



Cattewater Harbour

Draft Port Masterplan

28 May 2024

Non-confidential - Standard

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Executive Summary

Vision

The Cattewater Harbour Masterplan will serve as a manual for decision-makers to futureproof the port over the next 25 years. It will enable the port to adapt to changes in the environmental, technological and socio-economic landscape; harnessing these winds of change to enhance Plymouth's proud maritime heritage in close collaboration with local partners, ensuring it delivers innovation, social and environmental justice to the wider area.

This strategic masterplan document represents an important step in the ongoing process of consultation and action to future proof the Cattewater for the benefit of all stakeholders, Plymouth, and the region. It aims to inform stakeholders and decision makers by providing:

- an overview of activities that currently take place within the Cattewater Harbour
- findings of policy review and stakeholder engagement, leading to a vision and objectives
- outputs of stakeholder engagement exploring drivers for change and possible futures
- short-, medium- and long-term interventions and opportunities for the Cattewater

The document is structured as follows:

Part 1: Introduction - Introduces this document, describes the Cattewater and the process adopted for this draft masterplan.

Part 2: Understanding the Harbour – The Cattewater hosts a varied mix of marina and leisure-based activities and serves as Plymouth's primary cargo port for a range of dry and liquid cargoes. It also has a growing profile as a hotbed of maritime innovation and technology development. Within the surrounds of the Cattewater is a rich natural and historic environment that must be respected, such as the Plymouth Sound Special Area of Conservation, and the historic conservation areas of the Barbican and Turnchapel. New economic trends and opportunities are appearing as, for example, the path to Net Zero spurs growth in Celtic Sea offshore wind.

Part 3: Vision and Objectives – Policy review and stakeholder engagement have produced a wide base of information which has been distilled to produce a vision and objectives for the masterplan under the three key themes of Education, Employment and Upskilling, Decarbonisation and Operations, and Cooperation and Collaboration. It is intended that the vision and objectives will help bridge the present and the future, setting out a common goal and inspiring a long-term purpose, while providing markers to aim for and measure against.

Part 4: Exploring the Future – In collaboration with stakeholders, the strategic masterplan explores how the future could play out. A SWOT analysis of the Cattewater paints a picture of a well-established base of investment, supply chain and excellence in education, which needs to overcome constraints to growth such as lack of capacity, ageing infrastructure and a complex patchwork of legal ownership for land and operations. Drivers of change are investigated, with critical factors identified as societal attitudes to sustainable development and the availability of land for harbour-related uses. Acknowledging that these drivers could take the harbour in different directions, the masterplanning strategy builds a set of four scenarios which illustrate plausible futures for the Cattewater. Two scenarios, which better align with the masterplan vision, focus on the development of sustainability and green energy initiatives and interventions, where cooperation and collaboration between stakeholders facilitates good use of available land and mitigates development pressures associated with non-harbour related uses.

Part 5: Planning for Action – Interventions are identified for the short, medium, and long term that could help the Cattewater steer towards its preferred future and stay true to its vision. Many of these are centred on collaboration & cooperation, whether at a strategic level in ensuring that the Cattewater is supported in local, regional and national policy, or in the form of more targeted efforts such as working with the Plymouth & South Devon Freeport to support growth and investment or exploring joint ventures between stakeholders to improve and develop infrastructure. It is recognised that there is much that could be achieved in the field of decarbonisation and improved operations – existing activities could evolve through electrification of cargo operations and provision of shore power to visiting ships, and new markets can be targeted through accommodating short-sea shipping and supporting the floating offshore wind developments in the Celtic Sea. It is also noted that education, employment, and upskilling in the region will benefit from and reinforce such interventions, as well as providing the opportunity to build on Plymouth and the Cattewater's existing pedigree in maritime technology and research.

Executive Summary

The actions and interventions which would allow the Cattewater to make progress in realising the masterplan vision are presented in detail in Part 5 of this report. The highest priority interventions are summarised here, within this Executive Summary:

High-priority interventions

Futureproof infrastructure:

- *Maintenance and rehabilitation of aging port assets*, e.g. regenerating Pomphlett Wharf, modernising storage facilities at Cattedown Wharves
- *Accommodate larger vessels already coming to market*, e.g. new generation of cement carriers – invest in infrastructure (widening/deepening navigation channels, upgrading mooring facilities where needed)
- *Target operations decarbonisation* – ensure adequate grid capacity, electrify port equipment & charging facilities, provide shore power for vessels

Policy focus:

- *Continue to grow relationships with the city council* and ensure the harbour's value is recognised in policy such as Joint Local Plans and land-use zoning
- *Obtain national political support* to feature the Cattewater in industrial, planning, and environmental strategies
- *Work with Plymouth and South Devon Freeport* to make the most of its benefits – investment, profile raising, customs sites & customer growth. An example is the recent securing of Freeport funding for dredging of the eastern end of the Cattewater channel to accommodate larger, new generation vessels. Opportunities exist for other infrastructure works, short-sea shipping development, and marine innovation.

Support transport modal shifts:

- *Implement a water-taxi service* linking the upper reaches of the Cattewater to the Barbican & Mount Batten, to shift away from travel by road.
- *Develop container port capability* to support short-sea shipping

Part 6: What's Next? – summarises the draft masterplan process and recommended next steps, which are:

- **Further Public and Stakeholder Consultation** – continue CHC's proactive collaboration with stakeholders to evaluate the draft masterplan and ensure their input to future decisions
- **Policy and Government focus** – ensure the harbour features in the City Council's decisions on economic development, planning and environmental strategies, as well as the Joint Local Plan.
- **Progress interventions for study and implementation** – confirm priority interventions and establish ownership of these. Further study to establish feasibility and cost/benefit and assess the need for methods of delivery such as public/private partnerships or joint ventures between stakeholders.

Part 1	<u>Introduction</u>	6	Part 3	<u>Vision & Objectives</u>	21
1.1	<u>Introduction</u>	7	3.1	<u>Themes and Objectives</u>	22
1.2	<u>Setting</u>	7	3.2	<u>Vision</u>	23
1.3	<u>Masterplanning for the Cattewater</u>	8	Part 4	<u>Exploring the Future</u>	24
Part 2	<u>Understanding the Harbour</u>	9	4.1	<u>Strengths, Weaknesses, Opportunities and Threats</u>	25
2.1	<u>Harbour Context and Baseline</u>	10	4.2	<u>Future Scenarios</u>	26
2.1.1	<u>Bulk Cargo</u>	11	4.3	<u>Economic compatibility of scenarios</u>	27
2.1.2	<u>Leisure</u>	12	Part 5	<u>Planning for action</u>	28
2.1.3	<u>Commercial & Technology</u>	13	5.1	<u>Introduction</u>	29
2.1.4	<u>Residential</u>	14	5.2	<u>High Priority Interventions</u>	29
2.2	<u>Special Designations</u>	15	5.3	<u>Medium Priority Interventions</u>	31
2.2.1	<u>Historic Environment</u>	15	Part 6	<u>What's Next?</u>	32
2.2.2	<u>HSE Consultation Zones</u>	16	6.1	<u>Summary</u>	33
2.2.3	<u>Natural Environment</u>	16	6.2	<u>Next Steps</u>	33
2.3	<u>Local and National Policy</u>	17	Annexe A	<u>Stakeholder Consultation</u>	34
2.4	<u>Economic Trends & Opportunities</u>	18	A1	<u>Stakeholder Engagement</u>	35
2.4.1	<u>Liquid Bulk – Oil Products</u>	18	A2	<u>Drivers of Change</u>	36
2.4.2	<u>Bulk Cargo and Freight</u>	18	A3	<u>Introduction to Scenarios</u>	37
2.4.3	<u>Fishing</u>	19	A4	<u>Scenario 1 – “Osmosis” Cattewater</u>	38
2.4.4	<u>Visitor Economy</u>	19	A5	<u>Scenario 2 – “Lighthouse” Cattewater</u>	39
2.4.5	<u>Plymouth and South Devon Freeport</u>	19	A6	<u>Scenario 3 – “Rudderless” Cattewater</u>	40
2.4.6	<u>High Tech and Maritime Industries</u>	20	A7	<u>Scenario 4 – “Weathered” Cattewater</u>	41
2.4.7	<u>Low Carbon and Renewable Energy</u>	20			



CATTEWATER
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Part 1: Introduction

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28 May 2024

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Welcome to Cattewater Harbour Commissioners' draft masterplan for Cattewater Harbour. This document represents an important step in an ongoing process of consultation and action to futureproof the port for the benefit of all stakeholders, Cattewater, Plymouth, and the region.

Cattewater Harbour Commissioners (CHC) is the Statutory Harbour Authority for the Cattewater, as well as the Competent Harbour Authority for the Port of Plymouth. At the heart of their masterplanning aims are the following key drivers:

- The ambition for the Port to cement itself as the key gateway to the Southwest which will drive the regional and national net zero targets.
- Adapting to and capitalising on changes in cargo trends.
- Overcoming constraints on port operations.
- Making the most of opportunities presented by the City's Freeport
- Addressing climate, nature, social inclusion, and the growth of the port-city relationship.
- Aligning with local government and the Joint Local Plan.
- Driving technological investment in marine technology and autonomous industries based at Turnchapel Wharf.



Image: Esri, Intermap, NASA, NGA, USGS, Earthstar Geographics, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

The city of Plymouth has four statutory harbour areas - Cattewater, Sutton Harbour, Millbay and the King's Harbour Master. Cattewater is the easternmost of these, occupying the estuary of the river Plym between the tip of Mount Batten Breakwater and Laira Bridge.

The Cattewater is host to a diverse mix of land and water uses. It is responsible for most of Plymouth's commercial cargo operations, with over two million tonnes of dry and wet bulk cargo passing through each year including the main regional supply of petroleum. Several separate marinas on the Cattewater act as the base for the largest concentration of leisure vessels within Plymouth, and the harbour is also home to world-leading marine technology development & research at Turnchapel Wharf.

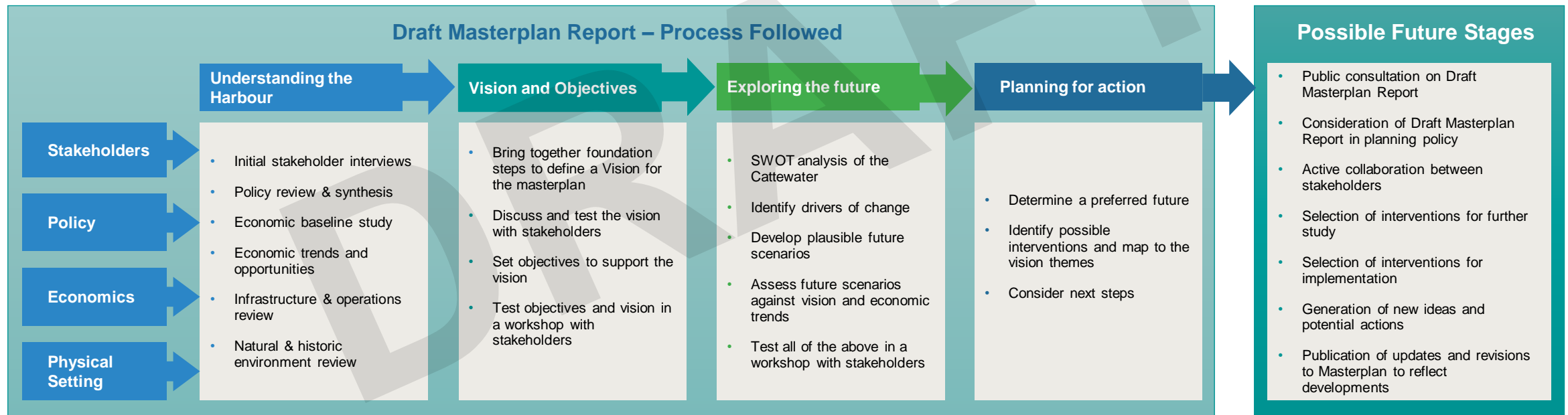


1.3 Masterplanning for the Cattewater

The Cattewater is a complex harbour, with the water and land owned and used in differing ways by a wide-ranging array of individuals and organisations with the freedom to act together or independently. As a Trust Port, CHC is publicly accountable to stakeholders and its ethos is one of holistic stewardship – comprehensive, considered consultation is at the core of the Commissioners’ strategy to ensure that the harbour best serves and benefits the local and regional community as well as its immediate users. The impact of the harbour goes far beyond the economic activity and trade passing through – it must also deliver social and environmental justice and sustainability.

