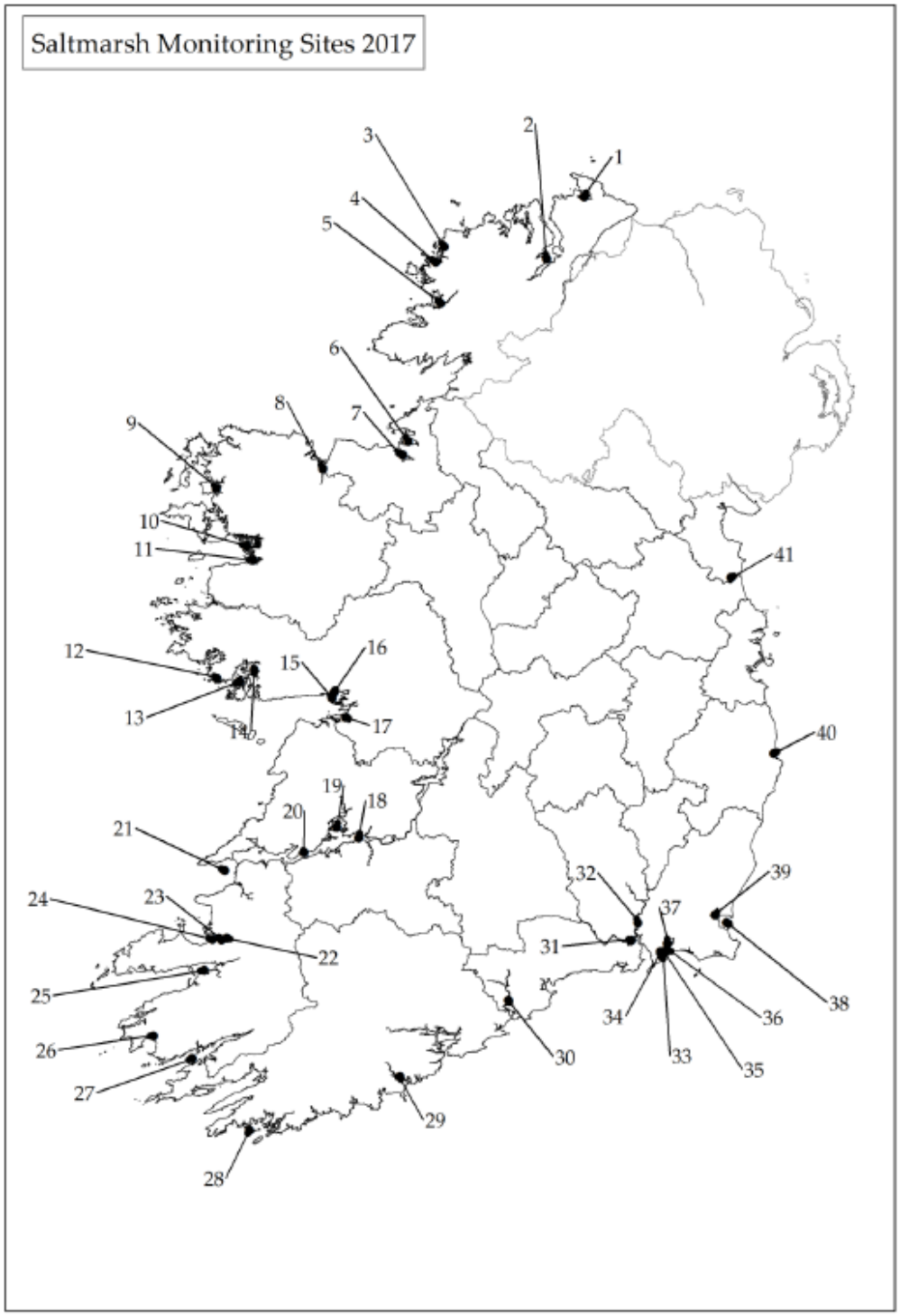

Figure 1 Location of sites for Saltmarsh Monitoring Project 2017-18 (from RFT). Note: Numbered locations relate to Table 1 and may represent more than one site.

2.2 Site packs

A site pack for each survey site was prepared in advance of the survey. Included in the site pack were two sets of hardcopy A3 colour maps created in ArcGIS, these maps illustrated the habitat polygons from the Saltmarsh Monitoring Project 2007-2009 shapefiles on top of background aerial photography. One set of maps was printed with habitat code labels for each polygon and the other without, in order to increase clarity for smaller polygons that may be obscured by labels. The map sets generally comprised an overview map at an appropriate scale and high-resolution maps with a scale of 1:3000.

A front sheet containing basic site information and data collection fields (Appendix I) was included in each site pack.

2.3 Data collection

In the field data were collected on Trimble Nomad ruggedized hand-held computers using three main programmes: Turboveg for relevé data, Microsoft Excel Mobile for monitoring data, and ArcPad for navigation and polygon identification. Turboveg is a specialist ecological database for the recording and storing of vegetation relevé data. It consists of two components: a PC version and TurbovegCE that operates on mobile platforms. Use of Turboveg enables relevés to be collected using the current Irish species checklist and thus ensures a standard nomenclature is used by surveyors. Turboveg is also the database used by the National Biodiversity Data Centre (NBDC) for the National Vegetation Database; therefore datasets can be readily assimilated. ArcPad is a GIS application that operates on mobile platforms and is a component of the ArcGIS system. Use of ArcPad allows availability of digital maps to fieldworkers and assists in navigation. ArcPad is the recommended GIS application, as NPWS use ArcGIS applications and file formats as standard.

Additional site-level data was recorded on the front sheet of the site pack.

The hardcopy maps illustrating the polygon boundaries from the previous survey were used to record changes to polygon boundaries. Changes to boundaries, due to interpretation or actual changes on the ground, were drawn onto the map for later digitisation. There were instances where very large polygons were subdivided to make them more manageable, or where smaller polygons were combined as there was no substantive difference in the habitat, or they were below the minimum mapping size (generally 400m^2).

2.3.1 Habitats and communities

Four Annex I habitats were surveyed and mapped as part of the current survey:

- *Salicornia* mud (1310)
- Atlantic salt meadows (1330)
- Mediterranean salt meadows (1410)
- Halophilous scrub (1420)

Each Annex I habitat can be assigned one or more IVC community (Table 3), with the exception of 1420, which can form in communities that would, in the absence of *Sarcocornia perennis*, be considered another Annex habitat.

Table 3 Annex I habitat and Irish Vegetation Classification community relationships

Annex I code	Annex I habitat	Irish Vegetation Classification community code	Irish Vegetation Classification community
1310	*Salicornia* mud	SM1a	*Salicornia* agg. saltmarsh
1330	Atlantic salt meadows	SM2a	*Puccinellia maritima–Glaux maritima* saltmarsh
		SM2b	*Atriplex portulacoides–Puccinellia maritima* saltmarsh
		SM2c	*Puccinellia maritima–Limonium humile* saltmarsh
		SM2d	*Puccinellia maritima–Aster tripolium* saltmarsh
		SM3a	*Plantago maritima–Armeria maritima* saltmarsh
		SM3b	*Plantago maritima–Puccinellia maritima* saltmarsh
		SM4a	*Festuca rubra–Agrostis stolonifera* saltmarsh
		SM4b	*Festuca rubra–Juncus gerardii* saltmarsh
		SM4c	*Festuca rubra–Armeria maritima* saltmarsh
		SM4d	*Festuca rubra–Plantago maritima* saltmarsh
		SM6b	*Agrostis stolonifera–Triglochin maritimum* saltmarsh
		SM6c	*Agrostis stolonifera–Potentilla anserina* saltmarsh
		SM6d	*Agrostis stolonifera–Juncus gerardii* saltmarsh
1410	Mediterranean salt meadows	SM5a	*Juncus maritimus–Festuca rubra* saltmarsh
		SM5b	*Juncus maritimus–Plantago maritima* saltmarsh
1420	Halophilous scrub	-	No community defined

2.3.2 Plots

Assessment plots completed by McCorry (2007) and McCorry & Ryle (2009) were relocated using the Trimble Nomad's GPS in order to repeat the previous work as closely as possible. In some cases this was not possible owing to habitat change (e.g. erosion of saltmarsh) and the plot was moved to nearby saltmarsh habitat, where available.

The plot consisted of a 2m x 2m area, within which a range of data were collected. A full list of species present within the plot was recorded to Turboveg along with the following data:

- Date (dd/mm/yyyy)
- Location (Irish Grid for conversion to Irish Transverse Mercator)
- Site number and name (xxx_site name)
- Plot number (from SMP or new number assigned)
- Recorder initials
- Community (Irish Vegetation Classification. e.g. SM1a, SM2b)
- Annex I habitat (1310, 1330, 1410, 1420)
- Disturbed ground (% cover)
- Annual species density (m^{-2}) (1310 only)
- *Sarcocornia perennis* density (m^{-2}) (1420 only)
- *Spartina* spp. within 5m (% cover)
- Maximum height quadrant 1 (cm) (highest photosynthetic element on plant. i.e. not flowers)
- Maximum height quadrant 2 (cm) (highest photosynthetic element on plant. i.e. not flowers)
- Maximum height quadrant 3 (cm) (highest photosynthetic element on plant. i.e. not flowers)
- Maximum height quadrant 4 (cm) (highest photosynthetic element on plant. i.e. not flowers)

At each plot, a digital photograph was taken showing the plot itself, with at least one other photograph showing the broader landscape context.

2.3.3 Polygons

In order to provide the data required for carrying out the WFD assessment, and to provide more accurate figures for the calculation of Annex I habitat area, percentage area covered by each IVC community zone present was recorded for each polygon (e.g. SM2, SM3). This was estimated following a walkover of the polygon. Also recorded was percentage cover within the polygon of the following:

- Swamp (e.g. *Bolboschoenus maritimus* swamp, *Phragmites australis* swamp)
- *Elytrigia*/Driftline
- Pans
- Bare ground (creeks)
- Non-saltmarsh (e.g. rock, mudflat)

2.3.4 Site level

Site level data were recorded on the front sheet of the site pack. This included summary data for the site, the results of assessments and a list of pressures and threats recorded. A range of site level criteria for each were recorded, including, where relevant:

- Hydrological alteration
- Variation in median maximum plant height
- Zones present >1% habitat area
- Loss of landward transitions
- Presence of typical species
- New *Spartina* records in vicinity
- Other negative indicators
- Indicators of local distinctiveness

Details of the criteria for each Annex I habitat, including what measure is used and what targets apply are presented in Tables 5-8. The front sheet template is presented in Appendix I.

2.3.5 Pressures and threats

Pressures and threats acting on the saltmarsh habitats are recorded at a site level. These are identified through the walkover survey and recorded following the standard coded system (DG Environment, 2017). For each pressure, the following is recorded on the site pack front sheet:

- Location (inside/outside)
- Influence (positive, negative, neutral)
- Intensity (high, medium, low)
- % habitat affected (<1%, 1-25%, 25-50%, 51-75%, 76-99%, 100%)

2.4 Habitats Directive Assessment

Annex I habitats are assessed under four parameters of conservation status: Range, Area, Structure and functions, and Future prospects. Guidance on assessment is provided by the EU (DG Environment, 2017). Evaluation of conservation status requires the separate assessment of the four parameters. Each parameter can receive an assessment of Favourable (green), Unfavourable-Inadequate (amber) or Unfavourable-Bad (red). The individual parameter assessments are then combined, with the aid of an evaluation matrix (Table 4), to give an overall national assessment of conservation status for the habitat.

This survey assessed three parameters at each saltmarsh site: Area, Structure and functions, and Future prospects. Range was assessed separately at the national scale for the National Conservation Assessment report.

Area is assessed by examining the current extent of the habitat and comparing it with that mapped in previous surveys, or by comparing areas across different series of aerial photographs and satellite imagery. Area losses are expressed as percent loss on an annual basis over a specified period.

To assess the Structure and functions of the target Annex I saltmarsh habitats at the sites, the survey methodology follows what has now become standard practice for terrestrial habitats in Ireland in using monitoring stops (or plots). Structure and functions are assessed by means of several criteria (to assess the habitat according to local conditions) that examine key attributes of the habitat and compare the current values with set benchmarks or thresholds that reflect the habitat when it is in favourable condition. The criteria are examined and assessed at a monitoring stop, which is usually a plot of fixed size delimited on the ground using a measuring tape or quadrat square. The dimensions of the plot and the number of monitoring stops recorded vary depending on the type and extent of the habitat.

The Future prospects assessment at each site requires an examination of the habitat's stability, in terms of its Area and Structure and functions, in the context of the impacts and activities taking place in the Annex I saltmarsh across the site. The balance between positive and negative impacts is weighed up and the Future prospects of the habitat at the site over the next two reporting periods (12 years) are evaluated.

2.4.1 Area assessment

The Area parameter was assessed in the field, taking note of any recent losses in habitat due to human activities evident during the survey. Ordnance Survey of Ireland aerial photography (1995, 2000, 2005, 2010) along with Google Earth® time-series images were also consulted for a number of sites to determine if area losses due, for example, to construction of roads or other structures had taken place since the baseline survey, or at sites not covered by the baseline survey. Losses were digitised using ArcMap 10.1 and the total area lost was calculated. The area loss was expressed as a percentage of the original (pre-loss) area as follows:

$$(\text{Area lost} / (\text{Current area} + \text{area lost})) \times 100$$

This was then divided by the number of years since the baseline survey to derive the annual percentage loss in area.

Table 4 General evaluation matrix for assessment of Conservation Status (CS) (adapted from DG Environment, 2016).

	Conservation Status			
Parameter	**Favourable ('green')**	**Unfavourable – Inadequate ('amber')**	**Unfavourable – Bad ('red')**	**Unknown**
Range	Stable or increasing AND not smaller than the 'favourable reference range'	Any other combination	>1% decline in range per year over specified period OR More than 10% below 'favourable reference range'	No or insufficient reliable information available
Area	Stable or increasing AND not smaller than the 'favourable reference area' AND without significant changes in distribution pattern within range (if data available)	Any other combination	>1% decline in area per year over specified period OR With major losses in distribution pattern within range OR More than 10% below 'favourable reference area'	No or insufficient reliable information available
Structure & functions	Structure and functions in good condition and no significant deteriorations / pressures	Any other combination	> 25% of the area is unfavourable as regards its specific structures and functions	No or insufficient reliable information available
Future prospects	The habitat's prospects for its future are excellent / good, no significant impact from threats expected; long-term viability assured	Any other combination	The habitat's prospects are bad, severe impact from threats expected; long-term viability not assured.	No or insufficient reliable information available
Overall assessment of CS	All 'green' OR three 'green' and one 'unknown'	One or more 'amber' but no 'red'	One or more 'red'	Two or more 'unknown' combined with green or all 'unknown'

2.4.2 Structure and functions assessment

The assessment of Structure and functions was based on data gathered at both the monitoring plot level and at the site level. Criteria were developed from those used in the SMP (McCorry, 2007; McCorry & Ryle, 2009), which, in turn, drew on the *Common Standards Monitoring Guidance for Saltmarsh Habitats* (JNCC, 2004). The number and precise criteria used varied by habitat across the four Annex I saltmarsh habitats assessed, as did the number of fails required to assign the habitat at a given site to the relevant conservation status: 1310 (Table 5), 1330, (Table 6), 1410 (Table 7), 1420 (Table 8). Number of fails was used in the assessment due to the fact that the number of criteria used in any given site varied.

Table 5 Summary of Structure and functions assessment for 1310 followed in 2018.

Criterion	Measure	Target
Physical structure: hydrology (habitat level)	Occurrence of human disturbance to hydrology (including impacts on creeks and pans)	No disturbance relative to SMP baseline.
Vegetation composition: typical species (stop level)	Density of *Salicornia* agg., *Suaeda maritima* and *Sagina maritima* in 2m x 2m plots	Minimum density >10 plants m^{-2}.
Vegetation composition: negative species (stop level)	% cover of *Spartina* spp. within 5m radius of stop centre	% *Spartina* spp. cover ≤ SMP baseline
Vegetation composition: negative species (habitat level)	Presence of *Spartina* spp. within vicinity of habitat	Not present where not recorded by SMP baseline, otherwise NA
Other negative indicators (stop level)	Signs of infilling, reclamation, turf-cutting, pollution	None recorded
Indicators of local distinctiveness (habitat level)	Presence of site-specific target species	No evidence of decline or loss of target species
Structure & functions assessment result for the site:		Favourable = 0 criteria failed
		Unfavourable-Inadequate = 1 criterion failed
		Unfavourable-Bad = 2+ criteria failed

Table 6 Summary of Structure and functions assessment for 1330 followed in 2018.

Criterion	Measure	Target
Physical structure: hydrology (habitat level)	Occurrence of human disturbance to hydrology (including impacts on creeks and pans).	No disturbance relative to SMP baseline.
Vegetation structure: plant height (habitat level)	Standard deviation of median of maximum leaf height from four quadrants of 2m x 2m plots.	Standard deviation of median plant height >5.
Vegetation structure: disturbed ground (stop level)	% disturbed ground within 2m x 2m plots.	<5% disturbed ground.
Vegetation structure: zonation (habitat level)	Number of zones (SM2, SM3, SM4, SM6BCD, *Elytrigia*/driftline) covering 1% or more of 1330 area.	Site-specific targets set based on geographical type of saltmarsh and expert judgement.
Vegetation structure: transition (habitat level)	Distribution of natural transitions to semi-natural terrestrial habitats on landward margin.	No loss of natural transitions relative to SMP baseline.
Vegetation composition: typical species (habitat level)	Frequency of typical species (List A*) within 2m x 2m plots.	Minimum of twelve species recorded.
Vegetation composition: negative species (stop level)	% cover of *Spartina* spp. within 5m radius of stop centre.	% *Spartina* spp. cover ≤ SMP baseline.
Vegetation composition: negative species (habitat level)	Presence of *Spartina* spp. within vicinity of habitat.	Not present where not recorded by SMP baseline, otherwise NA.
Other negative indicators (stop level)	Signs of infilling, reclamation, turf-cutting, pollution.	None recorded.
Indicators of local distinctiveness (habitat level)	Presence of site-specific target species.	No evidence of decline or loss of target species.
Structure & functions assessment result for the site:		Favourable = 0 criteria failed
		Unfavourable-Inadequate = 1-2 criteria failed
		Unfavourable-Bad = 3+ criteria failed

* Typical species List A presented in Table 9

Table 7 Summary of Structure and functions assessment for 1410 followed in 2018.

Criterion	Measure	Target
Physical structure: hydrology (habitat level)	Occurrence of human disturbance to hydrology (including impacts on creeks and pans).	No disturbance relative to SMP baseline.
Vegetation structure: disturbed ground (stop level)	% disturbed ground within 2m x 2m plots.	<5% disturbed ground.
Vegetation structure: transition (habitat level)	Distribution of natural transitions to semi-natural terrestrial habitats on landward margin.	No loss of natural transitions relative to SMP baseline.
Vegetation composition: typical species (habitat level)	Frequency of typical species (List B*) within 2m x 2m plots.	Minimum of six species recorded.
Vegetation composition: typical species (habitat level)	Frequency of typical species (List B*) within 2m x 2m plots.	Minimum two species in >25% of plots (excluding *Juncus maritimus*).
Vegetation composition: negative species (stop level)	% cover of *Spartina* spp. within 5m radius of stop centre.	% *Spartina* spp. cover ≤ SMP baseline.
Vegetation composition: negative species (habitat level)	Presence of *Spartina* spp. within vicinity of habitat.	Not present where not recorded by SMP baseline, otherwise NA.
Other negative indicators (stop level)	Signs of infilling, reclamation, turf-cutting, pollution.	None recorded.
Indicators of local distinctiveness (habitat level)	Presence of site-specific target species.	No evidence of decline or loss of target species.
Structure & functions assessment result for the site:		Favourable = 0 criteria failed
		Unfavourable-Inadequate = 1-2 criteria failed
		Unfavourable-Bad = 3+ criteria failed

* Typical species List B presented in Table 9

Table 8 Summary of Structure and functions assessment for 1420 followed in 2018.

Criterion	Measure	Target
Physical structure: hydrology (habitat level)	Occurrence of human disturbance to hydrology (including impacts on creeks and pans).	No disturbance relative to SMP baseline.
Vegetation structure: disturbed ground (stop level)	% disturbed ground within 2m x 2m plots.	<5% bare/disturbed ground.
Vegetation structure: transition (habitat level)	Distribution of natural transitions to semi-natural terrestrial habitats on landward margin.	No loss of natural transitions relative to SMP baseline.
Vegetation composition: typical species (stop level)	% cover of *Sarcocornia perennis* in 2m x 2m plots.	>5% cover *Sarcocornia perennis.*
Vegetation composition: negative species (stop level)	% cover of *Spartina* spp. within 5m radius of stop centre.	% *Spartina* spp. cover ≤ SMP baseline.
Vegetation composition: negative species (habitat level)	Presence of *Spartina* spp. within vicinity of habitat.	Not present where not recorded by SMP baseline, otherwise NA.
Other negative indicators (stop level)	Signs of infilling, reclamation, turf-cutting, pollution.	None recorded.
Indicators of local distinctiveness (habitat level)	Presence of site-specific target species.	No evidence of decline or loss of target species.
Structure & functions assessment result for the site:		Favourable = 0 criteria failed
		Unfavourable-Inadequate = 1 criterion failed
		Unfavourable-Bad = 2+ criteria failed

Table 9 Typical species lists in Structure and functions assessment of 1330 and 1410 in 2018.

List A (1330)	List B (1410)
Agrostis stolonifera	*Aster tripolium*
Armeria maritima	*Cochlearia* spp.
Aster tripolium	*Glaux maritima*
Atriplex littoralis	*Juncus acutus*
Atriplex portulacoides	*Juncus maritimus*
Atriplex prostrata	*Juncus gerardii*
Beta vulgaris	*Leontodon autumnalis*
Carex extensa	*Oenanthe lachenalii*
Cochlearia spp.	*Plantago maritima*
Elytrigia atherica	*Triglochin maritimum*
Elytrigia repens	-
Festuca rubra	-
Glaux maritima	-
Juncus gerardii	-
Limonium humile	-
Plantago maritima	-
Puccinellia maritima	-
Salicornia agg.	-
Spergularia marina	-
Spergularia media	-
Suaeda maritima	-
Triglochin maritimum	-
Tripleurospermum maritimum	-

Due to the fact that the Structure and functions assessment for a site contained a number of site/habitat level criteria, it was not possible to calculate the percentage of habitat at a site in Favourable condition based on the proportion of monitoring stops that pass, as has been done for other monitoring projects (e.g. Martin *et al.*, 2018). For this reason, a scheme was devised that related the number of criteria that failed with a percentage of the site deemed to be in Favourable condition (Table 10).

Table 10 Scheme used in calculating the area of habitat in Favourable condition. Note: For 1310, a site cannot score higher than 50% Favourable where one of the failing criteria is 'Vegetation composition: negative species (stop level)'.

No. criteria failed	% area in Favourable condition
0	100
1-2	75
3	25
4+	0

2.4.3 Future prospects assessment

EU guidance states that the habitat's Future prospects parameter:

> …should be evaluated by individually assessing the expected future trends and subsequently future prospects of each of the other three parameters [Range, Area and Structure & functions], taking primarily into account the current conservation status of the parameter, threats (related to the parameter assessed) and the conservation measures being taken or planned for the future. Once the future prospects of each of the other three parameters have been evaluated, they should be combined to give the overall assessment of Future prospects. (DG Environment, 2017, p.145).

Future prospects were assessed at the site level by evaluating the future prospects and future expected trend of Area and Structure and functions at each site, and examining the current pressures, future threats and beneficial management practices operating on the habitat. Guidance provided by the EU (DG Environment, 2017) was followed to determine the future trends and future prospects of each parameter. For Annex I saltmarsh habitat to be assessed as having Favourable Future prospects, its prospects had to be judged to be good, with no severe impacts expected from threats and the habitat expected to be stable or improving in the long term (Table 4). For it to be assessed with Unfavourable-Bad Future prospects, its prospects were judged to be bad, with severe impacts expected from threats and the habitat expected to decline or disappear in the long term. An assessment of Unfavourable-Inadequate Future prospects was between these two extremes.

To help evaluate future prospects according to the above guidance, the pressures, threats and positive activities occurring on each site were recorded according to the 2017 impact codes. The magnitude of the impact (high, medium or low), influence (positive, negative or neutral) and percentage area of habitat affected (<1%, 1-25%. 26-50%, 51-75%, 76-99%, 100%) were also noted.

2.4.4 Overall conservation assessment

The overall conservation status assessment for the habitats at each site were evaluated based on the results of all three parameters, according to the evaluation matrix in Table 4 and using the guidance provided by the EU (DG Environment, 2017).

2.4.5 Site maps

A site map was produced to accompany each site report. These maps were produced to show the distribution of each Annex I saltmarsh habitat within the site, along with other associated saltmarsh habitats. The locations of monitoring plots were also included. Where a mapped habitat constitutes 75% or more of the area of a polygon, only the primary habitat is illustrated. Where the primary habitat is less than 75% of a polygon, the secondary habitat is also illustrated. The secondary habitat is indicated by the habitat in parentheses on the map legend.

2.5 Water Framework Directive Assessment (SMAATIE)

SMAATIE was implemented following the methods set out in Devaney and Perrin (2015a; 2015b), with slight adjustments, which are likely to be implemented as part of the tool update under SAMFHIRES. This adjustment related to increasing the number of zones by one for each of the saltmarsh types (Estuary, Bay, Fringe, Sandflats, Lagoon), with a maximum of three zones counted from 1330 (from SM2, SM3, SM4, SM6BCD, *Elytrigia*/Driftline).

Relevant data from the current survey were extracted from the Turboveg database and combined with the other existing data required to run to the tool, including the SMP.

Potential Saltmarsh Area (PSA) was derived as part of the SMAATIE and SAMFHIRES projects.

3 Results

3.1 Overall statistics

3.1.1 Sites surveyed

A total of 86 sites were visited in the period May 2017 to August 2018. Of these, one site had no saltmarsh habitat remaining due to erosion (Grange – SMP0046), while for a second site, permission was not forthcoming to survey most of the site (Inch – SMP0075). In the case of Inch, areas identified as potential saltmarsh habitat around Castlemaine Harbour were surveyed in its place, forming site SMP0157. A full list of sites is presented in Table 11, with a summary of the number of monitoring plots recorded and the Annex I habitats present.

Table 11 List of sites surveyed in 2017-18 including the number of monitoring stops and Annex I saltmarsh habitats recorded. In column three, the number in brackets indicates the total number of stops recorded, including those in non-Annex I habitats.

