

MONTROSE PORT MASTERPLAN

CONSULTATION DRAFT

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Glossary of acronyms

CD	Chart datum
CTV	Crew transfer vessel
EV	Electric vehicles
FTE	Full-time equivalent (jobs)
GVA	Gross value added
GW	Gigawatts
HVO	Hydrotreated vegetable oil
HM	Harry Maiden
INTOG	Innovation and targeted oil and gas (leasing round)
MAS	Mooring and anchor systems
MPA	Montrose Port Authority
MPIP	Montrose Port Industrial Park
MW	Megawatts
NPF	National Planning Framework
O&G	Oil and gas
O&M	Operations and maintenance
OB	Optimism bias
OBC	Outline business case
OSV	Offshore support vessel
RDF	Refuse-derived fuel
SAC	Special Area of Conservation
SEPA	Scottish Environment Protection Agency
SOC	Strategic Outline Case
SOV	Service Operation Vessel
SSE	Scottish and Southern Energy
SSSI	Site of Special Scientific Interest

1. INTRODUCTION

Introduction

This is the Consultation Draft Masterplan for Montrose Port. It provides a blueprint for the physical development of the port through the creation of new marine infrastructure and other measures. It takes a long-term perspective of the port's potential, taking into account the needs of existing users, and opportunities over the next few decades. It gives particular consideration to the synergy between this and flood protection for the town.

Montrose Port Authority (MPA) operates as a Trust Port. It is an independent statutory authority which does not have shareholders or owners, and it serves to benefit port users and other stakeholders, including the local community.

Montrose has a long history as a trading port dating back to the 12th century, and this continues to the present day. As well as handling grains, fertilisers and other cargo, Montrose is now established as a major hub for supporting offshore oil and gas activity, and increasingly offshore wind farms.

The port has substantial marine assets (over 1,000 metres of sheltered berthing), in addition to real estate (around 41 hectares) for warehousing, offices, light industrial and laydown areas.

Montrose Port

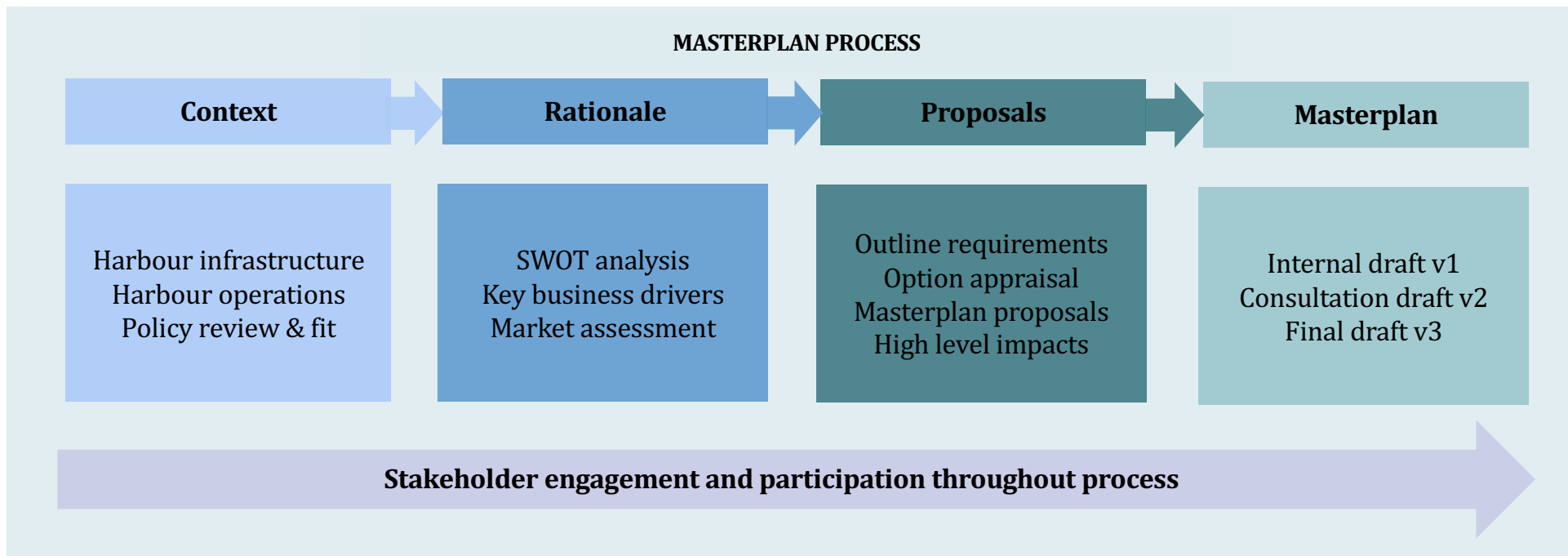


Masterplan methodology

A port masterplan sets out the physical strategy for the business. The masterplan should be built around the needs of users and other stakeholders, while taking account of future business opportunities as well as the national, regional and local policy landscape.

A successful masterplan must be built on a sound understanding of the current situation, the issues faced, likely risks and threats, and market opportunities and potential for the port to capture them. As a result, stakeholder engagement and participation has been at the heart of this masterplan. This has highlighted the importance of sustainability, balance, environmental concerns and community impact when considering all proposals.

This masterplan is aligned with the UK Department for Transport's Guidance on the Preparation of Port Masterplans and the HM Treasury Green Book and Better Business Case 'Five Case Model' advice. The latter sets out the stages for taking forward significant strategic investment proposals, and this masterplan is consistent with the first stage (the "Strategic Outline Case").



Masterplan structure

The structure of this masterplan is consistent with the requirements for a Strategic Outline Case (SOC) with a focus on the Strategic Case (Foundation), initial input relating to the Economic Case (Masterplan Proposals and Economic Impacts) and Management Case (Implementation) – see right.

This masterplan provides a blueprint for the physical development of Montrose Port over the next 20 years and beyond.

The masterplan will enable Montrose Port to continue to support existing operations, attract new business and respond to changing markets over time. Furthermore, the plan will aim to future-proof the port as a vital economic driver and community asset for Montrose and wider region.

Introduction

- Masterplan process
- Structure

Foundation

- Strategic context
- Market assessment
- Key drivers and business needs
- Policy focus
- Outline requirements

Masterplan Proposals

- Masterplan proposals
- Illustrative costs

Economic impacts

- High level overview of potential economic impacts

Environmental Considerations

- Summary of environmental aspects

Implementation

- Project plan and key steps
- Stakeholder engagement
- Funding

2. FOUNDATION

Overview

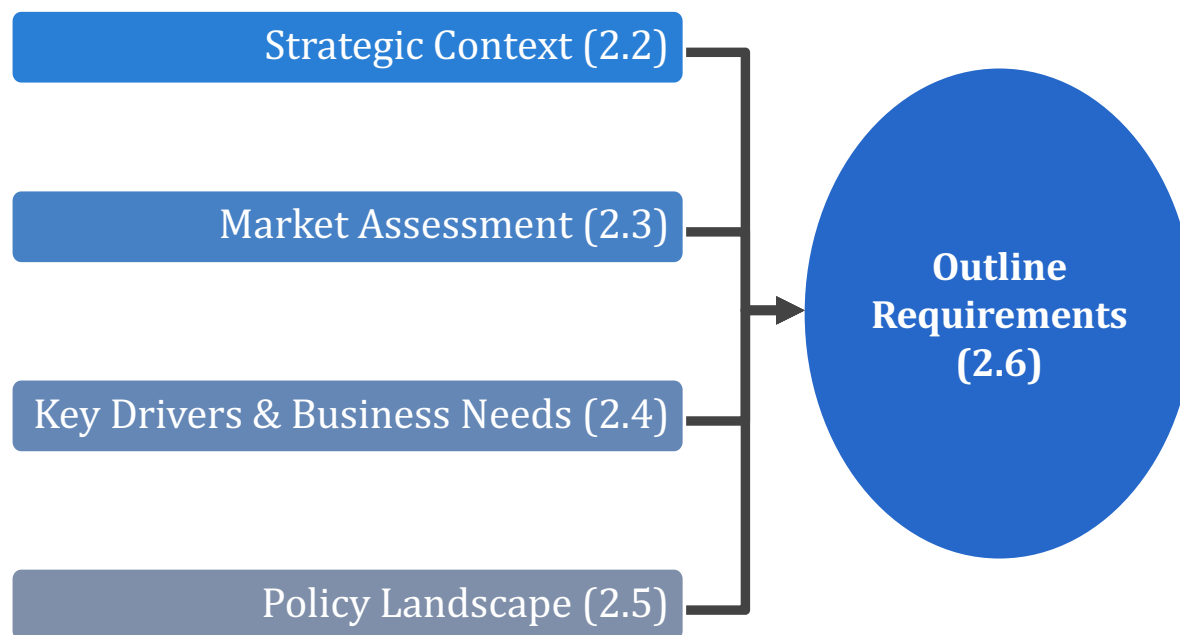
The foundation for the masterplan sets out the strategic case and compelling rationale that underpins the proposals.

This section explains the basis for this in terms of:

- The strategic context for Montrose Port in terms of where it is and what it does.
- The market opportunities that present themselves in the locale.
- The key drivers and business needs as these relate to port business and its stakeholders.
- The local, regional and national policy landscape within which Montrose Port operates.

These are brought together in a statement of what the masterplan should deliver, namely the Outline Requirements.

Building blocks



Montrose Port

Montrose Port is built along the shore of the River South Esk which forms a natural harbour.

The western end of the port is defined by the road bridge for the A92, followed by the rail bridge for the mainline northeast link between Dundee and Aberdeen.

By road, Montrose lies 28 miles north of Dundee and 37 miles south of Aberdeen. Montrose railway station is less than a mile from the port on the north side of the River South Esk.

