Marine Conservation Advice:

Conservation Advice Packages and evidence needs

Awantha **DISSANAYAKE**
Marine Conservation Advice
Natural England

NATURAL ENGLAND

www.rivercool.co.uk

Natural England: Marine Conservation Advice

Natural England has a responsibility:

To provide conservation advice for all Marine Protected Areas (MPAs) within England's inshore waters (out to 12 nautical miles)

To support sites to achieve their conservation objectives and to guide effective management.

To lead on or support the Joint Nature Conservancy Committee (JNCC) on conservation advice at sites at the 12 nm boundary.

Natural England: Marine Conservation Advice

1. Specific needs for evidence
2. Gaps in knowledge/
   data gathering
3. Protocols:
   development & deliverance
4. Challenges with Evidence
5. Cross-organisation partnerships
6. Way forward

Context

What we're trying to achieve

What we've done so far

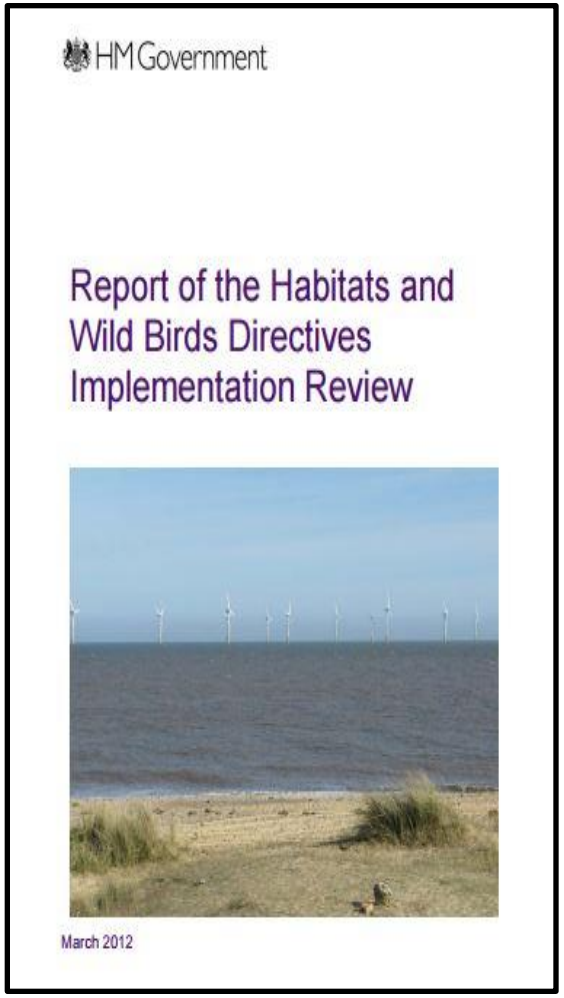
Engagement

What's coming

1. Context

"We will make sure that gold plating of EU rules on things like habitats aren't placing ridiculous costs on British businesses."

George Osborne, Autumn Statement 2011


HM Government

Report of the Habitats and Wild Birds Directives Implementation Review

March 2012

HDIR measures:

- Facilitating NSIPS: Nationally Significant Infrastructure projects
- Improve customer experience
- Improve the quality and quantity of data

Other drivers:

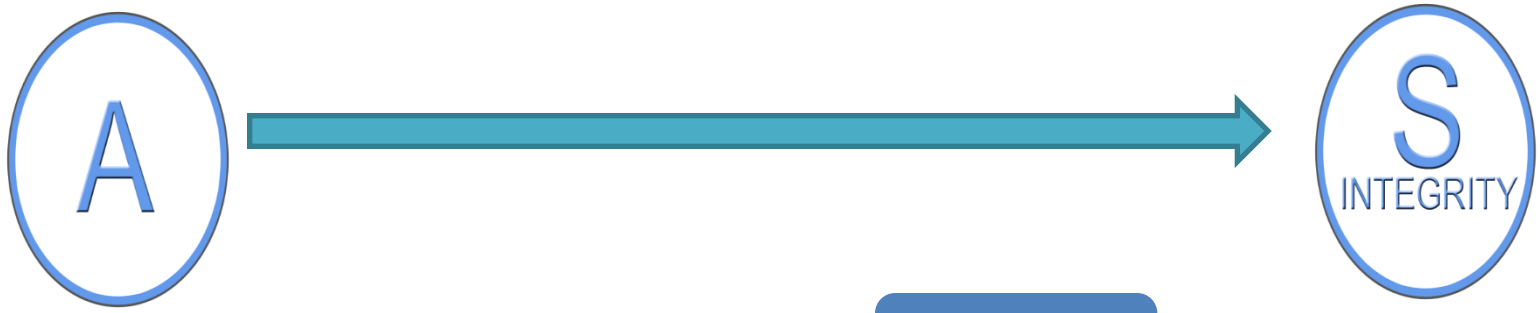
- Stakeholder needs
  - Make it operator focussed
  - Make it simple
  - Make it consistent
- Government/organisation needs
  - "Show your workings"
  - Government/organisation guidelines on using evidence to inform advice

2. What we're trying to achieve

It's old

Is my **A**ctivity likely to have a **s**ignificant effect on Site integrity?

I never use it



Where can I find it?

HRA assessment (SPA, SAC)

MCZ assessments

EIA

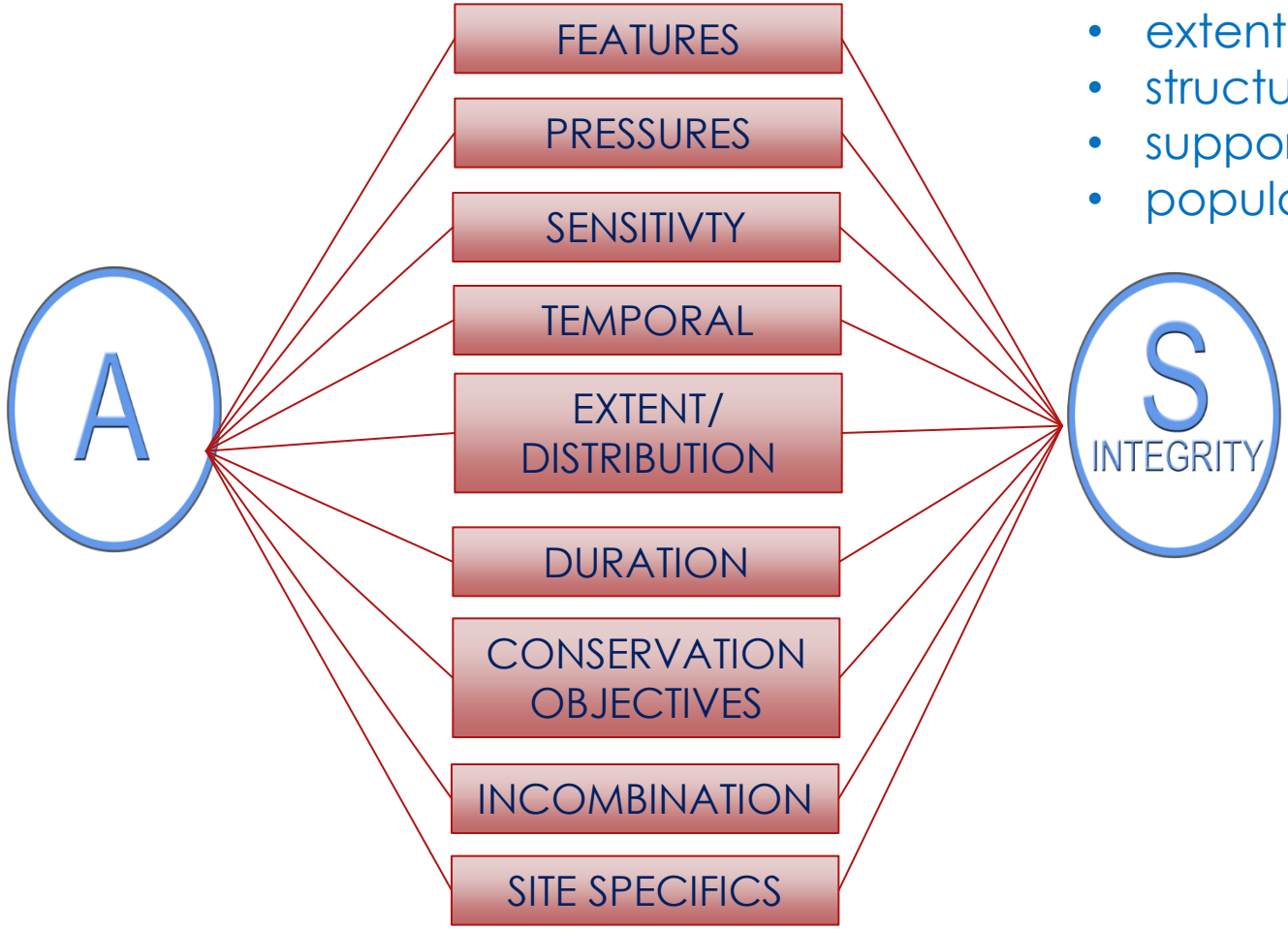
The evidence is out of date

Complex considerations…

Ensure that the integrity of the site is maintained or restored as appropriate

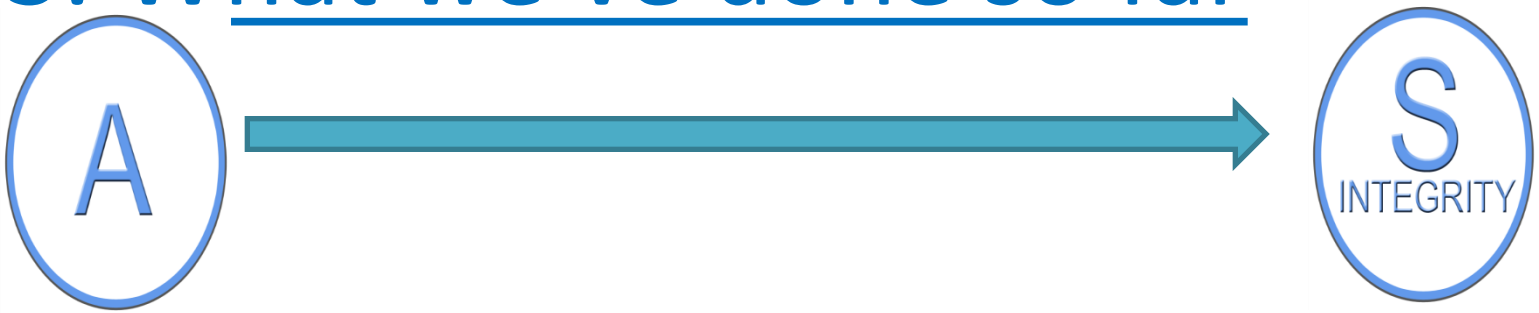
Maintain/restore

- extent and distribution
- structure and function
- supporting processes
- populations



