

***DALGETY BAY
REMEDICATION
WORKS***

*Environmental Impact Assessment
Volume 4 - Non-Technical Summary
February 2017*

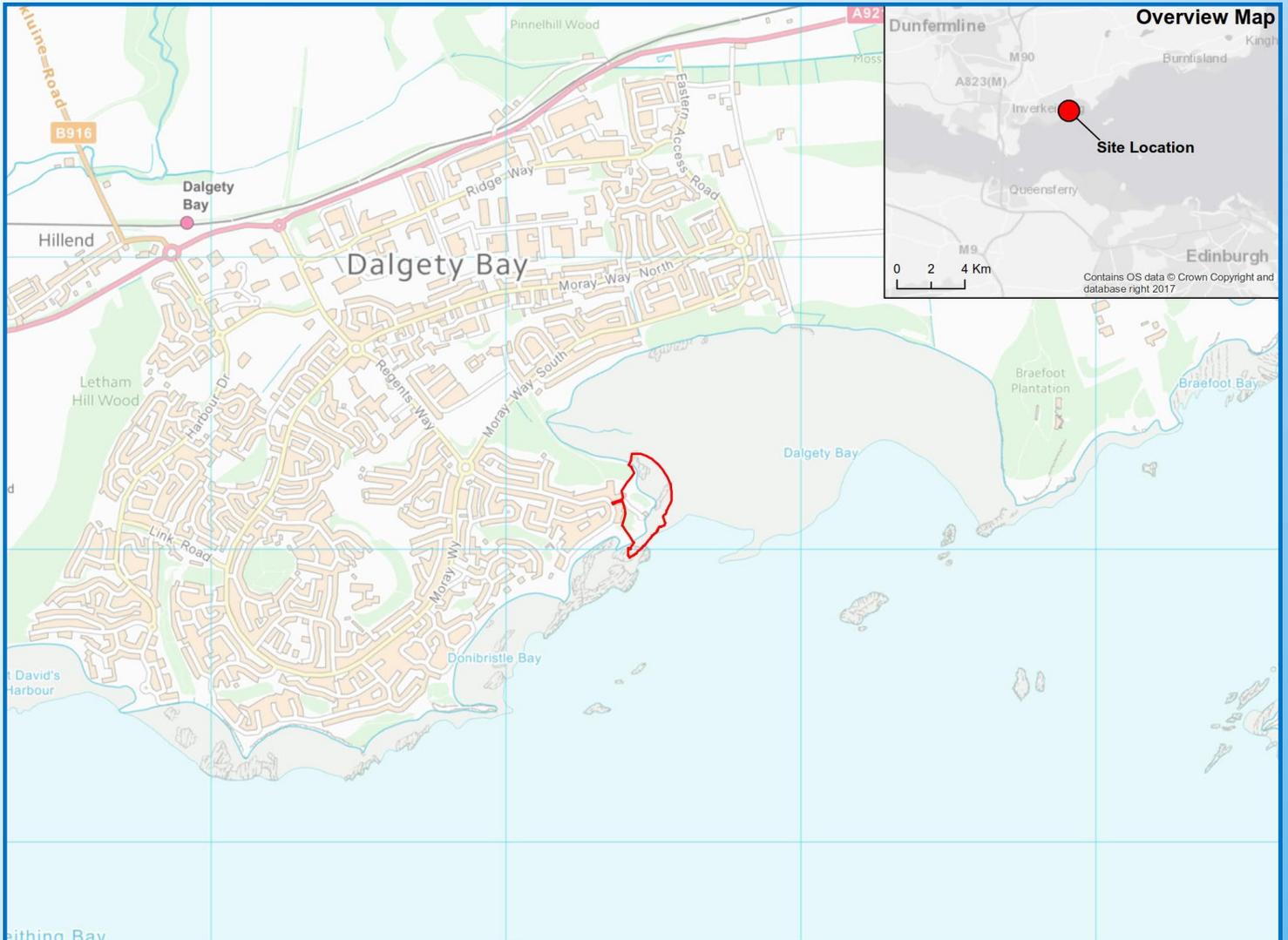


Figure NTS1: Site Location

Project Background

During the First World War, the area surrounding the Dalgety Bay foreshore was utilised by the Royal Naval Air Service as an airfield (Donibristle) which subsequently became a fleet aircraft repair depot. The area was then used by the Royal Air Force (RAF) as a shore training base until 1939 when it was re-commissioned as HMS Merlin, a Royal Navy shore establishment which included a major aircraft repair yard. The facility was eventually decommissioned as a military establishment in 1959.