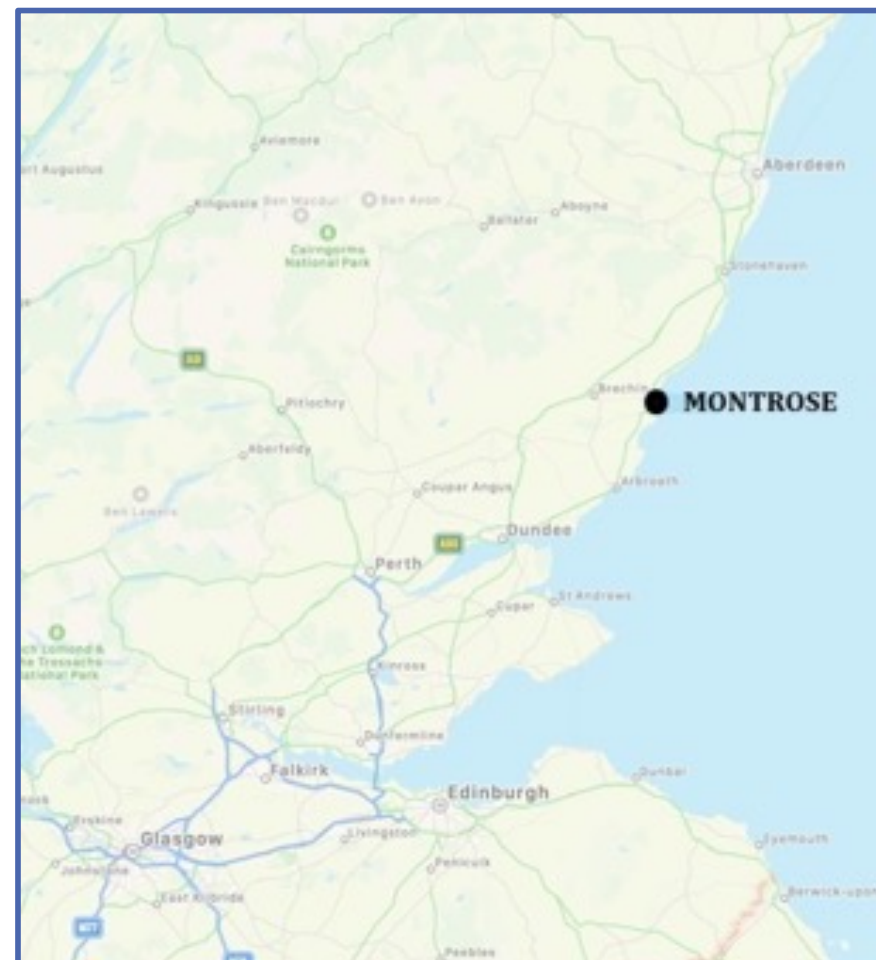
Upstream of the road and rail bridges lies the Montrose Basin. This is a tidal basin which is designated as a Site of Special Scientific Interest (SSSI) and managed by the Scottish Wildlife Trust as a wildlife reserve.



Source: Google Maps

Geographical location

Montrose is well located on the east coast to service oil and gas developments and wind farms in the North Sea.



Source: OpenStreetMap

Harbour facilities

Montrose Port provides marine facilities for the oil and gas sector, offshore wind, general cargo and other offshore services.

The port has eight operational berths and a further three that require rehabilitation (berths 9, 10 and 11), see map opposite.

Key port facilities include:

- 1,000 metres of berths up to a depth of -8 m CD
- 130,000 m² of open storage space
- 42,000 m² of warehousing space
- 3 x heavy lift pads
- over 2,000 m² of office space

The navigation channel is dredged to depth of -5 m chart datum (CD) with a width of 50 metres.

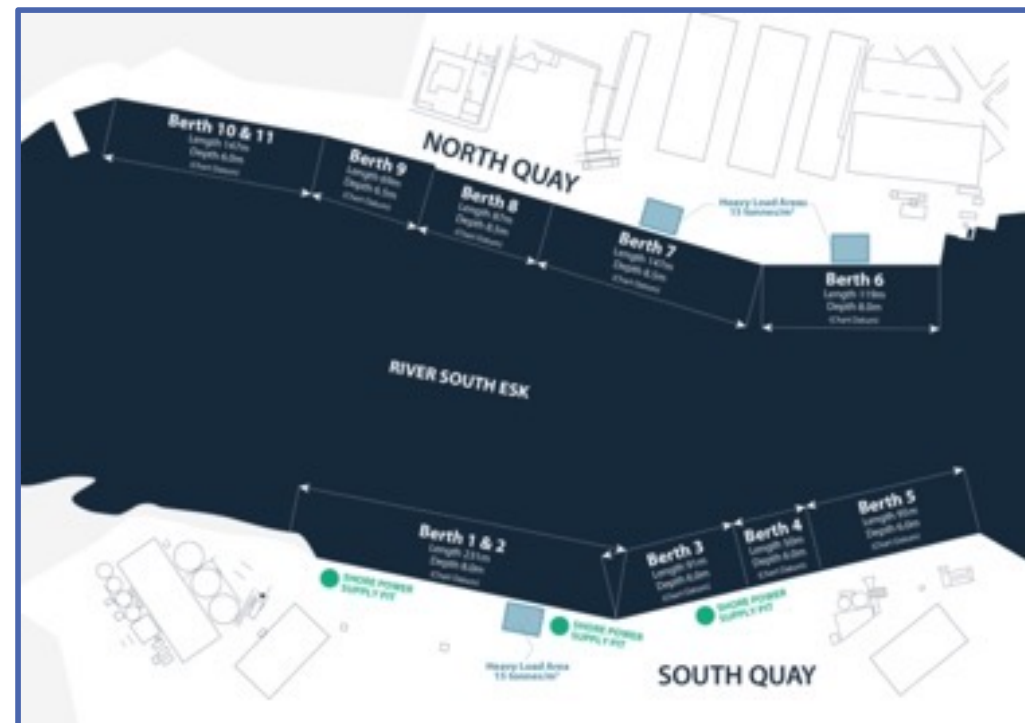
Shore power is already available at berths 1, 2 and 3, which was a first for a Scottish port. MPA are in the process of rolling it out to other berths.

In addition to the port estate either side of the channel, MPA own a 10 hectare site (former Petrofac site) at the north end of the town. This site is being developed as Montrose Port Industrial Park (MPIP).

MPA also own an 8 hectare site on Charleton Road adjacent to MPIP.

The South Quay is mostly used for mooring and anchor systems storage and operations (MAS), and offshore wind support activities, but there are also grain silos to the western end.

The North Quay is largely used for general cargo, bulks and project work.



Source: Montrose Harbour Authority

Harbour activity

Montrose is an active port with around 600 vessels calls per year, two thirds of which are offshore oil and gas and offshore renewables related, with the remainder being commercial cargo vessels.

Mooring and Anchor Systems (MAS)

Montrose is the largest mooring and anchor systems port globally, providing services to offshore oil and gas as well as renewables.

Offshore Wind

Montrose is established as an O&M base, supporting both the Seagreen (1.1 GW) and Inch Cape (1.1 GW) offshore wind farms.

Oil and Gas

Several companies supporting the oil and gas sector are established in Montrose, with substantial volumes of oilfield equipment, subsea components, machinery and pipework stored at the port.

Decommissioning

MPA have recently invested in a designated decommissioning base where offshore equipment can be broken down for cleaning and processing.

General Cargo

Montrose has a number of grain silos with a drying facility, and a fertiliser bulk-breaking operation. In addition, there has been significant trade in animal feed, refuse-derived fuel (RDF), timber, oilfield pipe and fuels.

Traded volumes through the port are substantial, with imports of 323,592 tonnes and exports of 221,238 tonnes in 2022-23.

Overall impact

Montrose Port Authority had an annual turnover of around £9 million (2023-24) up from just under £8 million in the previous year. As a Trust Port, all profits are reinvested in the business; both physical infrastructure and staff development.

The port is a major contributor to the local and regional economy. In terms of its direct and indirect impact, the port sustains an estimated 384 full-time equivalent jobs¹. This equates to a net contribution of £36.4 million per year to Scotland's gross value added.

MPA have a strong commitment to sustainability. In addition to shore power for berthed vessels, EV chargers have been installed across the port estate and all MPA vehicles and plant are either electric or can take HVO (hydrotreated vegetable oil). Plans for installing solar panels and other renewable energy sources on the port estate are being discussed.

1. Economic Impact Study, August 2023

Market outlook summary

Activity at the Port of Montrose centres around four main sectors:

- Offshore wind
- Oil and gas field support
- Decommissioning support
- General cargo

In addition, there is potential to develop cruise and the supply of new fuels.

The outlook for existing business is for high growth in many of the sectors (see figure opposite).

Montrose is well positioned to capitalise on this growth. However, there are some issues that need to be addressed to maximise the growth potential in the port, and these issues are targeted in this masterplan.

Sector	Outlook	Issues
Offshore wind O&M	High growth potential. Great potential for Montrose to be an O&M base for a further 7 wind farms. Increasing support from 2.6 GW to 16 GW.	Need additional pontoons for Crew Transfer Vessels (CTV) and berths for Service Operation Vessels (SOV). Warehousing and office space also needed. Deeper channel of benefit.
Offshore wind construction	High growth potential. Strong potential for Montrose to increase activity with range of support vessels and chain and anchor work from Montrose.	Need additional berths, laydown area and warehousing. Deeper channel and quays of benefit.
Offshore wind decommissioning	High growth potential after 2040. Strong potential to develop as a wind decommissioning hub with refurbishment, repair, recycling and waste-to-energy. Potential to develop in conjunction with ZeroFour site.	Need additional quayside and laydown area.
Oil and gas support	Some growth in short run, but overall decline. Montrose could capture additional overflow work in short to medium-term.	Additional quayside and laydown area of benefit. Deeper channel and quays of benefit.
Oil and gas decommissioning	High level of activity over next decade. Opportunity to capture some additional volumes.	Need additional laydown area. Deeper channel and quays of benefit.
Trade in bulks	Potential gradual decline in some areas, with continued volatility. Montrose could maintain existing volumes.	Deeper channel of benefit.
New fuels	Uncertainty in short to medium term. Scope for Montrose to focus on key fuels for regular port users. Potential to expand shore power.	Need additional space for fuel bunkers and fuelling/charging points.

Offshore wind overview

While offshore wind has been under development for many years in Scotland, there is still much to do.

The offshore wind capacity slated for development in Scottish waters totals 40 GW. Of this, only some 3 GW is operational, and over 32 GW of offshore wind farms came in under the latest ScotWind Round (2022) and INTOG programme¹.

Development of these later wind farms are expected to start towards the end of this decade, with the first becoming operational from 2032 onwards. Of the total 40 GW, over three quarters are off the east coast, with much of it close to Montrose.

Port requirements for offshore wind

Port requirements differ between the construction and O&M phases.

Construction phase

Turbines are now up to 15 MW and getting larger. This means blade lengths of over 100 metres and nacelles of over 700 tonnes. A construction base port needs deepwater quays and large laydown areas for marshalling components and possibly fabrication yards.

