Stranraer Marina Expansion Project

Environmental Impact Assessment Report

Non-Technical Summary

August 2025

FAIRHURST

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CONTROL SHEET

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Non-Technical Summary

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1.0 Introduction and Background

1.1 Fairhurst have been appointed to prepare an Environmental Impact Assessment (EIA) Report (EIAR) which sets out the findings of an EIA relating to a project for the expansion and redevelopment of Stranraer Marina, including dredging ("hereafter referred to as the proposed development"). Fairhurst's appointment is by Balfour Beatty Civil Engineering Limited (BBCEL) who in turn are appointed by Dumfries and Galloway Council (DGC) ('the Applicant'). The EIAR documents the findings of the EIA process, which has been applied to the proposed development, which will accompany the following consent applications:

- Planning Permission from the Local Planning Authority (LPA) under the Town and Country Planning (Scotland) Act 1997 (As amended)[1] for licensable activities above Mean High Water Springs (MHWS); and
- Marine Licences from Marine Directorate – Licensing Operations Team (MD-LOT)[2] under the Marine (Scotland) Act 2010[3] for licensable activities below MHWS, including for construction works below the MHWS tide level, and for the associated capital and maintenance dredging and disposal of sediment for beneficial use.

1.2 The EIA process seeks to identify and assess the likely significant effects resulting from both the construction and operation of the proposed development, with the aim of ensuring that, where possible appropriate mitigation has been incorporated into the design of the project (embedded mitigation), and where necessary additional mitigation measures are identified to help alleviate significant adverse effects.

1.3 As required by Schedule 4 of the Town and Country and Planning (Environmental Impact Assessment) (Scotland) Regulations 2017[4] and Schedule 4 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017[5] a Non-Technical Summary (NTS) has been prepared to accompany the EIAR. Therefore, this NTS explains the findings of the EIAR technical chapters in a non-technical manner.

[1] Town and Country Planning (Scotland) Act 1997
[2] Marine Directorate - Licensing Operations Team (MD-LOT) is the regulator responsible for determining marine licence applications on behalf of the Scottish Ministers in the Scottish inshore region (between 0 and 12 nautical miles (nm)) under the Marine (Scotland) Act 2010, and in the Scottish offshore region (between 12 and 200 nm) under the Marine and Coastal Access Act 2009.
[3] Marine (Scotland) Act 2010
[4] The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 https://www.legislation.gov.uk/ssi/2017/102/contents
[5] The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 https://www.legislation.gov.uk/ssi/2017/115/contents

The Need for the Proposed Development

1.4 Stranraer has had a significant maritime history based around fishing, the armed forces, and an historic long-standing ferry service to and from Northern Ireland. The relocation of the ferry terminal to Cairnryan has reduced the flow of visitors to the town which has had a significant effect, but also creates an important opportunity to reconnect the town to the waterfront through new development in and around the harbour area.

1.5 The opportunity has emerged for the expansion of the existing Stranraer Marina ("the proposed development"), a key element in the regeneration of Stranraer waterfront, to be included as a project within the Borderlands Inclusive Growth Deal[6]. The Borderlands Inclusive Growth Deal is a joint initiative to secure investment for priority projects that will deliver accelerated economic growth for the benefit of individuals, businesses and communities across the Borderlands region, Stranraer included.

1.6 The Stranraer Marina Expansion project has been included within the Destination Borderlands theme of the Growth Deal, which aims to promote tourism as a priority sector. Stranraer Marina has a provisional Growth Deal funding allocation, subject to satisfactory approval of the Full Business Case (FBC).

1.7 The original Outline Business Case (OBC) was produced in 2020 and was approved when the Borderlands Inclusive Growth Deal was signed in March 2021.

1.8 An updated Outline Business Case (OBC) (2024)[7] for the proposed development was then produced by ARUP, on the development of the FBC, which confirms that *"the aim of the project is to repurpose Stranraer and Loch Ryan as a distinctive and successful marine leisure destination and act as a catalyst for the wider regeneration of Stranraer town and its waterfront. The project was identified as a priority project through the Destination Borderlands programme and funding of £16 million has been committed through the Borderlands Inclusive Growth Deal".*

1.9 The refreshed OBC (2024) set out a 'Five Case Model' for the proposed development, including:

- **Strategic Case** - In 2011, the ferry operator moved operations up the coast to Cairnryan, leaving Stranraer without ferry services. This loss of the primary attractor for visits and

[6] The Borderlands Inclusive Growth Deal was formally signed in March 2021, bringing up to £452 million of financial investment to the Borderlands area (Source: Gov.uk)
[7] Ove Arup & Partners Limited: Stranraer Marina Expansion Outline Business Case: April 2024

spend in the local economy left Stranraer, an area that already faces relatively high deprivation levels, vulnerable and requiring transformational investment to regenerate the town and ensure a sustainable, inclusive and resilient economy. The proposed development was therefore identified as a priority project for the regeneration of the waterfront and town, and £18.023M of funding was committed with £16M from Borderlands and £2.023M from DGC. Furthermore, the OBC states that the proposed development "*has transformational potential and will be the anchor in reimagining the waterfront, under a collaborative 'One Waterfront' approach. The range of projects that will be delivered by One Waterfront will offer opportunities to boost tourism and create a more vibrant cultural and leisure destination offer. The marina expansion will act as a catalyst for waterfront development and wider regeneration, contributing to Stranraer becoming a water sports and eco-tourism destination, and also supporting wider investment and regeneration within Stranraer to deliver economic and social value".*

- **Economic Case** – Following an assessment of five shortlisted options, scored against factors including value for money, it was concluded that the design of a 223-berth comprehensive service marina was the preferred option. The OBC for the proposed development noted that a place-based appraisal was completed for the preferred option, estimating that it will support 30 net additional, permanent jobs, with an associated Gross Value Added (GVA) over 25 years of £25.3m. The review of the economic case found that the project represents value for money from a public investment perspective.
- **Commercial Case** - The commercial case sets out the procurement and contract strategy and how the SCAPE framework is being used to deliver value for money and wider community benefits. The Design Build Development Agreement will deliver the proposed development but the decision on the operational model for the marina is yet to be agreed and will be explored further at detailed design stage with the preferred option informing the financial modelling and commercial considerations within the FBC.
- **Financial Case –** The OBC explores other potential funding sources, including local, regional and national, to identify potential opportunities to fund certain elements of the proposed development, predominantly focused on potential for direct contributions to landside infrastructure and public realm, but also additional features that are not currently costed in – for example, digital infrastructure and clean energy generation.
- **Management Case –** The OBC notes that the management case presents a viable plan for delivery, and one that is aligned with recent strategic developments such as the Stranraer Place Plan and One Waterfront approach.

One Waterfront – Embracing and Unlocking the Area

1.10 The area presents a transformative opportunity to instil positive change and deliver upon the wider ambition of a 'One Waterfront' approach for Stranraer. Embracing the Waterfront, arguably Stranraer's greatest natural asset, has the potential to unlock economic, social and environmental opportunities for both locals, visitors and wildlife. Positively planned and implemented change could transform it into a people-centric destination that is lively, diverse, accessible and well-connected, with links to the Marina, the wider waterfront and Rhins of Galloway, Stranraer Town Centre, and surrounding communities.

1.11 Dumfries and Galloway Council commissioned the waterfront engagement work that was undertaken by The Stove and Creative Stranraer, which has helped gather thoughts from communities across the town and celebrate the past, present and future of Stranraer's Waterfront. Reflecting the views gathered, the proposals are intended to reimagine and reconnect the Waterfront to the heart of Stranraer and its people, enabling the area to become a multifunctional, high quality, vibrant and representative public space. The area of reclaimed land could become a place to play, reconnect with the water, and socialise through improved public realm, art installations, and space for mixed community uses.

EIA Screening

1.12 In respect of the proposed development, comprising of both marine and terrestrial development, an EIA Screening Opinion request was submitted to both Marine Scotland - Licensing Operations Team (MS-LOT) (now Marine Directorate - Licensing Operations Team (MD-LOT)) and DGC as the Local Planning Authority (LPA). The requests for EIA Screening Opinions were submitted in accordance with the relevant requirements, as set out in the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 and the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

1.13 An EIA Screening Opinion was received from MS-LOT in February 2021. It was determined by MS-LOT that the "*proposed works are an EIA project under the 2017 MW Regulations and, therefore, an EIA is required".*

EIA Scoping

1.14 The main function of the EIA scoping exercise is to identify potentially significant issues for detailed assessment and those that can be 'scoped out' of future assessments.

1.15 An EIA Scoping Report (March 2021)[8] setting out the proposed scope of the EIA for the proposed development was submitted to MS-LOT, and received in June 2021 (**Appendix 1.2 – Volume 2** of the EIAR). In accordance with Regulation 14 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ("2017 MW Regulations"), the Scottish Ministers considered the content of the Scoping Report as sufficient and issued their Scoping Opinion, (February 2023)[9].

Pre-Application Engagement and Consultation

Non-Statutory Engagement

1.16 The Stranraer Waterfront Community Engagement Project is an innovative community engagement project funded by Dumfries & Galloway Council and delivered by The Stove Network and Creative Stranraer. The first phase of this work took place from November 2023 to April 2024 and the second phase began in July 2024, with completion coinciding with final planning application and marine licence applications submissions in 2025. The project employs The Stove Network's distinctive creative placemaking approach: using arts, culture and creativity to support community-led change. This methodology places communities at the heart of Stranraer's future vision for the Waterfront, ensuring it reflects local priorities, ignites civic pride, strengthens identity, and builds long-term social and economic value through participation, connection and collective agency.

1.17 The key objective was to include diverse community voices and ideas in the final designs for a re-imagined waterfront in Stranraer by offering a dynamic creative engagement programme (including 78 hands-on workshops, 15 public art interventions, 5 town hall meetings, and 3 large-scale public events) to bring the community together to re-connect with the waterfront and imagine what this place could be in the future for local people and visitors. The process was iterative, allowing new Ideas and input to emerge from local people, groups and businesses which has provided clear evidence of community needs and aspirations. The

[8] RPS Group: Environmental Impact Assessment Scoping Report – Stranraer Marina (March 2021)
[9] Marine Scotland: Scoping Opinion adopted by the Scottish Ministers under Part 4 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Dumfries and Galloway Council Stranraer Marina Development: February 2023

design team has worked to incorporate these into the final design that are submitted to the Competent Authorities.

1.18 From November 2023 to April 2025, 1,698 individuals and 40 local organisations have participated. The Creative Communications campaign has a digital reach of over 30,000.

Statutory Pre-Application Consultation (PAC)

1.19 The proposed development falls within the prescribed classed of licensable activities, which require pre-application consultation (PAC), in accordance with The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013[10] and with the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013[11] (as amended by the Town and Country Planning (Pre-Application Consultation) (Scotland) Amendment Regulations 2021[12].

1.20 Public consultation events were therefore undertaken at the Stranraer Millennium Centre on the 28th November 2024 and 24th April 2024.

1.21 A PAC report, which summarises the consultation exercises undertaken to date and responses received has been prepared in support of both the planning application and applications for marine licences.

The Environmental Impact Assessment (EIA) Report (EIAR)

1.22 The accompanying Environmental Impact Assessment (EIA) Report (EIAR) records the findings of the EIA process, which has considered all the likely significant effects of the proposed development, in order to suitably address the requirements of both consenting regimes.

1.23 Where potential significant adverse effects on the environment are identified, the EIAR records the appropriate standard and additional mitigation measures, identified by the EIA topic specialists to help prevent, reduce, and where possible, off-set and compensate for, the potential adverse effects. Cumulative effects are considered for each environmental topic, within each technical chapter.

[10] The Marine Licensing (Pre-application consultation) (Scotland) Regulations 2013
[11] The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013
[12] Scottish Statutory Instruments: 2021 No. 99: The Town and Country Planning (Pre-Application Consultation) (Scotland) Amendment Regulations 2021

1.24 The EIAR consists of three volumes:

- **Volume 1** – Main Technical Assessments;
- **Volume 2** – Appendices to the Main Technical Assessments; and
- **Volume 3** – Drawings and Figures.

Availability of the EIA Report and Non-Technical Summary

1.25 Copies of the EIAR (including this NTS) can be obtained for a charge of £500.00.

1.26 Contact details for copies are as follows:

Michael Jones
Fairhurst
1 Arngrove Court
Barrack Road
Newcastle-Upon-Tyne
NE4 6DB
Tel [Redacted]
E-mail [Redacted]

Technical Competence

1.27 The EIAR and NTS have been co-ordinated and compiled by Fairhurst Group LLP on behalf of the Applicant, with input from various technical experts. In accordance with both The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 the EIA has been undertaken by competent experts as set out in **Table 1.1** below.