Site code	Site name	No. Annex I monitoring stops (total stops)	Annex I habitats present			
			1310	1330	1410	1420
SMP0009	Tawin Island	26	Y	Y	Y	N
SMP0013	Rosmurrevagh	4	Y	Y	N	N
SMP0017	Caraholly South	4	Y	Y	Y	N
SMP0018	Killadangan	7	Y	Y	Y	N
SMP0019	Annagh Island	10	Y	Y	Y	N
SMP0023	Bartragh Island	12	Y	Y	Y	N
SMP0025	Rusheens	2(3)	N	Y	Y	N
SMP0028	Rathmelton	15	Y	Y	Y	N
SMP0029	Green Hill	5	Y	Y	N	N
SMP0030	Lower Lough Swilly	6	Y	Y	Y	N
SMP0031	Fahan	5	N	Y	Y	N
SMP0034	Mornington	17	Y	Y	Y	N
SMP0038	Castlebridge	20	N	Y	Y	N
SMP0039	Ferrycarrig	2	N	Y	Y	N
SMP0040	Rosslare	24	Y	Y	Y	N
SMP0041	Bannow Island	13	Y	Y	Y	Y
SMP0043	Taulaght	10	Y	Y	Y	N
SMP0045	Gorteens	8	Y	Y	Y	Y
SMP0046	Grange	0	N	N	N	N
SMP0047	Fethard	12	Y	Y	Y	Y
SMP0049	Killowen	4	N	Y	N	N
SMP0050	Rochestown	15(16)	N	Y	Y	N
SMP0052	Little Island	10	N	Y	N	N
SMP0054	Kinsalebeg	13	N	Y	Y	N
SMP0061	Rock Castle, Bandon Estuary	14	N	Y	Y	N
SMP0064	Ballybrack	7	N	Y	Y	N
SMP0066	Barley Cove	5	N	Y	Y	N
SMP0070	Tahilla	5	N	Y	Y	N

Site code	Site name	No. Annex I monitoring stops (total stops)	Annex I habitats present			
			1310	1330	1410	1420
SMP0071	West Cove	9	N	Y	Y	N
SMP0072	Rossbehy	17	Y	Y	Y	N
SMP0073	Cromane	29	Y	Y	Y	N
SMP0074	Whitegate, Fybagh	14	Y	Y	Y	N
SMP0075	Inch	3	N	Y	Y	N
SMP0078	Carrigafoyle	21	Y	Y	Y	N
SMP0079	Barrigone, Aughinish	24	N	Y	Y	N
SMP0081	Bunratty	20	N	Y	Y	N
SMP0082	Shepperton, Fergus Estuary	16	N	Y	Y	N
SMP0083	Inishdea, Owenshere	23	N	Y	Y	N
SMP0084	Killadysert, Inishcorker	10	N	Y	Y	N
SMP0085	Knock	6	Y	Y	Y	N
SMP0086	Querrin	5	Y	Y	Y	N
SMP0087	Rinevella Bay	7	N	Y	Y	N
SMP0089	Kinvarra-West	25	Y	Y	N	N
SMP0092	Kilcaimin	12	Y	Y	Y	N
SMP0094	Roscam West and South	10	Y	Y	N	N
SMP0095	Seaweed Point	8	Y	Y	Y	N
SMP0096	Barna	10	Y	Y	Y	N
SMP0098	Teeranea	8	Y	Y	Y	N
SMP0099	Lettermullan West	9	Y	Y	Y	N
SMP0100	Lettermore South	11	Y	Y	Y	N
SMP0101	Bealadangan	7	N	Y	Y	N
SMP0102	Kinavarra	23	N	Y	Y	N
SMP0110	Doona	4	Y	Y	Y	N
SMP0111	Aughness	11	N	Y	Y	N
SMP0112	Tullaghan Bay	17	Y	Y	Y	N
SMP0117	Ballysadare Bay	54	Y	Y	Y	N
SMP0118	Strandhill	6	Y	Y	N	N
SMP0119	Cummeen Strand	24	Y	Y	Y	N
SMP0126	Glen Bay	10	N	Y	Y	N
SMP0128	Roshin Point	12	N	Y	Y	N
SMP0129	Keadew	10	Y	Y	Y	N
SMP0130	Dooey	17	Y	Y	Y	N
SMP0134	Lower Slaney Estuary	9	N	Y	Y	N
SMP0135	Broad Lough	24	Y	Y	Y	N
SMP0136	Tourig Hall	8	Y	Y	Y	N
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	16(17)	Y	Y	Y	N
SMP0138	Shannon Airport	8(10)	N	Y	N	N
SMP0139	Rineanna Point	13	N	Y	Y	N
SMP0140	Garavoge Estuary	15	Y	Y	Y	N
SMP0141	Lough Atalia	5	N	Y	Y	N
SMP0142	Upper Shannon Estuary	17	N	Y	Y	N
SMP0143	Lower Shannon Estuary	8	Y	Y	Y	N

Site code	Site name	No. Annex I monitoring stops (total stops)	Annex I habitats present			
			1310	1330	1410	1420
SMP0144	Islandavanna	25	N	Y	Y	N
SMP0145	Poulnasherry Bay	14	Y	Y	Y	N
SMP0146	Ballinskelligs Bay	16	N	Y	Y	N
SMP0147	Derrymore Island	23	Y	Y	Y	N
SMP0148	Annagh	12	Y	Y	Y	N
SMP0149	Blennerville	7	N	Y	Y	N
SMP0150	Trawbreaga Bay	33	Y	Y	Y	N
SMP0151	Lunniagh	12	Y	Y	Y	N
SMP0152	Lettermacaward	12	N	Y	Y	N
SMP0153	Inishmacnaghtan	23	N	Y	Y	N
SMP0154	Carna, Mweenish Island	13	Y	Y	Y	N
SMP0155	Fergus Estuary	29(31)	N	Y	Y	N
SMP0156	Lower Suir Estuary (Little Island – Cheekpoint)	11(12)	N	Y	N	N
SMP0157	Castlemaine Harbour	24	Y	Y	Y	N

3.1.2 Area of habitat

A total of 29.8 km² of saltmarsh habitat, including associated swamps, pans and creeks, was surveyed in the course of the current project. Annex I habitats constituted 14.7 km². A breakdown of these figures is presented in Table 12.

Table 12 Breakdown of saltmarsh areas surveyed in 2017-18.

Habitat	Area (km²)
Salicornia mud (1310)	0.14
Atlantic salt meadows (1330)	10.95
Mediterranean salt meadows (1410)	3.61
Halophilous scrub (1420)	0.0024
Total Annex I habitat	**14.70**
Spartina swards	6.24
Swamp	7.23
Pans	0.26
Creeks & bare ground	1.34
Total associated habitat	**15.07**
Total saltmarsh surveyed	**29.77**

3.2 1310 *Salicornia* mud

3.2.1 Area assessment

Because of the differences in mapping methods employed by the baseline survey and the 2017-18 survey, it was not possible to compare habitat areas between the two monitoring periods directly. This Area assessment, therefore, is based on losses that were observed by surveyors in the course of the survey or from aerial/satellite imagery analysis, rather than losses detected by comparing areas mapped during the two surveys.

A total of 13.9ha of 1310 habitat was recorded in the course of the survey from 48 sites (Table 13). This represents 12% of the mapped 1310 habitat in Ireland. The most significant expanse of 1310 in the country is to be found at Bull Island (SMP0004), which was not surveyed as part of this project. The site was surveyed in 2017 as part of the EPA-Funded SAMFHIRES project (Perrin, 2018b). Of the national area (current survey combined with SMP and SAMFHIRES data) of 1310, 99% (115 ha) is within SACs and the habitat is listed as a QI for 93% (107 ha) of this area. A total of 98% of the 1310 area surveyed during the current project was within an SAC.

Table 13 Area assessments of 1310 habitat at saltmarsh sites surveyed in 2017-18. Only sites where 1310 was recorded in the baseline or the 2017-18 survey are included.

Site code	Site name	Area (ha) 2006-09	Area (ha) 2017-18	Area lost since 2008 (ha)	% Area loss per annum (10 years)	Area assessment
SMP0009	Tawin Island	1.08	0.876	0	0	Favourable
SMP0013	Rosmurrevagh	0	0.022	0	0	Favourable
SMP0017	Caraholly South	0	0.010	0	0	Favourable
SMP0018	Killadangan	0	0.007	0	0	Favourable
SMP0019	Annagh Island	0.01	0.029	0	0	Favourable
SMP0023	Bartragh Island	0.26	0.030	0	0	Favourable
SMP0028	Rathmelton	1.24	1.118	0	0	Favourable
SMP0029	Green Hill	0	0.590	0	0	Favourable
SMP0030	Lower Lough Swilly	0.01	0.316	0	0	Favourable
SMP0034	Mornington	1.327	2.239	0	0	Favourable
SMP0040	Rosslare	0.172	0.791	0	0	Favourable
SMP0041	Bannow Island	0.002	0.009	0	0	Favourable
SMP0043	Taulaght	0.006	0.086	0	0	Favourable
SMP0045	Gorteens	0.008	0.139	0	0	Favourable
SMP0047	Fethard	0.1	0.191	0	0	Favourable
SMP0066*	Barley Cove	0.004	0	0	0	Not assessed
SMP0072	Rossbehy	0.002	0.010	0	0	Favourable
SMP0073	Cromane	0	0.007	0	0	Favourable
SMP0074	Whitegate, Fybagh	0	0.012	0	0	Favourable
SMP0075**	Inch	1.241	0	0	0	Not assessed
SMP0078	Carrigafoyle	0.003	0.459	0	0	Favourable
SMP0079*	Barrigone, Aughinish	0.0001	0	0	0	Not assessed
SMP0083*	Inishdea, Owenshere	0.003	0	0	0	Not assessed
SMP0085	Knock	0.029	0.036	0	0	Favourable
SMP0086	Querrin	0.19	0.095	0	0	Favourable
SMP0087*	Rinevella Bay	0.001	0	0	0	Not assessed

Site code	Site name	Area (ha) 2006-09	Area (ha) 2017-18	Area lost since 2008 (ha)	% Area loss per annum (10 years)	Area assessment
SMP0089	Kinvarra-West	0.018	0.049	0	0	Favourable
SMP0092	Kilcaimin	0.015	0.032	0	0	Favourable
SMP0094	Roscam West and South	0.023	0.039	0	0	Favourable
SMP0095	Seaweed Point	0.003	0.004	0.0025	3.9	Unfavourable-Bad
SMP0096	Barna	0.067	0.030	0	0	Favourable
SMP0098	Teeranea	0.001	0.002	0	0	Favourable
SMP0099	Lettermullan West	0	0.072	0	0	Favourable
SMP0100	Lettermore South	0.002	0.00001	0	0	Favourable
SMP0110	Doona	0	0.034	0	0	Favourable
SMP0112	Tullaghan Bay	0	0.00001	0	0	Favourable
SMP0117	Ballysadare Bay	0.012	0.002	0	0	Favourable
SMP0118	Strandhill	0.001	0.034	0	0	Favourable
SMP0119	Cummeen Strand	0.050	0.034	0	0	Favourable
SMP0129	Keadew	0	0.042	0	0	Favourable
SMP0130	Dooey	0.851	2.607	0	0	Favourable
SMP0135	Broad Lough	NA	0.339	NA	NA	Favourable
SMP0136	Tourig Hall	NA	0.004	NA	NA	Favourable
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	NA	0.551	NA	NA	Favourable
SMP0140	Garavoge Estuary	NA	0.023	NA	NA	Favourable
SMP0143	Lower Shannon Estuary	NA	0.194	NA	NA	Favourable
SMP0145	Poulnasherry Bay	NA	0.202	NA	NA	Favourable
SMP0147	Derrymore Island	NA	2.286	NA	NA	Favourable
SMP0148	Annagh	NA	0.066	NA	NA	Favourable
SMP0150	Trawbreaga Bay	NA	0.095	NA	NA	Favourable
SMP0151	Lunniagh	NA	0.011	NA	NA	Favourable
SMP0154	Carna, Mweenish Island	NA	0.064	NA	NA	Favourable
SMP0157	Castlemaine Harbour	NA	0.003	NA	NA	Favourable
	Total	**6.73**	**13.89**			

* 1310 lost due to natural processes (Erosion, succession) **No areas of 1310 at Inch SMP0075 could be accessed due to issues with permission

Genuine loss of 1310 due to anthropogenic activities was recorded at only one site – Seaweed Point (SMP0095), where an area of the habitat was lost due to works related to reinforcing an embankment. Other losses were noted, but not recorded as loss, as they were caused by natural processes typical of this often ephemeral, pioneer habitat. These losses included loss due to succession to 1330 and to erosion. Table 13 presents the area of 1310 recorded at each of the surveyed sites compared to the baseline (where applicable), and the area of anthropogenic loss recorded.

While at some sites 1310 was lost completely due to natural processes, changes in area recorded at other sites may be due to a combination of two factors: natural processes leading to the expansion or contraction of 1310 area, and changes to mapping methodology. For the baseline survey, entire polygons were usually assigned to the dominant habitat in the field, with mosaics recorded in some cases; however, the 2017-18 survey assigned percentages to the various habitats within any given polygon, allowing greater resolution of habitat area. While in the baseline survey, a very small patch of 1310 may not have been mapped as it was impractical, this area would have been recorded in the 2017-18 survey by assigning a small percentage of the polygon area to 1310. In addition, 0.1% was the smallest

percentage applied in the 2017-18 survey, which may lead to an over-estimation of 1310 area in some cases.

As part of the Article 17 reporting, the Area parameter was assessed at each site utilising the criteria listed in Table 4. The 47 sites with no recorded anthropogenic area loss, or with a gain in area, were assessed as Favourable. The one site (Seaweed Point) that lost area at a rate greater than 1% per annum was assessed as Unfavourable-Bad. Sites where 1310 was recorded in the baseline survey, but not in the 2017-18 survey and had no evidence of anthropogenic activities causing the loss were considered 'Not assessed'. This reflects the naturally dynamic nature of the 1310 habitat.

The entirety of the anthropogenic area loss of 1310 occurred within an SAC where 1310 is listed as a QI: Galway Bay Complex SAC (site code 000268).

3.2.2 Structure and functions assessment

The assessment of Structure and functions of sites where 1310 was recorded in 2017-18 was carried out using the criteria set out in Table 5. A summary of the failures by criterion is presented in Table 14. Sites where 1310 was not recorded in the current survey were not assessed and not all parameters could be assessed for every site. For example, no stop-based parameters could be assessed where insufficient 1310 habitat occurred to facilitate setting out a plot.

Table 14 Failure rates of criteria used to assess Structure and functions for 1310.

Assessment criterion	Number of sites assessed	Number of sites that failed	% of assessed sites that failed
Physical structure: hydrology (habitat level)	48	0	0
Vegetation composition: typical species (stop level)	22	2	9
Vegetation composition: negative species (stop level)	10	3	30
Vegetation composition: negative species (habitat level)	24	0	0
Other negative indicators (stop level)	22	0	0
Indicators of local distinctiveness (habitat level)	0	0	0

The criterion that most frequently failed was 'Vegetation composition: negative species (stop level)' with three fails. The failures were caused by a recorded increase in the cover in *Spartina anglica* in the vicinity of the plot, which can displace the 1310 habitat. The second most frequently failed criterion, with two fails, was 'Vegetation composition: typical species (stop level)', which related to the density of annual species, such as *Salicornia* spp. and *Suaeda maritima*, in the plot. No sites failed on any of the other criteria and no sites were assessed for Indicators of local distinctiveness (habitat level), as none were identified for 1310 at any of the sites.

The Structure and functions of each site was assessed based on the number of criteria failed (Table 5) and these results are presented in Table 15. Only sites where 1310 habitat was recorded in the current survey were assessed. Of the 48 sites assessed for Structure and functions, 43 (90%) were Favourable, while five (10%) were Unfavourable-Inadequate.

Table 15 Structure and functions assessments for sites that supported 1310.

SMP code	Site name	Number of criteria assessed	Number of criteria failed	Structure and functions assessment
SMP0009	Tawin Island	5	0	Favourable
SMP0013	Rosmurrevagh	2	0	Favourable
SMP0017	Caraholly South	4	0	Favourable
SMP0018	Killadangan	4	0	Favourable
SMP0019	Annagh Island	1	0	Favourable
SMP0023	Bartragh Island	2	0	Favourable
SMP0028	Rathmelton	4	0	Favourable
SMP0029	Green Hill	3	0	Favourable
SMP0030	Lower Lough Swilly	3	0	Favourable
SMP0034	Mornington	4	0	Favourable
SMP0040	Rosslare	4	1	Unfavourable-Inadequate
SMP0041	Bannow Island	1	0	Favourable
SMP0043	Taulaght	1	0	Favourable
SMP0045	Gorteens	3	0	Favourable
SMP0047	Fethard	4	1	Unfavourable-Inadequate
SMP0072	Rossbehy	1	0	Favourable
SMP0073	Cromane	1	0	Favourable
SMP0074	Whitegate, Fybagh	1	0	Favourable
SMP0078	Carrigafoyle	3	0	Favourable
SMP0085	Knock	4	0	Favourable
SMP0086	Querrin	4	1	Unfavourable-Inadequate
SMP0089	Kinvarra-West	3	0	Favourable
SMP0092	Kilcaimin	4	0	Favourable
SMP0094	Roscam West and South	2	0	Favourable
SMP0095	Seaweed Point	2	0	Favourable
SMP0096	Barna	2	0	Favourable
SMP0098	Teeranea	2	0	Favourable
SMP0099	Lettermullan West	4	1	Unfavourable-Inadequate
SMP0100	Lettermore South	2	0	Favourable
SMP0110	Doona	2	0	Favourable
SMP0112	Tullaghan Bay	2	0	Favourable
SMP0117	Ballysadare Bay	2	0	Favourable
SMP0118	Strandhill	4	0	Favourable
SMP0119	Cummeen Strand	5	0	Favourable
SMP0129	Keadew	2	0	Favourable
SMP0130	Dooey	5	0	Favourable
SMP0135	Broad Lough	2	0	Favourable
SMP0136	Tourig Hall	2	0	Favourable
SMP0137	Lower Blackwater M Estuary/ Youghal Harbour	3	0	Favourable
SMP0140	Garavoge Estuary	4	0	Favourable
SMP0143	Lower Shannon Estuary	1	0	Favourable
SMP0145	Poulnasherry Bay	1	0	Favourable
SMP0147	Derrymore Island	3	0	Favourable
SMP0148	Annagh	3	1	Unfavourable-Inadequate

SMP code	Site name	Number of criteria assessed	Number of criteria failed	Structure and functions assessment
SMP0150	Trawbreaga Bay	2	0	Favourable
SMP0151	Lunniagh	2	0	Favourable
SMP0154	Carna-Mweenish	2	0	Favourable
SMP0157	Castlemaine Harbour	1	0	Favourable

All of the five sites that were assessed as Unfavourable-Inadequate were located within an SAC. Rosslare (SMP0040) and Lettermullan West (SMP0099) were located within SACs for which 1310 was not listed as a QI: Slaney River Valley SAC (site code 000781) and Kilkieran Bay and Islands SAC (site code 002111), respectively. The remaining three sites, Fethard (SMP0047), Querrin (SMP0086) and Annagh (SMP0148), were located within SACs where 1310 was listed as a QI: Bannow Island SAC (site code 000697), Lower River Shannon SAC (site code 002165) and Tralee Bay and Maharees Peninsula West to Cloghane SAC (site code 002070). A list of the sites located within an SAC is presentedin Table 16.

Table 16 Structure and functions assessments for sites that supported 1310 located within SACs.

SMP code	SAC code	SAC name	QI	Structure and functions assessment
SMP0009	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0013	001482	Clew Bay Complex SAC	No	Favourable
SMP0017	001482	Clew Bay Complex SAC	No	Favourable
SMP0018	001482	Clew Bay Complex SAC	No	Favourable
SMP0019	001482	Clew Bay Complex SAC	No	Favourable
SMP0023	000458	Killala Bay/Moy Estuary SAC	Yes	Favourable
SMP0028	002287	Lough Swilly SAC	No	Favourable
SMP0029	002287	Lough Swilly SAC	No	Favourable
SMP0030	002287	Lough Swilly SAC	No	Favourable
SMP0034	001957	Boyne Coast and Estuary SAC	Yes	Favourable
SMP0040	000781	Slaney River Valley SAC	No	Unfavourable-Inadequate
SMP0041	000697	Bannow Bay SAC	Yes	Favourable
SMP0043	000697	Bannow Bay SAC	Yes	Favourable
SMP0045	000697	Bannow Bay SAC	Yes	Favourable
SMP0047	000697	Bannow Bay SAC	Yes	Unfavourable-Inadequate
SMP0072	000343	Castlemaine Harbour SAC	Yes	Favourable
SMP0073	000343	Castlemaine Harbour SAC	Yes	Favourable
SMP0074	000343	Castlemaine Harbour SAC	Yes	Favourable
SMP0078	002165	Lower River Shannon SAC	Yes	Favourable
SMP0085	002165	Lower River Shannon SAC	Yes	Favourable
SMP0086	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0089	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0092	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0094	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0095	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0096	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0098	002111	Kilkieran Bay and Islands SAC	No	Favourable

SMP code	SAC code	SAC name	QI	Structure and functions assessment
SMP0099	002111	Kilkieran Bay and Islands SAC	No	Unfavourable-Inadequate
SMP0100	002111	Kilkieran Bay and Islands SAC	No	Favourable
SMP0117	000622	Ballysadare Bay SAC	No	Favourable
SMP0118	000622	Ballysadare Bay SAC	No	Favourable
SMP0119	000627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	No	Favourable
SMP0129	001141	Gweedore Bay and Islands SAC	No	Favourable
SMP0130	001090	Ballyness Bay SAC	No	Favourable
SMP0135	002249	The Murrough Wetlands SAC	Yes	Favourable
SMP0136	002170	Blackwater River (Cork/Waterford) SAC	Yes	Favourable
SMP0137	002170	Blackwater River (Cork/Waterford) SAC	Yes	Favourable
SMP0140	000627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	No	Favourable
SMP0143	002165	Lower River Shannon SAC	Yes	Favourable
SMP0145	002165	Lower River Shannon SAC	Yes	Favourable
SMP0147	002070	Tralee Bay and Magharees Peninsula, West to Cloghane SAC	Yes	Favourable
SMP0148	002070	Tralee Bay and Magharees Peninsula, West to Cloghane SAC	Yes	Unfavourable-Inadequate
SMP0150	002012	North Inishowen Coast SAC	No	Favourable
SMP0151	001141	Gweedore Bay and Islands SAC	No	Favourable
SMP0154	002111	Kilkieran Bay and Islands SAC	No	Favourable
SMP0157	000343	Castlemaine Harbour SAC	Yes	Favourable

The approximate area of 1310 in Favourable condition at each site was calculated following the scheme set out in Table 10 and the results are presented in Table 17. As noted, the percentage area of 1310 deemed in Favourable condition at a site cannot exceed 50% where the site fails on the criterion is 'Vegetation composition: negative species (stop level)'. This is to reflect the particular threat that *Spartina anglica* poses to the Structure and functions of 1310. Overall, an area of 13.31 ha of 1310 was assessed as being in Favourable condition, which represents 96% of the habitat recorded in the current survey that was assessed for Structure and functions.

Table 17 The estimated area of 1310 where Structure and functions were deemed Favourable.

SMP code	SMP site	1310 area (ha)	Number of assessed criteria	Number of failed criteria	% Favourable condition	Favourable area (ha)
SMP0009	Tawin Island	0.876	5	0	100	0.876
SMP0013	Rosmurrevagh	0.022	2	0	100	0.022
SMP0017	Caraholly South	0.010	4	0	100	0.010
SMP0018	Killadangan	0.007	4	0	100	0.007
SMP0019	Annagh Island	0.029	1	0	100	0.029
SMP0023	Bartragh Island	0.030	2	0	100	0.030
SMP0028	Rathmelton	1.118	4	0	100	1.118
SMP0029	Green Hill	0.590	3	0	100	0.590

SMP code	SMP site	1310 area (ha)	Number of assessed criteria	Number of failed criteria	% Favourable condition	Favourable area (ha)
SMP0030	Lower Lough Swilly	0.316	3	0	100	0.316
SMP0034	Mornington	2.239	4	0	100	2.239
SMP0040	Rosslare	0.791	4	1	50	0.396
SMP0041	Bannow Island	0.009	1	0	100	0.009
SMP0043	Taulaght	0.086	1	0	100	0.086
SMP0045	Gorteens	0.139	3	0	100	0.139
SMP0047	Fethard	0.191	4	1	50	0.095
SMP0072	Rossbehy	0.010	1	0	100	0.010
SMP0073	Cromane	0.007	1	0	100	0.007
SMP0074	Whitegate, Fybagh	0.012	1	0	100	0.012
SMP0078	Carrigafoyle	0.459	3	0	100	0.459
SMP0085	Knock	0.036	4	0	100	0.036
SMP0086	Querrin	0.095	4	1	50	0.047
SMP0089	Kinvarra-West	0.049	3	0	100	0.049
SMP0092	Kilcaimin	0.032	4	0	100	0.032
SMP0094	Roscam West and South	0.039	2	0	100	0.039
SMP0095	Seaweed Point	0.004	2	0	100	0.004
SMP0096	Barna	0.030	2	0	100	0.030
SMP0098	Teeranea	0.00017	2	0	100	0.00017
SMP0099	Lettermullan West	0.072	4	1	75	0.054
SMP0100	Lettermore South	0.00001	2	0	100	0.00001
SMP0110	Doona	0.034	2	0	100	0.034
SMP0112	Tullaghan Bay	0.00001	2	0	100	0.00001
SMP0117	Ballysadare Bay	0.002	2	0	100	0.002
SMP0118	Strandhill	0.034	4	0	100	0.034
SMP0119	Cummeen Strand	0.034	5	0	100	0.034
SMP0129	Keadew	0.042	2	0	100	0.042
SMP0130	Dooey	2.607	5	0	100	2.607
SMP0135	Broad Lough	0.339	2	0	100	0.339
SMP0136	Tourig Hall	0.004	2	0	100	0.004
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	0.551	3	0	100	0.551
SMP0140	Garavoge Estuary	0.023	4	0	100	0.023
SMP0143	Lower Shannon Estuary	0.194	1	0	100	0.194
SMP0145	Poulnasherry Bay	0.202	1	0	100	0.202
SMP0147	Derrymore Island	2.286	3	0	100	2.286
SMP0148	Annagh	0.066	3	1	75	0.050
SMP0150	Trawbreaga Bay	0.095	2	0	100	0.095
SMP0151	Lunniagh	0.011	2	0	100	0.011
SMP0154	Carna, Mweenish Island	0.064	2	0	100	0.064
SMP0157	Castlemaine Harbour	0.003	1	0	100	0.003
	Total	**13.89**				**13.31**

3.2.3 Future prospects assessment

Before evaluating the Future prospects parameter for 1310, the activities, both positive and negative, recorded for the 1310 habitat during 2017-18 survey were examined. These are shown in Table 18 and Table 19, together with the intensity, percentage of the habitat affected, and total frequency for each of the activities.

A total of seven negative pressures were recorded for the 1310 habitat. The most frequently recorded pressure was 'I02 Other invasive alien species (other than species of Union concern)', followed by 'A09 Intensive grazing or overgrazing by livestock' and 'L02 Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices)'. *Spartina anglica* was the invasive alien species recorded as having a negative effect on 1310, as this species competes with *Salicornia* spp. and other species of 1310 for pioneer habitat in the form of bare sediment found within and in front of saltmarshes. Cattle and sheep were the grazers recorded having an impact on 1310 through the impacts of grazing and trampling. Natural succession, particularly to 1330, often results in the loss of areas of 1310. This natural process is caused by the stabilisation and collection of sediment facilitated by the pioneering action of 1310. All three pressures have the potential to result in the total loss of an area of 1310.