Radioactivity was discovered on the beach at Dalgety Bay during a routine baseline monitoring campaign related to the Rosyth Naval Base in June 1990. A limited survey was then carried out which confirmed the presence of discrete sources of radium-226 (a radioactive contaminant).

Potentially the radium-226 identified in the Dalgety Bay foreshore results from military instruments containing luminescent paint which, in line with recognised practice at the time, were incinerated with the resulting material buried on site.

The Defence Infrastructure Organisation (DIO) (a department of the Ministry of Defence) has been working

with a range of stakeholders to develop a strategy to clean up the foreshore in order to reduce or control the health and environmental risks associated with the contamination identified.

Significant work has been carried out to identify the most efficient solution to cleaning up the foreshore area. This has included the production of an 'Options Appraisal' which considered four different approaches to managing the radium, and a 'Management Strategy' which developed and tested these Options in order to recommend a preferred solution.

The preferred solution recommended in the Management Strategy has now been taken forward to the design phase and the associated physical works require both planning consent (from Fife Council) and a marine licence (from Marine Scotland). Due to the scale and nature of the development, an 'Environmental Impact Assessment' (EIA) has also been carried out and reported in an Environmental Statement (ES).

This document provides a summary of the EIA process and reports on the environmental effects which have been identified.

Other Sources of information

In addition to the ES, a number of other documents have been prepared to accompany the planning and marine licence applications. These are summarised below and it is recommended that these are considered in conjunction with this document:

- ES Volume 1: Detailed reporting of the EIA which has been carried out.
- ES Volume 2: Supporting drawings.
- ES Volume 3: Technical appendices which support the EIA.
- Planning Statement: This Statement provides an explanation of the principles behind (and justification for) the Development and how it fits with the national, regional and local planning and marine policies.
- Design and Access Statement: This Report explains the design principles and concepts that have been applied to particular aspects of the Development and how access issues have been considered.
- Pre-Application Consultation (PAC) Report: This document summarises the engagement which has been carried out to inform the community and the other stakeholders of the progression of the project and identifies how outcomes and feedback have informed the design process.
- Coastal Processes Report: The Coastal Processes Report determines how likely the sediment transport processes, and therefore the type of sediment within the bay, will change as a result of the Development. The overall conclusion is that the Development will not adversely affect the sediment transport within Dalgety Bay.

The Site

Dalgety Bay is located within Fife Council region, on the north shore of the Firth of Forth on the east coast of Scotland. The actual site where physical works will be carried out ('herein referred to as **'the Site'**') is identified in more detail in Figure NTS1.

The landward element of the Site encompasses the Dalgety Bay Sailing Club (DBSC), which comprises a number of buildings and structures including the club house, a boat store and rescue-boat house.

The DBSC has a single track vehicle access from an adjacent residential street, The Wynd which leads to car parking and a boat park. The Foreshore area includes two slipways and a jetty used by the club and an area used currently as a boat park.

The Ross Plantation, primarily broadleaf woodland, is located to the north-west of the DBSC. Much of the Ross Plantation and trees around and beyond the Club House are protected and therefore will be maintained.

The Site has been divided into five distinct Management Strategy Areas (MSAs) which all require varying remediation approaches to ensure an appropriate solution to addressing the contamination. These areas are summarised below:

- **Area H (Headland)** is located between the existing harbour wall and slipways. It is a moderately sloping gravel beach with isolated rock outcrops.
- **Area S (Slipway)** is located adjacent to DBSC. There are two existing concrete slipways at beach level and a raised stone jetty set within a moderately sloping gravelly/sandy beach.
- **Area BS (Boat Park Bay South)** and **BN (Boat**

Park Bay North) are located in the Boatyard area. The upper sand and gravel beach is typically 10-15m wide with sand, mud and rock below. Above the beach there is some steeply sloping rock armouring of approximately 1m in height.