Table 1.1 Competent Experts

Chapter/ Topic	Competent Experts	Company
EIA Co-ordination & Project Management	Michael Jones BA(Hons) DipTP MRTPI Stephen Raggett-Batchen BEng (Hons) CEng MICE Simon Shillington BEng (Hons) MEnvS CEng MICE	Fairhurst Group LLP
Coastal Processes	Adrian Bell BSc CEng FIEI FIAE MICE MIStructE Kristopher Calder BSc (Hons) MSc C. Sci MCIWEM C.WEM AMICE Dr Naomi Shannon BEng (Hons), PgCHET, MSc, PhD	RPS
Navigation and Safety	Martin R Latimer – Dip YBM Cameron MacPhail -DipHM DipPM Ross MacDonald - BEng (Hons)	Bluesea Consulting LLP
Major Accidents and Disasters	Stephen McAfee BSc MSc AIEMA IAQM MIEnv S	RPS
Flood Risk Water Quality	Vanora Ford BEng (Hons) CEng MICE Laurent Glasson BSc MSc CWEM MCIWEM Jenny Kirkpatrick BSc MSc CWEM CEnv MCIWEM Louise Connolly MEng GMICE	Fairhurst Group LLP
Benthic Ecology Fish and Shellfish Ecology	Bethany Reed – BSc in Marine Biology and MSc in Marine Science Luke Goodall – BSc and MSc in Marine Science David Alexander – BSc in Marine Science and MSc in Coastal Management	Eco Marine Consultants
Marine Mammals Terrestrial Biodiversity and Ornithology	John Thompson BSc MSc MCIEEM Claire Snowball BSc MSc MCIEEM Niamh Quirk BSc MSc Qualifying member of CIEEM Thomas Wilson BSc MSc Qualifying member of CIEEM	EcoNorth
Transportation	John Craft MCIHT	Fairhurst Group LLP
Air Quality	Dr Steven Lees BSc (Hons) PhD MIAQM MIEnv Sc Jinho Looi MSci, MA (Cantab), AMIAQM, AMIEnvSc.	RPS
Climate Change	Andrew Tasker BSc (Hons) MSc GradIEMA Alice Paynter BSc (Hons) PIEMA	RPS

Chapter/ Topic	Competent Experts	Company
Noise and Vibration	Pamela Lowery MSc MEng MIOA PIEMA Emily Forster BSc (Hons) AMIOA	RPS
Underwater Noise	Rasmus Sloth Pedersen MSc, MIOA, MIEnvSc, CSci	RPS
Soils, Geology and Contamination	Kirsty Walker BSc, CGeol, Rogep Craig Laughlan BSc (Hons) Lauren Buchanan BSc (Hons) MSc	Fairhurst Group LLP
Cultural Heritage	Richard Conolly MA(Hons) MCIfA FSA Scot	RPS
Landscape and Visual	Emily Russell BA (Hons) MLA CMLI	Fairhurst Group LLP
Socio Economics	Chijioke Anosike MSc, MIED, AssocRTPI	RPS
Cumulative Effects Mitigation and Monitoring Significance and Conclusions	See Above	See Above

Other Supporting Documentation

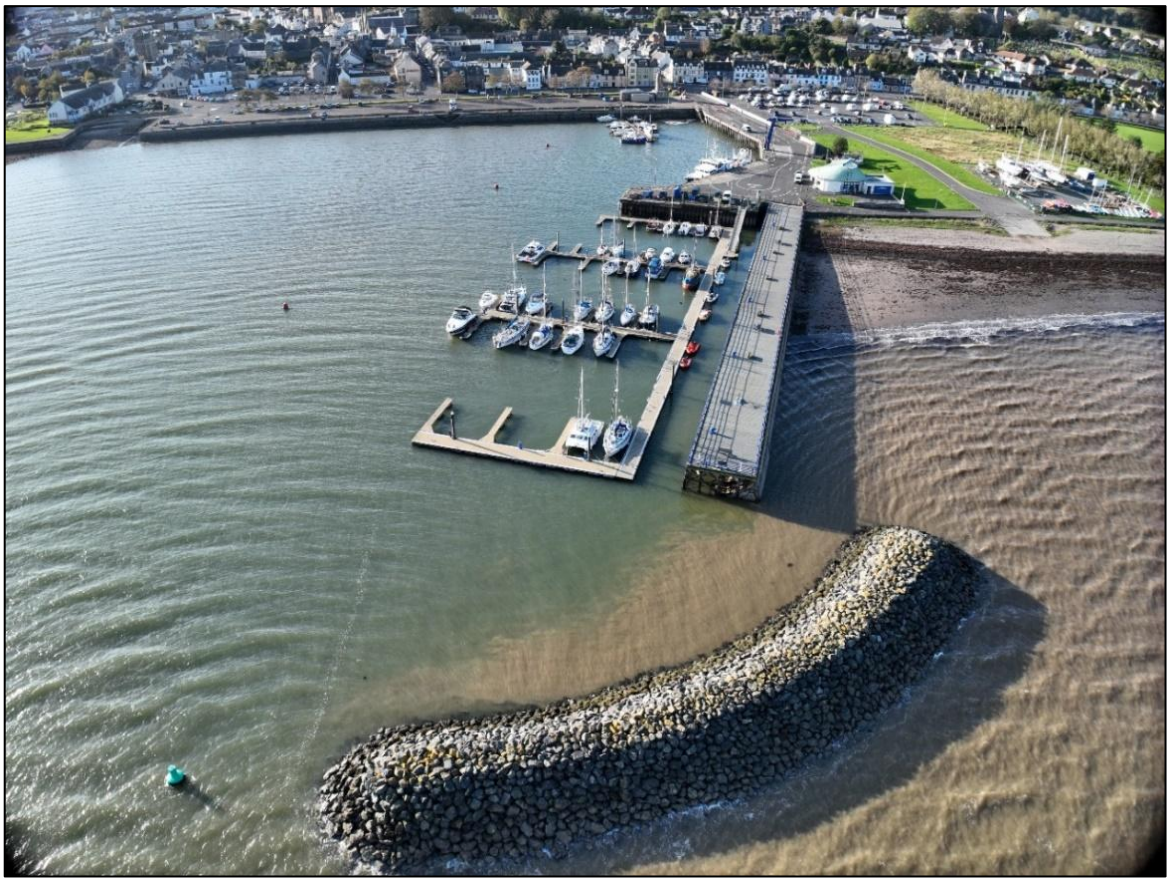
1.28 In addition to this NTS there are other supporting documents, which have been submitted to the different consenting authorities as part of the applications for marine licences and planning permission. These comprise:

- Environmental Impact Assessment Report (EIAR) (Volumes 1, 2 and 3);
- Marine Supporting Statement;
- Planning Supporting Statement;
- Placemaking Report;
- Pre-Application Consultation (PAC) Report;
- Framework Construction Environmental Management Plan (CEMP);
- Energy Statements;
- Design and Access Statement;
- Photos Pack; and
- Crown Estate Scotland Interest Statement.

2.0 Proposed Development Site

2.1 Stranraer is located in Dumfries and Galloway in southwest Scotland and lies at the south of Loch Ryan. The site is adjacent to Market Street, with access into the Marina from the junction of Market Street and Agnew Crescent.

2.2 The Marina is close to Stranraer's town centre, which offers a range of amenities, including shops, restaurants, and accommodation. The marina provides essential services for boat owners, including water and electricity hook-ups. There is also a boat yard on site, for the storage of boats. This facility also allows for boat owners / berth holders to undertake maintenance when required.



Photograph 1: View of existing Marina, West Pier and Breakwater

2.3 A number of residential dwellings and commercial properties are situated along Market Street and Agnew Crescent, opposite the site, with the A717/A7178 road running in-between.

2.4 The site of the proposed development consists of both land (terrestrial) and marine development. The existing marina is located in the north of the town of Stranraer and is operated by the applicant, Dumfries and Galloway Council. All of the areas that are part of the marina that are not 'on land' are owned by Crown Estate Scotland.

2.5 The existing marina serves the southern end of Loch Ryan and has historically been one of the busiest ports in the region. The marina itself currently consists of dogleg quay, and a finger pontoon, which is used by smaller fishing vessels, excursions and recreational craft. The current marina has approximately 70 berths over two locations within the harbour. One area is mainly set aside for commercial operators and there are 7 dedicated berths for visitors. The existing harbour also includes a number of larger commercial and fishing vessel berths against the harbour wall. Ferry terminals are also located north of the harbour in Cairnryan, giving access to the Clyde, the Solway, Isle of Man and the North Channel, and beyond to the Irish Sea.

2.6 Stranraer offers several walking and cycling routes that allow residents and visitors to explore the town and its surrounding landscapes. These routes cater to various fitness levels and interests, from leisurely strolls along the waterfront to more challenging cycling paths through the countryside.

2.7 Public access through the harbour and along the promenade is via the Coastal Walkway path, which forms part of the Rhins of Galloway Coast Path Core Path (No: 544)[13]. The Loch Ryan Coastal Path is one of the most popular walking routes in Stranraer. It runs along the shores of Loch Ryan, offering stunning views of the loch, the town, and the surrounding hills. Starting from the Stranraer Marina, the path follows the coastline northward towards Cairnryan, passing by picturesque beaches, historical sites, and areas of natural beauty. The path is mostly flat and well-maintained, making it suitable for all ages and fitness levels.

2.8 In terms of public transport, several local bus stops are within 800m walking distance of the site, on Harbour Street, Market Street and Port Rodie. These stops offer access to all bus services operating within Stranraer.

[13] Dumfries and Galloway Council: Core paths | Dumfries and Galloway Council (dumgal.gov.uk)

2.9 Land within the western section of the site, includes the existing boat yard, and adjacent grassed areas, which now benefits from planning permission (LPA Reference: 23/0976/FUL) for the erection of a boat shelter, extension of boat yard area, and instructor platform, etc.

Photograph 2: View towards Existing Boat Yard to the west of the site

2.10 Further north-east in this area, is an existing public pier and pontoon, alongside the Harbourmaster and Coastguard building and Fisherman's compound. Land within this part of the site also benefits from planning permission (LPA Reference: 23/0970/FUL) for the erection of a new watersports centre, formation of an additional parking area with associated hard and soft landscaping.

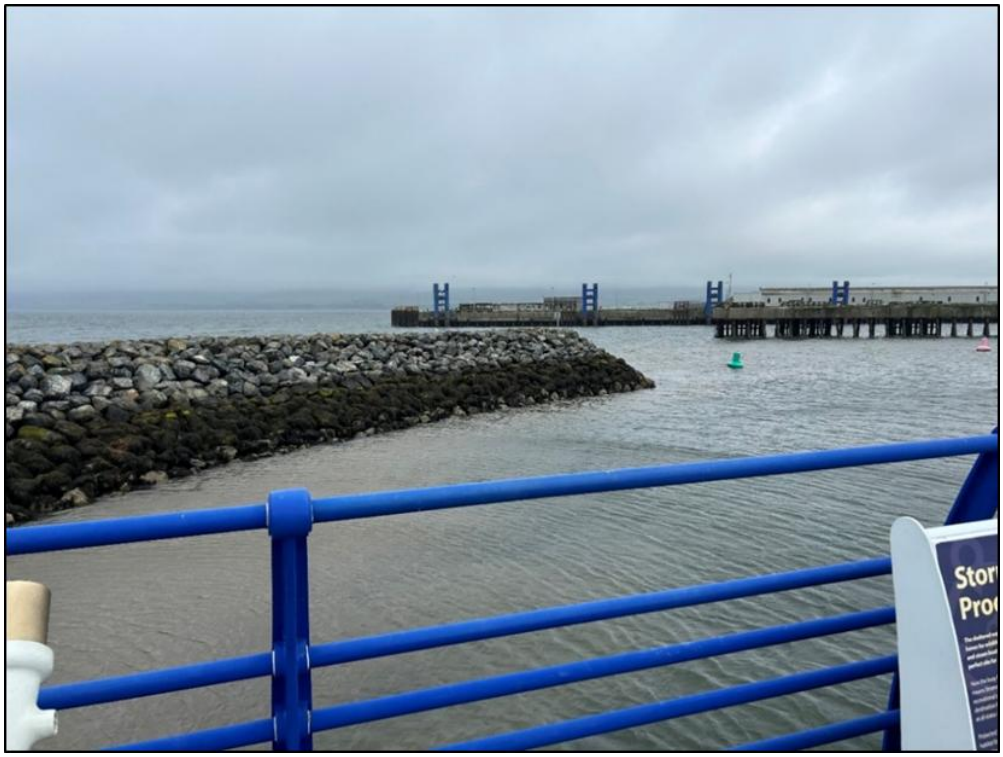
2.11 Vehicular access into this area is via an existing road, providing access to a public carpark, the West Pier and boat yard.