Of the remaining pressures, 'F07 Sports, tourism and leisure activities' and 'A36 Agriculture activities not referred to above' related to the operation of either agricultural vehicles or recreational vehicles impacting on 1310 habitat. 'F08 Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures)' related to the maintenance of a flood defence embankment, while 'L01 Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization)' was noted where former 1310 habitat had reverted to mudflat.

Table 18 Negative pressures listed by frequency of occurrence (Freq.) including intensity (H – High, M – Medium, L – Low) and % of habitat affected across the 48 site where 1310 was recorded.

Code	Description	Intensity			% of habitat affected						Freq.
		H	M	L	<1	1-25	26-50	51-75	76-99	100	
I02	Other invasive alien species (other than species of Union concern)	4	19	2	-	3	19	1	2	-	25
A09	Intensive grazing or overgrazing by livestock	2	-	2	-	-	-	2	-	2	4
L02	Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices)	1	2	-	-	-	1	-	-	2	3
F07	Sports, tourism and leisure activities	2	-	-	1	1	-	-	-	-	2
A36	Agriculture activities not referred to above	1	-	-	-	-	1	-	-	-	1
F08	Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures)	1	-	-	-	-	1	-	-	-	1
L01	Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization)	1	-	-	-	1	-	-	-	-	1
	Total	12	21	4	1	5	22	3	2	4	

A single positive impact was recorded for 1310 habitat in the course of the current survey (Table 19). Recorded under 'A36 Agriculture activities not referred to above', this referred to a case where old agricultural vehicle tracks had created bare mud areas that facilitated colonisation by the defining species of 1310, such as *Salicornia* spp.

Table 19 Positive impacts listed by frequency of occurrence (Freq.) including intensity and % of habitat affected across the 48 site where 1310 was recorded.

Code	Description	Intensity			% of habitat affected						Freq.
		High	Med	Low	<1	1-25	26-50	51-75	76-99	100	
A36	Agriculture activities not referred to above	1	-	-	-	-	1	-	-	-	1

The effects of negative and positive activities were considered in the context of each site's Area and Structure and functions assessment to make an overall Future prospects assessment for each of the 48 sites assessed following the 2017-18 survey that supported 1310 (Table 20). The Future prospects of the habitat over the next 12 years (two reporting periods) was assessed.

Table 20 Future prospects (FP) assessment of the 48 sites assessed following the 2017-18 survey that supported 1310. S&F=Structure and functions, Fav=Favourable, U-I=Unfavourable-Inadequate, U-B=Unfavourable-Bad.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0009	Tawin Island	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0013	Rosmurrevagh	Poor	Poor	U-I	High sheep grazing pressure is unlikely to allow habitat to become well-established
SMP0017	Caraholly South	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0018	Killadangan	Poor	Poor	U-I	Pressure of sheep grazing on the habitat is considered low and unlikely to change into the future, but potential spread of *Spartina anglica* poses a threat to the Area and S&F.
SMP0019	Annagh Island	Poor	Poor	U-I	Pressure of sheep grazing on the habitat is considered low and unlikely to change into the future, but potential spread of *Spartina anglica* poses a threat to the Area and S&F.
SMP0023	Bartragh Island	Good	Good	Fav	While natural processes has affected the distribution of the habitat at this site, it is likely to continue to occur into the future
SMP0028	Rathmelton	Poor	Poor	U-I	A large area of the habitat continues to be present at the site, but Area and S&F threatened by further spread of *Spartina anglica* at the site
SMP0029	Green Hill	Poor	Poor	U-I	A reasonable area of the habitat was recorded at the site, but Area and S&F threatened by further spread of *Spartina anglica*
SMP0030	Lower Lough Swilly	Poor	Poor	U-I	A large area of the habitat continues to be present at the site, but Area and S&F threatened by further spread of *Spartina anglica*
SMP0034	Mornington	Poor	Poor	U-I	A large area of the habitat continues to be present at the site, but Area and S&F threatened by further spread of *Spartina anglica*
SMP0040	Rosslare	Poor	Poor	U-I	Increasing cover of *Spartina anglica* is impacting on S&F and this is likely impact on Area and S&F into the future
SMP0041	Bannow Island	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0043	Taulaght	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0045	Gorteens	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0047	Fethard	Poor	Poor	U-I	Increasing cover of *Spartina anglica* is impacting on S&F and this is likely impact on Area and S&F into the future
SMP0072	Rossbehy	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0073	Cromane	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0074	Whitegate, Fybagh	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0078	Carrigafoyle	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0085	Knock	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0086	Querrin	Poor	Poor	U-I	Increasing cover of *Spartina anglica* is impacting on S&F and this is likely impact on Area and S&F into the future
SMP0089	Kinvarra-West	Good	Good	Fav	The disturbance to the habitat by cattle at the site is not considered to pose a threat, while vehicle tracks have created suitable pioneer habitat for the constituent species of 1310
SMP0092	Kilcaimin	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0094	Roscam West and South	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0095	Seaweed Point	Bad	Good	U-B	There has been some loss to the habitat due to embankment repair works. Some time will be required for recovery.
SMP0096	Barna	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0098	Teeranea	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0099	Lettermullan West	Good	Good	Fav	No pressure identified that poses significant threat to Area at this stage, and S&F of newly established area of habitat likely to improve as density increases
SMP0100	Lettermore South	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0110	Doona	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0112	Tullaghan Bay	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0117	Ballysadare Bay	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0118	Strandhill	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0119	Cummeen Strand	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0129	Keadew	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0130	Dooey	Good	Good	Fav	There is some disturbance to the habitat from vehicle tracks, but this is not considered to pose a threat to the future of the habitat at this site
SMP0135	Broad Lough	Good	Good	Fav	No previous baseline survey, so Area assumed to be Stable in absence of evidence of loss. No pressures or threats were identified for the habitat at this site.
SMP0136	Tourig Hall	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0140	Garavoge Estuary	Good	Good	Fav	No previous baseline survey, so Area assumed to be Stable in absence of evidence of loss. No pressures or threats were identified for the habitat at this site
SMP0143	Lower Shannon Estuary	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0145	Poulnasherry Bay	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0147	Derrymore Island	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0148	Annagh	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F
SMP0150	Trawbreaga Bay	Good	Good	Fav	No previous baseline survey, so Area assumed to be Stable in absence of evidence of loss. No pressures or threats were identified for the habitat at this site.
SMP0151	Lunniagh	Good	Good	Fav	No previous baseline survey, so Area assumed to be Stable in absence of evidence of loss. No pressures or threats were identified for the habitat at this site.
SMP0154	Carna, Mweenish Island	Good	Good	Fav	No previous baseline survey, so Area assumed to be Stable in absence of evidence of loss. No pressures or threats were identified for the habitat at this site.
SMP0157	Castlemaine Harbour	Poor	Poor	U-I	Presence of *Spartina anglica* at the site and its potential to spread poses a threat to Area and S&F

3.2.4 Overall conservation assessment (site level)

The assessments of the individual parameters at each site were combined according to the evaluation matrix in Table 4 to obtain the Overall conservation assessment for the 1310 habitat at each site. This resulted in 21 sites (44%) receiving an Overall conservation assessment of Favourable, 26 sites (54%) receiving an Unfavourable-Inadequate assessment, and one site (2%) receiving an Unfavourable-Bad assessment (Table 21).

Table 21 Results of the Overall conservation assessment for the 48 sites that supported 1310 habitat when all three parameters were assessed for the current reporting period. S&F=Structure and functions, FP=Future prospects, Fav=Favourable, U-I=Unfavourable-Inadequate, U-B=Unfavourable-Bad.

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0009	Tawin Island	Fav	Fav	Fav	Favourable
SMP0013	Rosmurrevagh	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0017	Caraholly South	Fav	Fav	Fav	Favourable
SMP0018	Killadangan	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0019	Annagh Island	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0023	Bartragh Island	Fav	Fav	Fav	Favourable
SMP0028	Rathmelton	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0029	Green Hill	Fav	Fav	U-I	Unfavourable-Inadequate

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0030	Lower Lough Swilly	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0034	Mornington	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0040	Rosslare	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0041	Bannow Island	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0043	Taulaght	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0045	Gorteens	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0047	Fethard	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0072	Rossbehy	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0073	Cromane	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0074	Whitegate, Fybagh	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0078	Carrigafoyle	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0085	Knock	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0086	Querrin	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0089	Kinvarra-West	Fav	Fav	Fav	Favourable
SMP0092	Kilcaimin	Fav	Fav	Fav	Favourable
SMP0094	Roscam West and South	Fav	Fav	Fav	Favourable
SMP0095	Seaweed Point	U-B	Fav	U-B	Unfavourable-Bad
SMP0096	Barna	Fav	Fav	Fav	Favourable
SMP0098	Teeranea	Fav	Fav	Fav	Favourable
SMP0099	Lettermullan West	Fav	U-I	Fav	Unfavourable-Inadequate
SMP0100	Lettermore South	Fav	Fav	Fav	Favourable
SMP0110	Doona	Fav	Fav	Fav	Favourable
SMP0112	Tullaghan Bay	Fav	Fav	Fav	Favourable
SMP0117	Ballysadare Bay	Fav	Fav	Fav	Favourable
SMP0118	Strandhill	Fav	Fav	Fav	Favourable
SMP0119	Cummeen Strand	Fav	Fav	Fav	Favourable
SMP0129	Keadew	Fav	Fav	Fav	Favourable
SMP0130	Dooey	Fav	Fav	Fav	Favourable
SMP0135	Broad Lough	Fav	Fav	Fav	Favourable
SMP0136	Tourig Hall	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0140	Garavoge Estuary	Fav	Fav	Fav	Favourable
SMP0143	Lower Shannon Estuary	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0145	Poulnasherry Bay	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0147	Derrymore Island	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0148	Annagh	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0150	Trawbreaga Bay	Fav	Fav	Fav	Favourable
SMP0151	Lunniagh	Fav	Fav	Fav	Favourable
SMP0154	Carna, Mweenish Island	Fav	Fav	Fav	Favourable
SMP0157	Castlemaine Harbour	Fav	Fav	U-I	Unfavourable-Inadequate

A direct comparison between the SMP and the current survey is difficult due to the changes to methodology. In some cases, 1310 was recorded at sites where it was not previously recorded and therefore a comparison of Overall conservation assessment cannot be made. Of the 26 sites for which results are available for both the SMP and the current survey, 22 have remained unchanged, three have

deteriorated and one has improved. Of those that deteriorated, Rathmelton (SMP0028) and Rossbehy (SMP0072) have seen their Future prospects drop from Favourable to Unfavourable-Inadequate due to the threat posed to the Area and Structure and functions of 1310 by the spread of *Spartina anglica*, while Seaweed Point (SMP0095) has declined from Favourable to Unfavourable-Bad due to loss of area related to human activities related to reinforcing and embankment.

3.2.5 Overall conservation assessment (national)

Following EU guidance (DG Environment, 2017), and using the data collected during the current survey, as well as other sources (McCorry, 2007; McCorry & Ryle, 2009; Perrin, 2018b), the following national assessment was made for Area, Structure and functions, and the Future prospects of the Area, and Structure and functions parameters for 1310:

Area:

- The short-term trend direction of Area is assessed as Stable, as there have only been negligible anthropogenic losses within the last two reporting periods
- The current Area is not smaller than the Favourable Reference Area
- The current conservation status of Area is therefore Favourable
- The short-term future trend (i.e. over the next 12 years) for Area is assessed as Stable, as no significant change in Area is expected based on the threats and pressures identified
- The Future prospects of Area is therefore Good

Structure and functions:

- The short-term trend direction of Structure and functions is Stable for habitat that is in Good condition
- The current Structure and functions is assessed as Favourable as 90% of the habitat is in Good condition
- The current conservation status of Structure and functions is therefore Favourable
- Although the potential threat of *Spartina* anglica was reported for 20 sites, this species is only demonstrating an actual increase at 3 sites, therefore the short-term trend of Structures and functions is stable.
- The Future prospects of Structure and functions are therefore Favourable.

The parameters required to assess the national Future prospects for 1310 in Ireland are summarised in Table 22. The assessments of the individual parameters of Area, and Structure and functions were combined according to the evaluation matrix in Table 4 to obtain the national Future prospects assessment for 1310 of Favourable.

Table 22 National Future prospects assessment for Area, and Structure and functions for 1310 for the current reporting period. FP=Future prospects.

Area parameter			**Structure and functions parameter**		
Current conservation status	**Short-term (12yrs) future trend**	**FP**	**Current conservation status**	**Short-term (12yrs) future trend**	**FP**
Favourable	Stable	Good	Favourable	Stable	Good

The assessments of the individual parameters of Area, Structure and functions, and Future prospects were combined according to the evaluation matrix in Table 4 to obtain the national Overall conservation assessment for 1310: Favourable.

3.3 1330 Atlantic salt meadows

3.3.1 Area assessment

Because of the differences in mapping methods employed by the baseline survey and the 2017-18 survey, it was not possible to compare habitat areas between the two monitoring periods directly. This Area assessment, therefore, is based on losses that were observed by surveyors in the course of the survey or from aerial/satellite imagery analysis, rather than losses detected by comparing areas mapped during the two surveys.

A total of 1,095 ha of 1330 habitat was recorded in the course of the survey (Table 23). This represents 40% of the mapped 1330 habitat in Ireland. Of the national area of 1330, 87% (2,352 ha) is within SACs and the habitat is listed as a QI for 87% (2,046 ha) of this area. A total of 93% of the 1330 area surveyed during the current project was within an SAC.

Table 23 Area assessments of 1330 habitat at saltmarsh sites surveyed in 2017-18. All areas given as hectares (ha). % Loss = Percentage area loss per annum (10 years)

Site code	Site name	Area 2006-09	Area 2017-18	Lost since 2008	% Loss	Area assessments
SMP0009	Tawin Island	38.33	47.34	0	0	Favourable
SMP0013	Rosmurrevagh	6.4	6.62	0	0	Favourable
SMP0017	Caraholly South	1.68	1.67	0.085	0.484	Unfavourable-Inadequate
SMP0018	Killadangan	0.86	1.63	0	0	Favourable
SMP0019	Annagh Island	4.45	3.92	0	0	Favourable
SMP0023	Bartragh Island	29.11	28.10	0	0	Favourable
SMP0025	Rusheens	1.24	1.37	0	0	Favourable
SMP0028	Rathmelton	10.03	9.60	0.152	0.156	Unfavourable-Inadequate
SMP0029	Green Hill	1.92	13.19	0	0	Favourable
SMP0030	Lower Lough Swilly	8.46	7.64	0.123	0.159	Unfavourable-Inadequate
SMP0031	Fahan	7.51	7.79	0	0	Favourable
SMP0034	Mornington	11.242	12.68	0	0	Favourable
SMP0038	Castlebridge	2.786	6.82	0	0	Favourable
SMP0039	Ferrycarrig	0.026	0.02	0	0	Favourable
SMP0040	Rosslare	7.535	7.58	0.156	0.202	Unfavourable-Inadequate
SMP0041	Bannow Island	1.981	3.08	0	0	Favourable
SMP0043	Taulaght	2.547	3.33	0.011	0.032	Unfavourable-Inadequate
SMP0045	Gorteens	0.997	1.66	0	0	Favourable
SMP0046*	Grange	0.014	0	0	0	Not assessed
SMP0047	Fethard	4.276	5.19	0	0	Favourable
SMP0049	Killowen	2.697	1.90	0	0	Favourable
SMP0050	Rochestown	17.499	16.69	0	0	Favourable
SMP0052	Little Island	3.616	6.42	0.309	0.460	Unfavourable-Inadequate
SMP0054	Kinsalebeg	5.357	15.84	0.052	0.033	Unfavourable-Inadequate
SMP0061	Rock Castle, Bandon Estuary	3.187	5.43	0.210	0.373	Unfavourable-Inadequate
SMP0064	Ballybrack	0.887	0.86	0	0	Favourable
SMP0066	Barley Cove	0.783	0.83	0	0	Favourable
SMP0070	Tahilla	0.073	0.18	0	0	Favourable
SMP0071	West Cove	0.246	0.59	0	0	Favourable

Site code	Site name	Area 2006-09	Area 2017-18	Lost since 2008	% Loss	Area assessments
SMP0072	Rossbehy	7.286	8.72	0.135	0.153	Unfavourable-Inadequate
SMP0073	Cromane	13.907	18.78	1.691	0.826	Unfavourable-Inadequate
SMP0074	Whitegate, Fybagh	2.553	2.37	0.009	0.037	Unfavourable-Inadequate
SMP0075**	Inch	9.483	0.75	0	0	Not assessed
SMP0078	Carrigafoyle	7.589	8.10	0.051	0.063	Unfavourable-Inadequate
SMP0079	Barrigone, Aughinish	10.2	10.86	0	0	Favourable
SMP0081	Bunratty	26.968	14.97	0	0	Favourable
SMP0082	Shepperton, Fergus Estuary	35.935	36.11	0	0	Favourable
SMP0083	Inishdea, Owenshere	19.636	20.46	0.007	0.004	Unfavourable-Inadequate
SMP0084	Killadysert, Inishcorker	2.94	3.54	0.266	0.698	Unfavourable-Inadequate
SMP0085	Knock	0.74	0.91	0.018	0.197	Unfavourable-Inadequate
SMP0086	Querrin	3.56	3.51	0.066	0.185	Unfavourable-Inadequate
SMP0087	Rinevella Bay	11.73	6.27	0	0	Favourable
SMP0089	Kinvarra-West	13.295	12.90	0	0	Favourable
SMP0092	Kilcaimin	7.818	6.92	0	0	Favourable
SMP0094	Roscam West and South	3.302	2.97	0	0	Favourable
SMP0095	Seaweed Point	1.416	1.44	0.003	0.018	Unfavourable-Inadequate
SMP0096	Barna	2.24	2.40	0	0	Favourable
SMP0098	Teeranea	2.024	1.70	0.089	0.496	Unfavourable-Inadequate
SMP0099	Lettermullan West	0.533	1.01	0.059	0.553	Unfavourable-Inadequate
SMP0100	Lettermore South	3.541	3.02	0	0	Favourable
SMP0101	Bealadangan	3.634	2.32	0	0	Favourable
SMP0102	Kinavarra	6.39	9.70	0.021	0.021	Unfavourable-Inadequate
SMP0110	Doona	8.717	8.75	0	0	Favourable
SMP0111	Aughness	2.678	2.94	0	0	Favourable
SMP0112	Tullaghan Bay	16.58	26.66	0.010	0.004	Unfavourable-Inadequate
SMP0117	Ballysadare Bay	37.114	36.59	0.054	0.015	Unfavourable-Inadequate
SMP0118	Strandhill	1.478	1.53	0	0	Favourable
SMP0119	Cummeen Strand	10.512	9.13	0	0	Favourable
SMP0126	Glen Bay	2.332	3.06	0	0	Favourable
SMP0128	Roshin Point	2.18	2.43	0	0	Favourable
SMP0129	Keadew	9.229	8.60	0.308	0.345	Unfavourable-Inadequate
SMP0130	Dooey	7.494	10.15	0	0	Favourable
SMP0134	Lower Slaney Estuary	NA	0.51	0	0	Favourable
SMP0135	Broad Lough	NA	16.69	0.035	0.021	Unfavourable-Inadequate
SMP0136	Tourig Hall	NA	6.80	0.232	0.330	Unfavourable-Inadequate
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	NA	14.08	0	0	Favourable
SMP0138	Shannon Airport	NA	9.12	0	0	Favourable
SMP0139	Rineanna Point	NA	8.15	0	0	Favourable
SMP0140	Garavoge Estuary	NA	10.28	0	0	Favourable
SMP0141	Lough Atalia	NA	1.74	0	0	Favourable
SMP0142	Upper Shannon Estuary	NA	11.49	0	0	Favourable
SMP0143	Lower Shannon Estuary	NA	43.08	0	0	Favourable
SMP0144	Islandavanna	NA	94.88	0	0	Favourable
SMP0145	Poulnasherry Bay	NA	16.26	0.162	0.099	Unfavourable-Inadequate

Site code	Site name	Area 2006-09	Area 2017-18	Lost since 2008	% Loss	Area assessments
SMP0146	Ballinskelligs Bay	NA	6.02	0.035	0.058	Unfavourable-Inadequate
SMP0147	Derrymore Island	NA	30.97	0	0	Favourable
SMP0148	Annagh	NA	13.01	0	0	Favourable
SMP0149	Blennerville	NA	23.42	0	0	Favourable
SMP0150	Trawbreaga Bay	NA	48.28	0.019	0.004	Unfavourable-Inadequate
SMP0151	Lunniagh	NA	26.22	0	0	Favourable
SMP0152	Lettermacaward	NA	5.36	0	0	Favourable
SMP0153	Inishmacnaghtan	NA	94.91	0	0	Favourable
SMP0154	Carna, Mweenish Island	NA	22.94	0	0	Favourable
SMP0155	Fergus Estuary	NA	56.54	0	0	Favourable
SMP0156	Lower Suir Estuary (Little Island – Cheekpoint)	NA	19.34	0	0	Favourable
SMP0157	Castlemaine Harbour	NA	7.65	0.779	0.924	Unfavourable-Inadequate
	Total	**470.77**	**1095.28**			

* 1330 lost due to natural processes and therefore was not assessed

** Large areas of 1330 at Inch SMP0075 could not be accessed due to issues with permission; therefore the site was not assessed.

Of the 86 sites visited, no anthropogenic area loss was recorded at 66% (57 sites) of sites (though the remaining 1330 habitat at Grange (SMP0046) was lost to natural processes in the form of erosion). Across the remaining 34% (29 sites) of sites, anthropogenic area loss had occurred that resulted in the total loss of 5.15 ha of 1330 habitat. This loss represents 0.5% of the area of 1330 surveyed in 2017-18. The losses mostly related to infilling/reclamation for a range of uses including agriculture, roads, and buildings. There were also losses due to the extraction of saltmarsh material for use in embankment repairs, and due to erosion instigated by over-grazing or the operation of vehicles. The largest loss in terms of area of 1330 habitat occurred at Cromane (SMP0073), Co. Kerry. At this site, areas of saltmarsh behind historical embankments had been converted to agricultural land through infilling and other works.

As part of the Article 17 reporting, the Area parameter was assessed at each site utilising the criteria listed in Table 4. The 55 sites that continued to support 1330 with no recorded anthropogenic area loss, or with a gain in area, were assessed as Favourable. The remaining 29 sites that lost area, but at a rate that was not greater than 1% per annum, were assessed as Unfavourable-Inadequate. One site (Grange-SMP0046) where 1330 was recorded in the baseline survey, but not in the 2017-18 survey and had no evidence of anthropogenic activities causing the loss was considered 'Not assessed', as was Inch (SMP0075), where only a fraction of the site was accessed due to issues with permission.

Of the 5.15 ha of 1330 lost to anthropogenic activities, 53% (2.74 ha) was lost from inside the SAC network. Of this 2.74 ha, 97% was from 12 SACs that listed 1330 as a QI, while the remaining 3% was from two SACs that did not list 1330 as a QI (Table 24).

Table 24 Area loss of 1330 from sites surveyed within the SAC network.

SAC code	SAC name	QI	SMP site code	Area loss (ha)
000268	Galway Bay Complex SAC	Yes	95	0.003
000335	Ballinskelligs Bay And Inny Estuary SAC	Yes	146	0.035
000343	Castlemaine Harbour SAC	Yes	72, 73, 74, 157	0.944
000622	Ballysadare Bay SAC	No	117	0.054
000697	Bannow Bay SAC	Yes	43	0.011
000781	Slaney River Valley SAC	Yes	40	0.017
001141	Gweedore Bay And Islands SAC	Yes	129	0.308
002012	North Inishowen Coast SAC	No	150	0.019
002111	Kilkieran Bay And Islands SAC	Yes	98, 99, 102	0.156
002137	Lower River Suir SAC	Yes	52	0.307
002165	Lower River Shannon SAC	Yes	78, 83, 84, 85, 86, 145	0.309
002170	Blackwater River (Cork/Waterford) SAC	Yes	54, 136	0.271
002249	The Murrough Wetlands SAC	Yes	135	0.035
002287	Lough Swilly SAC	Yes	28, 30	0.271
			Total	**2.74**

3.3.2 Structure and functions assessment

The assessment of Structure and functions of sites where 1330 was recorded in 2017-18 was carried out using the criteria set out in Table 6. A summary of the failures by criterion is presented in Table 25. Two sites were not assessed: Inch (SMP0075) and Grange (SMP0046). Inch was not assessed as not enough of the site could be surveyed due to issues with obtaining permission, while all 1330 habitat at Grange had been lost to erosion. Not all parameters could be assessed for every site. For example, 'Vegetation composition: negative species (habitat level)', which addresses the introduction of a *Spartina anglica* to a site could not be assessed where the species was already known from a site.

Table 25 Failure rates of criteria used to assess Structure and functions for 1330.

Assessment criterion	Number of sites assessed	Number of sites that failed	% of assessed sites that failed
Physical structure: hydrology (habitat level)	84	8	10
Vegetation structure: plant height (habitat level)	80	10	13
Vegetation structure: disturbed ground (stop level)	83	25	30
Vegetation structure: zonation (habitat level)	84	20	24
Vegetation structure: transition (habitat level)	84	12	14
Vegetation composition: typical species (habitat level)	83	25	33
Vegetation composition: negative species (stop level)	59	7	12
Vegetation composition: negative species (habitat level)	40	0	0
Other negative indicators (stop level)	83	3	4
Indicators of local distinctiveness (habitat level)	24	0	0

The criteria that most frequently failed were 'Vegetation composition: typical species (habitat level)' and 'Vegetation structure: disturbed ground (stop level)' with 25 fails each. The failures for 'Vegetation composition: typical species (habitat level)' were due to an insufficient number of species in List A (Table 9) being present across the plots recorded at a given site. The failures of 'Vegetation structure: disturbed ground (stop level)' related to the percentage area of plots disturbed, usually due to trampling by livestock. No site failed for 'Vegetation composition: negative species (habitat level)', as *Spartina anglica* was not recorded in any site from which it was not already known. In addition, no site failed the criterion 'Indicators of local distinctiveness (habitat level)', as no evidence of loss was recorded for any of the species listed for a given site.

The Structure and functions of each site was assessed based on the number of criteria failed (Table 6) and these results are presented in Table 26. Of the 84 sites assessed, 23 (27%) were Favourable, 48 (57%) were Unfavourable-Inadequate and 13 (16%) were Unfavourable-Bad.

Table 26 Structure and functions assessments for sites that supported 1330.