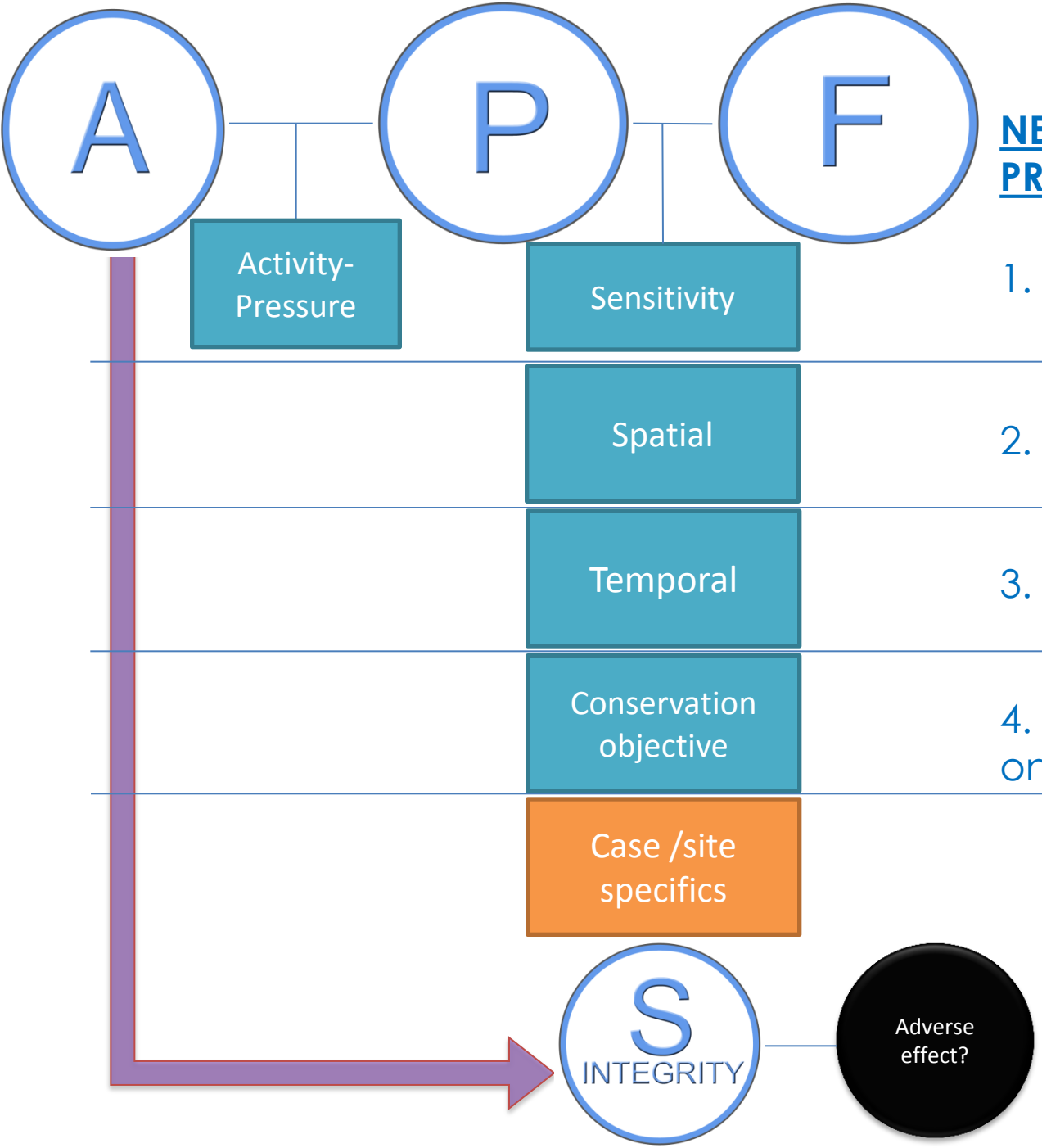
Adverse effect?

3. What we've done so far



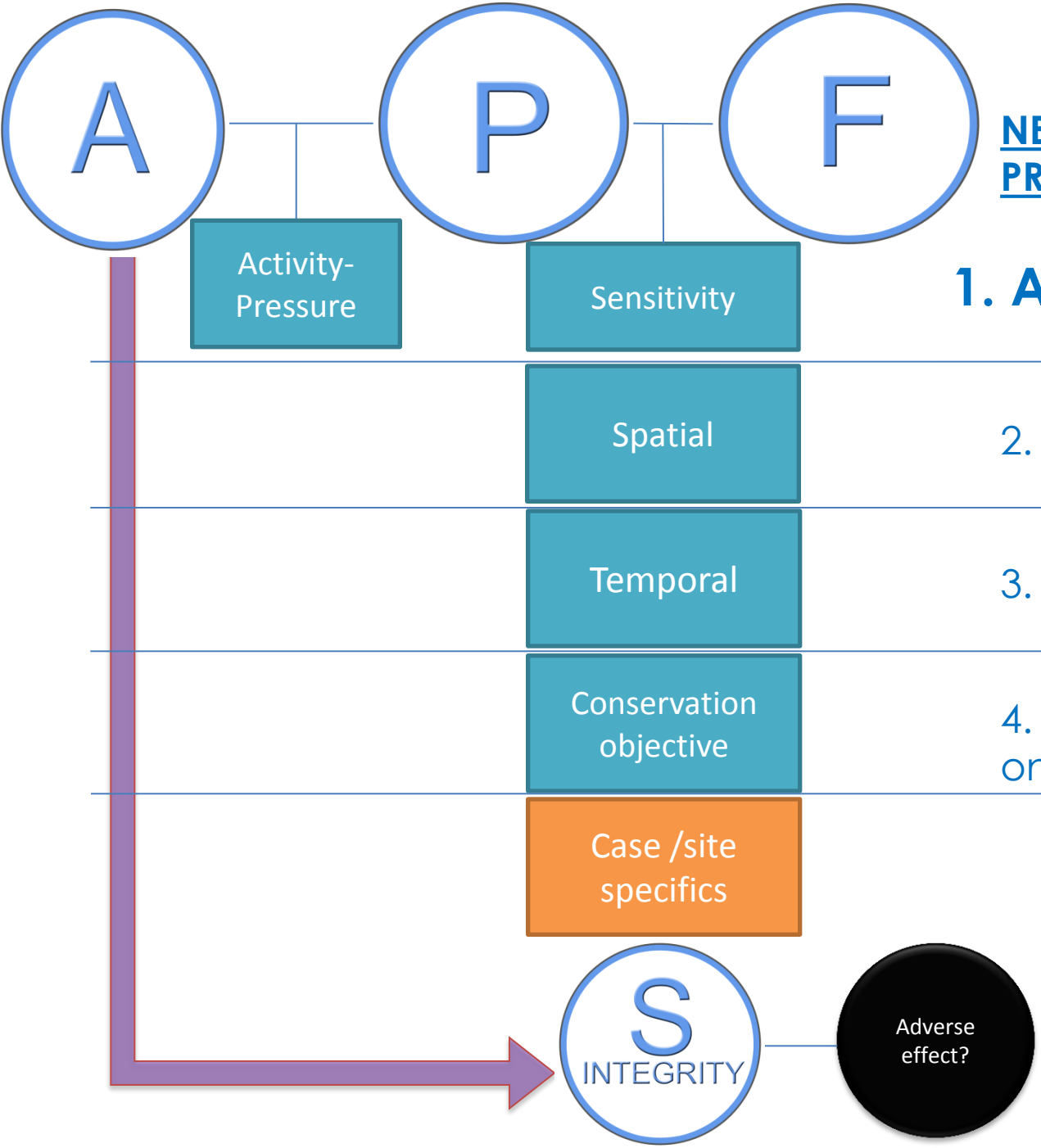
4 NEW EVIDENCE PRODUCTS

1. Advice on Operations	Could the activity damage the protected habitats or species?
2. High resolution maps	Where are the protected habitats and species?
3. Advice on feature seasonality	When are the species present?
4. Supplementary Advice on Conservation Objectives	What does success look like?



NEW EVIDENCE PRODUCTS

1. Advice on Operations
2. Mapping
3. Advice on Seasonality
4. Supplementary Advice on Conservation Objectives



NEW EVIDENCE PRODUCTS

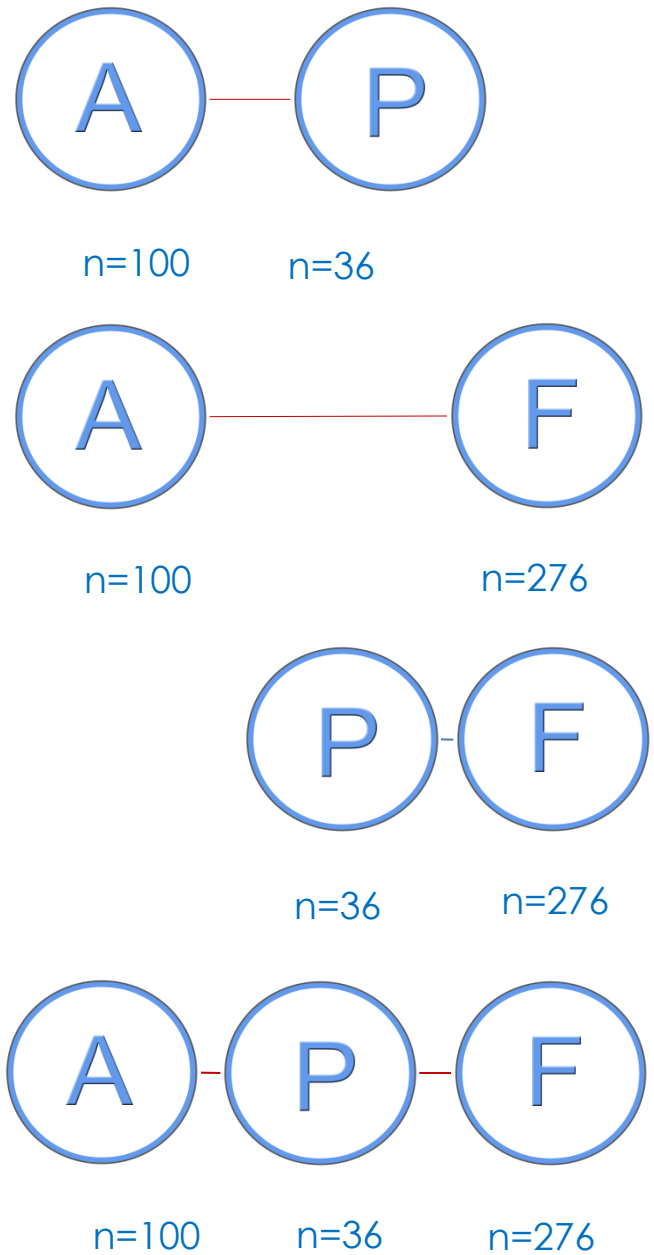
1. Advice on Operations

2. Mapping

3. Advice on Seasonality

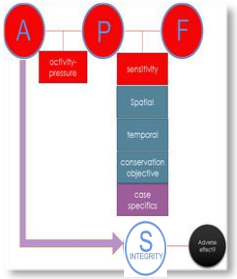
4. Supplementary Advice on Conservation Objectives

