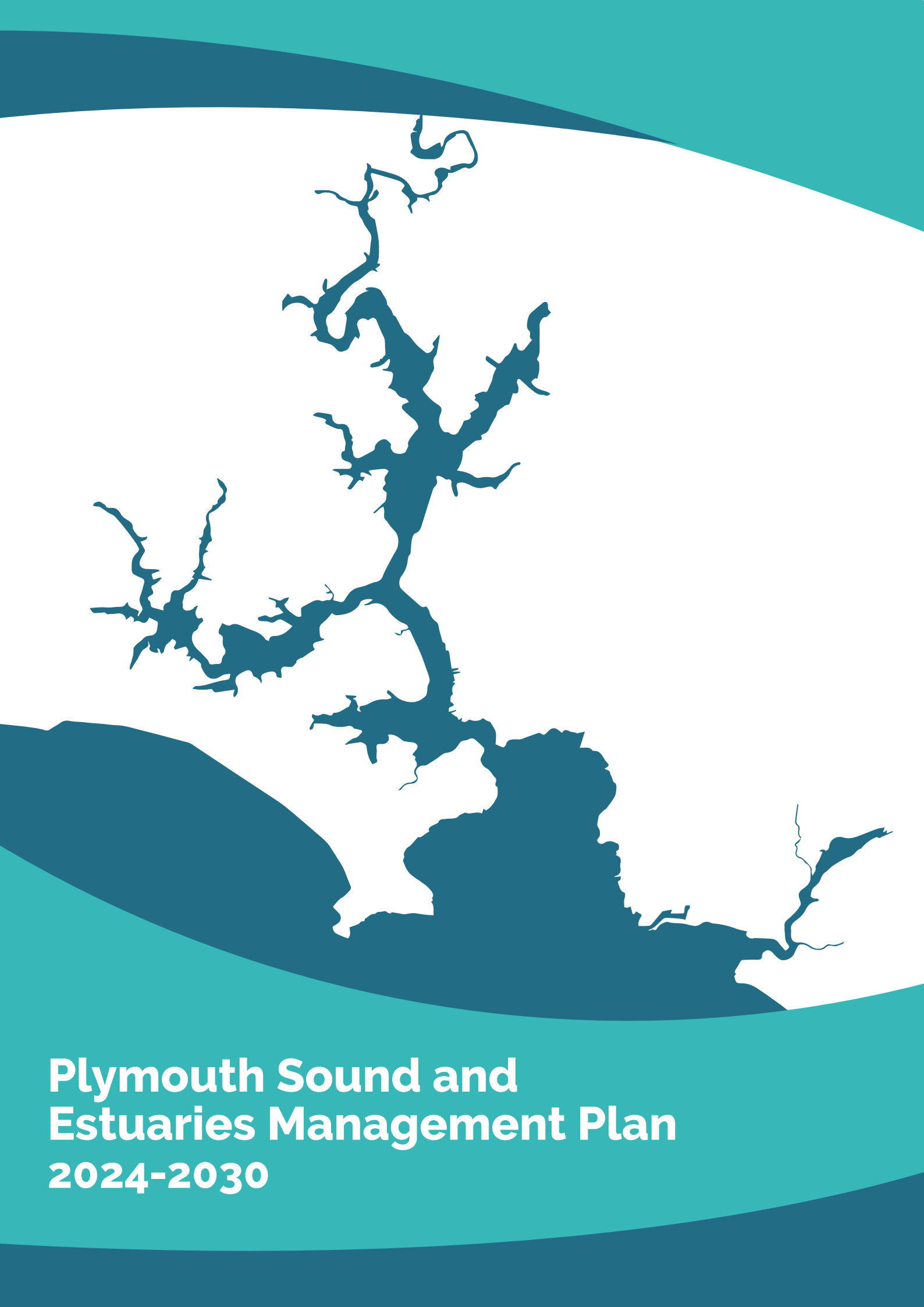

Plymouth Sound and Estuaries Management Plan 2024-2030

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This Management Plan has been developed by Partnership Coordinator, Amelia Sturgeon on behalf of, and with input from, TECF members. TECF Members include;

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Plymouth City Council (Host)
Associated British Ports
Cattewater Harbour Commissioners
Cornwall Council
Devon County Council
Duchy of Cornwall
Natural England
Ministry of Defence (Defence Infrastructure Organisation)
South Hams District Council
Sutton Harbour
West Devon Borough Council

Constituent members

Cornwall IFCA
Devon & Severn IFCA
Environment Agency

Marine Management Organisations

Guest

South Devon National Landscape and Heritage Coast
Tamar Valley National Landscape
University of Plymouth/Marine Research Plymouth?
National Marine Park
Devon Wildlife Trust?
Defence Infrastructure Organisation?

Creation of this plan was also supported by key partners;
University of Plymouth, etc…]

Special thank you to Kaja Curry, Mike Oxford, the KHM Team, Matt Ashley [add others]

Graphics by Helen Collingbourne, PCC and maps by Tom Mullier, Marine Mapping ltd.

Executive summary

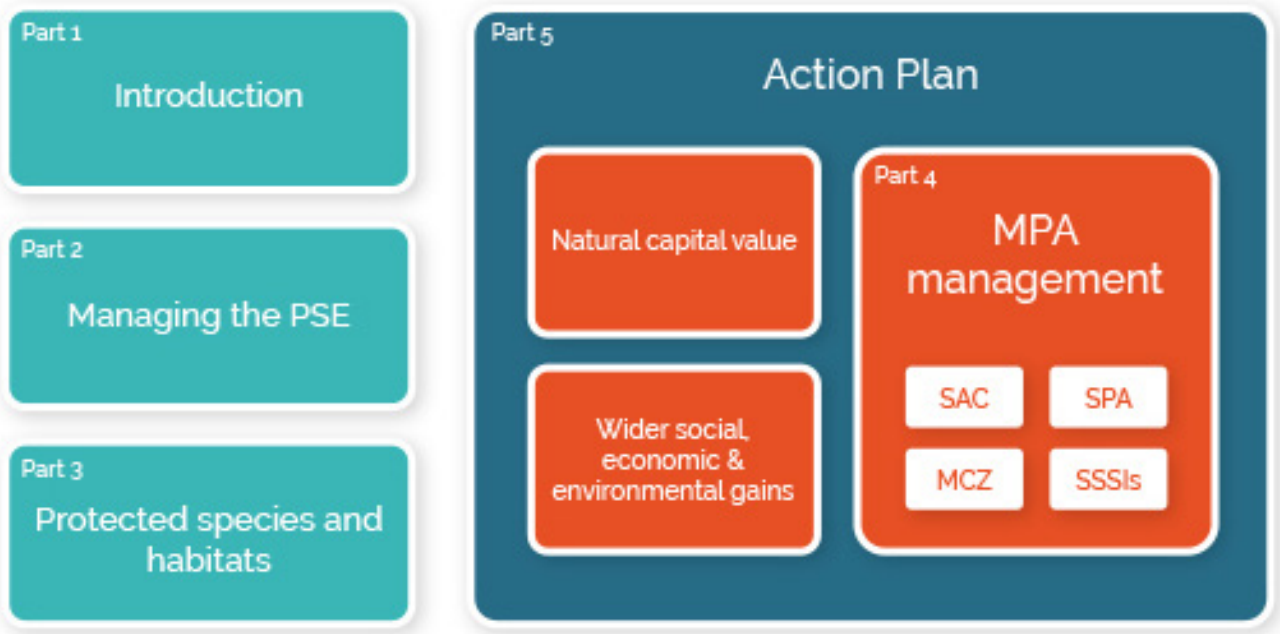
The Plymouth Sound and Estuaries (PSE) is a Marine Protected Area (MPA) located in the South West, UK. The area has a rich and diverse natural marine environment and a cultural and historical heritage, landscape and economy that is deeply connected to the estuary and coast. The Tamar Estuaries Consultative Forum (TECF) a coastal and estuary partnership, members have a legal responsibility to responsibility to manage the MPA. TECF, along with its advisory groups and the Yealm Estuary Management Group (YEMG), provide a collaborative framework for managing the PSE.

'Our vision is for the PSE to be a biodiverse and resilient ecosystem that supports its communities and businesses with a range of valued ecosystem services and for management to be collaborative, transparent and water user driven.'

This Management Plan aims to:

- Work to maintain and enhance the MPA favourable conservation status through compliance with statutory duties;
- Achieve effective management of the wider PSE waters, including non-designated waters, through collaboration, safeguarding the sustainable use of the water; securing environmental, economic and social benefits for society.

The Plymouth Sound and Estuaries (PSE) Management Plan



This Plan brings together the critical MPA Management Measures (Part 4) and considering a Natural Capital Approach integrates these into wider site management actions, set out in 11 themed topics, that help to deliver wider social and economic gains for society. (Part 5). This Plan provides a framework for managing the PSE through a coordinated and integrated approach to management, where organisations align their statutory duties towards the MPA and deliver these alongside wider management of our non-designated assets.

Parts 1-4 of this Plan cover the Yealm Estuary, however the Action Plan for the Yealm is included within the South Devon Estuaries Management Plan (Table 3). In this document PSE refers to the whole PSE area which includes the non-designated waters whereas PSE MPA refers to the Designated area. This Plan is designed as a resource for readers to dip in and out of relevant sections as needed, there may therefore be repetition.

This Plan responds to national and international ambitions for deliver genuine environmental gains for our estuaries and coast by delivering effective and adaptive management for our waters using the MPA feature based model as a framework to do so.

Foreword

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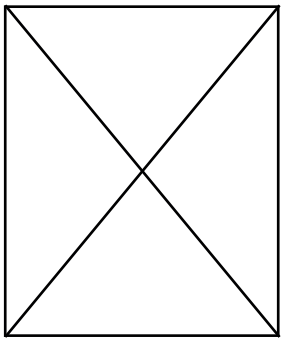

Rob Giles
Kings Harbour
Master Chair, TECF

Version Control

Version	Author/Reviewer	Date	Changes
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V3.2	Kaja Curry	05.02.2023	Independent review - various comments
V3.3	Consultation with TECF Members	[date]	Various changes throughout
V3.4	Public consultation	[date]	Various changes
V3.5	Approved by TECF	[date]	Approved by TECF for publication
V3.6	Adopted by Partners	[date]	[add description]

Review Timetable

Document Control	Author/Reviewer
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Superseded versions	[date]
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Abbreviations

CC Cornwall Council
CIFCA Cornwall Inshore Fisheries and Conservation Authority
CSF Catchment Sensitive Farming
CWT Cornwall Wildlife Trust
D&SIFCA Devon & Severn Inshore Fisheries and Conservation Authority
DASSH Archive of Marine Species and Habitats Data
DCC Devon County Council
DEFRA Department of Environment Food and Rural Affairs
DoC Duchy of Cornwall
DWT Devon Wildlife Trust
EA Environment Agency
EH English Heritage
EMS European Marine Site
HA Harbour Authority
IFCA Inshore Fisheries and Conservation Authority
JNCC Joint Nature Conservation Committee
KHM Kings Harbour Master
LA Local Authority
MarLIN Marine Life Information Network
MBA Marine Biological Association
MCA Marine Coastguard Agency
MMO Marine Management Organisation
MoD Ministry of Defence
MPA Marine Protected Area
NE Natural England
NL National Landscape (formally AONB)
PCC Plymouth City Council
PPMLC Port of Plymouth Marine Liaison Committee
PSE Plymouth Sound and Estuaries
PSE Plymouth Sound and Estuaries
PSNMP Plymouth Sound National Marine Park
SDNL South Devon National Landscape (formally AONB)
SHDC South Hams District Council
TCP Tamar Catchment Partnership
TECF Tamar Estuaries Consultative Forum
TV NL Tamar Valley National Landscape (formally AONB)
UoP University of Plymouth
WDBC West Devon Borough Council
WMCAAG Wembury Advisory Group
WRT West Country Rivers Trust
YEMF Yealm Estuary Management Group

Part 1. Introduction

1.1 The Tamar Estuaries Consultative Forum

The Tamar Estuaries Consultative Forum (TECF) a coastal and estuary partnership for the Plymouth Sound and Estuaries (PSE). It comprises authorities with a statutory responsibility over the Marine Protected Area (MPA) and other relevant organisations. The Yealm Estuary is partly included within MPA but excluded from the TECF management area (Figure 1) as management is coordinated through the Yealm Estuary Management Group (YEMG) (2.2.3).

TECF have produced this management plan to cover the whole PSE area and are responsible for coordinating delivery of the management actions identified in Action Plan (Part 5). Whilst this Plan is relevant to the Yealm (Parts 1-4), the YEMG will coordinate delivery of a separate Action Plan. A full description of TECF is provided in Section 2.2.2.

1.2 Plan Vision, Aims and Objectives

1.2.1 Vision

Our vision is for the Plymouth Sound and Estuaries (PSE) to be a biodiverse and resilient ecosystem that supports its communities and businesses with a range of valued ecosystem services and for management to be collaborative, transparent and water user driven.

1.2.2 Aims

The plan aims to:

1. Work to maintain and enhance the MPA favourable conservation status through compliance with statutory duties;

2. Achieve effective management of the wider PSE waters, including non-designated waters, through collaboration, safeguarding the sustainable use of the water; securing environmental, economic and social benefits for society.

Figure 1 *Map of the Plymouth Sound and Estuaries (PSE) showing the Marine Protected Area (MPA), TECF management area and Yealm Estuary management area. The component sites which form the MPA are shown in Figure 7.*

1.2.3 Objectives

To achieve these aims, this Plan will:

1. Provide a management framework that sets out an integrated strategy for managing the PSE MPA and the associated non-designated habitats and species.

2. Identify the key pressures and threats to the MPA designated features based on conservation advice from Natural England (Part 4).

3. Recognise MPA designated features as natural capital assets within the broader environmental context and understand the flow of ecosystem service benefits they provide.

4. Provide a six-year thematic Action Plan which identifies achievable partner actions and that address the key pressures and threats to MPA designated features.

5. Deliver actions through a collaborative governance structure (2.2) which involves water users in the decision-making process and makes effective use of resources to resolve challenges.

6. Support relevant and competent authorities by providing a clear means of delivering and monitoring their statutory duties in relation to the designated sites.

7. Align with other strategies to support collaborative working with partners from across the catchment recognising the need for catchment approach to estuary management.

1.3 What the plan covers

This document is presented in five parts (Figure 2):

Part 1 Introduction describes the plan, the background and importance of the area and introduces the Natural Capital Approach (NCA).

Part 2 Managing the Plymouth Sound and Estuaries explores the role of this plan within the management of the MPAs and the wider estuary and coast.

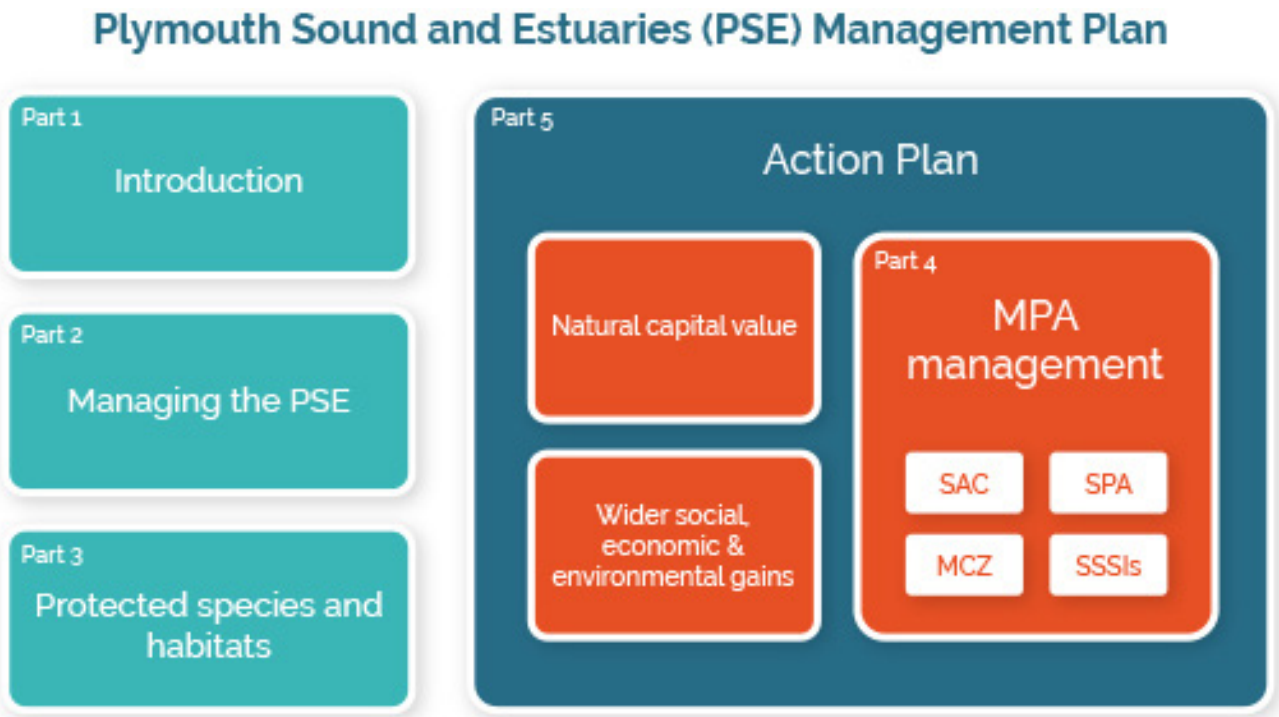
Part 3 Protected Habitats and Species describes the MPA component sites, the features and other special features in the site and the key ecosystem services provided. Sites include;

- Plymouth Sound and Estuaries Special Area of Conservation (SAC)
- Tamar Complex Special Protected Area (SPA)
- Tamar Estuary Marine Conservation Zone (MCZ).
- Sites of Special Scientific Interest (SSSIs) (various)

Part 4 MPA Management summarises the statutory guidance and ecosystem service provision for the MPA and sets out the Critical Management Measures.

Part 5 Action Plan provides an integrated Action Plan for managing the PSE area with 11 themes (Figure 13), which identifies actions which deliver the MPA Critical Management Measures identified in Part 4.

Figure 2 *Structure and broad content of the Plymouth Sound and Estuaries (PSE) Management Plan.*



1.4 Target audience

This Plan is for the authorities that make up TECF which have statutory powers to manage the PSE MPA[1] as well as those with a non-statutory (conservation or commercial) interest in the management of the estuary or coast. It also functions as a resource to inform and guide developing projects. Importantly, this document also serves water users with a transparent plan for how their estuary and coastline is being managed..

1.5 Plan production, implementation, reporting and review

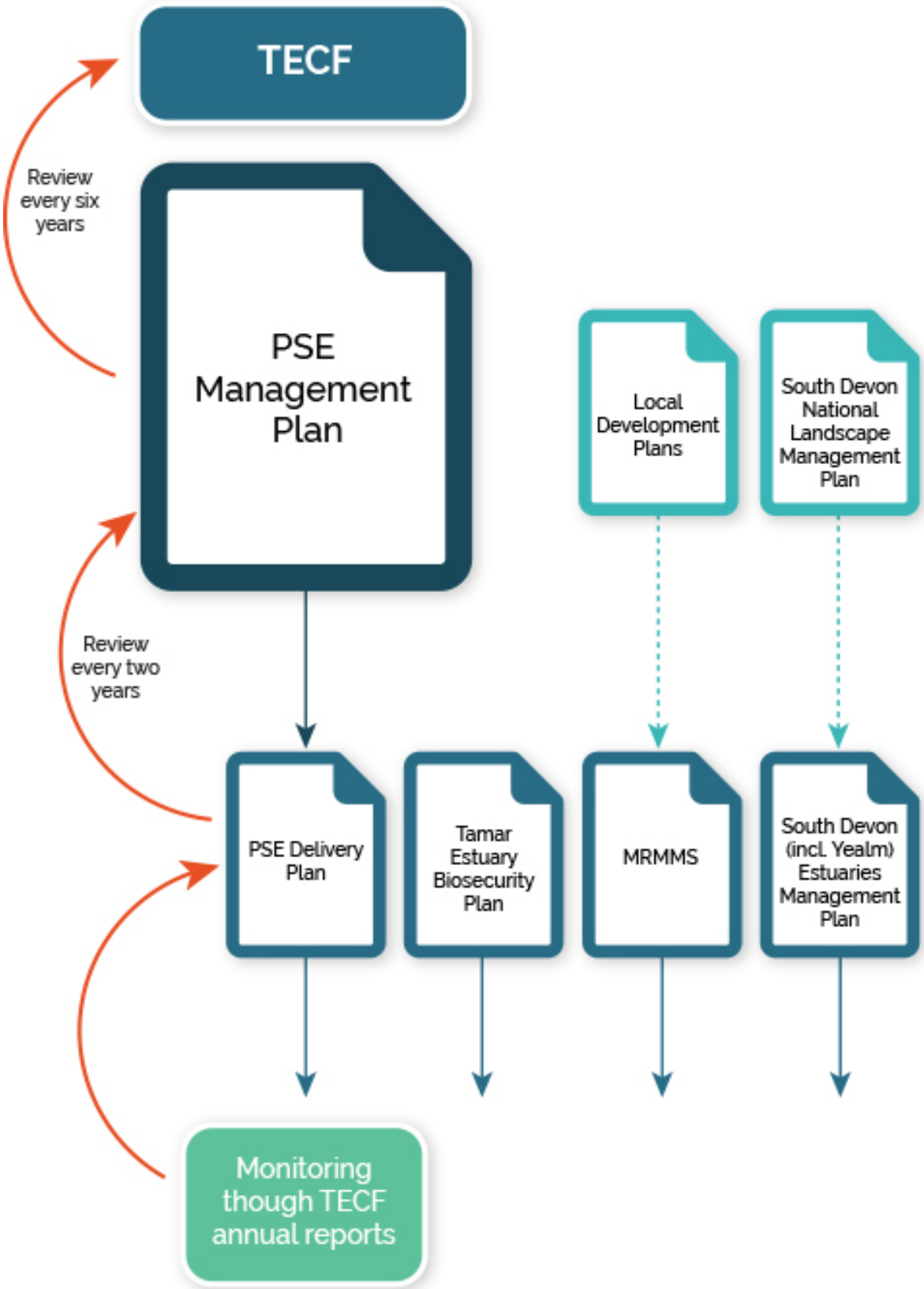
TECF is responsible for producing, monitoring and reviewing this plan, led/supported by the TECF coordinator (Figure 3). The Management plan was produced by the TECF coordinator on behalf of TECF (and the YEMG). TECF members and partners have had the opportunity to input through workshops and/or consultation, and a public consultation was held in [date], 2024.