SMP code	SMP site	Number of criteria assessed	Number of criteria failed	Structure and functions assessment
SMP0009	Tawin Island	10	0	Favourable
SMP0013	Rosmurrevagh	9	4	Unfavourable-Bad
SMP0017	Caraholly South	9	2	Unfavourable-Inadequate
SMP0018	Killadangan	8	2	Unfavourable-Inadequate
SMP0019	Annagh Island	8	3	Unfavourable-Bad
SMP0023	Bartragh Island	9	1	Unfavourable-Inadequate

SMP code	SMP site	Number of criteria assessed	Number of criteria failed	Structure and functions assessment
SMP0025	Rusheens	8	1	Unfavourable-Inadequate
SMP0028	Rathmelton	8	3	Unfavourable-Bad
SMP0029	Green Hill	8	1	Unfavourable-Inadequate
SMP0030	Lower Lough Swilly	8	3	Unfavourable-Bad
SMP0031	Fahan	9	1	Unfavourable-Inadequate
SMP0034	Mornington	8	1	Unfavourable-Inadequate
SMP0038	Castlebridge	10	1	Unfavourable-Inadequate
SMP0039	Ferrycarrig	8	2	Unfavourable-Inadequate
SMP0040	Rosslare	9	3	Unfavourable-Bad
SMP0041	Bannow Island	9	0	Favourable
SMP0043	Taulaght	9	1	Unfavourable-Inadequate
SMP0045	Gorteens	7	1	Unfavourable-Inadequate
SMP0046*	Grange	0	0	Not assessed
SMP0047	Fethard	9	0	Favourable
SMP0049	Killowen	8	1	Unfavourable-Inadequate
SMP0050	Rochestown	9	0	Favourable
SMP0052	Little Island	9	2	Unfavourable-Inadequate
SMP0054	Kinsalebeg	8	0	Favourable
SMP0061	Rock Castle, Bandon Estuary	9	2	Unfavourable-Inadequate
SMP0064	Ballybrack	9	1	Unfavourable-Inadequate
SMP0066	Barley Cove	10	1	Unfavourable-Inadequate
SMP0070	Tahilla	4	0	Favourable
SMP0071	West Cove	9	2	Unfavourable-Inadequate
SMP0072	Rossbehy	8	3	Unfavourable-Bad
SMP0073	Cromane	8	1	Unfavourable-Inadequate
SMP0074	Whitegate, Fybagh	8	1	Unfavourable-Inadequate
SMP0078	Carrigafoyle	9	0	Favourable
SMP0079	Barrigone, Aughinish	9	2	Unfavourable-Inadequate
SMP0081	Bunratty	9	2	Unfavourable-Inadequate
SMP0082	Shepperton, Fergus Estuary	9	3	Unfavourable-Bad
SMP0083	Inishdea, Owenshere	9	2	Unfavourable-Inadequate
SMP0084	Killadysert, Inishcorker	9	1	Unfavourable-Inadequate
SMP0085	Knock	8	3	Unfavourable-Bad
SMP0086	Querrin	8	5	Unfavourable-Bad
SMP0087	Rinevella Bay	8	1	Unfavourable-Inadequate
SMP0089	Kinvarra-West	9	0	Favourable
SMP0092	Kilcaimin	10	1	Unfavourable-Inadequate
SMP0094	Roscam West and South	9	0	Favourable
SMP0095	Seaweed Point	10	3	Unfavourable-Bad
SMP0096	Barna	10	0	Favourable
SMP0098	Teeranea	9	2	Unfavourable-Inadequate
SMP0099	Lettermullan West	9	3	Unfavourable-Bad
SMP0100	Lettermore South	9	1	Unfavourable-Inadequate
SMP0101	Bealadangan	9	1	Unfavourable-Inadequate
SMP0102	Kinavarra	9	1	Unfavourable-Inadequate
SMP0110	Doona	9	3	Unfavourable-Bad
SMP0111	Aughness	9	1	Unfavourable-Inadequate

SMP code	SMP site	Number of criteria assessed	Number of criteria failed	Structure and functions assessment
SMP0112	Tullaghan Bay	9	2	Unfavourable-Inadequate
SMP0117	Ballysadare Bay	10	0	Favourable
SMP0118	Strandhill	9	0	Favourable
SMP0119	Cummeen Strand	10	0	Favourable
SMP0126	Glen Bay	9	2	Unfavourable-Inadequate
SMP0128	Roshin Point	10	0	Favourable
SMP0129	Keadew	10	1	Unfavourable-Inadequate
SMP0130	Dooey	10	2	Unfavourable-Inadequate
SMP0134	Lower Slaney Estuary	7	0	Favourable
SMP0135	Broad Lough	8	2	Unfavourable-Inadequate
SMP0136	Tourig Hall	7	0	Favourable
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	7	0	Favourable
SMP0138	Shannon Airport	7	1	Unfavourable-Inadequate
SMP0139	Rineanna Point	7	0	Favourable
SMP0140	Garavoge Estuary	8	0	Favourable
SMP0141	Lough Atalia	8	2	Unfavourable-Inadequate
SMP0142	Upper Shannon Estuary	7	1	Unfavourable-Inadequate
SMP0143	Lower Shannon Estuary	7	0	Favourable
SMP0144	Islandavanna	7	1	Unfavourable-Inadequate
SMP0145	Poulnasherry Bay	7	2	Unfavourable-Inadequate
SMP0146	Ballinskelligs Bay	8	2	Unfavourable-Inadequate
SMP0147	Derrymore Island	7	1	Unfavourable-Inadequate
SMP0148	Annagh	7	2	Unfavourable-Inadequate
SMP0149	Blennerville	7	1	Unfavourable-Inadequate
SMP0150	Trawbreaga Bay	8	0	Favourable
SMP0151	Lunniagh	8	1	Unfavourable-Inadequate
SMP0152	Lettermacaward	8	1	Unfavourable-Inadequate
SMP0153	Inishmacnaghtan	7	2	Unfavourable-Inadequate
SMP0154	Carna-Mweenish	8	4	Unfavourable-Bad
SMP0155	Fergus Estuary	7	1	Unfavourable-Inadequate
SMP0156	Lower Suir Estuary (Little Island – Cheekpoint)	7	0	Favourable
SMP0157	Castlemaine Harbour	7	1	Unfavourable-Inadequate

* Grange was not assessed for Structure and functions, as no 1330 habitat remained.

Of the 48 sites that were assessed as Unfavourable-Inadequate, 43 were in SACs with 1330 listed as a QI, three were in SACs without 1330 listed as a QI and the remaining two were outside the SAC network (Table 27). Of the 23 sites that were assessed as Favourable, 18 were in SACs with 1330 listed as QI, four were in SACs without 1330 listed as a QI, with the remaining site outside the SAC network. Of the 13 sites that were assessed as Unfavourable-Bad, 12 were in SACs with 1330 listed as QI, with the remaining site outside the SAC network.

Table 27 Structure and functions assessments for sites that supported 1330 located within SACs.

SMP code	SAC code	SAC name	QI	Structure and functions assessment
SMP0009	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0013	001482	Clew Bay Complex SAC	Yes	Unfavourable-Bad
SMP0017	001482	Clew Bay Complex SAC	Yes	Unfavourable-Inadequate
SMP0018	001482	Clew Bay Complex SAC	Yes	Unfavourable-Inadequate
SMP0019	001482	Clew Bay Complex SAC	Yes	Unfavourable-Bad
SMP0023	000458	Killala Bay/Moy Estuary SAC	Yes	Unfavourable-Inadequate
SMP0025	000458	Killala Bay/Moy Estuary SAC	Yes	Unfavourable-Inadequate
SMP0028	002287	Lough Swilly SAC	Yes	Unfavourable-Bad
SMP0029	002287	Lough Swilly SAC	Yes	Unfavourable-Inadequate
SMP0030	002287	Lough Swilly SAC	Yes	Unfavourable-Bad
SMP0031	002287	Lough Swilly SAC	Yes	Unfavourable-Inadequate
SMP0034	001957	Boyne Coast and Estuary SAC	Yes	Unfavourable-Inadequate
SMP0038	000781	Slaney River Valley SAC	Yes	Unfavourable-Inadequate
SMP0039	000781	Slaney River Valley SAC	Yes	Unfavourable-Inadequate
SMP0040	000781	Slaney River Valley SAC	Yes	Unfavourable-Bad
SMP0041	000697	Bannow Bay SAC	Yes	Favourable
SMP0043	000697	Bannow Bay SAC	Yes	Unfavourable-Inadequate
SMP0045	000697	Bannow Bay SAC	Yes	Unfavourable-Inadequate
SMP0047	000697	Bannow Bay SAC	Yes	Favourable
SMP0049	002162	River Barrow and River Nore SAC	Yes	Unfavourable-Inadequate
SMP0050	002162	River Barrow and River Nore SAC	Yes	Favourable
SMP0052	002137	Lower River Suir SAC	Yes	Unfavourable-Inadequate
SMP0054	002170	Blackwater River (Cork/Waterford) SAC	Yes	Favourable
SMP0064	000101	Roaringwater Bay and Islands SAC	No	Unfavourable-Inadequate
SMP0066	001040	Barley Cove to Ballyrisode Point SAC	Yes	Unfavourable-Inadequate
SMP0070	002158	Kenmare River SAC	Yes	Favourable
SMP0071	002158	Kenmare River SAC	Yes	Unfavourable-Inadequate
SMP0072	000343	Castlemaine Harbour SAC	Yes	Unfavourable-Bad
SMP0073	000343	Castlemaine Harbour SAC	Yes	Unfavourable-Inadequate
SMP0074	000343	Castlemaine Harbour SAC	Yes	Unfavourable-Inadequate
SMP0078	002165	Lower River Shannon SAC	Yes	Favourable
SMP0079	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0081	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0082	002165	Lower River Shannon SAC	Yes	Unfavourable-Bad
SMP0083	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0084	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0085	002165	Lower River Shannon SAC	Yes	Unfavourable-Bad
SMP0086	002165	Lower River Shannon SAC	Yes	Unfavourable-Bad
SMP0087	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0089	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0092	000268	Galway Bay Complex SAC	Yes	Unfavourable-Inadequate
SMP0094	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0095	000268	Galway Bay Complex SAC	Yes	Unfavourable-Bad
SMP0096	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0098	002111	Kilkieran Bay and Islands SAC	Yes	Unfavourable-Inadequate
SMP0099	002111	Kilkieran Bay and Islands SAC	Yes	Unfavourable-Bad

SMP code	SAC code	SAC name	QI	Structure and functions assessment
SMP0100	002111	Kilkieran Bay and Islands SAC	Yes	Unfavourable-Inadequate
SMP0101	002111	Kilkieran Bay and Islands SAC	Yes	Unfavourable-Inadequate
SMP0102	002111	Kilkieran Bay and Islands SAC	Yes	Unfavourable-Inadequate
SMP0117	000622	Ballysadare Bay SAC	No	Favourable
SMP0118	000622	Ballysadare Bay SAC	No	Favourable
SMP0119	000627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	No	Favourable
SMP0126	000190	Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	No	Unfavourable-Inadequate
SMP0128	000197	West of Ardara/Maas Road SAC	Yes	Favourable
SMP0129	001141	Gweedore Bay and Islands SAC	Yes	Unfavourable-Inadequate
SMP0130	001090	Ballyness Bay SAC	No	Unfavourable-Inadequate
SMP0134	000781	Slaney River Valley SAC	Yes	Favourable
SMP0135	002249	The Murrough Wetlands SAC	Yes	Unfavourable-Inadequate
SMP0136	002170	Blackwater River (Cork/Waterford) SAC	Yes	Favourable
SMP0137	002170	Blackwater River (Cork/Waterford) SAC	Yes	Favourable
SMP0138	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0139	002165	Lower River Shannon SAC	Yes	Favourable
SMP0140	000627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	No	Favourable
SMP0141	000268	Galway Bay Complex SAC	Yes	Unfavourable-Inadequate
SMP0142	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0143	002165	Lower River Shannon SAC	Yes	Favourable
SMP0144	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0145	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0146	000335	Ballinskelligs Bay and Inny Estuary SAC	Yes	Unfavourable-Inadequate
SMP0147	002070	Tralee Bay and Magharees Peninsula, West to Cloghane SAC	Yes	Unfavourable-Inadequate
SMP0148	002070	Tralee Bay and Magharees Peninsula, West to Cloghane SAC	Yes	Unfavourable-Inadequate
SMP0149	002070	Tralee Bay and Magharees Peninsula, West to Cloghane SAC	Yes	Unfavourable-Inadequate
SMP0150	002012	North Inishowen Coast SAC	No	Favourable
SMP0151	001141	Gweedore Bay and Islands SAC	Yes	Unfavourable-Inadequate
SMP0152	000197	West of Ardara/Maas Road SAC	Yes	Unfavourable-Inadequate
SMP0153	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0154	002111	Kilkieran Bay and Islands SAC	Yes	Unfavourable-Bad
SMP0155	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0156	002137	Lower River Suir SAC	Yes	Favourable
SMP0157	000343	Castlemaine Harbour SAC	Yes	Unfavourable-Inadequate

The approximate area of 1330 in Favourable condition at each site was calculated following the scheme set out in Table 10 and the results are presented in Table27. Overall, an area of 825.11 ha of 1330 was assessed as being in Favourable condition, which represents 75% of the habitat recorded in the current survey that was assessed for Structure and functions.

Table 28 The estimated area of 1330 where Structure and functions was deemed Favourable.

SMP code	SMP site	1330 area (ha)	Number of assessed criteria	Number of failed criteria	% Favourable condition	Favourable area (ha)
SMP0009	Tawin Island	47.34	10	0	100	47.34
SMP0013	Rosmurrevagh	6.62	9	4	0	0
SMP0017	Caraholly South	1.67	9	2	75	1.25
SMP0018	Killadangan	1.63	8	2	75	1.22
SMP0019	Annagh Island	3.92	8	3	25	0.98
SMP0023	Bartragh Island	28.10	9	1	75	21.07
SMP0025	Rusheens	1.37	8	1	75	1.03
SMP0028	Rathmelton	9.60	8	3	25	2.40
SMP0029	Green Hill	13.19	8	1	75	9.89
SMP0030	Lower Lough Swilly	7.64	8	3	25	1.91
SMP0031	Fahan	7.79	9	1	75	5.84
SMP0034	Mornington	12.68	8	1	75	9.51
SMP0038	Castlebridge	6.82	10	1	75	5.11
SMP0039	Ferrycarrig	0.02	8	1	75	0.01
SMP0040	Rosslare	7.58	9	2	25	1.89
SMP0041	Bannow Island	3.08	9	0	100	3.08
SMP0043	Taulaght	3.33	9	1	75	2.50
SMP0045	Gorteens	1.66	7	1	75	1.24
SMP0047	Fethard	5.19	9	0	100	5.19
SMP0049	Killowen	1.90	8	1	75	1.42
SMP0050	Rochestown	16.69	9	0	100	16.69
SMP0052	Little Island	6.42	9	2	75	4.82
SMP0054	Kinsalebeg	15.84	8	0	100	15.84
SMP0061	Rock Castle, Bandon	5.43	9	2	75	4.07
SMP0064	Ballybrack	0.86	9	1	75	0.64
SMP0066	Barley Cove	0.83	10	1	75	0.63
SMP0070	Tahilla	0.18	4	0	100	0.18
SMP0071	West Cove	0.59	9	2	75	0.44
SMP0072	Rossbehy	8.72	8	3	25	2.18
SMP0073	Cromane	18.78	8	1	75	14.09
SMP0074	Whitegate, Fybagh	2.37	8	1	75	1.78
SMP0078	Carrigafoyle	8.10	9	0	100	8.10
SMP0079	Barrigone, Aughinish	10.86	9	2	75	8.14
SMP0081	Bunratty	14.97	9	2	75	11.23
SMP0082	Shepperton, Fergus Estuary	36.11	9	3	25	9.03
SMP0083	Inishdea, Owenshere	20.46	9	2	75	15.34
SMP0084	Killadysert, Inishcorker	3.54	9	1	75	2.66
SMP0085	Knock	0.91	8	3	75	0.68
SMP0086	Querrin	3.51	8	5	0	0
SMP0087	Rinevella Bay	6.27	8	1	75	4.71
SMP0089	Kinvarra-West	12.90	9	0	100	12.90
SMP0092	Kilcaimin	6.92	10	1	75	5.19
SMP0094	Roscam West and South	2.97	9	0	100	2.97
SMP0095	Seaweed Point	1.44	10	3	25	0.36

SMP code	SMP site	1330 area (ha)	Number of assessed criteria	Number of failed criteria	% Favourable condition	Favourable area (ha)
SMP0096	Barna	2.40	10	0	100	2.40
SMP0098	Teeranea	1.70	9	2	75	1.28
SMP0099	Lettermullan West	1.01	9	3	25	0.25
SMP0100	Lettermore South	3.02	9	1	75	2.26
SMP0101	Bealadangain	2.32	9	1	75	1.74
SMP0102	Kinavarra	9.70	9	1	75	7.28
SMP0110	Doona	8.75	9	3	25	2.19
SMP0111	Aughness	2.94	9	1	75	2.20
SMP0112	Tullaghan Bay	26.66	9	2	75	19.99
SMP0117	Ballysadare Bay	36.59	10	0	100	36.59
SMP0118	Strandhill	1.53	9	0	100	1.53
SMP0119	Cummeen Strand	9.13	10	0	100	9.13
SMP0126	Glen Bay	3.06	9	0	75	2.29
SMP0128	Roshin Point	2.43	10	0	100	2.43
SMP0129	Keadew	8.60	10	1	75	6.45
SMP0130	Dooey	10.15	10	2	75	7.61
SMP0134	Lower Slaney Estuary	0.51	7	0	100	0.51
SMP0135	Broad Lough	16.69	8	2	75	12.52
SMP0136	Tourig Hall	6.80	7	0	100	6.80
SMP0137	Lower Blackwater M Estuary	14.08	7	0	100	14.08
SMP0138	Shannon Airport	9.12	7	1	75	6.84
SMP0139	Rineanna Point	8.15	7	0	100	8.15
SMP0140	Garavoge Estuary	10.28	8	0	100	10.28
SMP0141	Lough Atalia	1.74	8	2	75	1.31
SMP0142	Upper Shannon Estuary	11.49	7	1	75	8.62
SMP0143	Lower Shannon Estuary	43.08	7	0	100	43.08
SMP0144	Islandavanna	94.88	7	1	75	71.16
SMP0145	Poulnasherry Bay	16.26	7	2	50	8.13
SMP0146	Ballinskelligs Bay	6.02	8	2	75	4.51
SMP0147	Derrymore Island	30.97	7	1	75	23.23
SMP0148	Annagh	13.01	7	2	50	6.51
SMP0149	Blennerville	23.42	7	1	75	17.57
SMP0150	Trawbreaga Bay	48.28	8	0	100	48.28
SMP0151	Lunniagh	26.22	8	1	75	19.67
SMP0152	Lettermacaward	5.36	8	1	75	4.02
SMP0153	Inishmacnaghtan	94.91	7	2	75	71.18
SMP0154	Carna, Mweenish Island	22.94	8	4	0	0.00
SMP0155	Fergus Estuary	56.54	7	1	75	42.41
SMP0156	Lower Suir Estuary	19.34	7	0	100	19.34
SMP0157	Castlemaine Harbour	7.65	7	1	75	5.74
	Total	**1094.53**				**825.11**

3.3.3 Future prospects assessment

Before evaluating the Future prospects parameter for 1330, the activities, both positive and negative, recorded for the 1330 habitat during 2017-18 survey were examined. These are shown in Table 29 and Table 30, together with the intensity, percentage of the habitat affected, and total frequency for each of the activities.

A total of 27 negative pressures were recorded for the 1330 habitat. The most frequently recorded pressure was 'A09 Intensive grazing or overgrazing by livestock', which was separated by grazer type in Table 29 due to the differing impact the various grazers can have on saltmarsh habitat. 'I02 Other invasive alien species (other than species of Union concern)', relating to *Spartina anglica*, was the second most frequently recorded pressure. Uncertainty around the exact impact of this species on 1330 makes estimating the intensity and area affected by this pressure difficult. 'L01 Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization)' was the third most frequently recorded pressure with erosion being recorded 31 times (though it may be more widespread, given the difficulty in identifying this pressure in the field). Other frequently recorded pressures included 'F07 Sports, tourism and leisure activities', in the form of tracks created by walking, horse-riding and vehicle driving, 'A36 Agriculture activities not referred to above', which comprises tracks created by agricultural vehicles and 'J04 Mixed source soil pollution and solid waste (excluding discharges)' which included dumping of construction waste, spoil and littering.

Table 29 Negative pressures listed by frequency of occurrence (Freq.) including intensity and % of habitat affected across the 85 sites where 1330 was surveyed. A09 is broken down by grazer due to the importance of the pressure. C=Cattle, S=Sheep, H=Horse, D=Donkey, U=Unknown.

Code	Description	Intensity			% of habitat affected						Freq.
		High	Med	Low	<1	1-25	26-50	51-75	76-99	100	
A09	Intensive grazing or overgrazing by livestock (C)	22	20	7	2	21	9	10	7	-	49
A09	Intensive grazing or overgrazing by livestock (S)	10	7	1	1	5	6	1	3	2	18
A09	Intensive grazing or overgrazing by livestock (H)	4	9	2	4	10	-	-	1	-	15
A09	Intensive grazing or overgrazing by livestock (CS)	2	2	-	-	-	3	1	-	-	4
A09	Intensive grazing or overgrazing by livestock (CH)	-	2	-	-	2	-	-	-	-	2
A09	Intensive grazing or overgrazing by livestock (U)	1	1	-	-	1	-	1	-	-	2
A09	Intensive grazing or overgrazing by livestock (D)	-	-	1	-	1	-	-	-	-	1
A09	Intensive grazing or overgrazing by livestock (HCS)	-	1	-	-	-	-	1	-	-	1
A09	Intensive grazing or overgrazing by livestock (SD)	1	-	-	-	-	-	1	-	-	1
A09	Intensive grazing or overgrazing by livestock (SDC)	-	1	-	-	-	-	1	-	-	1
I02	Other invasive alien species (other than species of Union concern)	2	38	1	2	36	2	2	-	-	41
L01	Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization)	28	1	2	19	9	2	-	-	1	31

Code	Description	Intensity			% of habitat affected						Freq.
		High	Med	Low	<1	1-25	26-50	51-75	76-99	100	
F07	Sports, tourism and leisure activities	14	12	4	18	10	1	1	-	-	30
A36	Agriculture activities not referred to above	26	1	-	16	10	1	-	-	-	27
J04	Mixed source soil pollution and solid waste (excluding discharges)	14	1	11	23	3	-	-	-	-	26
F08	Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures)	10	-	-	7	2	-	1	-	-	10
K02	Drainage	9	-	-	6	2	-	1	-	-	9
A33	Modification of hydrological flow or physical alternation of water bodies for agriculture (excluding development and operation of dams)	8	-	-	7	1	-	-	-	-	8
K05	Physical alteration of water bodies	4	2	-	3	3	-	-	-	-	6
A31	Drainage for use as agricultural land	2	1	-	1	2	-	-	-	-	3
G02	Marine fish and shellfish processing	3	-	-	2	1	-	-	-	-	3
E03	Shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging)	2	-	-	2	-	-	-	-	-	2
F12	Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water	1	-	1	-	1	-	-	-	1	2
I04	Problematic native species	2	-	-	-	-	-	1	1	-	2
L02	Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices)	2	-	-	-	2	-	-	-	-	2
A02	Conversion from one type of agricultural land use to another (excluding drainage and burning)	1	-	-	1	-	-	-	-	-	1
A04	Changes in terrain and surface of agricultural areas	1	-	-	1	-	-	-	-	-	1
A08	Mowing or cutting of grasslands	1	-	-	1	-	-	-	-	-	1
A10	Extensive grazing or undergrazing by livestock	-	1	-	-	-	-	1	-	-	1
A19	Application of natural fertilisers on agricultural land	-	-	1	-	1	-	-	-	-	1
E01	Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels)	1	-	-	1	-	-	-	-	-	1

Code	Description	Intensity			% of habitat affected						Freq.
		High	Med	Low	<1	1-25	26-50	51-75	76-99	100	
F10	Deposition and treatment of waste/garbage from commercial and industrial facilities.	-	-	1	1	-	-	-	-	-	1
F21	Industrial or commercial activities and structures generating marine pollution (excluding marine macro- and micro-particular pollution)	-	-	1	1	-	-	-	-	-	1
K04	Modification of hydrological flow	1	-	-	1	-	-	-	-	-	1
L06	Interspecific relations (competition, predation, parasitism, pathogens)	1	-	-	-	-	-	-	-	1	1
M07	Storm, cyclone	1	-	-	-	1	-	-	-	-	1
	Total	174	100	33	120	123	24	23	12	5	

Three positive impacts were recorded for 1330 habitat in the course of the current survey (Table 30). Recorded under 'F08 Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures)', was a situation where a historical embankment breached, resulting in 1330 forming in the formerly enclosed area. 'L01 Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization)' was recorded where accretion had led to the creation of new 1330 habitat, while 'L02 Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices)' was noted where succession had resulted in 1330 becoming established in an area that was previously 1310.

Table 30 Positive impacts listed by frequency of occurrence (Freq.) including intensity and % of habitat affected across the 85 sites where 1330 was surveyed.

Code	Description	Intensity			% of habitat affected						Freq.
		High	Med	Low	<1	1-25	26-50	51-75	76-99	100	
F08	Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures)	1	-	-	1	-	-	-	-	-	1
L01	Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization)	-	-	1	-	-	1	-	-	-	1
L02	Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices)	-	1	-	-	1	-	-	-	-	1
	Total	1	1	1	1	1	1	-	-	-	

The effects of negative activities were considered in the context of each site's Area and Structure and functions assessment to make an overall Future prospects assessment for each of the 85 1330 sites assessed following the 2017-18 survey (Table 31). Future prospects over the next 12 years (two reporting periods) were assessed.