In addition to the big construction vessels being used, large numbers of smaller vessels (survey vessels, anchor handlers, CTVs, SOVs, etc.), are needed and these also need a home port.

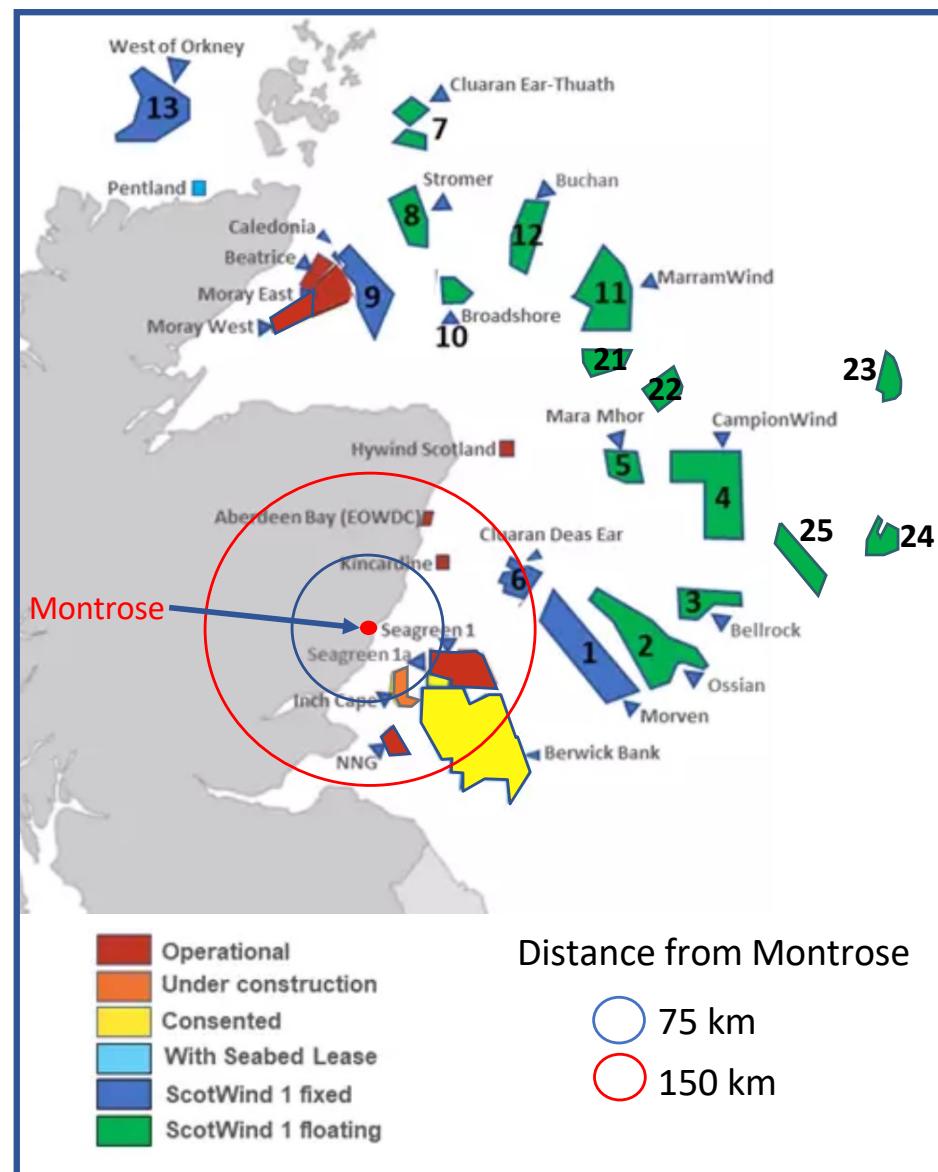
Operations and Maintenance (O&M)

O&M operations need berthing for their vessels and warehousing, office space and laydown areas. The types of vessels are:

- **CTVs:** take crew out each day to near shore farms (c.<75km). CTVs are small and can berth at pontoons.
- **SOVs:** service more distant farms, taking up to 60 crew and wind technicians out for 2-3 week rotations. SOVs are larger and need a quay for berthing.

INTOG: an initiative supporting decarbonisation of offshore oil and gas facilities through small and medium-scale developments including offshore wind.

Offshore wind farms under ScotWind and INTOG



Offshore wind potential targets

Montrose Port has already been chosen as an O&M support base for two offshore wind farms (Seagreen and Inch Cape). As one of the nearest ports, Montrose is also well placed to provide a base for the Berwick Bank development of some 4.2 GW.

In addition, as an established O&M port, Montrose has potential to provide a base for farms further away, where it has little or no distance advantage (or disadvantage) over other ports, in particular Aberdeen and Peterhead. These potential targets include:

• Morven	2.9 GW
• Ossian	3.6 GW
• Bellrock	1.2 GW
• Champion Wind	2.0 GW
• Cenos Offshore Windfarm	1.4 GW
• Cerulean Winds Cedar Project	1.0 GW

In total, Montrose Port could target over 16 GW of wind farm, representing a six-fold increase on current commitments. However, any significant expansion would require additional berths and warehousing space.

Offshore wind requirements

There has been a substantial shortage of port facilities across Scotland for all types of support for offshore wind from construction through to O&M.

Much work has been undertaken in this area to identify what is needed. A key study undertaken by Arup for Crown Estate Scotland concluded that for O&M support:

“... there are existing facilities that are adequate for both CTV and SOV based O&M.”

However, *“the industry collectively should consider;*

- *Development of additional capacity at the likely hub locations where multiple projects could be based.*
- *Development of shared O&M facilities and infrastructure.*

Montrose is already the O&M port for two offshore wind farms, and is well located to capture many more. Montrose is then clearly one of these hubs that should be developed, with shared facilities and infrastructure that could raise efficiency and capture economies of scale.

There is also great potential for Montrose to expand work as a support base for the smaller vessels used in construction operations.

Oil and gas related activities

UK oil and gas reserves have been in decline for over two decades, production has been falling and is now around two thirds below its peak. However, output has been relatively stable since 2012 due to a combination of relatively high oil prices and advances in enhanced oil recovery techniques.

Montrose is a well-established port for supporting the O&G sector, especially through its chain and anchor services.

O&G related activities at Montrose Port are expected to be maintained in the short-term, but are then expected to decline.

As this decline takes place, two areas of related opportunities continue to develop: O&G decommissioning (see opposite) and mooring and anchor systems (MAS) services for floating offshore wind.

Mooring and anchor systems

There are two established MAS providers, Intermoor and First Marine Solutions (FMS), based in Montrose, making it the leading MAS port globally. It is expected that any decline in oil and gas work, will be more than offset by the need for MAS for floating offshore wind. For floating offshore wind farms, MAS services are on a larger scale; chains are bigger in diameter (220mm rather than 84mm) and anchors heavier (40 tonnes versus 18 tonnes).

The volumes are also substantial in comparison to O&G mooring equipment. Estimates by ORE Catapult¹ indicate that offshore wind farms in Scottish waters will require some 3,500 km of chain and 4,800 anchors by 2050, with most of this market being addressable from Montrose.

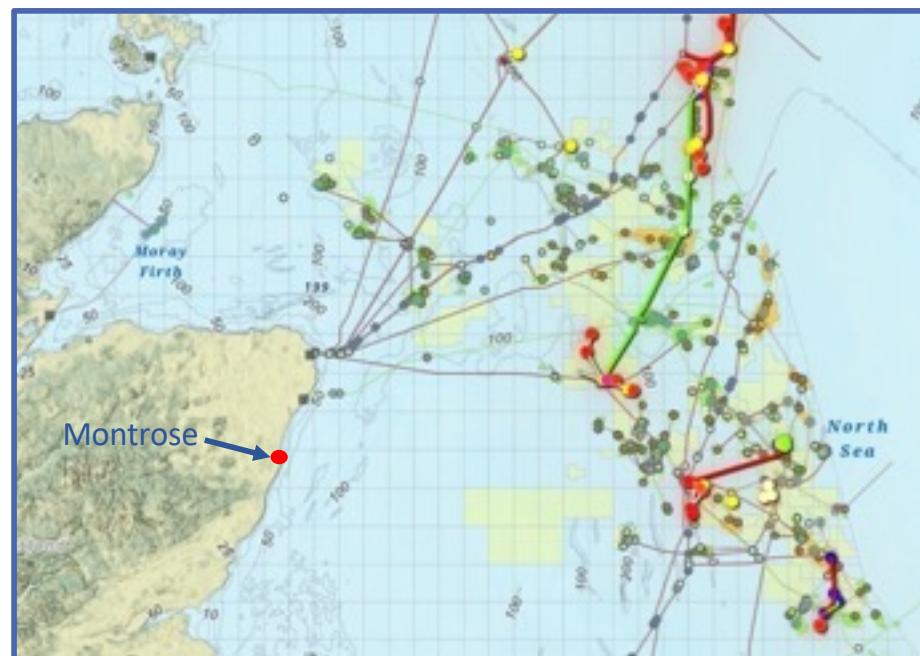
1. Mooring and anchoring systems – market projections, ORE Catapult 2021

Decommissioning

Decommissioning of oil and gas assets in the UK continental shelf has been underway for over a decade as some 375 offshore oil and gas installations are brought out of service by 2040. Decommissioning investment from 2025 to 2040 is estimated at around £38 billion.

Montrose is well located to support decommissioning (see map below of offshore O&G assets). This can be either acting as a home base for support vessels or using its new decommissioning base for taking in large parts for dismantling, or cleaning and processing.

In the longer-term there will be a need for wind farm decommissioning, as well as support for re-powering of turbines.



Source: NTSA Arcgis mapping and dataset



Cargo

The overall outlook for cargos is for no change in some key areas (e.g. grains), and decline in others (see below).

Cargo	Outlook
Fertilisers	May decline if/when excess electricity used to produce ammonia-urea.
Grain	No change. Continue to be volatile.
RDF	May decline if re-use and recycling improves.
Fuels	Decline as electricity use increases, but fragmented market.
Potash	Move in line with general fertilisers.
Wood products	No change. Continue to be volatile.
Pipe and steel	Decline with O&G activity at Montrose.
Animal feeds	No change. Continue to be volatile.

Decarbonisation and new fuels

The switch away from fossil fuels in the maritime sector has been slow. The options for the core fleet using Montrose will probably be electric and green hydrogen-ammonia, though this is far from certain. Flexibility in terms of ducting and space for bunkers is then required.