Within this context, masterplanning for the Cattewater needs to avoid dictating a rigid course of action while providing the impetus and direction needed for the harbour to achieve a positive future. It will be an ongoing, iterative process that will continue to evolve over time through collaboration and decision-making between the various parties able to enact changes in the harbour.

This document provides a snapshot of the masterplanning activities carried out to date, which are illustrated in the figure below. It is intended to serve as a reference point for information, public consultation, and a stepping stone to help decision-makers take action.





CATTEWATER
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Part 2: Understanding the Harbour

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2.1 Harbour Context and Baseline

This section summarises the local context which has informed the draft masterplan. It is a foundation for the development of future scenarios and actions.

The Cattewater is a complex area, with many different parties using the water and adjacent land in different ways, against a backdrop of interlinked historical, social and environmental geography.

CHC is the statutory navigation and conservancy authority for the harbour – their remit being to maintain and order safe navigation in the harbour by surveying and dredging the channels, maintaining navigation marks and lights and providing pilotage services and traffic regulation within the Cattewater. They also provide pilotage services to civil vessels in the wider port of Plymouth.

The figure opposite presents a snapshot of the Cattewater Harbour limits and how the adjacent waterfront land is currently being used.



Image: Cattewater Harbour Commissioners

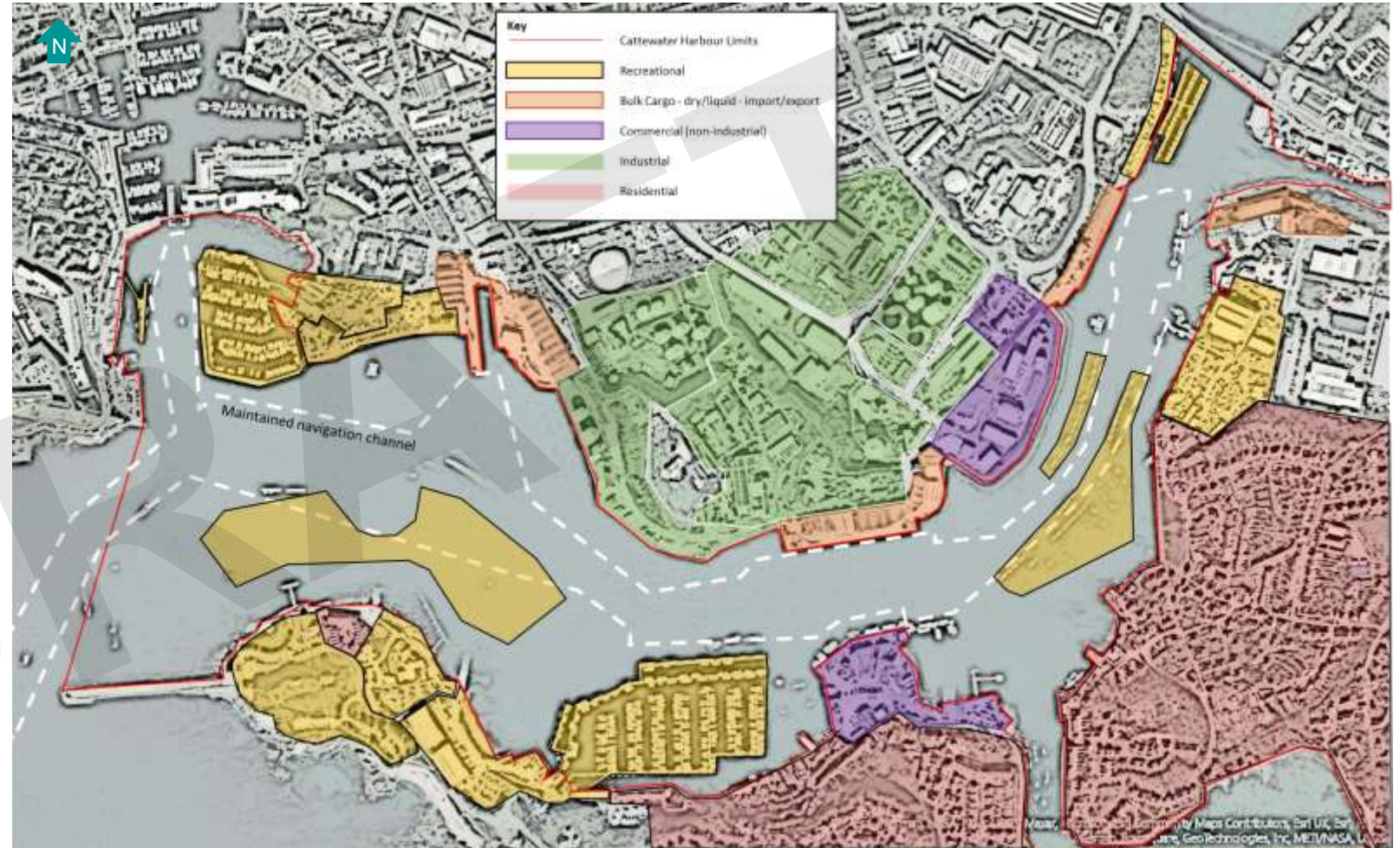


Image: Esri, Intermap, NASA, NGA, USGS, Earthstar Geographics, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

2.1.1 Bulk Cargo

The Cattewater is Plymouth's marine cargo hub. The pie chart below presents the breakdown of goods handled, which are dominated by importing of oil products and the import and export of dry bulk. Since 2000, Cattewater has increased the inwards tonnage of these products.

The figure opposite shows the areas used for cargo operations on the Cattewater, along with their operators, activities, and infrastructure.

It is acknowledged future increases in dry bulk throughput would be limited by a current lack of landside space for storage. The dimensions of the dredged channels, in particular the narrower navigable channel at the upstream end of the harbour, also restrict the size of vessels that can use the Cattewater.

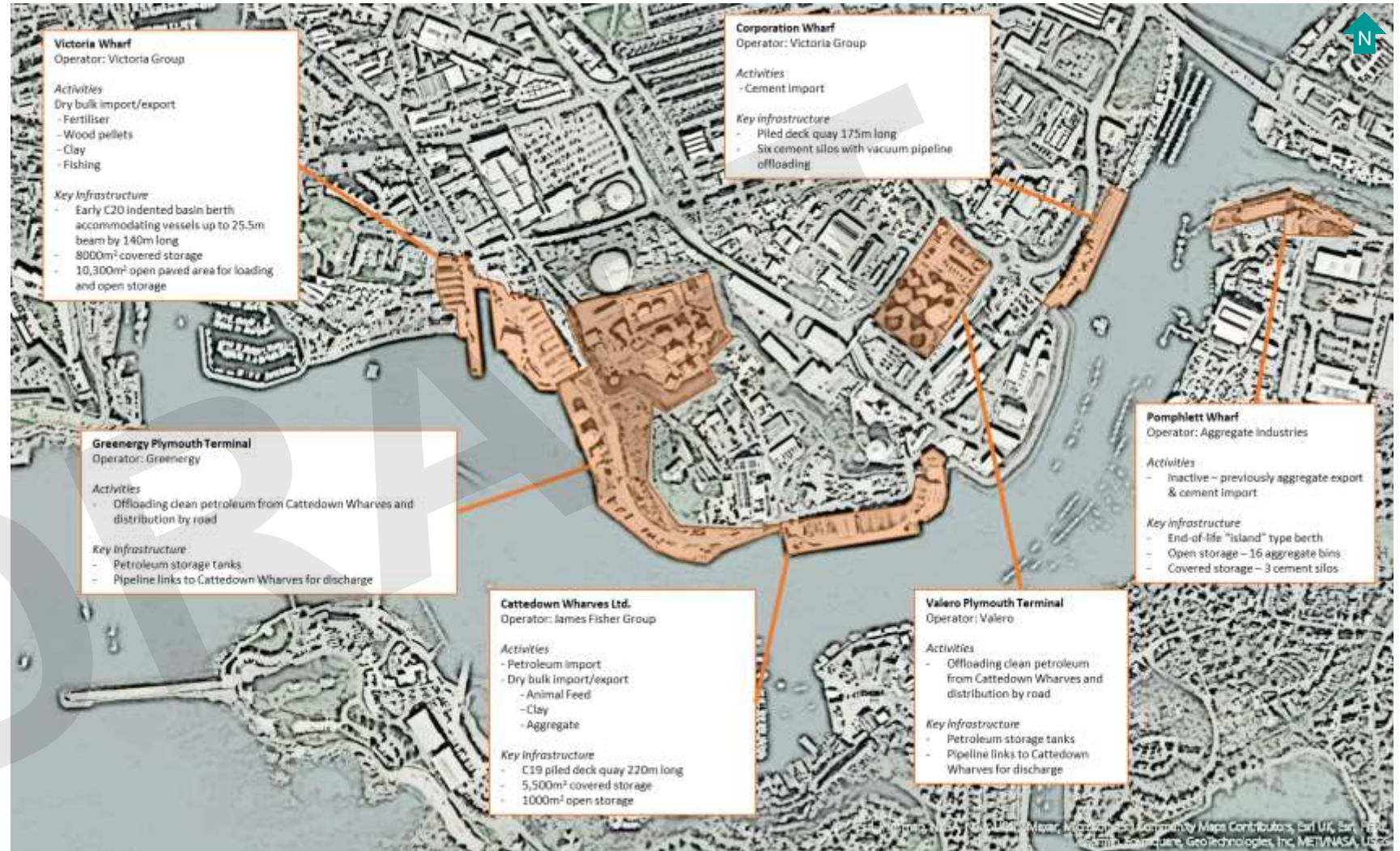
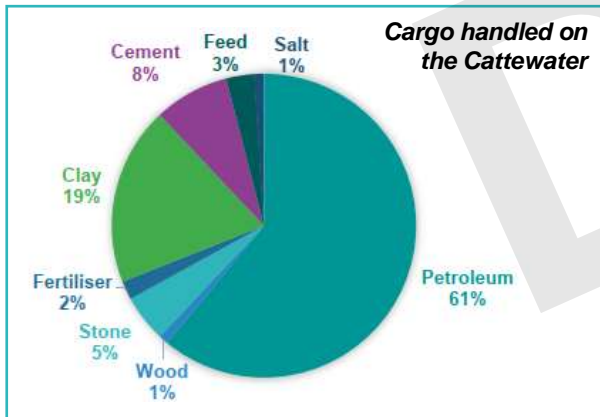


Image: Esri, Intermap, NASA, NGA, USGS, Earthstar Geographics, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

2.1 Harbour Context and Baseline

2.1.2 Leisure

The Cattewater is an important base for leisure activities, especially as it provides access to neighbouring Plymouth Sound. It hosts several marinas and on-water moorings with a combined total of over 800 berths for leisure craft, alongside the associated amenities and marina facilities. Key elements are highlighted on the figure opposite.

The Mount Batten Centre Charity Trust provides public benefit as one of the leading Watersports and Activities Centres in the Southwest. It also acts as a gateway to Plymouth Sound, an area that Plymouth City Council has declared a National Marine Park, to enhance the economic, environmental and social value of the Sound and promote public understanding and enjoyment of the area.

A comparatively new sector for the Cattewater is cruise, with cruise ship tenders making use of the Barbican Landing Stage which is advantageously located to deliver passengers into Plymouth's historic centre. This is linked to the city's long-term aspiration to become a key cruise port in the South-West, with an increase in visits from 4 cruise ship calls in 2018, to 12 for 2020 bringing approximately 15,000 passengers. The COVID-19 pandemic had a significant impact on demand, but 2023 saw a recovery to pre-pandemic numbers of cruise calls.

