

CHAPTER 2: SITE SELECTION AND ALTERNATIVES

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The European Council Directive 2011/92/EU (the EIA Directive) requires that “the environmental impact assessment report to be provided by the developer for a project should include a description of reasonable alternatives studied by the developer which are relevant to that project” (EUR-LEX, 2015). It is important to assess and document that genuine alternatives to the project have been considered in order to provide reassurance that the proposed development that is being put forward for assessment is the most suitable option.

This chapter provides an overview of the need for the Aberdeen Harbour Expansion Project and the alternative sites which were under consideration prior to Nigg Bay site being taken forward as the preferred option.

2.1 Need for the Development

2.1.1 Legislative and Policy Drivers

The National Planning Framework (The Scottish Government, 2014) is a strategy for the long-term development of Scotland over the next 20 years. It identifies key strategic infrastructure requirements to ensure that each part of the country can develop to its full potential. To help deliver the strategy, the National Planning Framework 3 (NPF3) identified 14 national developments, one of which is the expansion of Aberdeen Harbour. The NPF3 recognises the significance and importance of Aberdeen Harbour and its potential expansion, stating that “Aberdeen Harbour is a nationally important facility which supports the oil and gas sector, provides international and lifeline connections and makes significant contribution to the wider economy of the northeast. Expansion of the harbour is required to address current capacity constraints and to consolidate and expand its role” (The Scottish Government, 2014). The NPF3 is further discussed within Chapter 4: Planning and Legislation.

Alternative ports and harbours along the east coast of Scotland include Peterhead, Fraserburgh, Arbroath, Montrose and those in the Firth of Forth; however, these have not been identified within the NPF3 as ‘national developments’ for harbour expansion and therefore have not been considered further within this Environmental Statement (ES).

The Aberdeen Local Development Plan (LDP) adopted in 2012 is currently under review as part of the five yearly review process. The updated ‘proposed Aberdeen LDP’ was published in draft in March 2015 for a period of public engagement and acknowledges the expansion of Aberdeen Harbour, stating that the expansion will be subject to a Masterplan and/or Development Framework which will be adopted as Supplementary Guidance. Further detail can be found within Chapter 4: Planning and Legislation, and ES Appendix 4A: Planning and Legislation Supporting Information.

2.1.2 Operational Drivers

Ports and harbours are essential for movement of cargo and play a key role in growth of freight traffic. Scottish ports handled 76 million tonnes of foreign and domestic imports and exports in 2012, with 96% being handled by the 11 major ports, including Aberdeen. They contribute an estimated £17 billion to the Scottish economy and account for around 27,300 jobs in Scotland (The Scottish Government, 2015).

Foreign imports and exports and domestic traffic continue to contribute to national and regional economies. The expansion of facilities at Aberdeen is recognised as supporting this capacity and sustainable growth (The Scottish Government, 2015). It is also acknowledged that the future is likely to be driven by a trend for larger ships which require larger harbours, wider and deeper navigational channels as well as new trade routes opening up as a result of receding ice, notably the north-west passage (running along the Arctic coast of North America) and the northern sea route (from the Russian Arctic to the Pacific (Bering Strait)).

Ports and harbours also provide vital support to industries such as fishing, oil and gas, and the developing marine renewable energy industry. It is anticipated that ports and harbours will have an increasingly significant role in supporting future growth of the renewable energy industry, thereby extending their economic importance. They also support the tourism industry by providing a landing point for passenger ferries, cruises and other marine tourism operators as well as offering facilities for recreational users.

Aberdeen Harbour is viewed as Scotland's gateway for trade, linking with more than 40 countries globally as well as with other sites within the UK. It handles around 8,000 vessel arrivals annually (see ES Appendix 21-A: Nigg Bay Development Baseline Assessment for Shipping and Navigation). The Harbour contributes upwards of £510 million to the economy annually, imports and exports of around 4.76 million tonnes, and supporting in excess of 11,000 full time equivalent (FTE) jobs (see ES Appendix 1-A: Case for Growth, which is discussed further within Section 2.2). Aberdeen Harbour plays a critical role in the economy of Aberdeen and Scotland as a whole, and its sustained activity and growth are therefore essential to the maintenance of the local and national economy.