Implementation will be coordinated by the TECF coordinator though specialist delivery plans, including a biennial PSE Delivery Plan. Responsibility for individual actions fall on the named lead organisation. TECF Core Members contribute annually to fund TECF and to support this delivery process[2].

TECF members will update on activities at annual partnership meetings[3] and the TECF Coordinator will monitor and report on the plan delivery every two years. Statutory measures such as; Natural England's (NE) MPA condition assessments (4.1) and the Environment Agency's (EA) water body status assessment[4] (5.4), provide measures of success for this Plan. Action 2.3.a identifies this needs to develop this process further. Some individual actions may incorporate success measures within them. Individual delivery plans will include their own implementation, monitoring and reporting processes.

1 Where a management scheme exists for an SAC and SPA, the relevant authorities who are part of that scheme are obliged to exercise their functions under the scheme to secure the requirements of the Directive (Appendix 2).
2 [Add link to MoA]
3 Meeting minutes can be found on; [add new site link
4 Catchment Data Explorer

Figure 3 *The Plymouth Sound and Estuaries (PSE) Management Framework, showing the Management Plan implementation, monitoring and review process. MRMMS: Marine Recreation Mitigation and Management Scheme.*



1.6 Site Description

The Plymouth Sound and Estuaries (PSE) is located on the south coast of the UK, spanning the border between Cornwall and Devon. The PSE area relates to the Tamar, Tavy, Lynher, Plym and Yealm estuaries and the Plymouth Sound and Wembury Bay where the estuaries meet (Figure 3).

The PSE is a ria type estuary system which is distinguished as a drowned river valley[5]. A ria estuary type is characteristic of the region; they have relatively deep narrow channels with steep sides. The PSE has a large tidal range and salinity gradient and multiple shallow inlets and bays filled with soft sediments. This gives rise to a rich diversity of habitats supporting complex ecological communities which in turn provide many ecosystem services (Appendix 1). The Tamar (water) Management Catchment[6] covers 1869km^2; the estuaries, their tributaries and the geology form dramatic cliffs and valleys through Devon and Cornwall. This catchment includes the UNESCO World Heritage Site[7], Tamar Valley[8], South Devon[9] and Cornwall[10] National Landscapes and a major urban area, the City of Plymouth

In recognition of the national and international importance of the area's natural environment, the site has a number of ecological designations including Special area of Conservation (SAC), Special Protected Area (SPA), Marine Conservation Zone (MCZ) and Site of Special Scientific Interest (SSSI) (Part 3). These are collectively known as the Marine Protected Area (MPA). The MPA designations cover nearly all the PSE excluding the Plym Estuary, parts of the Yealm and some harbours and inlets (Figure 4).

Throughout this plan 'PSE' will be used to refer to the whole PSE area as described above (Figure 3). Where specific reference is made to the designated sites only, the term 'PSE MPA' will be used. Where this plan refers to the TECF or Yealm Management Catchments, these will be highlighted.

There are multiple authorities with statutory powers and legal responsibility to manage these waters (Table 1). The site is a Ministry of Defence (MOD) port overseen by the overall Port Authority, the Kings Harbour Master, Dockyard Port of Plymouth. There are three other harbour authorities operating within the port, each with their own statutory functions. There are multiple local authorities, National Landscapes and partnerships. The Duchy of Cornwall is the majority fundus (seabed) owner. The statutory nature conservation bodies have relevant powers for various activities and regulatory processes and South West Water is a private company that holds some delegated powers and responsibilities.

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5 Davidson, Nick. (1991). Nature Conservation and Estuaries in Great Britain (researchgate.net)
6 Tamar Catchment Management Plan
7 Cornish Mining WHS - Tamar Valley Mining District with Tavistock
8 Tamar Valley National Landscape
9 South Devon National Landscape
10 Cornwall National Landscape

Figure 4 *Map of the Plymouth Sound and Estuaries (PSE) showing Local authority administrative boundaries, National Landscapes, National Parks, Harbour Authority areas.*

Table 1 *Shows the relevant authorities found within the Plymouth sound and Estuaries (PSE).*

Authority or Organisation	Authority Type	TECF member
King's Harbour Master	Statutory Harbour Authority	Yes
Cattewater Harbour Commissioners		Yes
Associated British Ports		Yes
Sutton Harbour		Yes
River Yealm Harbour Authority		No
Plymouth City Council	Local Authority	Yes
Cornwall Council		Yes
Devon County Council		Yes
South Hams District Council		Yes
West Devon Borough Council		Yes
Natural England	Statutory nature conservation body	Yes
Environment Agency		Yes
Marine Management Organisation		Yes
Devon & Severn IFCA		Yes
Cornwall IFCA		Yes
Historic England		Yes
Duchy of Cornwall	Majority fundus owner	Yes
South Devon National Landscape	Protected landscape Authority with delegated powers?	Yes
Tamar Valley National Landscape		Yes
Dartmoor National Park		No
Cornwall National Landscape		No
Tamar Valley Mining District with Tavistock, Cornwall and West Devon Mining Landscape World Heritage Site		No
South West Water	Private water company (Statutory body with delegated powers (Regulated by independent bodies)	No
Defence Infrastructure Organisation	MOD facilities and infrastructure Management Organisation (?)	Yes

1.6.1 Activities in the PSE

The coast and estuaries historically support a variety of activities and industries due to the highly productive ecosystems found here. PSE is no different, the area's rich cultural heritage is intimately tied to the sea. Today, the Port of Plymouth remains a maritime and naval hub as well as a centre for marine recreation, research and innovation. The HMNB Devonport Dockyard is the largest naval base in Western Europe and has been home to the Navy since 1691. The Port also has regionally important commercial terminals for cargo, tourism and fishing, and 11 recreational marinas. Plymouth is recognised globally as a centre for marine research. Research from the Marine Biological Association (MBA, founded in 1884), Plymouth Marine Laboratory (PML, opened in 1988) and the University of Plymouth (UoP)[11], is pioneering and datasets represent some of the longest marine time series in the world. Resident marine institutions and businesses continue to pioneer world class marine research and innovation, developing our understandings of the marine environment, human and climate interactions. There is also a vibrant marine NGO sector delivering vital citizen science, education, awareness raising and volunteer opportunities; this includes Wembury Marine Centre which forms a hub for these activities. In 2019 the City Council and partners announced the declaration of a Plymouth Sound National Marine Park (PSNMP) to recognise and celebrate the areas unique marine culture and seascape (2.2.6). The rural area has a long history of farming and mining which continues to be a feature of the surrounding landscapes today.

In addition to climate change impacts, these human activities can exert pressures on our natural environment either directly or indirectly through: air, water, noise and light pollution; physical loss and disturbance of habitats; destructive fishing practices; spread of Invasive Non-Native Species (INNS) (Part 5). Most impacting activities are benefiting from the services our ecosystem provides and are tied to our local 'blue' economy, coastal communities and local culture, making them complex and challenging to manage.

The PSE is a valued natural capital asset which is integral to support local marine activities and economies as these all rely on a 'healthy' functioning ecosystem. It follows that their protection and enhancement should therefore be at the heart of decision-making. Given the complexity of these pressures, coordinated governance and management is essential to ensure the continued sustainable use of the sites resources.

11 The University of Plymouth began as the Plymouth School of Navigation in 1862 and became a university in 1920 History of Higher Education in Plymouth. became a university in 1920 History of Higher Education in Plymouth.

1.7 Embracing a Natural Capital Approach

The Government has set out its ambitions for the marine environment in its 25 year Environment Plan[12] and subsequent Environmental Improvement Plan 2023[13]; reverse the loss of marine biodiversity, improve the quality and quantity of key species and habitats, and improve the management of our waters, and manage our resources. To meet these ambitions, these plans recognise the importance of using a Natural Capital Approach (NCA) as a decision-making tool to make better-informed decisions. Defra's Marine Natural Capital and Ecosystem Assessment (mNCEA) program (beginning in 2022) is now working on a robust evidence base, suite of tools and framework to gather information to support this decision-making process.

The natural environment provides 'ecosystem services', which are the benefits provided by ecosystems that contribute to making human life both possible and worth living (Figure 5)[14]. Diverse and productive coastal and estuarine systems like the PSE support a variety of activities and industries that all reply on access to ecosystem services (1.6.1). Our natural environment, habitats and species can therefore be viewed as our 'Natural capital assets' which through contribution to services, goods and benefits, can help us to recognise their value.

The NCA uses the following key terminology;

- **Natural capital:** The elements of nature that directly or indirectly produce value to people, including ecosystems, species, freshwater, land, minerals, the air and oceans, as well as natural processes and functions.

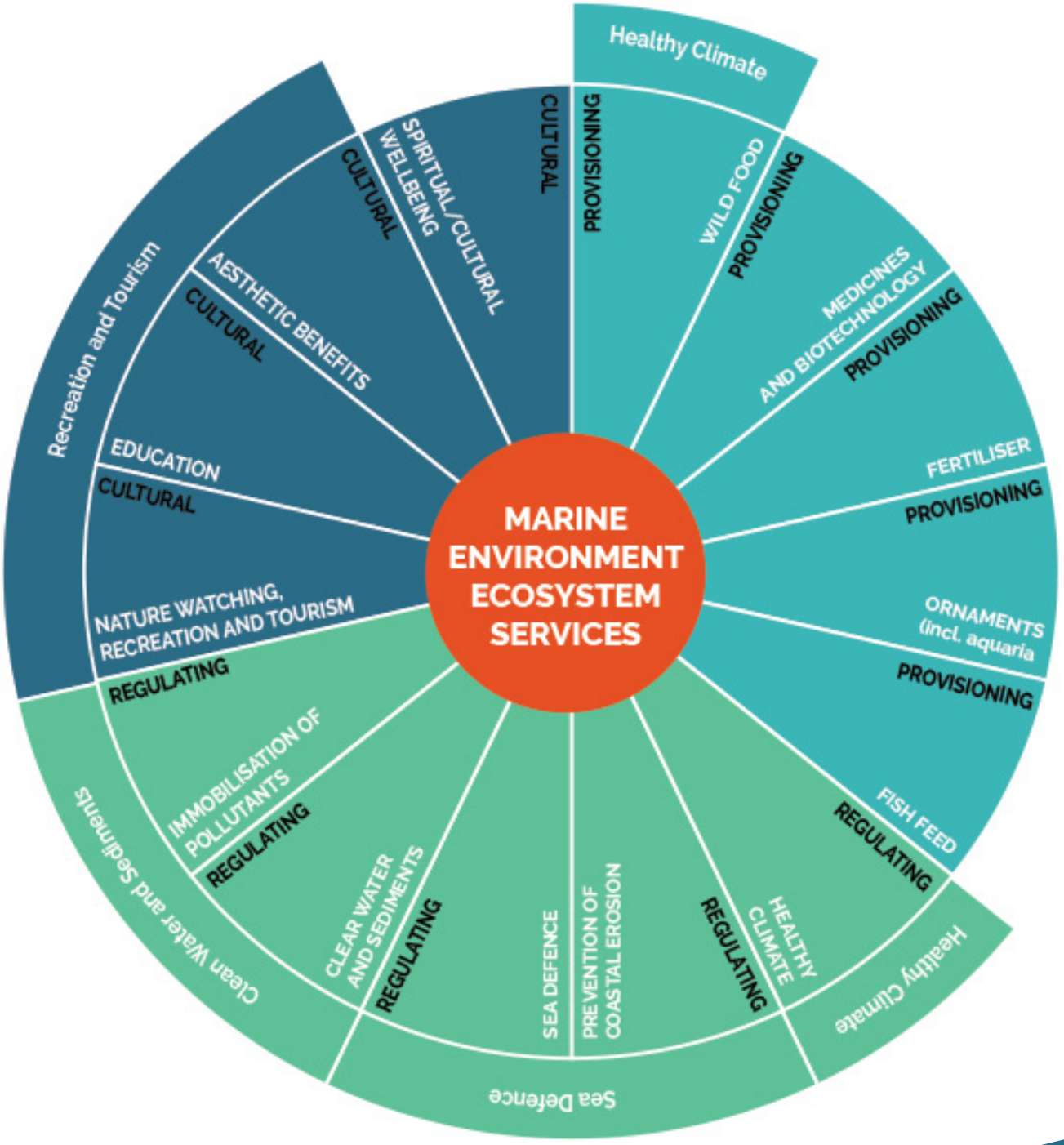
- **Assets:** a distinctive component of natural capital as determined by the functions it performs, for example, soils, freshwater, species.

- **Ecosystem services:** Functions and products from nature that can be turned into benefits with varying degrees of human input (Figure 5).

- **Benefits:** Changes in human welfare (or well-being) that result from the use or consumption of goods, or from the knowledge that something exists[15].

12 25 Year Environment Plan
13 Environmental Improvement Plan 2023
14 UK National Ecosystem Assessment 2011
15 Towards a Framework for Defining and Measuring Changes in Natural Capital, Working Paper, Natural Capital Committee, 2014

Figure 5 *The range of ecosystem services available from the marine environment, identified by the UK National Ecosystem Assessment Follow-on (2014) available; UK NEA (unep-wcmc.org) and the 5 services looked at in detail by the Natural Capital Asset and Risk Register (NCARR) 2023 (Appendix 1) to represent service provision in the Plymouth Sound and Estuaries (PSE).*



By looking at the flow of ecosystem service benefits to people and our economy, we can use the NCA to help assess the state of the Plymouth Sound and Estuaries (PSE) and identify how to manage threats and pressures to maintain and maximise the flow of these benefits (Figure 11, 3.5 & 4.1.1).

The Plymouth Sound and Estuaries Natural Capital Asset and Risk Register (NCARR) 2023, produced by the University of Plymouth, considers in detail, five key good and benefits of the 14 goods and benefits identified in the UK National Ecosystem Assessment Follow On (2014) (Figure 5)[14]. The assessment looks at the potential contribution of SAC features to these ecosystem service benefits if all habitats and species were in healthy condition (Appendix 1, Part 1); and the risk of reducing availability of benefits relevant to feature condition (Appendix 1, Part 2). This work also explores how previous and ongoing management actions reduce the risk of loss of ecosystem service benefits and where challenges remain to be addressed (Appendix 1, Part 3). The assessment evidences how management actions support continued delivery of ecosystem service benefits, aligning this plan with national policy ambitions, including those supporting the UK Government's 25 Year Environment Plan.

Ultimately, enabling healthy habitats, water bodies and species populations in PSE supports contribution to ecosystem services and the availability of benefits that benefit our lives. Ensuring effective management to enable healthy natural assets, combined with ensuring sustainable use of resources, provides a means of securing environmental, economic and social benefits for society.

Section 4.1.1 discusses how we can manage the flow of ecosystem services in the PSE.

1.8 Opportunities and Challenges for Management

Since the last plan was written, new opportunities and challenges have emerged which have influenced the revision of this Plan. To initiate this Plan review, TECF members identified the key national policy changes, projects, or new issues that could influence their work to manage the Plymouth Sound and Estuaries (PSE). These are summarised in Figure 6 below.

Figure 6 *Key challenges and opportunities for the conservation and enhancement of the Plymouth Sound and Estuaries identified by TECF members.*

Part 2. Managing the Plymouth Sound and Estuaries

2.1 Legislative Drivers

The United Nations, highlighted through Sustainable Development Goals (SDG's), the global urgency to conserve and sustainably use our seas and marine resources[16]. The UK State of Nature Report (2023) reveals a sustained decline in the abundance of UK species since the 1970s[17]. More specifically, the Environment Agency's (EA), State of the Environment: The Coastal and Marine Environment (2023) report, stresses the need for protecting, recovering and restoring of estuarine, coastal and marine environments, to secure a resilient, healthy and prosperous future both for people and wildlife[18].

Together with the Marine Strategy Regulations (2010), the UK Marine Strategy[19] helps the UK to deliver against key international obligations and commitments, including the SDG's. The Strategy provides the framework for delivering marine policy nationally and sets out outlines how to achieve the vision of clean, healthy, safe, productive and biologically diverse oceans and seas. The UK Marine Strategy requires action to be taken to achieve or maintain Good Environmental Status (GES). GES is broken down into 11 qualitative descriptors which are monitored nationally to support the assessment of GES[20].

The UK Government set out its goals and focus areas in the Environmental Improvement Plan (2023)[13]. This describes how a national network of Marine Protected Areas is central to marine restoration. Designated areas rely on good, effective and adaptive management to translate legal protections into genuine environmental gains. There is also growing recognition to go beyond protection and look at active recovery to reverse declines in habitat quality and biodiversity observed in our oceans.

16 The 2030 Agenda for Sustainable Development and SDG Indicators

17 State of Nature 2023, the State of Nature Partnership

18 Environment Agency, Chief Scientist's Group (2023) State of the environment: the coastal and marine environment

19 Introduction to UK Marine Strategy, UKMMAS

20 1. Marine biodiversity; 2. Non-indigenous species; 3. Commercial fish & shellfish. 4. Food webs; 5. Eutrophication; 6. Seabed integrity; 7. Hydrographical conditions; 8. Contaminants; 9. Contaminants in seafood; 10. Marine litter; 11. Energy, including underwater noise; Climate change.

2.1.1 Marine Protected Areas

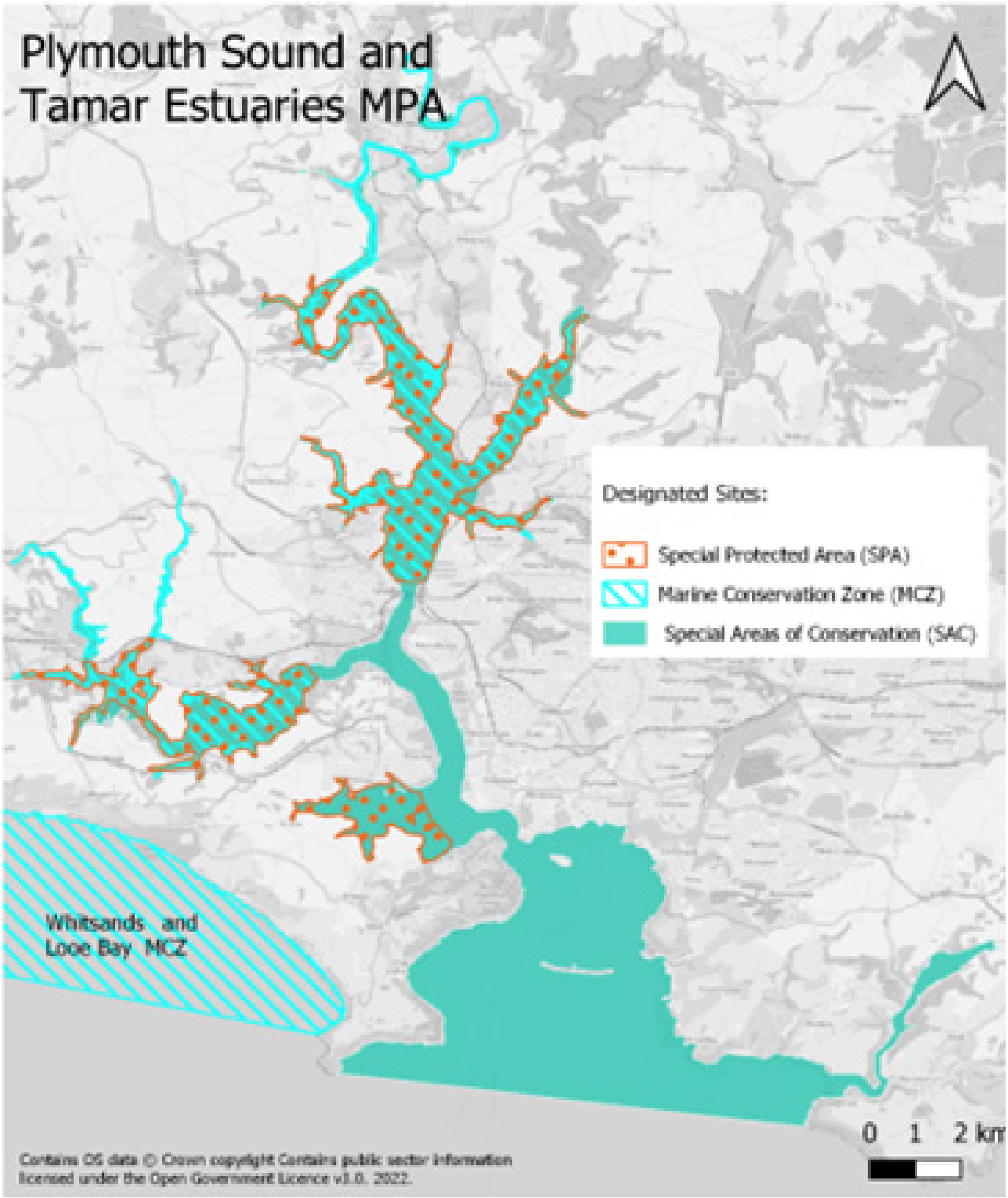
In England, the term Marine Protected Area (MPA) refers to a protected area of the sea or estuary and is an umbrella term for a number of designated sites. In the PSE, there are multiple overlapping nature conservation designations which come together to form the PSE MPA (Figure 7, Table 2). These designations are derived from different legislation and therefore vary in their purpose (Table 2). Together, the aim of designations is to maintain ecological diversity through the conservation of important, rare or threatened habitats and species and their supporting habitats. Although the UK currently uses a feature-based marine conservation model, the MPA network is the best available mechanism and can, and is, used to conserve and enhance our wider ecosystems, through the protection of broad habitats, supporting features and regulations of activities and threats such as pollution.