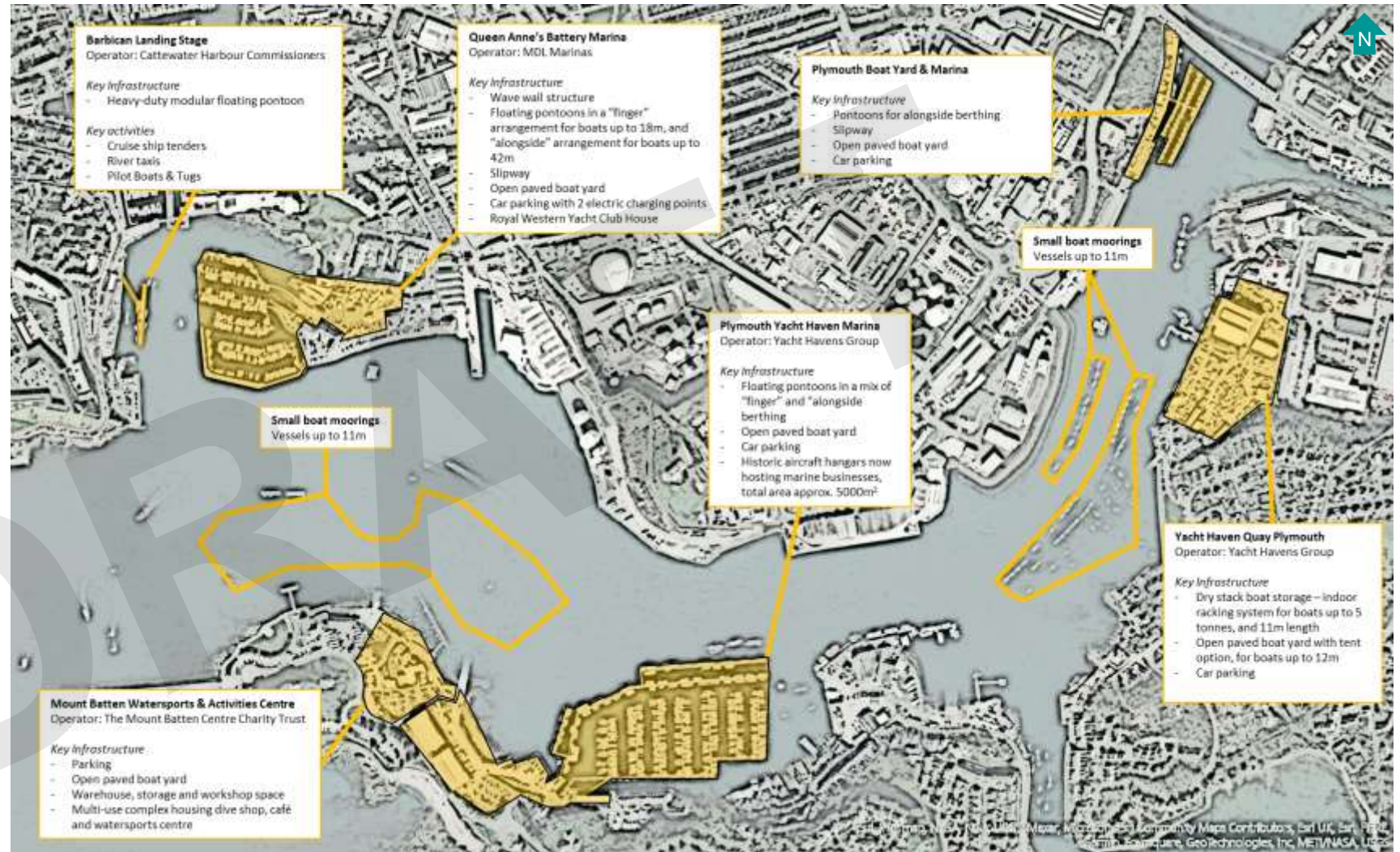


Image: Esri, Intermap, NASA, NGA, USGS, Earthstar Geographics, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

2.1.3 Commercial & Technology

The Cattewater plays a significant role in maritime research, with several high-tech marine businesses primarily located at Turnchapel Wharf, which affords modern facilities and rapid access for marine technology trials in both shallow and deep water. Examples include:

- Development and testing of autonomous vessels and systems by companies such as Thales, Fugro and Marine Artificial Intelligence.
- Training and education at the Fugro academy, SeaRegs training, and Plymouth Sailing School

The figure opposite shows some of the land areas adjacent to the Cattewater where commercial and high-tech activities are carried out.

The Cattewater's strength in this field is supported by its central location in Plymouth, which has the world's largest concentration of marine scientists and a culture of collaboration and creativity between the private and public sectors. Three world-leading areas of excellence have emerged: marine autonomy, clean propulsion, and digital ocean technology, with the Department of International Trade (DIT) recognising Plymouth as a High Potential Opportunity (HPO) for marine autonomy.

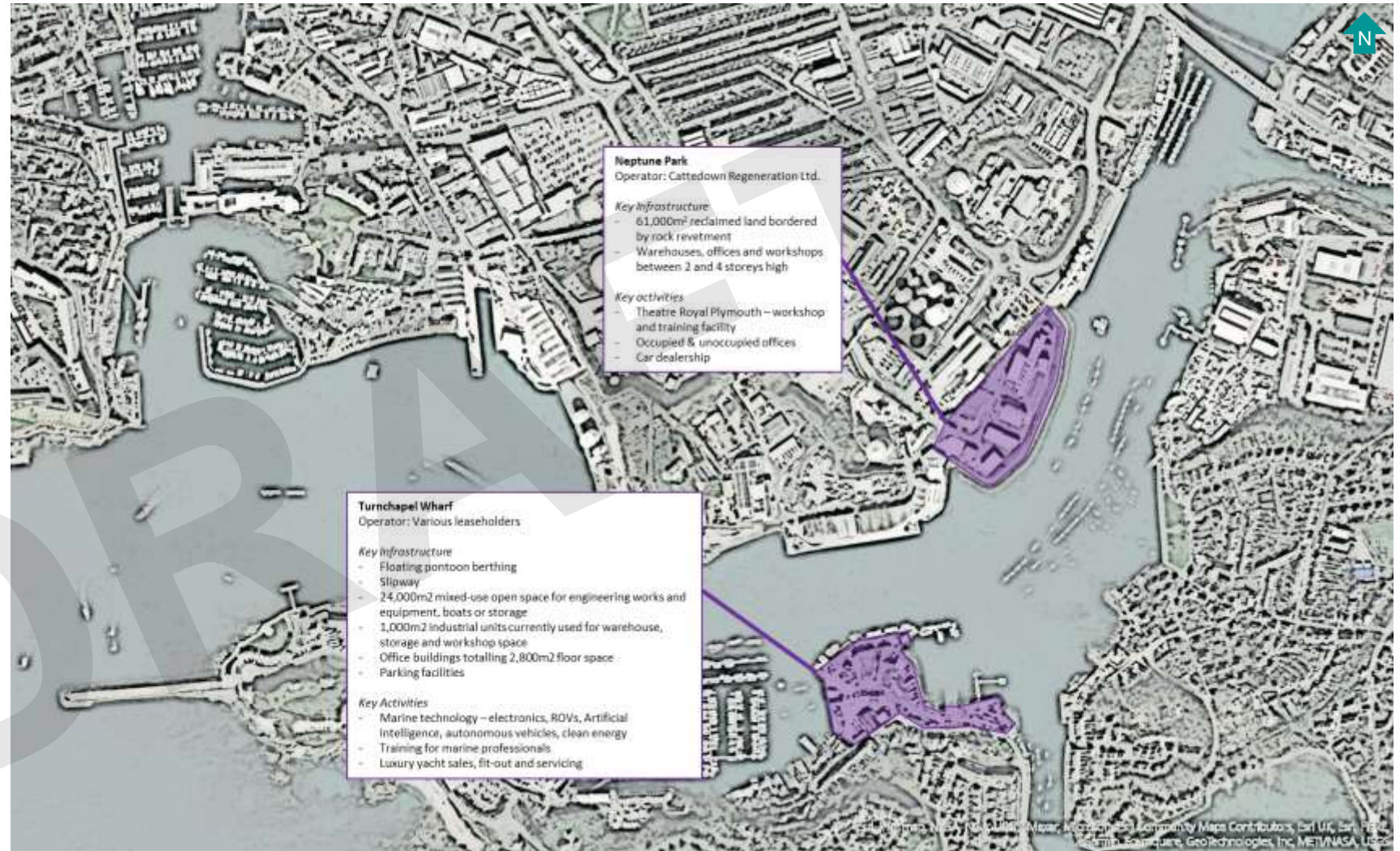


Image: Esri, Intermap, NASA, NGA, USGS, Earthstar Geographics, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

2.1.4 Residential

Residential developments at Oreston and Turnchapel line the southeastern side of the Cattewater, as illustrated in the figure opposite. Turnchapel is a designated conservation area, recognising the historic significance and character of the location.

Residents in these areas are immediate stakeholders of the Cattewater. Proximity to the water will be a contributor to the neighbourhood's sense of place, and the harbour is a valuable resource for people's leisure, enjoyment, and mobility. Residents stand to benefit from any improvement in the environment of the harbour.

Most residents commute outside of the immediate neighbourhood for work. The neighbourhood is relatively isolated from the rest of Plymouth, with all road routes leading up to the A379 and Laira Bridge, though the Mount Batten ferry provides a link to the Barbican for foot passengers and pedestrians. Plymouth City Council's Sustainable Neighbourhood Assessment for the area suggests improving connectivity by extending this water transport service to provide stops at Turnchapel and Oreston. The current road network is unsuited to HGV access.

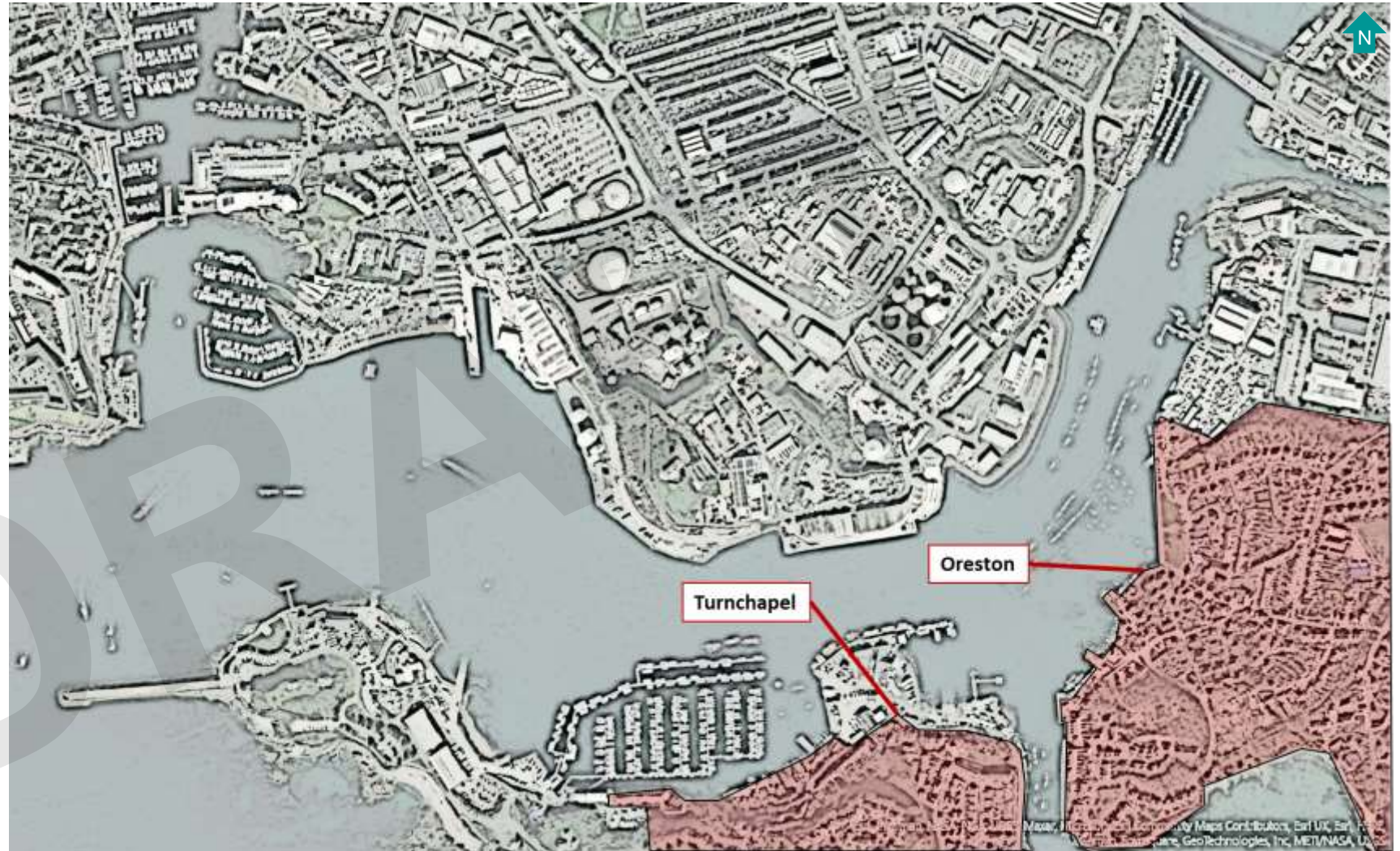


Image: Esri, Intermap, NASA, NGA, USGS, Earthstar Geographics, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, MET/NASA, USGS

The Cattewater and its surrounding area are rich in features which benefit from designations that command additional status under planning regulations. Understanding these will allow decision-makers to make plans which respect and work with the physical environment of the harbour. The designations can be categorised as follows:

- Historic Environment
- Health & Safety Executive (HSE) Consultation Zones (refer to following page)
- Natural Environment

2.2.1 Historic Environment



Image: Esri, Intermap, NASA, NGA, USGS, Maxar, Microsoft, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

The area around the Cattewater has elements falling under the following historic environment designations, which are highlighted on the figure opposite:

- *Conservation Areas* – Areas of special architectural or historical interest.
- *Listed Buildings* – Buildings of special historical interest.
- *Scheduled Monuments* – Nationally important archaeological sites.
- *Protected Wrecks* – remains of a vessel, or its contents, which are of historical importance.