AoO: Lines of evidence



Activity-Pressure

(AxP) = 3,600
(1,900 NR)



+

Activity-Feature

(AxF) = 27,600 (~5,600 NR)

+

Sensitivity

(FxP) = 9,936 (~3,100 NR)

=

Advice on Operations

(AxPxF) = 993,600!
(751,000 NR (75%)

Product 1: Advice on Operations

NATURAL ENGLAND

Designated Sites View

> Search > Site list > Marine site detail > Operation Matrix

- Home
- New notifications
- Search for site details
- Reports and statistics
  - Whole of England
  - Region
  - County
- Glossary

SAC Tweed Estuary

Advice on Operations

This advice identifies pressures associated with the most commonly occurring marine activities in the sit

- AGGREGATE EXTRACTION
  - [x] Aggregate dredging
  - [ ] Aggregate screening
  - [ ] Beach sand extraction
- AQUACULTURE
- BEACH MANAGEMENT
- CABLES
- COASTAL DEVELOPMENT AND FLOOD AND EROSION RISK MANAGEMENT SCHEMES (construction)
- COASTAL DEVELOPMENT AND FLOOD AND EROSION RISK MANAGEMENT SCHEMES (maintenance)
- COASTAL DEVELOPMENT AND FLOOD AND EROSION RISK MANAGEMENT SCHEMES (operation)
- COASTAL INFRASTRUCTURE
- COMMERCIAL SHIPPING (operation)
- ELECTRICITY FROM RENEWABLE ENERGY SOURCES
- FISHING
  - [ ] Anchored nets/lines
  - [ ] Demersal seines
  - [ ] Demersal trawl
  - [x] Diving
  - [ ] Dredges
  - [ ] Electrofishing
  - [ ] Hydraulic dredges
  - [ ] Shore-based activities
  - [ ] Traps
- LICENSED ACTIONS
- OIL, GAS AND CARBON CAPTURE STORAGE
- PORTS AND HARBOURS (construction)
- PORTS AND HARBOURS (maintenance)
- PORTS AND HARBOURS (operation)
- RECREATION

Reset | Select all | View advice on operations for selected activities

Product 1: Advice on Operations

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- RECREATION

Reset | Select all | View advice on operations for selected activities

ACTIVITY DESCRIPTION: The regular excavation of aggregates (a mixture of sand and/or gravel sediments) for use generally in construction and beach recharge. Seabed sediments are removed through trailing suction or static grab dredgers. Dredging is associated with numerous vessel movements, sediment alteration and resuspension. NOTE: This assessment does NOT include aggregate dredging in the intertidal. Please contact Natural England for advice on intertidal aggregate dredging.

ACTIVITY DESCRIPTION: Collection of target species by divers, snorkelers. Includes recreational diving.

Product 1: Advice on Operations

Microsoft Excel - mersey-estuary-spa-aoo (2)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1					Bird features							Supporting habitat								
2																			Saltmarsh	
3	Operation	Activity	Pressure	stification	Non-breeding Black-tailed godwit (Limosa limosa andica)	Non-breeding Dunlin (Calidris ina alpina)	Non-breeding Golden plover uvialis apricaria)	Non-breeding Pintail (Anas ita)	Non-breeding Redshank inga totanus)	Non-breeding Shelduck adorna tadorna)	Non-breeding Teal (Anas cca)	Freshwater and coastal grazing rsh	Intertidal biogenic reef: mussel ds	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy nd	Water column	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Salicornia and other annuals onising mud and sand
4	AGGREGATE EXTRACTION	Beach sand extraction	Above water noise	69	S	S	S	S	S	S	S									
5	AGGREGATE EXTRACTION	Beach sand extraction	Abrasion/disturbance of the substrate on the surface of the seabed	186										S			S		S	S
6	AGGREGATE EXTRACTION	Beach sand extraction	Barrier to species movement	189	S	S	S	S	S	S	S								S	S
7	AGGREGATE EXTRACTION	Beach sand extraction	Changes in suspended solids (water clarity)	65									S*	S	NS*	S*	NS	S*	S	S
8	AGGREGATE EXTRACTION	Beach sand extraction	Emergence regime changes – local, including tidal level change	44	S	S	S	S	S	S	NS		S*	S	S*	S*	S	S*	S	S
9	AGGREGATE EXTRACTION	Beach sand extraction	Habitat structure changes - removal of substratum (extraction)	1148										S			S		S	S
10	AGGREGATE EXTRACTION	Beach sand extraction	Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	166	IE	IE	IE	IE	IE	IE	IE			NS			NS		NS	NS
11	AGGREGATE EXTRACTION	Beach sand extraction	Introduction of light	68	S	S	S	S	S	S	S									
12	AGGREGATE EXTRACTION	Beach sand extraction	Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion	64										S			S		S	S
13	AGGREGATE EXTRACTION	Beach sand extraction	Physical change (to another seabed type)	92										S			S		S	S
14	AGGREGATE EXTRACTION	Beach sand extraction	Removal of non-target species	1473													S			
15	AGGREGATE EXTRACTION	Beach sand extraction	Siltation rate changes (Low), including smothering (depth of vertical sediment overburden)	713									S*	S	NS*	S*	S		S	S
16	AGGREGATE EXTRACTION	Beach sand extraction	Visual disturbance	715	S	S	S	S	S	S	S									
17	AGGREGATE EXTRACTION	Beach sand extraction	Water flow (tidal current) changes – local, including sediment transport considerations	1147									S*	NS	NS*	S*	S	S*	NS	NS
18	AGGREGATE EXTRACTION	Beach sand extraction	Wave exposure changes - local	45									S*	S	NS*	S*	S	S*	NS	NS
19	CABLES	Power cable: Decommissioning	Above water noise	314	S	S	S	S	S	S	S									
20	CABLES	Power cable: Decommissioning	Abrasion/disturbance of the substrate on the surface of the seabed	322								NA	S	S	S	S	S		S	S
21	CABLES	Power cable: Decommissioning	Changes in suspended solids (water clarity)	55								NA	S	S	NS	S	NS	S	S	S
22	CABLES	Power cable: Decommissioning	Collision ABOVE water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	1410	S	S	S	NS	S	S	S									
23	CABLES	Power cable: Decommissioning	Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	948																
24	CABLES	Power cable: Decommissioning	Deoxygenation	320								NA	NS	NS	NS	IE	NS	S	NS	NS
25	CABLES	Power cable: Decommissioning	Habitat structure changes - removal of substratum (extraction)	127								NA	S	S	S	S	S	S	S	S
26	CABLES	Power cable: Decommissioning	Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive	308	IE	IE	IE	IE	IE	IE	IE	NA	NS	NS	NS	IE	NS	S	NS	NS
27	CABLES	Power cable: Decommissioning	Introduction of light	312	S	S	S	S	S	S	S	NA						S		
28	CABLES	Power cable: Decommissioning	Introduction or spread of non-indigenous species	232	S	S		S	S	S	S	NA	S	S	IE	S	S	S	S	S
	CABLES	Power cable:	Litter																	

Readme | UK9005131 AoO output | Activity-Pressure justification | Activity-descriptions

Product 1: Advice on Operations

Activity 1 Pressure Activity-Pressure justification	**Aggregates dredging** Abrasion/disturbance of the substrate on the surface of the seabed Aggregate extraction removes the surface layers of sediment from the seabed. The method of dredging determines magnitude and depth of the structural damage. Trailer hopper suction dredging creates shallow furrows that may extend for several kilometres in length. The depressions are generally 2-3 m wide and initially only around 0.5 m deep. Static dredging tends to create deep (5-10 m) depressions in the seabed. On occasion this might result in the damage of seabed features or biologically important structures [3081; 3102; 3080].
Pressure Risk Profile	**High to Medium risk** Pressure is commonly induced by activity at a level that needs to be considered further as part of an assessment
Activity 2 Activity-Pressure justification	**Diving** The pressure would result from the physical extraction of target species (using tools or by hand), contact between gear and the seabed and also anchoring associated with the activity. Whilst these effects could be significant in areas of high activity, diving is generally considered to be one of the lowest impact fishing activities [FISH55].
Pressure Risk Profile	**Low risk** Unless there are evidence based case or site specific factors that increase the risk, or uncertainty on the level of pressure on a receptor, this pressure generally does not occur at a level of concern and should not require consideration as part of an assessment. The risk of this pressure will increase depending on the spatial/ temporal scale and intensity of the activity, the proximity of the activity to the feature (in space and time) and the sensitivity of the feature to the pressure. Cumulative and in-combination effects of activities may increase the risk further (see Activity-Pressure justification text).

Pressure	Annex I habitat													Annex II species	
	Estuaries									Mudflats and sandflats not covered by seawater at low tide					
	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	River lamprey (Lampetra fluviatilis)	Sea lamprey (Petromyzon marinus)
Abrasion/disturbance of the substrate on the surface of the seabed							S	S	S						
Habitat structure changes - removal of [illegible]							S	S	S					IE	IE
Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion							S	S	S						
Removal of non-target species							S	S	S					S	S
Above water noise															
Barrier to species movement														S	S
Changes in suspended solids (water clarity)	S*	NS*	S*	NS*	S*	NS*	S	S	S	NS*	S*	NS*	NS*		
Collision ABOVE water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)															
Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)														S	S
Emergence regime changes – local, including tidal level change considerations	S*	S*	S*	S*	S*	S*				S*	S*	S*	S*		
Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.							NS	NS	NS					IE	IE
Introduction of light															
Introduction of other substances (solid, liquid or gas)							IE	IE	IE					IE	IE
Introduction or spread of non-indigenous species							IE	S	S					IE	IE
Litter							IE	IE	IE					IE	IE
Physical change (to another seabed type)							S	S	S						
Siltation rate changes (High), including smothering (depth of vertical sediment overburden)							S	S	S						
Siltation rate changes (Low), including smothering (depth of vertical sediment overburden)	S*	S*	S*	NS*	S*	S*	S	S	S	S*	S*	NS*	S*		

Product 1: Advice on Operations

Activity 1 Pressure Activity-Pressure justification	**Aggregates dredging** Abrasion/disturbance of the substrate on the surface of the seabed Aggregate extraction removes the surface layers of sediment from the seabed. The method of dredging determines magnitude and depth of the structural damage. Trailer hopper suction dredging creates shallow furrows that may extend for several kilometres in length. The depressions are generally 2-3 m wide and initially only around 0.5 m deep. Static dredging tends to create deep (5-10 m) depressions in the seabed. On occasion this might result in the damage of seabed features or biologically important structures [3081; 3102; 3080].
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Reference pop-up

Last. K.S., Hendrick. V.J., Beveridge. C.M., Davies. A.J., 2011. Measuring the effects of suspended particulate matter and smothering on the behaviour, growth and survival of key species found in areas associated with aggregate dredging. Marine Aggregate Levy Sustainability Fund (MALSF)

Product 1: Advice on Operations – Risk profiling of

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RISK CATEGORY	RECOMMENDATION
High to Medium Risk	Pressure is commonly induced by activity at a level that needs to be considered further as part of an assessment
Low Risk	Unless there are evidence based case or site specific factors that increase the risk, or uncertainty on the level of pressure on a receptor, this pressure generally does not occur at a level of concern and should not require consideration as part of an assessment.