The Environment Act 2021 transposes in UK law, a range of European legislative drivers, following the UK's exit from the European Union (Figure 8). These drivers underpin the protection for some of the UK's marine site designations (Table 2). This Act brings together both European and national legislation that is relevant to MPAs and key environmental principles such as the precautionary and polluter pays principles as a basis for UK law.

Table 2 *Component sites that make up the Plymouth Sound and Estuaries (PSE) Marine Portected Area's (MPA).*

Site Name and Designation	Designation Date	Supporting Legislation
Plymouth Sound and Estuaries Special Area of Conservation (SAC)	2005	EU Habitats and Species Directive (Council Directive 92/43/EEC), as implemented by The Conservation of Habitats and Species Regulations 2017. Transposesed into UK law through Environment Act 2021 (2.1.2)
Tamar Estuaries Complex Special Protected Area (SPA)	1997	EU Directive on the Conservation of Wild Birds (2009/147/EC) as implemented through The Conservation of Habitats and Species Regulations 2017 and Wildlife and Countryside Act 1981. Transposesed into UK law through Environment Act 2021 (2.1.2)
Tamar Estuary Marine Conservation Zone (MCZ)	2013	Marine and Coastal Access Act, 2009
Lynher Estuary Site of Special Scientific Interest (SSSI) St. John''s Lake SSSI Tamar-Tavy Estuary SSSI Yealm Estuary SSSI Plymouth Sound Shores and Cliffs SSSI Rame Head & Whitsand Bay SSSI Wembury Point SSSI	1984-1997	Wildlife and Countryside Act 1981 as amended 1985.

Figure 7 *Map of the Plymouth Sound and Estuaries Marine Protected Area (PSE MPA) component sites the Plymouth Sound and Estuaries Special Area of Conservation (SAC), Tamar Estuaries Complex Special Protected Area (SPA), Tamar Estuary Marine Conservation Zone (MCZ), [Marine] Special Sites of Scientific interest (various) and Wembury Marine Conservation Area (VMCA).*



Within the UK MPA network, certain activities are managed to facilitate marine ecological recovery, delivering on UK policy ambitions (2.1). Figure 8 outlines the main statutory actions and processes used to manage the PSE MPA. Authorities rely on these powers to assess and manage pressures. As a result, some activities within MPAs are prohibited (for example, trawling within the PSE SAC), but many damaging activities cannot be restricted completely; authorities work with stakeholders and partners to manage or mitigate activities.

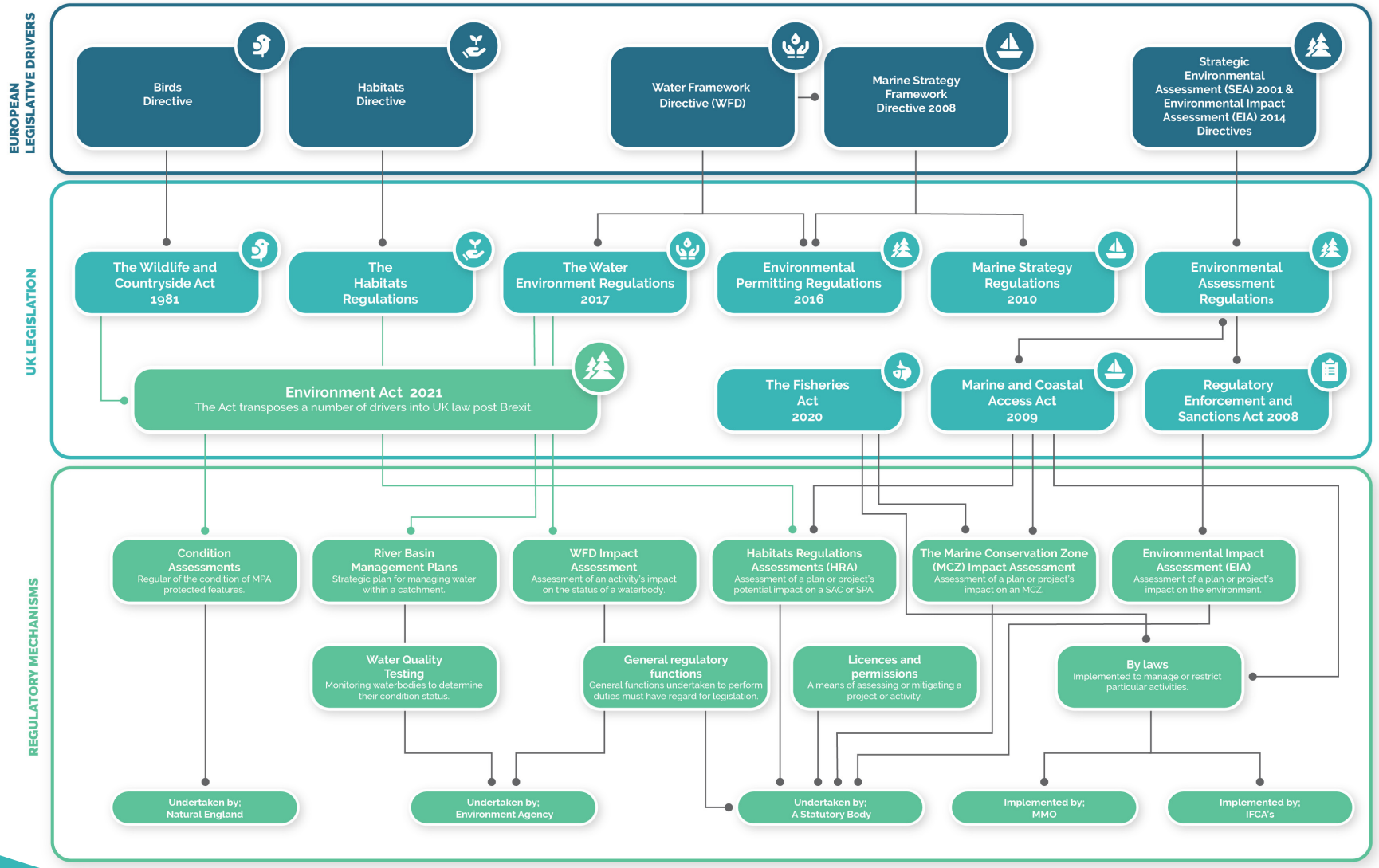
Importantly, relevant authorities have a legal requirement to exercise their functions in a way that they further the MPA sites conservation objectives (Table 5). Through the Habitat Regulations Assessment (for SACs and SPAs), or a MCZ Assessment process (for MCZs) relevant authorities are required to assess whether a plan or project will have a likely significant effect on a designated site. This provides a means to ensure that where a plan or project has the potential to significantly affect an MPA, suitable mitigation or compensation can be secured. For SSSIs, there is a consenting process for certain operations as well as,

Alongside the statutory powers and regulatory processes statutory authorities rely on management interventions through grant funded conservation projects. Management of pressures allow habitats and species to naturally, or 'passively', recover, this can be combined with 'active' recovery efforts to directly enhance or create new habitats.

NE is the responsible authority for monitoring and providing conservation advice for the MPA component sites which guide how statutory actions are implemented and the prioritisation of conservation and restoration efforts in MPAs (49). The MMO license, regulate and plan marine activities as well as providing guidance on managing fishing in MPAs and byelaws. The IFCAs sustainably manage the marine environment and inshore fisheries and review potential interactions between fishing activities and MPA features. The EA is responsible for regulating major industry and waste, water quality and resources, fisheries, inland river, estuary and harbour navigations, conservation and ecology.

These and other organisations produce plans and policies, which also play an important role in Managing the MPA and driving local action. These strategies are summarised in Table 3.

Figure 8 *The relevant regulatory mechanisms for the management of the Plymouth Sound and Estuaries and the relevant legislative drivers behind these. This diagram is not a comprehensive review of all relevant marine legislation and is adapted from Figure 5 of [2022-2026 FHEMS Management Plan, Yorkshire Marine Nature Partnership](#).*



Birds Drective: The conservation of Wild Birds (1979) (amended 2009);

Habitats Directive: The Conservation of Natural Habitats and of Wild Fauna and Flora (1992)

Water Framework Directive: Establishing a Framework for Community Action in the Field of Water Policy (2000)

The Habitats Regulations: The Conservation of Habitats and Species Regulations (as amended, 2019) and Conservation of Offshore)

Marine Habitats and Species Regulations (2017)

Environmental Assessment Regulations: Strategic Environmental Assessment Regulations 2004

Environmental Impact Assessment (EIA) Regulations 2017, Marine Works EIA Regulations 2017

2.1.2 European Marine Sites vs. Marine Protected Areas

Until 2021, 'European Marine Site' (EMS)' has been a term used to identify the designated area of the PSE. The EMS refers to the SAC and SPA which are part of the EU's Natura 2000 sites and designated under European Legislation. With the departure from the EU, in January 2020, the SAC and SPA legislation has been transposed into UK law through the Environment Act (Figure 8). At the time of writing, there are no changes in how we implement this legislation, nor the protection afforded to these sites.

In addition to the SAC and SPA, the UK designated a proportion of the SAC as an MCZ in 2013, under the MCAA 2009 (Figure 7). This recognises features of conservation importance, in addition to those identified by the EMS. These three sites, in addition to existing SSSIs that have marine components, collectively form the PSE MPA and are part of a network of protected areas within UK waters.

2.2 Local Marine and Coastal Governance

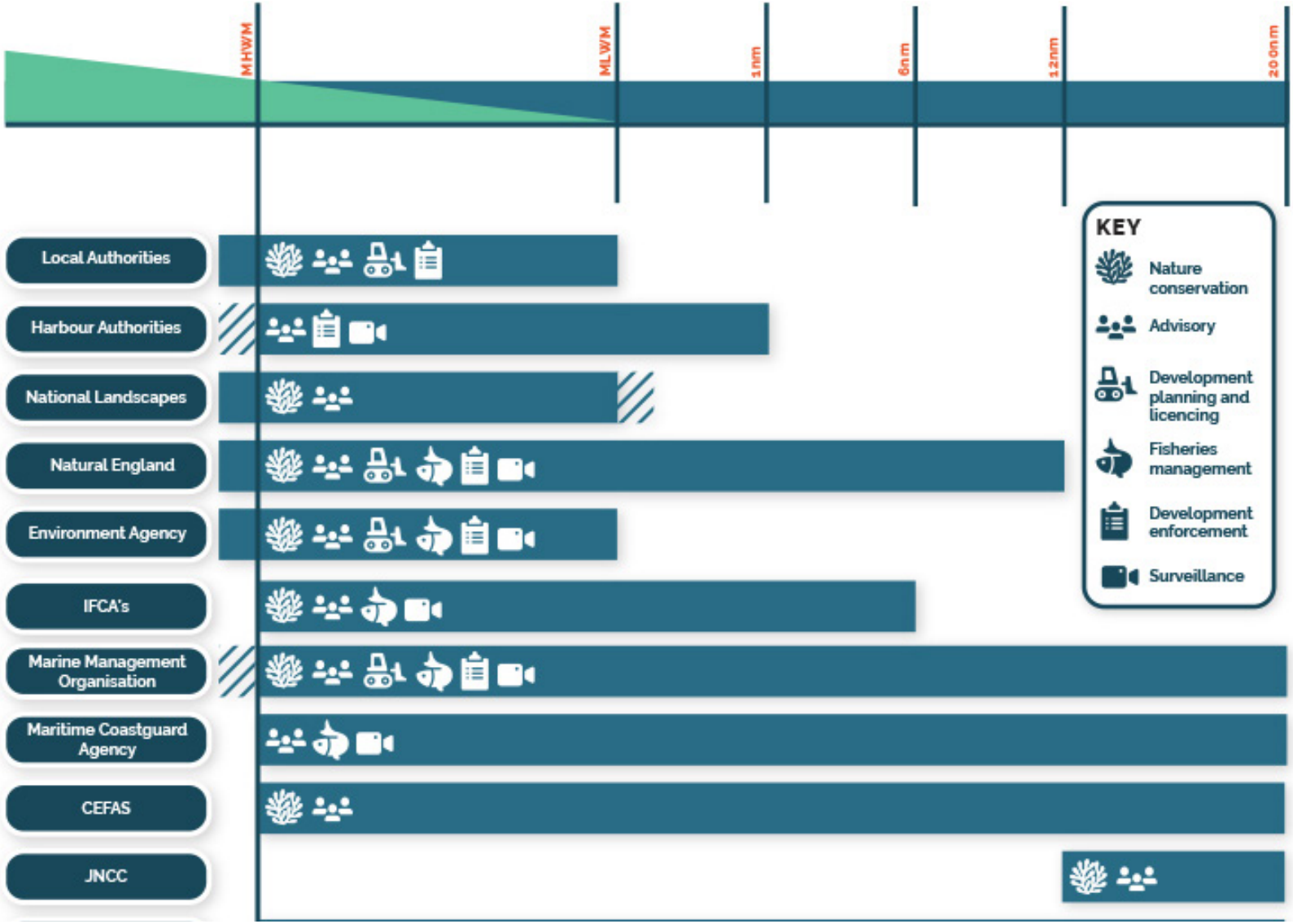
2.2.1 The need for a coordinated approach

Estuaries have an interplay of statutory authorities with different functions and duties (Figure 9). The management of marine areas is therefore complex, necessitating the coordination of numerous regulatory agencies, authorities, and organisations. The EA's State of the Environment Report (2023) calls for a system wide approach, stronger collaborative working, engagement and commitment from all levels to address our challenges in the marine environment. Figure 9 outlines the key role and functions of the statutory bodies relevant to the MPA.

There is a network of coastal partnerships around the UK that are working towards a coordinated coastal management approach[21]. In the absence of a formal coastal governance framework beyond individual statuary bodies, local coastal and estuary partnerships support the coordination and conflict resolution between these organisations their regulation and local conservation stakeholders and projects.

21 The Coastal Partnerships Network

Figure 9 *Varied responsibilities for different statutory bodies relevant to the Plymouth Sound and Estuaries (Cefas: Centre for Environment fisheries and Aquaculture Science; JNCC: Joint Nature Conservation Committee). Adapted from diagram produced by the Marine Management Organisation.*



2.2.2 Tamar Estuaries Consultative Forum (TECF)

Under the Habitat Regulations 2010 (as amended), any relevant authority can establish a single agreed management scheme for an SAC and/or SPA to direct how their functions are to be exercised. In 1994, recognising the complexities of management the PSE and the multiple authorities involved, the relevant organisations came together to establish TECF. This partnership thereby provides the strategic management group for the protection and enhancement of the PSE. In 1997 TECF produced the first plan for the site. The first plan didn't include the Yealm Estuary, so shortly after TECF, the Yealm Estuary Management Group (YEMG) was formed to focus on this area of the SAC. TECF and the YEMG continue to work closely to deliver site wide management, under this single Plan. More information about history of TECF can be found on the MPA website[22].

Members of TECF have signed up to a Memorandum of Agreement (MoA); this provides the framework to implement this plan. TECF members will work collectively to:

- Maintain a partnership to manage the Plymouth Sound and Estuaries
- Maintain an officer to further the objectives of the group
- Publish, review, and monitor a Management Plan
- Agree and implement an Action Plan
- Organise and attend tri-annual TECF meetings and other working groups and committee meeting where relevant
- As agreed, make contributions to the costs incurred
- Link with neighbouring partnerships to further catchment management

The partnership is chaired by the KHM, who also provides secretariat, and it is hosted by Plymouth City Council (PCC) who also employs the TECF Coordinator and MRMMS Officer (39).

2.2.3 The Yealm Estuary Management Group (YEMG)

Within the PSE, the Yealm Estuary and its community has a discrete set of issues and a distinct governance arrangement through the YEMG[23]. This group forms part of the South Devon National Landscape (NL) Estuaries Partnership, which covers the five estuaries in the NL. Part 1-4 of this Management Plan are relevant to the Yealm, but Management Actions (Part 5) are identified through the South Devon Estuaries Management Plan (Table 3). The YEMG and TECF work together to manage the PSE MPA and non-designated habitats and species and the two associated Management Plans, form a single scheme for the MPA.

22 [Add link to website]
23 South Devon National Landscape | Yealm Estuary Management Group meetings

2.2.4 TECF's Advisory Groups

TECF is supported by two advisory groups; Port of Plymouth Marine Liaison Committee (PPMLC) and Wembury Marine Conservation Area Advisory Group (WMCAAG). These, along with the YEMG form a collaborative governance structure for the management of the MPA (Figure 10).

PPMLC embodies representatives of estuary users, owners and interest groups (Figure 10)[24]. WMCAAG comprises a management committee of interested individuals which is supported by officers from organisations with an interest in the management of the Voluntary Wembury Marine Conservation Area (Figure 10, 3.6). This management structure offers a platform for co-operation and effective action in an environment where shared interests and responsibilities intersect. It fosters collaboration and consultation in fulfilling statutory duties while encouraging transparent communication between diverse interest groups and decision-makers.

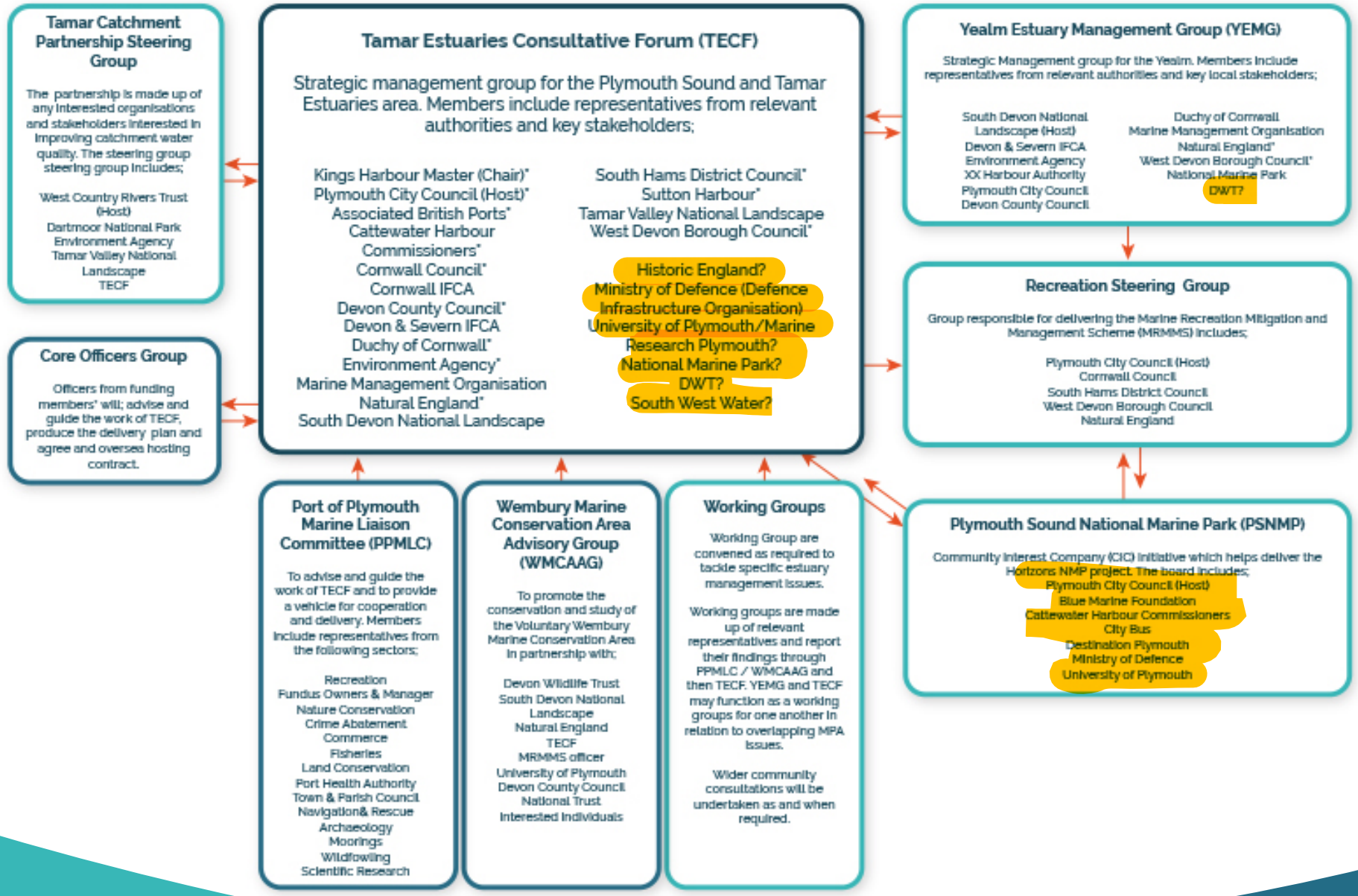
2.2.5 Marine Recreation Steering Group

Marine recreation throughout the site is managed in a variety of ways; the strategic mechanism for managing pressures on the MPA is through the Marine Recreational Mitigation and Management Scheme (MRMMS). The MRMMS is delivered in perpetuity and acts as a mechanism for delivering this plan. Updates are fed back to TECF, PPMLC and YEMG to ensure integration with site management.