Table 31 Future prospects (FP) assessment for the 85 sites assessed for 1330 following the 2017-18 survey. S&F=Structure and functions, Fav=Favourable, U-I=Unfavourable-Inadequate, U-B=Unfavourable-Bad.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0009	Tawin Island	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0013	Rosmurrevagh	Good	Bad	U-B	Current pressures, predominantly sheep grazing, unlikely to change and so S&F unlikely to improve without targeted measures.
SMP0017	Caraholly South	Poor	Poor	U-I	Infilling, grazing and vehicle operation at site likely to continue into the future.
SMP0018	Killadangan	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0019	Annagh Island	Good	Bad	U-B	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0023	Bartragh Island	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0025	Rusheens	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0028	Rathmelton	Poor	Bad	U-B	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0029	Green Hill	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0030	Lower Lough Swilly	Poor	Bad	U-B	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0031	Fahan	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0034	Mornington	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0038	Castlebridge	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0039	Ferrycarrig	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0040	Rosslare	Poor	Bad	U-B	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0041	Bannow Island	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0043	Taulaght	Poor	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0045	Gorteens	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0046	Grange	-	-	U-B	No 1330 habitat remains. No indication that it will re-establish in the future.
SMP0047	Fethard	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0049	Killowen	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0050	Rochestown	Good	Good	Fav	No pressure identified that poses significant threat to Area or S&F into the future.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0052	Little Island	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0054	Kinsalebeg	Poor	Good	U-I	No pressure identified that poses significant threat to Structure and functions into the future, but Area loss requires measures to address.
SMP0061	Rock Castle, Bandon Estuary	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0064	Ballybrack	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0066	Barley Cove	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0070	Tahilla	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0071	West Cove	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0072	Rossbehy	Poor	Bad	U-B	On-going works at the site will result in further loss of are, while current grazing level and spread of *Spartina anglica* will continue to impact on 1330 S&F.
SMP0073	Cromane	Poor	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0074	Whitegate, Fybagh	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0078	Carrigafoyle	Poor	Good	U-I	Infilling and dumping likely to continue leading to further loss of 1330 habitat.
SMP0079	Barrigone, Aughinish	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0081	Bunratty	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0082	Shepperton, Fergus Estuary	Good	Bad	U-B	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F, while spread of *Spartina anglica* is likely to continue.
SMP0083	Inishdea, Owenshere	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0084	Killadysert, Inishcorker	Poor	Poor	U-I	Spread of *Spartina anglica, Phragmites australis* and *Bolboschoenus maritimus* poses a threat to Area and S&F into the future.
SMP0085	Knock	Poor	Bad	U-B	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0086	Querrin	Poor	Bad	U-B	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F, as overgrazing will allow further invasion of 1330 by *Spartina anglica.*
SMP0087	Rinevella Bay	Poor	Bad	U-B	Changes to hydrology likely to lead to a loss of Area and S&F into the future. Freshwater species spreading.
SMP0089	Kinvarra-West	Good	Poor	Fav	No pressure identified that poses significant threat to Area or S&F into the future.
SMP0092	Kilcaimin	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0094	Roscam West and South	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0095	Seaweed Point	Poor	Bad	U-B	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0096	Barna	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0098	Teeranea	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0099	Lettermullan West	Poor	Bad	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0100	Lettermore South	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0101	Bealadangan	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0102	Kinavarra	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0110	Doona	Good	Bad	U-B	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0111	Aughness	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0112	Tullaghan Bay	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0117	Ballysadare Bay	Poor	Good	U-I	No pressure identified that poses significant threat to Area or S&F into the future.
SMP0118	Strandhill	Good	Good	Fav	No pressure identified that poses significant threat to Area or S&F into the future.
SMP0119	Cummeen Strand	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0126	Glen Bay	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0128	Roshin Point	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0129	Keadew	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0130	Dooey	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0134	Lower Slaney Estuary	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0135	Broad Lough	Poor	Poor	U-I	Drainage works contributing to Area loss likely to continue into the future. Further impacts on S&F not considered likely.
SMP0136	Tourig Hall	Poor	Good	U-I	No pressure identified that poses significant threat to Area into the future, and no threats to S&F identified.
SMP0137	Lower Blackwater M Estuary	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0138	Shannon Airport	Good	Poor	U-I	No pressure identified that poses significant threat to Area, recently established saltmarsh likely to see S&F improve into future.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0139	Rineanna Point	Good	Poor	U-I	No pressure identified that poses significant threat to Area, high level of grazing likely to impact negatively on S&F into future.
SMP0140	Garavoge Estuary	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0141	Lough Atalia	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0142	Upper Shannon Estuary	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0143	Lower Shannon Estuary	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0144	Islandavanna	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but targeted measures required to improve S&F.
SMP0145	Poulnasherry Bay	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0146	Ballinskelligs Bay	Poor	Poor	U-I	Infilling and drainage likely to continue into the future, resulting in a loss of Area and targeted measures required to improve S&F.
SMP0147	Derrymore Island	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0148	Annagh	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0149	Blennerville	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0150	Trawbreaga Bay	Poor	Good	U-I	Infilling likely to continue into the future, resulting in a loss of Area, no significant threat to S&F identified.
SMP0151	Lunniagh	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0152	Lettermacaward	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0153	Inishmacnaghtan	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0154	Carna, Mweenish Island	Good	Bad	U-B	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0155	Fergus Estuary	Good	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.
SMP0156	River Suir Estuary	Good	Good	Fav	No pressure identified that poses significant threat to Area or S&F.
SMP0157	Castlemaine Harbour	Poor	Poor	U-I	No pressure identified that poses significant threat to Area into the future, but targeted measures required to improve S&F.

3.3.4 Overall conservation assessment (site level)

The assessments of the individual parameters at each site were combined according to the evaluation matrix in Table 4 to obtain the Overall conservation assessment for the 1330 habitat at each site. This resulted in 16 sites (19%) receiving an Overall conservation assessment of Favourable, 54 sites (63%) receiving an Unfavourable-Inadequate assessment, and 15 sites (18%) receiving an Unfavourable-Bad assessment (Table 32).

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0009	Tawin Island	Fav	Fav	Fav	Favourable
SMP0013	Rosmurrevagh	Fav	U-B	U-B	Unfavourable-Bad
SMP0017	Caraholly South	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0018	Killadangan	Fav	U-I	U-I	Unfavourable-Inadequate

Table 32 Results of the Overall conservation assessment for the 85 sites that supported 1330 habitat when all three parameters were assessed for the current reporting period. S&F=Structure and functions, FP=Future prospects, Fav=Favourable, U-I=Unfavourable-Inadequate, U-B=Unfavourable-Bad.

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0009	Tawin Island	Fav	Fav	Fav	Favourable
SMP0013	Rosmurrevagh	Fav	U-B	U-B	Unfavourable-Bad
SMP0017	Caraholly South	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0018	Killadangan	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0019	Annagh Island	Fav	U-B	U-B	Unfavourable-Bad
SMP0023	Bartragh Island	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0025	Rusheens	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0028	Rathmelton	U-I	U-B	U-B	Unfavourable-Bad
SMP0029	Green Hill	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0030	Lower Lough Swilly	U-I	U-B	U-B	Unfavourable-Bad
SMP0031	Fahan	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0034	Mornington	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0038	Castlebridge	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0039	Ferrycarrig	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0040	Rosslare	U-I	U-B	U-B	Unfavourable-Bad
SMP0041	Bannow Island	Fav	Fav	Fav	Favourable
SMP0043	Taulaght	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0045	Gorteens	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0046*	Grange	-	-	U-B	Unfavourable-Bad
SMP0047	Fethard	Fav	Fav	Fav	Favourable
SMP0049	Killowen	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0050	Rochestown	Fav	Fav	Fav	Favourable
SMP0052	Little Island	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0054	Kinsalebeg	U-I	Fav	U-I	Unfavourable-Inadequate
SMP0061	Rock Castle, Bandon Estuary	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0064	Ballybrack	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0066	Barley Cove	Fav	U-I	U-I	Unfavourable-Inadequate

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0070	Tahilla	Fav	Fav	Fav	Favourable
SMP0071	West Cove	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0072	Rossbehy	U-I	U-B	U-B	Unfavourable-Bad
SMP0073	Cromane	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0074	Whitegate, Fybagh	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0078	Carrigafoyle	U-I	Fav	U-I	Unfavourable-Inadequate
SMP0079	Barrigone, Aughinish	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0081	Bunratty	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0082	Shepperton, Fergus Estuary	Fav	U-B	U-B	Unfavourable-Bad
SMP0083	Inishdea, Owenshere	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0084	Killadysert, Inishcorker	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0085	Knock	U-I	U-B	U-B	Unfavourable-Bad
SMP0086	Querrin	U-I	U-B	U-B	Unfavourable-Bad
SMP0087	Rinevella Bay	Fav	U-I	U-B	Unfavourable-Bad
SMP0089	Kinvarra-West	Fav	Fav	Fav	Favourable
SMP0092	Kilcaimin	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0094	Roscam West and South	Fav	Fav	Fav	Favourable
SMP0095	Seaweed Point	U-I	U-B	U-B	Unfavourable-Bad
SMP0096	Barna	Fav	Fav	Fav	Favourable
SMP0098	Teeranea	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0099	Lettermullan West	U-I	U-B	U-I	Unfavourable-Bad
SMP0100	Lettermore South	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0101	Bealadangan	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0102	Kinavarra	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0110	Doona	Fav	U-B	U-B	Unfavourable-Bad
SMP0111	Aughness	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0112	Tullaghan Bay	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0117	Ballysadare Bay	U-I	Fav	U-I	Unfavourable-Inadequate
SMP0118	Strandhill	Fav	Fav	Fav	Favourable
SMP0119	Cummeen Strand	Fav	Fav	Fav	Favourable
SMP0126	Glen Bay	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0128	Roshin Point	Fav	Fav	Fav	Favourable
SMP0129	Keadew	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0130	Dooey	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0134	Lower Slaney Estuary	Fav	Fav	Fav	Favourable
SMP0135	Broad Lough	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0136	Tourig Hall	U-I	Fav	U-I	Unfavourable-Inadequate
SMP0137	Lower Blackwater M Estuary	Fav	Fav	Fav	Favourable
SMP0138	Shannon Airport	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0139	Rineanna Point	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0140	Garavoge Estuary	Fav	Fav	Fav	Favourable
SMP0141	Lough Atalia	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0142	Upper Shannon Estuary	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0143	Lower Shannon Estuary	Fav	Fav	Fav	Favourable
SMP0144	Islandavanna	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0145	Poulnasherry Bay	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0146	Ballinskelligs Bay	U-I	U-I	U-I	Unfavourable-Inadequate

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0147	Derrymore Island	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0148	Annagh	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0149	Blennerville	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0150	Trawbreaga Bay	U-I	Fav	U-I	Unfavourable-Inadequate
SMP0151	Lunniagh	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0152	Lettermacaward	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0153	Inishmacnaghtan	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0154	Carna, Mweenish Island	Fav	U-B	U-B	Unfavourable-Bad
SMP0155	Fergus Estuary	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0156	Lower Suir Estuary	Fav	Fav	Fav	Favourable
SMP0157	Castlemaine Harbour	U-I	U-I	U-I	Unfavourable-Inadequate

* Grange was not assessed for Area or Structure and functions, as no 1330 habitat remained

A direct comparison between the SMP and the current survey is difficult due to the changes to the survey and Structure and functions assessment methodologies. Of the 61 sites for which results are available for both the SMP and the current survey, 28 have remained unchanged, 15 have deteriorated and 18 have improved. The change to the survey and assessment methodologies between the SMP and the current survey make direct comparisons of the results difficult, as the monitored parameters are no longer the same.

3.3.5 Overall conservation assessment (national)

Following EU guidance (DG Environment, 2017), and using the data collected during the current survey, as well as other sources (McCorry, 2007; McCorry & Ryle, 2009; Perrin, 2018b), the following national assessment was made for Area, Structure and functions, and the Future prospects of the Area, and Structure and functions parameters for 1330:

Area:

- The short-term trend direction of Area is assessed as Decreasing, as NPWS (2013) reported a loss in area of 0.4-0.5% due to anthropogenic impacts during the last reporting period, while for the current reporting period a loss of 0.4% of the total surveyed area was recorded
- The current Area is <10 % less than the Favourable Reference Area (FRA)
- The current conservation status of Area is therefore Unfavourable-Inadequate
- The short-term future trend (i.e. over the next 12 years) of Area is assessed as Negative as no conservation measures have been identified to counteract the listed pressures and return the habitat to the FRA
- The Future prospects of Area is therefore Poor

Structure and functions:

- The short-term trend direction of Structure and functions is Stable for habitat that is in Good condition
- The current Structure and functions is assessed as 77% of the habitat in Good condition, which is above the 75% threshold for Unfavourable-Bad.
- The current conservation status of Structure and functions is therefore Unfavourable-Inadequate.
- The short-term future trend of Structure and functions is assessed as Stable, as the percentage of 1330 habitat in Good condition has remained within the range stated for the previous reporting period.
- The Future prospects of Structure and functions is therefore Poor.

The parameters required to assess the national Future prospects for 1330 in Ireland are summarised in Table 33. The assessments of the individual parameters of Area, and Structure and functions were combined according to the evaluation matrix in Table 4 to obtain the national Future prospects assessment for 1330 of Unfavourable-Inadequate.

Table 33 National Future prospects assessment for Area, and Structure and functions for 1330 for the current reporting period. FP=Future prospects.

Area parameter			Structure and functions parameter		
Current conservation status	**Short-term (12yrs) future trend**	**FP**	**Current conservation status**	**Short-term (12yrs) future trend**	**FP**
Unfavourable-Inadequate	Negative	Poor	Unfavourable-Inadequate	Stable	Poor

The assessments of the individual parameters of Area, Structure and functions, and Future prospects were combined according to the evaluation matrix in Table 4 to obtain the national Overall conservation assessment for 1330: Unfavourable-Inadequate (deteriorating).

3.4 1410 Mediterranean salt meadows

3.4.1 Area assessment

Because of the differences in mapping methods employed by the baseline survey and the 2017-18 survey, it was not possible to compare habitat areas between the two monitoring periods directly. This Area assessment, therefore, is based on losses that were observed by surveyors in the course of the survey or from aerial/satellite imagery analysis, rather than losses detected by comparing areas mapped during the two surveys.

A total of 361 ha of 1410 habitat was recorded in the course of the survey (Table 34). This represents 38% of the mapped 1410 habitat in Ireland. Of the national area of 1410, 82% (788 ha) is within SACs and the habitat is listed as a QI for 76% (596 ha) of this area. A total of 92% of the 1410 area surveyed during the current project was within an SAC.

Table 34 Area assessments of 1410 habitat at saltmarsh sites surveyed in 2017-18. All areas given as hectares (ha). % Loss = Percentage area loss per annum (10 years)

Site code	Site name	Area 2006-2009	Area 2017	Lost since 2008	% Loss	Area assessment
SMP0009	Tawin Island	1.53	2.709	0	0	Favourable
SMP0017	Caraholly South	0	0.135	0	0	Favourable
SMP0018	Killadangan	4.57	3.498	0	0	Favourable
SMP0019	Annagh Island	4.46	4.038	0	0	Favourable
SMP0023	Bartragh Island	0.01	0.127	0	0	Favourable
SMP0025	Rusheens	2.46	1.605	0	0	Favourable
SMP0028	Rathmelton	0.53	0.626	0	0	Favourable
SMP0030	Lower Lough Swilly	0	0.005	0	0	Favourable
SMP0031	Fahan	0	0.040	0	0	Favourable

Site code	Site name	Area 2006-2009	Area 2017	Lost since 2008	% Loss	Area assessment
SMP0034	Mornington	0	0.071	0	0	Favourable
SMP0038	Castlebridge	23.391	12.096	11.295	4.83	Unfavourable-Bad
SMP0039	Ferrycarrig	0.06	0.060	0	0	Favourable
SMP0040	Rosslare	0.426	0.192	0	0	Favourable
SMP0041	Bannow Island	0	0.479	0	0	Favourable
SMP0043	Taulaght	0.491	0.475	0	0	Favourable
SMP0045	Gorteens	0.785	0.910	0	0	Favourable
SMP0046*	Grange	0.04	0	0	0	Not assessed
SMP0047	Fethard	0	0.014	0	0	Favourable
SMP0050	Rochestown	0.04	0.106	0	0	Favourable
SMP0054	Kinsalebeg	1.591	0.875	0	0	Favourable
SMP0061	Rock Castle, Bandon Estuary	5.044	3.035	0	0	Favourable
SMP0064	Ballybrack	0.426	0.375	0	0	Favourable
SMP0066	Barley Cove	0.108	0.078	0	0	Favourable
SMP0070	Tahilla	2.066	1.927	0	0	Favourable
SMP0071	West Cove	1.952	2.060	0	0	Favourable
SMP0072	Rossbehy	16.096	9.661	2.565	2.10	Unfavourable-Bad
SMP0073	Cromane	29.315	21.894	0.277	0.125	Unfavourable-Inadequate
SMP0074	Whitegate, Fybagh	2.605	1.861	0	0	Favourable
SMP0075**	Inch	29.112	2.204	0	0	Not assessed
SMP0078	Carrigafoyle	4.559	4.761	0	0	Favourable
SMP0079	Barrigone, Aughinish	2.41	1.706	0	0	Favourable
SMP0081	Bunratty	0.865	1.596	0	0	Favourable
SMP0082	Shepperton, Fergus Estuary	0	0.004	0	0	Favourable
SMP0083	Inishdea, Owenshere	11.553	12.379	0	0	Favourable
SMP0084	Killadysert, Inishcorker	0.709	0.996	0	0	Favourable
SMP0085	Knock	0.144	0.097	0	0	Favourable
SMP0086	Querrin	0.008	0.011	0	0	Favourable
SMP0087	Rinevella Bay	2.45	3.371	0	0	Favourable
SMP0092	Kilcaimin	0.503	0.175	0	0	Favourable
SMP0095	Seaweed Point	0.948	0.786	0	0	Favourable
SMP0096	Barna	0.418	0.364	0	0	Favourable
SMP0098	Teeranea	0.653	0.615	0	0	Favourable
SMP0099	Lettermullan West	2.011	1.107	0	0	Favourable
SMP0100	Lettermore South	0.463	0.474	0	0	Favourable
SMP0101	Bealadangan	0.285	0.451	0	0	Favourable
SMP0102	Kinavarra	37.878	30.087	0.008	0.003	Unfavourable-Inadequate
SMP0110	Doona	0.124	0.258	0	0	Favourable
SMP0111	Aughness	0.178	0.331	0	0	Favourable
SMP0112	Tullaghan Bay	29.572	20.521	0	0	Favourable
SMP0117	Ballysadare Bay	34.911	36.301	0	0	Favourable
SMP0119	Cummeen Strand	2.309	2.136	0	0	Favourable
SMP0126	Glen Bay	12.6	9.463	0	0	Favourable
SMP0128	Roshin Point	4.76	4.509	0	0	Favourable

Site code	Site name	Area 2006-2009	Area 2017	Lost since 2008	% Loss	Area assessment
SMP0129	Keadew	0.089	0.474	0	0	Favourable
SMP0130	Dooey	0.025	0.187	0	0	Favourable
SMP0134	Lower Slaney Estuary	NA	0.007	0	0	Favourable
SMP0135	Broad Lough	NA	5.166	0	0	Favourable
SMP0136	Tourig Hall	NA	0.001	0	0	Favourable
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	NA	3.319	0	0	Favourable
SMP0139	Rineanna Point	NA	0.757	0	0	Favourable
SMP0140	Garavoge Estuary	NA	1.642	0	0	Favourable
SMP0141	Lough Atalia	NA	6.291	0	0	Favourable
SMP0142	Upper Shannon Estuary	NA	1.097	0	0	Favourable
SMP0143	Lower Shannon Estuary	NA	2.716	0	0	Favourable
SMP0144	Islandavanna	NA	0.002	0	0	Favourable
SMP0145	Poulnasherry Bay	NA	13.757	0.193	0.139	Unfavourable-Inadequate
SMP0146	Ballinskelligs Bay	NA	17.853	0.035	0.020	Unfavourable-Inadequate
SMP0147	Derrymore Island	NA	31.404	0	0	Favourable
SMP0148	Annagh	NA	3.723	0	0	Favourable
SMP0149	Blennerville	NA	0.058	0	0	Favourable
SMP0150	Trawbreaga Bay	NA	11.909	0.306	0.251	Unfavourable-Inadequate
SMP0151	Lunniagh	NA	3.322	0	0	Favourable
SMP0152	Lettermacaward	NA	4.035	0	0	Favourable
SMP0153	Inishmacnaghtan	NA	3.914	0	0	Favourable
SMP0154	Carna, Mweenish Island	NA	5.735	0	0	Favourable
SMP0155	Fergus Estuary	NA	6.827	0	0	Favourable
SMP0157	Castlemaine Harbour	NA	32.763	0.779	0.232	Unfavourable-Inadequate
	Total	**277.53**	**360.61**	**15.458**		

* 1410 lost due to natural processes and therefore not assessed

** Large areas of 1410 at Inch SMP0075 could not be accessed due to issues with permission

Of the 77 sites surveyed that supported 1410 in either the current survey period or the SMP, no anthropogenic area loss was recorded at 90% (69 sites) of sites. Across the remaining 10% (8 sites) of sites, anthropogenic area loss had occurred that resulted in the total loss of 15.46 ha of 1410 habitat. This loss represents 4.11% of the area of 1410 surveyed in 2017-18. The losses mostly related to the succession of 1410 to swamp due to undergrazing, infilling/reclamation for a range of uses including agriculture, roads, and buildings, and extraction of saltmarsh material for use in embankment repairs. The single largest lost in terms of area and percentage of 1410 habitat present occurred at Castlebridge (SMP0038), Co. Wexford. At this site, areas of 1410 had become invaded by *Phragmites australis*, transforming the habitat to swamp. This succession has been attributed to the removal of grazers from the site, though other factors may also be at play including waterbody nutrient levels and the inundation regime. The second largest loss of 1410 habitat occurred at Rossbehy (SMP0072), Co. Kerry, where areas of saltmarsh behind historical embankments had been converted to agricultural land through infilling and other works. Some 1410 habitat was also lost to infilling for residential development at this site.

As part of the Article 17 reporting, the Area parameter was assessed at each site utilising the criteria listed in Table 4. The 68 sites that continued to support 1410 with no recorded anthropogenic area loss, or with a gain in area, were assessed as Favourable. The six sites that lost area, but at a rate that was not greater than 1% per annum, were assessed as Unfavourable-Inadequate. The two sites where the rate of

loss was greater than 1% per annum were assessed as Unfavourable-Bad. The remaining site (Grange) where 1410 was recorded in the baseline survey, but not in the 2017-18 survey and had no evidence of anthropogenic activities causing the loss was considered 'Not assessed'.

Of the 15.46 ha of 1410 lost to anthropogenic activities, 90% (13.99ha) was lost from inside the SAC network. Of this 13.99ha, 98% was from five SACs that listed 1410 as a QI, while the remaining 2% was from one SAC that did not list 1410 as a QI (Table 35).

Table 35 Area loss of 1410 from sites surveyed within the SAC network.

SAC code	SAC name	QI	SMP site code	Area loss (ha)
000335	Ballinskelligs Bay And Inny Estuary SAC	Yes	146	0.035
000343	Castlemaine Harbour SAC	Yes	72, 73, 157	2.155
000781	Slaney River Valley SAC	Yes	38	11.295
002012	North Inishowen Coast SAC	No	150	0.306
002111	Kilkieran Bay And Islands SAC	Yes	102	0.004
002165	Lower River Shannon SAC	Yes	145	0.185
			Total	**13.98**

3.4.2 Structure and functions assessment

The assessment of Structure and functions of sites where 1410 was recorded in 2017-18 was carried out using the criteria set out in Table 7. A summary of the failures by criterion is presented in Table 36. Two sites were not assessed: Inch (SMP0075) and Grange (SMP0046). Inch was not assessed as not enough of the site could be surveyed due to issues with obtaining permission, while all 1410 habitat at Grange had been lost to erosion. Not all parameters could be assessed for every site. For example, 'Vegetation composition: negative species (habitat level)', which addresses the introduction of a *Spartina anglica* to a site could not be assessed where the species was already known from a site.

The criterion that most frequently failed was 'Vegetation structure: disturbed ground (stop level)', which related to the percentage area of plots disturbed, usually due to trampling by livestock, with 11 fails. The second most frequently failed criterion, with six fails, was 'Vegetation composition: typical species (habitat level)'. The failures were due to an insufficient number of species in List B (Table 9) being present across the plots recorded at a given site. No site failed for 'Vegetation composition: negative species (habitat level)', as *Spartina anglica* was not recorded in any site from which it was not already known.

Table 36 Failure rates of criteria used to assess Structure and functions for 1410.

Assessment criterion	Number of sites assessed	Number of sites that failed	% of assessed sites that failed
Physical structure: hydrology (habitat level)	74	2	3
Vegetation structure: disturbed ground (stop level)	60	11	18
Vegetation structure: transition (habitat level)	74	1	1
Vegetation structure: typical species (habitat level) min. 6 spp.	60	6	10
Vegetation structure: typical species (habitat level) 2 spp. >25% plots	60	2	3
Vegetation composition: negative species (stop level)	39	3	8
Vegetation composition: negative species (habitat level)	37	0	0
Other negative indicators (stop level)	60	2	3
Indicators of local distinctiveness (habitat level)	3	1	33

The Structure and functions of each site was assessed based on the number of failed criteria (Table 7) and these results are presented in Table 37. Of the 75 sites assessed, 51 (68%) were Favourable, 23 (31%) were Unfavourable-Inadequate and one site (1%) was Unfavourable-Bad.

Table 37 Structure and functions assessments for sites that supported 1410.

SMP code	SMP site	Number of criteria assessed	Number of criteria failed	Structure and functions assessment
SMP0009	Tawin Island	8	0	Favourable
SMP0017	Caraholly South	3	0	Favourable
SMP0018	Killadangan	7	0	Favourable
SMP0019	Annagh Island	7	0	Favourable
SMP0023	Bartragh Island	3	0	Favourable
SMP0025	Rusheens	8	1	Unfavourable-Inadequate
SMP0028	Rathmelton	8	0	Favourable
SMP0030	Lower Lough Swilly	2	0	Favourable
SMP0031	Fahan	3	0	Favourable
SMP0034	Mornington	2	0	Favourable
SMP0038	Castlebridge	9	1	Unfavourable-Inadequate
SMP0039	Ferrycarrig	8	2	Unfavourable-Inadequate
SMP0040	Rosslare	9	1	Unfavourable-Inadequate
SMP0041	Bannow Island	6	0	Favourable
SMP0043	Taulaght	7	0	Favourable
SMP0045	Gorteens	2	0	Favourable

SMP code	SMP site	Number of criteria assessed	Number of criteria failed	Structure and functions assessment
SMP0046	Grange	0	0	Not assessed
SMP0047	Fethard	2	0	Favourable
SMP0050	Rochestown	7	0	Favourable
SMP0054	Kinsalebeg	7	0	Favourable
SMP0061	Rock Castle, Bandon Estuary	8	0	Favourable
SMP0064	Ballybrack	7	1	Unfavourable-Inadequate
SMP0066	Barley Cove	9	1	Unfavourable-Inadequate
SMP0070	Tahilla	8	0	Favourable
SMP0071	West Cove	8	0	Favourable
SMP0072	Rossbehy	7	3	Unfavourable-Bad
SMP0073	Cromane	7	0	Favourable
SMP0074	Whitegate, Fybagh	7	1	Unfavourable-Inadequate
SMP0078	Carrigafoyle	7	0	Favourable
SMP0079	Barrigone, Aughinish	7	1	Unfavourable-Inadequate
SMP0081	Bunratty	7	0	Favourable
SMP0082	Shepperton, Fergus Estuary	2	0	Favourable
SMP0083	Inishdea, Owenshere	7	1	Unfavourable-Inadequate
SMP0084	Killadysert, Inishcorker	7	0	Favourable
SMP0085	Knock	7	1	Unfavourable-Inadequate
SMP0086	Querrin	2	0	Favourable
SMP0087	Rinevella Bay	7	0	Favourable
SMP0092	Kilcaimin	3	0	Favourable
SMP0095	Seaweed Point	8	0	Favourable
SMP0096	Barna	8	0	Favourable
SMP0098	Teeranea	8	1	Unfavourable-Inadequate
SMP0099	Lettermullan West	8	0	Favourable
SMP0100	Lettermore South	8	0	Favourable
SMP0101	Bealadangan	8	1	Unfavourable-Inadequate
SMP0102	Kinavarra	8	0	Favourable
SMP0110	Doona	3	0	Favourable
SMP0111	Aughness	8	1	Unfavourable-Inadequate
SMP0112	Tullaghan Bay	8	1	Unfavourable-Inadequate
SMP0117	Ballysadare Bay	8	0	Favourable
SMP0119	Cummeen Strand	8	0	Favourable
SMP0126	Glen Bay	8	1	Unfavourable-Inadequate
SMP0128	Roshin Point	8	0	Favourable
SMP0129	Keadew	3	0	Favourable
SMP0130	Dooey	3	0	Favourable
SMP0134	Lower Slaney Estuary	6	1	Unfavourable-Inadequate
SMP0135	Broad Lough	7	1	Unfavourable-Inadequate
SMP0136	Tourig Hall	2	0	Favourable
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	6	0	Favourable
SMP0139	Rineanna Point	4	0	Favourable
SMP0140	Garavoge Estuary	7	0	Favourable
SMP0141	Lough Atalia	7	0	Favourable

SMP code	SMP site	Number of criteria assessed	Number of criteria failed	Structure and functions assessment
SMP0142	Upper Shannon Estuary	6	0	Favourable
SMP0143	Lower Shannon Estuary	6	1	Unfavourable-Inadequate
SMP0144	Islandavanna	2	0	Favourable
SMP0145	Poulnasherry Bay	6	0	Favourable
SMP0146	Ballinskelligs Bay	6	1	Unfavourable-Inadequate
SMP0147	Derrymore Island	6	0	Favourable
SMP0148	Annagh	6	0	Favourable
SMP0149	Blennerville	6	2	Unfavourable-Inadequate
SMP0150	Trawbreaga Bay	7	0	Favourable
SMP0151	Lunniagh	7	1	Unfavourable-Inadequate
SMP0152	Lettermacaward	7	0	Favourable
SMP0153	Inishmacnaghtan	6	1	Unfavourable-Inadequate
SMP0154	Carna-Mweenish	7	0	Favourable
SMP0155	Fergus Estuary	6	1	Unfavourable-Inadequate
SMP0157	Castlemaine Harbour	6	0	Favourable

* Grange was not assessed for Structure and functions, as no 1410 habitat remained

Of the 23 sites that were assessed as Unfavourable-Inadequate, 17 were in SACs with 1410 listed as a QI, three were in SACs without 1410 listed as a QI and the remaining three were outside the SAC network (Table 38). The site that was assessed as Unfavourable-Bad was in an SAC where 1410 was listed as a QI. Of the 51 Favourable sites, 36 were within SACs with 1410 listed as a QI, 13 were in SACs without 1410 listed as a QI and the remaining two were outside the SAC network.