Montrose are already investing in shore power and are looking at generation of renewables across their estate. There may also be potential for local production of green hydrogen-ammonia using excess power generation from nearby wind farms, with bunker supplies for vessels at the port.

Cruise

The cruise sector is largely untapped at Montrose due to lack of infrastructure. This is a strong and growing market, especially for the smaller vessels (expedition and exploration sized) which are more suited to Montrose.

Montrose has potential to develop as a cruise call port for small to medium-sized vessels, touring the east coast. There is a good range of nearby attractions including Montrose Golf Links, Langley Park Gardens, Dunninald Castle, House of Dun, Montrose Air Station Museum and beaches.

Attracting cruise calls can have a broad economic impact beyond the usual reach of the cargo and energy-related activities at the port.

Cruise vessels prefer to berth alongside rather than tender passengers ashore. Given the right infrastructure there is strong potential to attract vessels and develop broad community-based offering for passengers.

Market opportunities summary

Offshore
wind O&M

High long-term growth outlook

Build on two existing O&M bases

Great potential to service more wind farms

Offshore
wind
construction

High growth outlook

Scope to expand as base for construction support vessels

O&G
support

Strong base but medium to long term decline

Natural transition to wind farm support: e.g. mooring and anchor systems

O&G
decomm

Strong short to medium term outlook

Scope to expand activities with decomm facility

Cargo trade

Strong base with mixed outlook across commodities

Scope to expand in some areas but constrained

Cruise

Strong and growing market always looking for new ports of call

Montrose has a high level of largely untapped potential

Role of stakeholder engagement

Extensive stakeholder engagement has been used throughout the development of the masterplan. In particular, in assessing the constraints and issues in and around the port, the market potential, and the options for developing Montrose Port.

The main stakeholder sessions have been:

- Initial discussions with MPA and stakeholders in April 2024.
- Follow-up discussions in May 2024.
- Optioneering workshops June 2024.
- Further discussions with MPA on constraints and options in July 2024.

Stakeholders have included most port users, as well as broader interested parties such as Scottish Enterprise, Angus Council, SSE Renewables and offshore wind farm developers.

The role of stakeholder engagement can be seen in the figure opposite which outlines the process of identifying options for developing Montrose Port.

Stakeholder engagement

Discussions with Montrose Port Authority

Stakeholder meetings

Identification of issues, constraints and market opportunities
Identification of outline requirements



Further stakeholder meetings

Optioneering workshops

Scoping of options for developing the port to meet the outline requirements



Assessment of options

Possible phasing

High level costs and impacts

Short list of options to be considered for inclusion in masterplan

Risk and threats

Montrose Port faces three significant threats which will have an impact across the town.

Flood risk

- Medium to long-term threat of coastal, river and surface water (see map opposite).
- Flood threat to the North quays at the port, parts of the town, GSK site and the railway station.
- Links Golf courses already being eroded.
- Currently a dynamic coastal defence strategy is being followed, but longer term, hard flood defences will be required.

O&G transition

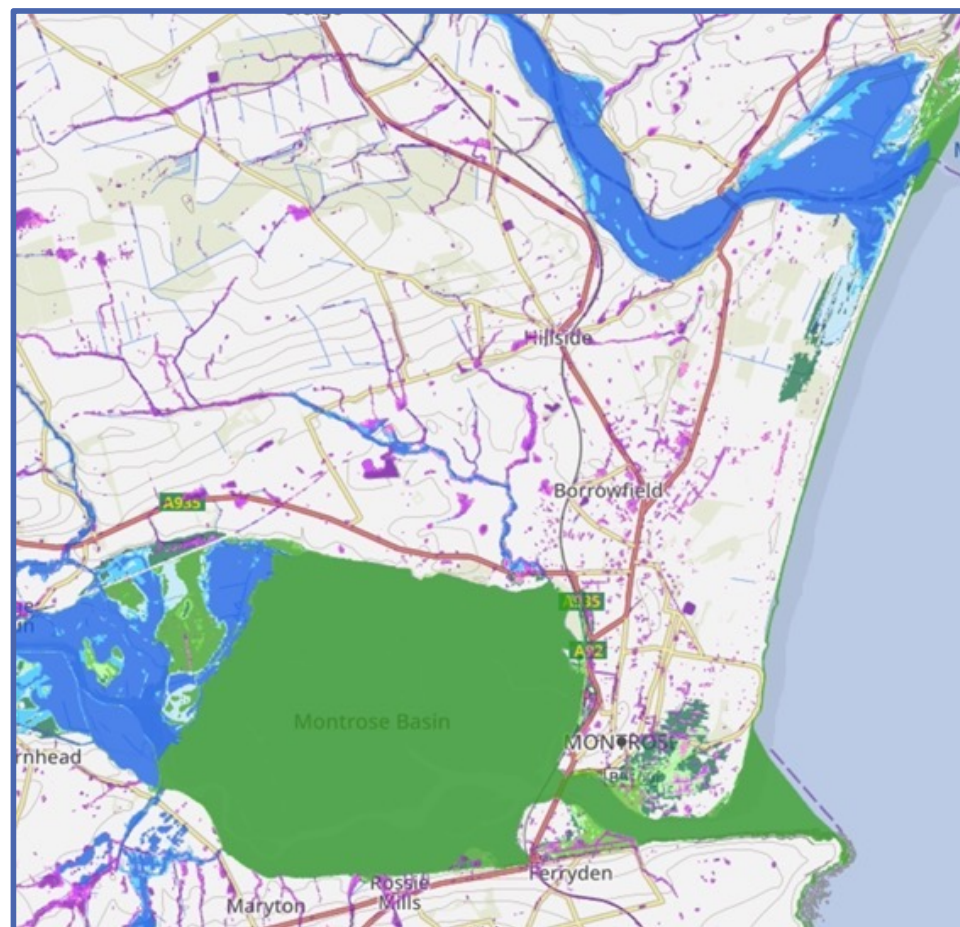
- The oil and gas sector could start to decline rapidly.
- The port needs to continue to service the O&G sector, including decommissioning, while supporting and the growing needs of offshore wind.

Competition

- Increasing competition for offshore wind support from other countries including Norway and Denmark, that could result in a loss to Scotland.

Flood risk

KEY					
Surface water		Coastal flooding		River flooding	
	High likelihood		High likelihood		High likelihood
	Medium likelihood		Medium likelihood		Medium likelihood
	Low likelihood		Low likelihood		Low likelihood



Source: Scottish SEPA flood maps

Key strength of Montrose Port - Staff

The stakeholder consultations showed that Montrose Port is well-run, competitive and accommodating.

The Harbour staff are seen as a major attribute for the port:



Other strengths

Trust port status is seen as giving the MPA an interest in supporting port users

Pilotage service is quick and efficient

Competitive pricing against other ports in the North East

Leading on the 'green agenda', as the first port to install shore power for vessels

Well-located to support oil and gas and offshore wind in the northern North Sea

Established as the leading port for chain and anchor work in the North Sea

An established operations and maintenance port for offshore wind

Rapid service and vessel turnarounds for all vessels

Opportunities at the port

Offshore wind O&M

- With rapid growth in offshore wind developments, Montrose has great potential to attract more O&M operators.

Offshore wind installation support

- Shortage of port capacity for construction support activities. Scope for Montrose to expand in this area, especially in mooring and anchor systems.

O&G decommissioning

- With high activity levels in the next decade, there is potential to attract more piecemeal decommissioning work.

Offshore wind decommissioning

- Scope for Montrose to develop a dedicated wind turbine decommissioning hub, supporting major repair, refurbishment, refits and recycling.

Drone port

- Potential to develop drone services from the port. Alternatively, they could be run from the old airfield (ZeroFour site) to the north of the town.

Wider opportunities

Supply chains

- Scope to fill gaps in the local supply chain through provision of workshops, warehousing and fabrication space, at or near the port.

Commercial Park

- Potential to link development of the former Petrofac site to marine activities. The site is now owned by the port and renamed Montrose Port Industrial Park.

ZeroFour site

- Potential to link with developments at ZeroFour site, currently owned by Crown Estate Scotland, for a range of activities: hydrogen production, engineering, wind turbine decom./recycling, equipment storage, etc.

Future fuels

- Opportunity to become a “zero-carbon” port, providing green ammonia-hydrogen and onshore power combined with own generation.

Flood defence

- The medium to long-term need to develop hard flood defences for the town could also deliver usable port infrastructure (e.g. berths and laydown area).

Maritime related issues and constraints

Berths

- Overall shortage of berths, especially during busy times.
- Limits the growth of port-related activity, especially to meet needs of offshore wind support.

Channel depth

- Access only possible for many vessels during high tide.
- Increasing numbers of offshore construction vessels cannot access the port as draught too high.

Channel width

- Restricts access to port for larger vessels.
- Sub-optimal vessel sizes used for cargos, adding to costs.

Quayside depth

- Restricts use of berths for larger vessels.
- Problem is increasing due to trend for bigger vessels.

Dredging

- Siltation of channel requires regular costly dredging to maintain access.
- Restrictions of when dredging can be undertaken (e.g. to avoid salmon smolting) puts access to port at risk.

Bunkering

- Limited to three berths, creating some delays and extra moves in port.
- Storage volumes relatively modest compared with demand and no capacity for future fuel mix.

Wider issues and constraints

Laydown area

- Shortage of space, which restricts expansion in activities at the port.
- Also adds to delays.

Warehousing

- Demand for more warehousing at and nearby the port.
- Bonded warehousing also wanted.

Supply chain

- Limited supply chain at Montrose adds to costs and project delays.
- Particular need for fabrication capability.

General services

- Great need for accommodation and suitable venue for training.
- Transporting personnel to/from Aberdeen adds to costs.

Road access

- A90 is good, but large loads struggle on the last 10 miles from Brechin.

Policy focus

Successful masterplans cannot be developed in isolation from existing policy, otherwise they do not provide a strategic fit and risk running into difficulties with permits and funding.

The key policies and programmes of relevance to developments at Montrose Port are summarised below.

Priority linkages with policies

The proposals outlined in this masterplan will contribute to the delivery of a range of local, regional and national policy objectives.

The key linkages relate to Montrose Port facilitating economic growth and promoting the transition to a net zero economy.

