

Marine Nature Recovery

(MNR) – First steps towards MNR within Cornwall’s inshore seas

A report by Cornwall Council, Cornwall Wildlife Trust and Natural England

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1.0 Report introduction

1.1 Background and purpose of project

In 2020, Cornwall was chosen by Government as one of five areas nationally as a 'Nature Recovery Pilot'. The purpose of the pilots was to produce a draft Local Nature Recovery Strategy (LNRS) which would set out the opportunities and priorities for terrestrial nature recovery. Whilst the seas below Mean Low Water fall outside the statutory scope of the LNRSs (as defined in the Environment Bill), the draft strategy that Cornwall produced and submitted to Defra in June 2021 included reference to marine opportunities. It was recognised that excluding the marine environment from the LNRS leaves significant gaps in our understanding of nature recovery opportunities for Cornwall due to the fundamental connections between land and sea. Therefore, this project sought to prepare the necessary foundations on which future work to deliver nature recovery in the marine environment could be based. It focuses on how existing information can best be harnessed to direct initial efforts for marine nature recovery both within the existing MPA network and in the wider seas, developing transferable methodology to inform the marine component of any future LNRS.

1.2 Project delivery – a partnership approach

This partnership project was primarily delivered between Cornwall Council (CC), Cornwall Wildlife Trust (CWT), and Natural England (NE) but also brought together the expertise and contributions from a number of other key organisations via the Marine Working Group (MWG*). The MWG met monthly between Jan-May 2021 to discuss specific project outputs, with additional advice and input provided by members through one-to-one meetings and email correspondence. The project outputs were further supported through internal discussions within NE, the Royal Society of Wildlife Trusts (RSWT), and Cornwall Council's pilot LNRS team.

In addition, the project's marine nature recovery advocacy work was delivered through presentations and attendee input at the Cornwall Wildlife Trust 'Your Shore Beach Ranger conference (Jan '21), South West Marine Ecosystem webinar (Mar '21), Your Shore Local Marine Conservation groups meeting (Mar '21), and CWT Wildlife Matters live event (Mar '21).

1.3 Limitations

Outputs arising from this project reflect available time and resources. As confirmed through the combined experiences of MWG members who have, between them, already dedicated considerable resource to data collection; mapping; development of marine fisheries and environmental bylaws, target setting, indicators; and/or KPIs, progressing nature recovery at sea will take considerable time, investment and the commitment of many. Further challenges in progressing marine nature recovery may arise through the need for implementation of secondary legislation under the Fisheries Act 2020 or the designation of HPMAs, factors requiring Government and statutory intervention. Strong evidence and clear understanding of what marine nature recovery is and the need for it are necessary for active stakeholder engagement. Marine nature recovery is unlikely to be quick or simple, with transparent evidence and careful stakeholder engagement fundamental to success.

MWG The Marine Working Group is a sub-group of Cornwall's Marine Liaison Group. Member organisations include CIFCA, University of Exeter, RSPB, Marine Biological Association, Cornwall College, University of Plymouth, JNCC, NE, CC & CWT.*

Of the seven projected outputs in the original project brief, two were subsequently deemed impractical to deliver, in full, at this stage;

- Output iv). Producing a map of the existing MPA network within Cornish waters integrating ecological information with available information on activity and management.
Reason: Lack of available, collated local evidence, and lack of time and resource to collate these data within the scope of this project.
Revised output: Develop a marine mapping portal to identify and describe a baseline for marine nature recovery.
- Output vi). Creation of a prioritised list of Cornwall MPAs for nature recovery action.
Reason: Lack of available evidence and resource/time needed for effective stakeholder engagement.
Revised output: Develop preliminary stakeholder engagement plan.

1.4 Project scope and outputs

The project scoped out the fundamental requirements for progressing nature recovery in Cornwall's marine environment, with a focus on the existing MPA network, but also considering the wider seas. This was a 'first steps' approach in considering how marine nature recovery could be progressed despite being outside the legislative remit of the LNRS under the Environment Bill. Given necessary resourcing, evidence, stakeholder engagement, and statutory support, it is hoped that this can be built on in the future (in tandem with, or cognisant of, ongoing HPMA work), to allow for the strategic delivery of marine nature recovery action for Cornwall's inshore waters.

The outputs of the project include the development of:

- A working definition of marine nature recovery
- Indicators to measure marine nature recovery success
- Criteria for prioritising marine nature recovery opportunities
- An achievable target for marine nature recovery by 2030
- Recommendations for the creation of a marine mapping data portal to identify and describe a baseline for marine nature recovery in Cornwall's inshore waters
- A recommended framework for marine nature recovery stakeholder engagement work
- Recommendations for further work and a summary of lessons learnt

These outputs are arranged as discrete discussion papers in the following report.

2.0 Defining marine nature recovery

2.1 Developing a working definition of marine nature recovery

Our seas offer us a vital support system for life, providing food, resources, air and natural defence against climate change. However, they are not immune to the current ecological emergency. The legacy of historic impacts in the marine environment is today combined with emerging threats from new forms of coastal and offshore activity as well as the intensifying impacts of climate change at sea. Our degraded marine environment faces multiple intense pressures with little respite: even in the deep ocean there are very few, if any areas that are free from human impact. To continue to provide for our planet, our ocean must be healthy and resilient. This can only be achieved through an ambitious recovery programme that minimises and eliminates threats to marine habitats and wildlife, whilst simultaneously building ecological growth and resilience, and maximising the potential for nature-based solutions to tackle climate change.

Marine nature recovery is needed to reverse past declines in wildlife and habitats and bring our seas back to life, so that they are healthy and thriving now and into the future for people, climate and nature. To rebuild the marine life-support systems that deliver the many benefits that society receives from a healthy ocean we need urgent action.