Local Authorities are responsible for ensuring Local Development Plans do not result in an impact to the Marine Protected Area. This scheme principally sets out work required to mitigate impacts that may arise as a result of new housing developments and tourism growth up to 2034. The Scheme provides the mechanism to collect financial contributions from relevant developments. The Scheme employs a dedicated MRMMS Officer, hosted by PCC, and scheme delivery is governed by a Steering Group (Figure 10); supported by the TECF coordinator and YEMG Officer. The group meets three times a year and PCC is hosts and provides secretariat.

24 [link to PPMLC page on website

Figure 10 *Governance framework for the Plymouth Sound and Estuaries Marine Protected Area (MPA).*



2.2.6 Plymouth Sound National Marine Park

In 2019, PCC and partners declared the intention for a Plymouth Sound National Marine Park (PSNMP) which is now a registered Charitable Incorporated Organisation (CIO). PCC worked with partners to secure funding from the National Lottery Heritage Fund to support the development and delivery of the UK's first National Marine Park for the following 5 years. Beyond this, the CIO will continue to exist as the responsible entity for the PSNMP.

The PSNMP is a social policy initiative aiming to enhance the economic, environmental and social values of the PSE. It is not a designation and has no legal status but works with TECF members to maximise benefits for nature. It supports conservation management by finding ways to manage our ecologically important and protected seascape by celebrating our local culture, and heritage. Crucially, the PSNMP seeks to improve public engagement and awareness in the marine environment and address inequalities in water access. This provides a valuable and new mechanism to assist the delivery of this Plan. The PSNMP also brings with it challenges for management, as the project seeks to engage people to get on, in and under the water. Mitigation for these potential is integrated into project plans and monitored.

2.3 Links with other plans and projects

This Plymouth Sound and Estuaries (PSE) Management Plan combined with the relevant Yealm Estuary sections within the South Devon Estuaries Environmental Management Plan 2018-2024, form a single Management Scheme for PSE Marine Protected Area (MPA).

There are also a number of other current and emerging plans which may provide a statutory or non-statutory function (Table 3). All these plans have a role in delivering the sustainable management of the PSE and the PSE MPA and so should be considered when reading this plan. There are also overlapping aims and actions; where a document is relevant to this Management Plan, the lead organisation will be cited in Part 5. To ensure effective delivery of this plan, it will require coordination between TECF partners.

Table 3 *Plans and strategies relevant to management of the Plymouth Sound and Estuaries.*

Plans and Strategies	Lead Organisation
Adaptation Plan for Devon, Cornwall and the Isles of Scilly	Devon Climate Emergency
Cornwall's Climate Change Action Plan	Cornwall Council
Cornwall Maritime Strategy	
Cornwall and the Isles of Scilly Environmental Growth Strategy	
Local Flood Risk Management Strategies: • Devon Local Flood Risk Management Strategy 2021-2027 • Cornwall Local Flood Risk Management Strategy 2020-2026 • Plymouth's Local Flood Risk Management Strategy	Lead Local Flood Authorities
Local Plans; • Plymouth South Hams and West Devon Joint Local Plan and The Cornwall Local Plan	Cornwall Council and Devon County Council
Local Nature Recovery Strategies: • Cornwall and the Isles of Scilly Local Nature Recovery Strategy • Devon Local Nature Recovery Strategy – a joint strategy for Devon, Plymouth and Torbay	
The National Heritage Protection Plan Framework	Historic England
Tamar Catchment Flood Management Plans	Environment Agency
Tamar Catchment Plan	Tamar Catchment Partnership
Tamar Valley National Landscape Management Plan	Tamar Valley National Landscape
Recreation, Mitigation and Management Scheme (MRMMS)	MRMMS Steering Group
South West River Basin Management Plan 2022	Environment Agency
Shoreline Management Plan 16 or Shoreline Management Plans	South Devon and Dorset Coastal Authorities Group
South Devon Estuaries Management Plan 2018-2024	South Devon National Landscape
South Devon National Landscape Management Plan 2019-2024	
The South West Marine Plan	Marine Management Organisation
SWW Water Management Documents: • Drainage and Wastewater Management Plan • Alignment to the Storm Overflows Discharge Reduction Plan • Water Resources Management Plan • Business Plan • Biodiversity Strategy	South West Water
Cornish Mining World Heritage Site Management Plan	Corning Mining world Heritage Site

Part 3. Protected Habitats and Species

This section provides an overview of the protected and important habitats and species found in the MPA, it is not a comprehensive description of estuary assets. Descriptions are derived fromthe following sources, readers seeking further information on management and features should refer to these sites:

- JNCC pages for national marine habitat classification, the Special Area of Conservation (SAC) and their sites Annex II species, Annex I habitats
- NE designated site view and evidence library
- Magic maps, to find site boundaries and locate habitats and species
- Plymouth MPA website for local information
- Marine species & wildlife: protection for how wildlife is the UK is legally protected.
- British Trust for Ornithology bird facts.
- Wembury Marine Conservation Area webpage

NE's Designated Site View (as above) provide detail and conservation advice on designated sites including management measures and condition assessment details. For more information about the condition and management of protected features see Part 4.

3.1 Plymouth Sound and Estuaries Special Area of Conservation

Plymouth Sound and Estuaries (PSE) SAC[25] is a protected area for a range of habitats and species as listed in the Annex I and annex II of the Directive (Table 2). It is the largest MPA component site, at 6,402ha it gives the MPA its boundary and contains some of the best examples of estuary habitats in the country (Figure 7). Features include abundant Southern Mediterranean-Atlantic species rarely found in the UK; it is the only known breeding site for the Allis shad. The site is also NE's first sentinel site which means it's used as a key monitoring site to inform the status and condition of other features in England.

25 Standard Data Form Plymouth Sound and Estuaries SAC K0013111

3.1.1 SAC features

The following Annex II species and Annex I habitats are the designated features of the PSE SAC:

Allis shad, *Alosa alosa* is a small migratory fish that is rare and declining, with the Tamar Estuary being the only known breeding population in the UK. Relatively little information is available on shad habitat requirements, but they utilise lower estuary and coastal waters to grow and feed, before migrating into fresh water to spawn in gravelly substrate.

Atlantic salt meadows, *Glauco-Puccinellietalia maritimae,* (commonly referred to as Saltmarsh), are communities of halophytic (salt-tolerant) plants growing on intertidal shores. These habitats form the most extensive saltmarsh type in England. They are widespread throughout the UK but uncommon in the South West. These are valuable habitats, supporting other species like wading and roosting birds and juvenile fish. The Tamar is the only known population of the triangular club rush (Schoenoplectus triqueter) in England.

Estuaries are a feature central to the SAC designation and are the downstream part of a river valley, subject to the tide and extending from the limit of brackish water. The Tamar Estuary complex is designated due to the variety and extent of habitats and the rare and important species. These estuaries show one of the best examples of salinity graded communities in the UK due to the few numbers of locks and weirs. The sub features (notable habitats) associated with this feature are:

- Atlantic salt meadows, *Glauco-Puccinellietalia maritimae*
- Circalittoral rock
- Infralittoral rock
- Intertidal mixed sediments
- Intertidal mud
- Intertidal rock
- Intertidal seagrass beds
- Subtidal mixed sediments
- Subtidal mud
- Subtidal sand
- Subtidal seagrass beds

Large shallow inlets and bays are large indentations in the coastline with shallow water sheltered from wave action. They describe habitat complexes which are made up of interdependent mosaics of different habitats some of which are listed as features of the SAC in their own right; the Plymouth Sound and Wembury Bay are examples of this feature. Large shallow inlets and bays of the PSE SAC, along with the Fal Estuary SAC, are the only example of this feature found in ria estuaries and can support an interesting and complex range of ecological communities. In the PSE, this estuary feature supports the following subfeatures:

- Circalittoral rock
- Infralittoral rock
- Intertidal rock
- Subtidal coarse sediment
- Subtidal mixed sediments
- Subtidal mud
- Subtidal sand
- Subtidal seagrass beds

Mudflats and sandflats not covered by seawater at low tide are a highly productive intertidal system which forms an essential part of the food chain. Mudflats and sandflats are composed of a variety of sediments which support an extensive and diverse range of habitats including biogenic reefs or seagrass. The physical condition of the area determines sediment size, which in turn, determines the ecological community. The mudflats support extensive and diverse communities of bivalves (for example, muscle beds) and other invertebrates and provide important feeding grounds for wading birds. This feature supports the following sub features*:*

- Intertidal coarse sediments
- Intertidal mixed sediments
- Intertidal mud
- Intertidal sand and muddy sand
- Intertidal seagrass beds

Reefs are rocky habitats with communities of attached algae and invertebrates. In the PSE, rocky reefs are widespread and defined by factors; wave exposure, tidal flow, bathymetry, geology and salinity variation, which encourages a concentrated diversity of flora and fauna. This feature in the PSE is of particular importance due to the presence of the relatively soft Devonian limestone which supports particular species. This feature includes rocky shores, kelp dominated reefs, and subtidal reefs that support animals and rare species like the pink sea fan Eunicella verrucosa. Reefs can be divided into three sub features:

- Circalittoral rock
- Infralittoral rock
- Intertidal rock

Sandbanks which are slightly covered by sea water all the time, or subtidal sandbanks, are formed of sandy sediments in higher energy areas resulting in tide swept banks. Depending on physical chemical and hydrological factors, these banks can support a range of diverse communities. The following subfeatures are:

- Subtidal coarse sediment
- Subtidal mixed sediments

- Subtidal mud
- Subtidal sand
- Subtidal seagrass bed

Shore dock, *Rumex rupestris* is an endangered coastal plant that grows on rocky, sandy and raised beaches, shore platforms and lower slopes of cliffs. Shore dock's specific habitat requirements also include a reliance on a source of fresh water. Within PSE, the shore dock is found to have stable populations at Rame and Wembury. The site also contains areas of suitable habitat

3.2 Tamar Complex Special Protected Area (SPA)

The Tamar Complex SPA[26] is a protected area for rare and migratory birds as listed in the Annex I of the Directive (Table 2). The site is 1,995ha and made up of three geographically distinct areas of intertidal mudflats, mixed muddy sediment and saltmarshes, across St Johns Lake, Lyner, Tavy and upper reaches of the Tamar (Figure 7). These areas are important for the two species of birds protected under the Tamar Complex SPA, as it provides important feeding and roosting areas for overwintering populations.

3.2.1 SPA features

The following Annex I bird species are the designated features of this site:

Avocet, *Recurvirostra avosetta* is a wading bird with a long upturned bill that feeds on aquatic insects, crustaceans and worms found within marshes and intertidal estuarine habitats. The Tamar Complex SPA is designated for the overwintering (non-breeding) population. Avocets breed more widely in East England, coastal and inland lagoons, or in mainland Europe. Large flocks then travel to use South East and South West estuaries like the Tamar to overwinter. Since the species left the UK in the 19th Century, the Avocet is a conservation success story, returning to the UK in 1940's. The potential habitats important for supporting this species are:

- Atlantic salt meadows, *Glauco-Puccinellietalia maritimae*
- Freshwater and coastal grazing marsh
- Intertidal coarse sediment
- Intertidal mixed sediments
- Intertidal mud
- Intertidal rock
- Intertidal sand and muddy sand
- Water column

26 Standard Data Form Tamar Complex SPA_UK9010141 (jncc.gov.uk)

Little egret, *Egretta garzetta* is a small heron that feeds on fish and crustaceans in shallow water throughout saltmarshe and muddy sediments. Little egrets are found throughout the PSE area when feeding and at high tide roosts. Evening and roosting sites can be located at distance outside of the Tamar Complex boundary but are important management considerations and so referred to as functionally linked land. Nationally important numbers are present in autumn and spring, although a small population of little egrets are present in the Tamar Complex year round and bread in the sites surrounding areas. The habitats important for supporting this species are*:*

- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Coastal reedbeds
- Freshwater and coastal grazing marsh
- Intertidal coarse sediment
- Intertidal mixed sediments
- Intertidal mud
- Intertidal rock
- Intertidal sand and muddy sand
- Intertidal seagrass beds
- Water column

The Tamar Complex SPA is also important for a range of other protected wildfowl and wader species[27] (Schedule 1 Species identified with an '*'):

- Shelduck, *Tadorna tadorna*
- Whimbrel, *Numenius phaeopus**
- Greenshank, *Tringa nebularia**
- Mediterranean gull, *Ichthyaetus melanocephalus**
- Dunlin, *Calidris alpine*
- Curlew, *Numenius Arquata**
- Black-tailed godwit, *Limosa limosa**
- Redshank, *Tringa totanus*

27 Although not protected under the Tamar Complex SPA, all protected species under the Wildlife and Countryside Act 1981 as amended 1985. Some are listed as Schedule 1 Species (Part 1 - protected at all times) Schedule 1_Wildlife and Countryside Act 1981 (legislation.gov.uk)

3.3 Tamar Estuary Marine Conservation Zone (MCZ)

The Tamar Estuary MCZ is a protected area for habitats and species[28] (Table 2). The site is 1,530ha in total and is made up of two distinct geographic areas of estuary, Lynher and the Tavy and Upper reached of the Tamar estuary (Figure 7). These sites largely follow the boundaries of the two northern Tamar Complex SPA geographic areas.

3.3.1 MCZ Features

The following features are designated under the Tamar Estuary MCZ:

Blue mussel *(Mytilus edulis)* beds are a habitat found in shallow subtidal and intertidal areas. This common bivalve attaches to rocky, sandy or muddy substrates and can bind to other bivalve shells forming a dense reef structure. They stabilise the sediment their bound to and provide habitats for other species, thereby creating an important food source. Beds are found in both the Lyner and the Tamar. Intertidal elements of this habitat also come under the intertidal biogenic reefs feature.

Intertidal biogenic reefs are reefs where the structure is created by the animal themselves rather than rocky substrate (3.1.1). The main intertidal biogenic reef is the intertidal elements of the blue mussel beds, as defined above.

Intertidal coarse sediment describes coarse shingle or similar sediment that is normally only found on open, high-energy coastline in Devon. In the PSE it appears in the sheltered upper reaches of the Tavy and Tamar estuaries where freshwater inputs wash out particulate matter. This feature.

Native oyster, *Ostrea edulis,* is a threatened filter feeding mollusc found in shallow subtidal estuarine habitats. They are found throughout the MCZ and if left undisturbed, in suitable conditions, can form biogenic reefs (see above). They provide a number of other services including improving water quality and supporting other species, improving biodiversity.

Smelt, *Osmerus eperlanus,* is a small threatened marine fish that shoals in lower estuaries and, in spring, migrate into freshwater to spawn in stone, sand and gravel substrates, or soft vegetation. They are a short lived species with younger species being restricted by salinity which can make them vulnerable to pressures. They are an important food source for fish-eating birds and other commercially important fish such as bass. The only known spawning site in the South West is south of Gunnislake weir in the upper Tamar.

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28 Marine conservation zone 2013 designation: Tamar Estuary - GOV.UK (www.gov.uk)

3.4 Site of Special Scientific Interest (SSSI)

SSSIs protect the best examples of UKs habitats, species, geological or physiographical features. As the first conservation designation they underpin the international designations that followed (SACs and SPAs). SSSIs legally form part of the MPA network where they are considered to protect marine features. SSSIs play an important role often as a supporting habitat, for species such as the Little egret (Egretta garzetta), and habitats of importance such as intertidal habitats that cover areas above mean high water for example, salt marsh and intertidal seagrass. .

3.4.1 Lynher Estuary SSSI

The Lyner Estuary SSSI is 673ha and covers the entirety of the Lyner and overlaps with the SAC, SPA and MCZ. It is made up of principally intertidal sediment and a small area of woodland on the southern side.

3.4.2 Plymouth Sound Shores and Cliffs SSSI

The Plymouth Sound Shores and Cliffs SSSI is 44ha and covers the shore and some of the coastal cliff from; Mt Batten to Crownhill Bay; eastern Cawsands Bay, Penlee Point. The shore area is also designated under the SAC. The site is made up of principally shingle and rocky shore and the cliffs are designated for the geological interest.

3.4.3 Rame Head and Whitsand Bay SSSI

The Rame Head SSSI is 161ha and covers the upper shore (supralittoral zone) and coastal cliffs around the headland and Polhawn Cove. The area covering Polhawn Cove is also designated under the SAC. The site is made up of principally coastal cliffs of geological interest and coastal plants.

3.4.4 St. John's Lake SSSI

The St. John's Lake SSSI is 266ha and covers the intertidal area of St Johns Lake and overlaps in its entirety with the SAC and SPA. It is made up of intertidal sediment.

3.4.5 Tamar-Tavy Estuary SSSI

The Tamar-Tavy Estuary SSSI is 1,414ha and covers the coastline from Heybrook main estuary areas down to the Tamar Bridge and the shore area overlaps in its entirety with the SAC. It is made up of principally intertidal and subtidal sediment, saltmarsh and some areas of fringing woodland.

3.4.6 Wembury Point SSSI

The Wembury Point SSSI is 139ha and covers the shore and some of the lower estuary rocky shore and the intertidal areas in the upper estuary, excluding conflate creek. It overlaps in its entirety with the SAC. The site is made up of principally rocky shore, upper shore (supralittoral zone), and the fringing cliffs and fields designated for the coastal vegetation and woodland.

3.4.7 Yealm Estuary SSSI

The Yealm Estuary SSSI is 87ha and covers some of the intertidal area main estuary areas down to the Tamar Bridge. The shore area overlaps with the SAC. It is made up of principally intertidal rock and sediment.

3.5 Natural Capital Assets of Plymouth Sound, Estuaries and Coast

The habitats and species within the Plymouth Sound and Estuaries (PSE), and coast (to Eddystone reef) area are found to provide a significant contribution of multiple ecosystem services, including all 14 ecosystem service goods and benefits identified in the UK National Ecosystem Assessment Follow-On to flow from marine and coastal ecosystems[14] (Appendix 1). There is particularly high contribution to the five important, key, ecosystem service goods and benefits: Wild food; Healthy climate; Sea defence; Clean water and sediments; Recreation and Tourism (Figure 12). The PSE MPA features are found to contribute to these services in varying degrees (Figure 12). This and further assessment of MPA features contribution to all 14 ecosystem services can be found in Appendix 1).

3.6 Wembury Voluntary Marine Conservation Area (MCA)

The Wembury MCA Advisory Group (WMCAAG) established the voluntary MCA in 1981, in recognition of its special biodiversity and its unique and long-standing role in the study and appreciation of marine life. The Wembury MCA is 563ha and includes Wembury Bay, Heybrook Bay and Bovisand Bay, running from Fort Bovisand to Gara Point, and extending seaward to include the Great Mewstone (but excluding the Yealm landward of Cellar Beach) (Figure 7).

The site has existing legal protections under the SAC, the Yealm Estuary and Wembury Point SSSIs, as well as other individual species protections. To further this protection, the MCA Code of Conduct requests that no wildlife is killed, harmed or removed from the MCA.

The MCA contains extensive and highly biodiverse rocky reefs (intertidal and subtidal), seagrass beds and sediment communities. At low water, the patches of sand, shingle and stranded seaweed provide feeding grounds for resident and migrant waders. Wembury MCA has a national and international reputation for marine biology research, including studies on rocky shore ecology, subtidal habitats, shallow-water fish species and Nursehound Catshark *(Scyliorhinus stellaris)* breeding grounds. Its long-standing research role also makes the Wembury MCA an important site for the examination of long-term environmental impacts including climate change. Additional protected species of interest include the Giant Goby *(Gobius cobitis)* and the Pink Sea Fan *(Eunicella verrucosa)*.

3.7 Other Protected or Important Species

The following notable species are also be found in PSE MPA, and while not listed under the SAC, SPA, MCZ, or SSSIs, they may have different legal protections and are of interest to the management of the ecosystem:

- **Atlantic salmon, *Salmo salar,*** is a designated feature of the Dartmoor SAC and uses the PSE to migrate to the Dartmoor site to spawn.
- **Otter, *Lutra lutra,*** is a designated feature of the Dartmoor SAC but can also be found in parts of the PSE site.
- **Pink sea-fan, *Eunicella verrucosa,*** is designated under the Whitsand and Looe Bay MCZ and also found within the MPA boundary.
- **European eel, *Anguilla Anguilla,*** are regarded as critically endangered on the IUCN Red List of Threatened Species.
- **Short-snouted Seahorse, *Hippocampus hippocampus*** and **Long-snouted Seahorse, *Hippocampus guttulatus,*** or spiny seahorse, are rare species reported to be found in subtidal seagrass beds.
- **Commercially important fish** species such as bass, trout, bream, pollock all use the protected features within the site.
- **Marine mammals,** a range of different species of seals, porpoise, dolphins, whales, are transient visitors including within the breakwater.
- **Giant Goby, *Gobius cobitis,*** is a rare species of fish found in rocky shores, found on rocky shores including at Wembury.
- **St Piran's hermit crab, *Clibanarius erythropus,*** is a rare crab making a strong comeback in Cornwall and Devon, including at Wembury'.

3.8 Functionally linked land and species

Functionally linked land refers to a habitat that supports a designated feature, even if it is outside of a designated site boundary. For example, Little Egret roost roosting sites are found outside in woodlands outside the SPA boundary, these sites are given a degree of protection due to their role. In addition, the Atlantic Salmon is designated as a feature of the Dartmoor SAC; fish use the Tamar Estuary complex on their migration to freshwater spawning sites in the Dartmoor SAC, the Atlantic Salmon should therefore be included when considering the PSE MPA.