Table 38 Structure and functions assessments for sites that supported 1410 located within SACs.

SMP code	SAC code	SAC name	QI	Structure and functions assessment
SMP0009	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0017	001482	Clew Bay Complex SAC	No	Favourable
SMP0018	001482	Clew Bay Complex SAC	No	Favourable
SMP0019	001482	Clew Bay Complex SAC	No	Favourable
SMP0023	000458	Killala Bay/Moy Estuary SAC	No	Favourable
SMP0025	000458	Killala Bay/Moy Estuary SAC	No	Unfavourable-Inadequate
SMP0028	002287	Lough Swilly SAC	No	Favourable
SMP0030	002287	Lough Swilly SAC	No	Favourable
SMP0031	002287	Lough Swilly SAC	No	Favourable
SMP0034	001957	Boyne Coast And Estuary SAC	No	Favourable
SMP0038	000781	Slaney River Valley SAC	Yes	Unfavourable-Inadequate
SMP0039	000781	Slaney River Valley SAC	Yes	Unfavourable-Inadequate
SMP0041	000697	Bannow Bay SAC	Yes	Favourable
SMP0043	000697	Bannow Bay SAC	Yes	Favourable
SMP0045	000697	Bannow Bay SAC	Yes	Favourable
SMP0046	000697	Bannow Bay SAC	Yes	Not assessed
SMP0047	000697	Bannow Bay SAC	Yes	Favourable
SMP0050	002162	River Barrow And River Nore SAC	Yes	Favourable

SMP code	SAC code	SAC name	QI	Structure and functions assessment
SMP0054	002170	Blackwater River (Cork/Waterford) SAC	Yes	Favourable
SMP0064	000101	Roaringwater Bay And Islands SAC	No	Unfavourable-Inadequate
SMP0066	001040	Barley Cove To Ballyrisode Point SAC	Yes	Unfavourable-Inadequate
SMP0070	002158	Kenmare River SAC	Yes	Favourable
SMP0071	002158	Kenmare River SAC	Yes	Favourable
SMP0072	000343	Castlemaine Harbour SAC	Yes	Unfavourable-Bad
SMP0073	000343	Castlemaine Harbour SAC	Yes	Favourable
SMP0074	000343	Castlemaine Harbour SAC	Yes	Unfavourable-Inadequate
SMP0078	000343	Castlemaine Harbour SAC	Yes	Favourable
SMP0079	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0081	002165	Lower River Shannon SAC	Yes	Favourable
SMP0082	002165	Lower River Shannon SAC	Yes	Favourable
SMP0083	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0084	002165	Lower River Shannon SAC	Yes	Favourable
SMP0085	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0086	002165	Lower River Shannon SAC	Yes	Favourable
SMP0087	002165	Lower River Shannon SAC	Yes	Favourable
SMP0092	002165	Lower River Shannon SAC	Yes	Favourable
SMP0095	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0096	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0098	002111	Kilkieran Bay And Islands SAC	Yes	Unfavourable-Inadequate
SMP0099	002111	Kilkieran Bay And Islands SAC	Yes	Favourable
SMP0100	002111	Kilkieran Bay And Islands SAC	Yes	Favourable
SMP0101	002111	Kilkieran Bay And Islands SAC	Yes	Unfavourable-Inadequate
SMP0102	002111	Kilkieran Bay And Islands SAC	Yes	Favourable
SMP0117	000622	Ballysadare Bay SAC	No	Favourable
SMP0119	000627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	No	Favourable
SMP0126	000190	Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	No	Unfavourable-Inadequate
SMP0128	000197	West Of Ardara/Maas Road SAC	Yes	Favourable
SMP0129	001141	Gweedore Bay And Islands SAC	Yes	Favourable
SMP0130	001090	Ballyness Bay SAC	No	Favourable
SMP0134	000781	Slaney River Valley SAC	Yes	Unfavourable-Inadequate
SMP0135	002249	The Murrough Wetlands SAC	Yes	Unfavourable-Inadequate
SMP0136	002170	Blackwater River (Cork/Waterford) SAC	Yes	Favourable
SMP0137	002170	Blackwater River (Cork/Waterford) SAC	Yes	Favourable
SMP0139	002165	Lower River Shannon SAC	Yes	Favourable
SMP0140	000627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	No	Favourable
SMP0141	000268	Galway Bay Complex SAC	Yes	Favourable
SMP0142	002165	Lower River Shannon SAC	Yes	Favourable
SMP0143	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0144	002165	Lower River Shannon SAC	Yes	Favourable
SMP0145	002165	Lower River Shannon SAC	Yes	Favourable
SMP0146	000335	Ballinskelligs Bay And Inny Estuary SAC	Yes	Unfavourable-Inadequate

SMP code	SAC code	SAC name	QI	Structure and functions assessment
SMP0147	002070	Tralee Bay And Magharees Peninsula, West To Cloghane SAC	Yes	Favourable
SMP0148	002070	Tralee Bay And Magharees Peninsula, West To Cloghane SAC	Yes	Favourable
SMP0149	002070	Tralee Bay And Magharees Peninsula, West To Cloghane SAC	Yes	Unfavourable-Inadequate
SMP0150	002012	North Inishowen Coast SAC	No	Favourable
SMP0151	001141	Gweedore Bay And Islands SAC	Yes	Unfavourable-Inadequate
SMP0152	000197	West Of Ardara/Maas Road SAC	Yes	Favourable
SMP0153	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0154	002111	Kilkieran Bay And Islands SAC	Yes	Favourable
SMP0155	002165	Lower River Shannon SAC	Yes	Unfavourable-Inadequate
SMP0157	000343	Castlemaine Harbour SAC	Yes	Favourable

The approximate area of 1410 in Favourable condition at each site was calculated following the scheme set out in Table 10 and the results are presented in Table 39. Overall, an area of 322.59ha of 1410 was assessed as being in Favourable condition, which represents 90% of the habitat recorded in the current survey that was assessed for Structure and functions.

Table 39 The estimated area of 1410 where Structure and functions was deemed Favourable.

SMP code	SMP site	1410 area (ha)	Number of assessed criteria	Number of failed criteria	% Favourable condition	Favourable area (ha)
SMP0009	Tawin Island	2.709	8	0	100	2.709
SMP0017	Caraholly South	0.135	3	0	100	0.135
SMP0018	Killadangan	3.498	7	0	100	3.498
SMP0019	Annagh Island	4.038	7	0	100	4.038
SMP0023	Bartragh Island	0.127	3	0	100	0.127
SMP0025	Rusheens	1.605	8	1	75	1.204
SMP0028	Rathmelton	0.626	8	0	100	0.626
SMP0030	Lower Lough Swilly	0.005	2	0	100	0.005
SMP0031	Fahan	0.040	3	0	100	0.040
SMP0034	Mornington	0.071	2	0	100	0.071
SMP0038	Castlebridge	12.096	9	1	75	9.072
SMP0039	Ferrycarrig	0.060	8	2	75	0.045
SMP0040	Rosslare	0.192	9	1	75	0.144
SMP0041	Bannow Island	0.479	6	0	100	0.479
SMP0043	Taulaght	0.475	7	0	100	0.475
SMP0045	Gorteens	0.910	2	0	100	0.910
SMP0047	Fethard	0.014	2	0	100	0.014
SMP0050	Rochestown	0.106	7	0	100	0.106
SMP0054	Kinsalebeg	0.875	7	0	100	0.875
SMP0061	Rock Castle, Bandon	3.035	8	0	100	3.035
SMP0064	Ballybrack	0.375	7	1	75	0.281
SMP0066	Barley Cove	0.078	9	1	75	0.059

SMP code	SMP site	1410 area (ha)	Number of assessed criteria	Number of failed criteria	% Favourable condition	Favourable area (ha)
SMP0070	Tahilla	1.927	8	0	100	1.927
SMP0071	West Cove	2.060	8	0	100	2.060
SMP0072	Rossbehy	9.661	7	3	25	2.415
SMP0073	Cromane	21.894	7	0	100	21.894
SMP0074	Whitegate, Fybagh	1.861	7	1	75	1.396
SMP0078	Carrigafoyle	4.761	7	0	100	4.761
SMP0079	Barrigone, Aughinish	1.706	7	1	75	1.279
SMP0081	Bunratty	1.596	7	0	100	1.596
SMP0082	Shepperton, Fergus Estuary	0.004	2	0	100	0.004
SMP0083	Inishdea, Owenshere	12.379	7	1	75	9.285
SMP0084	Killadysert, Inishcorker	0.996	7	0	100	0.996
SMP0085	Knock	0.097	7	1	75	0.073
SMP0086	Querrin	0.011	2	0	100	0.011
SMP0087	Rinevella Bay	3.371	7	0	100	3.371
SMP0092	Kilcaimin	0.175	3	0	100	0.175
SMP0095	Seaweed Point	0.786	8	0	100	0.786
SMP0096	Barna	0.364	8	0	100	0.364
SMP0098	Teeranea	0.615	8	1	75	0.461
SMP0099	Lettermullan West	1.107	8	0	100	1.107
SMP0100	Lettermore South	0.474	8	0	100	0.474
SMP0101	Bealadangain	0.451	8	1	75	0.339
SMP0102	Kinavarra	30.087	8	0	100	30.087
SMP0110	Doona	0.258	3	0	100	0.258
SMP0111	Aughness	0.331	8	1	75	0.248
SMP0112	Tullaghan Bay	20.521	8	1	75	15.391
SMP0117	Ballysadare Bay	36.301	8	0	100	36.301
SMP0119	Cummeen Strand	2.136	8	0	100	2.136
SMP0126	Glen Bay	9.463	8	1	75	7.097
SMP0128	Roshin Point	4.509	8	0	100	4.509
SMP0129	Keadew	0.474	3	0	100	0.474
SMP0130	Dooey	0.187	3	0	100	0.187
SMP0134	Lower Slaney Estuary	0.007	6	1	75	0.005
SMP0135	Broad Lough	5.166	7	1	75	3.875
SMP0136	Tourig Hall	0.001	2	0	100	0.001
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	3.319	6	0	100	3.319
SMP0139	Rineanna Point	0.757	5	0	100	0.757
SMP0140	Garavoge Estuary	1.642	7	0	100	1.642
SMP0141	Lough Atalia	6.291	7	0	100	6.291
SMP0142	Upper Shannon Estuary	1.097	6	0	100	1.097
SMP0143	Lower Shannon Estuary	2.716	6	1	75	2.037
SMP0144	Islandavanna	0.002	2	0	100	0.002
SMP0145	Poulnasherry Bay	13.757	6	0	100	13.757
SMP0146	Ballinskelligs Bay	17.853	6	1	75	13.390
SMP0147	Derrymore Island	31.404	6	0	100	31.404

SMP code	SMP site	1410 area (ha)	Number of assessed criteria	Number of failed criteria	% Favourable condition	Favourable area (ha)
SMP0148	Annagh	3.723	6	0	100	3.723
SMP0149	Blennerville	0.058	6	2	75	0.043
SMP0150	Trawbreaga Bay	11.909	7	1	75	8.931
SMP0151	Lunniagh	3.322	7	0	100	3.322
SMP0152	Lettermacaward	4.035	7	1	75	3.026
SMP0153	Inishmacnaghtan	3.914	6	1	75	2.936
SMP0154	Carna, Mweenish Island	5.735	7	0	100	5.735
SMP0155	Fergus Estuary	6.827	6	1	75	5.120
SMP0157	Castlemaine Harbour	32.763	6	0	100	32.763
	Total	**358.41**				**322.59**

3.4.3 Future prospects assessment

Before evaluating the Future prospects parameter for 1410, the activities, both positive and negative, recorded for the 1410 habitat during 2017-18 survey were examined. These are shown in Table 40 and Table 41, together with the intensity, percentage of the habitat affected, and total frequency for each of the activities.

A total of 17 negative pressures were recorded for the 1410 habitat. The most frequently recorded pressure was 'A09 Intensive grazing or overgrazing by livestock', which was separated by grazer type in Table 40 due to the differing impact the various grazers can have on saltmarsh habitat. 'L01 Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization)' was the second most frequently recorded pressure with erosion being recorded nine times (though it may be more widespread, given the difficulty in identifying this pressure at small scales). Other frequently recorded pressures included 'A36 Agriculture activities not referred to above', which comprises tracks created by agricultural vehicles, 'J04 Mixed source soil pollution and solid waste (excluding discharges)' which included dumping of construction waste, spoil and littering, and 'K02 Drainage' and 'I02 Other invasive alien species (other than species of Union concern)', which related to the effects of *Spartina anglica.*

Table 40 Negative pressures listed by frequency of occurrence (Freq.) including intensity and % of habitat affected across the 75 sites where 1410 was surveyed. A09 is broken down by grazer due to the importance of the pressure. C=Cattle, S=Sheep, H=Horse, U=Unknown.

Code	Description	Intensity			% of habitat affected						Freq.
		High	Med	Low	<1	1-25	26-50	51-75	76-99	100	
A09	Intensive grazing or overgrazing by livestock (C)	10	16	4	1	9	6	6	7	1	30
A09	Intensive grazing or overgrazing by livestock (S)	4	4	1	2	2	1	-	1	3	9
A09	Intensive grazing or overgrazing by livestock (H)	1	3	1	1	4	-	-	-	-	5
A09	Intensive grazing or overgrazing by livestock (CH)	-	1	1	-	-	2	-	-	-	2

Code	Description	Intensity			% of habitat affected						Freq.
		High	Med	Low	<1	1-25	26-50	51-75	76-99	100	
A09	Intensive grazing or overgrazing by livestock (U)	1	-	-	-	1	-	-	-	-	1
L01	Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization)	7	1	1	5	4	-	-	-	-	9
A36	Agriculture activities not referred to above	4	1	1	2	4	-	-	-	-	6
J04	Mixed source soil pollution and solid waste (excluding discharges)	1	-	3	2	2	-	-	-	-	4
I02	Other invasive alien species (other than species of Union concern)	-	4	-	-	4	-	-	-		4
K02	Drainage	3	-	-	2	1	-	-	-	-	3
K05	Physical alteration of water bodies	1	2		1	2	-	-	-	-	3
E01	Roads, paths, railroads and related infrastructure (e.g. bridges, viaducts, tunnels)	2	-	-	2	-	-	-	-	-	2
F07	Sports, tourism and leisure activities	1	1	-	2	-	-	-	-	-	2
F08	Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures)	2	-	-	2	-	-	-	-	-	2
M07	Storm, cyclone	2	-	-	1	1	-	-	-	-	2
A10	Extensive grazing or undergrazing by livestock	-	1	-	-	-	4	-	-	-	1
A24	Management of waste in agriculture (e.g. temporary holding of solutions like manure storage ponds/lagoons or deposition of waste)	1	-	-	1	-	-	-	-	-	1
A31	Drainage for use as agricultural land	-	1	-	-	1	-	-	-	-	1
A33	Modification of hydrological flow or physical alternation of water bodies for agriculture (excluding development and operation of dams)	1	-	-	-	1	-	-	-	-	1
G02	Marine fish and shellfish processing	1	-	-	1	-	-	-	-	-	1
I02	Other invasive alien species (other than species of Union concern)	-	1	-	-	1	-	-	-	-	1
K04	Modification of hydrological flow	1	-	-	1	-	-	-	-	-	1
	Total	43	35	12	26	36	10	6	8	4	

Two positive impacts were recorded for 1410 habitat in the course of the current survey (Table 41). Cattle grazing that was deemed to be having a positive effect was recorded under 'A09 Intensive grazing or overgrazing by livestock' and 'L02 Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices)' was noted where succession had resulted in 1410 becoming established in an area that was previously 1330. In this case, the effect is positive for 1410, as it results in an increase in area of the habitat, but negative for 1330 as there is a corresponding loss of area for this habitat. Therefore, while it is positive for 1410, the effect could be considered neutral for Annex I saltmarsh habitats overall.

Table 41 Positive impacts listed by frequency of occurrence (Freq.) including intensity and % of habitat affected across the 75 sites where 1410 was recorded.

Code	Description	Intensity			% of habitat affected						Freq.
		High	Med	Low	<1	1-25	26-50	51-75	76-99	100	
A09	Intensive grazing or overgrazing by livestock	1	-	-	-	1	-	-	-	-	1
L02	Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices)	2	-	-	-	2	-	-	-	-	1
	Total	3	-	-	-	3	-	-	-	-	

The effects of negative activities were considered in the context of each site's Area, and Structure and functions assessment to make an overall Future prospects assessment for each of the 76 1410 sites assessed following the 2017-18 survey (Table 42). Future prospects over the next 12 years (two reporting periods) were assessed.

Table 42 Future prospects (FP) assessment for the 76 1410 sites assessed following the 2017-18 survey. S&F=Structure and functions, Fav=Favourable, U-I=Unfavourable-Inadequate, U-B=Unfavourable-Bad.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0009	Tawin Island	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of horse grazing not considered to pose a threat to S&F.
SMP0017	Caraholly South	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0018	Killadangan	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of sheep grazing not considered to pose a threat to S&F.
SMP0019	Annagh Island	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of sheep grazing not considered to pose a threat to S&F.
SMP0023	Bartragh Island	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of sheep grazing not considered to pose a threat to S&F.
SMP0025	Rusheens	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to cattle and sheep grazing management required to improve S&F.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0028	Rathmelton	Good	Good	Fav	Limited erosion identified at the site unlikely to pose a threat to the habitat in the future and no pressure identified that poses a threat to S&F.
SMP0030	Lower Lough Swilly	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0031	Fahan	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0034	Mornington	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0038	Castlebridge	Bad	Poor	U-B	Removal of grazers has resulted in Area loss due to expansion of *Phragmites australis* swamp, which is likely to continue into the future.
SMP0039	Ferrycarrig	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but actions required to improve S&F, such as the reintroduction of grazing.
SMP0040	Rosslare	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to grazing management required to improve S&F.
SMP0041	Bannow Island	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0043	Taulaght	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0045	Gorteens	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0046*	Grange	-	-	U-B	No 1410 habitat left at site due to erosion and unlikely to establish in the near future.
SMP0047	Fethard	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0050	Rochestown	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0054	Kinsalebeg	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle & sheep grazing not considered to pose a threat to S&F.
SMP0061	Rock Castle, Bandon Estuary	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0064	Ballybrack	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to grazing management required to improve S&F.
SMP0066	Barley Cove	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to grazing management required to improve S&F.
SMP0070	Tahilla	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0071	West Cove	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0072	Rossbehy	Bad	Bad	U-B	On-going infilling will result in further loss of Area of habitat and impact on S&F.
SMP0073	Cromane	Poor	Good	U-I	On-going infilling will result in further loss of Area of habitat, but S&F of remaining habitat not likely to be threatened.
SMP0074	Whitegate, Fybagh	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but increasing cover of *Spartina anglica* has impacted on S&F, though is unlikely to impact much more on 1410.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0078	Carrigafoyle	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0079	Barrigone, Aughinish	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but increasing cover of *Spartina anglica* has impacted on S&F, though is unlikely to impact much more on 1410.
SMP0081	Bunratty	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle and horse grazing not considered to pose a threat to S&F.
SMP0082	Shepperton, Fergus Estuary	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0083	Inishdea, Owenshere	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to cattle grazing management required to improve S&F.
SMP0084	Killadysert, Inishcorker	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0085	Knock	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to cattle grazing management required to improve S&F.
SMP0086	Querrin	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0087	Rinevella Bay	Good	Good	Fav	Natural losses to 1410 due to storm activity unlikely to result in significant losses into the future and no other pressures were identified for the habitat at this site.
SMP0092	Kilcaimin	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of sheep grazing not considered to pose a threat to S&F.
SMP0095	Seaweed Point	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0096	Barna	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0098	Teeranea	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to cattle grazing management required to improve S&F.
SMP0099	Lettermullan West	Good	Good	Fav	Natural losses to 1410 due to erosion unlikely to result in significant losses into the future and level of cattle grazing not considered to pose a threat to S&F.
SMP0100	Lettermore South	Good	Good	Fav	Natural losses to 1410 due to erosion unlikely to result in significant losses into the future and level of cattle grazing not considered to pose a threat to S&F
SMP0101	Bealadangan	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to horse grazing management required to improve S&F.
SMP0102	Kinavarra	Poor	Good	U-I	Loss of habitat to road widening once-off and no future threats to Area identified. Level of grazing by cattle, horses and sheep not considered to pose a threat to S&F.
SMP0110	Doona	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0111	Aughness	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to sheep grazing management required to improve S&F.
SMP0112	Tullaghan Bay	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to sheep and cattle grazing management required to improve S&F.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0117	Ballysadare Bay	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle and sheep grazing not considered to pose a threat to S&F.
SMP0119	Cummeen Strand	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle and horse grazing not considered to pose a threat to S&F.
SMP0126	Glen Bay	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to cattle grazing management required to improve S&F.
SMP0128	Roshin Point	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0129	Keadew	Good	Good	Fav	Pressures identified for the site are not likely to lead to a reduction in Area or S&F.
SMP0130	Dooey	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0134	Lower Slaney Estuary	Good	Poor	U-I	No pressure identified that poses significant threat to Area, and U-I for S&F due to low species numbers as the area of habitat is still small. Future trend considered positive as 1410 becomes more established.
SMP0135	Broad Lough	Good	Poor	U-I	No pressure identified that poses significant threat to Area, and no future impacts on S&F identified.
SMP0136	Tourig Hall	Good	Good	Fav	No pressures or threats were identified for the habitat at this site
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of sheep grazing not considered to pose a threat to S&F
SMP0139	Rineanna Point	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0140	Garavoge Estuary	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0141	Lough Atalia	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0142	Upper Shannon Estuary	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle and horse grazing not considered to pose a threat to S&F.
SMP0143	Lower Shannon Estuary	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to cattle grazing management required to improve S&F.
SMP0144	Islandavanna	Good	Good	Fav	No pressures or threats were identified for the habitat at this site.
SMP0145	Poulnasherry Bay	Poor	Good	U-I	On-going infilling will result in further loss of Area of habitat, but S&F of remaining habitat not likely to be threatened.
SMP0146	Ballinskelligs Bay	Poor	Poor	U-I	On-going re-profiling of drains resulting in loss of Area and resulting in U-I S&F likely to continue into the future.
SMP0147	Derrymore Island	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of grazing not considered to pose a threat to S&F.
SMP0148	Annagh	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of grazing not considered to pose a threat to S&F.
SMP0149	Blennerville	Good	Poor	U-I	No pressure identified that poses significant threat to Area, and U-I for S&F due to low species numbers as

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
					the area of habitat is still small. Future trend considered positive as 1410 becomes more established.
SMP0150	Trawbreaga Bay	Poor	Good	U-I	On-going conversion to agricultural land will result in further loss of Area of habitat, but S&F of remaining habitat not likely to be threatened.
SMP0151	Lunniagh	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to cattle and sheep grazing management required to improve S&F.
SMP0152	Lettermacaward	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle grazing not considered to pose a threat to S&F.
SMP0153	Inishmacnaghtan	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to cattle and horse grazing management required to improve S&F.
SMP0154	Carna, Mweenish Island	Good	Good	Fav	No pressure identified that poses significant threat to Area, and level of cattle and horse grazing not considered to pose a threat to S&F.
SMP0155	Fergus Estuary	Good	Poor	U-I	No pressure identified that poses significant threat to Area, but changes to cattle grazing management required to improve S&F.
SMP0157	Castlemaine Harbour	Poor	Good	U-I	No evidence that further conversion of saltmarsh habitat to agricultural land is likely to occur, and level of horse grazing not considered to pose a threat to S&F.

3.4.4 Overall conservation assessment (site level)

The assessments of the individual parameters at each site were combined according to the evaluation matrix in Table 4 to obtain the Overall conservation assessment for the 1410 habitat at each site. This resulted in 46 sites (61%) receiving an Overall conservation assessment of Favourable, 27 sites (36%) receiving an Unfavourable-Inadequate assessment, and 3 sites (4%) receiving an Unfavourable-Bad assessment (Table 43).

Table 43 Results of the Overall conservation assessment for the 75 1410 sites when all three parameters were assessed for the current reporting period. S&F=Structure and functions, FP=Future prospects, Fav=Favourable, U-I=Unfavourable-Inadequate, U-B=Unfavourable-Bad.