Scottish Programme for Government 2025-2026	Seizing the new economic opportunities presented by the Just Transition to cleaner energy and responding to the climate crisis.
Scotland's 10-year National Strategy for Economic Transformation	Includes the Hydrogen Innovation Scheme and ScotWind.
National Planning Framework 4 (NPF4) 2023	Focus on spatial strategy to support net-zero climate change commitments.
Climate Change Plan	Just Transition to a net-zero economy and society.
Crown Estate Scotland (CES) Corporate Plan 2025-2030	Includes ScotWind leasing for offshore wind, but also new market opportunities and investing in energy ports to unlock supply chain benefits.
Tay Cities Deal / Angus Fund Mercury Programme	Includes Montrose Port Skills Academy, road improvements to Montrose, development of ZeroFour Business Park and establishment of a Drone Port.
Angus Local Development Plan 2029-2039/2049	Implementation of the road improvements and ZeroFour site above.

Outline requirements and summary of beneficiaries

A set of outline requirements have been identified following the assessment of issues, constraints, market outlook and opportunities. These outline requirements represent what the masterplan should facilitate, and they fall into four categories each with their own set of beneficiaries.

Marine Access

Deeper channel

- Mooring and anchor systems services
- O&G support
- Offshore wind O&M
- Offshore wind development
- Bulk cargo

Flood protection

- All port users
- Parts of the town

Deepwater quays

- Offshore wind development
- O&G decom.
- Wind decom.
- O&G support

Infrastructure

Additional berths

- All offshore wind
- O&G support
- Mooring and anchor systems services

Additional pontoons

- Offshore wind O&M

Additional laydown area

- O&G decom.
- Mooring and anchor systems services
- Wind decom.
- Supply chain development

Superstructure

Additional warehousing

- Offshore wind O&M
- O&G support
- Supply chain development

Workshops and fabrication space

- All offshore sectors

Additional offices

- Offshore wind O&M

Training area

- All offshore operators

Other Requirements

Extension of onshore power

- All vessels and sectors

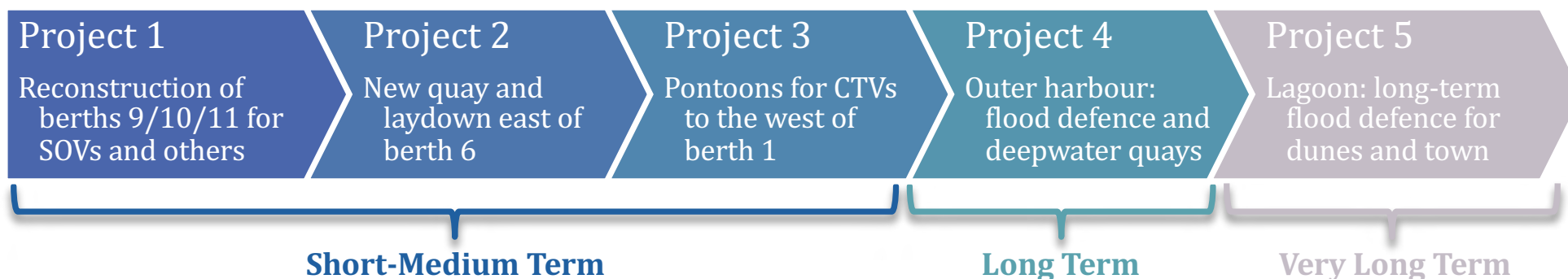
Accommodation

- Offshore wind O&M
- O&G decom.
- Other offshore project work

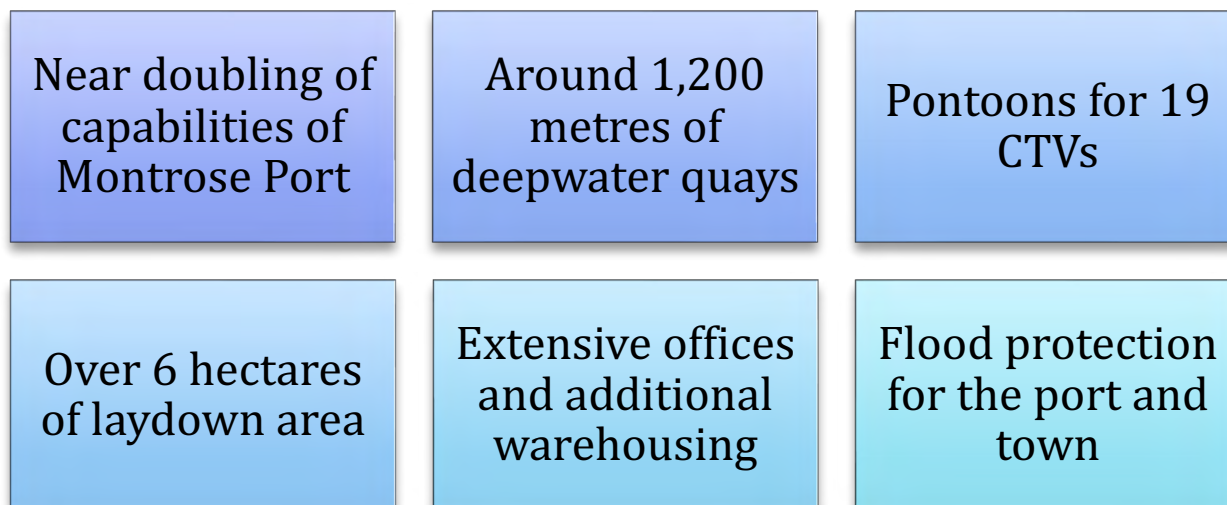
3. MASTERPLAN PROPOSALS

Overview

The masterplan prioritises three projects for developing the capacity of Montrose Port to serve its users and capture growing business opportunities, especially in offshore wind support. Projects 1, 2 and 3 are focussed on maximising use of the existing harbour, while Project 4 is for development of an outer harbour. In the very long-term there is then scope for a lagoon (Project 5) which gives a high level of protection from sea flooding due to erosion of the sand dunes.

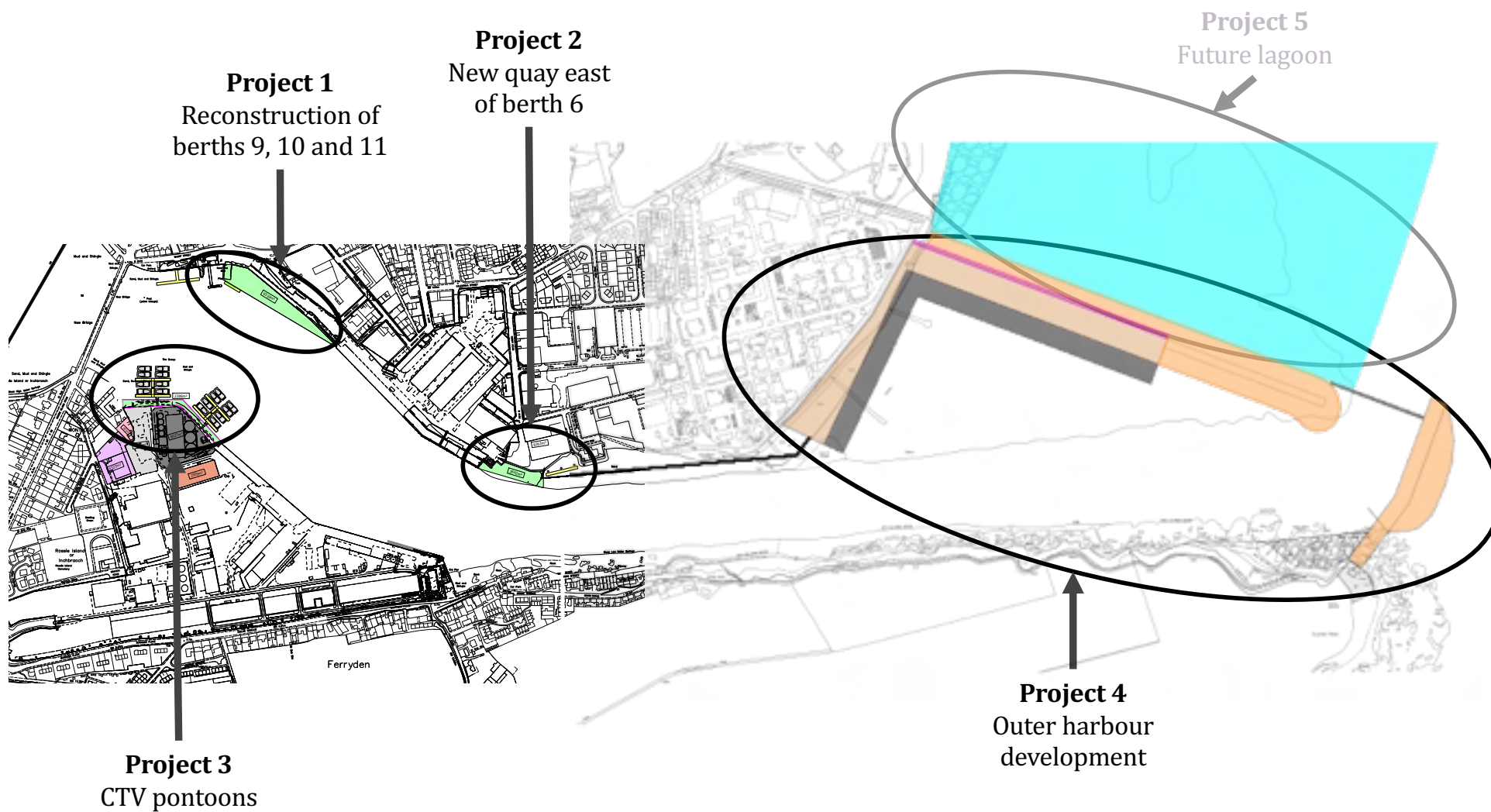


Summary of deliverables



Location of projects

Projects 1, 2 and 3 are located inside the existing harbour, while the Projects 4 and 5 are at the mouth of the South Esk.



Meeting the outline requirements

Combined with some existing developments around the port, Montrose Port Industrial Park and Charlton Road site, this masterplan will deliver on all of the outline requirements.

Deeper channel

Flood
protection

Deepwater
quays

Additional
berths

Additional
pontoons

Additional
laydown area

Additional
warehousing

Workshop &
fabrication
space

Offices

Training facility

Accommodation

Socio-economic
benefits to town

Project 1: Reconstruction of berths 9, 10 and 11

Berths 9, 10 and 11, at the western end of the north quay are in disrepair and largely unusable, and this project covers their redevelopment.

The existing quay line would be built out into the river and straightened, improving its usefulness and providing additional laydown area (see figure below).