When assessing the condition of some MPA designated habitats, the species composition found or supported is also assessed. So although these species may not be protected in the same manner, they form an important part of the assessment of MPA condition.

Part 4. MPA Management

4.1 Monitoring and reporting critical risks to the MPA

Overall conservation objectives for each site are set on designation (Table 5). Supplementary conservation advice is also published as well as advice on; condition of features, seasonality, and impactful operations and activities (Table 5). This statutory advice provides the backbone for the management measures needed to conserve and restore designated sites. It also provides guidance to inform impact assessments of plans or projects such as new developments, fishing practices or strategic plans.

NE assesses the condition of the designated features in line with the Marine Condition Assessment Methodology (for Annex 1 habitats). Additional detailed assessment of features and waterbody assets' extent and condition, including pressures and threats, can be seen in Appendix 1: Part 2, Annex 2.

For the SAC and SPA, statutory nature conservation bodies are required under the Habitats Directive to assess and report on the conservation status of features to the Sectary of State every six years. For MCZs Defra is required, under the Marine and Coastal Access Act 2009, the requirement is to assess and report to parliament progress towards the site's conservation objectives[29]. For SSSIs, assessing and monitoring their condition under the Wildlife and Countryside Act 1981 (as amended). Reports are published by NE[30] and Defra[31] respectively.

This Plan is created in line with the Habitat Regulations, however there is currently no reporting or monitoring mechanism or requirements on the implementation of this Plan.

29 Marine conservation zones: explanatory note
30 Designated Site Search
31 Marine Protected Areas network report (2012 to 2018)

Table 4 *Statutory conservation objectives for the Plymouth Sound and Estuaries Marine Protected Area (PSE MPA) component sites, and links to statutory conservation advice pages. Condition assessments can be found in Appendix 2.*

MPA Component Site	Conservation Objectives	Designated Features	Conservation Advice			
Plymouth Sound and Estuaries (PSE) SAC	These objectives apply to the site and the individual species and/or assemblage of species for which the site has been designated. The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the Favourable Conservation Status of its qualifying features, by maintaining or restoring: • the extent and distribution of qualifying natural habitats and habitats of the qualifying species • the structure and function (including typical species) of qualifying natural habitats • the structure and function of the habitats of the qualifying species • the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • the populations of each of the qualifying species • the distribution of qualifying species within the site	Allis shad, *Alosa alosa*	Supplementary advice	Feature condition	Seasonality	Impacting operations and activities
		Atlantic salt meadows *Glauco-Puccinellietalia maritimae* (Saltmarsh)			N/A	
		Estuaries				
		Large shallow inlets and bays				
		Mudflats and sand flats not covered by seawater at low tide				
		Reefs				
		Sandbanks which are slightly covered by sea water all the time				
		Shore dock, *Rumex rupestris*				

MPA Component Site	Conservation Objectives	Designated Features	Conservation Advice			
Tamar Complex SPA	The site's conservation objectives apply to the site and the individual species and/ or assemblage of species for which the site has been classified (the "Qualifying features" listed above). The objectives are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • the extent and distribution of the habitats of the qualifying features • the structure and function of the habitats of the qualifying features • the supporting processes on which the habitats of the qualifying features rely • the populations of each of the qualifying features • the distribution of qualifying features within the site	Avocet, *Recurvirostra avosetta* Little egret, *Egretta garzetta*	Supplementary advice	Feature condition	Seasonality	Impacting operations and activities

MPA Component Site	Conservation Objectives		Designated Features	Conservation Advice			
The Tamar Estuary MCZ	The objective of the zone is that the protected features: 1. Are maintained in favourable condition if they are already in favourable condition, or 2. Are brought into favourable condition if they are not already in favourable condition. Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a protected feature is in favourable condition. Any temporary reduction of numbers of a species is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery. This should be read in conjunction with the accompanying supplementary advice section, which provides more detailed information to help achieve the objectives set out above, including which attributes should be maintained and which recovered.	For each protected habitat feature, favourable condition means that, within the zones both: 1. Its extent is stable or increasing 2. Its structure and function, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part of or inhabiting the habitat) are sufficient to ensure that it remains in a condition which is healthy and does not deteriorate.	Intertidal coarse sediment	Supplementary advice	Feature condition	N/A	Impacting operations and activities
			Intertidal biogenic reefs				
			Blue mussel, *Mytilus edulis* beds				
		The second conservation objective of the zone is that, in relation to smelt and the native oyster: a. The quality and quantity of habitat available to the population and b. The composition of that population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive.	Native oyster, *Ostrea edulis*				
			European Smelt, *Osmerus eperlanus*			Seasonality	

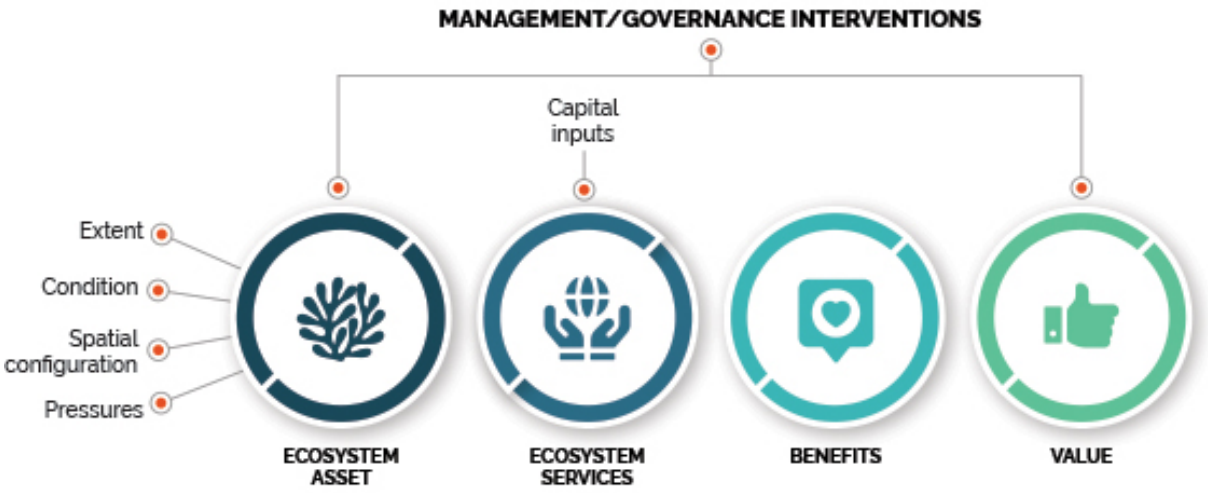
MPA Component Site	Conservation Duty	Designated Features (terrestrial and geological features in blue)	Conservation Advice		
Lynher Estuary SSSI	The Wildlife & Countryside Act 1981 as amended places a legal duty on Natural England to act for the benefit of SSSIs and take reasonable steps, consistent with the proper exercise of its functions, to further the conservation and enhancement of the special scientific interest of SSSIs. In order to provide all SSSIs with protection from potentially harmful activities, the Act requires: • owners and occupiers of SSSI land proposing to carry out or permit operations that may damage the special interest of their SSSI to first apply for Natural England's consent. • public bodies proposing to carry out operations which they consider are likely to damage the features of special interest within a SSSI (whether within or outside the boundary of an SSSI) to first apply for Natural England's assent • public bodies proposing to authorise or permit others to carry out operations that may be likely to damage the special interest of a SSSI (whether within or outside the boundary of an SSSI) to first seek Natural England's advice	Black-tailed godwit, *Limosa limosa islandica* (non-breeding)	Feature Condition	Operations Requiring Natural England Consent	Views About Management
		Wigeon, *Anas penelope*			
		Littoral sediment*			
		Lowland mixed deciduous woodland			
		Bulbous Foxtail, *Alopecurus bulbosus*			
		Saltmarsh**			
Plymouth Sound Shores and Cliffs SSSI		Variscan Structures	Feature Condition	Operations Requiring Natural England Consent	Views About Management
		Littoral rock and inshore sublittoral rock**			
		Littoral sediment**			
Rame Head & Whitsand Bay SSSI		Marine Devonian	Feature Condition	Operations Requiring Natural England Consent	Views About Management
		Coastal Geomorphology			
		Slender Bird's-foot-trefoil, Lotus angustissimus			
		Early Meadow-grass, *Poa infirma*			
		Shore Dock, *Rumex rupestris***			
		Vascular plant assemblage			
St. John's Lake SSSI		Black-tailed godwit, *Limosa limosa islandica*	Feature Condition	Operations Requiring Natural England Consent	Views About Management
		Little egret, *Egretta garzetta* (non-breeding)**			
		Wigeon, *Anas Penelope* (non-breeding)**			
		Littoral sediment**			
		More than 20,000 Non-breeding waterbirds			
		Saltmarsh**			

MPA Component Site	Conservation Duty	Designated Features (terrestrial and geological features in blue)	Conservation Advice		
Tamar-Tavy Estuary SSSI		Avocet, *Recurvirostra avosetta* (non-breeding)**	Feature Condition	Operations Requiring Natural England Consent	Views About Management
		Allis shad, *Alosa alosa***			
		Lowland mixed deciduous woodland			
		Triangular Club-rush, *Schoenoplectus triqueter*			
		Saltmarsh**			
		Vascular plant assemblage			
Wembury Point SSSI		Cirl bunting, *Emberiza cirlus* (breeding)	Feature Condition	Operations Requiring Natural England Consent	Views About Management
		Littoral sediment**			
		Shore Dock, *Rumex rupestris***			
		Reefs**			
		Scrub			
		Soft maritime cliff and slope			
Yealm Estuary SSSI		Littoral rock and inshore sublittoral rock**	Feature Condition	Operations Requiring Natural England Consent	Views About Management
		Littoral sediment**			

4.1.1 Managing the flow of Ecosystem Services and Benefits

An ecosystem service is a product or function that is provided to us by habitats and species in the marine environment; their ability to do this depends on their health and extent. It is important for us to understand and recognise what these are and how human pressures can diminish them (Figure 11). Applying an evidenced Natural Capital Approach (NCA) like this alongside statutory management practices (Part 4), can help us to prioritise management actions and consider the wider benefits of the more challenging practices. This aims to deliver more sustainable estuary management as we can identify the knock-on effects of management on our local economy, our society health and wellbeing.

Figure 11 *The flow of ecosystem services from ecosystem asset to society value and the affecting inputs relevant to management. Diagram sourced from [reference].*



The Natural Capital Asset and Risk Register (NCARR) undertaken for the Plymouth Sound, Estuaries and Coastal Region (Appendix 1) uses condition assessment and basic models to assesses the health and capability of habitats and species to provide the functions that contribute to ecosystem services. The NCARR also identifies where this service provision may be at risk, a summary of this can be seen in Figure 12.

Figure 12 *The five key ecosystem services that are provided by the Plymouth Sound and Estuaries Marie Protected Area (PSE MPA) the features that contribute to these services and the risk to service provision; as assessed by the PSE Natural Capital Asset and Risk Register (NCARR) 2023. More detail and the original assessments can be found in Appendix 1. The MCZ and SSSI features were not included in this assessment).*

CONTRIBUTING FEATURES

High provision to service

Saltmarsh; Seagrass Beds; Subtidal Reef

Moderate Provision to service

Intertidal Reef; Intertidal Sediments; Subtidal Sediments; Biogenic Reefs.

ECOSYSTEM SERVICE

Marine and coastal habitats play a valuable role in the defence of coastal regions. Physical barriers like intertidal rock dampen wave energy and contain rising water. Saltmarsh dampen wave energy, store large volumes of water and vegetation attenuates currents and accumulates sediment. Seagrass and kelp habitats dissipate wave energy and accumulate sediments. Marine habitats provide barriers reducing risk of damage to coastal defences and low lying land and infrastructure. If unimpeded by coastal development, natural intertidal habitats such as saltmarsh will migrate with rising sea level rises.

RISK TO SERVICE PROVISION

Food (wild food: fish and shellfish) benefits are at high risk due to the extent of sublittoral soft substratum habitat outside MPAs without management objectives and with impaired quality (condition) based on knowledge of previous demersal fishing activity. The condition of important fish and shellfish nursery habitat (seagrass beds, littoral rock and sediment habitats) and shellfish waters are also impaired in relation to elevated contaminant levels, spread of invasive non-native species and physical pressures from anchoring and mooring. Reduced water quality related to elevated bacterial contamination and nutrient enrichment reduces shellfish aquaculture and hand gathering harvesting opportunities.

CONTRIBUTING FEATURES

High provision to service

Saltmarsh; Seagrass Beds;

Moderate Provision to service

Kelp Beds; Intertidal Mud; Biogenic Reefs.

ECOSYSTEM SERVICE

Habitats and species within Plymouth Sound and Estuaries contribute towards the capture and long-term storage of atmospheric carbon, thereby supporting a healthy climate. Root systems of saltmarsh and seagrass capture and store carbon. Algae and kelp communities on intertidal habitats and Phytoplankton, algae and macro algae capture carbon which is exported in detritus, and a proportion stored/sequestered in offshore soft substratum sediments. Rivers and estuaries providing a relatively large C efflux by transporting terrestrial detritus into the coastal zone.

RISK TO SERVICE PROVISION

Healthy climate benefits are at risk due to the degraded quality of the littoral and sublittoral seagrass habitats, littoral mud and mussel bed habitats. Sublittoral soft sediment habitats provide a lower contribution to healthy climate benefits but over a much greater spatial scale. Degraded quality of these habitats in relation to elevated sediment contaminant levels and disturbance from fishing activity and anchoring and mooring is likely to also increase risk to delivery of healthy climate benefits..

CONTRIBUTING FEATURES

High provision to service

Intertidal Reef; Saltmarsh.

Moderate Provision to service

Intertidal sediment; seagrass beds; Kelp Beds; Biogenic Reef

Low provision to service

Intertidal mud; Subtidal reef; Subtidal sediments.

ECOSYSTEM SERVICE

Marine and coastal habitats play a valuable role in the defence of coastal regions. Physical barriers like intertidal rock dampen wave energy and contain rising water. Saltmarsh dampen wave energy, store large volumes of water and vegetation attenuates currents and accumulates sediment. Seagrass and kelp habitats dissipate wave energy and accumulate sediments. Marine habitats provide barriers reducing risk of damage to coastal defences and low lying land and infrastructure. If unimpeded by coastal development, natural intertidal habitats such as saltmarsh will migrate with rising sea level rises.

RISK TO SERVICE PROVISION

Sea defence benefits provided by littoral habitats and sublittoral seagrass are at risk, due to a reduction in extent and condition of these habitats related to anchoring and mooring activity.

CONTRIBUTING FEATURES

High provision to service

Saltmarsh; Seagrass Beds; Biogenic Reefs.

Moderate provision to service

Intertidal Mud; Subtidal Sediments.

ECOSYSTEM SERVICE

Marine living organisms store, bury and transform waste though assimilation and chemical decomposition and re-composition. Saltmarsh and seagrass vegetation accrete and store organic matter and nutrients within biomass and sediments. Subtidal sediment species communities help to modify sediments through their feeding and burrowing activity cycling nutrients. Filter feeding bivalves, such as mussels help to improve water quality by filtering pollutants and contaminants out of the water.

RISK TO SERVICE PROVISION

Clean water and sediment benefits supported by the ecological functions and processes in littoral mud, seagrass, mussel beds and the subtidal sediment and seagrass habitats are considered to be at risk due to impaired quality (condition) of these habitats. Habitats are impacted by elevated contaminant levels and disturbance from demersal fishing and anchoring and mooring activities.

CONTRIBUTING FEATURES

High provision to service

Saltmarsh; Intertidal Sediments..

Moderate provision to service

Intertidal Reef; Subtidal Reef; Seagrass Beds; Biogenic Reef.

Low provision to service

Intertidal mud.

ECOSYSTEM SERVICE

Marine habitats, species and water bodies provide the basis for a wide range of recreation and tourism activities. These cultural opportunities include watersports, wildlife watching, recreational fishing, appreciating scenery (e.g. from a viewpoint), swimming outdoors, visits to a beach, walking and jogging which all provide, aesthetic, education and health benefits. Access to these activities is enabled by the proximity of Plymouth and surrounding towns and villages to estuaries and coastal spaces. Safe access including unpolluted water bodies is required to enable these activities

RISK TO SERVICE PROVISION

Recreation and tourism benefits are at risk due to degraded littoral and sublittoral seagrass beds and degraded littoral rock and soft substratum habitats, as well as incidences of poor water quality. Water quality related to recreation activities is primarily impacted by nutrient enrichment from agricultural run-off, pollution events and bacterial contamination from industry and water system infrastructure.

As outlined in Section 3.5, the habitats and species within the Plymouth Sound, estuaries (PSE) and coast are found to contribute significantly to ecosystem service provision (Figure 12, Appendix 1). The extent and condition of PSE MPA features, and trends, are also found to be impacting on their service provision; some ecosystem services are at risk of being reduced or lost. The PSE is therefore not delivering the full potential contribution to ecosystem services. This flow of ecosystem services are also found to be highly interlinked; so reduction of extent and condition of one feature could have knock on effect on multiple services.
To maximise the provision of ecosystem services in the PSE, the NACRR displays the importance of providing management actions through an ecosystem approach to recover and maintain all MPA features to favourable condition.

4.2 MPA Critical Management Measures

To support and further guide site management outlined in Part 2, this plan identifies Critical Management Measures to the Plymouth Sound and Estuaries Marine Protected Area (PSE MPA) (Table 6). This is based on the European Marine Site (EMS) Site Improvement Plan (SIP) which outlined the critical risks to features of the EMS[32] updated by Natural England's Regulation 35 Advice Packages (4.1). The MCZ was not included within the EMS SIP, so MCZ features have been included based on the 2024 condition assessment and conservation advice (Table 6, Appendix 2). Critical Management Measures and their relating actions have then been reviewed to identify those that will maximise the potential contribution of ecosystem benefits, based on the evidence provided in the NCARR (Appendix 1), which is summarised in Figure 12.

To ensure these Measures (Table 6) are considered in the wider context and integrated into PSE area management, each measure is addressed within the Action Plan in Part 5. This Action Plan is implemented through delivery plans (Figure 3) which allow for adaptive management if new evidence or statutory conservation advice in relation to designated features emerges.

Identifying the Measures for the site supports statutory bodies (TECF members), to prioritise delivery of the Action Plan and monitor management efforts against site condition. Organisations and stakeholders should also consider the measures below and the associated ecosystem service benefits when developing marine conservation projects (Figure 12).

32 Site Improvement Plan: Plymouth Sound and Tamar Estuary

Table 5 *Critical Management Measures for the Plymouth Sound and Estuaries Marine Protected Area (PSE MPA), outlining pressure affecting different designated features and the measures identified to ensure the conservation objectives (Table 5) are met. Information adapted from Site Improvement Plan: Plymouth Sound and Tamar Estuary.*

Pressures	Affected features				Critical Management Measure	Relevant section or action in Action Plan	Affected Ecosystem Service Benefit Contribution** (listed in order of importance and direct (black) and indirect impacts (grey)
	SAC	**SPA**	**MCZ**	**SSSI**			
1. Coastal squeeze	Estuaries; Intertidal mudflats and sandflats; Saltmarsh; Shore dock	Little Egret Avocet	Blue Mussel Beds; Intertidal biogenic reefs	Black-tailed godwit; Wigeon; Littoral sediment; Saltmarsh; Littoral rock and inshore sublittoral rock; Shore Dock; Little egret; Non-breeding waterbirds; Avocet; Triangular Club-rush;	Quantify impacts and provide space for habitat adaptation	5.7 Development and Coastal Change: Action 1a 5.10 Climate Change Action: 2a 5.3 Nature Conservation and Enhancement: Action 1b	**REGULATING**: Sea Defence **PROVISIONING:** Wild Food **REGULATING:** Healthy Climate **REGULATING:** Clean Water and Sediments **CULTURAL:** Recreation and Tourism
2.Inappropriate weirs dams and other structures	Allis shad		Smelt	Allis shad	Identify barriers to migration and investigate options for fish easement, fish passage, and barrier removal	5.3 Nature Conservation and Enhancement: Action 6a.	**CULTURAL:** Recreation and Tourism **PROVISIONING:** Wild Food

*Terrestrial and geological features of SSSIs haven't been included in this table. **This includes the five key ecosystem service benefits that were assessed through Natural Capital Asset and Risk Register Appendix 1 and are representative of a range of wider services.

Pressures	Affected features				Critical Management Measure	Relevant section or action in Action Plan	Affected Ecosystem Service Benefit Contribution** (listed in order of importance and direct (black) and indirect impacts (grey))
	SAC	SPA	MCZ	SSSI			
3. Licence and planning processes	Estuaries; Intertidal mudflats and sandflats; Large shallow inlets and bays; Reefs, Saltmarsh; Allis shad	Little Egret, Avocet	All	All	Improve coordination and information sharing between developers and regulators	5.7 Development and Coastal Change: Actions 2a, 3a, 4a, 4b, 5a 5.1 Coordination: Action 1a	**PROVISIONING:** Wild Food **REGULATING:** Healthy Climate **REGULATING**: Sea Defence **REGULATING:** Clean Water and Sediments **CULTURAL:** Recreation and Tourism
4. Water Pollution	Subtidal sandbanks; Estuaries; Large shallow inlets and bays; Saltmarsh; Allis shad; Shore dock; Intertidal mudflats and sandflats?	Avocet	Blue mussel beds, Intertidal biogenic reefs, Intertidal coarse sediment, Native oyster? Smelt	Black-tailed godwit; Wigeon;??? Littoral sediment;?? Saltmarsh; Littoral rock and inshore sublittoral rock;??? Shore Dock; Little egret;??? Non-breeding waterbirds;?? Avocet; Allis shad; Triangular Club-rush; Reefs??	Monitor indicators of water pollution and use to inform and deliver interventions to reduce inputs	5.2 Evidence, Monitoring and Data Management: Actions 1a, 1b 5.4 Water Quality: Actions 1a – 5c	**CULTURAL:** Recreation And Tourism **REGULATING:** Healthy Climate **REGULATING:** Clean Water And Sediments **PROVISIONING:** Wild Food **REGULATING**: Sea Defence

*Terrestrial and geological features of SSSIs haven't been included in this table. **This includes the five key ecosystem service benefits that were assessed through Natural Capital Asset and Risk Register Appendix 1 and are representative of a range of wider services.