- **Area BN-Z (Boat Park Bay North Zone 1)** is located on the landward strip at Boat Park Bay North and covers an area of approximately 5m wide by 35m long. The area comprises the unprotected part (i.e. no rock armouring) of Area BN, north of the reclaimed boat park.



Figure NTS2: Photographs of Dalgety Bay

Key aspects of the development are described below:

- The strategy for **Area H** is to replace the existing armour stone and extend the area covered by rock armour with the new Cover System, which consists of a geotextile membrane and protective rock armour to prevent release of radium materials. The Cover System will extend seaward from existing ground level, as is currently the case. At the western edge the Cover System will tie in with existing rock outcrops and at the eastern extent it will be retained against the new Slipway.
- The strategy for **Area S** is to remove the existing slipway and jetty structures then excavate the foreshore to remove contamination. It is anticipated that the existing slipways and jetty would be removed in two phases with a temporary jetty installed to allow DBSC to continue to operate while a new Slipway is constructed.
- The strategy **Areas BN and BS** is to replace the existing armour stone with a new Cover System and extend the area covered by rock armour as is the case in Area H.
- The strategy for **Area BN-Z** is to completely excavate contaminated material and replaced with non-contaminated material.

The Development

The primary objective of the Development is to address health risks caused by potential exposure to contaminated objects. During the design phase, numerous options were considered for each of the five MSA's and each of these options was assessed against a number of environmental and social criteria.

It was concluded in the Management Strategy that the removal of higher activity particles and the installation of a 'Cover System' to prevent erosion and release of further contamination onto the foreshore was the most favourable option.

As such, the physical works required to address the radium contamination ('**the Development**') primarily comprises of a cover system consisting of a robust, 'geotextile' held in place and protected by rocks. The existing DBSC slipway and jetty structures will also be removed and replaced with a single slipways and jetty structure ('**the Slipway**').

The majority of materials will be delivered by barge (example below) to reduce the number of vehicle movements to the Site. Radioactive contaminants encountered during the construction works which exceed activity thresholds will be removed off site and disposed of under an appropriate waste licence as required by law.

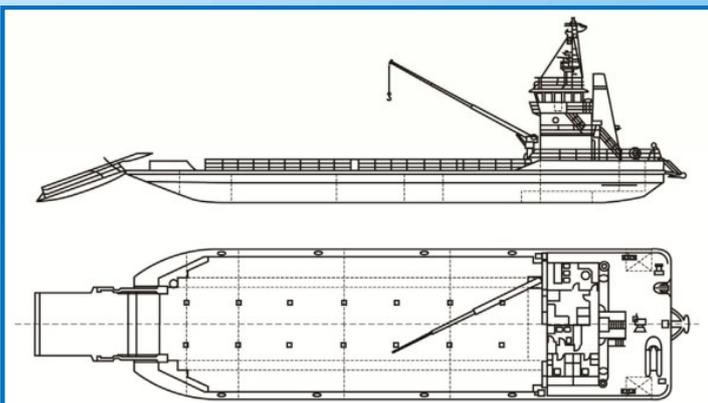


Figure NTS3: Construction Barge

Scoping & Consultation

Proactive engagement has been fundamental to addressing the health and environmental risks associated with the contamination at Dalgety Bay and ensuring the finalised solution is fit-for-purpose. Consultation has been undertaken with a range of interested parties including (but not limited to) formal government bodies such as the Scottish Environment Protection Agency (SEPA) and Scottish Natural Heritage (SNH), Fife Council and Marine Scotland, as well as landowners and the local community. An EIA 'Scoping Report' was prepared to share information with interested parties on the likely environmental impacts and determine which environmental topics should be addressed in further detail.

Extensive consultation was carried out by Fife Council as part of the scoping process and a number of additional issues and opportunities were highlighted in the Scoping Opinion: a formal document issued by Fife Council in consultation with Marine Scotland as decision making authorities.