At the western end of the new quay, the seabed shelves upwards making it unsuitable for berthing large vessels. To maximise use of this space, there is scope for a pontoon for use by CTVs and/or tenders for cruise passengers delivering them directly into town.

The project delivers:

- 209 m of quayside
- 6,510 m² hardstanding
- 200 m² office space
- 800 m² warehousing
- 33 m pontoon

Key

-  Pontoons
-  Quay 209m at -9 CD



Project 2: New quay east of berth 6

This scenario covers the development of a new quay to the east of berth 6 with direct access from the eastern end of the north quay. The maximum quay length is 125 metres before it runs into the water outflow pipes to the east and/or extends too far into the river and impedes traffic.

There is potential for future installation of pontoons to the east of the new quay.

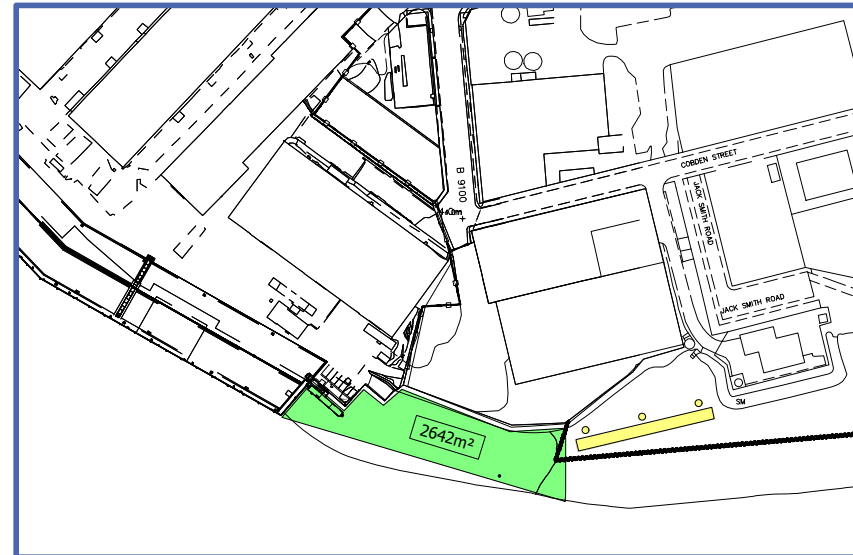
The pontoon for the pilot boat would need to be relocated, possibly to the western end of berths 10/11 or to the west of berth 1.

The project delivers:

- Quay of 125 m
- Laydown area of 2,642 m²
- Potential 60 m of pontoons for 2 CTVs

Key

-  Pontoons: 60 m
-  Quay: 125 m at -9 m CD



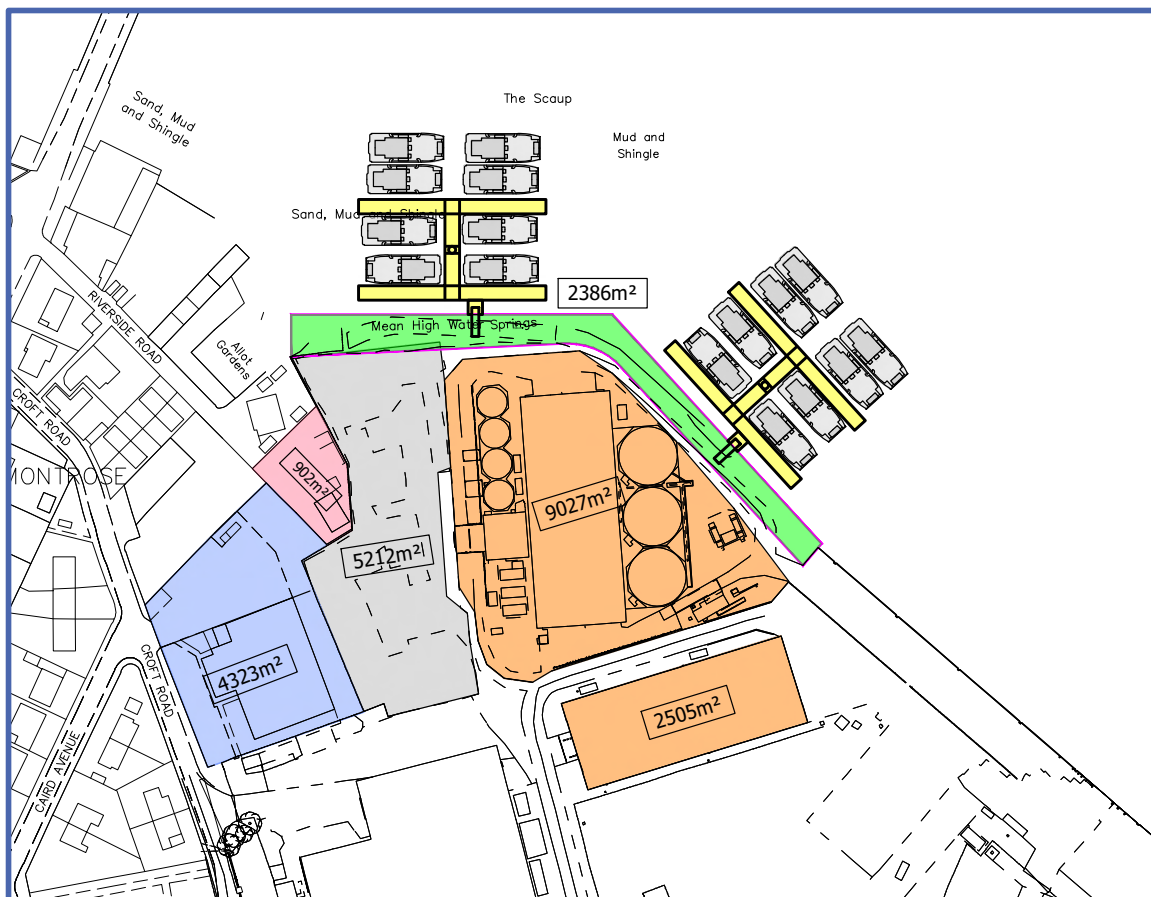
Project 3: Pontoons for CTVs

Development of pontoons for CTVs to the west of berth 1 on the south side of the river near the bridge.

The location is suitable for up to 16 CTVs berths and could make use of adjacent land for laydown. The pontoons would support the growing needs of wind farm developers.

The project delivers:

- Quay of 200 m
- Pontoons for 12 to 16 CTVs
- Laydown area of up to 6,114m² to the west of the grain silos in addition to quayside



Key

- Pontoons: for 12 to 16 CTVs
- Quay line 200 m
- Laydown area
- Silos and grain drying sites
- Scrap yard (MPA)
- HM site

Project 4: Outer harbour development

This project is for the development of an outer harbour with flood defence, which will deliver flood protection for the town against future sea level rise causing overtopping of the river and / or Montrose Basin.

The primary need is for a breakwater to the north of the entrance channel that will reduce dredging requirements and support long term flood defences for the port and town. The breakwater will form the basis of new deepwater quays and laydown area. A second breakwater from Scurdie Ness will add further protection to the port and allow for flood gates to be installed.

In the longer term, a lagoon could be built to the north of the main breakwater to protect the sand dunes, providing further flood protection to the town.