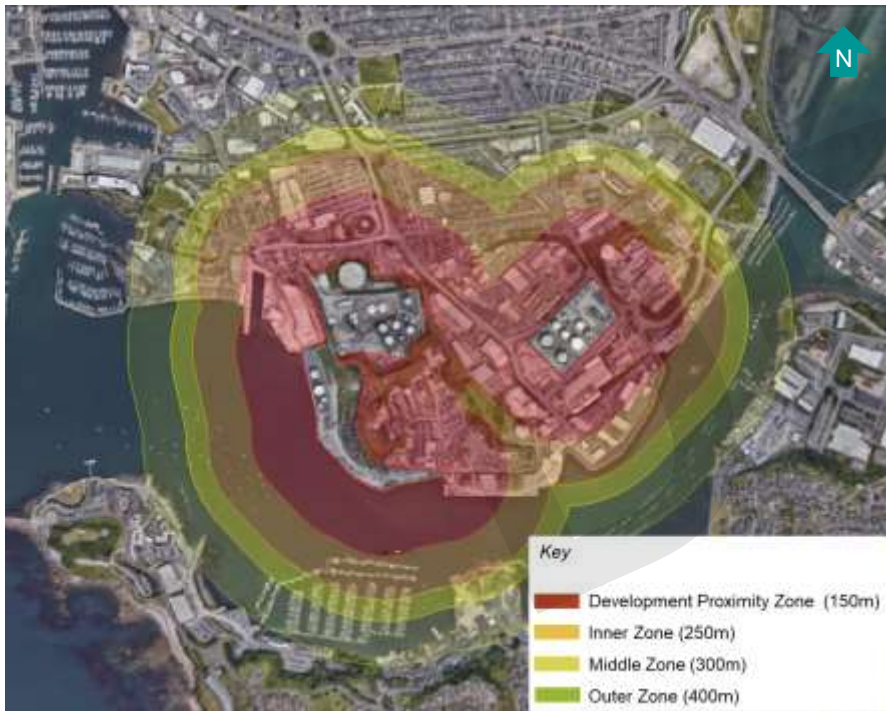
Mount Batten Tower – part of a Scheduled Ancient Monument.

Image: Cattewater Harbour Commissioners

2.2.2 HSE Consultation Zones

The Cattedown area currently features sites which handle petroleum and ammonium nitrate – highly flammable products, where a major accident could potentially have an acute effect on the surrounding area. To ensure safety, a zoning scheme is implemented, within which any planned development requires consultation with the Health & Safety Executive (HSE) which feeds into the planning process.

The figure below illustrates the extent of the consultation zones. In general, the HSE will advise against more sensitive developments (e.g. residential, large public facilities) in the inner zones.



2.2.3 Natural Environment

The natural environment around the Cattewater has features and areas which are protected by the following designations:

- *Sites of Special Scientific Interest* – Areas featuring special interests such as wildlife, geology, and landform.
- *Tree Preservation Orders* – Specific protected trees, groups of trees or woodlands.
- *Special Areas of Conservation* – Areas host to important natural habitats and species.

These features are illustrated on the figure below.



Image: Esri, Intermap, NASA, NGA, USGS, Maxar, Microsoft, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

2.3 Local and National Policy

Understanding the relationship between Cattewater Harbour and wider planning policy allows us to identify ways in which the development of the Cattewater can contribute and align with regional and national goals. The policy papers shown opposite have been identified as relevant and reviewed to inform the masterplan.

Key elements and messages of policy that can be related to the Cattewater have been extracted and distilled into a set of aims. These are set out in the table below, where they have been grouped into nine main themes and mapped to the UN's Sustainable Development Goals (UN SDGs – internationally recognised markers of sustainability).

- Policy Review**
- Local Transport Plan 2011-2026 (2011)
 - Plymouth & South West Devon Joint Local Plan 2014-2034 (2019)
 - Peninsula Transport: Economic Connectivity Study (2020)
 - WP06 Report: Carbon Transition Strategy (2023)
 - Peninsula Transport: Vision (2021)
 - WP09: South West Freight Strategy (2022)
 - Route Strategy Initial Overview Report: South West Peninsula (2023)
 - WP12 International Gateway Study 2023

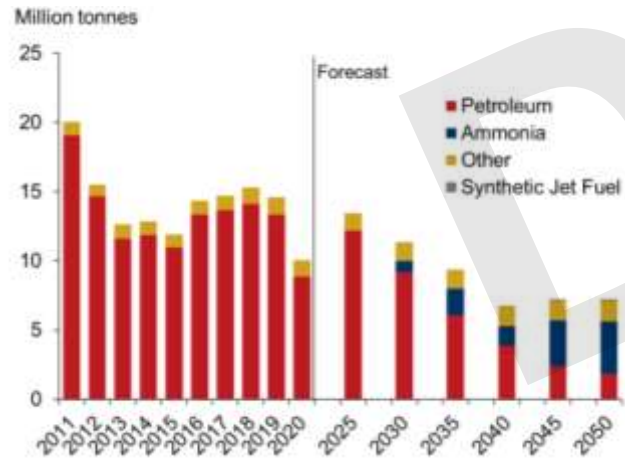
UN SDG 4 Quality Education	UN SDG 7 Affordable and Clean Energy	UN SDG 8 Decent Work and Economic Growth			UN SDG 9 Industry, Innovation and Infrastructure		UN SDG 11 Sustainable Cities and Communities	UN SDG 17 Partnerships for the Goals
Educational / Training / Social	Net zero / Decarbonisation / Environment / New Tech	Employment	Economy / Finance	Tourism	Capacity assessment	Freeport	Urban and Transport / Modal Shift	Cooperation / Collaboration
Making connections between people and places to decrease social exclusion, enhance health and well-being and promote access to opportunities.	Tackle climate change by decarbonising short distance trips (within 20 minutes), for example by providing safe cycling, walking or water transport links.	Strengthen the Cattewater's role in the region, linking towns, villages and surrounding rural areas by enhancing employment opportunities.	Explore future mobility options of freight vehicles to improve inter-harbour movements enabling a better access to key areas, while considering visitor access to key attractions and future developments, for example on the waterfront.	Support access to the Cattewater for tourists by improving connections from Plymouth and further afield.	Encourage more rail-based freight movement	Explore opportunities for the Cattewater to host floating accommodation during seasonal highs	Ensure access to the Cattewater Harbour site is sustainable, for example by making walking, cycling, public transport or water transport the desirable choice.	Enabling the Cattewater's potential to be recognised as a vital growth hub for the region.
	Ensuring clean growth in key locations by enhancing the resilience of the transport network and seeking opportunities to decarbonise the freight sector.			Develop a positive sense of arrival to the Cattewater by creating a safe, clean and accessible environment for those travelling on cruise ships.		Make the most of the benefits of Freeports through enhancing and developing industries, skills and products		

It is impossible to predict the future of the economy with certainty, but some things are more likely than others and it will be important to bear these in mind when making decisions about the future of the Cattewater. This section discusses some of the possible future economic trends and opportunities in relevant sectors and potential benefits / risks of each of these.

2.4.1 Liquid Bulk – Oil Products

Incoming oil products are the main cargo handled on the Cattewater, with a trend of steady growth since 2000. Future reduction will likely occur due to the UK’s transition to Net Zero – the forecasted demand for petroleum is dependent on the energy pathway used, but under a balanced Net Zero Pathway, national demand is expected to be reduced approximately from 70m tonnes to 20m tonnes by 2050.

The harbour’s ongoing growth in inwards oil products runs against the national trend, which is already falling, suggesting that while a long-term decline is to be expected, the local demand in the short term may be resilient – this is also the view of current operators on the Cattewater. An Oxford Economic report forecasting liquid cargo at the Port of London estimates a similar picture, with the reduction in petroleum products occurring largely between 2030 and 2040 as shown in the figure below.



It is reasonable to suggest that, in the long term, Cattewater should consider alternatives to petroleum cargo. An example of future liquid bulk in the energy sector could be the growth of the hydrogen economy, as illustrated in the increased demand for liquid Ammonia shown to the right. There are already regional developments in this sector, with the energy supplier Carlton Power aiming to build a 10MW green hydrogen plant at Langage Energy Park, with support of the Freeport.

2.4.2 Bulk Cargo and Freight

Since 2000, the trend for bulk cargo coming into the Cattewater shows a steady growth in volume. Outwards cargo is more volatile but, on average, has stayed at a similar level since 2008. As Plymouth’s cargo hub, the Cattewater could benefit from the local and national policy focus on supporting short-sea shipping of cargo as a replacement for road transport. Goods moved by boat have the lowest embodied carbon per kilometre of any mode of transport.

One way to seize this opportunity would be for cargo operators on the Cattewater to target containerised freight transport, which does not currently feature in their operations. It is currently estimated that Devon and Cornwall see several hundred movements of containers per week by road, primarily linked to the ports of Southampton and Felixstowe – there is scope for this flow of goods to shift from road to sea transport. In its 2019 report on the future of freight demand, the National Infrastructure Commission forecast an increase in the total short-sea traffic between the UK and Europe as shown in the table below.

Scenario	2015	Business as usual 2050	Carbon Reduction 2050	Carbon Survival 2050	Manufacturing Renaissance 2050
Container units (millions)	9.6	19.14	18.05	18.05	7.00

Such trends suggest there is an opportunity for the Cattewater to build upon existing cargo levels to support a sustainable long-term future, though the following should be noted:

- Existing operations at Victoria and Cattedown Wharves are space-constrained in terms of landside storage – supporting growth in cargo volumes may require investment in expansion of facilities, on top of investment in equipment and storage space. Approaches such as Joint Ventures between stakeholders could play a role in accessing the capital required.
- The predicted UK-wide increase in containers does not guarantee sufficient demand in Plymouth, which will be dependent on local requirements and the availability of different modes of freight transport. For container vessel calls to be viable the port would have to offer competitive pricing which would need to be balanced with the capital expenditure required.

2.4.3 Fishing

The Cattewater plays a supporting, but noteworthy, role in the fishing economy of Plymouth as a whole – Victoria Wharf lands catch from vessels that are too large to access the main fish quay and market at neighbouring Sutton Harbour. Typically, this is high-value cargo such as shellfish.

While fishing has long been economically and culturally important to Plymouth as a whole, trends since 2008 show a decrease in income from circa £14m to £8.5m. Along with the fact that fishing only forms a small part of current operations on the Cattewater, it is unlikely that targeting growth in this sector would be a sustainable direction for the Cattewater. The Plymouth City Council Plan for Sustainable Fishing reflects this position and mainly focuses on improvements at Sutton Harbour, while noting that the Victoria Wharf could continue to play a part in landing more and larger vessels.

2.4.4 Visitor Economy

Destination Plymouth is a public/private partnership responsible for growing the visitor economy in the city as a whole. It aims to grow visitor spend by 30% from £347 million to £450 million in a decade and increase the total visitor numbers by 15% by 2030. The Cattewater has a part to play in this, namely by attracting cruise ships, growing leisure use of the water, and acting as a gateway to Plymouth Sound.