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0009	Tawin Island	Fav	Fav	Fav	Favourable
SMP0017	Caraholly South	Fav	Fav	Fav	Favourable
SMP0018	Killadangan	Fav	Fav	Fav	Favourable
SMP0019	Annagh Island	Fav	Fav	Fav	Favourable
SMP0023	Bartragh Island	Fav	Fav	Fav	Favourable
SMP0025	Rusheens	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0028	Rathmelton	Fav	Fav	Fav	Favourable
SMP0030	Lower Lough Swilly	Fav	Fav	Fav	Favourable
SMP0031	Fahan	Fav	Fav	Fav	Favourable
SMP0034	Mornington	Fav	Fav	Fav	Favourable
SMP0038	Castlebridge	U-B	U-I	U-B	Unfavourable-Bad
SMP0039	Ferrycarrig	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0040	Rosslare	Fav	U-I	U-I	Unfavourable-Inadequate

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0041	Bannow Island	Fav	Fav	Fav	Favourable
SMP0043	Taulaght	Fav	Fav	Fav	Favourable
SMP0045	Gorteens	Fav	Fav	Fav	Favourable
SMP0046	Grange	-	-	U-B	Unfavourable-Bad
SMP0047	Fethard	Fav	Fav	Fav	Favourable
SMP0050	Rochestown	Fav	Fav	Fav	Favourable
SMP0054	Kinsalebeg	Fav	Fav	U-I	Unfavourable-Inadequate
SMP0061	Rock Castle, Bandon Estuary	Fav	Fav	Fav	Favourable
SMP0064	Ballybrack	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0066	Barley Cove	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0070	Tahilla	Fav	Fav	Fav	Favourable
SMP0071	West Cove	Fav	Fav	Fav	Favourable
SMP0072	Rossbehy	U-B	U-B	U-B	Unfavourable-Bad
SMP0073	Cromane	U-I	Fav	U-I	Unfavourable-Inadequate
SMP0074	Whitegate, Fybagh	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0078	Carrigafoyle	Fav	Fav	Fav	Favourable
SMP0079	Barrigone, Aughinish	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0081	Bunratty	Fav	Fav	Fav	Favourable
SMP0082	Shepperton, Fergus Estuary	Fav	Fav	Fav	Favourable
SMP0083	Inishdea, Owenshere	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0084	Killadysert, Inishcorker	Fav	Fav	Fav	Favourable
SMP0085	Knock	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0086	Querrin	Fav	Fav	Fav	Favourable
SMP0087	Rinevella Bay	Fav	Fav	Fav	Favourable
SMP0092	Kilcaimin	Fav	Fav	Fav	Favourable
SMP0095	Seaweed Point	Fav	Fav	Fav	Favourable
SMP0096	Barna	Fav	Fav	Fav	Favourable
SMP0098	Teeranea	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0099	Lettermullan West	Fav	Fav	Fav	Favourable
SMP0100	Lettermore South	Fav	Fav	Fav	Favourable
SMP0101	Bealadangan	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0102	Kinavarra	U-I	Fav	U-I	Unfavourable-Inadequate
SMP0110	Doona	Fav	Fav	Fav	Favourable
SMP0111	Aughness	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0112	Tullaghan Bay	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0117	Ballysadare Bay	Fav	Fav	Fav	Favourable
SMP0119	Cummeen Strand	Fav	Fav	Fav	Favourable
SMP0126	Glen Bay	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0128	Roshin Point	Fav	Fav	Fav	Favourable
SMP0129	Keadew	Fav	Fav	Fav	Favourable
SMP0130	Dooey	Fav	Fav	Fav	Favourable
SMP0134	Lower Slaney Estuary	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0135	Broad Lough	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0136	Tourig Hall	Fav	Fav	Fav	Favourable
SMP0137	Lower Blackwater M Estuary/Youghal Harbour	Fav	Fav	Fav	Favourable
SMP0139	Rineanna Point	Fav	Fav	Fav	Favourable
SMP0140	Garavoge Estuary	Fav	Fav	Fav	Favourable

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0141	Lough Atalia	Fav	Fav	Fav	Favourable
SMP0142	Upper Shannon Estuary	Fav	Fav	Fav	Favourable
SMP0143	Lower Shannon Estuary	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0144	Islandavanna	Fav	Fav	Fav	Favourable
SMP0145	Poulnasherry Bay	U-I	Fav	U-I	Unfavourable-Inadequate
SMP0146	Ballinskelligs Bay	U-I	U-I	U-I	Unfavourable-Inadequate
SMP0147	Derrymore Island	Fav	Fav	Fav	Favourable
SMP0148	Annagh	Fav	Fav	Fav	Favourable
SMP0149	Blennerville	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0150	Trawbreaga Bay	U-I	Fav	U-I	Unfavourable-Inadequate
SMP0151	Lunniagh	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0152	Lettermacaward	Fav	Fav	Fav	Favourable
SMP0153	Inishmacnaghtan	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0154	Carna-Mweenish	Fav	Fav	Fav	Favourable
SMP0155	Fergus Estuary	Fav	U-I	U-I	Unfavourable-Inadequate
SMP0157	Castlemaine Harbour	U-I	Fav	U-I	Unfavourable-Inadequate

* Grange was not assessed for Area or Structure and functions, as no 1410 habitat remained

A direct comparison between the SMP and the current survey is difficult due to the changes to the survey and Structure and functions assessment methodologies. Of the 48 sites for which results are available for both the SMP and the current survey, 25 have remained unchanged, 10 have deteriorated and 13 have improved. The change to the survey and assessment methodologies between the SMP and the current survey make direct comparisons of the results difficult, as the monitored parameters are no longer the same.

3.4.5 Overall conservation assessment (national)

Following EU guidance (DG Environment, 2017), and using the data collected during the current survey, as well as other sources (McCorry, 2007; McCorry & Ryle, 2009; Perrin, 2018b), the following national assessment was made for Area, Structure and functions, and the Future prospects of the Area, and Structure and functions parameters for 1410:

Area:

- The short-term trend direction of Area is assessed as Decreasing, a loss of 3.69% of the total surveyed area was recorded for the current reporting period, following a loss of 0.07% for the previous reporting period
- The current Area is <10% less than the Favourable Reference Area (FRA)
- The current conservation status of Area is therefore Unfavourable-Inadequate
- The short-term future trend (i.e. over the next 12 years) of Area is assessed as Negative as no conservation measures have been identified to counteract the listed pressures and return the habitat to the FRA
- The Future prospects of Area is therefore Poor

Structure and functions:

- The short-term trend direction of Structure and functions is Stable for habitat that is in Good condition
- The current Structure and functions is assessed as 91% of the habitat in Good condition, which is above the 90% threshold for Favourable.
- The current conservation status of Structure and functions is therefore Favourable

- The short-term future trend of Structure and functions is assessed as Stable
- The Future prospects of Structure and functions is therefore Good

The parameters required to assess the national Future prospects for 1410 in Ireland are summarised in Table 44. The assessments of the individual parameters of Area, and Structure and functions were combined according to the evaluation matrix in Table 4 to obtain the national Future prospects assessment for 1410 of Unfavourable-Inadequate.

Table 44 National Future prospects assessment for Area, and Structure and functions for 1410 for the current reporting period. FP=Future prospects

Area parameter			Structure and functions parameter		
Current conservation status	**Short-term (12yrs) future trend**	**FP**	**Current conservation status**	**Short-term (12yrs) future trend**	**FP**
Unfavourable-Inadequate	Negative	Poor	Favourable	Stable	Good

The assessments of the individual parameters of Area, Structure and functions, and Future prospects were combined according to the evaluation matrix in Table 4 to obtain the national Overall conservation assessment for 1410: Unfavourable-Inadequate (deteriorating).

3.5 1420 Halophilous scrub

3.5.1 Area assessment

Because of the differences in mapping methods employed by the baseline survey and the 2017-18 survey, it was not possible to compare habitat areas between the two monitoring periods directly. This Area assessment, therefore, is based on losses that were seen by surveyors in the course of the survey, rather than losses detected by comparing areas mapped during the two surveys. The particular difficulty of mapping 1420, due to the habitat existing in a mosaic with other Annex I saltmarsh habitats, was noted by NPWS (2013).

A total of 0.24 ha of 1420 habitat was recorded in the course of the survey (Table 45). This represents 84% of the mapped 1420 habitat in Ireland. Of the national area of 1420, 100% (0.28 ha) is within SACs and the habitat is listed as a QI for 100% (0.28 ha) of this area.

Table 45 Area assessments of 1420 habitat at saltmarsh sites surveyed in 2017-18. Only sites where 1420 was recorded in the baseline or the 2017-18 survey are included.

Site code	Site name	Area (ha) 2006-09	Area (ha) 2017-18	Area lost since 2008 (ha)	% Area loss per annum (10 years)	Area assessment
SMP0041	Bannow Island	0.166	0.008	0	0	Favourable
SMP0043	Taulaght	0.012	0	0.012	10	Unfavourable-Bad
SMP0045	Gorteens	0.059	0.097	0	0	Favourable
SMP0047	Fethard	0.121	0.134	0	0	Favourable
	Total	**0.36**	**0.24**			

Of the four sites surveyed that supported 1420, no anthropogenic area loss was recorded at 75% (3 sites) of sites. Across the remaining 25% (1 site) of sites, anthropogenic area loss had occurred that resulted in the total loss of 0.012 ha of 1420 habitat. This loss represents 4.76% of the area of 1420 surveyed in 2017-18. The loss at Taulaght (SMP0043) accounted for 100% of the habitat recorded at that site. This loss related to the habitat being smothered by algal mats caused by eutrophication of the adjacent waterbody.

As part of the Article 17 reporting, the Area parameter was assessed at each site utilising the criteria listed in Table 4. The three sites that continued to support 1420 with no recorded anthropogenic area loss, or with a gain in area, were assessed as Favourable. The remaining site (Taulaght) where the rate of loss was greater than 1% per annum was assessed as Unfavourable-Bad.

Of the 0.012 ha of 1420 lost to anthropogenic activities, 100% (0.012 ha) was lost from inside the SAC network and in a site that listed 1420 as a QI.

3.5.2 Structure and functions assessment

The assessment of Structure and functions of sites where 1420 was recorded in 2017-18 was carried out using the criteria set out in Table 8. A summary of the failures by criterion is presented in Table 46. Sites where 1420 was not recorded in the current survey were not included and not all parameters could be assessed for every site. For example, 'Vegetation composition: negative species (habitat level)', which addresses the introduction of a *Spartina anglica* to a site could not be assessed where the species was already known from a site.

Table 46 Failure rates of criteria used to assess Structure and functions for 1420.

Assessment criterion	Number of sites assessed	Number of sites that failed	% of assessed sites that failed
Vegetation composition: negative species (stop level)	3	1	33
Vegetation structure: disturbed ground (stop level)	3	0	0
Vegetation composition: typical species (stop level)	3	0	0
Physical structure: hydrology (habitat level)	3	0	0
Vegetation structure: transition (habitat level)	3	0	0
Vegetation composition: negative species (habitat level)	0	0	0
Other negative indicators (stop level)	3	0	0
Indicators of local distinctiveness (habitat level)	0	0	0

The only criterion that failed was 'Vegetation composition: negative species (stop level)' at one site due to the increased cover of *Spartina anglica* at the monitoring plot. No site was assessed for 'Vegetation composition: negative species (habitat level)', as *Spartina anglica* was not recorded in any site from which it was not already known, nor was any site assessed for 'Indicators of local distinctiveness (habitat level)' as no such species were identified for any of the sites.

The Structure and functions of each site was assessed based on the number of criteria failed (Table 8) and these results are presented in Table 47. Of the three sites assessed, two (67%) were Favourable and 1 (33%) was Unfavourable-Inadequate. Taulaght (SMP0043) could not be assessed, as there was no 1420 habitat present, but was assigned a Structure and functions assessment of Unfavourable-Bad.

Table 47 Structure and functions assessments for sites that supported 1420

SMP code	SMP site	Number of criteria assessed	Number of criteria failed	Structure and functions assessment
SMP0041	Bannow Island	6	0	Favourable
SMP0043	Taulaght	0	0	Unfavourable-Bad
SMP0045	Gorteens	6	0	Favourable
SMP0047	Fethard	6	1	Unfavourable-Inadequate

* Taulaght was assessed as Unfavourable-Bad for Structure and functions, as no 1420 habitat remained

All three sites that were assessed were located within the same SAC, Bannow Bay SAC (site code 000697), for which 1420 is listed as a QI.

The approximate area of 1420 in Favourable condition at each site was calculated following the scheme set out in Table 10 and the results are presented in Table 48. Overall, an area of 0.2045 ha of 1420 was assessed as being in Favourable condition, which represents 86% of the habitat recorded in the current survey that was assessed for Structure and functions.

Table 48 The estimated area of 1420 where Structure and functions was deemed Favourable

SMP code	SMP site	1410 area (ha)	Number of assessed criteria	Number of failed criteria	% Favourable condition	Favourable area (ha)
SMP0041	Bannow Island	0.0075	6	0	100	0.0075
SMP0045	Gorteens	0.0968	6	0	100	0.0968
SMP0047	Fethard	0.1336	6	1	75	0.1002
	Total	**0.2379**				**0.2045**

3.5.3 Future prospects assessment

Before evaluating the Future prospects parameter for 1420, the activities, both positive and negative, recorded for the 1420 habitat during 2017-18 survey were examined. These are shown in Table 49, together with the intensity, percentage of the habitat affected, and total frequency for each of the activities.

A total of two negative pressures were recorded for the 1420 habitat. The most frequently recorded pressure was 'J02 Mixed source marine water pollution (marine and coastal)'. This pollution has resulted in eutrophication of the waterbody within which the 1420 was located and the eutrophication has led to the formation of the algal mats that have smothered the 1420 habitat. This impact has led to the total loss of the 1420 habitat at Taulaght (SMP0043). The only other pressure recorded was 'I02 Other invasive alien species (other than species of Union concern)', which refers to the negative impact of *Spartina anglica* on the 1420 habitat.

Table 49 Negative pressures listed by frequency of occurrence (Freq.) including intensity and % of habitat affected across the four sites where 1420 was previously recorded.

Code	Description	Intensity			% of habitat affected						Freq.
		High	Med	Low	<1	1-25	26-50	51-75	76-99	100	
J02	Mixed source marine water pollution (marine and coastal)	2	-	-	-	1	-	1	-	-	2
I02	Other invasive alien species (other than species of Union concern)	1	-	-	-	-	-	-	-	1	1
	Total	3	-	-	-	1	-	1	-	1	

No positive activities were recorded for 1420.

The effects of negative activities were considered in the context of each site's Area and Structure and functions assessment to make an overall Future prospects assessment for each of the four 1420 sites assessed following the 2017-18 survey (Table 50). Future prospects over the next 12 years (two reporting periods) were assessed.

Table 50 Future prospects (FP) assessment of the sites assessed following the 2017-18 survey that supported 1420. S&F=Structure and functions, Fav=Favourable, U-I=Unfavourable-Inadequate, U-B=Unfavourable-Bad.

SMP code	Site name	FP of Area	FP of S&F	FP of habitat	Rationale
SMP0041	Bannow Island	Good	Good	Fav	No pressures identified impacting on the habitat that threaten its long-term viability
SMP0043	Taulaght	Bad	Bad	U-B	Habitat at the site lost due to current pressures and its re-establishment is uncertain
SMP0045	Gorteens	Good	Good	Fav	No pressures identified impacting on the habitat that threaten its long-term viability
SMP0047	Fethard	Good	Poor	U-I	Spread of *Spartina anglica* poses a threat to the Structure and functions, and the Future prospects of the habitat this site

3.5.4 Overall conservation assessment (site level)

The assessments of the individual parameters at each site were combined according to the evaluation matrix in Table 4 to obtain the Overall conservation assessment for the 1420 habitat at each site. This resulted in two sites (50%) receiving an Overall conservation assessment of Favourable, one site (25%) receiving an Unfavourable-Inadequate assessment, and one site (25%) receiving an Unfavourable-Bad assessment (Table 51).

Table 51 Results of the Overall conservation assessment for the four 1420 sites when all three parameters were assessed for the current reporting period. S&F=Structure and functions, FP=Future prospects, Fav=Favourable, U-I=Unfavourable-Inadequate, U-B=Unfavourable-Bad.

SMP code	Site name	Area	S&F	FP	Overall conservation status
SMP0041	Bannow Island	Fav	Fav	Fav	Favourable
SMP0043	Taulaght	U-B	U-B	U-B	Unfavourable-Bad
SMP0045	Gorteens	Fav	Fav	Fav	Favourable
SMP0047	Fethard	Fav	U-I	U-I	Unfavourable-Inadequate

While a direct comparison between the SMP and the current survey is difficult due to the changes to methodology, any changes in Overall conservation status are likely to represent real change at the site in question. The loss of the 1420 habitat at Taulaght (SMP0043) has resulted in a drop in Overall conservation status from Unfavourable-Inadequate to Unfavourable-Bad. Fethard (SMP0047) has seen its Overall conservation assessment drop from Favourable to Unfavourable-Inadequate due to the spread of *Spartina anglica*, which has impacted on Structure and functions, and Future prospects.

3.5.5 Overall conservation assessment (national)

Following EU guidance (DG Environment 2017), and using the data collected during the current survey, as well as other sources (McCorry, 2007; McCorry & Ryle, 2009; Perrin, 2018b), the following national assessment was made for Area, Structure and functions, and the Future prospects (FP) of the Area, and Structure and functions parameters for 1420:

Area:

- The short-term trend direction of Area is assessed as Decreasing, as NPWS (2013) reported a loss of area due to anthropogenic impacts during the last reporting period and further losses have occurred.
- The current Area is >10% below the Favourable Reference Area
- The current conservation status of Area is therefore Unfavourable-Bad
- The short-term future trend (i.e. over the next 12 years) for Area is assessed as Negative, as no conservation measures have been identified to counteract the identified pressures and return the habitat to the FRA.
- Future prospects of Area is therefore Bad.

Structure and functions:

- The short-term trend direction of Structure and functions is Stable for habitat that is in Good condition
- Current Structure and functions is assessed as 88% of the habitat in Good condition, which is below the 90% threshold for Favourable.
- The current conservation status of Structure and functions is therefore Unfavourable-Inadequate
- The short-term future trend for Structure and functions is assessed as Stable.
- Future prospects of Structure and functions is therefore Poor.

The parameters required to assess the national Future prospects for 1420 in Ireland are summarised in Table 52. The assessments of the individual parameters were combined according to the evaluation matrix in Table 4 to obtain the national Future prospects assessment for 1420 of Unfavourable-Bad.

Table 52 National Future prospects assessment for Area, and Structure and functions for 1420 for the current reporting period. FP=Future prospects.

Area parameter			Structure and functions parameter		
Current conservation status	**Short-term (12yrs) future trend**	**FP**	**Current conservation status**	**Short-term (12yrs) future trend**	**FP**
Unfavourable-Bad	Negative	Bad	Unfavourable-Inadequate	Stable	Poor

The assessments of the individual parameters were combined according to the evaluation matrix in Table 4 to obtain the national Overall conservation assessment for 1420: Unfavourable-Bad (deteriorating).

3.6 WFD ecological status

The SMAATIE tool was applied to the data collected during the course of the current survey, supplemented, where necessary, with data produced by the SMP, SMAATIE and SAMFHIRES projects. Only 15 waterbodies met the criteria for assessment in terms of number of plots (≥5 plots) and area (≥10 ha) (Devaney & Perrin, 2015b). The Ecological Status for saltmarsh in these waterbodies, along with the SMP sites on which this assessment is based, is presented in Table 53.

Table 53 Ecological status for waterbodies assessed using SMAATIE including contributing SMP sites.

EU_Code	MS_CD	Name	SMP code	Overall EQR	Ecological status
IE_EA_010_0100	EA_010_0100	Boyne Estuary	SMP0034	0.72	Good
IE_EA_130_0100	EA_130_0100	Broad Lough	SMP0135	0.63	Good
IE_NW_220_0100	NW_220_0100	Swilly Estuary	SMP0028, SMP0029, SMP0030, SMP0031	0.41	Moderate
IE_SE_040_0200	SE_040_0200	Lower Slaney Estuary	SMP0038, SMP0039, SMP0134	0.45	Moderate
IE_SE_100_0200	SE_100_0200	New Ross Port	SMP0049, SMP0050	0.5	Moderate
IE_SE_100_0500	SE_100_0500	Lower Suir Estuary (Little Island - Cheekpoint)	SMP0052, SMP0156	0.67	Good
IE_SH_050_0100	SH_050_0100	Lee K Estuary	SMP0147, SMP0148, SMP0149	0.6	Good
IE_SH_060_0800	SH_060_0800	Upper Shannon Estuary	SMP0081, SMP0138, SMP0139, SMP0142	0.37	Poor
IE_SH_060_1100	SH_060_1100	Fergus Estuary	SMP0082, SMP0083, SMP0084, SMP0139, SMP0144, SMP0153, SMP0155	0.5	Moderate
IE_SW_020_0100	SW_020_0100	Lower Blackwater M Estuary/Youghal Harbour	SMP0054, SMP0136, SMP0137	0.43	Moderate
IE_SW_230_0200	SW_230_0200	Castlemaine Harbour	SMP0072, SMP0073, SMP0074, SMP0075, SMP0157	0.49	Moderate
IE_WE_160_0100	WE_160_0100	Kinvarra Bay	SMP0089	0.67	Good
IE_WE_420_0300	WE_420_0300	Moy Estuary	SMP0023, SMP0025	0.76	Good
IE_WE_460_0300	WE_460_0300	Ballysadare Estuary	SMP0117, SMP0118	0.67	Good
IE_SH_050_0000	SH_050_0000	Inner Tralee Bay	SMP0147	0.82	High

A full set of results, including those for waterbodies that did not meet the criteria for assessment using SMAATIE, are presented in Appendix II.

The deliverable for this element of the work was a completed SMAATIE tool spreadsheet and an assessment of the BQE for each waterbody and therefore there is no further discussion of these results in Section 4.

4 Discussion

4.1 General discussion

The current survey covered a significant proportion of the confirmed and potential saltmarsh habitat along all coasts of Ireland. For this reason, the results can reasonably be considered to represent the true status of saltmarsh in the country. All four Annex I habitats have seen losses in area attributable to anthropogenic activities, including infilling to create land for agriculture and development, earthworks to repair embankments protecting lands previously annexed from saltmarshes and tidal flats, and the deposition of algal mats related to eutrophication of the associated waterbody. The main activity that is impacting on saltmarsh habitats is grazing by a range of livestock, but principally cattle and sheep. This activity has negatively impacted Structure and functions on numerous saltmarshes, affecting 1330 in particular, as the relatively unpalatable nature of *Juncus maritimus*-dominated 1410 provides it with some protection from this impact. Such activities are likely to continue into the future, posing a threat to the Future prospects of saltmarsh habitats.

In contrast to the losses of Annex I habitat recorded, habitat creation has taken place at a number of locations. At Kilmacleague West, Tramore, Co. Waterford, compensatory saltmarsh habitat was created by breaching an embankment and flooding an area of former polder land. This work was carried out to offset the loss of habitat caused by the creation of Tramore Landfill following a ruling by the Court of Justice of the European Union (case c494/01 Commission of the European Communities vs Ireland). The works have seen the establishment of mudflat and saltmarsh habitats, including zones of 1310 and 1330 around the newly-flooded area; *Spartina anglica* has also become established in the area.

An example of unplanned saltmarsh habitat creation can be found at Harper's Island, Co. Cork. At this site, a subsurface breach in a levee allowed saline water to flow onto previously reclaimed farmland (T. Gittings, personal communication, January 20, 2017). Under the new regime, salt-intolerant species have died-off and saltmarsh vegetation has become established, including 3.2 ha dominated by *Salicornia* spp., which corresponds to 1310 *Salicornia* mud, recorded when the site was surveyed in 2014 (O'Neill *et al.*, 2014).

An example of unsuccessful managed realignment for the creation of areas of saltmarsh and mudflat can be found at the Youghal Bypass, Co. Cork. The proposed work programme, which included a topographical survey vital to the success of any saltmarsh habitat creation project, was not followed, resulting in the creation of a mudflat, but no saltmarsh (T. Gittings, personal communication, January 20, 2017). This was due to the fact that works required to raise the ground level to one at which saltmarsh can become established were not undertaken. This stands as a reminder of the importance of fully implementing the range of surveys and actions required to achieve a successful saltmarsh habitat creation project.

Despite these, and other planned or unplanned saltmarsh creation events, without more broad conservation actions there is likely to be a continued net loss of saltmarsh habitat and continued unsatisfactory status in relation to Structure and functions of saltmarsh Annex I habitats. This includes the enforcement of planning laws and the regulation of activities that constitute Notifiable Actions/Activities Requiring Consent within SACs. Grazing management plans are needed to address the impact grazing is having on the Annex I habitats. These management plans need to be site-specific, the effects monitored and the plan adjusted as necessary. Complete cessation of grazing is not necessarily the solution, as discussed in Section 4.3.

Each of the four Annex I habitats will be discussed separately, touching on topics related to Area, Structure and functions, and Future prospects.

4.2 1310 *Salicornia* mud

The assessment of 1310 *Salicornia* mud is complicated by the dynamic nature of this pioneer habitat. Defined by annual species and dependent on suitable conditions related to sediment and inundation regime, the habitat is susceptible to changes in biotic and abiotic conditions. Changes in erosion and deposition rates can make an area more or less suitable for the establishment of the habitat from one growing season to the next. Competition with perennial species can also lead to loss of the habitat, as succession to 1330 can occur as species such as *Puccinellia maritima*, *Spergularia marina* and *Glaux maritima* become established. These factors can result in the habitat area fluctuating from one year to the next at some sites, while at other sites the area can be more stable. While area loss was attributed to anthropogenic activities at Seaweed Point (SMP0095), other losses and gains are presumed to be as a result of natural processes and accepted as part of the dynamic nature of the habitat. New areas can become suitable for colonisation by *Salicornia* spp. within existing established saltmarsh habitat through disturbance related to livestock trampling, vehicle tracks and the decomposition of seaweed mats. This latter pathway to habitat creation is considered a particularly important one, as the hairy *Salicornia* spp. seeds adhere to the seaweed and then geminate on the bare ground created as the seaweed smothers the underlying vegetation (Ellison, 1987).

As well as fluctuating from year-to-year, the comparison of the 1310 area between the SMP and the current survey is complicated by the change to the mapping methodology. Whereas the SMP mapped polygons as dominated by 1310, or a 50/50 mosaic of 1310 with another habitat, in the current survey, 1310 was assigned a percentage cover for any given polygon in which it was recorded. Depending on the situation, this change could result in an apparent increase or decrease in area of 1310 for a given saltmarsh area.

The most direct and widespread threat to the 1310 habitat in Ireland is the continued spread of *Spartina anglica* at sites where it is already established, and the potential spread to new sites. *S. anglica* is a perennial grass that spreads via rhizomes (creeping underground stems) and seeds, and, as a pioneer species, competes directly with the constituent plants of 1310. Annual plants, such as *Salicornia europaea*, are at a competitive disadvantage with perennials like *S. anglica*, which can increase its biomass year-on-year. *Spartina* spp. spreading into an area of bare mud, previously suitable for 1310, can reduce *Salicornia* spp. growth through root competition and shading (Ellison, 1987). The continued expansion of *S. anglica* swards along the marsh front and into creeks and pans within the saltmarsh may restrict 1310 in affected sites to ephemeral patches, such as those created by occasional disturbance. This would be dependent on the continued presence of a seed source for the annual species at the site. *Salicornia europaea* has been shown to be particularly well adapted to the temporal and spatial variability in the availability of patches suitable for colonisation. The plant produces large central seeds and smaller lateral seeds (Orlovsky *et al*., 2016). The smaller seeds have been shown to be more dormant and less tolerant to saline conditions than the large seeds (Philipupillai & Ungar, 1984). The different characteristics of the two seed types are thought to be important for continued plant survival in a variable habitat, with the more dormant smaller seeds remaining viable in the soil seed bank (Philipupillai & Ungar, 1984). These characteristics may allow 1310 to continue to occur at sites despite heavy infestation by *S. anglica*.

The national Overall conservation assessment for 1310 *Salicornia* mud is assessed as Favourable. This could be perceived as an improvement from NPWS (2013), however there is a less stringent threshold for "area of habitat in good condition" as part of the Structure and functions assessment, also *Spartina* was only reported to have expanded in three sites despite having the potential to spread in a further 20 sites. The extent of *Spartina* will need to be closely monitored.

4.3 1330 Atlantic salt meadows

Atlantic salt meadows (1330) is a more stable habitat than 1310, and so the main reason for changes to area between the SMP and the current survey is the change to the mapping methodology noted in Section 4.2. Anthropogenic loss was noted at a number of sites, relating to infilling/reclamation for a range of uses including agriculture, roads, and buildings, extraction of saltmarsh material for use in embankment repairs, and erosion instigated by over-grazing or the operation of vehicles. Just over half of the loss recorded in the current survey was from within SACs that listed 1330 as a QI, suggesting that the designation of the SAC alone has not provided complete protection for the habitat within the site. The activities noted are all Notifiable Actions and/or require a licence or consent from another statutory authority.