- Stakeholder driven (including the eNGOs)
- Sustainable Development led (Sector Specialists)
- A risk assessment of the pressure for a given activity
  Risk profile is based primarily on expert judgement (e.g. including, but not limited to casework experience)
- To ensure our products are fit for purpose (staff and stakeholders)

Product 1: Advice on Operations – Sensitivity Evidence

Pressure	Annex I habitat													Annex II species	
	Estuaries									Mudflats and sandflats not covered by seawater at low tide				fluviatilis)	n marinus)
	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Intertidal coarse sediment	Intertidal mixed sediments		ly		
Abrasion/disturbance of the substrate on the surface of the seabed							S	S	S						
Habitat structure changes - removal of substratum (extraction)							S	S	S						
Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion							S	S	S						
Removal of non-target species							S	S	S						
Above water noise															
Barrier to species movement															
Changes in suspended solids (water clarity)	S*	NS*	S*	NS*	S*	NS*	S	S	S	NS*	S*				
Collision ABOVE water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)															
Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)															
Emergence regime changes – local, including tidal level change considerations	S*	S*	S*	S*	S*	S*					S*				
Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.							NS	NS							
Introduction of light															
Introduction of other substances (solid, liquid or gas)							IE		IE					IE	IE
Introduction or spread of non-indigenous species							IE	S	S					IE	IE
Litter							IE		IE					IE	IE
Physical change (to another seabed type)							S	S	S						
Siltation rate changes (High), including smothering (depth of vertical sediment overburden)							S	S	S						
Siltation rate changes (Low), including smothering (depth of vertical sediment overburden)	S*	S*	S*	NS*	S*	S*	S	S	S	S*	S*	NS*	S*		

Feature/subfeature/supporting habitat	**Subtidal mixed sediments**
Pressure	**Introduction or spread of invasive non-indigenous species (INIS)**
Pressure description	The direct or indirect introduction of invasive non-indigenous species, e.g. Chir mitten crabs, slipper limpets, Pacific oyster and their subsequent spreading an out-competing of native species. Ballast water, hull fouling, stepping stone effe (e.g. offshore wind farms) may facilitate the spread of such species. This pressu could be associated with aquaculture, mussel or shellfishery activities due to imported seed stock or from accidental releases.
Pressure benchmark	A significant pathway exists for the introduction or spread of one or more non-indigenous invasive species; OR there is a potential for the introduction of high invasive/impact species.
Pressure comment	Sensitivity assessment will be made against a prescribed list of INIS based on th GBNNSIP list of potential invasive species.
Feature sensitivty to pressure (RANGE)	Not sensitive - High sensitivity

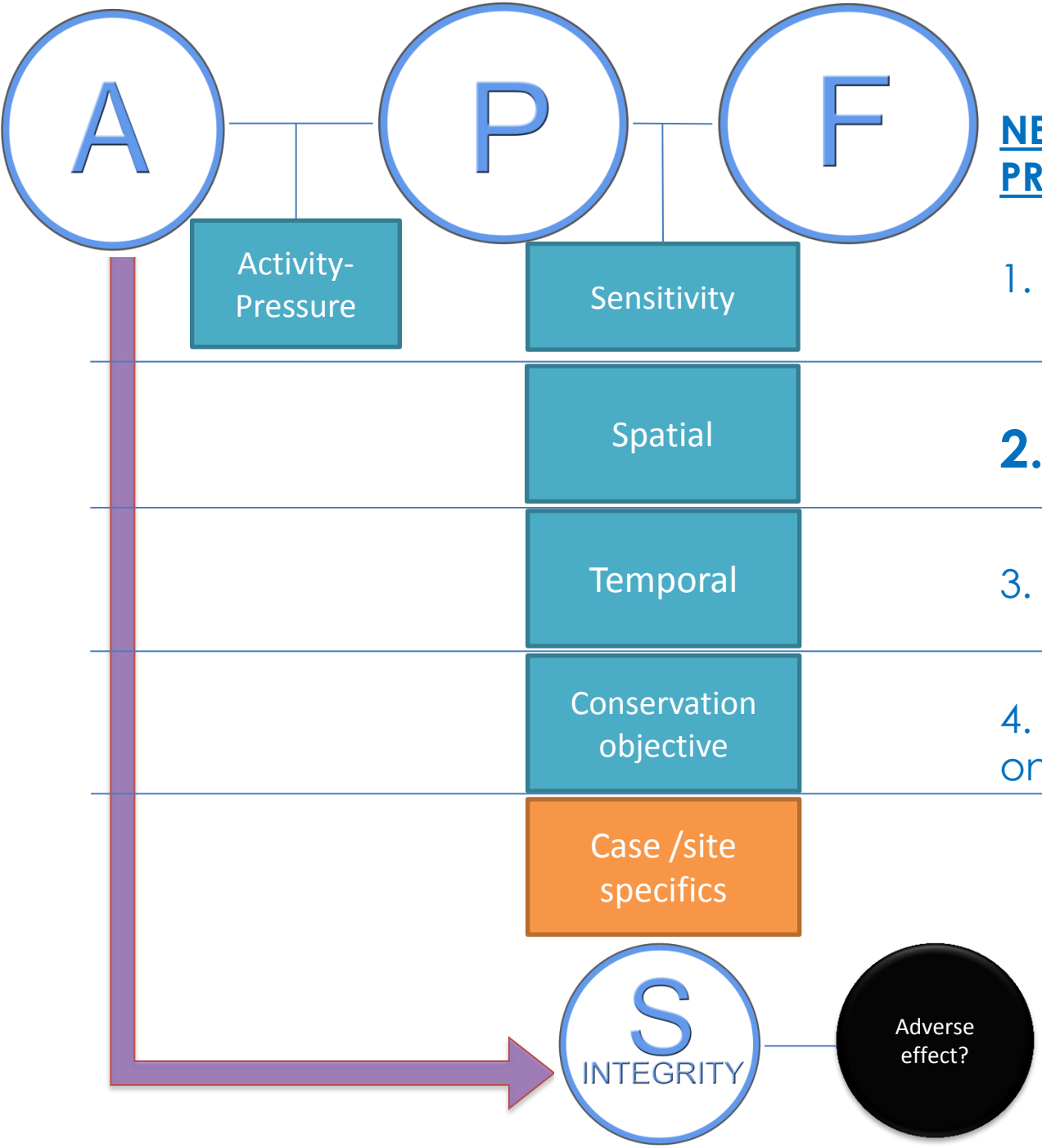
Feature sensitivity underpins the AoO pressures

Product 1: Advice on Operations

Sensitivity evidence

Feature/subfeature/supporting habitat	Subtidal mixed sediments
Pressure	Introduction or spread of invasive non-indigenous species (INIS)
Pressure description	The direct or indirect introduction of invasive non-indigenous species, e.g. Chinese mitten crabs, slipper limpets, Pacific oyster and their subsequent spreading and out-competing of native species. Ballast water, hull fouling, stepping stone effects (e.g. offshore wind farms) may facilitate the spread of such species. This pressure could be associated with aquaculture, mussel or shellfishery activities due to imported seed stock or from accidental releases.
Pressure benchmark	A significant pathway exists for the introduction or spread of one or more non-indigenous invasive species; OR there is a potential for the introduction of highly invasive/impact species.
Pressure comment	Sensitivity assessment will be made against a prescribed list of INIS based on the GBNNSIP list of potential invasive species.
Feature sensitivty to pressure (RANGE)	Not sensitive - High sensitivity

Biotope-name	Sensitivity		Resistance	Resilience	Justification
	Rank	Confidence			
A5.5331 - Zostera marina/angust	High	Medium	Low	Low	he seabed consists of a mixed substratum of san
A5.5343 - Ruppia maritima in rec	High	Medium	Low	Low	otope. Indeed recovery would only be possible if
A5.625 - Mytilus edulis beds on s	High	Medium	Low	Very Low	Minchin, 1995; Blanchard, 1997; Thieltges, 2005;
A5.61 - Polychaete worm reefs (	Low	High	Medium	Medium	rs and observed that the presence of living and dead s
A5.612 - Sabellaria alveolata on	Low	Medium	Medium	High	anipulative experiments in the intertidal where live a
A5.611 - Sabellaria spinulosa on	Not sensitive	Low	High	High	pinulosa reefs occur intertidally, however,
A5.434 - Limaria hians beds in tic	No evidence (NEv)	No evidence (NEv)	vidence (NEv)	idence (NEv)	effect of this pressure on Limaria hians.
A5.621 - Modiolus modiolus bed	No evidence (NEv)	No evidence (NEv)	vidence (NEv)	idence (NEv)	No evidence.
A5.622 - Modiolus modiolus bed	No evidence (NEv)	No evidence (NEv)	vidence (NEv)	idence (NEv)	No evidence.