2.2 Case for Growth

In 2012 Aberdeen Harbour Board (AHB) commissioned a report entitled Case for Growth (see ES Appendix 1-A) to provide a business case for expansion and to seek engagement with key stakeholders to consider the different scenarios for the future growth of the port at Aberdeen, following the review of the NPF and the first strategic development plan for Aberdeen City and Shire.

The report detailed current forecasts predicting an increase in cargo over the coming years to support the oil and gas industry, including decommissioning and offshore renewables sectors. The report also outlined the expansion elements already implemented to meet requirements within the current harbour, including significant investment into the expansion of the existing harbour at Torry Quay (located on the River Dee), providing additional deep water berthing and an extensive back up area to assist in handling future growth in oil based traffic. Commercial Quay (located within the Albert Basin area of the existing Aberdeen Harbour) provides much needed additional general cargo handling space. The deepening and widening of the navigation channel has also been implemented and will assist in 24 hour access for wider vessels used for subsea work and those involved in deploying offshore renewables projects. It is recognised that there has been a recent decrease in oil and gas exploration activity and a drop in the price of oil; however, notwithstanding the change in market conditions, the need for the project remains.

Despite the recent deepening and improvement of Torry Quay and dredging of the access channel to the existing harbour to improve navigation, the lack of space for new berths and lack of suitable back-

up areas is now restricting the future potential for growth of the port. Such growth is being driven by both current and emerging demands including, but not limited to, the following:

- Increased size (including draft) of offshore support vessels, cargo vessels, offshore wind farm deployment vessels, ferries and cruise ships;
- Demands for berths for 'off hire' or maintenance requirements;
- Growth in cargo sectors; and
- Anticipated growth in decommissioning work from the oil and gas industry.

The Case for Growth report identified a number of constraints to further development within the current harbour, which include the natural confines of the harbour within a city centre location, and pressure on land for mixed use developments that are not compatible with port activities. In addition, vehicular access to and from the port, in particular in and around Market Street, is a long standing constraint in respect of traffic management.

2.3 Consideration of Alternative Options

Responding to the recognised need for the expansion of the Aberdeen Harbour facilities, in 2012 AHB commissioned a pre-feasibility study (Directions for Growth, see ES Appendix 1-B). The emerging options were developed against a range of criteria:

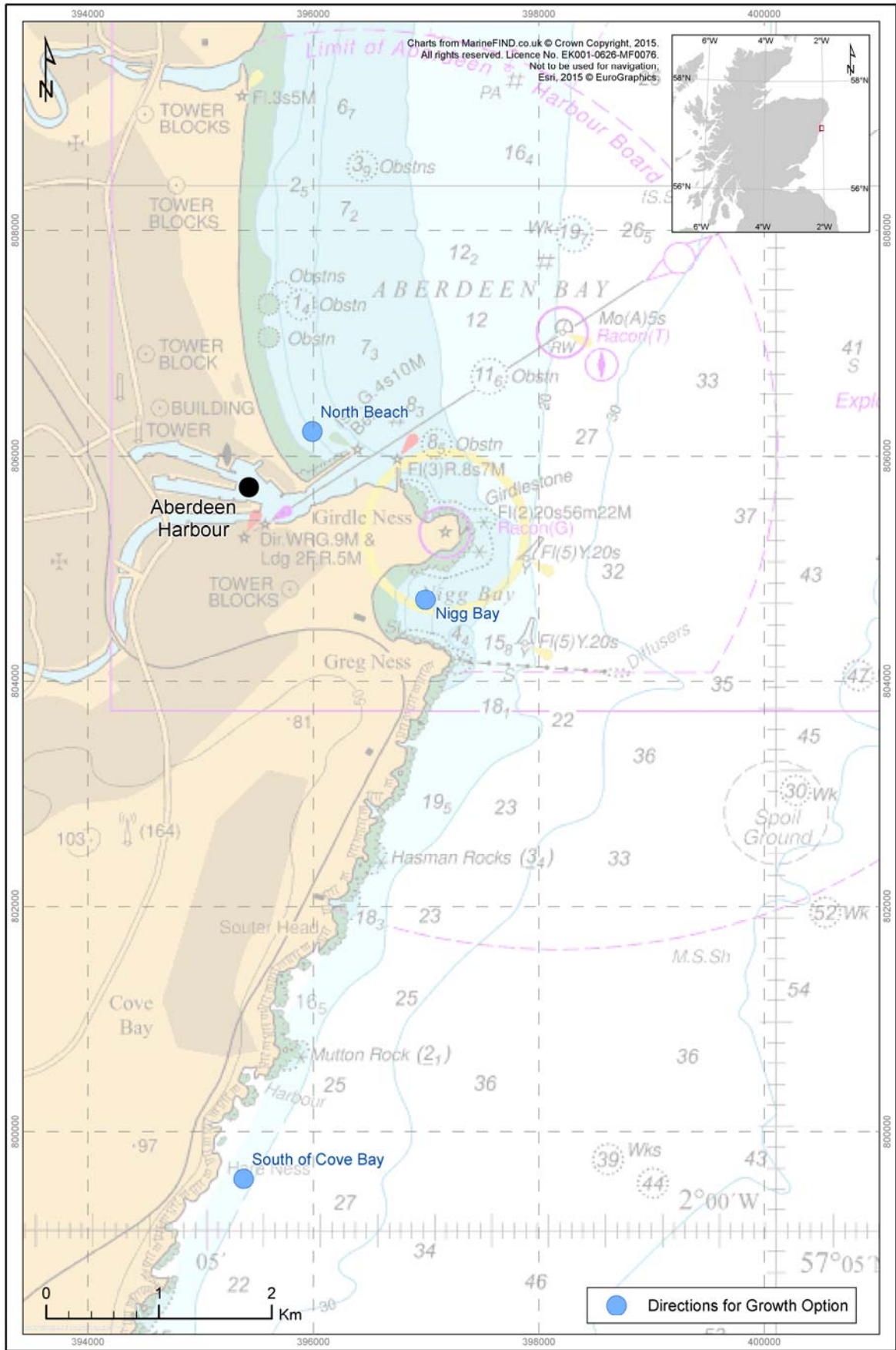
- The AHB constitution (Aberdeen Harbour Order (Confirmation) Act 1960 (as amended)): AHB has a responsibility to maintain and improve the port's infrastructure for future generations;
- Proximity to existing harbour boundary: the close proximity to the existing port facility is key for a number of reasons, primarily that the facilities offered at the existing harbour are critical for servicing the strong customer base located in the city and immediate region, and relocation or diversion may result in a change in traffic patterns and potential loss of skills and knowledge base away from Aberdeen;
- Business case: the need to ensure financial viability of the proposals. This considers the amount of operational land and berths which need to be delivered, the length of new quays, and the amount of dredging at each site, which would significantly impact upon construction costs and needed to be factored into the wider business case;
- Deliverability: the proposals need to consider potential barriers to development, both physical and procedural in terms of consents and licenses but also land ownership, availability and infrastructure capacity;
- Accessibility (road/rail): the need to improve road and rail access, where infrastructure improvements are required to facilitate developments;
- Community benefits and amenity: regeneration considerations were a key factor in site selection, encompassing any adverse impacts upon amenity and vitality of an area;
- Environmental impact: the presence or absence of sites of conservation value and similarly any sites of cultural, historical or geological significance, as well as protected species and ecological value;

- Landscape and visual impact: each location needs to be assessed for its impact upon the local landscape and seascape; and
- Minimising traffic impact and disruption: the ability to create new facilities or alter existing ones with minimal disruption to existing traffic.

As part of the initial investigative work, AHB produced a pre-feasibility study (ES Appendix 1-B: Directions for Growth) to look at potentially viable options within the existing harbour limits including further development of the existing harbour. The physical constraints of the coastline limited the options of suitable development locations for a harbour expansion that would not incur the need for significant upfront costs, which from the outset would render the project financially unviable. As a result of this study, three locations were identified that demonstrated the physical capacity to accommodate the new harbour facilities. The three locations identified for consideration (as shown on Figure 2.1) were:

- Expanding the existing harbour;
- North Beach immediately to the north of the existing harbour; and
- Nigg Bay immediately to the south of the harbour.

An area south of Cove Bay was also considered (as shown on Figure 2.1), but the straight, rocky coastline is lacking any natural shelter and would require uneconomical investment to enable the building of a protective breakwater structure.