Through the scoping process, the following environmental issues were identified as requiring assessment:

- Landscape and Visual;
- Water;
- Nature Conservation;
- Ornithology (Bird Life);
- Traffic and Transport;
- Noise and Vibration; and,
- Coastal Processes

These environmental topics have been considered in the EIA and are discussed further in the Environmental Statement. The only exception is Coastal Processes which has been assessed in a separate report which will be submitted in support of the planning and marine

licence applications (AECOM Coastal Processes Report, February 2017).

In addition to the above, two public exhibitions were held in November 2016 to provide an opportunity for all stakeholders to view the current status of the Development and give feedback and suggestions in respect of the proposed design and implementation.

Further engagement will be carried out during construction to ensure that the public and other stakeholders will be fully informed of the construction processes and program.

Approach to the EIA

The purpose of the EIA is to identify and assess the likely significant environmental effects resulting from the construction and operation of the Development. One of the key aims has been to integrate environmental considerations into the design from the very start of the process.

The main steps that have been followed in undertaking the EIA are summarised below:

- Baseline surveys were undertaken to identify and describe the existing conditions or environmental character of the area potentially affected by the Development;
- Relevant natural and man-made processes that may change the character of the Development Site were identified as part of the baseline surveys;
- Consideration was given to the possible interactions between the Development and both existing and future conditions of the site. These effects on the site were assessed by the sensitivity and the magnitude of impact on the environment.
- The possible environmental effects, both direct and indirect, were predicted and used to inform the site design process;
- Recommendations were made to avoid, minimise or mitigate adverse effects and, where possible, enhance positive effects;
- In cases where no practical mitigation measure has been identified, the ES has highlighted remaining or 'residual' impacts and classified these in accordance with a standard set of significant criteria; and,
- The results of the EIA for the final design are reported within this ES.

The EIA process aims to assist good decision-making based on information about the potential environmental effects of the Development. The approach to assessing the significance of likely environmental effects considers a combination of the magnitude of the impact and the sensitivity of the receiving environment (receptor). When the magnitude of the impact and sensitivity of the receptor are considered together a judgement on the significance of effects can be made. The table below outlines this relationship in more detail (the effects regarded as 'significant' are highlighted in blue):

Sensitivity or Value of Receptor	Magnitude of Impact			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Moderate	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very Low	Minor	Negligible	Negligible	Negligible

Table 1: Classification of Environmental Effects

The significance of the effects arising from the Development are reported with reference to the table above and using a seven-point scale as follows:

- Major Adverse;
- Moderate Adverse;
- Minor Adverse;
- Negligible;
- Minor Beneficial;
- Moderate Beneficial; and,
- Major Beneficial.

Policy Context

The Planning Statement (February 2017) provides a more detailed assessment of the planning and marine policies which govern development of this nature, and provides justification which demonstrates that the Development meets these requirements.

While the remediation of the foreshore at Dalgety Bay is not specifically referenced through national or local land use or marine policy, it is apparent that the Development itself is in line with national objectives to protect and enhance Scotland's coastlines and sustainably manage marine resources.