Photograph 3: views from access road towards existing Pillar Crane and Harbourmaster and Coastguard building

Photograph 4: View from Coastal Walkway path towards the beach and existing slip way to the west of the existing Marina

Photograph 5: View from Coastal Walkway path towards the existing West Pier and existing Breakwater

Photograph 6: Boats in the Marina



Photograph 7: View from West Pier towards existing Breakwater and East Pier

Photograph 8: View from West Pier back towards Harbourmaster building

2.12 There is one designated heritage asset within the proposed development site boundary. This is the Harbour Office with weighbridge (LB49655), which is a Category C Listed Building, and is the former harbourmaster's office.

2.13 The Site lies partially within the Stranraer Conservation Area.

2.14 There are a further 65 Listed Buildings in the Study area. These comprise:

- Three Category A Listed Buildings;
- 28 Category B; and
- 34 Category C.

Photograph 9: View of Listed Harbour Office (former harbourmaster's office) within Breastworks Car Park

2.15 Whilst the site of the proposed development is located within the existing townscape associated with Stranraer, it lies adjacent to two landscape character types, identified from NatureScot[14] as Peninsula (LCT 156) and Coastal Flats – Dumfries and Galloway

[14] NatureScot: Landscape Character Types 2019

(LCT 158). Both of these identified LCT's are influenced by the existing built form of Stranraer at a local level.

2.16 No international or nationally designated sites are located within 2km of the proposed development boundary. The Loch Ryan Important Bird Area (IBA) overlaps with the site boundary. The IBA was designated as such as it supports the only commercial native oyster beds in Scotland. The IBA supports important numbers of wintering waterbirds.

2.17 Outside 2km from the site, a number of designated sites identified for breeding bird interests are present. These include Glenn App and Galloway Moors Special Protection Area (SPA) which is located >4km away at the nearest point and is designated for its important population of breeding Hen Harrier.

2.18 There are three Sites of Special Scientific Interest (SSSI) located within 5km of the site. Auchrochar Wetlands is located circa 3km south east of the proposed site. White Loch – Lochinch SSSI is located circa 4km east of the site and is also a Special Protection Area (SPA).

2.19 Glen App and Galloway Moors is a SSSI and SPA, covering an area of approximately 9000 hectares (ha). The southernmost parcel of this designation, is located circa 4.6km north east of the site.

2.20 In terms of flood risk, the Scottish Environment Protection Agency (SEPA) flood maps provide guidance on the possible extent, depth and velocity for different likelihoods ('High, Medium and Low') of fluvial, coastal and pluvial flooding, alongside various associated information. The SEPA flood maps indicate that the entire proposed development site and its immediate surroundings are at risk of coastal flooding in the 1 in 200 year plus climate change (+ CC) event: the flood maps show complete inundation of the site in this scenario.

2.21 The SEPA flood maps also indicate that an area immediately south of the site boundary, along the A717 road, is at risk of fluvial flooding associated with the Town Burn in the 1 in 200 year + CC event. The indicative fluvial flood extents impact the Market Street/ Harbour Street (A717) roundabout access to the site and encroach marginally into the site in the vicinity of the Town Burn outfall and slipway. However, this watercourse is culverted along much of its length and so these maps are unlikely to be representative of flood risk associated with this watercourse.

2.22 The British Geological Survey (BGS) Online GeoIndex viewer[15] has recorded the presence of Made Ground within the onshore area of the site, which is considered to relate to the former reclamation of this area.

2.23 The British BGS Online GeoIndex viewer records the superficial geology underlying the majority of the onshore area to comprise of Marine Beach Deposits, documented to consist of clay, silt, sand and gravel. The southern onshore area is recorded to be underlain by Raised Marine Beach deposits comprising gravel, sand, and silt.

2.24 In terms of bedrock geology, the BGS Online GeoIndex viewer records the bedrock underlying both the onshore and offshore investigation areas as belonging to the Loch Ryan Formation of Permian Age. This formation is documented to comprise coarse breccia-conglomerate of greywacke clasts in a red sandstone matrix and thin beds of sandstones.

2.25 Bedrock was not encountered during the onshore and offshore intrusive investigations.

2.26 In terms of hydrogeology, The BGS hydrogeological digital map (1:625,000)[16] indicates that the Loch Ryan Formation belonging to the Stewarty Group parent unit (Bedrock), underlying the site, is classed as a moderately productivity aquifer with unfractured low permeability Breccias.

2.27 The SEPA Water Environment Hub Interactive Map[17] records the bedrock aquifer to belong to the Stranraer groundwater body which is present beneath the site (SEPA ID: 150557), with the overall environmental condition recorded as being poor.

2.28 The groundwater vulnerability (Scotland) map[18] indicates the groundwater underlying the Site to have a vulnerability class of 4a indicating it is vulnerable to pollutants not readily adsorbed or transformed.

2.29 In terms of hydrology, The closest classified surface water body is the Loch Ryan, which is within the site boundary forming the offshore area. The SEPA Water Environment Hub Interactive Map[19] records the overall condition of Loch Ryan (SEPA ID: 200011) to be good, with this water body being classified as 'Coastal'. Given the proximity and scale of

[15] BGS online viewers (geology and hydrogeology) - www.bgs.ac.uk
[16] BGS online viewers (geology and hydrogeology) - www.bgs.ac.uk
[17] Scottish Environment Protection Agency (SEPA) - www.sepa.org.uk
[18] BGS. User Guide: Groundwater Vulnerability (Scotland) GIS dataset, Version 2. Revised Report. Open Report OR/15/002. 2015
[19] BGS. User Guide: Groundwater Vulnerability (Scotland) GIS dataset, Version 2. Revised Report. Open Report OR/15/002. 2015.

Loch Ryan, it is considered that the onshore groundwater will flow in a northerly direction towards this.

3.0 The Proposed Development

3.1 The proposed development consists of a series of upgrades and expansion works to the existing infrastructure at Stranraer Marina, to accommodate more and larger vessels. The proposed works are situated both on land (terrestrial) and marine based, including:

- Revised Marina layout - inclusion of up to an additional 185 new berths, in addition to the 45 existing berths, which gives a total of 230 berths (existing and proposed). It is considered that circa 14 of these berths will be for commercial use;
- An extension to the existing breakwater, in addition to a second breakwater (which will also serve as a berthing area for large vessels);
- Capital and maintenance dredging to accommodate new marina layout;
- Fuel Berth;
- New linkspan to new berth pontoons (also referred to as marina access bridge);
- New Workshops, as well as a vessel wash down bay;
- New floating harbour/marina facilities for users of the new berth pontoons;
- Retrofitting of the existing harbour reception building to enhance energy efficiency;
- New Fishermen's compound;
- New quay wall to replace the existing wall at Breastworks car park and that of the west quay area;
- New Coastguard and marine research building (Solway Coast and Marine Pilot Project – also referred to as SCAMPP);
- Upgrading and installation of new lighting through the project area, including navigational lighting e.g. port hand light;
- The installation of a new substation area within the Breastworks car park area;
- The upgrading of the existing slipway adjacent to Breastworks car park;
- New car parking and green open space on reclaimed land area – with a new linked revetment between the land and water providing a seating area and view point; and
- Upgrades to both Breastworks and Marine Lake car parks, including motorhome stances.

3.2 It is considered that the overall construction period of the project will be up to 24 months, with a forecast year/ year of opening to be 2028.

3.3 Inputs from the project team's ecologists in terms of timing of works for dredging and piling activities were discussed with the pre-construction Contractor. This considered potential impacts on: Marine Mammals; Breeding Bird Species; and Fish species. It is therefore considered that the following calendar months will be avoided for piling and dredging, where possible:

- February;
- March;
- April;
- May; and
- June.

3.4 In relation to overwintering birds, the most sensitive periods are identified as October to March. Where the programme cannot avoid the overwintering period, tidal restrictions will be in place to avoid or minimise impacts on roosting or feeding birds.

Operational Phase

Revised Marina Layout - inclusion of up to an additional 185 new berths

3.5 The revised marina layout will include up to an additional 185 new berths, in addition to the 45 existing berths. It is considered that circa 14 of these berths will be for commercial use.

3.6 The revised marina layout will also provide for superyachts, and large vessel visitor berthing.

3.7 The addition to these berthing numbers is in relation to the existing marina. Currently this is located to the north of the harbour area. Aspects of this existing area will be reconfigured in order to allow use of this area, alongside the new expanded berths. Commercial berths will be identified and the interface between the commercial and leisure users is to be minimised through the layout proposed.

3.8 Following inspections of the existing harbour and quay walls, repairs have been identified to specific areas, and a replacement wall proposed for the Breastworks quay wall. It is envisioned that the repairs and replacement wall will be undertaken as part of the overall marina works.

Dredging to accommodate new marina layout

3.9 The current marina was last dredged in 2013. Since then, no maintenance dredging has taken place. A dredging plan has been developed for the marina expansion project.

3.10 Maintenance dredging will then occur to keep the access channels and berths at their designed depths. It involves removing recently accumulated sediments such as mud, sand and gravel.

3.11 The proposed dredging will provide a general depth of water of 2.5m with additional 0.5m margin in all states of the tide (measures from LAT, lowest astronomical tide). In the area where

larger vessels such as superyachts can berth, the provided depth will be 4.0m with an additional 0.5m margin.

3.12 It is anticipated that dredging would be undertaken using a grab or cutter suction dredger with a split hull hopper, or a similar configuration. Dredging is to various depths between -2.0m CD to -4.5m CD, with over dredge allowance for each dredging activity to suit the method to achieve the design bed levels.

3.13 Material might be placed on land for dewatering or further treatment if required prior to re-use. The disused Stena Line ferry terminal on the East Pier may offer an area of land and quayside that may facilitate such transfer of materials, away from the existing working harbour, as well as a large area of flat land to accommodate stockpiles of materials. 'Rainbowing' of dredged materials directly into the deposit area could also be considered if circumstances allow.

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3.15 Material might be placed on land for dewatering or further treatment if required prior to re-use. The disused Stena Line ferry terminal on the East Pier may offer an area of land and quayside that may facilitate such transfer of materials, away from the existing working harbour, as well as a large area of flat land to accommodate stockpiles of materials. 'Rainbowing' of dredged materials directly into the deposit area could also be considered if circumstances allow.

3.16 It is hoped that some of the dredge material will be able to be reused to form the reclaimed land. However, it is anticipated that any surplus material, or material that is deemed geotechnically unsuitable for land reclamation, is subject to offshore sea disposal. Moreover, if it is determined that the land reclamation exercise is not viable for whatever reason, then all the dredged material would be subject to offshore sea disposal If material re-issue can be undertaken, it is anticipated that the dredged material will be disposed of by a combination of disposal to create the reclaimed land (up to 48,340 cubic metres) and at off shore sea disposal (the balance of the total dredge but not less than 84,276 cubic metres). For a total of 132,616 cubic metres of dredged material with a tolerance for over dredge to meet design level for the method used.

3.17 The primary licensed sea disposal site is located to the east of Stranraer within the North Channel (MA010 – North Channel Scotland) – located approximately 38km by sea from the dredge area. An alternative disposal site (MA025 Girvan), located to the north of Stranraer, approximately 47km by sea from the dredge area, is also included within this application. This

site would serve as a back-up option which will assist in managing weather / sea condition risk during dredging operations

3.18 The following dredging parameters for the Proposed Development comprise:

- Total dredging volume 132,616m^3
- Use in reclamation 48,340m^3
- Disposal at Beaufort's Dyke 84,276m^3

3.19 The reclaimed land profile will consist of a base layer of imported material if the dredge material cannot be used for this layer, subject to testing to confirm this. Following this, the remaining area to be made up will be through use of treated dredge material.

3.20 The indicative extent of the proposed new dredging areas are:

- General depth of dredge to -3.0mCD (below chart datum) giving nominal depth in all conditions of 2.5m with a 0.5m total provision for wave-induced boat movement and sedimentation measured below LAT;
- Local area dredged to -4.5mCD for vessels with deeper draft including superyachts (4m nominal depth). Access to this area for vessels between 2.5 and 4.0m draft will be tidally constrained at certain times;
- Fuel berth area within existing pontoon area dredged to -3.5mCD;
- Channel between new marina area and former ferry channel dredged to -3.5mCD;
- Gradient of change between depths is typically 1:5, with the area around the existing breakwater extension being 1:4;
- Existing operational areas in south-west corner and existing pontoons notionally dredged to -3.0mCD.