This includes:

- A growing and resilient MPA network designated and managed for nature conservation, including some Highly Protected Marine Areas
- Habitat restoration and creation within and outside the MPA network to help restore ecological processes and connect marine wildlife populations
- Building resilience to climate change, including acting to protect, restore and expand vital 'blue carbon' assets and the ecosystem services that they provide
- Enabling people to enjoy, understand and connect with nature at sea, benefitting health and wellbeing

2.1.1 Terrestrial nature recovery

Nature recovery on land is focused on the delivery of a Nature Recovery Network (NRN). The NRN as envisioned by the 25 Year Environment Plan¹ and the draft Environment Bill², is a single, national network comprising core sites designated for nature conservation, connected to additional newly-created or restored wildlife-rich habitats and 'stepping stones'. The aim of the NRN is to benefit people and wildlife by improving landscape scale resilience to climate change, provide natural solutions that reduce carbon emissions, increase carbon storage and manage flood risk, and sustain vital ecosystems by allowing nature to recover and thrive.

A key planning mechanism for the NRN on land will be the Local Nature Recovery Strategies (LNRS) which will map, plan and prioritise local action and investment. These will be led by Responsible Authorities, at a local authority level and the seaward boundary will in most cases be Mean Low Water.

The published policy and draft legislation describing the NRN do not explicitly address the establishment of a marine element to the NRN. The context for nature recovery in the marine environment is different to that on land – for example with a separate planning structure and licensing regime. However, the ecosystems that make up the terrestrial and marine environments are not separate but form a continuum across the coastal zone. Therefore, nature recovery efforts

on land and at sea must be integrated to address key pressures across coastal and marine environments.

2.2 Protection of the marine environment – progress so far

A Marine Protected Area (MPA) network has already been established, with the aim of making a significant contribution to the resilience and recovery of the marine ecosystem. Current management of the MPA network focuses on the maintenance or recovery of specific features of conservation interest contained within MPAs. In this sense, MPAs, designed to act as an ecologically coherent network of sites, enable conservation within the MPA boundary but do not address the management of the wider seas between MPAs. This makes the existing MPA network akin to the core areas plus ‘stepping stones’ envisaged for the terrestrial NRN.

Effective management in the wider seas, with measures outside of protected sites, is therefore essential to complement the benefits of the MPA network. This management is at present delivered through combined efforts across marine planning, licensing, fisheries management and the overall progress towards delivering Good Environmental Status (GES) for UK seas through the UK Marine Strategy^{3,4}. GES is defined as: *the environmental status of marine waters where these provide ecologically diverse and dynamic ocean and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations*. Both the 25 Year Environment Plan and the Fisheries Act (2020)⁵ also contain objectives to deliver GES.

The Strategy seeks to keep the collective pressure of human activities within levels compatible with the achievement of GES. The UK Marine Strategy outlines 11 qualitative descriptors defined to help assess progress towards achieving GES: biodiversity, non-indigenous species, commercial fish, food webs, eutrophication, sea-floor integrity, hydrographical conditions, contaminants, contaminants in seafood, marine litter and underwater noise. The Strategy furthermore set out a series of specific targets for each descriptor listed above to enable assessment of the level to which GES had been achieved.

It should be noted that neither the UK MPA network nor the UK Marine Strategy were originally designed to deliver ‘nature recovery’ *per se*, and therefore, although in combination they should deliver significant benefits towards this goal, additional measures and aims may be necessary. In order to deliver nature recovery for the marine environment, we must consider what further actions could be taken in addition to the establishment and proper protection of MPAs; to safeguard and restore the marine environment, increase economic and social benefits and improve public services. Wider measures, designed to deliver recovery and restoration of the marine ecosystem, must also include explicit measures to help restore carbon-rich habitats to help limit the impacts of climate change.

2.3 Achieving nature recovery within the MPA network

Significant progress towards achieving nature recovery in the UK’s marine environment should result from the existing commitment to establish a ‘well-managed’ network of MPAs, with adequate protection of the habitats and species within the MPA network. This will require both targeted site management measures to improve the extent and condition of specific habitat features, as well as

more general site management aimed at enabling the restoration of ecosystem structure and function across a broad range of interlinked marine habitats (the ‘whole site approach’)⁶.

When we think of ‘recovery’ in the marine environment, the traditional approach has always been for protected sites or features to ‘recover’ from previous damage, back to a specific point – often an already-degraded baseline. In order to truly achieve marine nature recovery, we must ensure that we are working towards more ambitious and holistic definitions for recovery for the marine environment as a whole, not just within protected areas⁷.

Recent work^{6,8,9} has shown that, in areas where pressures are removed or significantly reduced, marine habitat recovery can move beyond the current ambition for maintenance/recovery of MPA habitat features set by existing site conservation objectives. Therefore, it is vital that the MPA network includes a suite of Highly Protected Marine Areas (HPMAs) which offer the strictest levels of environmental protection. Areas protected in this way will contribute to ecosystem resilience, but also critically will help to provide a baseline reference for marine nature recovery. They can therefore be used to gauge the success of wider MPA management, as well as measures to promote marine nature recovery beyond protected sites boundaries.

Nature recovery is not just about biodiversity but also improving ecosystem resilience to climate change and providing natural solutions that reduce carbon emissions. It will therefore also be important to look beyond biodiversity and recognise the extent of ‘blue carbon’ habitats that exist within already designated MPAs and take action to protect them against damaging activities.