NEW EVIDENCE PRODUCTS

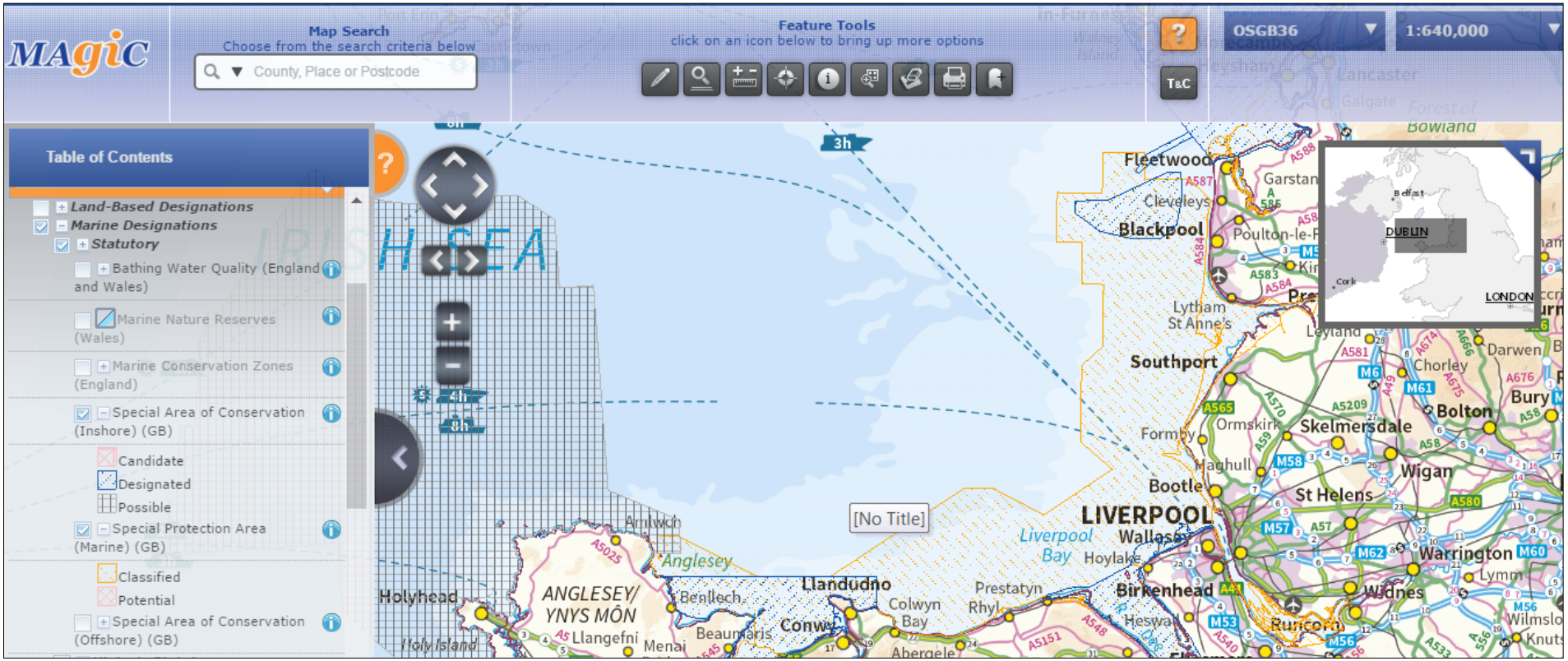
1. Advice on Operations

2. Mapping

3. Advice on Seasonality

4. Supplementary Advice on Conservation Objectives

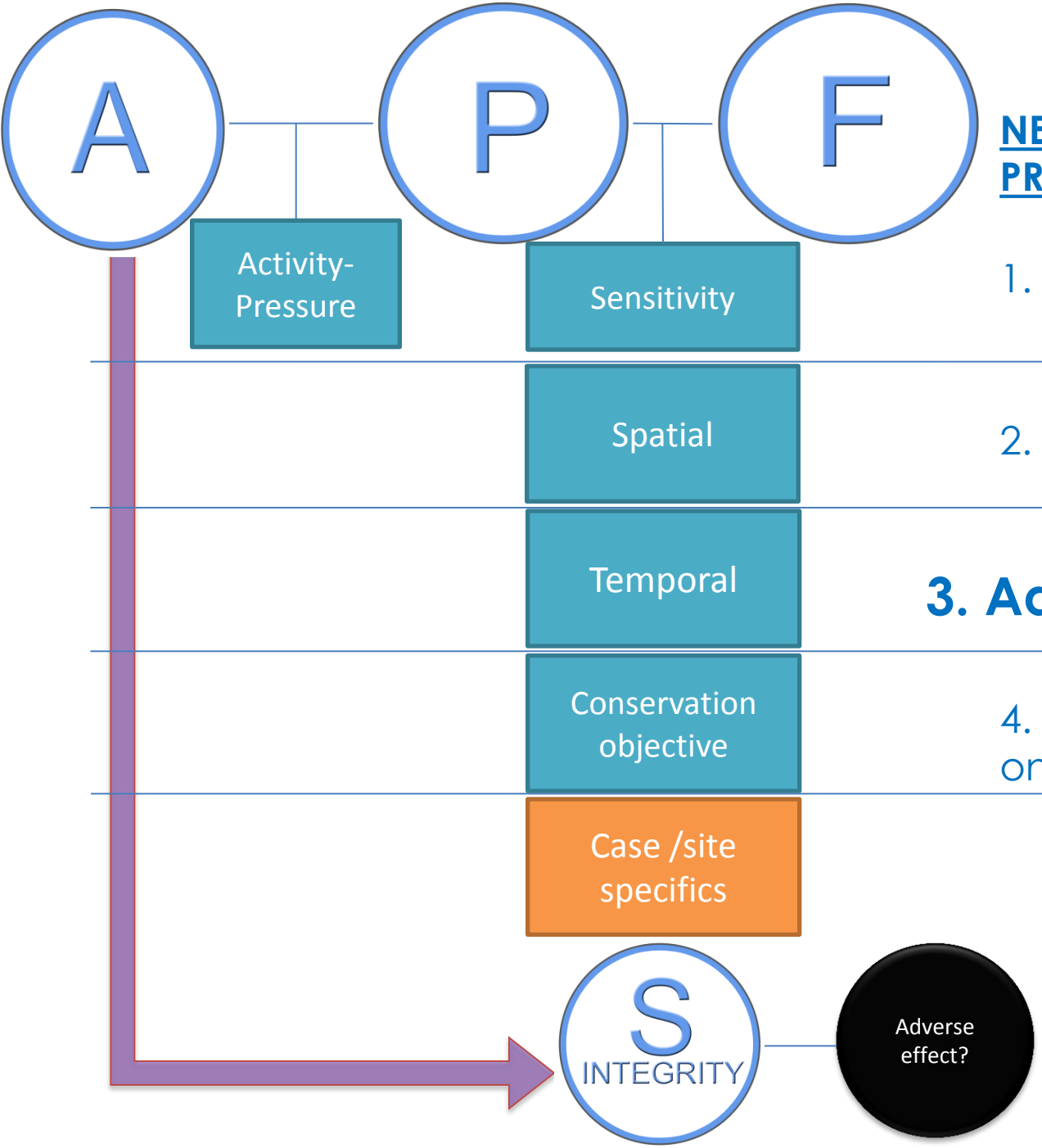
Product 2: Mapping



2 year effort from NE's GI team

- Digitising 1,628 surveys (1895 – 2015)
  - ~148,000 points
  - ~1,500,000 polygons

- NE, Cefas, EA verification surveys
- Volunteer data
- Photographic evidence
- LIDAR
- Bathymetric data
- Multibeam



NEW EVIDENCE PRODUCTS

1. Advice on Operations

2. Mapping

3. Advice on Seasonality

4. Supplementary Advice on Conservation Objectives

Product 3: Advice on feature seasonality – based on WeBS

NATURAL ENGLAND

Designated Sites View

Login Forgotten Password

> Search > Site list > Marine site detail > Seasonality

- Home
- New notifications
- Search for site details
- Reports and statistics
  - Whole of England
  - Region
  - County
  - Interim NE reports
  - NE Internal reports
- Glossary

Benfleet and Southend Marshes SPA

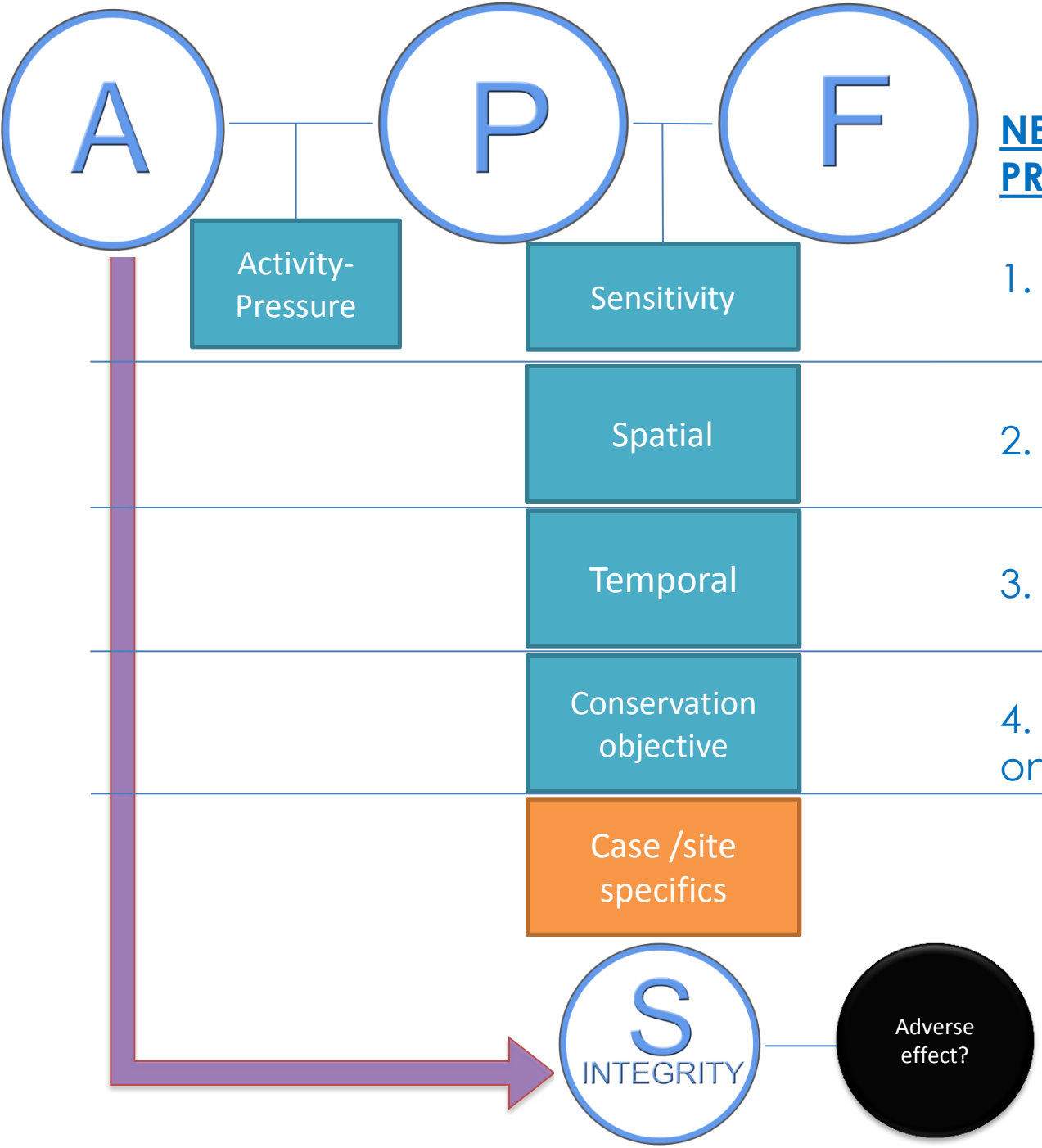
Seasonality tables

Feature name	Designated Season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dark-bellied Brent goose (Branta bernicla bernicla), Non-breeding	Non-breeding	■	■	■						■	■	■	■
Dunlin (Calidris alpina alpina), Non-breeding	Non-breeding	■	■	■						■	■	■	■
Grey plover (Pluvialis squatarola), Non-breeding	Non-breeding	■	■	■					■	■	■	■	■
Knot (Calidris canutus), Non-breeding	Non-breeding	■	■	■						■	■	■	■
Ringed plover (Charadrius hiaticula), Non-breeding	Non-breeding	■	■						■	■	■	■	■