Cattewater currently facilitates cruise calls by welcoming passengers at the Barbican landing stage, though the economic benefit is primarily to the town itself with anecdotal evidence of £0.5m visitor spend in 2022. Cruise ships themselves currently anchor in Plymouth Sound or at Millbay but could present a revenue opportunity for the Cattewater if new infrastructure were put in place to accommodate them, for example in the form of a multi-use quay at Victoria Wharf. With the exception of the Covid-19 pandemic period, cruise growth in Plymouth has been healthy but without substantial future increase would remain a small portion of the overall economic picture.

Plymouth City Council's declaration of a Marine Park project in Plymouth Sound provides a valuable opportunity to target leisure use of the water. Collaboration with existing stakeholders such as the Mount Batten Centre could yield mutual benefit.

2.4.5 Plymouth and South Devon Freepport

The Cattewater lies within the overall boundaries of the Plymouth and South Devon Freeport as shown in the figure below. The Freeports model proposed by the UK Government has three core objectives: i) to become national hubs for global trade and investment; ii) create 'hotbeds' for innovation; and iii) promote regeneration through the creation of high-skilled jobs. The primary means of achieving this is with policy levers such as taxation benefits, simplified customs arrangements, a supportive planning environment, and granting of seed capital.

At this point, three 'tax sites' have been designated in the Freeport. The Freeport's employment forecast is of demand for around 3,584 new jobs by 2028/29, concentrated in professional, technical and skilled trade occupations.

It is reasonable to expect positive demand for the Cattewater if new investment locally leads to growth and supply chain opportunities for commercial port users. Collaboration with the Freeport could be a driver of investment in the harbour – the Freeport has a stated commitment to working with the Cattewater to optimise port infrastructure and ensure port capacity. Two target areas of relevance to the Cattewater are:

- Short-sea shipping to reduce road transport. As Plymouth's main cargo port, the Cattewater is well placed to help realise this objective.
- Marine innovation, marine autonomy, decarbonisation and offshore renewable energy support solutions. Much of the Freeport's current focus is on developing these sectors at Oceansgate, in the Devonport area. However, Turnchapel Wharf in the Cattewater could also make a strong case for Freeport involvement as it also hosts world-leading activities in this field.



Image: UK Government

2.4.6 High Tech Maritime Industries

The city of Plymouth has a strong reputation in the field of high-tech maritime industries such as marine autonomy, clean propulsion and digital ocean technology. It is recognised as a UK High Potential Opportunity for marine autonomy by the Department of International Trade.

There is a relatively significant opportunity for high value job growth in this sector, and the established high-tech maritime activities at Turnchapel Wharf present an opportunity for some of this growth to take place on the Cattewater. Growth on the Cattewater would be assisted by proximity to the many marine scientists and technologists in the city, as well as infrastructure such as Smart Sound Plymouth. To make the most of the opportunity, it would be desirable to seek promotion and investment from parties such as the Freeport and City Council, who have been active in supporting the field but have often focused their attention on developments outside of the Cattewater, in particular at Devonport South Yard.

2.4.7 Low Carbon and Renewable Energy

The Cattewater is advantageously located near Plymouth's main high-voltage distribution network, presenting the opportunity for electrification of port operations. Provision of shore power to vessels in the port would generate a revenue stream while moving the harbour along the Net Zero trajectory.

Decarbonisation can also be advanced by targeting a modal shift from road to water transport, whether through short-sea shipping as discussed in Section 2.4.2, or extension of the current Mount Batten Ferry operations to serve the upper reaches of the Cattewater. The latter could have the benefit of providing better pedestrian and cycling connection between the Turnchapel and Oreston neighbourhoods and the centre of Plymouth, reducing reliance on car use.

Offshore wind has been identified as a key opportunity in Plymouth, in particular the development of Floating Offshore Wind (FLOW) farms in the Celtic Sea targeting 24GW of output by 2045. It is recognised that the new Celtic Freeport, comprising sites at Milford Haven and Port Talbot in South Wales, is better placed geographically to be the primary beneficiary of this development, but the scale of the project is such that a multi-port strategy will likely be required and the Cattewater could play a part.

An opportunity study produced by Regen notes the potential of Plymouth for support to the fabrication and manufacturing of FLOW components, as well docking for FLOW vessels – for example CHC notes the potential for anchor-handling vessels and barges to use the Cattewater. The present lack of available landside space at Cattewater may impact on market potential for manufacturing or staging of FLOW components – at least in the short to medium-term.

Looking to the longer term, beyond the Celtic Sea development, the role of the Cattewater could expand further if FLOW projects are developed off the south coast and in the western approaches to the English Channel. As an indication of the scale of opportunity generated by a given FLOW development for the best-placed ports, the Celtic Freeport Economic Impact Assessment estimated that FLOW could generate and sustain around 11,000 FTE jobs in South Wales.

Turnchapel Wharf already has links to FLOW technology in the form of marine autonomy testing and training, for unmanned & remote-operated vessels used in offshore asset inspection and monitoring. This could make the Cattewater an attractive location to grow this facet of the FLOW sector. The UK is leading the world in FLOW development and the Cattewater could capitalise on this to build skills and knowledge that would provide long-term benefit as the industry develops globally.



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Part 3: Vision and Objectives

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3.1 Themes and Objectives

A vision statement helps bridge the past and present with the future, setting out a common goal and inspiring a long-term purpose. When undertaking transformational change, it is essential to establish a navigational aid, such as a vision, to paint a picture for all stakeholders of the point on the horizon we are aiming for.

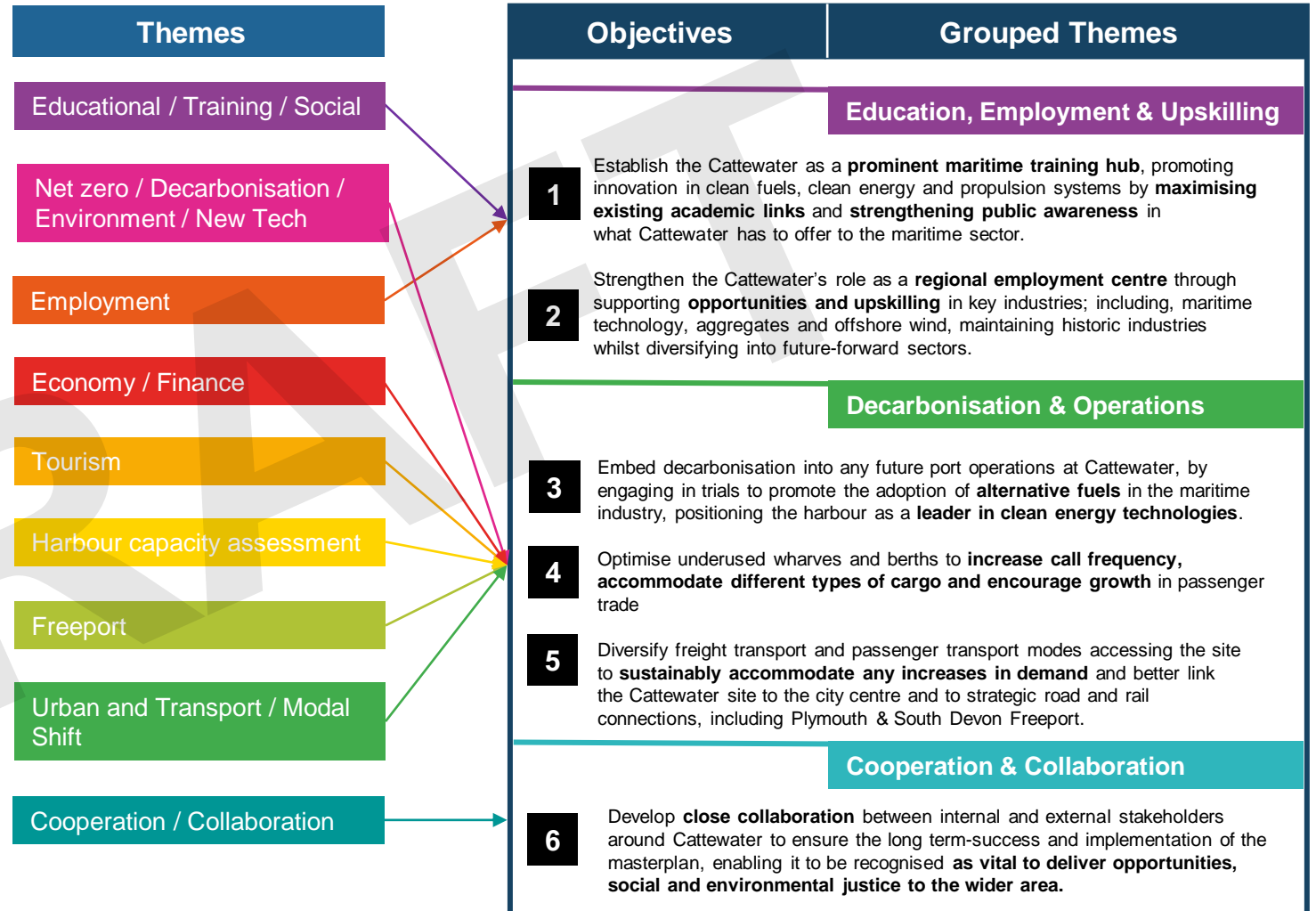
Objectives provide the detail on intended outcomes from the vision. They are measurable and are designed to facilitate change and directly contribute to achieving the shared vision.

A clear vision and objectives will help the Cattewater to be resilient to future uncertainties and tackle current issues. For these to be robust, they must be grounded in the right sources – in this instance, the following have been used:

Stakeholder Engagement – interviews and a workshop with representatives from local organisations to understand their thoughts and ideas for the future of the harbour (see Appendix A).

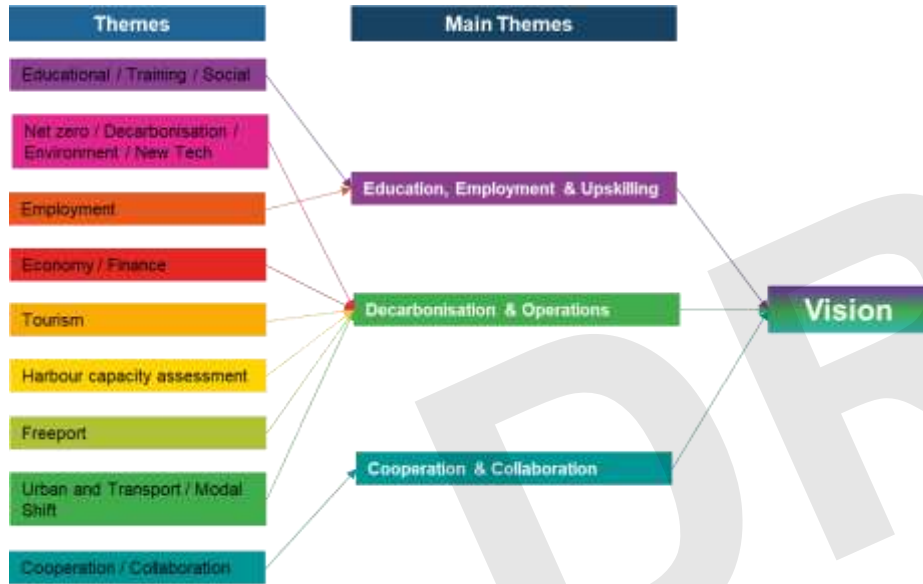
Policy review – review of local and national policy to understand how Cattewater Harbour can contribute to wider planning objectives.

Combined, the stakeholder feedback and policy review yield a detailed picture of issues and opportunities affecting Cattewater Harbour. The key messages resulted in a set of six consolidated objectives which are presented in the figure opposite. The objectives have been sorted under three main themes, which are a development of the nine themes presented in Section 2.3.



The three main themes and associated objectives were used to guide the overall vision statement for Cattewater Harbour Masterplan as shown below.

This vision was accepted and approved in a workshop with key stakeholders.



“The Cattewater Harbour Masterplan will serve as a manual for decision-makers to futureproof the port over the next 25 years. It will enable the port to adapt to changes in the environmental, technological and socio-economic landscape; harnessing these winds of change to enhance Plymouth’s proud maritime heritage in close collaboration with local partners, ensuring it delivers innovation, social and environmental justice to the wider area.”



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Part 4: Exploring the Future

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4.1 Strengths, Weaknesses, Opportunities, Threats

This section explores what the future may hold for the Cattewater, primarily by generating a set of scenarios to give stakeholders and decision-makers something to visualise and aim for. As a first step in developing these scenarios, we assessed the strengths, weaknesses, opportunities and threats for the future of the Cattewater as a port. These were built up and explored by workshoping with stakeholders and are shown in the grid opposite.