2.4 Nature recovery through management of the wider seas

The 2019 update to the UK Marine Strategy noted that 11 of the 15 descriptor/ecosystem component indicators measured for the state of UK waters were red or amber (i.e. GES not achieved, or only partially achieved). Clearly then, further action is urgently required to ensure that we have sustainable limits for all activities at sea in place.

Existing management structures should be utilised to embed an ecosystem-based approach to management of marine activities. The Marine Strategy Regulations define an ecosystem-based approach as an approach which: *“(a) ensures that the collective pressure of human activities ... is kept within levels compatible with the achievement of good environmental status; and (b) does not compromise the capacity of marine ecosystems to respond to human-induced changes.”*

For example:

- Marine plans must be updated to take a forward-thinking approach that acknowledges the need for marine nature recovery and adequately incorporates all activities in the sea. They must follow an ecosystem-based approach, underpinned by a clear hierarchy of policies that ensure achievement of Good Environmental Status.
- A strong marine licensing system must ensure the ecological sustainability of our marine industries. This should include the development of collaborative solutions for the implementation of environmental net gain approaches in the marine environment, to contribute to large-scale marine ecosystem restoration by providing positive environmental

outcomes from developments and incorporate end-of-life opportunities for innovation and collaboration

- Fisheries management will need to make full use of the new tools available through the Fisheries Act (2020) (e.g. the new Fisheries Management Plans) to reward sustainable fishing, prioritising methods which maximise the social and economic gain whilst minimising environmental impacts.
- Informed fisheries management should incorporate sensitivity of marine habitats into the decision-making process so that an appropriate contribution can be made to MPA objectives and GES throughout the wider seas.
- All of these management measures and tools must be used to recognise, protect and best manage 'blue carbon' across seascapes as well as marine biodiversity
- Steps must be taken to eliminate marine pollution – often from terrestrial sources – including marine plastics, organochlorines and eutrophication e.g. by further investigating pathways for marine litter and implementing River Basin Management Plans to tackle the flow of excess nutrients and contaminants from land to sea. Marine noise pollution must also be addressed.

2.5 Marine habitat restoration for nature recovery

Management in the marine environment, whether of MPAs or areas outside current protection, is often focused on removing or mitigating pressures to allow marine habitats and species populations to persist and recover. However human impacts on our seas and the marine wildlife around us are so pervasive and significant that merely protecting what is left and managing current activities will not be sufficient to achieve true recovery. Some areas will need active intervention to restore what has been lost.

There is therefore a growing focus on marine habitat restoration – in particular, vegetated habitats such as seagrass and saltmarsh, but also native oyster beds (as defined by OSPAR: see *Ostrea edulis* beds). These habitat types are relatively amenable to habitat restoration and provide significant measurable benefits in terms of increased carbon storage, and so will be key to delivery of marine nature recovery both within and outside of the MPA network.

In summary, achieving nature recovery in the marine environment is both urgent and essential. The scale of the threats facing our oceans today is enormous and must be matched with the scale of our ambition to recover nature at sea without delay.

This will require a step-change in our approach to marine nature conservation. We need better protection and management of our MPA network, including some areas given the strictest levels of environmental protection, as well as wider seas management aimed at removal and mitigation pressures, coupled with active restoration of marine habitats that align with the ambitions set out by the government in the 25 Year Environment Plan.

Above all, to deliver the benefits to people it will be vital to inspire and connect people and communities to the marine environment – increasing public enjoyment and understanding of our coasts and seas.

2.6 References

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3.0 Preliminary measurements of marine nature recovery success

3.1 Measuring marine nature recovery

In recent years, various local, national and international reports have examined the state of our seas, attempting to track changes in the marine environment over time ^{1, 2, 3, 4, 5, 6}. A range of indicators, criteria and targets have been designed to measure condition and trends in specific elements (biological, physical and chemical) of ocean health at various scales. There is therefore no shortage of criteria and indicators relevant to the marine environment, covering aspects from species trends or habitat extent to water quality or sea temperatures. However, although numerous and comprehensive, these criteria have all been designed within the framework of 'traditional' conservation rather than to reflect the broader concept of nature recovery which encompasses the repair and restoration of the marine environment. They are also commonly designed and measured at an international, national or regional scale and are therefore of varying use when considering trends and impacts at the local, county scale.

The task for this work package was therefore to design a set of preliminary indicators and targets with which marine nature recovery success in Cornish inshore waters (0-12nm, below MHWS) can be measured against, taking into account existing criteria and indicators for the marine environment, as well as other considerations such as the availability of data.

3.2 Existing targets and indicators for Cornwall's MPA network

There are a number of marine metrics, key performance indicators (KPIs), goals or targets already monitored against and reported on by different organisations in Cornwall. Whilst assessing marine nature *recovery* may not be their intended purpose, some of them, particularly Cornwall's Environmental Growth Strategy KPIs⁷, could be used as indicators contributing to a wider picture of ocean recovery. Developing an entirely new set of indicators to measure local marine nature recovery specifically was thought to be undesirable, in terms of duplication of effort and the likely complexity and expense of doing so.

3.2.1 Cornwall's Environmental Growth Strategy (EGS) – marine KPIs

Cornwall's Environmental Growth Strategy already reports on a number of marine KPIs to assess environmental growth⁷. These KPIs may also provide useful proxies of marine nature recovery and therefore should be considered in conjunction with the suite of indicators developed for this project.