Pressures	Affected features				Critical Management Measure	Relevant section or action in Action Plan	Affected Ecosystem Service Benefit Contribution** (listed in order of importance and direct (black) and indirect impacts (grey)
	SAC	SPA	MCZ	SSSI			
6. Disturbance from public access and recreation	Reefs; Allis shad; Shore dock; Subtidal sandbanks;? Intertidal mudflats and sandflats?	Little Egret Avocet	Smelt?	Black-tailed godwit; Wigeon; Littoral sediment;?? Shore Dock; Little egret; Non-breeding waterbirds; Avocet; Reefs	Investigate the impacts of marine recreation activities, manage and mitigate where required	5.5 Recreation: Actions 1a, 1b, 1c, 3a, 3b, 3c 5.7 Development and Coastal Change: Actions 4b	**PROVISIONING:** Wild Food **REGULATING:** Healthy Climate **REGULATING**: Sea Defence **REGULATING:** Clean Water and Sediments **CULTURAL:** Recreation and Tourism
7. Invasive non-native species (INNS)	Shallow inlets and bays; Reefs; Subtidal sandbanks,? Intertidal mudflats and sandflats?		Blue mussel beds, Intertidal biogenic reefs, Native oyster	Littoral sediment; Littoral rock and inshore sublittoral rock; Reefs	Investigate impacts of INNS, monitor and manage the spread	5.3 Nature Conservation and Enhancement: Action 5a, 5b, 5.11 Communications and Engagement: Action 1c	**PROVISIONING:** Wild Food **CULTURAL:** Recreation and Tourism **REGULATING:** Healthy Climate **REGULATING:** Clean Water and Sediments **REGULATING**: Sea Defence

*Terrestrial and geological features of SSSIs haven't been included in this table. **This includes the five key ecosystem service benefits that were assessed through Natural Capital Asset and Risk Register Appendix 1 and are representative of a range of wider services.

Pressures	Affected features				Critical Management Measure	Relevant section or action in Action Plan	Affected Ecosystem Service Benefit Contribution** (listed in order of importance and direct (black) and indirect impacts (grey))
	SAC	**SPA**	**MCZ**	**SSSI**			
8. Direct land take from development	Estuaries; Intertidal mudflats and sandflats; Large shallow inlets and bays; Reefs; Saltmarsh	Little Egret; Avocet	Blue mussel beds; Intertidal biogenic reefs; Smelt	Black-tailed godwit; Wigeon; Littoral sediment; Saltmarsh; Littoral rock and inshore sublittoral rock; Shore Dock; Little egret; Non-breeding waterbirds; Avocet; Triangular Club-rush; Reefs	Quantify the level of impact and provide compensatory habitat as required	5.3 Nature Conservation and Enhancement: Action 1b 5.7 Development and Coastal Change: Actions 2a, 2e	**REGULATING**: Sea Defence **REGULATING:** Healthy Climate **CULTURAL:** Recreation and Tourism **PROVISIONING:** Wild Food **REGULATING:** Clean Water and Sediments
9. Disturbance from recreational hand gathering fisheries	Intertidal mudflats and sandflats	Little Egret; Avocet	Blue mussel beds; Intertidal biogenic reefs?	Black-tailed godwit; Wigeon; Littoral sediment; Little egret; Non-breeding waterbirds; Avocet	Manage impacts of crab tiling/bait digging and monitor.	5.6 Fisheries: Action 3a, 4a, 5a, 6a 5.5 Recreation: Actions 3a.	**PROVISIONING:** Wild Food **REGULATING:** Healthy Climate **REGULATING**: Sea Defence **REGULATING:** Clean Water and Sediments **CULTURAL:** Recreation and Tourism

*Terrestrial and geological features of SSSIs haven't been included in this table. **This includes the five key ecosystem service benefits that were assessed through Natural Capital Asset and Risk Register Appendix 1 and are representative of a range of wider services.

Pressures	Affected features				Critical Management Measure	Relevant section or action in Action Plan	Affected Ecosystem Service Benefit Contribution** (listed in order of importance and direct (black) and indirect impacts (grey)
	SAC	SPA	MCZ	SSSI			
10. Benthic disturbance from commercial fisheries	Subtidal sandbanks; Large shallow inlets and bays; Reefs		? Oyster?	Reefs	Enforcement of appropriate management to minimise fisheries impacts.	5.6 Fisheries: Action 6a	**REGULATING:** Healthy Climate **PROVISIONING:** Wild Food **CULTURAL:** Recreation and Tourism **REGULATING:** Clean Water and Sediments **REGULATING**: Sea Defence
11. Potential impacts from commercial fisheries	Subtidal sandbanks; Intertidal mudflats and sandflats; Large shallow inlets and bays; Reefs; Saltmarsh; Allis shad; Shore dock	Little Egret Avocet	Smelt	Black-tailed godwit; Wigeon; Littoral sediment; Littoral rock and inshore sublittoral rock; Shore Dock;? Little egret; Non-breeding waterbirds; Avocet; Allis shad; Reefs	Assess impact of fisheries management measures and investigate most appropriate management measures	5.6 Fisheries: Action 6a	**REGULATING:** Healthy Climate **PROVISIONING:** Wild Food **CULTURAL:** Recreation and Tourism **REGULATING:** Clean Water and Sediments **REGULATING**: Sea Defence

*Terrestrial and geological features of SSSIs haven't been included in this table. **This includes the five key ecosystem service benefits that were assessed through Natural Capital Asset and Risk Register Appendix 1 and are representative of a range of wider services.

Pressures	Affected features				Critical Management Measure	Relevant section or action in Action Plan	Affected Ecosystem Service Benefit Contribution** (listed in order of importance and direct (black) and indirect impacts (grey)
	SAC	SPA	MCZ	SSSI			
12. Air Pollution: impact of atmospheric nitrogen deposition	Saltmarsh; Shore dock	Avocet	?	Shore Dock; Triangular Club-rush;	Provide strategic management of sites atmospheric nitrogen	???	**PROVISIONING:** Wild Food **REGULATING:** Healthy Climate **REGULATING**: Sea Defence **REGULATING:** Clean Water and Sediments **CULTURAL:** Recreation and Tourism
13. Climate change	All	All	All	All	Improve understanding of how features are impacted by and investigate opportunities to support adaptations to climate change	5.2 Evidence, Monitoring and Data Management: Actions 1a, 1b 5.10 Climate Change: Actions 2a, 2b, 3a, 3b, 4a.	**PROVISIONING:** Wild Food **REGULATING:** Healthy Climate **REGULATING**: Sea Defence **REGULATING:** Clean Water and Sediments **CULTURAL:** Recreation and Tourism
14. Lack of knowledge and understanding of feature extent, distribution and ecology in the site	Saltmarsh, Allis Shad ?	?	Smelt Native Oyster ? Mussel beds, Biogenic reefs?	Saltmarsh; Allis shad; Triangular Club-rush?	Conduct research and monitoring into those features with little baseline evidence to support condition assessments.	Research actions.	Research actions.

*Terrestrial and geological features of SSSIs haven't been included in this table. **This includes the five key ecosystem service benefits that were assessed through Natural Capital Asset and Risk Register Appendix 1 and are representative of a range of wider services.

Part 5. Action Plan

This Action Plan is an integrated approach designed to achieve sustainable management of the Plymouth Sound and Estuaries (PSE) as a whole ecosystem; actions therefore, address the Critical Management Measures for the MPA (Table 6). The Plan is set out under 11 themes (Figure 13). For Actions relevant to the Yealm Estuary please see the South Devon Estuaries Management Plan (Table 3).

Each theme covers:

- **Background** – a short summary of the key issues under this topic, existing management considerations and any principle services or opportunities to consider.
- **Aims** – the management aims TECF sets out to achieve under this theme.
- **Actions** – the main management challenges and the actions required to address these in line with the aims. Some of these will be an existing statutory duty and some will require additional resources and collaboration.

Plan production, implementation review and reporting is outlined in Section 1.5. To ensure this plan can deliver adaptive management, these strategic actions will be delivered though a biennial PSE Delivery Plan and/or other focused schemes and strategies which will allow for changes throughout the 6-year plan period (Figure 3).

Figure 13 *Themes of the Plymouth Sound and Estuaries Action Plan, highlighting the these that cut across the Action Plan.*

5.1 Coordination

5.1.1 Background

The PSE has a MPA with multiple component sites (Figure 7), designated at different times, under different legislation and come with varying statutory guidance. The PSE also has undesignated areas, species and habitats that are individually protected outside of the MPA component site designations. This plan aims to align individual management duties and provide an ecosystem approach to managing the PSE.

The PSE has a large range of commercial, naval and recreational activities as well as significant environmental research and monitoring activities; inevitably there are challenges to reconcile. The site is highly valued for its natural and built heritage and the multiple statutory bodies have overlapping responsibility (Figure 9). Coordination is a vital tool to deliver conservation by ensuring legal duties are met and to deliver management sustainably. There is also overlap between organisations' individual plans and strategies (Figure 9). Integrated partnership working is needed to make plans and strategies complementary.

Since 1994, TECF has brought together those with an interest in the PSE into a collaborative partnership. The sites governance framework (Figure 10) provides a unique, responsive vehicle for coordination, planning and management. Through this mechanism, arising water management or conservation issues meet the attention of organisations that may have the required responsibility, authority or regulatory power. Through pooling of resources, TECF employs a dedicated Coordinator to ensure coordinated site management and enabling delivery of this management plan.

There are a number of other relevant partnerships, including the; Yealm Estuary Management Group (2.2.3), National Landscapes (AONB'S), and Tamar Catchment Partnership (5.4.1). Together this network of partnerships relies on support and communication to jointly deliver environmental improvements and protections.

This coordination between management responsibilities and conservation interventions is essential to deliver meaningful benefits for the conservation and enhancement of the MPA.

5.1.2 Aims

- To provide and oversee an effective management framework for the PSE and the MPA, that resolves issues, delivers added value through collaboration.
- Support TECF members to meet deliver meaningful environmental benefits and ensuring compliance with statutory duties.

5.1.3 Actions

Table 6 *Actions identified to address challenges associated with coordination in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10); other: see Abbreviations).*

1 Coordination

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Coordination of water users and managers.	**1a.** Provide strategic MPA management through TECF and review TECF and PPMLC's Memorandum of Agreement as required.	**TECF**	No assessed contribution
	1b. Review how to integrate MPA component site management within existing management framework and have regard for Start Point to Plymouth Sound & Eddystone SAC.	**TECF**/NE	No assessed contribution
	1c. Integrate into partnership work any relevant management requirements arising from changes in new legislation, policy, plans or strategies.	**TECF**/TECF members	No assessed contribution
	1d. Maintain and improve functional relationship with Yealm Estuary Management Group, Wembury Advisory Group and other interest groups to ensure TECF work delivery throughout the MPA.	**TECF/ YEMG**/TECF members/ WHS	No assessed contribution
2. Coordinated delivery of management responsibilities, activities and projects.	**2a.** Publish, deliver and monitor a; six year Management Plan, Delivery Plan and annual partnership budget.	**TECF**	No assessed contribution
	2b. Delivery of TECF through an agreed contract with Plymouth City Council and Kings Harbour Authority.	**PCC/KHM**	No assessed contribution
	2e. Coordinate delivery plans, including; PSE Delivery Plan, MRMMS, Tamar Estuaries Biosecurity plan.	**TECF**/TECF members	No assessed contribution
3. Insufficient capacity within some authorities to deliver management actions.	**3a.** Pool member resources to allow collaborative action delivery including the funding of dedicated officers.	**TECF/PCC**	No assessed contribution
	3b. Monitor management plan delivery through TECF meetings, annual reporting and where necessary, identify opportunities to collaborate to improve delivery.	**TECF**/TECF members	No assessed contribution
4. Funding resilience.	**4a.** Secure annual TECF contributions and review contributions when required.	**TECF**	No assessed contribution
	4b. Explore opportunities for capacity building within TECF and individual members to support delivery of the Plan Actions.	**TECF**/TECF members	No assessed contribution

5.2 Evidence, Monitoring and Data Management

5.2.1 Background

Having targeted research, robust evidence bases, and sufficient monitoring is fundamental to site management. Improving data sharing and collaboration between researchers and managers is needed, to support evidence-based decision-making, to streamline research efforts and identify gaps. Sharing common approaches and methodologies also would help to standardise methodologies, which could then align more with statutory monitoring and policy development requirements.

The PSE is a nationally important location for monitoring; the SAC is one of NE's sentinel monitoring sites where features inform national guidance and is a study site for the Marine Natural Capital and Ecosystem Assessment (mNCEA) program, and the EA use the Tamar River as an index river for water quality. Some features and qualities of the PSE are comparatively well monitored and therefore, addressing knowledge and data gaps in the site has the potential to be nationally significant.

Data ownership, use and restrictions are complex and is often a barrier to sharing data. Much of the data and evidence associated with MPA management is publicly available, with some presented on central data hubs and public platforms but often awareness of what's available and ease of access can be poor. JNCC through Marine Recorder[33] hold a national database of benthic data from a variety of sources. NE provide and manage MPA protected site data and produce supporting evidence bases. The EA monitor and provide water quality data in line with the WFD. Commercial fishing activity and catch data is collected by the MMO among other things and the IFCAs also collect fishing activity, as well as recreational fishing and habitat condition and pressures. There are also local resources such as DAASH based at the MBA[34]. Local authorities, research institutions, businesses, charities and regional record centres all also hold valuable data for site management. For example, wading bird data from the British Trust of Ornithologists (BTO) is used to underpin SPA condition assessments. Citizen science provides important widespread long term data sets for marine conservation.

Collaboration is key for the effective delivery of actions in this section and the TECF governance framework (Figure 10) supports the ability to do so.

33 Marine Recorder, JNCC
34 DASSH

5.2.2 Aims

- To build on the integrated estuary-wide research and monitoring program by sharing data and resources.
- To secure best available data collected economically whilst having minimal environmental impact.
- Use best available data as a decision-making tool to inform management.

5.2.3 Actions

Table 7 *Actions identified to address challenges associated with evidence, monitoring and data management in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10 2.2.2); other: see Abbreviations).*

2. Evidence, Monitoring and Data Management

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Continually improve understanding of the PSE and use best available evidence to inform management and monitoring.	**1a.** Work with organisations to support targeted data and evidence gathering by helping to; identify knowledge gaps that support management actions, align projects to provide consistent methodologies and improve sharing of data.	**TECF members**	No assessed contribution
	1b. Work with organisations to support monitoring by helping to; identify monitoring gaps, align projects to provide consistent methodologies and improve sharing of data.	**TECF members**	No assessed contribution
2. Consolidating and managing data that can support marine management and in-combination assessments.	**2a.** Develop processes for managing and sharing data, in part by; creating and maintain an evidence library and utilising MPA website as a platform to signpost to existing data sources.	**TECF**/NE	No assessed contribution
3. Monitoring management plan interventions.	**3a.** Develop the plans annual reporting and success measures process through TECF and deliver an integrated monitoring plan to inform future management actions.	**TECF**/NE	No assessed contribution

5.3 Nature Conservation and Enhancement

5.3.1 Background

National legislation, policy and guidance has an important role in reversing the sustained decline in the condition of our natural environment. Nationally there is recognition for the need to strengthen protections, improve pressure management measures, deliver active nature recovery and consider the wider value of our ecosystem through a natural Capital Approach (NCA).

The Environment Act 2021 introduces requirements for landscape scale nature recovery. With this, comes new regulatory processes such as; Local Nature Recovery Strategies (LNRS), Biodiversity and Environmental Net Gain, and ambitions to develop Green finance opportunities. These new mechanisms will support existing MPA management through new alternative revenue streams that value Natural Capital, Biodiversity and service like carbon capture. Additional resource, reliable evidence bases, and standardised methodology is required to develop the necessary policies and finance markets. The Natural Capital and Ecosystem Assessment (NCARR) highlights the significant value of the PSE and the wider social and economic benefits of managing it (Appendix 1) and the Marine Natural Capital and Ecosystem Assessment (mNCEA) programme, aims to collect baseline information on the extent condition and change of England's environmental natural capital and society benefits. This local and national knowledge will help to inform decision-making and policy development. A robust network of protected areas is the central mechanism to deliver marine nature recovery nationally.

Invasive non-native species (INNS) pose a continued threat to the balance of ecosystems and the condition of the designated features. Defra's Environmental Improvement Plan and 'INNS framework strategy[35] sets out actions relating to INNS understanding and risk management. The site is vulnerable to the spread of INNS particularly due to the port's considerable marine traffic. In 2018, TECF developed the site's first Biosecurity Plan, which identifies species of interest, vector pathways and appropriate biosecurity measures[36].

The PSE is considered a good example of a natural estuary system, largely free form dams and weirs in the upper estuaries. There are however a few structures that prevent particularly rare and threatened species of migratory fish from migrating to freshwater spawning habitats. This theme covers challenges linked to managing the natural environment and non-anthropogenic impacts like INNS. Climate change is discussed in Section 5.10.

35 The Great Britain invasive non-native species strategy
36 [Link to biosecurity plan on website]

5.3.2 Aims

- Protect, restore and enhance the condition of protected habitats and reverse trends in declining species.
- Take an ecosystem approach to the managing the PSE, integrating designated site management with other protected, or non-protected habitats and species management, maximising the flow of ecosystem services.
- Monitor the presence and impacts of INNS in the site, and reduce the risk of introductions, and impact and spread of existing INNS.

5.3.3 Actions

Table 8 *Actions identified to address challenges associated with nature conservation and enhancement in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10); other: see Abbreviations).*

3. Nature Conservation and Enhancement

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Overall declines in the extent and condition of marine ecosystems, leading to the loss of scarce or vulnerable habitats and species.	**1a.** Identify evidence gaps in condition assessments and support and facilitate research that contributes to feature management.	**NE/TECF/ YEMG**/TECF members	
	1b. Develop a collaborative Local Nature Recovery Strategy and voluntary subtidal extension that aligns with existing projects and helps to identify strategic mitigation and enhancement areas	**DCC & CC/TECF/** LAs/NLs/Gov bodies	
	1c. Develop coordinated policies and procedures for Nature Recovery Networks, Biodiversity, Environmental and Marine Net Gain.	**NE**/TECF members	
	1d. Investigate conservation models for the Voluntary Wembury MCA to safeguard its special status.	**WMCAAG**/TECF/ IFCA/MMO/NE	No assessed contribution

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
2. Take an ecosystem approach to conserving ecosystem and habitat functionality.	**2b.** Implement actions from environmental plans and strategies to conserve habitat functionality.	**TECF members**	
	2a. Deliver and support projects with an ecosystem and/or natural capital approach, where additional knowledge and evidence is developed.	**TECF members**	
3. Incorporate MPA component sites into current management measures and deliver landscape scale improvements.	**3a.** Integrate and align management measures for MCZ and SSSIs into current management plan.	**TECF/NE**/TECF members	
4. Limited financial resource to deliver the required statutory conservation and recovery work.	**4a.** Identify opportunities to develop alternative funding models for habitat management, such as green finance and local investment in nature.	**TECF members**	
New action or integrate above?	**3b.** Consider condition assessment to enable challenges and actions to become site specific.	**TECF/NE**/TECF members	
5. Invasive non-native species (INNS).	**5a.** Update Biosecurity Plan and develop and implement proactive management measures with stakeholders	**TECF**/TECF members	
	5b. Monitor and map the changes in extent of INNS and support projects to control them where appropriate.	**MBA**/NE/EA/ IFCAs/YEMG/ UoP/PML	
6. Artificial barriers to migration.	**6a.** Gather evidence required and remove or modify weirs or dams. Monitor effectiveness of any changes.	**SWW/EA/NE/** Tamar Catchment Partnership	

5.4 Water Quality

5.4.1 Background

The Governments 25 Year Environment Plan[12] and Environment Improvement Plans[13] have clear ambition to improve the quality of the water environment including estuaries and coast. The Water Environment (Water Framework Directive) Regulations 2017 (WFD Regulations) provide a framework for managing the water environment in England. The WFD Regulations, requires plans to be prepared for each river basin district; the South West River Basin Management Plan (Table 3) includes objectives and summarises the programme of measures required to achieve these. The PSE is managed within the Tamar Management Catchment[37] which in turn is divided into operational catchments and water bodies (Table 10). In addition, local objectives and measures developed by the Tamar Catchment Partnership can be found on the Catchment Pages[38].

The PSE comprises four WFD water bodies;their status at the time of writing can be seen in Table 10. Plymouth Sound water body fails for Total Inorganic Nitrate (TIN) which is linked to nutrients from multiple sources including Agriculture and Water Industry and Plymouth Tamar fails for mitigation measures assessment[39].