3.21 At the time of writing this ES Chapter, the specific details of the dredging operations are not fully known, and would be confirmed at the dredging contract stage, and contractors outline which plant they propose to use.

3.22 At the time of writing this EIAR, the specific details of the dredging operations are not fully known, and would be confirmed at the dredging contract stage, and contractors outline which plant they propose to use.

3.23 Therefore, to help inform the EIA, a range of parameters were used, to allow for an assessment of worst case. For example, in terms of the coastal processes assessment, the percentage spill has been set at an upper bound to cover the range of dredging techniques applicable for

capital dredging and reclamation works, i.e. cutter suction, backhoe, grab bucket etc. The topic specialists have also used the upper bound dredging rate for the types of plant that may be used at the site. Their assessment is therefore applied to the maximum design scenario related to the impacts they are assessing.

Breakwaters

3.24 An existing breakwater is located immediately north of the existing marina berths. The proposed development comprises of an extension to the existing breakwater and the provision of an additional new breakwater, the final arrangement of which was established following completion of wave modelling (Appendix 2.1 of Volume 2 of the EIAR) and detailed design works. It is proposed to construct the breakwater extension using dredge material as fill, with a rock armour exterior to match existing, and the additional breakwater will also double up as a superyacht berthing area.

Fuel Berth

3.25 A fuel berth is proposed as part of the revised layout, to be located as part of revisions to the existing marina berths.

New linkspan to new berth pontoons (Marina access bridge);

3.26 The extension of pontoon berthing areas will require an update to the current linkspan (marina access bridge), but also the installation of an additional one. These linkspans (marina access bridges) will be located to aid commercial and leisure users to their respective pontoon areas.

New Workshops, as well as a vessel wash down bay

3.27 The current boatyard compound is being expanded, and delivered outwith this project.

3.28 Ancillary workshops are proposed in this area to provide marine related servicing. The workshops being proposed would provide short to long term lets in the immediate phasing of the project. This would allow for several contractors to lease a workshop to undertake works at the marina. It is hoped that through the development of this marina expansion, that in the long team these workshops would be taken over and ran as one entity. These units would be self-sufficient – being serviced by water and power.

New floating harbour/marina facilities for users of the new berth pontoons

3.29 Due to the inclusion of the Solway Coast and Marine Pilot Project (SCAMPP) /coastguard buildings, additional facilities for the enlarged marina cannot be provided by way of an extension to the existing Harbour reception buildings. Therefore, a new floating WC and showers facilities unit has been developed, floated off the new pontoon area.

3.30 Access will only be possible from the new pontoon area. The facilities will be placed along the southern leg of the new berthing pontoons, adjacent to the new linkspan (marina access bridge) access point.

Retrofitting of the existing harbour reception building to enhance energy efficiency

3.31 The development of retrofitting considerations to the existing harbour reception building is being delivered through the project. Within this, the enhancement of the existing building to provide improved energy efficiency is being considered.

New Fishermen's Compound

3.32 There is an existing small compound area at the marina. As part of the expansion project, this compound area is required to be increased. This is proposed to be located on the existing West Pier area adjacent to the existing Harbour Master building.

New Quay Wall to replace the existing wall at Breastworks car park and that of the west quay area

3.33 Following the inspection of the existing Breastworks quay wall in 2024, it was found that there were significant defects with this asset. Due to the findings, it was decided that a replacement structure be designed rather than undertaking repairs to the existing, and would form part of the scope of the proposed development.

3.34 The cantilevered sheet piled wall will be installed approximately 2m to the north of the existing wall, with this left in place. This new wall will replace the quay wall that currently exists. This will be similar in proposal to the west quay area also.

3.35 A Temporary Construction Platform is proposed to be included as part of the construction phase related to the construction of the South Quay wall. It is a non-permanent structure

designed to support heavy construction equipment such as cranes, piling rigs, and tracked excavators. It will also provide safe access across soft ground sea bed conditions during construction operations. The form of construction is to use a SHW Spec Class 6A material, which is granular fill suitable for underwater placement ordinarily formed of crushed stone. It will be virgin material or reused from other project.

3.36 Upon installation of the new sheet piled wall, the existing wall will be left in place, with fill imported to fill the void between the two.

3.37 This new wall at Breastworks car park will provide a wider coastal pathway as part of the overall benefit to the users of the new marina area. The west quay wall will provide a usable space for the function of the harbour area.

New Coastguard and marine research building (Solway Coast and Marine Pilot Project - SCAMPP)

3.38 The proposed development includes a new coastguard building, and marine research facility on the land directly to the south of the existing harbour reception building.

3.39 This building will incorporate two occupiers; however, both will remain separate in operation so that although one building, they are independently managed.

Redeveloped public slipway, linking into and enhancing the existing coastal walk, connecting to the new reclaimed land area

3.40 Through an optioneering exercise, the location and style of this redevelopment and enhanced slipway were considered – these included options to upgrade the existing, or move the slipway to a more useable space.

3.41 As part of the overall coastal walkway upgrade - enhancing this route to a more desirable place to walk - the slipway redevelopment will be delivered in such a way to meet the active travel requirements of the area, to ensure an enhancement of the existing, creating a more welcoming and useable connection through the harbour, and to the water itself.

Upgrading and installation of new lighting through the project area

3.42 The marina lighting is to be upgraded and enhanced throughout, including navigational lighting e.g. port hand light.

3.43 For areas such as the new coastal walkway, similar feature lighting to the current solution is proposed in order to make the area more attractive to users. Compound areas and car parking zones will also have lighting requirements reviewed and upgraded so as to ensure visibility of these areas.

The installation of a new substation area within the Breastworks car park area

3.44 Within the existing Breastworks car park, a new connection and substation is required for the project.

3.45 This item will be delivered by the Distribution Network Operator (DNO) team, with full design details for this being delivered directly.

3.46 This area has been identified to minimise impact on the overall project design, and impact on the overall area of the marina, while achieving the requirements of the DNO team for the area.

The upgrading of the existing slipway adjacent to Breastworks car park

3.47 The public slipway adjacent to Breastworks car park is to be upgraded.

3.48 The design solution has moved the current slipway further north from its current location to ensure all tide access.

3.49 The realignment of this has been developed to ensure vehicle access at the top of the slipway is enhanced to better the current setup.

3.50 The inclusion of an EZDock from Pontoon and Dock Ltd. has also been proposed as part of the design solution in order to maximise the access and use of this slipway.

New car parking and green open space on reclaimed land area – with a new link between the land and water providing a seating area and view point

3.51 In addition to the regeneration and improvement of the Stranraer Waterfront, it is noteworthy that the proposed development includes for an area of reclaimed land, including green open space. It is proposed that land reclaimed using dredged material from the marina will be used

primarily for car parking, with potential for part of the area to also host local events and community initiatives.

3.52 A new revetment would face this, with rock armour used to protect the exposed face. A new pedestrian walkway would run along this face, extending the existing walkway taking the public through the harbour, to Agnew Park to the west.

3.53 It is also proposed to include an area of large 'steps' within this area, to allow the public to sit and look out into the harbour area – allowing them to connect with the land and the sea. It is considered that the 'steps' would take the form of concrete elements, tying in with the rock armour that is proposed in the area too.

Upgrades to both Breastworks and Marine Lake car parks, including motorhome stances.

3.54 This existing car parking areas in both Breastworks and Marine Lake car parks are to be enhanced and landscaping aspects undertaken to ensure a more attractive public realm area.

3.55 Clearly identified pedestrian routes, as well as disabled spaces, motorcycle spaces and bike parking are also being provided.

3.56 The small loss of parking in these areas is being reinstated on the new reclaimed land area as detailed above.

3.57 Within the Marine Lake car park, 15 no. motorhome stances are also being proposed.

Embedded Mitigation

3.58 Through the iterative EIA process opportunities for embedded environmental mitigation, have been considered throughout the design process of the proposed development. Where possible, environmental mitigation measures have been developed into the 'Design Fix', to ensure that the final development design and site layout represents the optimum approach to reduce potential environmental effects.

3.59 The proposed development has been subject to a multi-disciplinary design process, which for example, has included input from Landscape Architects. The assessment approach undertaken as part of the EIA process was to assess the proposed development including embedded mitigation (e.g. landscaping) which is built into the design, to identify the potential

significance of effects and then, where necessary, define additional mitigation to address the impacts and report the residual significance of effects at the end of each chapter.

3.60 During design development stages, the EIA topic specialists liaised with the design team, to discuss their embedded environmental mitigation proposals. These proposals were managed by the EIA Co-ordinator and Project Manager and recorded in a centralised EIA Mitigation Tracker. The topic specialists explain within their chapters, what embedded mitigation they have factored into their assessments. Examples of embedded mitigation measures include:

- Extension to the existing breakwater and the provision of an additional new floating breakwater, the final arrangement of which was established following completion of wave modelling and detailed design works;
- Existing breakwater to incorporate shingle, etc. to encourage nesting;
- Nest boxes to be provided on new buildings;
- Flood resilience being delivered within buildings;
- New reclaimed land - A natural profile will be retained that will silt up/dry out at times of low tide as it currently does;

- Climate Change

    - EV charging points that are currently installed in Breastworks car park are to remain in use;

    - With regards to measures implemented to reduce operational emissions, these are largely limited to the implementation of the following design measures associated with the new coastguard and marine research facility, fully detailed within the accompany Statement of Energy reports (individual reports provided for the workshop, coastguard building, and research facility):

        - Installation of all-electric heating and hot water system;

        - Installation of mechanical ventilation with heat recovery;

        - Low energy lighting (e.g. LEDs) will be utilised within buildings at the proposed development;

        - Installation of solar PV on the roofs of the coastguard and marine research facility to enable 20% of regulated energy consumption to be met through low or zero carbon generating technologies;

- The existing harbour reception building will be retrofit to enhance energy efficiency;

- Landscaping
  - Retention of existing landscape framework around the site;
  - Reclaimed land to have areas of soft landscape including specimen planting (native and semi- native) to soften increased areas of hard landscape/ new built form to provide partial screening for visual receptors to the east;
  - Specimen planting between Marine Lake car park and the extended compound/ workshop area to provide partial screening of increased areas of hard landscape and built form from receptors to the south, as well as tying into the existing landscape framework of Agnew Park;
  - Enhanced areas of soft landscape within Marine Lake Car Park around the proposed coach parking including low level planting.
  - Breastwork car park to be reworked to allow for planting area to the north, as well as some seating areas to look onto the marina.
  - Reclaimed land area to have a revetment to its edge into the sea. Whilst this is an engineered solution, it will provide a softer transition of this land into the sea when compared to a retaining wall.
  - Additional soft landscape (including street trees) within Breastworks car park.

Construction Phase

3.61 To help inform the EIA process, this section, provides a summary of the anticipated construction period, with details on associated plant and machinery requirements. It is important to note that there is scope for potential extension or reduction or removal of construction stage requirements as construction methods are development. The construction stage information provided has been informed by professional judgements and best estimates at the time of undertaking the EIA.

Pre-construction enabling works

3.62 The current energy supply to the site is at capacity. The requirements to upgrade this supply are being considered currently, and it is likely that this aspect of the works be accelerated to be installed prior to construction works of the marina expansion project.