Strengths

- Powerful investor background – attracting skills or infrastructure investment
- Good education facilities and major maritime training provider
- Wealth of local knowledge among decision makers
- Department for Transport backing (evidenced in 2020 Economic Connectivity Study)
- Healthy Small-Medium Enterprise growth
- Established maritime expertise and history
- Essential location for Devon, Cornwall and Somerset
- Strong and integrated supply chain network

Opportunities

- Alternative fuels for vessels – renewable energy
- High salary of the maritime industry could be very attractive to a skilled workforce
- Taking advantage of the government's pushing for short sea shipping
- Taking advantage of national focus on coastal community
- Established international customers focusing on the area
- More investment – especially if bringing environmental benefit and upgrades to Victorian infrastructure
- Expansion in rail infrastructure
- Using policy to protect the port
- Systems thinking approach

Weaknesses

- Confusion over Cattewater's Freeport position
- New and changing environmental legislation
- Potential societal resistance to change
- Uncertainty over older infrastructure and ability to support growth
- Lack of capacity to support growth (storage/navigation)
- Access to Cattewater and perceived remoteness of Plymouth
- Waterside location – more vulnerable to climate change
- Siloed working between decision makers
- Limited depth of water – navigations constraint
- Lack of capacity on electricity grid
- Lack of a clear regulatory framework

Threats

- Housing development competing with port for land
- Complex patchwork of legal ownership of land and operations
- Policy vulnerable to changing politics
- Risk of port being overlooked in planning policy
- Turning away potential customers (lack of capacity)
- Competitive job market
- Difficulty managing increased water use (recreation)
- Unpredictability of climate change e.g. sea levels
- Artificial Intelligence exacerbating inequality
- Decline in biodiversity
- Lack of data to support adaptation
- Not approaching challenges holistically
- Trend for larger ships – may “outgrow” the Cattewater

Through workshoping with stakeholders, a set of plausible future scenarios for the Cattewater has been created. The purpose of these scenarios is to:

- assist stakeholder understanding by providing concrete examples of how the harbour could look in 25 years' time
- give stakeholders something to measure against or aim for when making decisions, selecting interventions that will help guide the Cattewater towards outcomes that are more aligned to the masterplan vision and objectives.

The different scenarios have been built by considering the many factors which may affect the future of the Cattewater, which can be termed “drivers of change”. The interplay between these drivers will lead to different possible futures.

The drivers of change, their importance, and their likelihood, were identified via workshops with port stakeholders. The result of this assessment is presented in Annexe A. The most uncertain and most important of the factors identified were brought together to form the following two critical drivers:

- **Acceptability of pro-sustainable solutions** – the extent to which society favours or facilitates environmentally conscious development.
- **Land availability for harbour uses** – the extent to which harbour users can secure the land they need, which can be influenced by such things as policy or political intervention and competition for space

Four future scenarios were then built by considering the interaction between these drivers, and the outcome that this would have on the Cattewater. These are summarised in the table opposite and further explored in Appendix A.

Scenario	Description
<p>“Osmosis”</p> <ul style="list-style-type: none"> ➢ Society drives for sustainability ➢ Good land availability for port operations 	<ul style="list-style-type: none"> • Expansion of shore-side developments for storage and production • Collaboration for development of innovative sea and wind technological hubs and opportunity spaces • Development of facilities supporting non-fossil fuel energy production, storage, and servicing of vessels • Environmental preservation focus has encouraged leisure activities in and around the port
<p>“Lighthouse”</p> <ul style="list-style-type: none"> ➢ Society drives for sustainability ➢ Poor land availability for port operations 	<ul style="list-style-type: none"> • Collaboration and cooperation between stakeholders helps mitigate the impact of poor land availability, with mutualisation of shore-side resources such as land and infrastructure for storage and production needs. • Societal support for decarbonisation has enabled development of a marine energy demonstration park, providing clean power to surrounding properties as well as ships. • Environmental preservation focus has increased tourism, academic research, and up-skilling opportunities.
<p>“Rudderless”</p> <ul style="list-style-type: none"> ➢ Society resists sustainability ➢ Good land availability for port operations 	<ul style="list-style-type: none"> • Port activities grow with little cooperation, leading to fragmented land use and duplication of services and infrastructures. • No strategy for climate resilience and sustainable alternatives, fossil fuel and new technologies are being used with little coordination. • Environmental degradation.
<p>“Weathered”</p> <ul style="list-style-type: none"> ➢ Society resists sustainability ➢ Poor land availability for port operations 	<ul style="list-style-type: none"> • Port activities displaced by residential and commercial land use. • Lack of investment and collaboration by port users leads to insufficient infrastructure and degrading historic structures, further hampering growth. • No strategy for climate resilience and sustainable alternatives, fossil fuel and new technologies are being used with little coordination. • Environmental degradation

4.3 Economic compatibility of scenarios

The following table presents how the scenarios presented above align with the economic trends and opportunities discussed in Section 2. It illustrates how economic opportunities may play out in the various futures identified. A positive rating does not mean that the pathway to this scenario will automatically lead to growth in that area, rather that it could create the positive climate for such growth to happen. This can inform decision makers in identifying a preferred future and taking action to increase its likelihood.

Economic Opportunities	Osmosis	Lighthouse	Rudderless	Weathered
Freight	✓ - Low land cost/ high land availability and strong support for decarbonisation will create a strong appetite within the port for space to be used to transition to ammonia and hydrogen fuel cells as a result of the decline in petroleum demand	- Higher land costs / lack of land available will mean land will need to be safeguarded / repurposed to support the transition to ammonia and hydrogen fuel cells as a result of the decline in petroleum demand. Strong support for decarbonisation means there would be appetite within the Harbour to ensure this.	X - Low land cost/ high land availability and lack of support for decarbonisation could result in business as usual and lack of appetite to transition to clean energy and storage facilities	X - Lack of support for decarbonisation and high land costs/ low land availability could result in a push land to be used for more residential housing and lack of land to transition to clean energy and storage facilities
Visitor Economy	✓ - Strong support for decarbonisation and sustainable solutions will push for a port that is environmentally clean which will support the Harbour as a destination rather than place of work, and particularly land being made available for leisure activities	✓ - Strong support for decarbonisation and sustainable solutions will push for a port that is environmentally clean which will support the Harbour as a destination rather than place of work	X – Lack of investment in the port has resulted in the port degrading and it not being seen as an attractive destination for visitors	X – Lack of investment in the port has resulted in the port degrading and it not being seen as an attractive destination for visitors
High Technology and Maritime Industries	✓ - Strong support for decarbonisation, investment and low land cost/ high land availability creates an environment where innovation and sustainable initiatives can flourish and build on the success of Turnchapel Wharf	- High land costs/ lack of land available could be a constraint to develop required workspaces and supporting infrastructure, but strong support for decarbonisation and continued collaboration is a strong starting point to build on the success of Turnchapel Wharf	X – Despite land available, a lack of investment in the port and lack of support for decarbonisation could result in a lack of appetite to build on the success of Turnchapel and invest more in innovation and research	X - High land costs/ lack of land available could be a constraint to develop required workspaces and supporting infrastructure to support innovation and research
Offshore wind	✓ - Low land cost/ high land availability and strong support for decarbonisation means there would be an appetite to use land to support supply chain opportunities linked to FLOW	- Higher land costs / lack of land available will mean land will need to be safeguarded / repurposed to support supply chain opportunities linked to FLOW. Strong support for decarbonisation means there would be appetite within the Harbour to ensure this.	X – Despite land available, a lack of investment and support for decarbonisation means there is likely to be a lack of appetite to support supply chain opportunities linked to FLOW	X – Strong competition for land use/ lack of space and lack of support for decarbonisation means there is likely to be a lack of appetite to support supply chain opportunities linked to FLOW



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Part 5: Planning for action

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5.1 Introduction

The Scenarios presented in Section 4 show varying degrees of compatibility with the masterplan vision and objectives. The “Osmosis” and “Lighthouse” scenarios represent more positive outcomes, while the “Rudderless” and “Weathered” scenarios are less desirable and could be considered a form of managed decline. Stakeholders for the Cattewater are in a strong position to influence the direction of the harbour and steer towards a particular future, but to do so will require proactive interventions to be made.

This section sets out possible interventions that have been developed through engagement with stakeholders and discussion with CHC. At this stage of the masterplanning process, it is an aspirational and high-level list – some of the interventions identified would need further consideration and investigation to determine their viability. Interventions could stand alone as independent actions, but in many cases they would complement and reinforce each other.

5.2 High-Priority Interventions

The interventions set out in this sub-section have been identified as high-priority, either due to their urgency, ease of implementation, or impact. Action should be taken on these in the first instance.

<i>Futureproof Infrastructure</i>		<i>Theme: Decarbonisation & Operations</i>
Intervention	Outcome	
Maintenance and rehabilitation of aging port assets <ul style="list-style-type: none"> • Regeneration of Pomphlett Wharf – refurbish or replace of existing dock infrastructure, and provide new equipment to reopen cement/aggregate facility. Otherwise, consider site for other port use, for example in supporting Turnchapel Wharf. • Modernise storage facilities at Cattedown Wharves to allow increased throughput. Ensure ongoing maintenance of historic Cattedown Wharves jetty. 	<ul style="list-style-type: none"> • Underused assets are once again able to contribute to the life of the harbour • Existing infrastructure remains fit for purpose into the future 	
Accommodate larger vessels already coming to market, e.g new generation of cement carriers <ul style="list-style-type: none"> • Widen or deepen existing navigation channels • Invest in suitable berthing infrastructure (e.g. bollards, fenders) if necessary 	<ul style="list-style-type: none"> • Cargo volumes can grow without increasing marine traffic • Reduced emissions per unit transported 	
Target decarbonisation of existing operations <ul style="list-style-type: none"> • Liaison with utilities providers to assess and ensure grid capacity • Electrification of port equipment and shore power provision at Victoria Wharf and Cattedown Wharves • Electric vehicle charging facilities throughout port 	<ul style="list-style-type: none"> • Reduction in local pollution from port operations • Progress on pathway to Net Zero 	

5.2 High Priority Interventions

<i>Policy Focus</i>		<i>Theme: Cooperation & Collaboration</i>
Intervention	Outcome	
Continue to grow relationships with the city council and ensure the harbour's value is recognised in policy	<ul style="list-style-type: none"> • Prominence of the Cattewater in Joint Local Plans • Land use zoning to safeguard areas for the Cattewater's port operations, e.g. at the Cattedown Industrial Estate • Public investment in the port, e.g. via public/private partnerships 	
Promote the Cattewater at a national policy level	<ul style="list-style-type: none"> • Importance of the Cattewater recognised in industrial, planning, and environmental strategies • Individual operators or CHC better placed to access to central government funding 	
Work with Plymouth and South Devon Freeport to secure investment, profile raising, and customer growth	<ul style="list-style-type: none"> • Investment in current infrastructure. An example is the recent securing of Freeport funding for dredging of the eastern end of the Cattewater channel. The Freeport also has an interest in ensuring the other port infrastructure on the Cattewater remains fit for purpose. • Investment in short sea shipping, for example the development of container-handling capabilities at Victoria Wharf • Investment in marine innovation, supporting and building on the established activities at Turnchapel Wharf 	

<i>Support Transport Modal Shifts</i>		<i>Theme: Decarbonisation & Operations ; Education, Employment & Upskilling</i>
Intervention	Outcome	
<ul style="list-style-type: none"> • Implement a water-taxi service linking the upper reaches of the Cattewater to the Barbican & Mount Batten, to shift away from travel by road. 	<ul style="list-style-type: none"> • Neighbourhoods of Turnchapel and Oreston benefit from improved connectivity to the city centre • Increased public transport use reduces road traffic, congestion, and local emissions in the Cattewater area 	
<ul style="list-style-type: none"> • Develop container port capability to support short-sea shipping 	<ul style="list-style-type: none"> • Direct economic benefit to the Cattewater through growth in cargo volumes • Contribution to the UK's Net Zero pathway 	

5.3 Medium-Priority Interventions

The interventions set out in this sub-section have been identified as medium-priority, but should form part of the harbour’s long-term strategy.