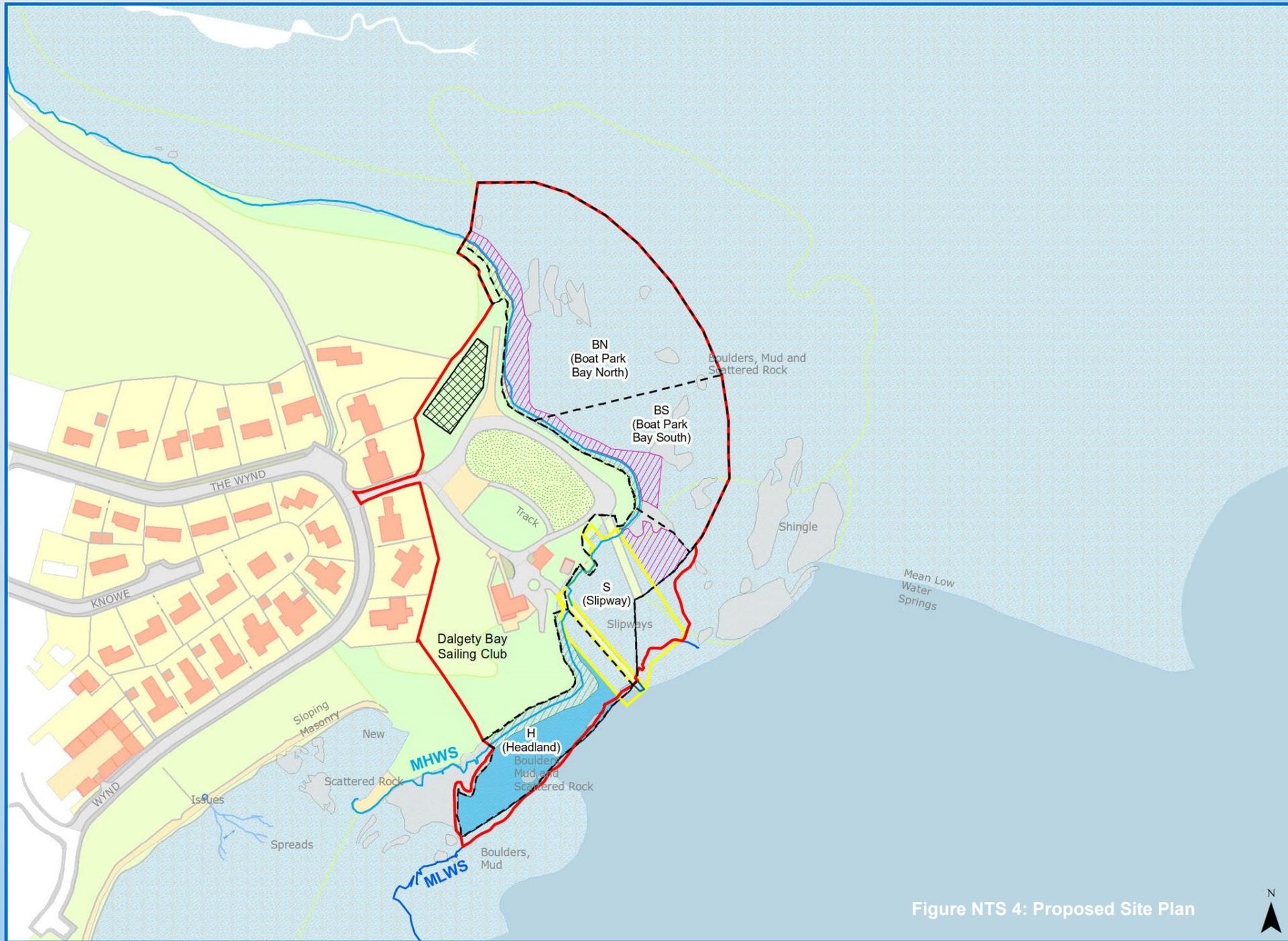
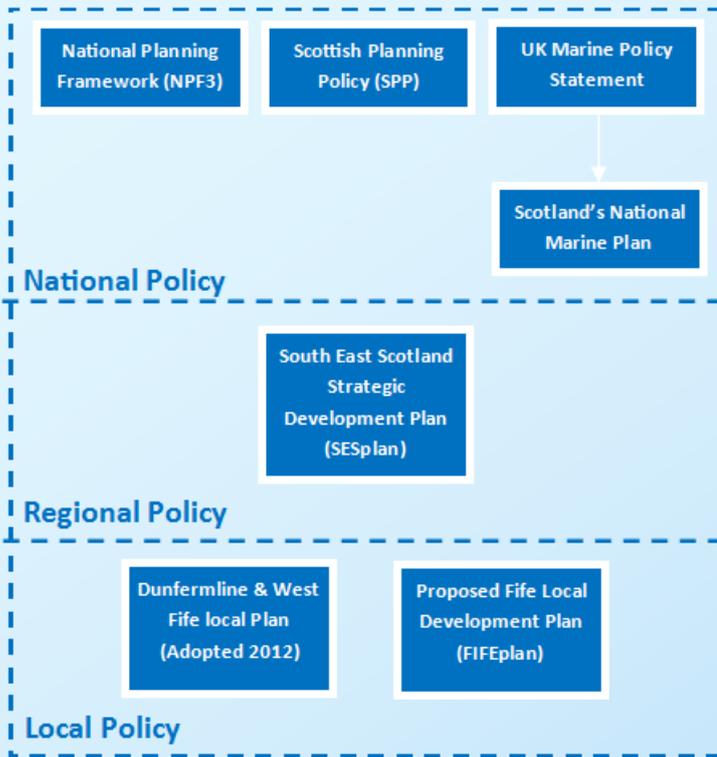