EGS Targets:

- By 2030 at least 30% of seas will be positively managed for nature
- By 2050 we are growing nature in 4x as much of our inshore waters as in 2020

EGS KPIs:

- % of coastal waters protected
- % of fish landed (by value) to Cornish ports recommended as sustainable
- % of bathing waters rated as good or excellent

- % of biodiversity targets likely to be fulfilled
- % of estuaries with a good or higher ecological rating
- % of inshore seabed actively managed to deliver environmental growth

As the most recent EGS reporting shows, 34% of Cornwall's inshore (0–12 nm) waters are within a designated MPA⁷ suggesting that, locally the government ambition to protect a third of seas by 2030 (the so called 30x30 target⁹) has already been exceeded. However, in 2019, just 7% of the inshore seabed here was under positive management*, resulting in environmental growth⁷. This suggests that much more needs to be done to reduce the risk of MPAs becoming 'paper parks'. Moreover, evidence from outside the MPA network (including pollution, bycatch and other fishing data, population trends, habitat loss, and animal strandings data⁸) show that much of our waters are in long term decline. For these reasons, additional indicators to the EGS KPIs are required to measure nature recovery success in MPA network and beyond.

3.2.2 Marine nature recovery and Highly Protected Marine Areas (HPMAs)

In order to both understand *and* achieve marine nature recovery, our seas must also include more, and larger, areas which exclude all extractive and depositional use and prevent damaging levels of other activities¹. To date, the process of selecting and designating such areas (including previous discussions around No Take Zones (NTZs) and Marine Conservation Zone (MCZ) Reference Areas) have been inadequately resourced and fraught with conflict and delay⁹. It is acknowledged that it takes time to introduce legislation (both national regulation and local bylaws). Experience shows that it takes at least a year to get a Cornwall Inshore Fisheries & Conservation Authority (CIFCA) bylaw from 'concept' in to force. That period can be significantly longer if there is stakeholder/political objection to a proposed measure. The success of future HMPAs, which will contribute in part to marine nature recovery, relies upon a transparent, properly resourced communications and engagement process.

Full site protection offers the best chance for marine recovery, both within and beyond the network¹, and HPMAs form an essential part of wider plans to help nature recover in our seas. We therefore recommend monitoring against a Headline Indicator of increasing HPMA coverage in Cornish inshore waters, to complement and support the overarching target of an increased area of 'effective management' within the existing MPA network.

3.3 Designing measurements of marine recovery success - key considerations

There are a number of key considerations in developing measurements of marine recovery success. These include;

- Availability of regularly reported local evidence (see 3.1)
- Significance of shifting environmental baselines¹⁰ (see 3.2)
- Variation in recovery time (see 3.2)
- Inclusion of indicators which capture recovery success within and beyond the MPA network
- Complexity and cost of developing new criteria/metrics/standards
- The limitations of utilising existing criteria/metrics/standards

Some of these considerations are described in further detail below (paras 3.1-3.4)

3.3.1 Making the most of existing monitoring and data opportunities

First and foremost, monitoring against any set of indicators must be achievable. Selection of indicators to measure recovery success has been based on a keen understanding of the inherent difficulties and high costs associated with the collection of data at sea. Consideration was given to availability of up-to-date evidence as measurements of recovery success need to be repeatable and ongoing, and where possible, using data collated as part of existing, funded programmes and reported on annually.

In developing the preliminary list, indicators were based on the following principles;

That evidence supporting the criteria should be –

- Representative of the benthos and water column
- Include indicators for species and habitats
- Relate to areas within and outside the MPA network
- Locally relevant
- Measurable, regular time series, and open-source data

3.3.2 Shifting environmental baselines

Due consideration must be given to the significance of shifting environmental baselines¹⁰ – measuring recovery success is inherently problematic without clear understanding of what the habitat(s), species or ecosystem looked like, at given points, in the past. It should be recognised that in working towards marine recovery and restoration, more information will be gained about what we could and should be aiming for. The indicators outlined in this paper are therefore described as “preliminary”, and as our knowledge grows they should be revisited. It is also critical to consider variation in recovery time – marine systems in general (and some habitats and species in particular) may take years to even begin to recover. Extended bounce-back time must be accounted for when measuring recovery success.

3.3.3 Management vs environmental indicators

Measurements based on management change are likely to be easier to monitor over time than a complex suite of biological, physical and chemical indicators – some of which may take decades to respond positively to improved environmental conditions. In a time of limited resources concentrating efforts on reducing the impacts of adverse human activities offers the greatest immediate potential gains in terms of nature recovery. However, biophysiochemical indicators based on locally relevant, available species, habitat and water column evidence can be useful in supporting management measurements - and together can be regarded as proxy indicators of marine health and recovery in the wider seas.

3.3.4 Target setting and marine nature recovery

The value in setting specific targets to measure recovery success was considered as part of this work package. Although ambitious local targets can be useful to focus attention and activity, the reality of achieving nature recovery at sea will primarily be determined nationally by government, external agencies and industry (eg, through fisheries and climate legislation and regulation). Our recommendations therefore include both a target, as well as proxy indicators of health and recovery for which assessing the direction of travel (improving or deteriorating) is a useful measure in itself.

3.4 Recommended preliminary target & indicators to measure recovery success

Measuring nature and its recovery success in the marine environment is both complex and costly. Whilst a focussed monitoring programme covering a comprehensive range of habitats and species, which is comparable to a historic 'natural' state, is ideal, it is not practicable given current evidence and resources. Moreover, a species/habitat-based approach alone may not be helpful in furthering our understanding of wider ecological health or resilience of the network as a whole, or in avoiding issues associated with shifting environmental baselines. Our recommendations take account of these factors and incorporate both new and existing indicators (Table 1).