Feature name	Breeding status	Annual vegetation of drift lines	Atlantic salt meadows (Glauco-puccinellietalia maritimae)	Freshwater and coastal grazing marsh	Intertidal biogenic reef: mussel beds	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Salicornia and other annuals colonising mud and sand	Spartina swards (Spartinion maritimae)	Subtidal seagrass beds
Dark-bellied Brent goose	Non-breeding		■	■		■	■	■		■	■	■	■	■
Dunlin	Non-breeding	■	■	■			■	■	■	■	■	■	■	
Grey plover	Non-breeding	■	■	■	■		■	■	■	■	■	■	■	
Knot	Non-breeding	■	■	■	■		■	■	■	■	■	■	■	
Ringed plover	Non-breeding	■	■	■	■		■	■	■	■	■	■	■	

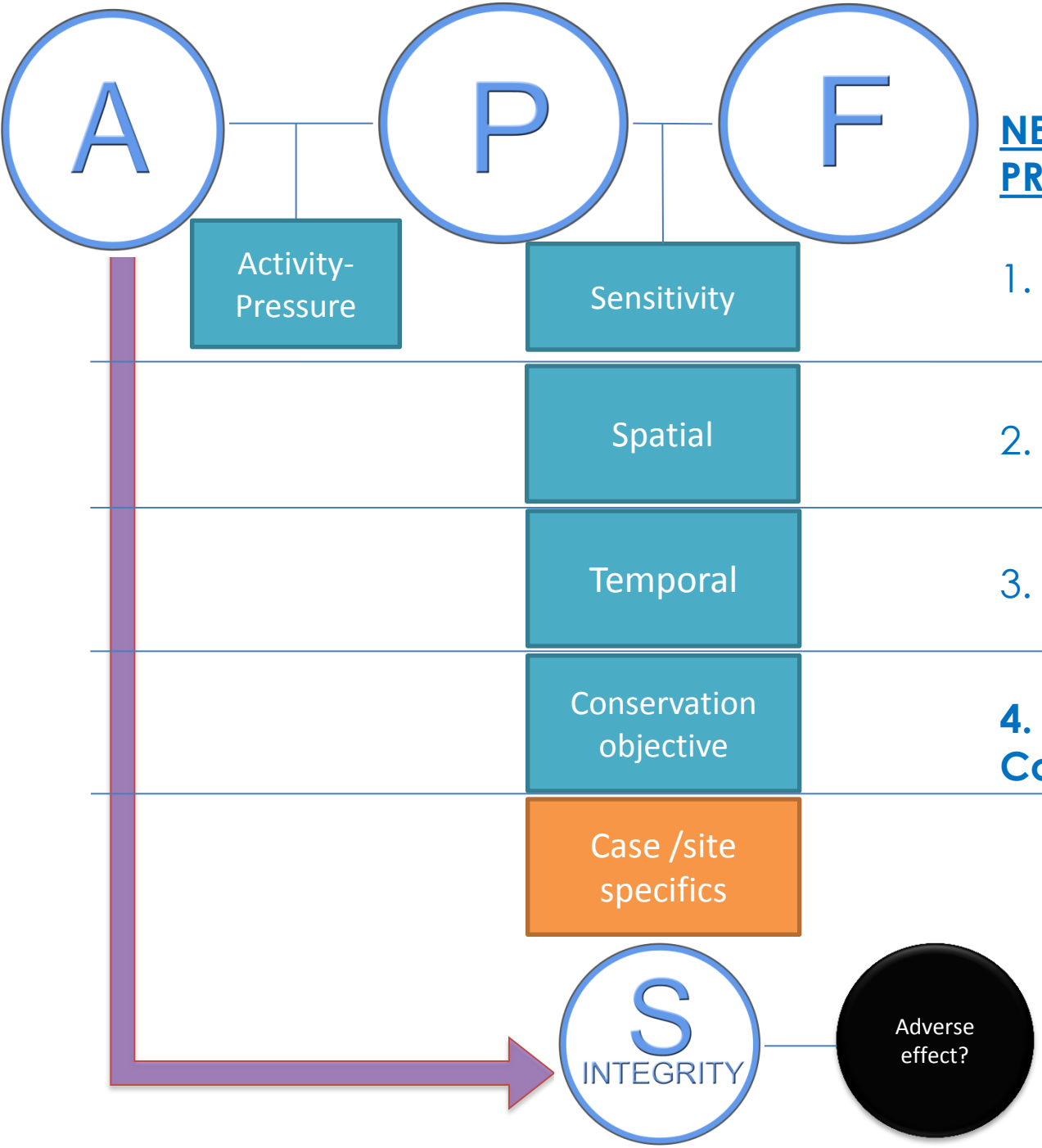
■ indicate the months in which significant numbers of each **mobile designated feature are most likely to be present** at the site during a typical calendar year

not highlighted in green are **not** ones in which the features are **necessarily absent,** rather that features may be present in less significant numbers in typical years, but there may still be a significant effect.



NEW EVIDENCE PRODUCTS

1. Advice on Operations
2. Mapping
3. Advice on Seasonality
4. Supplementary Advice on Conservation Objectives



NEW EVIDENCE PRODUCTS

1. Advice on Operations

2. Mapping

3. Advice on Seasonality

4. Supplementary Advice on Conservation Objectives

Product 4: Supplementary Advice on Conservation Objectives (SACO)

Home
New notifications
Search for site details
Reports and statistics
Whole of England
Region
County
Interim NE reports
NE Internal reports
Glossary

> Search > Site list > Marine site detail > Supplementary Advice

Drigg Coast SAC

Supplementary advice

The Supplementary Advice on Conservation Objectives (SACOs) present attributes which are ecological characteristics or requirements of the designated species and habitats within a site. The listed attributes are considered to be those which best describe the site's ecological integrity and which if safeguarded will enable achievement of the Conservation Objectives. These attributes have a target which is either quantified or qualified depending on the available evidence.

The target identifies as far as possible the desired state to be achieved for the attribute. In many cases, the attribute targets show if the current objective is to either 'maintain' or 'restore' the attribute. The targets given for each attribute do not represent thresholds to assess the significance of any given impact in Habitats Regulation Assessments. You will need to assess this on a case-by-case basis using the most current information available.

Where there is no evidence to determine a marine feature's condition, a vulnerability assessment, which includes sensitivity and exposure information for features and activities in a site, has been used as a proxy for condition. Evidence used in preparing the SACO has been cited with hyperlinks included where possible. Where references have not been provided, Natural England has applied ecological knowledge and expert judgement.

Some, but not all, of these attributes can also be used for regular monitoring of the condition of the designated features. The attributes selected for monitoring the features, and the standards used to assess their condition, are listed in separate monitoring documents, which will be available from Natural England.

When to use

You should use this information, along with the conservation objectives and case-specific advice issued by Natural England when developing, proposing or assessing an activity, plan or project that may affect the site.

Any proposals or operations which may affect the site or its features should be designed so they do not adversely affect any of the attributes in the SACO or achievement of the conservation objectives.

Features:
Choose one or more features and/or their sub-features below by selecting the applicable boxes in the tree. This will show the relevant targets. Where a feature has sub-features this will be indicated with a greyed out triangle below, which can be expanded.

- Atlantic decalcified fixed dunes (Calluno-Ulicetea)
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
- Dunes with Salix repens Ssp. argentea (Salicion arenariae)

Screen shot of SACO page on DSS

- Provides detailed advice and information to enable the application and achievement of the Conservation Objectives.

Product 4: Supplementary Advice on Conservation Objectives (SACO)

- Estuaries
  - A1E-Intertidal rock
  - A2.1E-Intertidal coarse sediment
  - A2.2E-Intertidal sand and muddy sand
  - A2.3E-Intertidal mud
  - A2.4E-Intertidal mixed sediments
  - A3E-Infralittoral rock
  - A5.1E-Subtidal coarse sediment
  - A5.2E-Subtidal sand
  - A5.4E-Subtidal mixed sediments
- Mudflats and sandflats not covered by seawater at low tide
- River lamprey (Lampetra fluviatilis)
- Sea lamprey (Petromyzon marinus)