Medium-priority interventions	Theme
<p>Strength through collaboration:</p> <ul style="list-style-type: none"> Unified working between stakeholders. Using joint ventures or partnerships to increase economic power. Joined-up decision-making between stakeholders and other port authorities, making plans that are complementary and mutually beneficial, avoiding inefficient duplication of services. 	<p>Cooperation & Collaboration</p>
<p>Gain space to grow:</p> <ul style="list-style-type: none"> Industrial estates at Cattedown offer opportunities for port storage, especially for Cattedown & Corporation Wharves New quayside and landside storage can be secured by building at Deadman’s bay (adjacent to Victoria Wharf) Neptune Park could support port operations, for example as landside storage in collaboration with operators at Cattedown or Corporation Wharf. Alternatively, current owners have an interest in clean energy projects such as marine-source heat pumps. Regeneration of Pomphlett Wharf – refurbishment or replacement of existing dock infrastructure, and provision of new cargo-handling equipment. Otherwise, safeguarding site for other port use, for example in supporting Turnchapel Wharf. 	<p>Decarbonisation & Operations</p>
<p>Join the Net Zero Economy:</p> <ul style="list-style-type: none"> Make the most of the growth in Floating Offshore Wind. Build on Turnchapel Wharf’s lead in establishing skills & research in this sector. Support the Celtic Sea supply chain, accommodating vessels and crew for wind farm construction and maintenance. Consider serving as a staging point for smaller wind farm components. Plan for diversification away from petroleum imports – identify alternative uses of landside infrastructure at Valero and Greenergy sites, and dock infrastructure at Cattedown Wharves. Possible transition to clean energy markets. 	<p>Decarbonisation & Operations Education, Employment & Upskilling</p>
<p>Support the Visitor Economy:</p> <ul style="list-style-type: none"> Contribute to Destination Plymouth’s promotion of the cruise industry in Plymouth – raise the profile of the Cattewater and its advantageous location near the historic centre of the city. Capitalise on Mount Batten’s location to collaborate with the Plymouth Sound Marine Park – provision of facilities and experiences for leisure and tourism. Capitalise on CHC’s role as an environment statutory consultee to play a bigger role in decision making to safeguard the natural environment around the Cattewater and wider area. 	<p>Cooperation & Collaboration Education, Employment & Upskilling</p>



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Part 6: What's Next?

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This draft masterplan report is intended to be useful in a variety of ways.

- The snapshot it provides of the current state of the Cattewater can be used as a basis of evidence for readers seeking to gain a holistic understanding of the port, and act as a foundation for decisions on the future.
- The vision and objectives developed as part of the masterplan are navigational aids. They are concise statements that communicate the overall direction of choice for the harbour and adjacent land areas. When assessing the merits of individual decisions that would affect the harbour, the vision and objectives are markers to judge against.
- The assessment of strengths, weaknesses and opportunities, and potential drivers of change, reflects the current mood of consulted stakeholders when asked to consider the landscape in the present and looking ahead. This provides a starting point for intervention – it stands to reason that those wanting a bright future for the Cattewater should:
 - Play to its strengths
 - Seek to improve on its weaknesses
 - Make the most of opportunities
 - Act to ward off threats
- The future scenarios presented within this masterplan document are tools to provoke thought and spur action. They illustrate how decisions made now can lead to significantly different outcomes in the future.
- The actions and interventions proposed herein are not exhaustive, nor are they intended to be prescriptive, but they demonstrate ways in which the masterplan objectives could be met. The Cattewater as a harbour has no single entity with the power to dictate or enforce an overall direction – the way that it evolves will be the product of separate decisions made by the independent parties who own, operate or have influence around the harbour. If acting in concert, they can be expected to have a greater impact than acting separately, which is the reason that collaboration and cooperation have been selected as a core masterplan objective.

The masterplan development work completed to date makes clear that in the short, medium and long term, there is potential for significant change in the Cattewater and that such change will be necessary to achieve the masterplan vision. The following steps are recommended to continue the journey:

Further Public and Stakeholder Consultation

CHC is a proactive organisation when it comes to stakeholder engagement, which has been a significant input to the masterplanning exercise to date. It will be essential to continue this collaboration – in the short term as a direct review and evaluation of this document, and as an ongoing input to future decisions that are made on the Cattewater such as interventions to prioritise.

Policy and Government focus

To achieve the vision for Cattewater Harbour requires strong government support at local and national level. There is an opportunity for local MPs to fly the flag for the port, and for the port to feature in the City Council's decisions on economic development, planning policy and nature and conservation strategies. An update to the Plymouth and South West Devon Joint Local Plan is expected, and it is important that this updated policy considers the potential of the Cattewater.

Progress on interventions for study and implementation

Each of the interventions listed within this document will require a proactive effort to implement. Very few of them can be carried through by a single organisation or stakeholder, so ongoing consultation and collaboration will be required to first select interventions to prioritise and establish ownership of these. With action on the proposed interventions, it is more likely that the harbour will track towards the more positive and vision-compatible "Osmosis" or "Lighthouse" scenarios.

Interventions that ensure the right infrastructure is in place to support future growth are important to making Cattewater Harbour competitive by being an attractive location that is well serviced and well connected. These will however require investment and would benefit from further study, not least to establish feasibility and cost/benefit and assess the need for methods of delivery such as public/private partnerships or joint ventures between stakeholders. Each of these would be projects in their own right.



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Annexe A: Stakeholder Consultation

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Stakeholder engagement

Stakeholder engagement has been a core input to the masterplanning process to date and will be central to the success of the Cattewater in future. To date, as part of the foundation of this document, the following consultation has been carried out:

Stakeholder interviews

Cattewater Harbour Commissioners
Cattewater Harbour User Group
Plymouth City Council
Plymouth & South Devon Freeport
Offshore Renewable Energy Catapult
Cattedown Regeneration Ltd.
Victoria Group Ltd.
Aggregate Industries Ltd.
Cattedown Wharves Ltd.
Greenergy Fuels Ltd.
Valero Energy Ltd.
Destination Plymouth
University of Plymouth

Workshop 1 – Vision Refinement and Identification of Uncertainties

Cattewater Harbour Commissioners
Plymouth City Council
Aggregate Industries
Yacht Haven Group
Mount Batten Centre
RYA West
University of Plymouth
Offshore Renewable Energy Catapult
Cattedown Regeneration Ltd.
Victoria Group

Workshop 2 – Scenario Mapping and Exploration of Options

Cattewater Harbour Commissioners
Plymouth City Council
Aggregate Industries
Yacht Haven Group
Mount Batten Centre
RYA West
University of Plymouth
Plymouth & South Devon Freeport
Victoria Group
Kings Harbour Master
Duchy of Cornwall
Greenergy Fuels Ltd.

We are grateful to all those who have contributed and encourage these individuals and organisations, and others, to continue their invaluable support and contribution to the Cattewater in future.

The following sections of this annexe present a condensed output of Workshops 1 & 2, which informed the drivers of change and scenarios presented in the main body of this report.

A2 Drivers of Change

Drivers of change are things which will have a significant influence on how the future will look. It is important to understand drivers that are specific and relevant to the Cattewater to ensure the credibility of any future scenarios that are envisaged.

A workshop was held with port stakeholders to identify and explore factors that could affect Cattewater Harbour in the future. The drivers of change were grouped into Social, Economic, Environmental, and Political categories and workshop participants were asked to consider them in terms of their importance and the level of confidence in their outcome. The result of this assessment is shown on the grid to the right.

It can be expected that the important drivers of change are more likely to influence the future of the Cattewater. Those that are uncertain could lead to a diversity of plausible future scenarios depending on how they pan out. The most important and uncertain drivers of change, shown in the top right of the figure opposite, can be considered critical uncertainties.

The likelihood of an outcome can of course be influenced by people taking action to steer the Cattewater in a particular direction – understanding the interplay between drivers of change and possible future scenarios will help to guide the Cattewater towards outcomes that are more aligned to the masterplan vision and objectives.

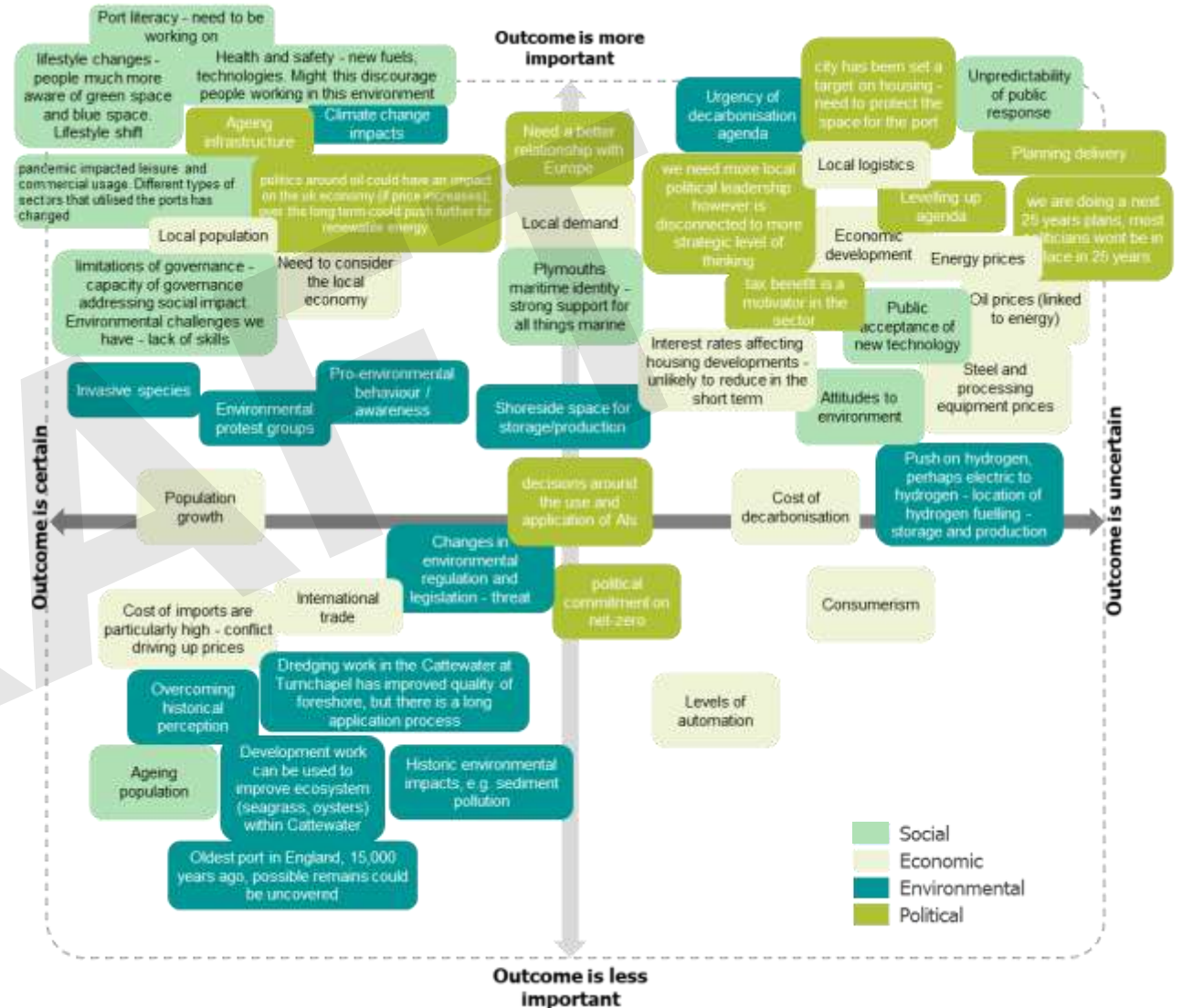
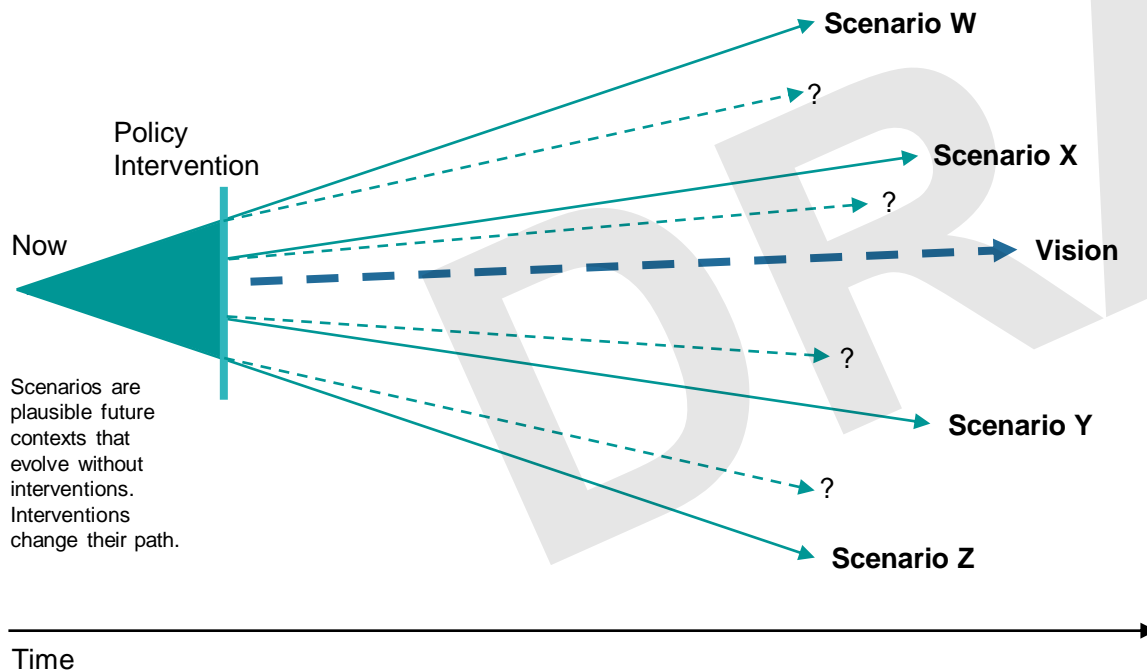


Image: Cattewater Harbour Commissioners

Scenarios are stories about the future. They do not mean that these things will come to pass or that they are the only scenarios, their purpose is to help understand change and actions and the extent to which potential interventions (such as those included in the Masterplan Report) could deliver the intended outcomes if one or more of the plausible futures eventuated.