Habitat losses to natural processes are considered to be part of the natural functioning of habitats such as saltmarshes. Such losses due to natural processes included erosion, storm damage and succession. Erosion is often difficult to quantify at a site, due to the scale at which areas are mapped and the precision of standard hand-held GPSs. Apparent erosion cliffs can be quite stable, as slumping vegetation blocks provides protection from further erosion (Gabet, 1998). In contrast, in some areas erosion can lead to the complete loss of 1330 from a site, as was recorded at Grange (SMP0046) across the SMP and the current survey. Saltmarsh sites, particularly those in estuaries, may be at risk of increased erosion into the future, as riverine flood events are expected to be more frequent and intense with climate change (Desmond *et al.*, 2017).

Storm damage was recorded for 1330 from Rinevella Bay (SMP0087), where shingle from the beach below the saltmarsh had been thrown up the shore and covered 1330 habitat. This loss was exacerbated by apparent changes to the hydrology of the site that resulted in the replacement of 1330 by swamp and open water in places. This change in hydrology may have been caused by an altered inundation regime related to the more developed shingle barrier. Sites such as Rinevella Bay may be vulnerable to further damage related to more intense storms predicted due to climate change (albeit with a lower frequency) (Desmond *et al.*, 2017).

For 1330, succession can lead to both an increase and decrease in habitat area, and both were recorded in the current survey. Loss of 1330 was recorded where adjacent 1410 habitat had expanded. This was notable at sites subject to heavy cattle poaching pressure, such as Inishdea, Owenshere (SMP0083). It is suggested that the unpalatable nature of *Juncus maritimus* and its ability to spread via rhizomes gives it an advantage over the more palatable species typical of 1330.

While 1330 habitat can be lost through succession to 1410, similarly, 1330 habitat can develop in areas previously dominated by 1310. As discussed, 1310 is a pioneer habitat. Once established, it can accumulate sediment and make an area more suitable for plant species adapted to life higher up the marsh, resulting in the creation of 1330 habitat. Alternatively, where 1310 has become established in a disturbed patch in an area previously considered 1330, succession can return the patch to 1330 as the perennial species of the 1330 habitat outcompete the annual species of 1310.

In terms of Structure and functions, 1330 was most heavily influenced by grazing. In the course of the survey, grazing by cattle, sheep, horses and donkeys was recorded, separately and as part of a mixed grazing regime. Each grazer has a different impact on the habitat. The direct effect of grazing can result in a variable sward height and composition, while due to their weight, cattle will often also cause poaching, breaking up the surface of the saltmarsh. Sheep, while lighter, can cause compaction of the soil, and graze a very tight sward (in the region of 4-5 cm). Horses tend to cause less poaching than cattle, but disturb the soil more than sheep, while also grazing very tightly. Grazing by donkeys was too infrequent to form a clear picture of the impact they have on the 1330 habitat.

As noted above, cattle grazing at Inishdea, Owenshere (SMP0083) has resulted in a heavily poached, tussocky substratum and has facilitated the replacement of 1330 by 1410 in places. Sheep grazing at Bartragh Island (SMP0023) has created a very tight sward within the 1330 habitat and has resulted in

some species (e.g. *Triglochin maritimum*) being almost entirely excluded from the sward. Querrin (SMP0086), Co. Clare was an example of the high impact horse grazing can have on 1330 with the horse grazing resulting in a tight sward with a high cover of bare ground. Also, disturbance by horses at this site had allowed *Spartina anglica* to invade the 1330 sward in a way not seen at other sites, where usually it was limited to creeks and pans within the 1330 habitat.

While grazing was recorded as having a large impact on 1330 at many sites, it must be noted that the complete removal of grazing from previously grazed sites is not necessarily recommended. Grazing can directly impact on the habitat by reducing sward height and selectively excluding some species, while the associated poaching breaks up the turf, may facilitate erosion and invasion by alien species, and changes the vegetation community. However, in a small number of sites (e.g. SMP0156 Lower Suir Estuary (Little Island – Cheekpoint) and SMP0135 Broad Lough), the effect of a lack of grazing can be seen in the abundance of *Elytrigia atherica*. Tall climax plant communities such as *E. atherica* can dominate in the absence of any grazing pressure, resulting in the loss of more species-rich saltmarsh communities (Bakker *et al.*, 1993; Esselink *et al.*, 2002; Mandema *et al.*, 2015; Sammul *et al.*, 2012; van Klink *et al.*, 2015). Grazing intensity impacts on other ecosystem elements, such as birds, fish and invertebrates, in a variable manner (Ford *et al.*, Jones, 2013; Friese *et al.*, 2018; Mandema *et al.*, 2015); therefore, the exclusion of grazers from a saltmarsh requires careful consideration. Altering grazing regimes should be done as part of a management plan which incorporates monitoring to assess whether the desired outcome with regard to species and vegetation community diversity is achieved. This is particularly true in protected areas, such as SACs and SPAs, where there may be competing conservation objectives.

The national Overall conservation assessment for 1330 Atlantic salt meadows is Unfavourable-Inadequate, which is unchanged from the previous reporting period (NPWS, 2013), but the trend has changed from Stable to Deteriorating. This change in trend is due to losses in area, which are expected to continue into the future. Measures are required to address these losses through appropriate management and enforcement actions.

4.4 1410 Mediterranean salt meadows

Given its position in the upper saltmarsh, often transitioning into terrestrial habitat, 1410 is particularly vulnerable to impacts from anthropogenic activities extending from the landward side. Anthropogenic loss of area was noted at a number of sites. The losses mostly related to the succession of 1410 to swamp due to undergrazing, infilling/reclamation for a range of uses including agriculture, roads, and buildings, and extraction of saltmarsh material for use in embankment repairs. Almost 90% of the loss recorded in the current survey was from within SACs that listed 1410 as a QI, suggesting that the designation of the SAC alone has not provided complete protection for the habitat within the site. While some of the activities noted are Notifiable Actions and/or require a licence or consent from another statutory authority, the removal of grazing from a site has resulted in the largest loss of 1410. This loss was recorded at Castlebridge (SMP0038), Co. Wexford, where the removal of cattle grazing had resulted in the expansion of adjacent swamp habitat into areas that previously supported 1410. While there may be other contributing factors, such as nutrient levels in the waterbody or a change in the inundation regime, the removal of grazers is considered to be the primary cause for the succession from 1410 to *Phragmites australis*-dominated swamp. Related to the removal of grazing at this site was the apparent loss of Borrer's Saltmarsh Grass (*Puccinellia fasiculata*), which was previously known from disturbed ground related to a track in the upper marsh (McCorry & Ryle, 2009). This track has since revegetated in the absence of grazer activity resulting in the loss of the niche for this species.

Again, as noted in Section 4.2, the main reason for changes to area between the SMP and the current survey is the change to the mapping methodology.

From a Structure and functions point of view, 1410 is impacted by grazing, but to a lesser extent than 1330. *Juncus maritimus* is largely unpalatable to grazers, being spikey and hard, and this provides

protection to the plant itself and to other plants growing in and around it. The movement of grazers through 1410 can result in a more tussocky habitat, with poaching and bare ground found in between the tussocks of *Juncus maritimus*. This grazing-related impact is the reason the criterion 'Vegetation structure: disturbed ground (stop level)', was the most commonly failed criterion for 1410.

As for 1330, the impact of grazing on 1410 requires management, but this does not necessarily mean the complete removal of grazers from the habitat. Such action would result in further loss of the habitat similar to that seen at Castlebridge, and would impact negatively on the area of this habitat in Ireland, with related loss of species and vegetation community diversity.

The national Overall conservation assessment for 1410 Mediterranean salt meadows is Unfavourable-Inadequate, which is unchanged from previous reporting round (NPWS, 2013), but the trend has changed from Stable to Deteriorating. This change in trend is due to losses in area, which are expected to continue into the future. Measures are required to address these losses through appropriate management and enforcement actions.

4.5 1420 Halophilous scrub

Halophilous scrub (1420) continues to have a very restricted distribution in Ireland, limited to only a few sites in Co. Wexford, mostly within Bannow Bay SAC. The habitat, whose presence in Ireland has been called into question (McCorry & Ryle, 2009), is currently listed as an Annex I habitat for Ireland, and was therefore assessed. The best example of the habitat is Ballyteige Burrow (SMP0005), which was not surveyed in the current survey, but was surveyed as part of SAMFHIRES. The habitat has seen loses over recent years, and the current survey has recorded its loss from Taulaght (SMP0043). This loss has been attributed to eutrophication of the waterbody within which the site is located (Environmental Protection Agency [EPA], 2018). Algal mats, whose formation is encouraged by increased nutrient conditions, have resulted in the loss of the 1420 habitat at the site through smothering. While the habitat has the potential to re-establish at the site if the conditions that caused its loss are addressed, its loss has negatively affected the Area and Range of the habitat in Ireland.

Apart from the area loss attributed to anthropogenic activities, area change for 1420 is heavily influenced by mapping methodology, due to the patchy nature of *Sarcocornia perennis* at the sites. This issue was raised in NPWS (2013), where it was noted that mapping individual patches separately or combining them into one larger patch would result in a very different area outcome. This has proved to be the case and the only loss that is considered genuine for 1420 is that recorded at Taulaght.

Actions required to address the water quality issues in Bannow Bay, in relation to its status as a Designated Shellfish Area under the European Communities (Quality of Shellfish Waters) Regulation 2006 S.I. No. 268 of 2006 (as amended), were proposed as early as 2009 (Department of the Environment, Heritage and Local Government [DEHLG], 2009). The proposed actions in relation to urban waste water treatment, on-site waste water treatment and agricultural fertiliser inputs would improve the nutrient status of Bannow Bay, and reduce the likelihood of the formation of algal mats that have impacted on the 1420 habitat. At this time, the requirement for upgraded waste water treatment at Wellingtonbridge has not been realised and remains on the Capital Investment Plan of Irish Water (Wexford County Council [WCC], 2017), while on-site waste water treatment systems likely to be impacting on the waterbody were to be assessed and enforced, where necessary. The effective and targeted implementation of the Good Agricultural Practice Regulations was deemed sufficient to address the issue of agricultural nutrient inputs. Without the timely and effective implementation of the required measures, the future of 1420 within Bannow Bay may be at risk. The current Overall conservation assessment for 1420 of Unfavourable-Bad (deteriorating), which is unchanged from the previous round of reporting (NPWS, 2013), indicates the urgency required in addressing threats to this scarce habitat.

5 Recommendations

Based on the findings of the current project, a number of recommendations are made in relation to conservation measures required to improve the conservation status of saltmarsh habitats in Ireland, future assessments, and research in relation to saltmarsh habitats in Ireland.

5.1 Recommended conservation measures

5.1.1 Habitat restoration

Annex I saltmarsh habitat has seen loss and damage from a range of human activities, including dumping, infilling and drainage. Habitat loss caused by such activities will often require active restoration in order to reverse the damage done and to achieve a positive future trend for Area assessments. As most of the Annex I saltmarsh in Ireland falls within the SAC network, existing powers under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) are available to the Minister to direct the owner, occupier or user to restore the land after damage. However, liaison with landowners should first be undertaken to attempt to remedy the situation, before recourse to the legal route. Avenues are also available for collaboration with county councils, via their waste enforcement sections, to address issues such as dumping and infilling, and these should be explored.

5.1.2 Control of *Spartina anglica*

The non-native invasive species *Spartina anglica* has been identified as a threat to saltmarsh habitats, in particular 1310, as well as other Annex I habitats, such as Mudflats and sandflats not covered by seawater at low tide (1140). Studies have been conducted on the possibility of controlling or eradicating *S. anglica* from sites where it has become established (Hacker *et al.*, 2001; Hammond & Cooper, 2002). Hand removal, mowing, mechanical control, herbicide application and biological control have all been used with varying success (Hedge *et al.*, 2003). Given the expense involved in treating large areas of *S. anglica* and the lack of certainty around success, it is unlikely that such programs of control or eradication can be widely applied. Therefore, the potential for removing small infestations of *S. anglica* in otherwise uninvaded waterbodies should be investigated (e.g. Annagh Island – SMP0019) and the removal of plants from newly colonised areas should be a priority to prevent further spread.

5.1.3 Agri-environment schemes

Agri-environment schemes have a key role to play in the conservation of Annex I saltmarsh habitats and in providing the future funding for the conservation measures that will be required for the four target Annex I saltmarsh habitats to attain favourable conservation status nationally. It is clear from the main threats and pressures identified in the course of the current survey that agricultural activities, including livestock grazing, reclamation of land, and the operation of agricultural vehicles, are having a major impact on the Structure and functions of Annex I saltmarsh habitats. Despite this, saltmarsh habitats are not the specific target of any of the actions listed for the Department of Agriculture, Food and the Marine's (DAFM) Green, Low-Carbon, Agri-Environment Scheme (GLAS) (Image & Forster Brown, 2018).

Livestock grazing on saltmarsh is particularly widespread, most notably in the western half of the country. As stated in Section 4.3, the management of grazing on saltmarsh habitats is not straightforward, with negative impacts possible from increasing or decreasing the grazing pressure. Broadly speaking, historically grazed sites will require grazing to maintain higher conservation value, while historically ungrazed or lightly grazed sites should remain ungrazed (Doody, 2008). For this reason, any proposed changes to the grazing regime at a saltmarsh site would need to be made through

liaison between the landowner and a qualified ecologist, with clearly set out, attainable, measureable targets. The success of farmer-led schemes, such the Burren Programme, may provide a blueprint for the future management of saltmarsh sites for the conservation of Annex I saltmarsh habitats and dependant species.

Engagement with landowners was not a major part of the current project, and was largely limited to obtaining permission to access lands. Engagement with landowners and DAFM will be required to bring saltmarsh habitats into the existing schemes, such as GLAS or the Agricultural Sustainability and Support Advisory Programme (ASSAP) (Glanbia Connect, 2019), or to promote the development of new schemes. It is recommended that such work should be progressed as a priority in order to improve the conservation status of Annex I saltmarsh habitats in Ireland ahead of the next round of Article 17 reporting.

5.1.4 Managed retreat

Due to climate change-related sea level rise, saltmarsh habitats will be under threat from 'coastal squeeze', whereby coastal habitats in front of flood defences are lost in the face of sea level rise (Pontee, 2013). Enclosing areas that previously supported saltmarsh habitat behind embankments for conversion to agricultural land was common practice around Ireland. Examples of this can be seen in many places, in particular within river estuaries (e.g. Fergus Estuary). Where such 'reclamation' has occurred, large areas of saltmarsh are usually lost, and extant saltmarsh habitat is often limited to a narrow strip in front of the embankment. Given that the development and continued presence of saltmarsh is dependent on the inundation regime, sea level rise will lead to a narrowing of the zone suitable for saltmarsh, as the low water mark migrates landwards, while the high water mark meets the embankment and is prevented from retreating further. The loss of saltmarsh habitat to coastal squeeze will result in the direct loss of Annex I habitats, as well as the ecosystem services they provide, such as wave attenuation and the protection of flood defences. Managed retreat is a tool available to planners to combat coastal squeeze, by intentionally breaching existing flood defences to allow the sea to re-establish saltmarsh habitats in areas where it previously existed and provide scope for landward migration of saltmarshes in the face of sea level rise.

Ireland is lagging behind other European countries in relation to the development of a coastal management strategy (Murphy, 2017). A review by Esteves and Williams (2017), states that, between them, Belgium, Denmark, France, Germany, Netherlands, Spain and the United Kingdom have managed realignment projects covering an area of 15,807 ha implemented or under construction. This ranges from 206 ha for Denmark to 5,036 ha for Germany (Esteves & Williams, 2017).

The development of a coastal management strategy implementing managed retreat is an important element of maintaining or increasing the area of saltmarsh habitat in Ireland, with implications for the HD and the WFD. It is recommended that Ireland move forward on this important work as soon as possible. The success of such projects can be seen in the examples, such as Kilmacleague West, Tramore, Co. Waterford, presented in Section 4.1.

5.2 Refinement of survey methodology

5.2.1 Site rationalisation

While most of the original SMP sites represent relatively compact and coherent saltmarsh sites, those added to the list of sites to survey based on the assessment of potential saltmarsh habitat from aerial photography as part of the SMP (SMP0134-SMP0157) often comprise small areas of saltmarsh dispersed around a waterbody. It would benefit future surveys if such sites were rationalised by creating new, more coherent sites that could be more efficiently surveyed. Currently, a site such as Lower Shannon

Estuary (SMP0143) extends along both sides of a very large estuary and is also intermingled with other defined SMP sites, presenting a logistical issue when it comes to surveying.

5.2.2 Site selection

In order to achieve the best outcome in relation to the reporting requirements for both the HD and the WFD, the selection of survey sites should be carefully planned. This is necessary due to the spatial disparity between the previous definition of saltmarsh site boundaries and the definition of waterbody boundaries under the WFD. Often, numerous saltmarsh sites fall within a single waterbody, or alternatively, a single saltmarsh site may extend into several waterbodies. The use of SMAATIE to assess the Ecological Status of the angiosperm element under the WFD is made difficult where only some areas of saltmarsh within a given waterbody are surveyed due to the need for a range of specific data to run the tool.

Future monitoring should ensure that saltmarsh sites selected for survey correlate well with WFD waterbody boundaries.

5.2.3 Refinement of assessment methodology and criteria

The current survey and assessment methodology was developed from the SMP (McCorry, 2007; McCorry & Ryle, 2009), which was based on the *Common Standards Monitoring Guidance for Saltmarsh Habitats* (JNCC, 2004). For the current project, changes were made to streamline the collection of data to satisfy the requirements of the HD assessment and the WFD assessment (using SMAATIE). It is considered unhelpful to change the survey and assessment methodology for each monitoring period, as it makes it difficult to assess true changes and trends; however, it is important to ensure that the method employed is providing as accurate and consistent a result as possible. For this reason, it is recommended that the current methodology should be followed for the next monitoring period, after which the data from the two monitoring periods should be reviewed and any refinements made.

5.3 Impact of *Spartina anglica*

There remains much uncertainty around the impact of *Spartina anglica* on Annex I saltmarsh habitats and it is likely that the precise impact will vary depending on the site or habitat in question. Nehring & Hesse (2008) suggest that *S. anglica* can have a significant effect on the lower to middle marsh. Habitat 1310 has been identified as being particularly vulnerable to invasion and exclusion by *S. anglica* given that both habitats occupy a similar niche i.e. pioneer habitat on bare sediment.

Whether *S. anglica* has a negative impact on 1330 (through invading the sward and/or colonising pans) or a positive one (stabilising sediment to facilitate succession of mudflat to 1330) remains unclear. In any case, any positive impact on 1330 is likely to come at the expense of mudflats, which form part of the Annex I habitat Mudflats and sandflats not covered by seawater at low tide (1140). For this reason, a better understanding of the dynamic is required.

While 1410 seems less susceptible to invasion by *S. anglica* due to its position higher up the shore (though instances were recorded where *S. anglica* was spreading within 1410), 1420 is at risk given its position on the saltmarsh. Evidence of invasion of 1420 by *S. anglica* was noted during the current survey.

Dieback of *Spartina* has been noted in a number of countries, including China, England and America (Li *et al.*, 2009; McKee *et al.*, 2004; Paramor & Hughes, 2007). Evidence of *S. anglica* dieback was noted in the course of the current survey within the Shannon Estuary (e.g. Barrigone, Aughinish – SMP0079) and the Fergus Estuary. The causes of *Spartina* dieback are unclear and further study of this phenomenon may provide a means of control, or eradication, of the species.

It is recommended that specific research be carried out to address the question of the impact of *S. anglica* on Annex I saltmarsh habitats, which may include a consideration of its impact on mudflats, as well as into to causes of *Spartina* dieback.

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Appendix I – Front sheet template

bec CONSULTANTS

Saltmarsh Monitoring 2017

Date(s) surveyed:_____

Surveyed by: _____

Site name			SMPI		SMP II
		HD 1310	ha	plots	plots
SMPI site no		**HD 1330**	ha	plots	plots
County		**HD 1410**	ha	plots	plots
Discovery map		**HD 1420**	ha	plots	plots
WFD water body		**Spartina**	ha		
Notes					

Habitat –level data

1330 zones present >1% of habitat area (☑) SM2 ☐ SM3☐ SM4☐ SM6BCD☐ Elytrigia/Driftline☐ Target no. of zones:

No. 1330 typical species (target 12) | **No. 1410 typical species (target 6)** | **No. 1410 species >25% frequency (target 2)**

Target for median max plant height | ***Value for median max plant height***

Habitat-level criteria

	HD 1310	**HD 1330**	**HD 1410**	**HD 1420**
Hydrological alterations				
Variation in median max plant height				
Zones present >1% habitat area				
Loss of landward transitions				
Presence of typical species				
New *Spartina* records in vicinity				
Other negative indicators				
Indicators of local distinctiveness				

Impacts:

Impact code / description e.g. A04.01 intensive grazing	**Location** inside / outside habitat	**Influence (+/-/0)**	**Intensity (H/M/L)**	**% habitat extent affected** (<1%; 1-25%; 26-50%; 51-75%; 76-99%; 100%)

Data entry/checking:

GPS points downloaded: INITIALS _____ DATE _____ Photos labelled correctly: INITIALS _____ DATE_____

Turboveg checked: INITIALS _____ DATE _____ Data checked & complete: INITIALS _____ DATE _____

Survey notes:

Site description or changes since baseline:

Comments on condition/management:

Other remarks:

Appendix II – SMAATIE results including sub-threshold sites

EU_Code	MS_CD	Name	SMP code	Overall EQR	Ecological status
IE_EA_010_0100	EA_010_0100	Boyne Estuary	SMP0034	0.72	Good
IE_EA_130_0100	EA_130_0100	Broad Lough	SMP0135	0.63	Good
IE_NW_100_0000	NW_100_0000	Northwestern Atlantic Seaboard (HAs 37;38)	SMP0126	0.55	Moderate
IE_NW_120_0100	NW_120_0100	Gweebarra Estuary	SMP0128, SMP0152	0.70	Good
IE_NW_160_0000	NW_160_0000	Gweedore Bay	SMP0129, SMP0151	0.86	High
IE_NW_160_0200	NW_160_0200	Gweedore Estuary	SMP0151	0.79	Good
IE_NW_170_0000	NW_170_0000	Ballyness Bay	SMP0130	0.84	High
IE_NW_220_0100	NW_220_0100	Swilly Estuary	SMP0028, SMP0029, SMP0030, SMP0031	0.41	Moderate
IE_NW_240_0000	NW_240_0000	Trawbreaga Bay	SMP0150	0.81	High
IE_SE_040_0000	SE_040_0000	Wexford Harbour	SMP0040	0.66	Good
IE_SE_040_0200	SE_040_0200	Lower Slaney Estuary	SMP0038, SMP0039, SMP0134	0.45	Moderate
IE_SE_050_0000	SE_050_0000	Eastern Celtic Sea (HAs 13;17)	SMP0047	0.41	Moderate
IE_SE_090_0000	SE_090_0000	Bannow Bay	SMP0041, SMP0043, SMP0045	0.76	Good
IE_SE_100_0200	SE_100_0200	New Ross Port	SMP0049, SMP0050	0.50	Moderate
IE_SE_100_0500	SE_100_0500	Lower Suir Estuary (Little Island - Cheekpoint)	SMP0052, SMP0156	0.67	Good
IE_SH_050_0000	SH_050_0000	Inner Tralee Bay	SMP0147	0.82	High
IE_SH_050_0100	SH_050_0100	Lee K Estuary	SMP0147, SMP0148, SMP0149	0.60	Good
IE_SH_060_0000	SH_060_0000	Mouth of the Shannon (HAs 23;27)	SMP0086, SMP0087, SMP0145	0.55	Moderate
IE_SH_060_0300	SH_060_0300	Lower Shannon Estuary	SMP0078, SMP0079, SMP0085, SMP0143	0.58	Moderate
IE_SH_060_0800	SH_060_0800	Upper Shannon Estuary	SMP0081, SMP0138, SMP0139, SMP0142	0.37	Poor
IE_SH_060_1100	SH_060_1100	Fergus Estuary	SMP0082, SMP0083, SMP0084, SMP0139, SMP0144, SMP0153, SMP0155	0.50	Moderate
IE_SW_020_0100	SW_020_0100	Lower Blackwater M Estuary / Youghal Harbour	SMP0054, SMP0136, SMP0137	0.43	Moderate
IE_SW_080_0100	SW_080_0100	Lower Bandon Estuary	SMP0061	0.85	High
IE_SW_140_0000	SW_140_0000	Roaring Water Bay	SMP0064, SMP0066	0.74	Good
IE_SW_190_0000	SW_190_0000	Outer Kenmare River	SMP0070, SMP0071	0.72	Good
IE_SW_190_0500	SW_190_0500	Drongawn Lough, Sneem	SMP0070	0.85	High

EU_Code	MS_CD	Name	SMP code	Overall EQR	Ecological status
IE_SW_200_0000	SW_200_0000	Ballinskelligs Bay	SMP0146	0.78	Good
IE_SW_230_0200	SW_230_0200	Castlemaine Harbour	SMP0072, SMP0073, SMP0074, SMP0075, SMP0157	0.49	Moderate
IE_WE_010_0000	WE_010_0000	Aran Islands, Galway Bay, Connemara (HAs 29;31)	SMP0154	0.71	Good
IE_WE_160_0000	WE_160_0000	Inner Galway Bay South	SMP0009	0.68	Good
IE_WE_160_0100	WE_160_0100	Kinvarra Bay	SMP0089	0.67	Good
IE_WE_170_0000	WE_170_0000	Inner Galway Bay North	SMP0009, SMP0092, SMP0095, SMP0096	0.69	Good
IE_WE_170_0700	WE_170_0700	Corrib Estuary	SMP0094, SMP0141	0.76	Good
IE_WE_200_0000	WE_200_0000	Kilkieran Bay	SMP0098, SMP0099, SMP0100, SMP0101	0.91	High
IE_WE_200_0200	WE_200_0200	Camus Bay	SMP0102	0.85	High
IE_WE_200_0300	WE_200_0300	Loch Fhada Upper Pools	SMP0101	0.75	Good
IE_WE_350_0000	WE_350_0000	Inner Clew Bay	SMP0013	0.34	Poor
IE_WE_350_0100	WE_350_0100	Westport Bay	SMP0017, SMP0018, SMP0019	0.49	Moderate
IE_WE_390_0100	WE_390_0100	Tullaghan Bay	SMP0110, SMP0111, SMP0112	0.90	High
IE_WE_420_0000	WE_420_0000	Killala Bay	SMP0023	0.67	Good
IE_WE_420_0300	WE_420_0300	Moy Estuary	SMP0023, SMP0025	0.76	Good
IE_WE_460_0200	WE_460_0200	Portavaud East, Ballysadare Bay	SMP0117	0.69	Good
IE_WE_460_0300	WE_460_0300	Ballysadare Estuary	SMP0117, SMP0118	0.67	Good
IE_WE_470_0100	WE_470_0100	Garavoge Estuary	SMP0119, SMP0140	0.75	Good