Table 1. Recommended target and indicators to measure marine nature recovery success

Recommended preliminary nature recovery success targets and indicators		Preferred direction of travel	Suggested reporting body/ies	Suggested reporting frequency
TARGET: 30% of MPA network (0-12nm) is in effective management by 2030		achieved	ERCCIS	Mid term & final assessment (2026 & 2030)
HEADLINE INDICATOR: The % area of Cornwall's nearshore MPA network (0-12nm) which is Highly Protected		↑	NE/ERCCIS	Mid term & final assessment (2026 & 2030)
SUPPORTIVE INDICATORS (WIDER SEAS):		Preferred direction of travel	Reporting body/ies	Existing reporting frequency
Species	1. Seabird breeding trends	↑	BTO/JNCC ¹¹	Annual
	2. Seal population metric: number of adult females at key breeding sites in West and North Cornwall	↑	CSGRT ¹²	Annual
	3. Number of cetacean strandings	↓	CWT ¹³	Annual
	4. % of all commercially exploited fish and shellfish populations within safe biological limits	↑	ICES, CIFCA, CGSG ¹⁴ (MSFD; D3)	Annual
	5. Number of reported marine wildlife disturbance incidents	↓	CM&CC Group ¹⁵	Annual
	6. Species specific SeaSearch trends <i>(to include priority indicator spp trends eg. crawfish, pink sea fan, native oyster)</i>	↑	CWT SeaSearch ¹⁶	Annual
Habitat	7. % of the seabed area subject to extractive and /or depositional use*	↓	-	-
	8. Extent & quality of blue carbon habitats**	↑	-	-
	9. SeaSearch habitat distribution and condition data <i>(to include priority habitats trends eg. seagrass, maerl, kelp beds)</i>	↑	CWT SeaSearch ¹⁶	Annual
Water Column	10. Incidence of biotoxins and harmful algal blooms	↓	CEFAS ¹⁷	Annual
	11. % coastal and estuarine water bodies to achieve 'good' or high' status	↑	EA ¹⁸	3 yearly

* and ** see next page

** Currently, monitoring of seabed disturbance at a local scale is not routinely reported on, although the EGS KPI ‘% of inshore seabed actively managed to deliver environmental growth’ provides a baseline figure. The new habitats disturbance indicator would be calculated, in the first instance, as % of available seabed area swept by bottom towed gears. Fisheries evidence, collected by CIFCA, would be based on VMS data for >12m and <12m vessels. Although, VMS is not a requirement for the <12m sector, it is anticipated this will be introduced, at least locally, in the near future’. Information regarding the local footprint of marine industries (including at-sea disposal areas) to be added as collated data becomes available.*

*** Assessing the extent/quality of blue carbon habitats is considered vital but is not routinely reported on in Cornish waters. However, should recent monitoring activities continue (eg. EA, CIFCA, NE & CC seagrass surveys), the collated information could contribute to a blue carbon indicator.*

We recommend an overall target and headline indicator which both focus on management within the existing MPA network. The overall target, which would track the progress of efficacy of whole-site management over time, is based on ‘effective management’ - here defined as ‘*management measures which are appropriate to achieve whole site nature recovery. Such measures protect the seabed, water column and all associated habitats and species within the site, where required, and are properly resourced so that they are both enforceable and enforced*’ – and importantly, with political commitment, is achievable by 2030. To date, protective measures have often focused on particular designated features within the network, but for nature to recover, it is essential that a ‘whole site’ management approach should be adopted. Safeguarding a higher proportion of the MPA network completely from damaging activities would support this, kick-starting nature recovery, therefore we have included the headline indicator to track the progress of HPMA designation for Cornwall over time.

Given the proportion of our seas outside MPAs, it is vital that nature recovery beyond the network is accounted for. The supportive indicators in Table 1 can be used to gauge the status of representative biological, chemical and physical components in the wider seas; the data behind each is already collated by 3rd parties on a regular basis (except indicators 7 & 8). The evidence required for the target and headline indicator, whilst not currently reported on, is expected in the future.

By combining biophysiochemical proxies with a headline indicator and target for management success, it is possible to begin to assess of the status of nature recovery within the MPA network and beyond. Given that people’s connection with nature is an essential component of, and precursor to, successful nature recovery, there may be appetite to develop an engagement metric in the future. In time, any of these preliminary measurements can be adjusted as new evidence, understanding and legislation progress.

3.5 References

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4.0 Defining criteria for prioritising areas for nature recovery opportunity

4.1 Introduction

In defining criteria for prioritising areas for nature recovery, we have utilised the expertise and experience of the Marine Working Group. Rather than devise new criteria we focus on two key pieces of work; the ecological site selection criteria set out in the Benyon Review¹, and the nature recovery prioritisation criteria developed as part of Cornwall’s Local Nature Recovery Strategy (LNRS) pilot².

Rationale for this approach;

- By prohibiting extractive, destructive and depositional uses, Highly Protected Marine Areas (HPMAs) are likely to offer the greatest opportunity for nature recovery within the existing network.
- To ensure compatibility and consistency (wherever possible) between terrestrial and marine nature recovery (particularly useful at the coast where recovery opportunities might straddle land and sea).
- To avoid duplication of effort by adapting and adopting existing peer-reviewed methodology

4.1.1 The Benyon Review and HPMA site selection criteria

Table 1 shows the ecological site selection principles and criteria as set out in the Benyon Review. It should be noted that a further 60+ social and economic criteria were considered within the review, though regarded as secondary filters. As this project is solely concerned with achieving nature recovery, wider socio-economic factors are not taken into account at this stage. Progressing the introduction of HPMAs in UK waters has been slow to date, but recent announcements confirming designation of pilot HPMAs before 2022 is promising. There is strong NGO support for the rapid designation and management of HPMAs.