Table 9 *Designated water bodies within the Plymouth Sound and Estuaries, their modification, ecological and chemical status from the 2019 assessmentstatus from the 2019 assessment.*

Water Body	Heavily Modified	Ecological Status	Chemical Status*
Plymouth Coast	No	Good	Fail
Plymouth Sound	No	Moderate	Fail
Plymouth Tamar	Yes	Moderate	Fail
Yealm Estuary	No	Good	Fail

**For the 2019 assessment of chemical status, some methods were changed, and the evidence base was increased; as a result, all water bodies now fail chemical status and this assessment is not comparable to previous years assessments. How to use Catchment Data Explorer contains further information.*

37 Tamar Management Catchment, Catchment Data Explorer
38 Tamar Catchment Partnership, Catchment Data Explorer
39 Ecological Potential in artificial and heavily modified water bodies is determined by whether measures are in place to the impacts of any modification on the ecology of the water body).

PSE also has one designated Shell Fishery[40] located in Wembury Bay and seven designated Bathing Waters; Kingsand, Cawsand, Firestone Bay, Plymouth Hoe West, Plymouth Hoe East, Bovisand, Wembury, for which the EA publishes annual status[41].

Climate change is a common contributor to local impacts on the PSE; sea level rise, increased average sea and freshwater temperatures, and climate shock events (too much or too little rainfall) all impact both the biological and physicochemical elements of the PSE water bodies. Upstream inputs from the 56 WFD designated water bodies that discharge into the sound through the Lower Rivers Tamar, Lyhner, Tavy, Plym and Yealm water bodies will carry a range of pollutants that will enter the sound. This will include pollution sources from agriculture, wastewater industry, urban run-off and wastewater from abandoned metal mines. Similarly, there are local pressures that directly impact the PSE and additionally include urban run-off, heavy modification to support land reclamation, industrialisation, and both port and recreational use. Whilst the majority of pollution has its origins from land and rivers, the marine environment also transports pollutants into the PSE and these include macro and micro plastics, industrial chemicals and nutrients from diffuse sources.

Pressures on water quality are complex and integrated into our existing infrastructure and industry, so whilst there is increased investment, solutions need significant financial investment. Small scale impacts from commercial recreational or domestic sources also have a cumulative effect on the catchment. Marine litter in particular, has additional environmental, economic and social impacts. A widespread multi-targeted approach to reducing water pollution is required incorporating nature -based solutions, innovation, as well as significant investment into water infrastructure.

5.4.2 Aims

- To achieve sustained water quality that is compatible with the MPA conservation objectives interest and commercial and recreational usage as required by legislation.

5.4.3 Actions

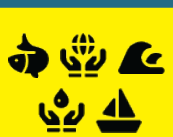
The overall approach to strategic actions for water quality is to influence, support and locally enable existing funded programmes targeting the sector for example, Drainage and Wastewater Management Plans, Environment Land Management. Additionally, our actions will seek to bridge these existing programmes and close gaps through working in partnership at a local and catchment scale.

40 Shellfisheries water quality
41 Bathing Water Quality

Table 10 *Actions identified to address challenges associated with water quality in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10); other: see Abbreviations).*

4. Water Quality

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Rural diffuse pollution.	**1a.** Support strategic targeting of the Government Environmental Land Management Scheme and other land management schemes to manage upstream diffuse agricultural pollution inputs.	**NE**/EA/NLs/LAs	
	1b. Enable the targeting and delivery of land management schemes within the PSE water bodies.	**NE**/EA/NLs/LAs	
	1c. Identify local PSE gaps and opportunities within existing programmes and seek to resolve through the delivery of nature-based solutions in project partnership.	**TECF**/NE/EA/NLs/LAs/Catchment Partners	
2. Wastewater.	**2a.** Support and influence the Plymouth Water Quality Improvement Partnership to prioritise and deliver action that impacts PSE water quality and priority habitats.	**SWW**/PCC/EA	
	2b. As a key stakeholder support and influence the delivery of action in the statutory Drainage and Wastewater Management Plans.	**TECF**/TECF Members	
	2c. Promote tools that classify real-time and long-term water quality assessments and the positive roles that individuals and businesses can take to reduce impacts.	**TECF**/PCC	
	2d. Identify local PSE gaps and opportunities within existing programmes and seek to resolve through the delivery of nature-based, hybrid and other solutions (for example, Natural Flood Management measures, SuDs) and good wastewater management practice (for example, septic tanks) through partnership projects.	**TECF**/NE/EA/NLs/Las/Catchment Partners	

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
3. Urban pollution and waterbody modification.	**3a.** Support and influence the Local Development Plan for Plymouth and neighbouring authorities managing development in and around the PSE.	**PCC**/CC/SHDC/ WDBC/NLs	
	3b. Ensure urbanisation within or around the PSE has minimal impact and adequate long-term mitigation.	**PCC**/TECF Members	
	3c. Create awareness and best practice to reduce volume and impact of local sources of urban run-off on the PSE.	**LAs**/MRMMS/TECF Members	
	3d. Identify local PSE gaps and opportunities within existing programmes and seek to resolve through the delivery of interventions (for example, yellow fish markers, point source buffering, drainage interceptors).	**LAs**/MRMMS/TECF Members	
4. Pollution from oils, chemicals and other substances.	**4a.** Ongoing review and development of Pollution Control Plans and regular testing/ improvement of these plans.	**KHM**/HAs/LAs/EA	
	4b. Support and Influence the development of policy and implementation of regulation to reduce disposal of hazardous substances within the PSE.	**TECF**/MRMMS/TECF Membership	
	4c. Promote and enhance existing tools that demonstrate, encourage and establish best practice for recreational craft using the PSE.	**MRMMS**/TECF/TECF Membership	
5. Marine litter.	**5a.** Support and Influence the development of policy and implementation of regulation to reduce marine litter within the PSE.	**TECF members**/TCP / YEMG	
	5b. Work with community and business stakeholders to find solutions to prevent and clean up marine litter.	**TECF members**/TCP/ YEMG	
	5c. Promote and review Port Waste Management Plans.	**HAs**/TCP	

5.5 Recreation

5.5.1 Background

The PSE is a valuable asset for public enjoyment; the area provides opportunities for a range of recreational activities due to the sheltered waters, rich wildlife, dramatic seascapes and landscapes, and the variety of access facilities. In this Plan, 'recreation' is used to describe the broad range of activities in the site from sailing to admiring views. The tourism and recreation ecosystem services are important to the local economy and deliver significant health and wellbeing benefits to local communities (Appendix 1). For example, biodiverse reefs support personal and comercial operators for diving, wildlife watching, and recreational fishing.

Many of these habitats and species are under pressure from the same activities which benefit from them; impacts such as disturbance are identified as a key threat to the condition of some MPA features. Recreational activity is estimated to increase with local population increases (due to houseing targets) and projects to improve engagement and inclusion with marine activities (such as the Plymouth Sound National Marine Park (PSNMP) Horizons Project). Tourism is also an important and growing economy; Plymouth City Council, Dartmoor National Park, the Tamar Valley and South Devon National Landscapes all have strategies for improving sustainable tourism and visitor numbers. To promote sustainable use of the estuary, any management efforts need to be ballenced with these social and economic benefits.

The PSE Marine Recreation Survey 2024[42] monitors temporal and spatial changes in water use to inform management. Recreational impacts on the MPA is managed through the Strategic Mitigation and Management Scheme 2018-2015[43]; this, in part, delivers the required mitigation from Local Development Plans (5.7), and provides a framework to deliver actions in this theme, as well as other.

The actions here are closley linked to those in Section 5.11, improving awareness and understanding of the human impacts is key to atcheiving this balance. Recreational fishing is addressed in Section 5.6, and managing recreation safety is discussed in Section 5.8.

42 Link to recreation survey
43 Link to recreation scheme

5.5.2 Aims

- Further the PSE MPA conservation objectives by ensuring marine recreation doesn't negatively impact on MPA features.
- Maintain and improve quality and accessibility of public access.
- Deliver a coordinated estuary-wide approach to managing marine recreation
- Ensure sustainable growth of marine recreation.

5.5.3 Actions

Table 11 *Actions identified to address challenges associated with recreation in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise. Organisations involved in delivery are identified (**TECF**: TECF coordinator on behalf of TECF; **TECF members**: all members (Figure 10); other: see Abbreviations*

5. Recreation

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Strategic management of recreational activities.	**1a.** Quantify and monitor the distribution and intensity of recreational impacts on species and habitats.	**MRMMS/MMO**	
	1b. Continue to deliver, review and update the collaborative Marine Recreational Management and Mitigation Scheme.	**MRMMS**	
	1c. Explore ways to manage non-licensable activities alongside existing Marine Recreational Management and Mitigation Scheme.	**MMO/MRMMS**	
2. Lack of coordination and strategic management of marine assets.	**2a.** Ensure growth in recreation is sustainable through coordinating management of marine assets, updating audits and regular reporting as required.	**HAs/LAs**/Duchy/ YEMG/WHS	

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
3. Species and habitat disturbance.	**3a.** Update a strategic plan for minimising recreational disturbance through zoning of activities, signage, codes of practice, charts and guides.	**MRMMS**/YEMG	
	3b. Continue to build evidence, support and deliver management measures for activities that impact sensitive seabed habitats, such as anchoring and mooring, rock pooling, research and crab tiling.	**MRMMS**/YEMG	
	3c. Manage physical disturbance of roosting and feeding bird populations.	**MRMMS**	
4. Coast path and waterfront access opportunities.	**4a.** Promote waterside trails including South West Coast Path and national trails such as the English Coast Path.	**NE/LAs/NLs**/ MRMMS	
	4b. Look for opportunities to create new seaward pedestrian access within the coastal margin for the English Coast Path.	**NE/LAs**	
5. Complexities of co-locating activities within a busy port.	**5a.** Support appropriate co-location of marine and maritime activities in the coastal zone through policy, planning and projects; maximising social, economic and environmental benefits.	**MMO/LAs**/HAs	

5.6 Fisheries

5.6.1 Background

The Plymouth Sound and Estuaries (PSE) sustains a range of commercial, recreational and hang gathering fishing activities which are an important part of the local culture and economy; in 2023, 4,631 tonnes were landed at Plymouth Fish Market, worth nearly £12.8 million[44]. Recreational fishing and wild food collection is also popular and is an important cultural service and a valuable economy in its own right.

44 2023 UK and foreign vessels landings by UK port and UK vessel landings abroad: provisional data

Although little of the commercial catch is from the MPA itself, the site supports life processes of fish and shellfish stocks including fish spawning, feeding or growth to maturity (Appendix 1). Saltmarsh, subtidal seagrass, sediments and rocky habitats, provide a nursery area for fish species and shellfish including many economically important species. The PSE is an important site for migratory fish, where they return to fresh water to spawn (Part 3). Species like Atlantic salmon and trout are target species for recreational fisheries and species like Smelt, the Allis Shad, as well as the Atlantic salmon are rare and protected. Good water quality is supports resilient populations, particularly supporting aquaculture resources and the availability of blue mussels for low levels of recreational hand gathering.

In the UK, fisheries management falls under the Fisheries Framework which interacts with a range of other legislation[45]. The Fisheries Act 2020, sets out eight fisheries objectives which, in part, outline that fisheries should be environmentally, socially and economically sustainable, and managed using an ecosystem-based approach that is informed by the best scientific advice. The Joint Fisheries Statement sets out policies to achieve these objectives. This includes production of Fisheries Management Plans (FMPs), which set out a framework to secure the long-term sustainability of UK fish stocks. The IFCAs work to manage a sustainable marine environment and inshore fisheries (out to 6 nautical miles (nm)). Devon and Severn IFCA and Cornwall IFCA both manage areas of the PSE under the Marine and Coastal Access Act 2009 and the Habitats Regulations 2017. They seek to balance social and economic benefits of fishing with the need to protect the marine environment, or promote its recovery from, the effects of such exploitation. In doing so, IFCAs assess potential interactions between fishing activities and MPA features; they implement adaptive management to ensure activities do not have an adverse impact. The MMO act to sustainably manage and monitor the inshore fishing fleet, including licences, catches and enforcement[46], and are responsible for fisheries management beyond 6nm. The EA manage freshwater fisheries, including stocks and licences. Wembury bay is a voluntary no take zone as the site is celebrated for its biodiverse rocky reefs.

Understanding and managing the impacts of recreational fisheries activities is challenging, as other than some specific species, recreational fishing and hand gathering is largely unregulated.

5.6.2 Aims

- To further the PSE MPA conservation objectives and achieve sustainable management of the fishing resource by managing impacts from commercial and recreational fishing and hand gathering activities.
- Increase extent, quality and functions of protected habitats which support fisheries.

45 Fisheries management and support: provisional common framework
46 MMO framework document

5.6.3 Actions

Table 12 *Actions identified to address challenges associated with Fisheries in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10); other: see Abbreviations).*

6. Fisheries

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Declining fish and shellfish numbers.	**1a.** Improve understanding of how fish and shellfish use the estuary and protected habitats for migration, reproduction, shelter, feeding. Provide evidence relevant to support management actions.	**Research Institutions (RI)/ TECF/YEMG/** IFCA/NE/EA/MMO	
2. Integrated management of fisheries in the MPA.	**2a.** Continue to deliver adaptive management of fishing activities, including reviewing current Byelaws and Permit Conditions in line with; statutory requirements, as appropriate as new evidence becomes available, and as HRAs/MCZ assessments are updated. Relevant evidence includes data on feature condition, exposure to fishing activities and impacts of gear-feature interactions.	**IFCAs**/EA	
3. Managing impacts from Shore Crab fishery and bait digging.	**3a.** Explore feasibility of a bylaw-based approach to hand working activities.	**IFCAs/NE**	
4. Low awareness of statutory regulations and voluntary guidelines, including Wembury no take zone.	**4a.** Work with local stakeholders and relevant authorities to raise awareness of current management measures and promote best fishing practices.	**MRMMS/ WMCAAG/** IFCAs	

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
5. Managing impacts arising from recreational fishing.	**5a.** Continue to assess the distribution and intensity of impacts from recreational fishing.	**MRMMS**	
	5b. Continue to implement and monitor success of recreational angling engagement and mitigation work.	**MRMMS**	
6. Compliance and monitoring.	**6a.** Increase engagement and coordinate with supporting organisations to encourage full compliance with relevant fisheries legislation, achieved through an adaptive co-management approach to fisheries management that is supported by risk-based, intelligence-led enforcement	**IFCAs/EA/MMO/** HAs/MOD	
7. New and emerging aquaculture and fisheries.	**7a.** Ensuring these are developed and managed sustainably and located appropriately.	**IFCAs/NE/EA/ MMO**	

5.7 Development and Coastal Change

5.7.1 Background

The two key drivers behind coastal change are coastal development and climate change. Coastal development is driven by agriculture, urban or maritime land use changes; ~650ha of land has been reclaimed within the PSE since pre-1700's[47]. Development threatens the condition of the MPA through: loss of habitat, coastal squeeze, air, water, noise and light pollution. Climate change causes sea level rise, increased storminess and rainfall which affects our coastal zone through flooding and erosion, and risks altering the estuary tidal flow regime. The PSE has a valuable role in coastal defence and climate adaptation; many features, principally saltmarsh, rocky reefs, and soft substrate habitats like seagrass beds, have a role in flood prevention, storm defence and alleviation, and reducing coastal erosion (Appendix 1).

47 Coastal Change - SWRCMP

In the PSE, coastal change is managed through Shoreline Management Plan 16 (Table 3) and Flood Risk Management Strategies, and monitored through the regional Coastal Monitoring Programme by South West Coastal Monitoring[48]. Loss or degraded intertidal habitats and artificialisation of coastal infrastructure can result in coastal squeeze; where natural habitats are unable to migrate inland to adapt to rising sea levels. To restore the resilience of coastal habitats, nature-based solutions are being used in coastal zone management. This can be seen in the Tamar where new wetland habitats have been created to manage the realignment of coastal defences whilst delivering benefits for water quality, biodiversity and recreation[49].

There are coastal development pressures within Plymouth particularly, due to: the developing marine sector; economic and climate change impacts on the maritime sector; and the cities vision to become one of Europe's most vibrant waterfront cities[50]. On land, development is strategically managed through local development plans; the Joint Local Plan and the Cornwall Local Plan (Table 3). Below high water, the MMO manages resources and spatial planning through the South West Marine Plan (Table 3). Planning, licencing and permitting processes, in line with these strategies, provide an important way to control development and protect the estuary. Planning within the coastal zone is complex with overlapping regulatory processes between the LPA, MMO, EA, NE, Lead Local Flood Authorities (LLFA) and Department for Transport. Coordination through Coastal Concordat[51] and TECF helps to streamline these processes.

Flood risk management significantly influences development and land use change. Various authorities manage flood risk[52], principally LLFA's which include DCC, PCC and CC, develop, maintain, apply and monitor strategies for flood risk management within their districts (Table 3). The EA manage main rivers, some coastal protection assets and has a more strategic role.

Through development permitting and licencing processes, impacts to natural features, historic assets, seascape, and our marine economy, are protected, mitigated and or compensated as necessary. Development therefore presents opportunities for environmental enhancements with new mechanisms falling out of the Environment Act 2021 that will support the delivery of measurable environmental gains (5.3).

5.7.2 Aims

- Further the conservation objectives by ensuring development does not negatively impact on features, directly, indirectly or in combination.

48 Home - SWRCMP
49 Calstock Wetlands - Tamar Valley National Landscape
50 Plymouth Visitor Plan 2020-2030
51 A coastal concordat for England
52 Who is responsible for local flood risk management?

- For all developments to follow the mitigation hierarchy and deliver measurable improvements in our natural environment.
- Ensure coastal developments support the delivery of wider economic and social gains.

5.7.3 Actions

Table 13 *Actions identified to address challenges associated with development and coastal change in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10); other: see Abbreviations).*

7. Development and Coastal Change

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Managing impacts from coastal processes.	**1a.** Identify sites at risk suitable for coastal management schemes that can secure environmental, economic and social benefits (for example, intertidal habitat creation). Use information to support a Nature Recovery Strategy.	**EA**/LAs/NLs	
	1b. Support implementation and review of Catchment Flood Management Plans.	**EA**/LLFAs	
2. Assessing and managing impacts from development plans and projects.	**2a.** Assess plans and projects through HRA, MCZ, EIA and WFD Assessments, seeking input from partners to ensure a strategic approach to mitigation and coordination.	**LAs/MMO/EA/NE**/ TECF LLFAs	
	2b. Include within new development plans, a strong policy framework that supports MPA conservation and enhancement, and links to other policy plans (for example, SW Marine Plan).	**LAs/NL**/MMO/NE/ EA/LLFAs	
	2c. Ensure plans and coastal defences are sensitive to the seascape, views and protected landscapes in line with policy, by requesting or undertaking seascape assessments.	**LAs/MMO/EA/NLs**	
	2d. Develop mechanisms and integrate requirements for post-development impact monitoring to assess impact of development projects.	**LAs/MMO/EA**	
	Nitrogen deposition?		

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
3. Overlapping licence processes for developments within the coastal zone.	**3a.** Coordinate and provide guidance on coastal development proposals through TECF in line with the Coastal Concordat.	**TECF/MMO/LAs/**NE/EA	No assessed contribution
4. Managing impacts from in combination effects of developments, including indirect effects such as recreational pressure.	**4a.** Investigate procedures for monitoring activities that could result in in combination impacts, such as research sampling or pollution.	**NE**/MMO/EA/LAs	
	4b. Continue to collaboratively monitor and update where necessary the strategic approach to recreational mitigation.	**MRMMS**/YEMG/TECF	
	4c. Identify cumulative land take since site designation, identify threshold to impacting site integrity and identify strategic opportunity areas for development compensation.	**TECF/YEMG**/CC/DCC/PCC/EA	
	?. Produce a site nitrogen Action Plan in order to Control, reduce and ameliorate atmospheric nitrogen impacts	**TECF/TECF members**	
5. Growing and adapting marine industry sector.	**5a.** Ensure sustainable growth of ports and marine industry sector.	**HAs/MMO/LAs/EA/NE**	No assessed contribution
	5b. Advocate appropriate marine industry zone land allocations through strategic planning, for example, Marine and Local Plans.	**LAs**/HAs/MMO	No assessed contribution

5.8 Ports, Navigation and Safety

5.8.1 Background

Naval and maritime industries are a defining feature of the history, economy and culture of the Plymouth Sound and Estuaries (PSE). The Dockyard Port of Plymouth is managed by the Kings Harbour Master (KHM) who ensures safety, environmental and property protection. Within the Port, HM Naval Base Devonport is one of the largest naval bases in Western Europe. Within the dockyard, large scale refitting of ships and submarines takes place. Furthermore, there is

significant commercial port activity conducted by Cattewater Harbour Commissioners, Sutton Harbour and Associated British Ports Millbay; respectively, they handle quantities of general and petrochemical cargo, fishing vessel traffic and regular passenger movements in both ferry and cruise ship traffic. The Naval, shipping and fishing trades are all nationally important and port authorities have a statutory duty to maintain safe navigation and protect the natural environment in accordance with the Port marine safety code[53]. With a vibrant recreational sector, port management teams successfully balance MOD, commercial and leisure vessel movements.

To operate, the Port requires maintenance, such as dredging, and infrastructure such as buoys, moorings and pontoons. There however, are environmental impacts and risks associated with this, principally; noise, air, water and light pollution, the introduction of INNS, habitat damage, and species disturbance. These are managed through Harbour Authority legislation and directions, and development licencing and permitting controls (5.7). For example, the Port Emergency Pollution Control Plan[54] is tested routinely to minimise the risk and impact of pollution events and dredging is informed by the Dredging Protocol Baseline 2023. Port authority powers can also be used to manage other damaging activities such as through licencing and registration schemes or zoning of areas for activities. It is also possible to adapt or utilise infrastructure for conservation advantages[55].

The Port is an important economic and employment driver in the city and the Plymouth and South Devon Freeport is a business expansion tool to attract trade and investment[56]. The Port is under pressure to respond to; legislation and policy changes, economic and industry pressures and the effects of climate change.