Figure NTS 4: Proposed Site Plan





requirement for foundation piling;

- A protective bund or barrier will require to be installed during excavation at Area BN-Z to prevent seawater ingress and the subsequent risk of contaminant dispersal;
- Rock armour stone and large pre-cast concrete slabs for the Slipway will be delivered by barge and stockpiled on the foreshore area, negating the requirement for this to be stored within the compound;
- No materials will be unloaded from the barge directly to the water environment; and,
- The works will be carried out over two consecutive six-month summer periods (approximately April to September), primarily to mitigate potential impacts on wintering birds in the adjacent Special Protection Area (SPA);

The environmental effects specific to each individual topic are described below.

Consideration of Environmental Effects

The assessment of impacts has been carried out through six individual topics; **Landscape and Visual, Water, Nature Conservation, Ornithology (Bird Life), Traffic and Transport, and Noise and Vibration**. As part of the EIA process, a number of in-built design measures have been incorporated into the construction and implementation methodology of the Development in order to reduce environmental impacts. These include for example:

- Rock armour, where present, will be removed in strips to minimise the duration that the embankment will be unprotected;
- Grassed areas which will form the working platform will require a temporary cover system (geotextile and stone) to mitigate any potential cross contamination;
- Work on the foreshore would be progressed between high tides;
- The existing slipways and jetty would be removed in two phases with a temporary jetty installed to allow the DBSC to continue to operate whilst the new structure is constructed;
- The proposed Slipway will be formed in sections from pre-cast concrete slabs with the geotextile membrane placed beneath, negating the

Landscape and Visual

The EIA includes a Landscape & Visual Assessment (LVIA) which considers any effects on the local landscape and seascape. This concludes that no Historic Gardens and Designed Landscapes, Local Landscape Areas, designated Open Space or other significant landscape features will be affected by the Development. The only significant visual impacts are during construction and will be temporary and reversible.

Figure NTS5: Dalgety Sailing Club Existing View



Figure NTS6: Dalgety Sailing Club Proposed View



(Indicative)

Water

The Water Environment assessment considers potential effects on surface water, groundwater drainage infrastructure and flood risk. Sensitive receptors in the Study Area identified as part of the water environment assessment include the Firth of Forth and its associated designations (Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar wetland).

It is recognised that potential risks to water quality could stem from contamination of coastal water during construction, due to factors such as damage of fuel tanks, washing effluent discharge or leakage of oil of plant working in the intertidal zone. This is of particular importance, given the potential for these sources to enter the water environment through surface run-off, or from wave action when water levels are high. A number of mitigation measures, environmental commitments and good site practices have therefore been established to minimise the risk of impact on surface water, drainage infrastructure and groundwater during construction. The assessment concludes that provided the mitigation measures identified are implemented, there will be no significant impacts on water quality, drainage infrastructure or groundwater during construction.

It should also be noted that once operational, the Cover System will have a minor positive effect on water quality. Furthermore, although the Development is not intended to act as a flood defence, upon completion there will be betterment in terms of flood risk and erosion protection.