Table 1. Site Selection Principles and Criteria for HPMAs (Benyon Review)

Site Selection Principle	Site Selection Criteria
Ecological importance	Does the area contain high biodiversity?
	Is the area important for key life cycle stages for species of conservation importance?
Sensitivity and potential to recover	Are habitats and species within the area judged to be sensitive?
	Does the site have potential to recover?
Ecosystem services	Does the site contain important areas of blue carbon?

4.1.2 Cornwall's LNRS prioritisation criteria

A suite of criteria for prioritising nature recovery opportunities has been developed as part of the Cornwall LNRS pilot. It should be noted that these criteria are designed for the selection of habitats and species (rather than areas) and focus on the terrestrial, rather than marine, environment.

Prioritisation criteria for nature recovery (Cornwall's LNRS pilot);

- If under collective control
- If a priority habitat/species
- If on the IUCN red list
- Recovery potential
- Distinctiveness within the UK and within a global context
- Climate resilience
- Sequestration potential
- Flood mitigation potential
- Keystone rating
- Enigmatic rating
- Deliverability in 5 years (both of actions and resultant change)
- Alignment with other local and national strategic policies

As part of the LNRS pilot, stakeholder engagement work (2019-2020) has already identified a number of early opportunities for nature recovery (predominantly on land). The suggestions, based on evidence and opinion, were prioritised using tallies of mentions by environment experts and from a public survey, and scoring against the above set of criteria. Decisions on the weighting of these components are decided by the Local Nature Partnership Steering Group. In contrast, this marine project has had very limited time and budget, and hence not had the capacity or resources required to undertake the necessary engagement required to prioritise opportunities as yet.

4.2 Defining criteria for prioritising areas for nature recovery opportunities

Table 2 sets out the proposed combined criteria for prioritising marine nature recovery opportunities within Cornwall's MPA network and the wider seas, informed by the Marine Working Group and outputs from the Benyon Review and the Cornwall LNRS pilot.

Table 2. Recommended criteria for prioritising marine nature recovery opportunities within Cornwall’s inshore waters

Prioritisation criteria for marine nature recovery opportunities within the MPA network and wider seas		Criteria applicable to the wider seas?
Ecological	1. Does the area contain high biodiversity and/or priority species/habitats?	✓
	2. Is the area important for key life cycle stages for a range of species, or species of conservation importance?	✓
	3. Are habitats and species within the area judged to be sensitive?	✓
	4. Does the area have potential to recover?	✓
	5. Does the area contain important blue carbon systems?	✓
	6. Is there potential for the extent of key habitats within the area to increase?	✓
	7. Is the area linked to other sites important for nature?	✓
	8. Does the area deliver (or has the potential to deliver) multiple ecosystem benefits?	✓
	9. Does the area have local, UK or global significance/distinctiveness?	✓
Management	10. Is there an effective framework for management within the area?	✓
	11. Is the area currently adversely affected by damaging activities?	✓
	12. Could positive changes to the management of the area be introduced within 5 years?	✓

4.3 Next steps

The designation of HPMA is a fundamental part of marine nature recovery. However, the selection and implementation of HPMA is a separate, national process with its own legislative and policy context. It is therefore likely to progress at a different pace to the progression of local nature recovery opportunities under the LNRS for Cornwall, which is closely tied to the Environment Bill and associated guidance. Therefore while the designation of HPMA for Cornwall’s inshore waters remains a priority recommendation from this project for furthering local nature recovery, the focus for this paper is on recommending prioritisation criteria that can be applied immediately to filter marine nature recovery opportunities both within and outside the MPA network.

It will be essential to engage and involve local communities in the process of designing priorities for marine nature recovery for Cornwall, as has been done for the LNRS pilot process so far. We would suggest building on and adapting the stakeholder engagement plan developed for the Cornwall LNRS pilot in order to develop a robust and inclusive process of marine and coastal stakeholder involvement. By utilising a combination of evidence, expert judgement and local knowledge, it will be possible to pipeline projects or activities that will best delivery marine nature recovery for Cornwall (see Section 7 - Progressing marine nature recovery - lessons learnt and recommendations).

4.4 References

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2. Cornwall Council (2021) *What is a Nature Recovery Plan?* Available at: <https://letstalk.cornwall.gov.uk/nature-recovery-plan> (Accessed May 21)

5.0 Developing a marine data portal for Cornwall's inshore waters

5.1 Accessing marine datasets – the current status in Cornwall's inshore waters

The original intention for Work Package 2 was to collate available ecological and activity information for Cornish MPAs (inshore), and then map out this information across sites, to enable effective and informed targeting and prioritisation of potential marine nature recovery measures within the Cornwall inshore MPA network. However, this was hampered by the fact that there currently exists no central marine 'data repository' – different datasets are held by different organisations. This is further complicated by the issues of ownership and availability for different datasets. Discussions were held with both ERCCIS and the NE GI/data teams to undertake a brief, initial data audit. It was decided that to collate and map out these data properly would require additional time and resource beyond the scope of this project, and it was agreed that the most useful, practical output for the project would be to scope out a data audit and collation exercise to be undertaken as a first step, in a separate project.

The project proposal below develops the work further than an initial data audit, proposing the development of a 'marine hub' for data, which would be the central repository for marine environmental and activity data in Cornish waters, akin to the Land Hub developed by ERCCIS/CC for terrestrial data. In order for any central location for data collation to be useful into the future, it requires resource input to keep it live and updated, and as comprehensive as possible. Part of the proposed project would therefore be to scope out what datasets are available, and the various challenges of bringing the required datasets together and maintaining them into the future. As a first step, it would be important to investigate a suitable model of data hosting/provision. It will not be a simple task but is worth doing as it is vital to have these data accessible and useable in order to sensibly and strategically plan marine nature recovery action in the future.