Site Specific Construction Activities or elements

3.63 Key construction related activities associated with the proposed development are likely to include, but are not limited to:

- Site establishment – this will take the form of temporary site accommodation units, installed within an agreed secure compound area within the site boundary;
- New sheet piled wall at Breastworks and the west quay – it is considered that this is likely to commence before the dredging commences;
- Install sheet piles – these will be installed using proprietary heavy-duty piling equipment with hydraulic hammer attachments driving the individual steel piles into the existing ground below;
- Concrete Cope – will be formed upon completion of piling process and pile top trimming where required. Utilising an insitu concrete forming process, transported by road;
- Dredging, Breakwater and Reclaimed Land Revetment and Reclamation – This activity will be completed by specialist contractors using marine dredging equipment, stabilisation of the dredge material using a secondary treatment process to alter the properties of the material to the desired specification. Heavy excavation equipment will be used to place and form the rock armour revetment, with subsequent heavy-duty compaction plant used to stabilise the final formation level in layers as infilling progresses to the desired finished level, likely in layers of 250mm to 300mm in depth;
- Extend Breakwater – This will be done using long reach heavy duty excavation plant to place the new rock armour material in the desired location. Materials will be transported using articulated dump trucks;
- New Marina Facility – Specialist marine floating equipment will be required to install new steel piles, with attendant work and safety boats for the duration of the activity;
- Marine plant install & Piling both on land and within the water – this is for buildings and pontoons:
    - The installation of the piles is likely to involve an aspect of vibropiling in order to help with the install of these items. This is where the pile is vibrated at high speed to assist with install into the ground material;
- Installation of new pontoons – these will form the new berthing areas;

- Installation of a new linkspan (marina access bridge) – new and refurbished linkspans (marina access bridge) are needed to allow access to the new/upgraded berthing pontoons;
- Building erection – a number of new buildings or extensions are required;
- Refurbish existing Harbourmaster Building – internal upgrade and refurbishment will be required;
- Car Parks & Hardstandings – final parking surfaces will be constructed and marked out to conform with the desired number of spaces for the expected vehicle types;
- Reclaimed Land Car Park Works – this will be new car parking capacity formed on the newly reclaimed land area;
- Marine Lake Car Park – reconfiguration of the existing car park, with the inclusion of motorhome parking spaces;
- Breastworks Car park – reconfiguration of the main car park to the south of the new marina, to accommodate linkspan (marina access bridge) access to the pontoons and marina welfare block, soft and hard landscaping and to maximise parking spaces in the marina area;
- Extended Boatyard – new hardstanding for provision of boat storage is being provided by others. However, an aspect of remedial/ fit out works are part of the scope of this project;
- Fisherman's Compound – relocated area for storage of the local fisherman's equipment; and
- Demobilise – upon completion of all construction work, all temporary accommodation will be removed, and any area of disturbed ground reinstated to the required standards.

Plant and Machinery

3.64 Although not all specific details of construction activities and associated plant are available at this stage, the below list is anticipated plant, machinery and vehicles that may be in operation during the construction phase:

Plant and Machinery List

- 25t all terrain mobile crane
- JCB 531/70 tele handler, 2.4t,
- Cat d6 dozer
- Cat 953 tracked loader
- Massey Fergusson 3075 (4x4) 90 hp tractor,
- Massey Fergusson 3080 (4x4) 100 hp tractor,

- 2.6t tipping trailer
- JCB 3cx wheeled excavator
- JCB 808 mini excavator (8.0t)
- JCB js130 excavator (13t)
- Cat 320 excavator (22t)
- Cat 330 excavator (33t)
- Large piling rig (50t plus) - new sheet piling
- Piling hammer - new sheet piling
- Komatsu pc800 excavator (80t)
- Cat 345 (65t) longreach exc (24m)
- Cat m318 wheeled excavator (18t)
- Labounty hdr 120 rock grapple (22-30t)
- Hydraulic hammer (20 - 22t)
- Electronic dig profile system
- Thwaites alldrive 6t dumper 4x4
- Thwaites alldrive 9t dumper 4x4,
- Articulated dump truck 25t artic dumptruck (11m3),
- 16t tipper truck,
- Wacker bpu 2540 compaction plate (140kg)
- Bomag bmp 8500 (1.6t) 650mm trench roller
- Bomag bw 135 ad roller (3.6t)
- 140cfm compressor
- Siltbuster fb50 mobile silt trap
- Diesel pressure washer (3000 psi)
- Jumbo bv hydraulic kerb lifter (150kg)
- Marine spud legged pontoon 34m 19m
- Workboat 5.2m steel c/w 40hp outboard
- Workboat 21m steel 400 bhp (including 2 crew)
- Kobleco cke 900g (100t) crane
- Lgp d6 dozer
- Simba harrow
- Mixer spreader

Figure 3.1: Image of Rock Grapple

Bulk Materials

3.65 The below list is the anticipated bulk materials, which will be required during the construction of the proposed development:

- C6/8 concrete 20mm agg (st1 mix)
- C40/50 concrete 10mm agg
- Surplus drainage arisings (soft)
- Unprocessed excavated sand
- Type 1 sub base as cl 803
- Acceptable fill 6f2-coarse capping
- Filter media 40/20mm graded-type b
- As dug sand duct/cable bedding
- Rock armour stone - 60-300 kg
- Rock armour stone - 1-3 tonne

Hours of Working

3.66 To help inform the assessment working during the EIA process, construction activities have been predicted to take place between 07:00-19:00 Monday to Friday; and 07:00 to 13:00 on

Saturdays. It is considered that there will be no construction works undertaken on Sundays or Bank Holidays. There will also be occasions when the contractor may have to work outside of the normal windows to hit tide times, which mainly relates to the marine tasks.

3.67 It is considered that any plant on site will be operating for the duration of the full working day for that purpose. However, this is only a prediction at this stage, to help inform the EIA process.

Temporary Construction Facilities

3.68 A typical temporary site set up will consist of a series of 32ft x 10ft containerised cabins, with self-contained office and welfare facilities for the staff and workers involved in delivery of the project. These will be powered from the mains power where a suitable connection is possible or alternatively from a temporary generator, water and foul connections will also be made to mains where possible, if not possible, waste will be contained in tanks for removal at regular intervals. They are commonly double stacked to save space, contained within a secure fenced off or fully hoarded compound.

Access During Construction

3.69 There will be a requirement to provide construction access across the entire Marina Expansion project area. A logistics and access plan will be developed in cooperation with and for approval by the LPA to ensure vehicular and pedestrian access is maintained throughout the project lifecycle. Designated access points will be created and all other construction activity will be securely fenced to ensure that any unauthorised personnel remain in the public areas.

3.70 Clear signage and directional markings will be in place to ensure clear delineation of construction activities from the normal operation of the surrounding harbour and public areas throughout. These will be maintained to the highest standards throughout the construction period and where necessary adjustments will be communicated in advance to local users.

3.71 The existing Marine Lake car park slipway access road is intended to support continued access to the Harbour area for existing users, during the construction phase.

3.72 During the construction phase, the existing shared use path that extends from Agnew Crescent, following a route around the east and north boundaries of the Marine Lake car park, to Agnew Park, will also remain open. Pedestrian and cyclist priority will also be retained over the slipway access road.

Contractor, Site Compound and Site Security

3.73 At the time of writing the EIA Report, the Applicant does not have a location fix for the site compound, however options considered include land adjacent to Agnew Park, or on land next to the East Pier. This is subject to confirmation by the Applicant in due course. Should this not be possible, an area will be clearly designated and secured from the public for the duration of the construction phase of this project.

3.74 The contractor will also likely erect hoarding around the temporary site compound, or as a minimum 2-metre-high temporary fencing (e.g. Heras).

3.75 It is considered that temporary security lighting and fencing will be required during the construction phase of the proposed development.

3.76 The contractor intends to install CCTV systems, backed up with security control room support, possibly using visiting guards.

3.77 There will also be security pods situated around the construction site, possibly around locations where the contractor can't secure plant in a main compound, to ensure these are protected by infrared beams, cameras and linked to the contractor's main security control room. The control room is operated 24 hours a day and the contractor will have access to local security and police in the area should there be any activity out of hours.

Construction Lighting

3.78 Where required during construction works at periods of low light or occasional night time working, there will be a requirement for additional general and task lighting. Large items of plant will have their own permanent lighting fitted and in operation throughout for the purposes of operator and adjacent personnel visibility. Task lighting will be in the form of diesel or electric powered tower lights or smaller handheld high-power task lighting. There will also be a requirement for general lighting to illuminate any covered walkways or within the temporary office compound.

Site Environmental Management

3.79 The Applicant is aware that the contractor will be required to produce and agree a Construction Environmental Management Plan (CEMP) to describe how construction will be managed to avoid, minimise and mitigate any potential construction effects on the environment and existing

surrounding receptors. Therefore, a Framework CEMP has been provided in support of the proposed development to help illustrate the environmental measures, which will be considered suitable during the construction phase of the project.

3.80 The Applicant is proposing to ensure that the arrangements in place are appropriate with regards to amenity of sensitive receptors, highway safety, and the surrounding environment during the construction period. The scope of the Framework CEMP includes:

- Site, Surroundings and Proposed Development;
- Key Construction Stages/ Activities;
- Highway and Traffic Management;
- Environmental Control Measures;
- Site Management and Community Liaison; and
- Conclusions.

3.81 During the construction period, the Principal Contractor will employ an Environmental Clerk of Works (ECoW), to help ensure that mitigation measures identified through the EIA process, alongside marine and planning conditions, are appropriately implemented and monitored on site during construction. At this stage a Principal Contractor has not been named and has not contributed to the Framework CEMP. It is therefore anticipated that the Framework CEMP will be revised upon a Principal Contractor's appointment to the scheme.

Waste Management

3.82 The Applicant is committed to promoting the minimisation of waste and encouraging beneficial re-use and recycling. All construction waste will be segregated at point of disposal into various waste streams (timber/ metal/ plastic/ glass etc), and all other office wastes will be removed to a recycling plant to achieve maximum recycling of all waste. The contractor will use a specialist waste broker to manage waste on their behalf.

3.83 A suitably qualified person will be appointed to fulfil the Site Waste Management role (i.e. site manager) and will be responsible for overall waste management issues arising from the project.

3.84 All materials will be responsibly sourced, and waste generated will be kept to a minimum and recycled where possible.

3.85 Sources of potential waste generation within the construction process are:

- Packaging, for example plastics, pallets, expanded foams etc.;

- Construction Waste, for example concrete and spoil;
- Waste materials generated from inaccurate ordering, poor usage, badly stored materials, poor handling, spillage etc.; and
- Dirty water.

3.86 All relevant contractors involved throughout the construction process will be required to investigate opportunities to minimise the arising of waste at source, and where waste generation is unavoidable, to maximise the recycling and re-use the potential of construction materials where possible. There will also be no burning of waste materials on site and waste will be removed as soon as practicable rather than being stockpiled.

3.87 All waste materials will be managed following the principles of the waste hierarchy as set by the European Waste Framework Directive (Directive 2008/98/EC[20]). Throughout the construction phase of the proposed development, the Applicant and the appointed contractor are to fully implement the below Waste Hierarchy to prioritise the prevention, reuse and recycling of waste:

- Prevention – prevent waste generation;
- Preparing for reuse – reusing materials;
- Recycling – turning waste into new products;
- Other recovery – for example energy recovery; and
- Disposal – landfill and no energy recovery.

Construction Staffing

3.88 The number of construction staff required on site during the construction phase will fluctuate according to the different stages of works and associated specific construction activities or elements as discussed above.

Health and Safety

[20] Directive 2008/98/EC of the European Parliament and of the Council

3.89 A Construction Phase Plan will be prepared in accordance with Construction (Design and Management) (CDM) 2015 regulations by the Principal Contractor. Further method statements and risk assessments are produced to establish safe methods of work and access.

3.90 All new personnel on site will be required to attend a site induction where safety procedures and site rules will be explained and they will be required to sign to acknowledge they have been informed and understand them. This information should also be included on the noticeboards.

3.91 A Site Fire Safety Coordinator should be appointed who will be responsible for producing a Site Fire Safety Plan and assessing the risk of fire on site. The location of emergency assembly points, fire alarms and firefighting equipment will be mentioned during site induction and included on the site noticeboards.

3.92 All users will be kept up to date with developments and advised of emergency procedures.

4.0 Alternatives Considered

Introduction

4.1 Schedule 4 (Paragraph 2) of The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and Schedule 4 (Paragraph 2) of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017, request that the applicant provides a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale), which are relevant to the proposed works and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

4.2 This chapter of the NTS, therefore sets out the main alternative options considered, including design options.

Marina Background

4.3 Stranraer Marina has been the subject of development proposals for a number of years. However, the Borderlands Inclusive Growth Deal has provided a key step towards delivery in addition to a renewed focus on project outcomes, including the potential of the project to better connect that waterfront and town centre and act as a catalyst for wider generation in the area[21].

4.4 The previous options proposed in an earlier 2015 OBC and the 2017 FBC were more focused on the strong links to the East Pier. However, as noted in the options Technical Note "*a strategic priority is that a new marina links more strongly with the existing marina, the town centre and the water sports community. It must not preclude future development of the East Pier, but its delivery is not dependent on the East Pier. The Stranraer Water Sports Association is planning a new watersports centre and the marina expansion project must consider the close interdependencies with this project in order to maximise wider benefits".*

4.5 DGC has invested in marine leisure on an ongoing basis. The marina had a partial refit in 2012, and a new services building was added in 2012, including a boatyard, and slipway in 2015 in addition to a new boat lift crane. The Council intend to continue to develop the marina operations to help attract more visiting leisure craft to Stranraer and to encourage the regeneration of the waterfront area and the town itself.