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Figure 2.1: The three locations identified for consideration

A high level assessment was made of each location option, which considered the following criteria:

- **CAPEX:** capital expenditure evaluation based on the comparative capital construction costs;
- **OPEX:** operating expenditure including manpower costs, energy, fuel and lubricants costs, communications and IT, civil maintenance costs, equipment maintenance costs and other operating costs such as marketing, legal and insurance;
- **Marine operability:** ability to manoeuvre to and from the berths including navigation, approach and berthing and evaluation of down time as a result of weather conditions/wave height;
- **Environmental Issues:** potential impacts upon environmentally sensitive areas and species;
- **Landscape access and operations:** existing and proposed road and rail networks; and
- **Constructability and project schedule:** ease of material delivery, construction activities and timing.

Following this exercise, the options were ranked, with South Cove receiving the lowest score of all the options. The South Cove option was not considered any further.

Following completion of the pre-feasibility report, AHB commissioned an internal strategic review, which considered the following:

- The long term strategic outlook for port activity in Aberdeen;
- Whether development of a new harbour could be justified;
- What approach to development might be the most feasible;
- Whether the best options pass a 'reality test' in terms of funding; and
- The strategic implications of undertaking such a development, and of not undertaking it.

The review also assessed a 'do nothing' scenario that indicated a managed decline of the harbour.

Following completion of this review, AHB progressed with stakeholder consultation; taking forward the two remaining options (North Beach and Nigg Bay) together with further development of the existing harbour.

To further inform the appraisal of these remaining options, AHB undertook extensive consultation with stakeholders, including Aberdeen City Council, Aberdeen and the Shire Strategic Development Authority, Marine Scotland, Scottish Natural Heritage, Scottish Environment Protection Agency and Transport Scotland. The consultations took the form of three targeted workshops themed primarily around transportation, planning and environmental considerations. The key outputs from these workshops are summarised in Table 2.1 to Table 2.3.

Table 2.1: Further development of the existing harbour

Transportation	Planning	Environment
Favourable		
-	<p>The intensification of this existing use is not likely to present insurmountable concerns in land use planning terms.</p> <p>There may be scope to acquire some additional land on the northern side of the harbour for landward expansion and intensification.</p>	<p>Minimal landscape impact.</p> <p>Development predominantly confined to existing operational/developed areas.</p>
Adverse		
<p>Market Street would remain the principal access to the harbour.</p> <p>Traffic capacity freed up from the Aberdeen Western Peripheral Route (AWPR) (expected to be 5 - 8% of city centre traffic) would be taken up by extra harbour traffic.</p> <p>This option does not provide any opportunity to improve the traffic situation in the city centre and will represent an increase in traffic even if there is associated mitigation.</p>	<p>There is no opportunity for new berths, just upgrade to existing ones – resulting in lost opportunities in servicing existing customers and attracting new ones.</p> <p>Acceptance that this option may represent maintenance of the status quo or even 'managed decline'.</p>	<p>Within the River Dee Special Area of Conservation (SAC), and therefore potential for impact.</p> <p>Disturbance to marine mammals and potentially birds, during construction.</p>

There are considerable environmental implications of the demolition of existing quays, redevelopment and capital dredging that would be required to redevelop the harbour to accommodate larger vessels; however, the site is an existing industrial location and, within reason, any additions would be unlikely to cause significant adverse landscape and visual impact.

With this option the transport links already exist; however, with the continued reliance on the city centre road network this also presents a limiting factor, with any increases in traffic to the detriment of the city.

Limiting the future growth of Aberdeen Harbour to within the existing harbour boundary, and any additional land that may be acquired on its fringes, would result in a compromise between existing berth space and the ability to accommodate larger vessels, and would effectively represent the managed decline of the harbour in the long term.

Table 2.2: Site alternative – North Beach

Transportation	Planning	Environment
Favourable		
-	-	-
Adverse		
<p>Market Street would remain the principal access to the harbour.</p> <p>Traffic capacity freed up from the AWPR (expected to be 5 - 8% of city centre traffic) would be taken up by extra harbour traffic.</p> <p>This option does not provide any opportunity to improve the traffic situation in the city centre and will represent an increase in traffic even if there is associated mitigation.</p> <p>Achieving a rail connection to the North Beach option would be a significant challenge due to land ownership.</p>	<p>The landscape and visual impact upon the amenity and character of the city is significant.</p> <p>It is likely that there will be significant effects on amenity as the beach is well used and there are a number of facilities.</p> <p>Planning permission unlikely to be achievable.</p>	<p>Close proximity to the River Dee SAC, and therefore potential for impact.</p> <p>Potential effects on marine mammals and birds.</p>

Development at North Beach would allow an increase in berthing capacity to accommodate larger vessels and could operate without impact on the existing harbour. North Beach is also in close proximity to the existing harbour.