5.2 Developing Cornwall's marine data portal

The purpose of the proposed marine mapping portal is to provide a variety of ecological, environmental and activity coastal and marine data for use by Local Authorities, eNGOs, Government bodies (the Environment Agency and Natural England), commercial businesses and the public. It seeks to address current gaps in access to data by drawing together relevant information into one location. This could be used to shape and contribute to environmental planning and protection from a shared baseline and, in particular, would inform the development of marine nature recovery priorities and projects.

It is suggested that the marine data portal would take approximately 6 months to develop (@ 1 FTE) (see Table 1).

The principal objectives for the portal are:

- Identification and quantification of a marine baseline
- Assessing a potential baseline for Marine Nature Recovery and Marine Net Gain
- Providing contextual information to support site management within the MPA network, and strategies for protection and enhancement within or outside of MPAs.

Table 1. Developing a marine data portal for Cornwall's inshore waters

1).	Investigate models for a marine data portal for Cornwall	6 weeks
	<ul style="list-style-type: none"> • Investigate best option for hosting: Marine equivalent to Land Hub Cornwall hosted by ERCCIS, or separate ArcOnline portal. Either: <ul style="list-style-type: none"> ○ Clone 'Land Hub Cornwall' into 'Marine Hub Cornwall' (3-5k, plus annual hosting costs 2.5k); Rewrite the website with marine relevant images and data; or ○ Set up separate marine portal in ArcOnline; Create Webmap/app in ArcOnline 	
2).	Map available assets	10 weeks
	<ul style="list-style-type: none"> • Investigate available datasets – from NE, ERCCIS and other sources. <ul style="list-style-type: none"> ○ NE datasets, CWT/ERCCIS datasets – see attached spreadsheet ○ Call for data to go to eNGOs, statutory bodies, etc via the Cornwall MLG. • Collate, symbolise, add metadata and licensing information (see accompanying spreadsheet) from available datasets into a web-based output along the following themes: <ul style="list-style-type: none"> ○ Baseline ○ Coastal influence ○ Designation ○ Habitat ○ Species ○ Features ○ Activities and Management 	
3).	Checking and testing	2 weeks
	<ul style="list-style-type: none"> • Impacts on assets – check each layer works together in user case-scenarios 	
4).	Wider stakeholder testing	4 weeks
	<ul style="list-style-type: none"> • Circulate to wider stakeholder group for limited use to inform development of marine nature recovery priorities and projects on a test base • Invite comments on the portal and make sensible changes before full release 	

The portal aims to make all data freely available (for view, with download considered in a later phase) on a website, showing an appropriate OS licence where required.

6.0 A framework for marine nature recovery stakeholder engagement work

6.1 The importance of stakeholder engagement

Stakeholder support is fundamental to marine nature recovery and, particularly, in the selection of specific areas for targeted action. Inadequate stakeholder engagement carries significant risks, with the potential to jeopardise both existing and future initiatives (as demonstrated in failures in No Take Zones (NTZ) and Reference Areas stakeholder participation). Whilst a stakeholder engagement programme was undertaken to prioritise predominantly land-based recovery opportunities, this was not possible within the time and resource constraints of this project. Instead the project focused on developing a framework for adoption, as and when sufficient resourcing become available.

6.2 A recommended framework for stakeholder participation

The aim of the framework (see Table 1) was to build a community of stakeholders, and foster positive, ongoing engagement with marine nature recovery thinking and initiatives in Cornwall.

Table 1. Marine nature recovery – a recommended stakeholder engagement plan

1).	Identify stakeholders
	<ul style="list-style-type: none"> • Draw up a list of all stakeholders who should be involved in/and informed of marine nature recovery in Cornwall inshore waters (local, regional and national) • For groups and organisations listed, identify appropriate named individuals or representatives to engage with directly. • Create an initial stakeholder list/database
2).	Carry out a stakeholder assessment
	<ul style="list-style-type: none"> • Stakeholder analysis, thinking through issues such as: <ul style="list-style-type: none"> ○ What do they currently think about the state of nature in Cornish waters? ○ Are they likely to support or oppose new measures to delivery nature recovery? ○ What influence do they have over the state of nature in Cornish waters? ○ What motivates them? ○ Who or what might influence them? ○ What is the best way of communicating with them? ○ If they are likely to remain in opposition to marine nature recovery plans, how will this be managed? • Undertake stakeholder mapping to identify who key stakeholders are and who will need particular attention, translating analyses to determine stakeholders of;

	<p>High influence, highly interested (manage closely)</p> <p>High influence, less interested (keep satisfied)</p> <p>Low influence, highly interested (keep informed)</p> <p>Low influence, less interested (monitor)</p>
3).	Design engagement process
	<ul style="list-style-type: none"> • Ensure there are adequate resources such as the right people, time and money to commit to marine nature recovery engagement work • When engaging stakeholders, establish their roles, responsibilities and consider providing terms of reference for activities they are being asked to undertake • Ensure confidentiality, and consider drawing up conflict of interest forms • Develop a shared understanding of the current situation; the overarching vision for marine nature recovery; objectives; and the purpose of engagement • Be clear about what level of stakeholder engagement is being sought (delegation and partnership vs consultation – e.g. Arnstein’s Ladder¹) • Be clear about what aspects of marine nature recovery stakeholders can realistically influence. Consider beforehand how public opinion will be weighted against expert advice • Be clear about how this marine nature recovery engagement sits alongside other marine stakeholder engagement activities and consultations (eg. fisheries bylaws, HPMAs)
4).	Deliver specific engagement activities with different audiences
	<ul style="list-style-type: none"> • Define clear aim(s) for each engagement activity (depending on stage of process) • Before starting, consider producing; <ul style="list-style-type: none"> ○ A short list of areas, management tools, species and/or habitats that are judged by expert opinion to be critical to marine nature recovery. Use these to form the basis of wider stakeholder engagement work. Consider highlighting flagship or iconic species for public engagement. ○ Examples of marine nature recovery case studies ○ Evidence of key benefits from previous research (including spill over effect, financial gains for fishers, tourism benefits) ○ A list of key facts & figures ○ Answers to FAQs <p>Key messages and ‘lines to take’ for consistent messaging</p> <ul style="list-style-type: none"> • Establish how you will engage with and/or inform stakeholders. This is will vary according to stakeholder group and could include; <ul style="list-style-type: none"> ○ Expert opinion workshops or meetings ○ Face to face/online meetings ○ Presenting at established network meetings ○ Designated web pages or news updates on partner websites, e newsletters or social media