[21] Arup: Stranraer Marina Expansion Project Technical Note: April 2024

Layout Options

4.6 The development of the OBC in 2015 looked at a large number of options for the extension of the existing marina. The options relating to residential and commercial redevelopment of the East Pier area have been discounted because they have been considered by the Project Team to not connect well with Stranraer town centre. They also required extensive offshore breakwaters and dredging, which would have adversely impacted on the viability of the scheme.

4.7 As explained in the accompanying options Technical Note, the Project Team considered the following factors when considering options: scale; connectivity; efficiency; accessibility; maintenance; marina offer; infrastructure requirements.

4.8 A summary of the marina development options and alternatives that were considered by the Project Team and as part of an updated OBC and options appraisal process, is set out below. Further information, including illustrations of these options, can be found in the accompanying options Technical Note.

Alternative 1: 'Do Nothing' Scenario

- Utilising the alternative 'do nothing scenario', the existing marina facilities at Stranraer would remain the same. This option would mean no investment in the existing marina beyond regular maintenance and renewal.
- Despite there being low cost benefits associated with Alternative 1, its disadvantage is low strategic fit and no potential for transformational outcomes for Stranraer through regeneration of the waterfront area.

Alternative 2: 'Do Minimum' Scenario – additional 30 Berths

- This option fell between the 'Do Nothing' and the larger scale expansion options. This second alternative included the extension of existing walkways and finger pontoon structures to help meet demand without requiring extensive new infrastructure. The additional marina facilities included within this option were a fuelling facility, heavy duty floating breakwater, and the potential provision of an accessible pontoon. This option would have provided a total of 100 berths.
- Disadvantages identified with this option included:
    - Does not help facilitate wider regeneration;
    - Does not add significantly to socio economic value of the project; and
    - Would still require dredging for a small gain in the quantum of berths

Alternative 3: Additional 183 Berths

- This option looked at an extension of the existing marina to make the total number of berths 253, and create an extended breakwater;
- Despite the advantages of this option, including for example using a single point of access would be more cost effective, its disadvantages outweighed these. Some of identified disadvantages included the following:
    - The current marina has been developed for predominately smaller craft and therefore a direct extension would be compromised and less adaptable to varying boat sizes; and
    - It would require an extensive, new dredged channel to be developed and maintained.

Alternative 4: Additional 161 Berths

- This option was designed to link strongly to the southern breastworks and a causeway, created by reclamation using dredged material. This option yielded 231 berths in total. This fourth alternative was considered to be adequately embedded into the inner harbour area to be well protected without the need for major breakwater works and if dredged material is to be used in reclaimed land, then this layout as considered to integrate "*attractively*" with the resulting causeway.
- The disadvantages that were identified for this option include:
    - Higher capital cost than 'Alternative 5' (see below), which was concluded to be the preferred option;
    - Does not provide for superyacht berthing;
    - It is less well connected to Agnew Park; and
    - Required extensive dredging in the shallowed areas.

Alternative 5: Additional 247 Berths

- This option was included to consider whether a marina could provide early benefits for Stranraer, whilst adding value to the East Pier, However, this alternative was discounted on the basis that it was focused on adding value to the East Pier, on which the project is no longer dependent.

Alternative 6: Additional 153 Berths (preferred option)

- This preferred option comprises large scale expansion of an additional 153 berths. However, it was also identified that this option could yield up to 185 new berths.

- This option has been designed to link well with the current operations at the marina, the breastworks and to be adaptable and efficient in relation to dredging activities and wave protection. As explained in the accompanying options technical note, the design of this preferred option focused on enhancing commercial operations and providing a practical fuelling point. The additional facilities included in this preferred option include land reclamation, new causeway and enhancements to connectivity.
- This option was recommended in the 2021 OBC as the preferred option, with the intention that it will go to detail design stage, to confirm location facilities, final access point, relationship to the causeway, links to the town and railway station, and boatyard and support service.

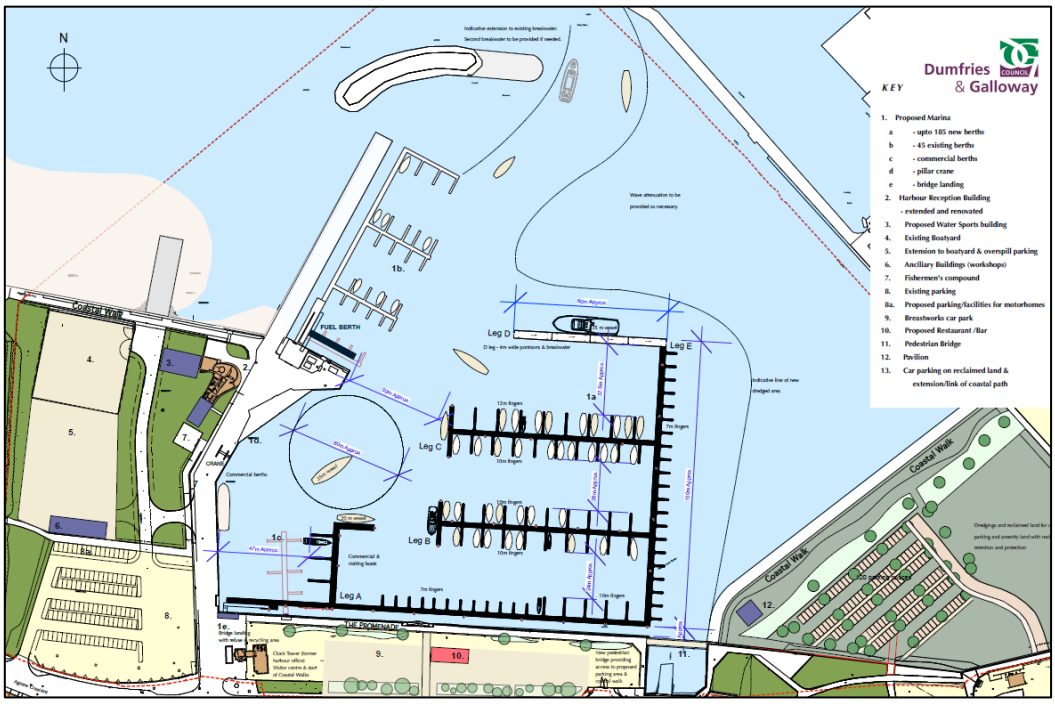


Figure 4.1: Preferred option Layout (source: Dumfries and Galloway Council)

Preferred Option – Design Development

Introduction

4.9 This section of the chapter will now consider the alternative design and site layout options that were considered, following the selection of the preferred option, before reaching the design fix.

Design Development Stages

First Revision

4.10 The proposed layout was amended, with the main changes comprising:

- Reduction in car parking numbers in existing car parks;
- Increase in car park area on reclaimed land;
- Proposed water sports building excluded from the project;
- Inclusion of SCAMPP building and parking;
- Exclusion of Pavilion building;
- Re-location of linkspan (marina access bridge) landing;
- Relocation of workshops;
- Exclusion of pedestrian bridge and area infilled to create viewpoint and improve walking and cycling routes.

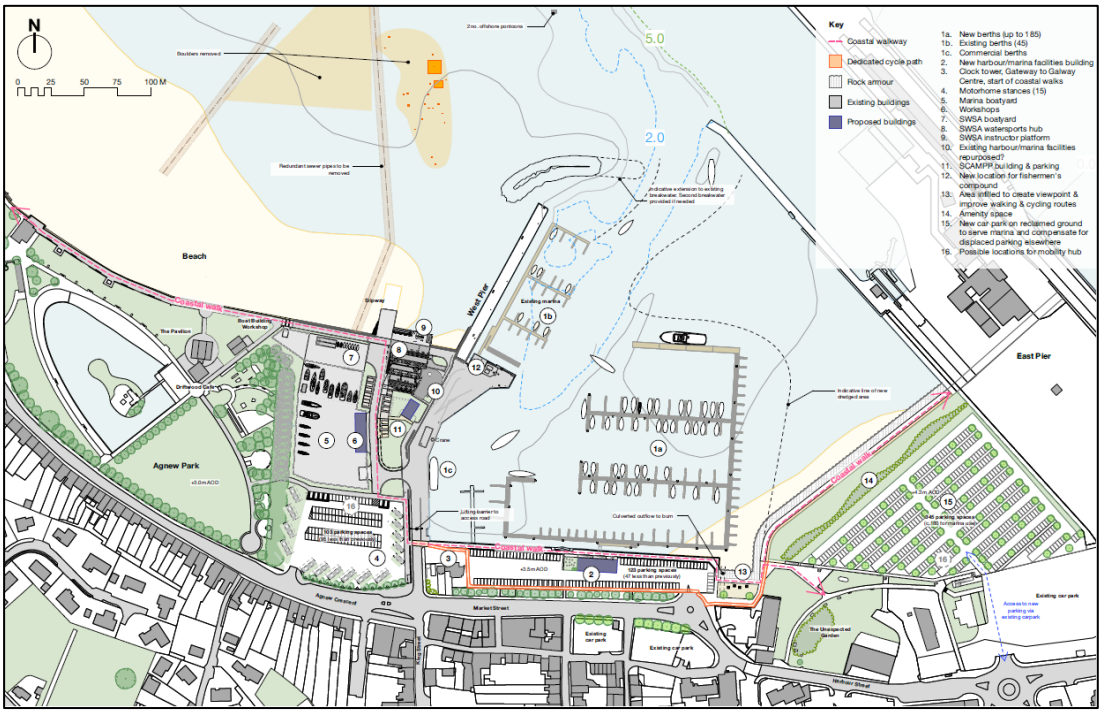


Figure 4.2: Layout & Design of First Revision

Second Revision (Design Freeze)

4.11 This second revision included the following changes:

- Relocation of proposed workshops within the boatyard back to original position;
- Removal of the proposed new harbour/ marina facilities building in Breastworks public car park,
- Increased parking numbers in Breastworks car park;
- Reduction in car parking on reclaimed land area; and
- Re-introduction of new pedestrian bridge providing access to proposed parking area and coastal walk.

4.12 This second design iteration, formed a design freeze, allowing the EIA topic specialists to commence their impact assessments and was used in the first stages of public consultation.

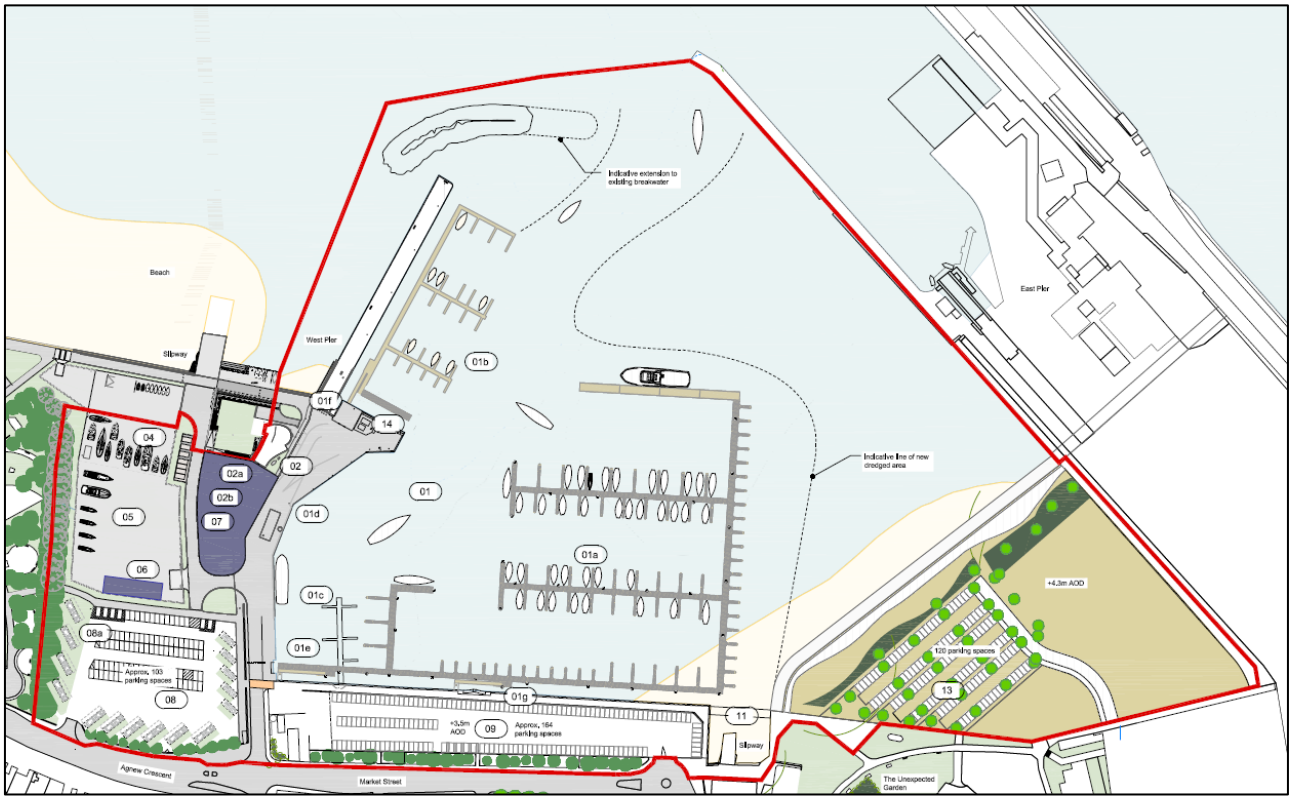


Figure 4.3: Layout & Design of Second Revision (Used as design freeze)