Figure NTS7: Dalgety Sailing Club Existing Jetty

Nature Conservation

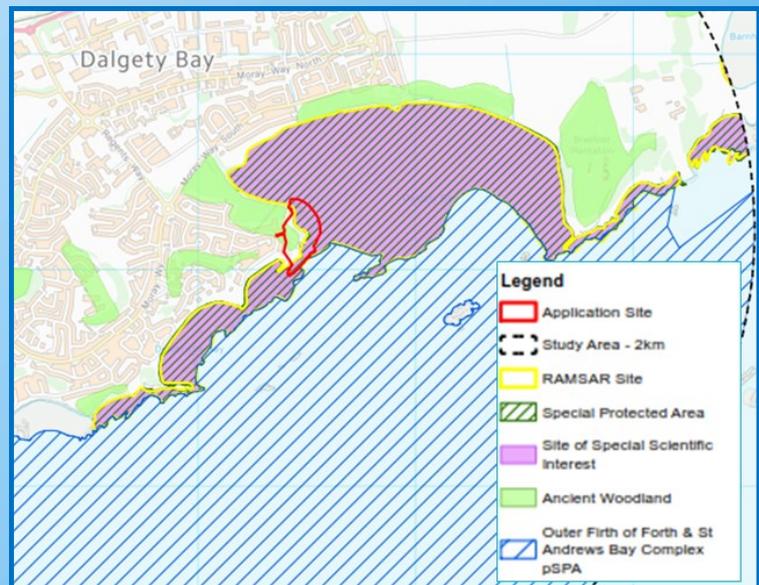
The nature conservation assessment was informed by desktop and field based research including an extended Phase 1 Habitat Survey, which was completed in June 2016. This supplements an Intertidal Phase 1 Survey Report reported by AMEC in February 2015.

The Phase 1 Habitat Survey sought to establish the presence of a range of ecological receptors in the area including:

- The Firth of Forth and its Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar designations;
- The Ross Plantation wildlife site;
- Ancient woodland and green networks;
- Protected mammals including bat, red squirrel, harbour porpoise grey seal and fish; and,
- Habitats including woodland, grassland and the foreshore habitat.

The Nature Conservation assessment provides a detailed appraisal demonstrating that, taking into account appropriate design development and the implementation of mitigation measures during construction (minimising the development footprint, summer working and undertaking the majority of works at low tide) there will be no adverse effects on habitats or species in the area.

Figure NTS8: Designated Sites



Ornithology (Bird Life)

The desk and field based assessment of predicted impacts on birds concludes that taking into consideration the recommended mitigation measures (summer working to avoid over wintering birds, keeping barges away from exposed rocks and islands in the Firth of Forth and the mouth of Dalgety Bay, not working at night and avoidance of disturbance to nesting birds) there will not be any significant ornithological impacts of any kind.

Traffic and Transport

The sourcing of materials and resulting transport route to the Site will be a matter for the Contractor to agree once appointed. The traffic and transport assessment therefore considers potential routes between the Site based on active quarries in the locality.

The initial assessment concluded that transporting all construction materials to the Site by Heavy Goods Vehicle (HGV) would result in an unacceptable impact and therefore recommends the delivery of the vast majority of material by sea.

Based on this approach, the number of HGV movements proposed is deemed to be negligible (i.e. less than one two-way movement per day over the construction period). However, a Traffic Management Plan has been recommended to ensure residual temporary effects relating to construction traffic are minimised. Upon completion, operational access to DBSC will remain unchanged.

Overall, the embedded mitigation of reducing the number of HGV movements to the Site by utilising barge transportation together with the implementation of a robust Traffic Management Plan will ensure that the Development does not result in any significant traffic and transport impacts.



Figure NTS9: Preferred Routes to Site

Noise and Vibration

The noise and vibration assessment identifies three receptors at The Wynd (numbers 39, 41 and 47) as being the most sensitive to potential noise/ vibration impacts. Baseline monitoring was completed at The Wynd to determine existing noise levels. Predictions for noise effects on receptors from construction noise and vibration resulting from the Development were assessed using

different scenarios of noise threshold.

As discussed in the Traffic and Transport Section the majority of materials will be delivered to the Site by barge. This has ensured that the noise and vibration impacts on residential properties has been reduced significantly through the design process.