Reset | Select all | Show attributes and targets for selected feaures

Nationally consistent advice / Site Specific

Feature

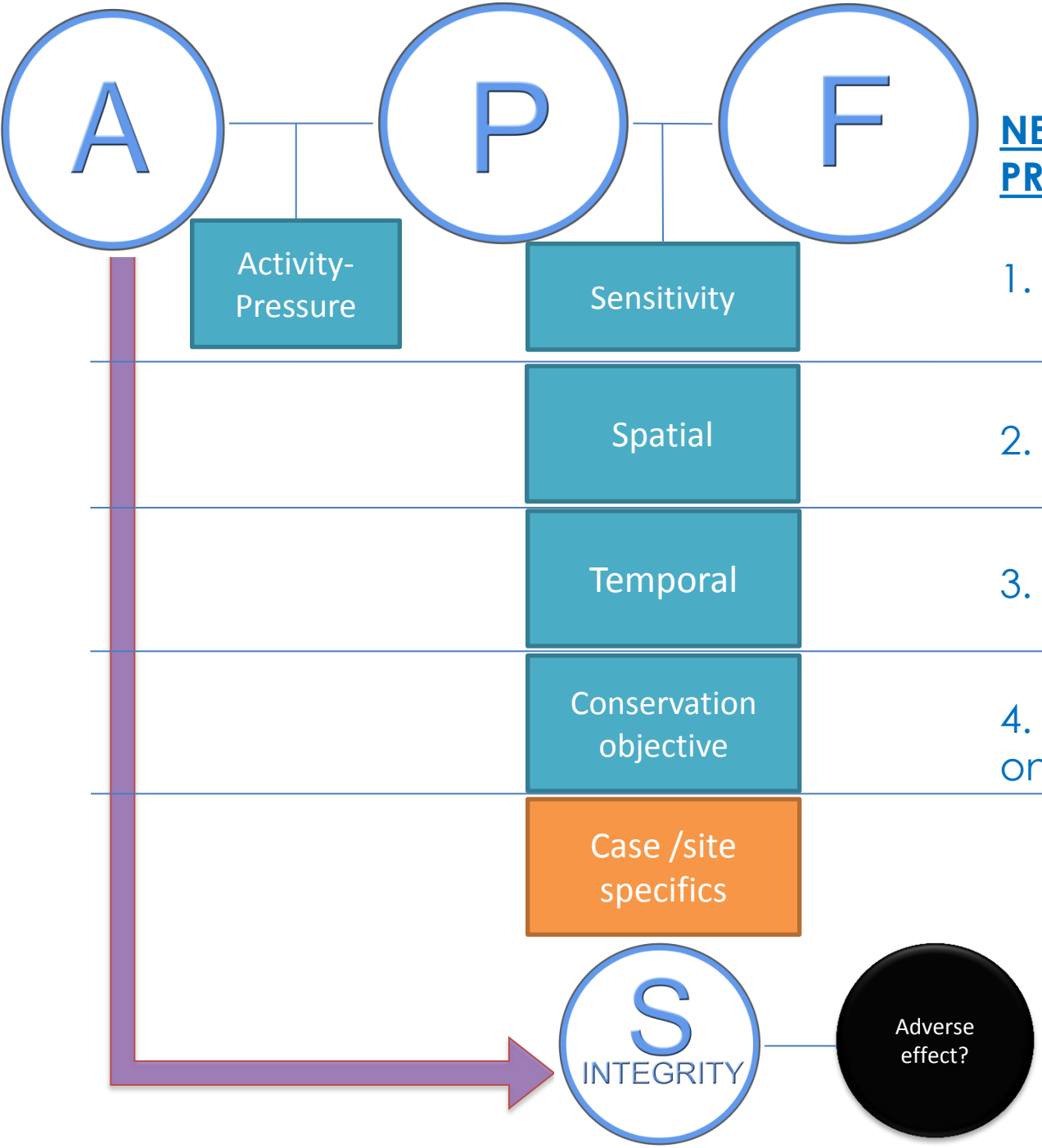
Attributes:

You can filter to show only targets for certain attributes by selecting one or more attributes from the list below (use ctrl click to select multiple). Note that only attributes for the features you have chosen are shown.

Distribution: presence and spatial distribution of intertidal coarse sediment communities
Distribution: presence and spatial distribution of intertidal mixed sediment communities
Distribution: presence and spatial distribution of intertidal mud communities
Distribution: presence and spatial distribution of intertidal sand and muddy sand communities
Extent and distribution
Structure: Non-native species and pathogens

Feature target

Feature Name	Attribute	Targets	Season	Supporting notes
Intertidal coarse sediment	Extent and distribution	Maintain the total extent and spatial distribution of intertidal coarse sediment.	N/A	The extent describes the presence and area of the habitat. It's the total area of the habitat across the site as a whole, even where it's patchy. The distribution describes the more detailed location(s) and pattern of habitat across the site. The distribution will influence the component communities present, and also help increase the health and resilience of the feature (Joint Nature Conservation Committee (JNCC) (2004)). A reduction in extent would alter the biological and physical functioning of the feature (M. Elliott, S. Nedwell, N. V. Jones, S. J. Read, N. D. Cutts and K. L. Hemingway (1998)). It's difficult to put an extent objective on a mobile, changing feature. An understanding of the supporting processes will be more helpful in determining site integrity. However, the extent can also be defined where the proportion of sediment-sensitive invertebrates (PSI) indicates a change to the sediment character. If there is insufficient evidence, the existing extent occurring at any one time should be the focus of an assessment due to the natural variation, and a fresh survey is likely to be required at the point of assessment, to ascertain what the existing extent is. There is no quantified baseline extent for intertidal coarse sediment habitat available from the time of site designation. The current extent of intertidal coarse sediment within the site is 11.88 ha (M. Hubble, S. Pears and R. Perez-Dominguez (2014)). The baseline distribution of intertidal coarse sediment within the Tweed Estuary SAC is described in (S. Jarvis, K. Mazik, J. Allen, S. Thomson, D. Burdon and N. Cutts (2003)) and (R. L. Foster-Smith, I. Sotheran, J. L. Foster-Smith and F. Bunker (1996)). To view the current distribution of intertidal coarse sediment within the site, please refer to the MAGIC map application. The target has been set due to a lack of evidence that the feature is being impacted by any anthropogenic activities.



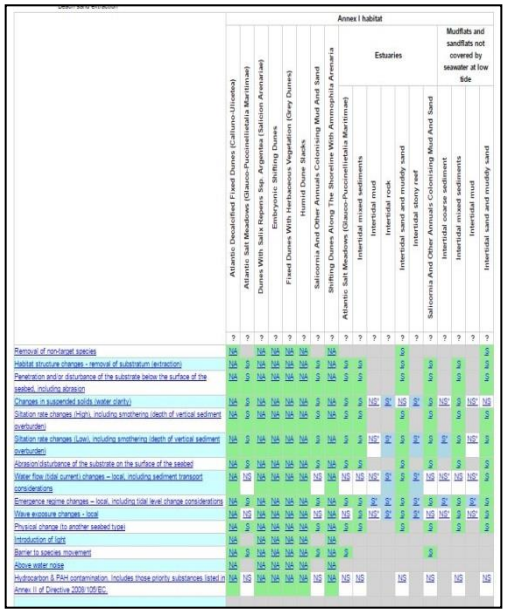
NEW EVIDENCE PRODUCTS

1. Advice on Operations
2. Mapping
3. Advice on Seasonality
4. Supplementary Advice on Conservation Objectives

Is my plan or project likely to have a significant effect on the site?

Screening tools

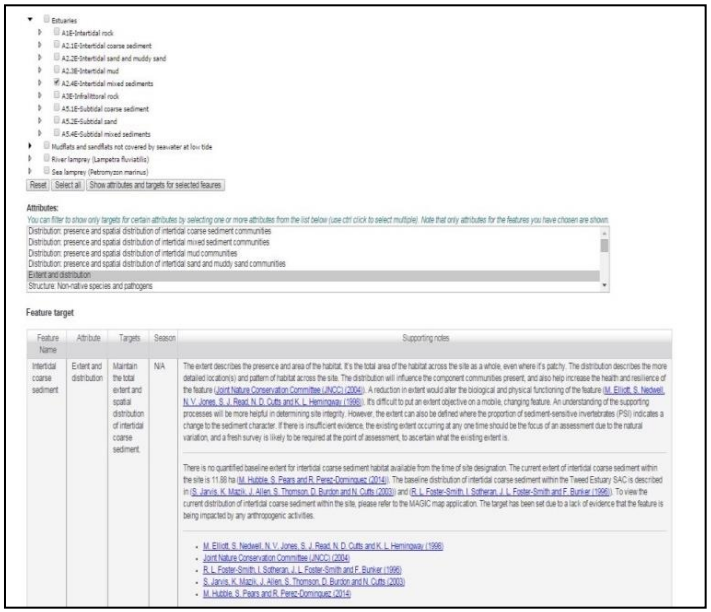
AoOps



Annex I habitat

	Atlantic Decalcified Fixed Dunes (Calluno-Ulicetea)	Atlantic Salt Meadows (Glauco-Puccinelliatalia Maritimae)	Dunes With Salix Repens Ssp. Argentea (Salicion Arenariae)	Embryonic Shifting Dunes	Fixed Dunes With Herbaceous Vegetation (Grey Dunes)	Humid Dune Slacks	Salicornia And Other Annuals Colonising Mud And Sand	Shifting Dunes Along The Shoreline With Ammophila Arenaria	Estuaries: Atlantic Salt Meadows (Glauco-Puccinelliatalia Maritimae)	Estuaries: Intertidal mixed sediments	Estuaries: Intertidal mud	Estuaries: Intertidal rock	Estuaries: Intertidal sand and muddy sand	Estuaries: Intertidal stony reef	Mudflats and sandflats not covered by seawater at low tide: Salicornia And Other Annuals Colonising Mud And Sand	Mudflats and sandflats not covered by seawater at low tide: Intertidal coarse sediment	Mudflats and sandflats not covered by seawater at low tide: Intertidal mixed sediments	Mudflats and sandflats not covered by seawater at low tide: Intertidal mud	Mudflats and sandflats not covered by seawater at low tide: Intertidal sand and muddy sand
	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Removal of non-target species	NA	?	NA	NA	NA	NA	?	NA					?						?
Habitat structure changes - removal of substratum (extraction)	NA	?	NA	NA	NA	NA	?	NA	?	?			?		?		?		?
Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion	NA	?	NA	NA	NA	NA	?	NA	?	?			?		?		?		?
Changes in suspended solids (water clarity)	NA	?	NA	NA	NA	NA	?	NA	?	?	NR	?*	NS	?*	?	NR	?	NR	NS
Siltation rate changes (High), including smothering (depth of vertical sediment overburden)	NA	?	NA	NA	NA	NA	?	NA	?	?			?		?		?		?
Siltation rate changes (Low), including smothering (depth of vertical sediment overburden)	NA	?	NA	NA	NA	NA	?	NA	?	?	NR	?*	?	?*	?	?*	?	NR	?
Abrasion/disturbance of the substrate on the surface of the seabed	NA	?	NA	NA	NA	NA	?	NA	?	?			?		?		?		?
Water flow (tidal current) changes – local, including sediment transport considerations	NA	NS	NA	NA	NA	NA	NS	NA	NS	NS	NR	?*	?	?*	NS	NR	NS	NR	?
Emergence regime changes – local, including tidal level change considerations	NA	?	NA	NA	NA	NA	?	NA	?	?	?*	?*	?	?*	?	?*	?	?*	?
Wave exposure changes - local	NA	NS	NA	NA	NA	NA	NS	NA	NS	?	NR	?*	?	?*	NS	NR	?	NR	?
Physical change (to another seabed type)	NA	?	NA	NA	NA	NA	?	NA	?	?			?		?		?		?
Introduction of light	NA		NA	NA	NA	NA		NA											
Barrier to species movement	NA	?	NA	NA	NA	NA	?	NA	?						?				
Above water noise	NA		NA	NA	NA	NA		NA											
Hydrocarbon & PAH contamination, includes those priority substances listed in Annex II of Directive 2008/105/EC	NA	NS	NA	NA	NA	NA	NS	NA	NS	NS			NS		NS		NS		NS

SACO



Advice on feature seasonality
Risk profiling of pressures
Sensitivity evidence
Feature maps

Facilitating NSIPS ✓

Improve the quality and quantity of data ✓

Make it operator focussed ✓

Make it consistent ✓

Show your workings ✓

Follow NE and govs standards ✓

Improve customer experience ✗

Make it simple ✗

5. What's coming: UNDER DEVELOPMENT

A screening tool connecting AoOps to SACO

19x23=437

Pressure	Annex I habitat													Annex II species	
	Estuaries									Mudflats and sandflats not covered by seawater at low tide					
	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	River lamprey (Lampetra fluviatilis)	Sea lamprey (Petromyzon marinus)
Abrasion/disturbance of the substrate on the surface of the seabed							S	S	S						
Habitat structure changes - removal of substratum (extraction)							S	S	S					IE	IE
Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion							S	S	S						
Removal of non-target species							S	S	S					S	S
Above water noise															
Barrier to species movement														S	S
Changes in suspended solids (water clarity)	S*	NS*	S*	NS*	S*	NS*	S	S	S	NS*	S*	NS*	NS*		
Collision ABOVE water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)															
Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)														S	S
Emergence regime changes – local, including tidal level change considerations	S*	S*	S*	S*	S*	S*				S*	S*	S*	S*		
Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.							NS	NS	NS					IE	IE
Introduction of light															
Introduction of other substances (solid, liquid or gas)							IE	IE	IE					IE	IE
Introduction or spread of non-indigenous species							IE	S	S					IE	IE
Litter							IE	IE	IE					IE	IE
Physical change (to another seabed type)							S	S	S						
Siltation rate changes (High), including smothering (depth of vertical sediment overburden)							S	S	S						
Siltation rate changes (Low), including smothering (depth of vertical sediment overburden)	S*	S*	S*	NS*	S*	S*	S	S	S	S*	S*	NS*	S*		

tLSE?