The project delivers

860 m of quayside

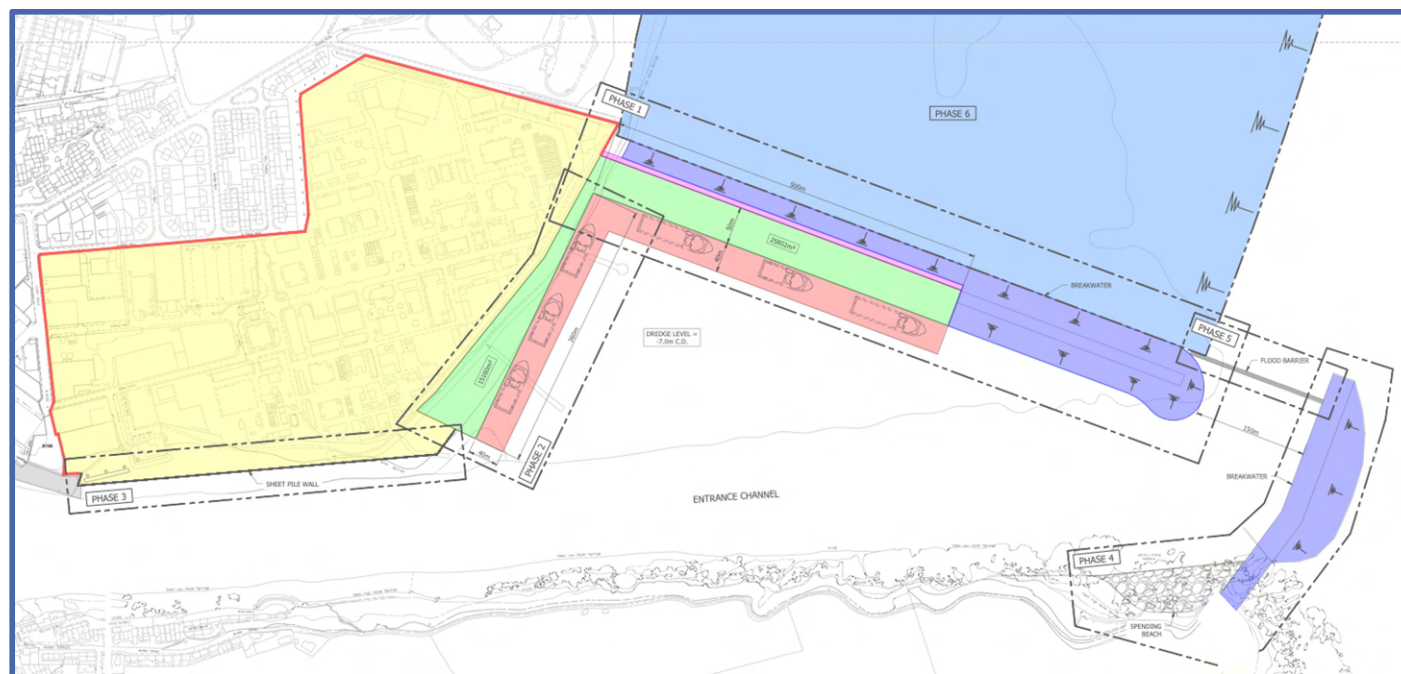
36,600 m²
hardstanding

Space for offices
and warehousing

Flood protection

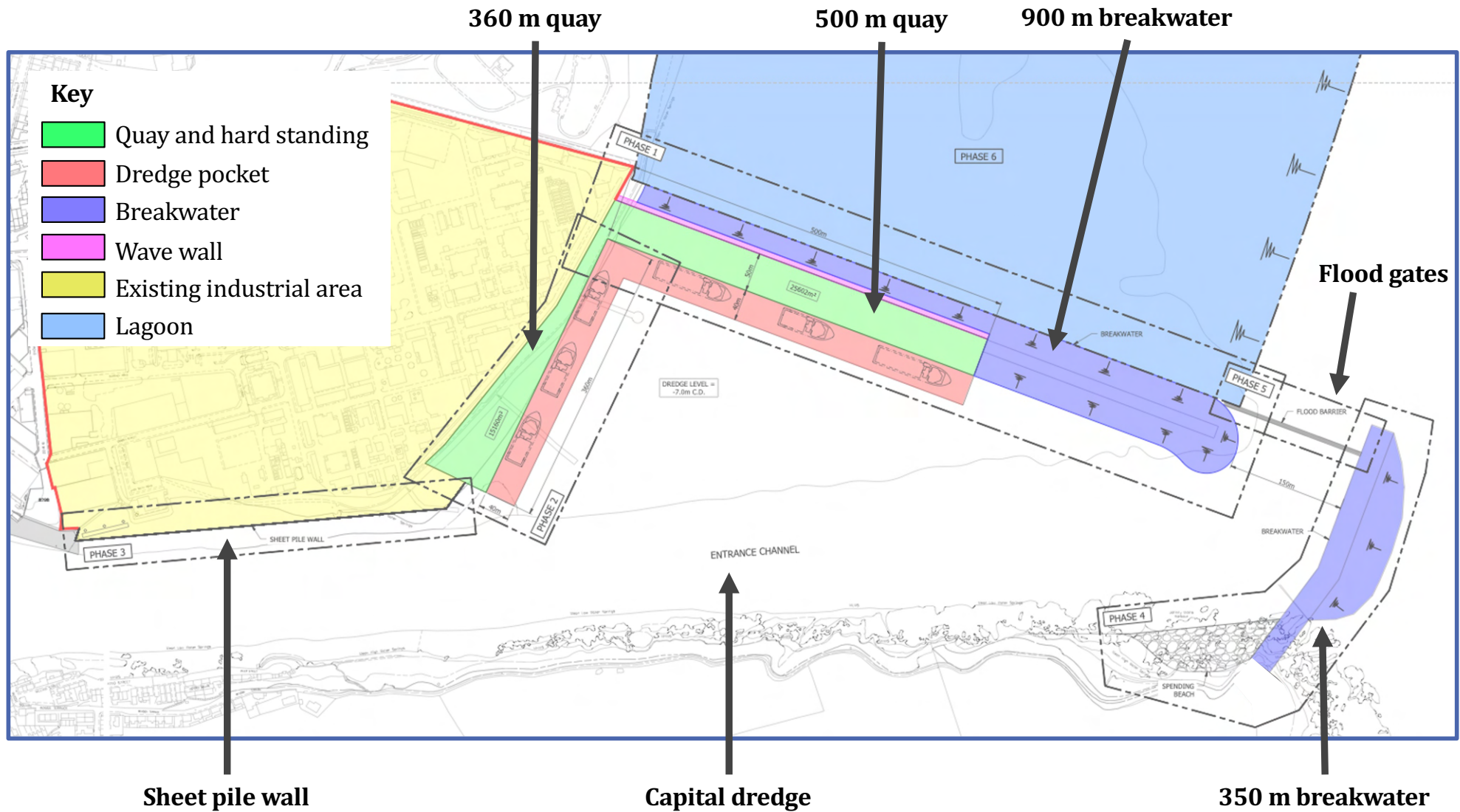
Key

- Quay and hard standing
- Dredge pocket
- Breakwater
- Wave wall
- Existing industrial area
- Lagoon



Project 4: Outer harbour development

3.5 MASTERPLAN PROJECT 4



Project 5: Future lagoon

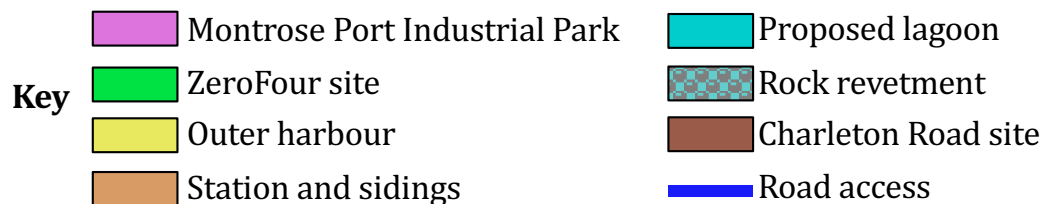
There is scope to build a lagoon in the future to the north of the main breakwater in Project 4. Such a lagoon would protect the sand dunes to the north of town from erosion, and by extension, the town from flooding from the north.

This would require a lagoon retaining wall of around 1,200 metres, impounding some 210 hectares of water (see right).

The lagoon could be tidal, with turbines generating power on both incoming and outgoing tides. There may also be potential for using the lagoon for pumped storage, utilising excess offshore wind power. With suitable gates/lock, the lagoon could also provide space for marine leisure activities.

The lagoon infrastructure could support further port capacity, either along the north side of the breakwater or at the northern end of the lagoon in close proximity to the ZeroFour site and Montrose Port Industrial Park.

The lagoon has not been included as a masterplan project, but has been assessed to ensure that such a longer term opportunity has been considered as a strategic option for the future of the town and the port for consideration by government.



High-level costs

A high-level estimate of capital costs has been made for each of the masterplan proposals (see below).

For the inner harbour developments, a low optimism bias (OB) of 10% for Projects 1 and 3, and 15% for Project 2, have then been added to these costs, as these projects are relatively straightforward and conditions well understood.

For the outer harbour project, the OB has been raised to 40%, reflecting a higher level of uncertainty.

The total capitals costs, including optimism bias are estimated at £529 million.

Summary of project capital costs: £ million

Project 1: Reconstruction of berths 9/10/11	£38
Project 2: New quay east of berth 6	£28
Project 3: O&M pontoons maximised	£12
Project 4: Outer harbour development	£452
Total cost	£529

	Cost Estimate £000s		
	Cost	OB	Total
Project 1: Reconstruction of berths 9/10/11			
Pontoon	£360	£36	£396
Office	£432	£43	£475
Warehouse	£1,233	£123	£1,357
Telecom mast	£308	£31	£339
Roadworks	£103	£10	£113
Main quay	£25,700	£2,570	£28,270
Dredging	£3,610	£361	£3,971
Engineering/feasibility fees	£2,381	£238	£2,619
Total	£34,127	£3,413	£37,540

Project 2: New quay east of berth 6			
Main quay	£15,860	£2,379	£18,239
Hardstanding	£2,641	£396	£3,037
Pontoons	£550	£83	£633
Piling and walkway	£500	£75	£575
Land purchase	£1,000	£150	£1,150
Site clearing	£1,000	£150	£1,150
Dredging	£750	£113	£863
Engineering/feasibility fees	£1,673	£251	£1,923
Total	£23,973	£3,596	£27,569

	Cost Estimate £000s		
	Cost	OB	Total
Project 3: O&M pontoons maximised			
Pontoon	£2,158	£216	£2,374
Quay	£3,957	£396	£4,353
Office	£648	£65	£712
Warehouse	£1,542	£154	£1,696
Dredging	£1,824	£182	£2,006
Engineering/feasibility fees	£760	£76	£836
Total	£10,889	£1,089	£11,978

Project 4: Outer harbour development			
Main breakwater	£82,000	£32,800	£114,800
Second breakwater	£31,889	£12,756	£44,645
Main quay and hardstanding	£79,299	£31,720	£111,019
Second quay & hardstanding	£39,967	£15,987	£55,954
Capital dredge	£10,000	£4,000	£14,000
Flood gates	£50,000	£20,000	£70,000
Relocating power cable	£2,000	£800	£2,800
Sheet piling along north side	£5,000	£2,000	£7,000
Engineering/feasibility fees	£22,512	£9,005	£31,516
Total	£322,667	£129,067	£451,733

4.ECONOMIC BENEFITS

Economic benefits

The key benefits from the projects identified in this masterplan come largely from developing facilities for offshore wind, and protecting port operations and the town from the impact of flooding.

Offshore wind

- Supports additional c.1,000 direct jobs
- Additional GVA of £47 million per year in local economy

Port access

- The addition of a break water safeguards port access, noting the port generates GVA of £36.4 million per year and 384 FTE jobs

Flood protection

- Removes risk of flooding for 1,300 people and 780 homes and businesses (SEPA, 2021)
- Safeguards operation of two key employers: GSK & MPA

Cruise market

- Additional local spend of £300,000 per year

Dredging

- Cuts annual dredging costs, currently £350,000 per year and rising

Offshore wind

With the projects outlined in this masterplan, there will be potential for establishing O&M bases at Montrose for the seven offshore wind farms being developed to the east.

The four nearest of these farms have a total capacity of 11.6 GW. Taking a benchmark of 90 jobs per GW for O&M operations, in line with existing practice, this implies:

- Creation of over 1,000 direct full-time jobs, of which many would be located in the vicinity of Montrose.
- Additional £47 million per year in GVA to the local economy.

This represents a reasonable estimate of the potential for supporting job creation and GVA as a result of the expanded port.

The masterplan will enable Montrose to develop as one of the much-needed large east coast O&M hubs for offshore wind, allowing operators to consolidate activities, improve efficiency and drive down costs.

Cruise

The outer harbour development will enable Montrose to attract cruise calls. Given its location and broad range of offers in the local area, (golf links, gardens, beaches, castles, museums, etc.), it is estimated that the port could readily attract 20 or more small and medium-sized cruise ships per year.

This level of activity equates to an additional spend in the local economy of some £300,000 per year across sectors not directly supported by existing port activities.

Dredging

Currently the port spends on average £350,000 per year on dredging to maintain the navigational channel. This cost has been rising each year as the frequency of storms increases.

Dredging not only needs to fit around the salmon smolt, but finding a location for the dredged material is increasingly difficult. Both of these can hamper keeping the channel clear.

The development of the breakwater will make it possible to carry out a capital dredge and increase the depth of the channel. This will then:

- Cut the need for maintenance dredging
- Provide access to the port for larger vessels

Flood protection for the River

There is an increasing risk to Montrose of flooding from the sea via the South Esk. This could impact many parts of the town, leading to:

- Flood damage to homes and businesses in the south of the town.
- Degradation of port facilities.
- Isolation and flooding of the GSK site, and potential relocation.
- Cutting of the railway line and disruption of services.