In addition, no materials will be deposited into the water environment and pre-cast structures will be utilised negating the requirement for pile foundations. These construction strategies will ensure that noise and vibration in the marine environment will be minimised.

The construction compound will be appropriately configured and managed to minimise impacts on neighbouring properties.

No significant noise and vibration impacts are expected and good site practices will also be employed to ensure that impacts are minimised as far as possible.

Cumulative Assessment

Cumulative effects occur when a number of individual predicted environmental impacts from development or developments add up to create additional or a greater effect. The cumulative assessment therefore identifies potential cumulative impacts and their significance; taking into account the location, timing of activities and developments, and their associated impacts.

As part of this assessment, a number of terrestrial and marine based developments which could come forward for development at the same time as the Development at Dalgety Bay were considered. Overall, the primary cumulative effect which has been identified results from increases in road based construction traffic. Should a number of developments be brought forward concurrently, there could be possible air quality, noise and traffic related impacts as a result of increased construction vehicles. These impacts will be short term and given the minimal amount of HGV movements proposed as part of the Development, the effects are considered to be minor adverse, which is not significant. It is expected that traffic levels will be appropriately controlled by consenting authorities as wider developments are approved.

Summary and Conclusion

Adverse Effects

Residual adverse effects resulting from the Development which cannot be avoided by the implementation of suitable mitigation can be summarised as follows. These impacts are temporary (during construction only) and reversible.

Landscape and Visual:

- Visual impacts resulting from construction processes at 2 of the 6 identified viewpoints (Viewpoint 1 – Dalgety Bay Sailing Club and Viewpoint 3 - Fife Coastal Path, Crow Hill Wood east of 'Sealstrand').

Beneficial Effects

The primary benefit of the Development is the remediating the foreshore in order to reduce or control the health and environmental risks associated with the pollutant linkages identified and thereby meeting the requirements of the Management Strategy. Furthermore implementing a new Slipway will improve the recreational potential of DBSC. No further significant environmental benefits have been identified through the EIA. However, the following minor beneficial effects are worth noting:

- The risk of erosion and flooding impacts on vacant coastal land will be reduced indirectly;
- Coastal grassland will be improved given the inclusion of sowing of a coastal grassland seed mix of local provenance in the area behind the concrete headwall in Area H once filled with topsoil.
- Surface water quality of the Firth of Forth Water Body will be enhanced in the longer term.



Figure NTS10: View from 'Braefoot Point', east of Dalgety Bay

Availability of Information and Next Steps

This Non-Technical Summary and associated ES supports the submission of a major planning application and associated marine licence for remediation works at Dalgety Bay.

The ES and associated supporting documents are available for download from the Fife Council planning portal website (<http://planning.fife.gov.uk/online/>). Details of the previous EIA screening (ref: 16/01079/SCR) and scoping (ref: 16/02372/SCO) consultations can also be viewed through this facility.

Hard copies of the ES are also available for viewing at Fife Council Planning Authority offices at the following address:

- Fife Council, Development and Buildings, Development Management, Kingdom House, Kingdom Avenue, Glenrothes, KY7 5LY.

Any representations regarding the Development should be made directly to Fife Council and Marine Scotland in one of the following ways:

- Online at the above website (Fife Council only);
- By email development.central@fife.gov.uk (Fife Council) and ms.majorprojects@gov.scot (Marine Scotland) .
- By post to the following addresses:
 - Fife Council, Development and Buildings, Development Management, Kingdom House, Kingdom Avenue, Glenrothes, KY7 5LY and,
 - Marine Scotland, Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB.

ABOUT AECOM

In a complex and unpredictable world, where growing demands have to be met with finite resources, AECOM brings experience gained from improving quality of life in hundreds of places. We bring together economists, planners, engineers, designers and project managers to work on projects at every scale. We engineer energy efficient buildings and we build new links between cities. We design new communities and regenerate existing ones. We are the first whole environments business, going beyond buildings and infrastructure. Our Europe teams form an important part of our worldwide network of nearly 100,000 staff in 150 countries. Through 360 ingenuity, we develop pioneering solutions that help our clients to see further and go further.

www.aecom.com

Follow us on Twitter: @aecom