5.8.2 Aims

- Further the MPA conservation objectives by ensuring port operation and maintenance does not negatively impact on features, directly, indirectly or in combination.
- Maintain a sustainable marine industry.

53 Port marine safety code
54 [Port of Plymouth Pollution Control Plan]
55 Home - Save Our Seabed
56 Freeport - Plymouth and South Devon Freeport

5.8.3 Actions

Table 14 *Actions identified to address challenges associated with shipping, navigation and saftey in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10); other: see Abbreviations).*

8. Shipping, Navigation and Safety

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Sustainable management of the port.	**1a.** Continue to review and implement the Dockyard Port of Plymouth Order and other local Port legislation.	**KHM**/CHC/ABP/SH	No assessed contribution.
	1b. Support sustainable Port developments.	**LAs/MMO**/EA/NE	No assessed contribution.
2. Managing dredging requirement and impacts.	**2a.** Maintain dredging baseline document and produce protocol.	**KHM**/MMO/NE	No assessed contribution
	2b. Demonstrate and encourage best practice for assessing environmental impacts of dredging licence applications, with particular regard to capital dredging proposals.	**MMO**/EA/NE	
	2c. Monitor rates of sedimentation, levels of contamination and related estuary geomorphology.	**HAs**/NE/EA	
	2d. Support projects to research the beneficial use of dredged spoil.	**HAs/TECF**	
3. Impact from vessel and watercraft activity.	**3a.** Monitor scale and levels of environmental impact of vessel activity on MPA features for example, foul water discharge, ballast water, litter and pollution. Manage relevant impacts within the Marine Recreation Mitigation and Management Scheme (MRMMS).	**MRMMS/MMO**/HAs/NE/YEMG	
	3b. Coordinate Port wide approach to cleaning up abandoned boats.	**HAs**/Duchy/PCC/MOD/MMO/MRMMS?	
4. Impact Underwater noise.	**4a.** Improve understanding of the impacts of underwater noise particularly in the lower estuary where it may case a barrier to migration	**HAs**/Duchy/PCC/MOD/MMO/MRMMS?	

5.9 Historic Environment

5.9.1 Background

The Environmental Improvement Plan 2023 recognises the importance of conserving our historic environment alongside our natural environment. Throughout human history estuaries have been used as barriers, boundaries, entry and exit points, highways, means of communication, for raw materials, and for food. The Plymouth Sound and Estuaries (PSE) is recognised to have one of the richest maritime archaeological environments in the UK due to: the area hosting some of the earliest records of human habitation from the prehistoric period; Plymouth being a major port throughout history; being a mining region since the Bronze Age. Reflecting these uses, historical assets such as; boats and aeroplane wrecks, weirs, boat yards, quays, mills, mining-related features and military defences can still be found throughout the site. The mining landscape is protected under the World Heritage Site and some assets have statutory protections (Listed Buildings, Scheduled Monuments and Protected Wrecks). There is also a large unprotected cultural resource, which may be of equal importance. In addition to the cultural value of the PSE site, the historic environment has a social, economic and environmental value too as some assets drive important recreation and tourism economies attracting visitors and divers as well as scientists and historians.

The Marine and Coastal Access Act 2009 states how historic features should be considered within marine development proposals and the UK Marine Policy Statement sets out some of the associated challenges[57]: these are represented in the Actions below. Many assets are vulnerable to climate change, coastal processes and activities like dredging and so work is being done to record these assets before they are potentially lost[58] [59]. The WHS Management Plan outlines how the Outstanding Universal Value of the site should be preserved (Table 3). Designated sites also come with their own legal and regulatory processes; these need to be aligned with the relevant processes for nature conservation.

There are opportunities for our local heritage to support the management of the natural environment. Restoration or protection of historical assets can be used to inadvertently protect or restore the natural marine environment and provide narratives to engage the general public in marine ecology and past and present pressures to their conservation. For example, wrecks can form artificial reefs restricting some activities and revealing our biodiverse reef species to divers. The estuaries also preserve long records of post-glacial environmental change within inter and subtidal sediment, investigating these changes can inform ecosystem conservation and restoration efforts.

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57 UK Marine Policy Statement 2011
58 The Ships Project
59 Cornwall and Isles of Scilly Historic Environment Record, Cornwall Council

5.9.2 Aims

- To improve management of historic maritime assets alongside MPA management.
- To promote awareness and understanding of the character, extent and value of the historic maritime environment.

5.9.3 Actions

Table 15 *Actions identified to address challenges associated with the historic environment in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10); other: see Abbreviations).*

9. Historic Environment

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Lack of understanding and accurate data for historic maritime assets; designated and undesignated.	**1a.** Audit historic assets, improve data accuracy, make data available, and identify information gaps.	**HE/LAs**/NLs/ UoP/ EA/SHIPS/ WHS	
	1b. Revive and promote the established mechanism for recording maritime finds.	**HE**/LAs/NLs/ UoP/ EA/SHIPS/ WHS	
	1c. Audit sites that remain under threat from development, sea level rise, coastal erosion or neglect; including those at risk or vulnerable on the heritage risk register.	**HE/LA**/NLs/ UoP/ EA/SHIPS/ WHS	
2. No single responsible organisation for conservation of historic environment and a lack of resource in statutory agencies.	**2a.** Improve collaboration between organisations and projects that support statutory functions by; developing new multidisciplinary projects, aligning regulatory processes, and utilising alternative management measures.	**KHE/NE/MMO/ EA**/ DCC/CC/ PCC/NLs/ RIs/ WHS	

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
3. Insufficient consideration of historic maritime assets in planning and licensing.	**3a.** Improve use of historical asset data within the planning and licencing process, by raising awareness of data holders and stakeholders to consult. Utilise partnership meetings to discuss development projects and data needs.	**HE/NE/MMO**/ LAs/ EA/NLs/ WHS	
	3b. Improve awareness and understanding of the regulatory framework by utilising digital platforms and partnership meetings.	**HE**/LAs/EA/NE/ MMO/NLs/TECF/ WHS	
	3c. Have regard and consideration for the Historic Environment in the development and delivery of projects and align with national policy and guidance.	**HE/MMO/LAs/ NE/ EA**/NLs/ WHS	

5.10 Climate Change

5.10.1 Background

As a result of climate change, droughts, heatwaves and rainfall will become more extreme. Whilst our understanding of specific mechanisms improves, these changes will affect the UK marine environment through relative sea level rise, increased sea temperatures, ocean acidification and shifting ocean currents. These pressures cause changes in the physical and ecological characteristics of our coastal environment through increased flooding, pollution, coastal erosion, coastal squeeze, toxic algal blooms, and changes in sedimentation and estuary hydrodynamics. These pressures have knock on effects throughout the food web impacting on both habitats and species abundance and distribution. Coastal communities and economies are impacted through changes in ecosystem service provision: food supply, public health benefits, water resources, flooding resilience and coastal access.

The Climate Change Act 2008 provides a framework for managing greenhouse gas emissions and adaptation. The UK Carbon Budgets form a legally binding commitment for which climate mitigation policy aligns[60]. For adaptation, the UK Climate Change Risk Assessment (CCRA3) is undertaken every 5 years[61] and informs the National Adaptation Programme (NAP3) 2023. This program identifies the need to; reduce pressures on marine resources; fund research into

60 Carbon Budgets
61 UK Climate Change Risk Assessment 2022

climate change impacts; and better coordinate actions at a local scale. The UK Marine Policy Statement 60 then outlines adaptation and mitigation in the marine policy context. Locally, Devon and Cornwall Climate Emergency teams and Plymouth Net Zero Partnership[62], work to coordinate and drive local action through local strategies (Table 3).

The PSE also plays an important role in reducing some of the effects of climate change, and estuarine systems have a key role in the carbon cycle (Appendix 1). 'Blue carbon habitats' like seagrass, saltmarsh and mud flats capture and store carbon in sediments and algae and kelp communities store carbon in their biomass. Saltmarsh, seagrass, algae and rocky shores provide coastal defence services (5.7). Understanding these functions is needed to reduce the risk of losing these ecosystem services and protect carbon stocks.

To address challenges associated with climate change, actions need to be integrated within all management activities, this section is therefore an underlying theme of this plan. Section 5.7discusses coastal change and actions there are also relevant to coastal adaptation.

5.10.2 Aims

- Reduce the demand on fossil fuels and consequently the emissions from the Port of Plymouth.
- Improve the MPA resilience and ability to adapt to climate change.

5.10.3 Actions

Table 16 *Actions identified to address challenges associated with climate change in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10); other: see Abbreviations).*

62 Plymouth Net Zero Partnership

10. Climate Change

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Reducing emissions.	**1a.** Identify areas for TECF to improve sustainability, including where greenhouse gas contributions can be reduced.	**TECF**/TECF members	
	1b. Develop, support and promote the use of an integrated and sustainable water transport system by encouraging businesses and recreational providers to integrate low carbon solutions for example, E-charging points, water taxies, solar opportunities.	**TECF members**/ WHS	
	1c. Support low carbon or carbon neutral maritime industries, for example, supporting green energy industries, and low carbon shipping.	**HAs**/LAs/MMO/ EA/ NE/HE	
	1d. Support member organisations individual climate ambitions.	**TECF members**	No assessed contribution.
2. Climate change adaptation.	**2a.** Assess the scale of the impact from coastal squeeze, erosion and flooding and identify locations for managing change.	**EA**/NE/MMO/ LAs/ Duchy/WHS	
	2b. Integrate climate and wave modelling into strategic planning for nature conservation.	**EA**/NE/LLFA	
3. Threats to blue carbon habitats and a lack of evidence to support effective management.	**3a.** Support and/or conduct coordinated research to further the development of evidence bases behind blue carbon habitats; carbon storage and sequestration rates, vulnerability, pressures and management challenges.	**RIs**/EA/NE/ MMO/ TECF/ YEMG/NL/Duchy	
	3b. Effectively manage existing and create new blue carbon habitat**s.**	**NE/MMO/EA/ Duchy**/LAs/NLs/ TECF/YEMG	
	3c. Support the development of new green finance models, such as carbon credit markets to support the conservation and creation of blue carbon habitats within the site.	**NE/EA/LAs/ NLs/CC**	
4. Poor understanding of the impact of Climate change on MPA features.	**4a.** Support and/or conduct research into Lack of understanding about how protected features will change with climate change scenarios, and identify required management interventions.	**RIs/NE/EA**/NLs/ WHS	

5.11 Communication and Engagement

5.11.1 Background

The sustainable management of the Plymouth Sound and Estuaries (PSE) can only be achieved through a wider understanding of the area's ecological and cultural value, its sensitivity to various pressures and its contribution to ecosystem services. This message must be communicated beyond scientists, experts, managers and regulators, to politicians, water users, visitors and the general public.

Locally there are organisations with considerable expertise delivering a variety of education, communication and engagement programs. For example, Wembury Marine Centre, operated by Devon Wildlife Trust, is a valuable education and awareness-raising centre for the site, delivering events and engaging thousands from a range of age groups every summer season. Efforts across the site however are currently uncoordinated due to the range of voluntary, public and private sector organisations involved. Engagement in the water historically has also failed to be inclusive of minority communities, low economic families, people with impairments, Special Educational Needs and Disability (SEND), and the elderly, particularly within Plymouth. The Plymouth Sound National Marine Park Horizons Project aims to address some of these inequalities in water use. The project will target groups with information about the PSE and share the knowledge and skills required to sustainably enjoy and protect people's marine spaces.

Although gaps remain, there continues to be significant investment in the conservation of our marine environment by statutory and non-statutory organisations. TECF has recognised the need to improve communication and public engagement in existing conservation and management work. Marine management however remains complex making effective communication to different groups is challenging. Improved understanding of statutory management activities will improve user appreciation, compliance leading to more effective management.

Like climate change, this is an underlying theme of this Plan as the challenges are fundamental to all themes previously discussed; in particular recreational management.

5.11.2 Aims

- To improve awareness and understanding of the PSE natural and cultural heritage to further the conservation objectives of the site.
- Target communication and engagement efforts to a wide range of groups to improve equality, diversity and inclusion.

5.11.3 Actions

Table 17 *Actions identified to address challenges associated with communication and engagement in the Plymouth Sound and Estuaries (PSE), including those to address the Marine Protected Area (MPA) Critical Management Measures (in turquoise). Organisations involved in delivery are identified (TECF: TECF coordinator on behalf of TECF; TECF members: all members (Figure 10); other: see Abbreviations).*

11. Communications and Engagement

Challenge	Strategic Action	Organisation Involvement (Lead in bold)	Ecosystem Service Contribution
1. Low awareness and understanding of the sites environmental value, sensitivity, and statutory requirements.	**1a.** Plan and deliver a coordinated approach to effective interpretation across the MPA.	**MRMMS**/YEMG/ WMCAAG/MMO/NLs / WHS	
	1b. Optimise and coordinate digital platforms as mechanisms for points of information and engagement.	**YEMG/WMCAAG/ TECF/MRMMS**/NLs/ TCP	
	1c. Plan and deliver a coordinated approach to increasing water user awareness of sensitive habitats and species including INNS, i.e. through codes of conduct and best practice guidance.	**MRMMS**/NE/HA/ YEMG/WMCAAG/ NLs/ MMO	
	1d. Work with representative organisations to target commercial user groups.	**YEMG/WMCAAG/NLs/ MRMMS**/HAs/ MMO	
2. Engagement not targeting all community and user groups.	**2a.** Create or adapt information and publications to ensure they are accessible and available to all.	**TECF members**/ PSNMP	
3. Deficiency of education about the marine environment and related issues.	**3a.** Improve education opportunities throughout the MPA.	**YEMG/WMCAAG/ NLs/MRMMS**/HAs/ MMO/RIs/OCT/ PSNMP/WHS	
4. Low awareness and understanding of TECF and its member's role in site management.	**4a.** Produce and update as required a TECF communications and marketing strategy and work alongside PSPSNMP to improve and distinguish identity and communications for stakeholders.	**TECF**/TECF members	No assessed contribution

Glossary

Circalittoral: The biogeographical subzone within the Sublittoral, or subtidal area charicterised by certain ecological communities[63].

Component site: A designated site that makes up a Marine Protected Area (MPA).

European Marine Site: A name used for an marine area that held a Special Area of Conservation and/or Special Protected Area. Now replaced by the term Marine Protected Area (MPA).

Features or protected peatures: A habitat or an ecosystem that is noted/protected by a designation, SAC, SPA, or MCZ.

Infralittoral: The biogeographical subzone within the Sublittoral, or subtidal area charicterised by certain ecological communities[63].

Littoral: The biogeographical zone covering the area between the mean high water springs and mean low water springs. In the context of this Plan, also referred to also as 'intertidal'.

Marine Protected Area: In England, the term Marine Protected Area (MPA) refers to a protected area of the sea or estuary and is an umbrella term for a number of designated sites,known as component sites. An MPA can have just one or a combination of these component sites.

Plymouth Sound and Estuaries (PSE): In this plan this term is used to refer to the management area for TECF which is shown in Figure 1 and includes the waters within the relates to the Tamar, Tavy, Lynher, Plym and Yealm estuaries and the Plymouth Sound and Wembury Bay where the estuaries meet.This includes, but is not limited to, the waters within the Marine Protected Area boundary.

Plymouth Sound and Estuaries (PSE) MPA: A protected marine area designated for nature, the MPA includes component sites; SAC, SPA and MCZ. These is located within the PSE, for example, the TECF management area.

Nature Conservation Body: A Government or arms length organisation that has a legal responsibility to deliver a function.

63 Biological zones, The Marine Life Information Network

Statutory duties/responsibilities: An organisation which has a legal responsibility under legislation to deliver a function that related to legislation.

Sublittoral: The biogeographical zone covering the area from the mean low water to the continental shelf, beyond the littoral, or intertidal, zone. In the context of this Plan, also referred to also as 'subtidal'[63].

Supralittoral: A biogeographical zone covering the area above mean high water springs, above the littoral zone, that is regularly splashed but not submerged in water, can also be known as the splash zone.

Responsible organisation: An organisation that has a legal responsibility to deliver a function on behalf of government.

Ria: A long, narrow estuary inlet formed by the partial submergence of a river valley.

TECF members: Organisations that make up the Tamar Estuaries Consultative Forum, these include Core, Associate, and guest members as detailed in the TECF Memorandum of Agreement 2 and summarised in Figure 10.

Water user: Somone who benefits from the water or has an interest in the water, either through using the water directly, personally or professionally, or people who cannot directly access the water but may enjoy it indirectly, for example through the coast path or the views. Otherwise referred to as a 'stakeholder'.

Appendices

Appendix 1: Plymouth Sound and Estuaries Natural Capital Reports

1a. Part One - Marine Natural Capital and Ecosystem Services in Plymouth Sound, Estuaries and Coast

1b. Part Three - Implications of Tamar Estuary Management Plan on Natural Capital

1c. Part Two - Baseline Natural Capital Asset and Risk Register for Plymouth Sound Estuaries and Coast

Appendix 2: Condition Assessments

Table 18 *Statutory conservation objectives for Plymouth Sound and Estuaries Marine Protected Area (PSE MPA) component sites and headline results of condition assessments completed by Natural England identifying percentage (%) of the features in favourable (F), unfavourable (U) and unfavourable declining (UD) condition.*

MPA Component Site	Designated Features	Condition Assessment Date	Feature Condition (%)		
			F	U	UD
Plymouth Sound and Estuaries (PSE) SAC	Allis shad, *Alosa alosa*	*	*	*	*
	Atlantic salt meadows *Glauco-Puccinellietalia maritimae*	*	*	*	*
	Estuaries	26/07/2021	56	3	41
	Large shallow inlets and bays	27/07/2021	39	12	49
	Mudflats and sand flats not covered by seawater at low tide	23/07/2021	84	5	11
	Reefs	20/07/2021	99	0	1
	Sandbanks which are slightly covered by sea water all the time	20/07/2021	1	18	81
	Shore dock, *Rumex rupestris*	*	*	*	*
Tamar Complex SPA	*Avocet, Recurvirostra avosetta (non-breeding)*	*	*	*	*
	Little egret, Egretta garzetta (non-breeding)	*	*	*	*
The Tamar Estuary Sites MCZ	*Intertidal coarse sediment*	18/03/2024	100	0	0
	Intertidal biogenic reefs	18/03/2024	0	0	100
	Blue mussel, Mytilus edulis beds	18/03/2024	0	0	100
	Native oyster, Ostrea edulis	*	*	*	*
	European Smelt, Osmerus eperlanus	*	*	*	*

MPA Component Site	Designated Features (terrestrial and geological features in grey)	Condition Assessment Date	Feature Condition (%)
Lynher Estuary SSSI	*Black-tailed godwit, Limosa limosa islandica (non-breeding)*	01/01/1900	Not Recorded
	Wigeon, Anas penelope	01/01/1900	Not Recorded
	Littoral sediment*	28/01/2021	Favourable
	Lowland mixed deciduous woodland	13/08/2012	Unfavourable - Recovering
	Bulbous Foxtail, Alopecurus bulbosus	01/01/1900	Not Recorded
	Saltmarsh**	08/08/2013	Favourable

MPA Component Site	Designated Features (terrestrial and geological features in grey)	Condition Assessment Date	Feature Condition (%)
Plymouth Sound Shores and Cliffs SSSI	Variscan Structures	01/01/1900	Not Recorded
	Littoral rock and inshore sublittoral rock**	01/01/1900	Not Recorded
	Littoral sediment**	01/01/1900	Not Recorded
Rame Head & Whitsand Bay SSSI	Marine Devonian	04/11/2009	Favourable
	Coastal Geomorphology	01/01/1900	Not Recorded
	Slender Bird's-foot-trefoil, *Lotus angustissimus*	01/10/2010	Favourable
	Early Meadow-grass, *Poa infirma*	01/10/2010	Favourable
	Shore Dock, *Rumex rupestris* **	01/10/2010	Favourable
	Vascular plant assemblage	01/10/2010	Favourable
St. John's Lake SSSI	Black-tailed godwit, *Limosa limosa islandica*	11/01/2017	Unfavourable - Declining
	Little egret, *Egretta garzetta* (non-breeding)**	30/06/2023	Not Recorded
	Wigeon, *Anas Penelope* (non-breeding)**	01/10/2010	Not Recorded
	Littoral sediment**	11/01/2017	Unfavourable - Declining
	More than 20,000 Non-breeding waterbirds	11/01/2017	Favourable
	Saltmarsh**	28/03/2014	Favourable
Tamar-Tavy Estuary SSSI	Avocet, *Recurvirostra avosetta* (non-breeding)**	01/10/2010	Not Recorded
	Allis shad, *Alosa alosa***	04/07/2023	Not Recorded
	Lowland mixed deciduous woodland	25/09/2014	Unfavourable - Recovering
	Triangular Club-rush, *Schoenoplectus triqueter*	01/10/2010	Not Recorded
	Saltmarsh**	09/08/2013	Favourable
	Vascular plant assemblage	01/10/2010	Not Recorded
Wembury Point SSSI	*Cirl bunting, Emberiza cirlus (breeding)*	29/11/2010	Unfavourable - Declining
	*Littoral sediment***	12/12/2010	Favourable
	Shore Dock, Rumex rupestris**	04/07/2023	Not Recorded
	Reefs**	12/12/2010	Favourable
	Scrub	01/01/1900	Not Recorded
	Soft maritime cliff and slope	01/01/1900	Not Recorded
Yealm Estuary SSSI	Littoral rock and inshore sublittoral rock**	01/01/1900	Not Recorded
	Littoral sediment**	01/01/1900	Not Recorded

*at the time of writing no condition assessment for these features has been released.

** SSSI features that are also designated features of the SAC, SPA or MCZ.