	<ul style="list-style-type: none"> ○ Online surveys ○ Public meetings / events / live discussions ● Draw up a detailed engagement plan for each stakeholder group ● Remember to make effort to include ‘hard to reach’ groups. This will be key to engaging the land-based, general public ● Plot activities against the marine nature recovery project timeline
5).	Feeding back on progress
	<ul style="list-style-type: none"> ● Ensure stakeholders know how their involvement will shape marine nature recovery, and feed back on how their input has influenced the decision-making process. Think about other ways in which their ongoing involvement may be of value in the future eg. through contributing to data collection, or in the development of new tools to measure marine nature recovery success ● Keep a record of engagement activities & feedback to demonstrate how stakeholders have been involved and informed, and responded ● Keep stakeholders regularly informed (eg. via existing partner e-newsletters, social media) ● Anticipate and manage potential media interest, and be ready with ‘key messages’ ● Say thank you and celebrate key milestones and successes

6.3 References

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7.0 Progressing marine nature recovery - lessons learnt and recommendations

This project was a ‘first steps’ approach to progressing marine nature recovery in Cornwall’s MPA network and the wider seas. As well as developing the thinking and methodologies to be applied to marine nature recovery work, a key part of the project has been in the evaluation of lessons learnt and recommendations for further work.

7.1 Lessons learnt

Discussions around marine nature recovery, and in particular linking between terrestrial and marine nature recovery, are still at a relatively early stage. This project was designed to offer a place-based focus from which to explore the issues with a small group of stakeholders. Progress towards the outputs for this project raised many interesting points – lessons learnt are summarised below:

1. The marine environment is currently outside the statutory scope of the LNRS under the Environment Bill, resulting in marine nature recovery being overlooked, under-resourced, and consequently several steps behind progress made with terrestrial nature recovery.
2. Currently the baseline evidence (ecological or activity-focused) to support strategic planning around marine nature recovery action is incomplete and widely dispersed. Rectifying this will be an important first step towards identifying opportunities and planning allocation of resources.
3. Through the introduction of management measures which prohibit extractive, destructive and depositional uses, Highly Protected Marine Areas (HPMAs) offer the most effective and immediate means for promoting marine nature recovery in the first instance, while further information around opportunities in the wider marine environment is collated.
4. Identifying specific areas of potential management change for nature recovery at a local level must be progressed at an appropriate pace and with caution. Premature and inadequate stakeholder engagement around marine nature recovery has the potential to jeopardise both current projects and future work.
5. Shifting environmental baselines, insufficient monitoring, and the complexity of marine ecosystems mean that defining marine nature recovery and measuring its success will remain challenging but should not be seen as prohibitive. Indicators to measure progress towards marine nature recovery are important to define and monitor against, but due to these challenges, they should be considered as proxies of ecosystem health.
6. Progressing nature recovery in the marine environment will require a combination of behavioural, policy and legislative change, at both local and national levels.

7.2 Recommendations for progressing marine nature recovery

The pressing need for recovery of our marine environment is clear. The many linkages between land and sea mean that work to recover nature on land or at sea in isolation cannot be completely successful. There is currently an unprecedented opportunity to bring together thinking on terrestrial and marine nature recovery, to ensure that strategic action is targeted coherently across land and sea, promoting the recovery of both terrestrial and marine environments.

The overarching recommendation from this project is therefore to continue to take forward work on marine nature recovery, and to ensure that it is integrated into action on terrestrial nature recovery rather than developed in isolation. Terrestrial and marine nature recovery are inextricably linked, and as such, should be offered proportional resource allocation and statutory support and recognition.

Specific recommendations for future work are as follows:

1. Development of a marine data portal to identify and describe a baseline for marine nature recovery in Cornwall's inshore waters (see Section 5).
2. Commissioning of the marine nature recovery stakeholder engagement package (see Section 6).
3. Development of a short film (and other resources) about what marine nature recovery looks like in Cornwall, how this could be achieved, and what the socio-economic benefits would be, as a first step for awareness-raising around marine nature recovery.
4. Commissioning of a study to investigate the current barriers (and associated solutions) to marine nature recovery in Cornwall.
5. Commissioning of study to understand the actions needed to bring about comprehensive marine nature recovery in Cornwall (including identification of specific habitats and/or species which will require targeted, proactive recovery plans beyond the designation of HPMA's).
6. Modification of the draft pilot LNRS methodology used to nominate pipeline recovery projects for the Nature Recovery Investment Programme - to account for differences in local knowledge, stakeholder engagement and connection with nature within the marine environment (see para 4.1).
7. Increase the coverage of HPMA's within Cornish inshore waters.

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