The North Beach option would require the most dredging and most significant new breakwater creation. The road network surrounding the Harbour already exists, however the need for vehicular traffic to use the existing road network through the city centre is a considerable constraint.

The site is identified in the Aberdeen Local Development Plan as Urban Green Space and Coastal Management - Coastal Area Development therefore there is a presumption that against development not used for the purpose of sport or recreation. The impacts on amenity and visual impact would be significant, and for this reason alone, the North Beach option is considered unviable.

Table 2.3: Site alternative – Nigg Bay

Transportation	Planning	Environment
Favourable		
The coast road to the south of Nigg Bay is already used by heavy goods vehicles (HGV) and could accommodate an increase in HGV traffic. Likely to avoid increase in city centre traffic and would not result in loss of potential benefits of AWPR.	-	Of the three options considered this is the furthest from the River Dee SAC.
Adverse		
-	Potential for impact on the amenity of Torry. Consideration required of the impact upon opportunities for recreation. Landscape and visual impact is a key issue. A listed lighthouse lies to the north of the site at Girdle Ness. Impact upon setting will require consideration.	Presence of Site of Special Scientific Interest (SSSI) at Nigg Bay would require careful consideration to minimise impact. Potential effects on marine mammals and birds. Protected plants such as sea pea (<i>Lathyrus japonicas</i>) has been found at the Bay.

Nigg Bay is relatively close to the existing harbour and within the current port limits. It offers the most scope for flexible new berth creation. The natural features of the bay mean that the length of breakwater and volume of capital dredging is less than the North Beach option.

The existing road network around Nigg Bay already accommodates HGVs; however, it was recognised at the workshops that further work would be needed to investigate the requirement for road improvements. As the Nigg Bay site is located outside of the city centre this may reduce vehicular traffic in the city centre long term.

The Green Belt policy carries a presumption against development not required for the purposes of agriculture, forestry or recreation or for essential infrastructure. Where development is permitted it is required that mitigation measures are put in place. In relation to green belts, Scottish Planning Policy confirms that ‘Local development plans should describe the types and scales of development which would be appropriate within a green belt which includes “Development meeting a national requirement or established need, if no other suitable site is available”. Nigg Bay is identified in the Aberdeen Local Development Plan as Green Belt, Green Space Network and Undeveloped Coast.

The potential adverse effects upon local communities and amenity would require detailed assessment. The Bay is relatively open and views into it from Girdle Ness and Greg Ness on either side may be affected, as well as views from Torry.

Nigg Bay is located further from the River Dee SAC than the other options, although the potential for effects on the site would still require detailed assessment. The potential effects on the geological SSSI

would require careful consideration, as would the potential presence of the sea pea (*Lathyrus japonicus*).

Conclusions from the appraisal and consultations indicated that expansion of the existing harbour did not meet the operational objectives, primarily due to space constraints; and development at North Beach would have an unacceptable impact on amenity. The Nigg Bay location, therefore, provides the most feasible option: it offers the least anticipated traffic impacts; the greatest scope for meeting the operational requirements; and it is the furthest distance from the River Dee SAC.

2.4 Best Practicable Environmental Option

Best Practicable Environmental Option (BPEO) assessment is a method for identifying the options that provide the “most environmental benefit” or “least environmental damage”. The BPEO for the development was produced by the quayside civil engineering contractors, Arch Henderson, in close collaboration with the EIA project team to assess appropriate alternative construction methods, including reuse of dredged material or disposal options.

The concepts and procedures for BPEO were defined in the Twelfth Report on Best Practicable Environmental Option of the Royal Commission on Environmental Pollution (RCEP) (1988). It provides a systematic approach to assessing the “performance” of different options, considering a range of criteria including:

- Environmental impact;
- Environmental risk;
- Health and safety risk;
- Technical feasibility; and
- Economic aspects.

The approach uses a combination of qualitative and quantitative assessments of the performance in each criterion, and a weighting of the relative influence or importance of the criteria, to derive an overall score or ranking of the options (RCEP, 1988; IEMA, 2009).

The BPEO report for the Aberdeen Harbour Expansion Project will be submitted with the applications for consent for the development.

2.5 References

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