Scenario planning is an industry recognised technique that involves the imagining of plausible futures, the driving forces that may lead to those futures (which are outside of the control of CHC), and their consequences. They are used to explore the deep uncertainty that we face in our decision making. It is a useful technique to explore multiple depictions of the future that may eventuate.

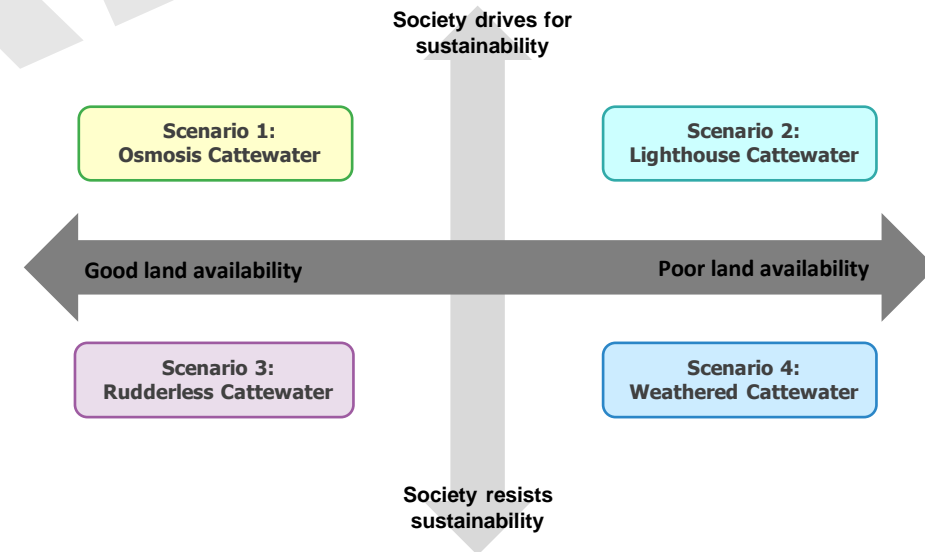
Four possible future scenarios have been created based on the drivers of change and the SWOT assessment presented in Section 4.



When considering drivers of change, focus was placed on those considered the most uncertain and most important from the long list of drivers. These were brought together to form two critical drivers:

- **Acceptability of pro-sustainable solutions:** The current trend is of society becoming more climate conscious and wanting to see environmentally conscious development, which aligns with the vision for the harbour. The extent to which this continues will have a significant impact in helping or hindering sustainable development for the Cattewater.
- **Land availability for port uses:** Port and harbour related businesses will always be in competition for space with other land uses. Increased competition might see port operations being displaced by more lucrative land uses such as residential, while specific policy focus and intervention could tip the balance the other way.

These two critical uncertainties have been combined to create four plausible future scenarios, as shown below. These can be seen as directions that Cattewater Harbour could be pulled in (without any intervention, i.e. based on exogenous factors). However, decisions or interventions, for example through policy or investment, can influence the likelihood of a scenario occurring and thus steer the Cattewater towards a particular future.



A4 Scenario 1 – “Osmosis” Cattewater

Society drives for sustainability, and there is good land availability for port operations

What does this future look like?

Relatively available land around the harbour has enabled expansion of shore-side developments for vital storage and production needs, keeping residential developments away from critical port areas.

Strong societal acceptance levels of pro-sustainable solutions have encouraged collaborative innovations that benefit harbour stakeholders and surrounding commercial and residential developments as well as regional employment and academic institutions through innovative sea and wind technological hubs and opportunity spaces.

Sustainable solutions, initiatives, and technological innovations have been able to flourish at Cattewater harbour due to affordable land costs that have enabled the development of storage facilities for non-fossil fuel energy production means and storage as well as servicing ship needs on the waterside.

Environmental preservation indicators are all green, which has encouraged leisure and commercial activities in and around the port, water and land-based activities are thriving, from sailing to aquaculture.



Land use plots are indicative of the potential make-up of the site under this scenario and do not represent a committed or agreed plan.

How would this future meet the grouped vision themes?

Theme	Compatibility	Description
Education, Employment & Upskilling	Strong	Port is a provider of jobs. Upskilling and academic ties are reinforced by focus on innovation and technology.
Decarbonisation & Operations	Strong	Alternative energy sources play a large part, while cargo diversification is supported.
Cooperation & Collaboration	Strong	Key stakeholders and the public are working in the same direction

A5 Scenario 2 – “Lighthouse” Cattewater

Society drives for sustainability, but there is poor land availability for port operations

What does this future look like?

Economic developments have pushed the cost of land around the harbour up, which has restricted expansion opportunities for Cattewater business owners and local stakeholders. Housing developments which are perceived to maximise high land value have been endangering valuable port space.

Collaboration and cooperation between harbour stakeholders has increased as a direct reaction to high land costs, which has helped improve the mutualisation of shore-side resources such as land and various port infrastructures necessary for storage and production needs.

Strong societal support for the decarbonisation of port activities has enabled Cattewater Harbour to develop a marine energy demonstration park, which now provides clean power to surrounding residential and commercial properties as well as ships. This has also increased tourism levels, academic research, and upskilling opportunities for all levels of job profiles linked to sustainable technologies.

Environmental markers such as endemic marine life and pollution levels have all improved since a strong sustainability led approach for the harbour has been adopted by CHC, with the support of stakeholders and the wider public.

How would this future meet the grouped vision themes?

Theme	Compatibility	Description
Education, Employment & Upskilling	Strong	Port is a provider of jobs. Upskilling and academic ties are reinforced by focus on innovation and technology.
Decarbonisation & Operations	Medium-Strong	This scenario makes positive steps towards decarbonisation, but cargo operations are threatened
Cooperation & Collaboration	Strong	Stakeholders and the public are working together to safeguard the port against external pressures.



Land use plots are indicative of the potential make-up of the site under this scenario and do not represent a committed or agreed plan.

Society resists sustainability, but there is good land availability for port operations

What does this future look like?

Low land costs have enabled port stakeholders to continue developing their commercial entities with little need to cooperate and share shore-side resources, often leading to fragmented land use and duplication of services and infrastructures.

Low societal acceptability of pro-sustainable solutions has hindered the development of clean energy production and storage facilities around the harbour as residents push for more housing developments to be built on the available land with little regard for the needs of the port. Academic institutions who wish to test decarbonisation research must fight for access to land with everyone else.

Lack of collaboration from stakeholders and the public on issues linked to climate change means Cattewater harbour and the surrounding area have been unable to develop a strategic approach to ensure resilience and adoption of sustainable alternatives, an assortment of fossil fuel and new technologies are being used with little coordination.

Environmental indicators are all amber or red, local marine life is endangered by invasive species and increasing polluted waters due to local de-regulation of sustainability measures. Tourism and leisure activities are suffering from increased pollution levels.

How would this future meet the grouped vision themes?

Theme	Compatibility	Description
Education, Employment & Upskilling	Weak	Cattewater is no beacon of education and upskilling, nor is it a centre of employment, in this scenario.
Decarbonisation & Operations	Weak	Progress on decarbonisation and clean energy is hampered.
Cooperation & Collaboration	Weak	There is little common action between stakeholders.



Land use plots are indicative of the potential make-up of the site under this scenario and do not represent a committed or agreed plan.

Society resists sustainability, and there is poor land availability for port operations

What does this future look like?

High land cost has priced out Cattewater harbour stakeholders, residential and tourism /commercial developments are asphyxiating historical port activities and Plymouth’s maritime identity.

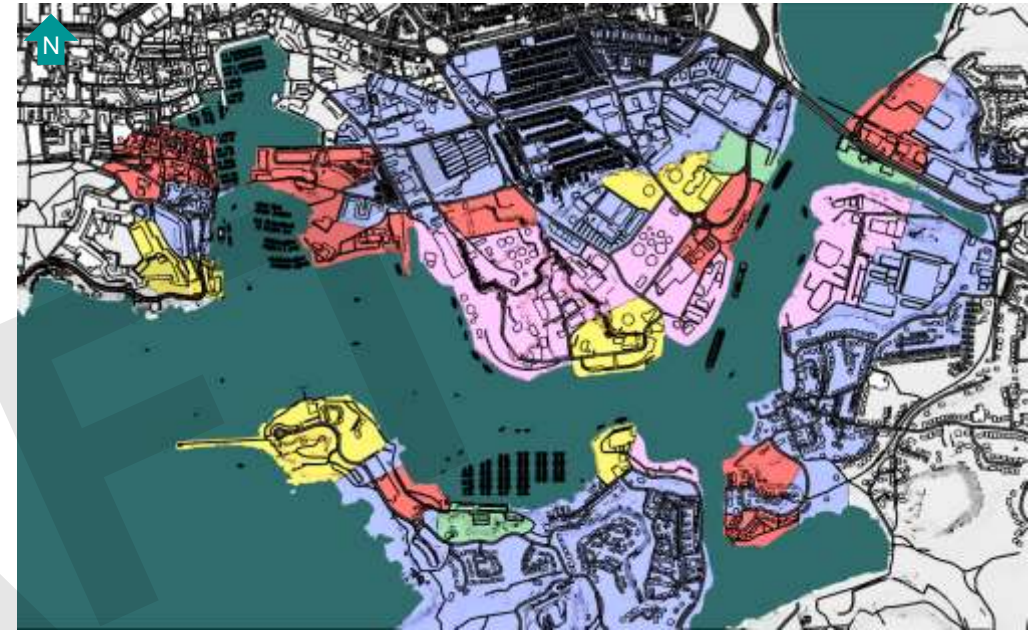
Low societal acceptability of pro-sustainable solutions has hindered the development of clean energy production and storage facilities around the harbour as residents push for more housing developments to be built on the available land with little regard for the needs of the port. Academic institutions who wish to test decarbonisation research must fight for access to land with everyone else.

Victorian port infrastructure is rapidly degrading as there is little collaboration with regards to surrounding land use, lack of joint investments concerning shore-side activities that require large land access for storage and production is penalising certain industries.

Environmental markers are amber or red and reflect local de-regulation of sustainability measures, which has endangered local marine life enabling invasive species and increasingly polluted water levels. Tourism and leisure activities in the harbour are suffering from increased pollution levels.

How would this future meet the grouped vision themes?

Theme	Compatibility	Description
Education, Employment & Upskilling	Weak	Reduced contribution to employment in the southwest. Little value added to upskilling and education.
Decarbonisation & Operations	Weak	Port-related operations are being replaced. Environmentally sustainable operations are hindered.
Cooperation & Collaboration	Weak	There is little common action between stakeholders.



Land use plots are indicative of the potential make-up of the site under this scenario and do not represent a committed or agreed plan.