Montrose and Ferryden are designated as areas vulnerable to flooding by SEPA (<https://www2.sepa.org.uk/frmplans/>). SEPA estimated in 2021 that there were 1,300 people and 780 homes and businesses at risk of flooding from the river. This is forecast to rise to 2,900 people and 1,700 properties by 2080.

Taking an average residential property price of £160,000, and assuming non-residential is the same, this means that c. £125m of property is currently at risk, rising to £272m by 2080. Due to be updated in 2027, these estimates may rise significantly due to increased understanding of sea level rise.

Montrose Port and GSK together provide 1,134 full-time equivalent jobs, (GSK employ c.750 people while the port secures 384 FTE jobs). The flood threat to just these two operations presents a substantial risk to the economy of the town and Angus.

The outer harbour development (Project 4) includes two breakwaters that will be connected by flood gates. Use of these gates at increasingly higher spring tides will remove this flood threat to the town via the South Esk, at the cost of temporarily closing the port.

Erosion protection for the sand dunes

The sand dunes to the east of the town, provide protection from the sea. These dunes are being eroded, with 7 metres being lost in 2023 alone.

Plans are in place to encourage beach nourishment together with some replenishment of the dunes. However, the long-term forecast is for a further 85 metres to be lost by 2050. At this point there will be a high risk of the dunes failing and the town being flooded via the low lying land behind these.

The Options Appraisal has considered the potential for placing revetment along the dunes to both provide flood defence and support provision of a Dune Road, which would connect the north side of the port to Montrose Port Industrial Park. Costs for this are estimated at c. £60 million. This is not included as a port masterplan project, but should be considered by government as part of a joint project for both flood defence of the town, and port development.

The development of the outer harbour and main breakwater could also be used as a basis for developing a lagoon (Project 5), providing enhanced long-term sea flood defence for the town.

5. ENVIRONMENTAL CONSIDERATIONS

Environmental considerations

Consideration for the environment is a core element of this masterplan and will be an integral part of developing the projects.

The Port of Montrose lies along the River South Esk, and is just downstream of the Montrose Basin, both of which are highly sensitive and protected. Furthermore, to the north of the river mouth lies a stretch of dunes which are subject to erosion from the sea.

In developing the masterplan projects, consultation with all key local stakeholders will be prioritised, including but not limited to the following:

- Esk Rivers & Fisheries Trust
- Angus Council
- Montrose Golf Links
- Scottish Wildlife Trust (Montrose Basin)

All appropriate national stakeholders such as Marine Scotland, Nature Scot and Crown Estate Scotland will be engaged as part of the rigorous environmental permissions process that is required.

Key areas for consideration

Montrose Basin

- SSSI tidal basin of 750 hectares

River South Esk

- Home to Atlantic salmon and freshwater mussels

The Sand Dunes

- Protecting the town but subject to erosion

Montrose Town

- Two designated conservation areas in town

Montrose Basin

This is a near circular tidal basin that forms part of the River South Esk estuary.

The Basin extends over 750 hectares and the tidal mudflats, salt marsh and reed beds that provide a home for over 100,000 migratory birds.

The basin is managed by the Scottish Wildlife Trust as a Wildlife Reserve, and designated as a Local Nature Reserve, Site of Special Scientific Interest, a Special Protection Area and a Ramsar Site.

Montrose Basin



Source: Scottish Wildlife Trust

River South Esk

The River is home to internationally significant populations of Atlantic salmon and the Fresh Water Pearl Mussel, and is designated a Special Area of Conservation (SAC).

Any development at the port, especially dredging activities, need to be timed such that they do not impact on the salmon smolt.

River South Esk



Source: Angus Tourism Cooperative

The Sand Dunes

The dunes along the Montrose Golf Links are a natural coastal flood barrier to the town, but are being eroded. There are plans to construct two rock groynes to encourage beach nourishment together with some replenishment of the dunes. This work is being undertaken by Angus Council.

The outer harbour projects with the construction of a breakwater has potential for improving the beach nourishment.

Sand Dunes by the Golf Links



Source: Angus Council

Montrose Town

Two of the 19 designated conservation areas in Angus are in Montrose town. However, both of these lie outside the areas for development under the masterplan and will not be impacted directly (see map below).

Montrose Town Conservation Areas



Source: Angus Council

6. IMPLEMENTATION

Project plan

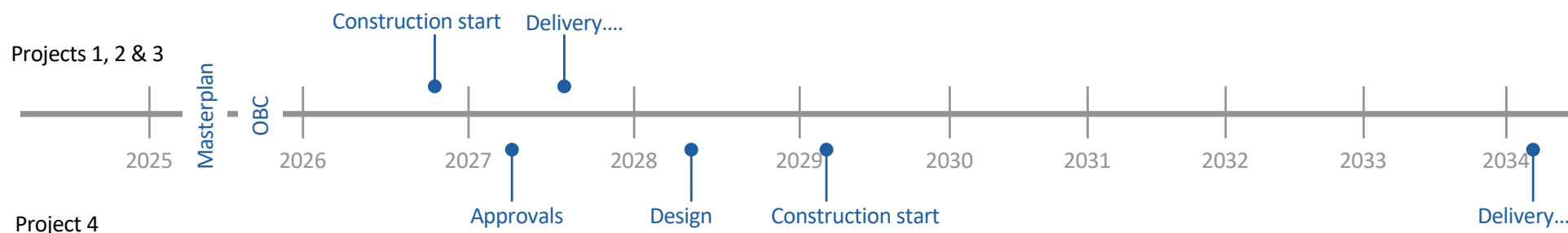
Given the schedules for developing offshore wind in Scottish waters, there is a need to provide more port infrastructure within the next few years along the east coast.

The reconstruction of berths 9, 10 and 11 can be undertaken relatively quickly. The first parts of the reconstructed berths should be operational from Q2 2027. The studies and consents for the new quay east of berth 6 could then be started in early 2026 with work on the additional O&M pontoons starting in the same year.

The development of the outer harbour is a much larger, and more complex project, with significant time required for technical feasibility, approvals, environmental impact assessment and design work.

To compress delivery times, elements of the implementation programme will be run in parallel where possible.

	Project 1 Berths 9, 10, 11	Project 2 Quay east of 6	Project 3 O&M pontoons	Project 4 Outer harbour
Masterplan complete	Q2 2025			
Outline business case (OBC)	Q2 2025			
Technical feasibility study	Q2 2025 - Q3 2025	Q1 2026 - Q2 2026	Q4 2026 - Q1 2027	Q2 2026 - Q1 2027
Statutory approvals & consents	Q2 2025 - Q4 2025	Q3 2026 - Q4 2026	Q4 2026 - Q1 2027	Q2 2027 - Q1 2028
Ground investigations	Q3 2025	Q4 2026	Q1 2027	Q3 2027
Detailed design	Q2 2025 - Q4 2025	Q2 2026 - Q1 2027	Q3 2026 - Q2 2027	Q2 2028 - Q1 2029
Procurement	Q4 2025 - Q1 2026	Q1 2027 - Q2 2027	Q2 2027 - Q3 2027	Q2 2029 - Q4 2029
Construction	Q2 2026 - Q4 2027	Q3 2027 - Q2 2028	Q4 2027 - Q3 2028	Q1 2029 - Q4 2035
Operational	Q2 2027 first part	Q2 2028	Q3 2028	Q1 2034 first part



Completion of the masterplan

Consultation with port users and other stakeholders has been central to the development of this masterplan. This approach will be continued during the finalisation phase with next steps being:

1. Community consultation
 - Drop-in sessions to discuss the draft masterplan
 - Telephone discussions and video calls with stakeholders
 - Drop-in sessions with presentations and in person discussion
 - Online presentation of masterplan for review and comment
2. Finalisation of the masterplan
3. Publication of the final masterplan

Following publication of the Final Masterplan, the focus will turn to implementation of the projects. This 'pre-development' stage is summarised right.

Pre-development Activities

Outline Business Case (OBC)

- The OBC sets out the financial and economic impacts associated with each project and any potential funding gaps. The OBC is crucial in securing funding to progress the masterplan.

Surveys and modelling

- More detailed survey work, especially for the outer harbour development will be required, together with wave and sedimentation modelling to optimise the line of the new breakwaters.

Technical feasibility studies

- These studies analyse the physical characteristics of each of the projects, determining the optimal implementation strategy, and detailing resource requirements.

Statutory approvals and consents

- All major developments, especially port infrastructure along a river, require a number of approvals and consents. In addition, the outer harbour development will require a Harbour Revision Order to extend the port's limits.

Stakeholder engagement strategy

- Continued stakeholder engagement, focussed on dialogue with potential funders, politicians and 'beacon' stakeholders to promote the project.

Funding

There are a range of funding sources to be explored as development of the masterplan proposals moves forward. Several of these sources target infrastructure that supports the transition to clean energy.

GB Energy is being developed as a government-owned investment body that will invest in clean energy and may also own and manage projects. While the focus is offshore wind, hydrogen, carbon capture and nuclear, there is scope for investment in supporting infrastructure such as ports servicing wind farms.

The Crown Estate and **Crown Estate Scotland** are working in partnership with GB Energy to support the accelerated delivery of clean energy infrastructure, including port developments.

There may be potential for Angus Council to borrow from the **Public Works Loans Board (PWLB)** on behalf of the port. The PWLB offer non-discretionary, long-term loans (from 10 to 50 years), at relatively low interest rates to support local authority investments.

Scottish Futures Trust provide support and coordination for infrastructure projects, with a focus on the transition to net zero, driving inclusive growth and building resilient and sustainable places.

The National Wealth Fund (formerly the UK Infrastructure Bank) provides loans or equity investment in areas that meet their strategic objectives and where there is a shortage of private financing. The Fund has invested in several ports (Tyne, Ardersier) as well as crucial flood defences.

The Scottish National Investment Bank (SNIB) has a similar remit to the National Wealth Fund. SNIB can provide loans or equity investment for infrastructure that supports the energy transition and tackles climate change.

Economic agencies such as **Scottish Enterprise** may have funding available for specific projects, economic growth accelerators, innovation, renewable technologies and investments that will support business growth.

There is potential for **offshore wind developers** to contribute (through joint venture/partnership with port), towards infrastructure that will enable their development to move forward.