Feature screening (x)
maps, sensitivity,
seasonality tables

Pressure screening (y)
Pressure risk assessments,
sensitivity

4x4=16

Pressure	Justification	Annex I habitat		Annex II species	
		Estuaries			
		Subtidal mixed sediments	Subtidal sand	River lamprey (Lampetra fluviatilis)	Sea lamprey (Petromyzon marinus)
Abrasion/disturbance of the su	596	S	S		
Habitat structure changes - rem	624	S	S	IE	IE
Penetration and/or disturbance	615	S	S		
Removal of non-target species	575	S	S	S	S

Tweed Estuary AoSI – 198 integrity attributes

	SITE														
	Annex I habitat													Annex II species	
	Estuaries									Mudflats and sandflats not covered					
Integrity attributes	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	River lamprey (Lampetra fluviatilis)	Sea lamprey (Petromyzon marinus)
Distribution: presence and spatial distribution of infralittoral rock communities	■														
Distribution: presence and spatial distribution of intertidal coarse sediment communities		■								■					
Distribution: presence and spatial distribution of intertidal mixed sediment communities			■								■				
Distribution: presence and spatial distribution of intertidal mud communities			■	■								■			
Distribution: presence and spatial distribution of intertidal rock communities					■										
Distribution: presence and spatial distribution of intertidal sand and muddy sand communities						■							■		
Distribution: presence and spatial distribution of subtidal coarse sediment communities							■								
Distribution: presence and spatial distribution of subtidal mixed sediment communities								■							
Distribution: presence and spatial distribution of subtidal sand communities									■						
Extent and distribution	■	■	■	■	■	■	■	■	■	■	■	■	■		
Population: population size														■	■
Population: recruitment and reproductive capability														■	■
Presence and spatial distribution of the species														■	■
Structure and function: biological connectivity														■	■
Structure: Non-native species and pathogens	■	■	■	■	■	■	■	■	■	■	■	■	■		
Structure: Opportunistic macroalgae cover		■	■	■		■				■	■	■	■		
Structure: physical structure of rocky substrate	■				■										
Structure: presence and abundance of typical species	■	■	■	■	■	■	■	■	■	■	■	■	■		
Structure: sediment composition and distribution		■	■	■		■	■	■	■	■	■	■	■		
Structure: sediment total organic carbon content		■	■	■		■	■	■	■	■	■	■	■		
Structure: species composition of component communities	■	■	■	■	■	■	■	■	■	■	■	■	■		
Structure: topography		■	■	■		■				■	■	■	■		
Supporting habitats: extent and distribution														■	■
Supporting habitats: food availability														■	■
Supporting processes: energy / exposure	■	■	■	■	■	■	■	■	■	■	■	■	■		
Supporting processes: physico-chemical properties	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supporting processes: sediment contaminants		■	■	■		■	■	■	■	■	■	■	■		
Supporting processes: sediment movement and hydrodynamic regime		■	■	■		■	■	■	■	■	■	■	■	■	■
Supporting processes: sedimentation rate	■				■										
Supporting processes: water quality - contaminants	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supporting processes: water quality - dissolved oxygen	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supporting processes: water quality - nutrients	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Supporting processes: water quality - turbidity	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Distribution: presence and spatial distribution of estuary communities	■	■	■	■	■	■	■	■	■						
Distribution: presence and spatial distribution of mudflat and sandflat communities										■	■	■	■		
Function: connectivity	■	■	■	■	■	■	■	■	■						
Structure: energy / exposure	■	■	■	■	■	■	■	■	■						
Structure: freshwater sources	■	■	■	■	■	■	■	■	■						
Structure: habitat zonation	■	■	■	■	■	■	■	■	■						
Structure: morphology	■	■	■	■	■	■	■	■	■						
Structure: sediment movement, sources and sinks	■	■	■	■	■	■	■	■	■						
Structure: substrate composition and distribution	■	■	■	■	■	■	■	■	■						
Structure: tidal regime	■	■	■	■	■	■	■	■	■						
Structure: Water density	■	■	■	■	■	■	■	■	■						

Tweed Estuary AoSI – 198 integrity attributes

Integrity attributes	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Subtidal coarse sediment	Subtidal mixed sediments
	SIT							
	Annex I habitat							
	Estuaries							
Distribution: presence and spatial distribution of infralittoral rock communities								
Distribution: presence and spatial distribution of intertidal coarse sediment communities								
Distribution: presence and spatial distribution of intertidal mixed sediment communities								
Distribution: presence and spatial distribution of intertidal mud communities								
Distribution: presence and spatial distribution of intertidal rock communities								
Distribution: presence and spatial distribution of intertidal sand and muddy sand communities								
Distribution: presence and spatial distribution of subtidal coarse sediment communities								
Distribution: presence and spatial distribution of subtidal mixed sediment communities								1
Distribution: presence and spatial distribution of subtidal sand communities								
Extent and distribution								1
Population: population size								
Population: recruitment and reproductive capability								
Presence and spatial distribution of the species								
Structure and function: biological connectivity								
Structure: Non-native species and pathogens								
Structure: Opportunistic macroalgae cover								
Structure: physical structure of rocky substrate								
Structure: presence and abundance of typical species								1
Structure: sediment composition and distribution								1
Structure: sediment total organic carbon content						1		
Structure: species composition of component communities								1
Structure: topography								
Supporting habitats: extent and distribution								
Supporting habitats: food availability								
Supporting processes: energy / exposure								1
Supporting processes: physico-chemical properties								
Supporting processes: sediment contaminants								
Supporting processes: sediment movement and hydrodynamic regime								1
Supporting processes: sedimentation rate								
Supporting processes: water quality - contaminants								1
Supporting processes: water quality - dissolved oxygen								1
Supporting processes: water quality - nutrients								1
Supporting processes: water quality - turbidity								1
Distribution: presence and spatial distribution of estuary communities					2			
Distribution: presence and spatial distribution of mudflat and sandflat communities								
Function: connectivity								
Structure: energy / exposure					1			
Structure: freshwater sources								
Structure: habitat zonation					1			
Structure: morphology					1			
Structure: sediment movement, sources and sinks					2			
Structure: substrate composition and distribution					1			
Structure: tidal regime								
Structure: Water density								

Activity:	Aggregates dredging
Pressure(s) affecting integrity attribute caused by activity(ies):	Abrasion/disturbance of the substrate on the surface of the seabed
	Habitat structure changes - removal of substratum (extraction)
	Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion
	Removal of non-target species

Activity:	Cable laying
Pressure(s) affecting integrity attribute caused by activity(ies):	Siltation rate changes (Low), including smothering (depth of vertical sediment overburden)
Feature/subfeature/sup hab:	Estuaries
Integrity attribute:	Distribution: presence and spatial distribution of estuary communities
Target:	Maintain the presence and spatial distribution of estuary communities.

Supporting and / or explanatory notes for the target:

A variety of communities make up the habitat. Listed component communities reflect the habitat's overall character and conservation interest. Communities are described as biotopes using EUNIS or the Marine Habitat Classification. Communities include, but are not limited to, those that are notable or representative of the feature. Representative communities include, for example, those covering large areas and notable communities include those that are rare, scarce or particularly sensitive to pressure. Changes to the spatial distribution of communities across the feature, could highlight changes to the overall feature.

References:

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Dyer, K., 1997. Estuaries - A Physical Introduction

Environment Agency, 2011. The estuary guide. Chapter 3: Estuary setting - Characterisation

JNCC., 2004. Common Standards Monitoring Guidance for Littoral Sediment Habitats

JNCC., 2004. Common Standards Monitoring Guidance for Estuaries

Hiscock, K. et al., 2006. The structure and functioning of marine ecosystems: an environmental protection and management perspective.

Davies, J. et al., 2001. Marine montioring handbook

Engagement

Joint SUDG and NE workshop - encouraging engagement and joint working - July 2015

Led to spin off workshops/liaison:

- Ports – NE and ABP Sept 15
- Cables – NE, SUDG and cable industry – Nov 15
- Aggregates – NE, BMAPA – methods - Aug 15
- Recreation – NE, RYA – Sept 2015
- Ongoing written feedback on products from other sectors

Coastal futures presentation of joint working – Jan 2016

Ongoing communications (MMO, JNCC, IFCA, EA, SNH, eNGOs)

Ongoing Conservation Advise Advisory Group (CAAG) meetings

Ongoing feedback internally from our site leads and sector specialists

Natural England: Marine Conservation Advice

Will:

- Provide, nationally consistent, site tailored advice on how an activity could affect site integrity

- Our evidence to inform advice is…

  Consistent
  Transparent
  Repeatable (reduces subjectivity)
  Best available

- Meet Natural England's Evidence standards

Natural England: Marine Conservation Advice

BUT!! – the application of these new evidence products will only ensure we are focusing our attention on the potential issues of concern - **that is all**

Warning!!

- It can't be used in isolation to determine potential impacts
- In the absence of case specifics (duration, extent and intensity) it is not sufficient to base NE's advice on
- Judgement and practical application will always be needed

Marine Conservation Advice: Evidence

1. Specific needs for evidence
2. Gaps in knowledge/
   data gathering
3. Protocols:
   development & deliverance
4. Challenges with Evidence
5. Cross-organisation partnerships
6. **Way forward – More evidence needed**

Context

What we're trying to achieve

What we've done so far

Engagement

What's coming

Thank you for your attention

Any questions?

www.pinterest.com/rachevenew/southport-surrounding-areas/

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