Design Fix – for EIA

4.13 As a result of certain changes to operational requirements from the client; feedback received during public consultation; and inputs provided by the EIA topic specialists e.g. wave modelling and landscape design, the following amendments were made to the proposed development:

Inclusion:

- New linkspan to new berth pontoons (marina access bridge);
- Inclusion of vessel wash down bay;
- New floating harbour/marina facilities for users of the new berth pontoons, plus additional refuse and recycling facilities also provided;
- Retrofitting of the existing harbour reception building to enhance energy efficiency;
- New quay wall to replace the existing wall at Breastworks car park and the west quay area;
- New Coastguard and marine research building (Solway Coast and Marine Pilot Project);
- Redeveloped public slipway, linking into and enhancing the existing coastal walk, connecting to the new reclaimed land area - originally a pedestrian bridge crossing was being proposed on the project. However, through the feedback obtained at the first public consultation event, it was clear that this was not something the people of Stranraer wanted. Instead a redeveloped slipway area was the request – upgraded in layout and size to ensure vehicular access, as well as maximising the slipway to ensure all tide use;
- The inclusion of motorhome parking within the Marine Lake car park;
- Upgrades to existing car parks; and
- Reclaimed Land – slight changes to car parking layout on reclaimed land.

Exclusions:

- Existing harbour/marina facilities extended and renovated;
- Removal of new pedestrian bridge to provide access to new reclaimed land area incorporating new coastal walk.

5.0 Environmental Impacts

Introduction

5.1 This chapter of the NTS summarises the predicted potential environmental effects, mitigation, and any residual impacts identified. The EIAR Chapters 7-24 assess a variety of environmental receptors which may be affected by the proposed development. The topics assessed by the EIA process are:

- Coastal Processes
- Navigation and Safety
- Major Accidents and Disasters
- Flood Risk
- Water Quality
- Benthic Ecology
- Fish and Shellfish Ecology
- Marine Mammals
- Terrestrial Biodiversity and Ornithology
- Transportation
- Air Quality and Dust
- Climate Change
- Noise and Vibration
- Underwater Noise
- Soils, Geology and Contamination
- Cultural Heritage
- Landscape and Visual
- Socio Economics

EIA Process

Baseline Conditions

5.2 This section of the EIA process considers the relevant environmental baseline conditions, as determined through desk-based reviews of existing information, consultation, and field surveys.

Impact Assessment

5.3 In accordance with the appropriate EIA Regulations for both consenting regimes (planning and marine), potential impacts are considered on the basis of their magnitude, nature, probability, duration, and reversibility. The potential for cumulative and combined effects are also considered where appropriate.

5.4 The significance of an effect is evaluated on the basis of the scale (magnitude) of the impact, and the importance or sensitivity of the receptor(s). Where potential significant environmental effects are identified in the assessment process, standard and additional mitigation and/or compensation measures, alongside specific monitoring are identified, and the residual effects after mitigation/compensation are evaluated.

5.5 Although some of the specialist assessments follow discipline-specific assessment guidance, standard terminology has been used to describe the significance of effects. The terms used, where applicable, are:

- Substantial/ Major - adverse/beneficial;
- Moderate - adverse/beneficial;
- Slight/ Minor - adverse/beneficial; and
- Negligible - adverse/beneficial.

5.6 Where applicable, short to medium term impacts and long-term impacts have been clearly defined in the specialist assessments. Short to medium term impacts are considered to be those associated with the construction phase of the proposed development, and long-term impacts are those associated with the development once operational.

5.7 Each specialist chapter sets out the assessment methodology followed, including the methods used for the collection of data and for the prediction and assessment of impacts and evaluation of effects. Any assumptions made are clearly identified. Similarly, any difficulties encountered in compiling the required information has been outlined in each individual chapter.

Mitigation

5.8 As discussed within the relevant chapters within the accompanying EIA Report, embedded mitigation has been designed into the proposed development and it is considered that the final development design and site layout represents the optimum approach to reduce environmental effects. The assessment approach undertaken as part of the EIA process was to assess the proposed development including embedded mitigation which is built into the design (e.g. landscaping), identify the potential significance of effects and then, where necessary, define

additional mitigation to address the impacts and report the residual significance of effects at the end of each chapter.

5.9 Once the EIA topic specialists completed their environmental assessment on the proposed development (including embedded mitigation), where potential significant adverse effects on the environment are identified, the competent expert then considers the appropriate standard and additional mitigation measures to help prevent, reduce, and where possible, off-set and compensate for, the potential effects.

Cumulative Effects

5.10 In-combination effects and cumulative effects are considered for each environmental topic, within each technical chapter, based on the cumulative projects identified within Chapter 25.0 of the EIAR. Chapter 25.0 of the EIAR provides a summary of the other planned and 'committed' and reasonably foreseeable developments in the locality of the site which could result in cumulative effects with the proposed development in terms of environmental impact.

5.11 Cumulative effects are the combined impacts of a single activity or multiple activities. The individual impacts from the proposed development may not be significant on its own but when combined with other developments, the significance of the combined effects could become significant. The EIA process also considers the combined effect of a number of individual residual impacts arising as a result of the proposed development on a single sensitive receptor/ resource. These are referred to as 'in-combination' or 'intra-project' interactions.

Summary of Environmental Effects

Coastal Processes

5.12 An EIA was undertaken for coastal processes, which examined both sensitive receptors relating to coastal features and also those which form pathways for other designated features and comprised the following:

- Suspended sediment concentration (SSC) and subsequent deposition resulting in alterations to bathymetry;
- Changes to baseline tidal regime;
- Changes to baseline wave climate; and
- Changes to baseline sediment transport regimes and pathways.

5.13 The assessment was supported by numerical modelling which was used to quantify the magnitude of the impacts. **Table 5-1** provides a summary of the activities associated with the construction and operational phases of the proposed development and the potential effects on coastal processes.

Table 5-1: Summary of Activites and Potential Effects relevant to Coastal Processes

<table>
<tr><th>Activity</th><th colspan="2">Potential Effect</th></tr>
<tr><td colspan="3">Construction Phase</td></tr>
<tr><td>Capital Dredging</td><td colspan="2">Increase in SSC and subsequent deposition</td></tr>
<tr><td rowspan="3">Presence of proposed development
Breakwater Extension
Floating Breakwater
Reclamation
Revised bathymetry</td><td>Changes to Baseline Tidal Regime</td><td rowspan="3">Impacts will escalate from the baseline condition (no infrastructure or impact) to the completed development though the course of the construction phase</td></tr>
<tr><td>Changes to Baseline Wave Climate</td></tr>
<tr><td>Changes to Baseline Sediment Transport</td></tr>
<tr><td colspan="3">Operational Phase</td></tr>
<tr><td>Maintenance Dredging</td><td>Increase in SSC and subsequent deposition</td><td>Significantly reduced from construction phase
Remains under ‘Do nothing’ scenario</td></tr>
<tr><td rowspan="3">Presence of proposed development
Breakwater Extension
Floating Breakwater
Reclamation
Revised bathymetry</td><td colspan="2">Changes to Baseline Tidal Regime</td></tr>
<tr><td colspan="2">Changes to Baseline Wave Climate</td></tr>
<tr><td colspan="2">Changes to Baseline Sediment Transport</td></tr>
</table>

5.14 The proposed development encompasses a range of embedded mitigation measures including:

- provision of offshore infrastructure designed to reduce the wave climate and enhance berthing facilities within the confines of the harbour;
- a floating breakwater with dual purpose for berthing super yachts during calm conditions reducing the requirement for additional infrastructure;
- the reuse of dredged material in reclaimed land area, rather than having to dispose and move it off site; and

- driven piles that will not give rise to significant increases in SSC as material is consolidated within the seabed.

5.15 During the construction phase, the proposed marine based development principally relates to increased dredging and provision of breakwaters to accommodate a new marina layout. The assessment considered increased SSC due to the sediment spill during dredging operations and the extent of sediment plumes and subsequent deposition of this material. No effects which are significant in EIA terms have been identified therefore, in terms of SSC and deposition, no specific monitoring or additional mitigation is recommended.

5.16 In terms of the physical presence of infrastructure and associated changes in bathymetry influencing tides, waves and sediment transport, impacts will escalate from the baseline condition (no infrastructure or impact) to the completed development though the course of the construction phase. The provision of infrastructure is designed to alter the wave climate within the harbour to facilitate berthing, therefore the assessment focused on potential impacts beyond those intended changes to coastal processes. No effects which are significant in EIA terms have been identified therefore, in terms of coastal processes, no specific monitoring or additional mitigation is recommended.

5.17 It was noted that there are currently no areas designated specifically for coastal processes attributes in the vicinity of the proposed development. It is concluded that there will be no significant effects arising from the proposed development during the construction and operational phases. It is further concluded that there will be no significant cumulative effects from the proposed development alongside other projects/plans.

Navigation & Safety

5.18 The EIA assessed the potential effects of the proposed development on shipping and navigational safety within a study area extending up to one nautical mile from the existing Stranraer marina.

5.19 The main goal is to identify any likely significant impacts on marine users and the surrounding environment from the construction work and the new marina design. This is done through a Navigational Risk Assessment (NRA) which was identified as required during pre-application discussions with the Consenting Authority.

5.20 An NRA is like a safety check for the water area. It is conducted according to established industry guidelines such as the Port Marine Safety Code and the NRA methodology used here is based on

international standards. The NRA method used for assessing maritime and navigation risk in this case is suitable for smaller projects and it uses available information and feedback from people who know the area well. The findings of this safety check are recorded within the EIAR.

5.21 Key steps in the NRA involve identifying potential dangers (hazards) and what could go wrong if they happen (undesirable scenarios). Risk is then assessed by looking at how likely an undesirable scenario is to occur and how bad the consequences would be for things like the environment, people, property, and businesses. The aim is always to reduce risks to be "As Low As Reasonably Practicable" (ALARP).

5.22 A crucial part of this assessment was talking to people who use or are involved with the marina and harbour, such as leisure users, clubs, the harbour authority and contractors. This consultation gathered local knowledge, although reaching existing commercial users proved difficult despite efforts. Baseline information reviewed also included existing safety data, incident reports, tidal information, and details about navigation aids like buoys and lights. Feedback suggested that the approach to the marina isn't clearly marked and lights are hard to see against town background lighting.

5.23 The NRA looked at both the construction phase and future operation of the expanded marina.

5.24 Initially, the assessment identified slight risks during construction for recreational vessels breaking their moorings and slight risks during future operations were identified for recreational vessels breaking moorings and for collisions between recreational vessels. The collision risk was noted as expected due to the anticipated increase in leisure boat traffic.

5.25 However, the report proposes additional safety measures (mitigation) based on standard industry practices and expert advice. These include things like improving communication, providing temporary and permanent navigation aids, proper staffing, managing vessel traffic and updating procedures.

5.26 With these additional measures in place, the assessment concluded that the initial slight risks are reduced to negligible levels, in EIA terms. Therefore, the assessment found no significant environmental effects in terms of navigation and safety resulting from the proposed development, provided the existing safety measures are maintained and the suggested additional measures are implemented.

5.27 Committed and reasonably foreseeable projects were reviewed and considered within the NRA framework and methodology. Additional controls were specifically identified and included in the

NRA, for example, early liaison with other associated projects in the area to ensure that projects do not adversely impact the planned development. As a result of the inclusion of these additional controls within the NRA, it is concluded that there is no potential for cumulative effects to arise from the committed and reasonably foreseeable projects identified.

Major Accidents and Disasters

5.28 This chapter provides consideration and high-level assessment of expected significant adverse effects of the proposed development on the environment deriving from the vulnerability of the development to risks of either relevant major accidents and/or disasters.

5.29 Mitigation and enhancement measures shall be implemented through-out the construction and operation of the proposed development. The EIAR has established that due to the iterative design process and implementation of suitable mitigation measures, potentially significant adverse effects resulting from the proposed development have been minimised. The associated EIAR concluded that through the implementation of prescribed mitigation measures during the construction phase, and in light of the new recreational function proposed by the marina; that environmental effects are either localised; or short-term and to be expected with developments of this nature.

5.30 The major accidents and disasters assessment of effects has followed the methodology that directs the assessment to focus on low likelihood but potentially high consequence events such as a major spill, explosion, fire, etc. (Institute of Environmental Management of Assessment (IEMA),2020).

5.31 Based on professional judgement, major accidents or disasters are events or situations that have the potential to affect the proposed development causing immediate or delayed serious damage to one or more of the following human health, welfare, and the environment. This assessment considers the risks of major accidents and disasters (hereafter referred to as major events) during construction and operation caused by natural hazards or manmade hazards (including operational failure).

5.32 A methodology was adopted to systematically identify potential risks, pathways for adverse effects to occur and suitable controls (for identified risks). This was broadly based on accepted technical risk assessment methods which allow the identification of risks, pathways, sensitive receptors and if required barriers / controls to mitigation risk to an acceptable level.

5.33 A review was undertaken of baseline conditions to identify existing facilities or natural features or scenarios (such as flooding) which could lead to risk events with associated major accident or hazard in combination with the proposed development. These developments were then screened to identify if any specific risk events required further consideration. This process also identified those, which could be screened out as not having a significant risk to retained proportionality and focus within the assessment.

5.34 The screening process considered if the risk event, then had a pathway and receptor so that if it occurred it would be expected to result in significant effects of the proposed development on the environment:

- The pathway is the route by which the risk event can reach the receptor, for example via the spillage of materials to a watercourse/waterbody; and
- The receptor, which is the specific component of the environment that could be adversely affected, if the source reaches it (e.g. the watercourse).

5.35 The assessment then considered what activities could result in an adverse impact during construction / operation/ decommissioning and what barriers or embedded mitigation are in place to prevent the source pathway receptor risk from occurring. Finally, the assessment sought to identify any 'escalation factors' which could compromise the integrity of embedded mitigation and therefore any significant residual risks and accordingly the need for further mitigation / monitoring.

5.36 It is considered that there will not be any likely significant environmental effects, in EIA terms, arising from the vulnerability of the proposed development to major accidents and natural disasters.

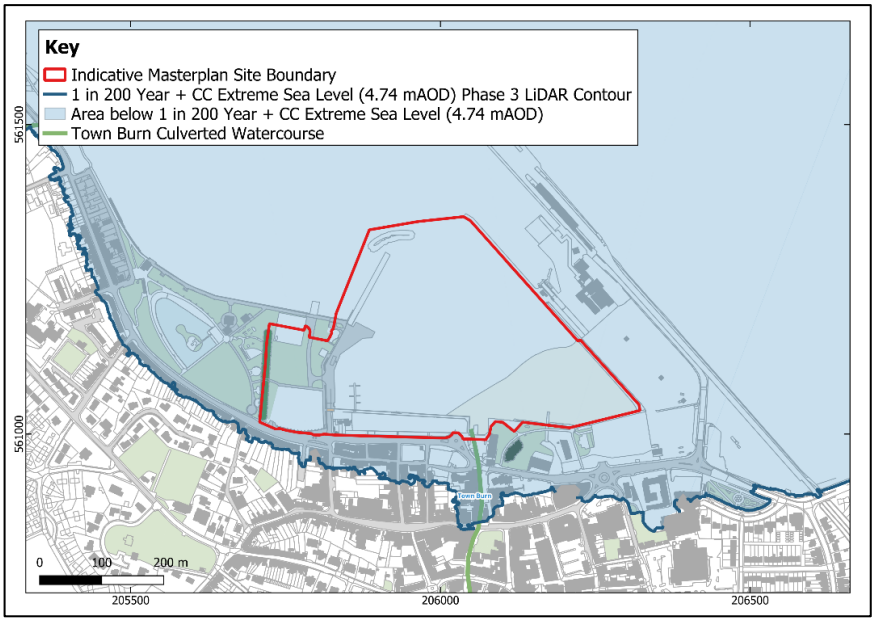
5.37 The Major Accidents and Disasters chapter of the EIAR notes the presence of committed and reasonably foreseeable projects in the study area and concludes that while these developments are in proximity to the proposed development, they are not expected to have significant cumulative effects on the road network usage or the risk of accidents. Each project's design and management measures ensure that any potential impacts are effectively controlled and mitigated. In summary, when considering the proposed development in combination with other proposed and consented developments within 5km of the proposed development, there will be no significant cumulative impacts.

Flood Risk

5.38 The EIA has considered potential impacts of the marina expansion scheme on flood risk to the existing environment within Stranraer. The proposed development consists of works both within Loch Ryan itself and along the shoreline, including slipway improvement works at the outfall of the culverted Town Burn watercourse. These works will introduce physical changes that could alter existing coastal processes (e.g. tidal currents or waves) and/or the routing of surface water towards the seafront, which could affect flood risk to wider environment.

5.39 Existing flood risk has been established for the site, including consideration of climate change impacts. Coastal flooding represents the main source of flood risk, with predicted 1 in 200 year plus climate change (+CC) extreme sea levels shown in **Error! Reference source not found.**. This represents extreme sea levels that are statistically expected to occur, on average, once every 200 years, plus an additional allowance for predicted climate driven increases in sea levels. Additionally, this depicts the coastal flood risk area as defined under the National Planning Framework 4 (NPF4), and defines the study area for the EIA in terms of flood risk impacts. Other sources of potential flood risk have also been considered, including: extreme waves, fluvial risk associated with the Town Burn, pluvial risk associated with surface water runoff/ponding, and potential for water to back up within existing sewers and drainage systems. Existing flood risk receptors – i.e. properties and infrastructure at risk of flooding – have also been identified, to allow consideration of any potential impacts of changes in flood risk on vulnerable receptors. Flood risk to the proposed development itself; which will, for the most part, be inherently water resilient, is dealt with fully in the accompanying Flood Risk Assessment (FRA) (Appendix 10.1: FRA (Volume 2 of the EIAR)).

Figure 5.1: Coastal Flood Risk Area – 1 in 200 Year + CC Extreme Sea Level



5.40 The construction phase of the proposed development will be short-lived and so the impact on flood risk during this phase was scoped out of the EIA, recognising that the contractor will be required to produce and agree a Construction Environmental Management Plan (CEMP) to describe how construction will be managed to avoid, minimise and mitigate flood risk. However, the operational phase of the proposed development will represent a permanent change compared to existing conditions, which has the potential to impact on flood risk at identified receptors. This will include, but not be limited to: permanent changes in coastal processes/wave conditions within the marina; permanent physical modification around the outfall of the culverted Town Burn; and permanent physical changes to surface water drainage.

5.41 The design of the proposed development has taken account of potential effects on flood risk, and it is expected that good practice will be employed and design standards adhered to in the detailed design to fully avoid or minimise potential adverse effects. The proposed development incorporates an extension to the existing breakwater and a new floating breakwater, which aim to reduce wave heights within the marina. The design of this has been informed by computational modelling of wave and tidal processes, which has confirmed that proposals are capable of providing acceptable wave heights at proposed pontoon berths and of avoiding adverse impacts on wave heights elsewhere. It is expected that development proposals along the shoreline will be appropriately profiled to allow surface water to drain towards the coast, without obstructing existing drainage routes; and that proposals for the slipway improvement, including extension of the existing Town Burn culvert structure, will be appropriately assessed and designed to avoid any increase in flood risk from this watercourse. Appropriate surface water drainage strategies have also been devised, which make use of existing surface water networks where possible, and discharge into coastal waters via existing or new surface water outfalls.

5.42 Assessment of the mitigation measures in the proposed development design indicates that there are no significant adverse impacts on flood risk, with some betterment identified for coastal flood risk as a result of local reductions in significant wave heights.

5.43 The committed and reasonably foreseeable projects relevant to the topic of flood risk are set out in Chapter 25 (Flood Risk) in the EIAR.

5.44 The enactment of the Flood Risk Management (Scotland) Act 2009 has imposed a duty on local authorities and other responsible authorities to contribute to managing flood risk in Scotland. As such, existing and proposed developments identified within the vicinity of the proposed development should, and will, have undergone appropriate flood risk assessment and should incorporate suitable mitigation to address any associated flood risk. As a result, it is anticipated

that the significance of effect of the proposed development on flood risk will remain Negligible for the operational phase when considering the cumulative effect of these developments.

Water Quality

5.45 As the proposed development consists of works both within Loch Ryan itself and along the shoreline, this has the potential to impact the water quality and physical characteristics (hydromorphology) of this coastal water body.

5.46 Loch Ryan is currently assigned a 'Good' Water Framework Directive (WFD) Status, which reflects the overall quality of the water body based on both its chemical and ecological (including biological and habitat) condition. It is also designated as a Shellfish Water Protected Area under The Water Environment (Shellfish Water Protected Areas: Designation) (Scotland) Order 2016; and a non-statutory Marine Consultation Area in view of the habitats that it contains.

5.47 The potential impacts of the proposed development on Loch Ryan have been assessed for both the construction and operational phases. The impacts considered include, but are not limited to: accidental spillage of pollutants; mobilisation of sediment and contaminants into the water column and subsequent sedimentation of the loch bed (as a result of dredging and wider construction activities); and permanent physical modification of the loch morphology, which has potential impacts on physical habitats, pollutant dispersal and water quality.

5.48 Construction and operational effects on the water environment have been assessed using established methodologies, with consideration of relevant environmental quality standards. This approach has enabled potential impacts on water quality and hydromorphology to be avoided, reduced, or appropriately mitigated.

5.49 Good practice construction site runoff and material storage/handling measures, and good practice dredging/dredge disposal methodologies will minimise potential construction effects on the water environment. Mitigation embedded into the design of the proposed development (e.g. bunding, non-return valves and flood resilience) will limit potential pathways for permanent new pollutant sources introduced along the shoreline (e.g. at fuel berths), and new surface and foul water drainage systems, toilet facilities and black water disposal points (i.e. for boat toilet wastewater) and have the potential to improve water quality in comparison to existing through the provision of enhanced disposal services, and treatment of waste water.

5.50 Computational modelling of wave and tidal processes has informed the siting and design of the proposed development, which has allowed development of a design which minimises impacts on coastal processes. Modelling indicates that the tidal regime, wave climate and sediment transport regime are predicted to remain substantially unchanged as a result of the localised nature and

limited footprint of the proposed development within the existing heavily modified harbour (Photograph 10). No degradation in the overall hydromorphological status of Loch Ryan is, therefore, expected.

5.51 Overall, and with consideration of proposed mitigation measures during construction and operational phases, no significant effects have been identified on the water quality or hydromorphology of Loch Ryan, or on the ability of this water body to continue to achieve its WFD objectives.

Photograph 10: Existing Modified Harbour Area

5.52 In relation to cumulative effects, during the construction phase, it is possible that the other projects identified above could have additional short term effects on water quality and/or hydromorphology in Loch Ryan during their respective construction phases. Particularly any dredging associated with Loch Ryan Port at Cairnryan (Marine Licence 00009930). However, these projects will be subject to strict environmental controls by regulators and will be required to implement extensive mitigation, to negate or minimise impacts. The construction phases of these projects will also not necessarily be concurrent with the proposed development.

5.53 When considering operational phase effects, it is noteworthy that all terrestrial developments constructed since the enactment of the Water Environment and Water Services Act in 2003 are expected to incorporate suitable drainage systems, with pollution treatment measures where required in line with SEPA's Supporting Guidance WAT-SG-12. It is, therefore, expected that proposed developments identified within the vicinity of the proposed development will incorporate drainage strategies which mimic natural catchment hydrology, providing appropriate treatment where required to prevent adverse effects on water quality from any associated increase in pollutant sources.

5.54 The EIA Chapter concluded that the effect on water quality and hydromorphology will remain as Negligible for water quality and Slight/Moderate for hydromorphology for the operational phase when considering the cumulative effect of other developments.

Benthic Ecology

5.55 The Benthic Ecology Chapter of the EIAR assesses the potential impacts of the proposed development on marine organisms living on or within the seabed, and associated habitats. This includes impacts arising from habitat loss, water quality impacts, increased suspended sediments, resuspension of contaminated sediments, risks from invasive non-native species, and the potential impacts of creating new artificial habitats.

5.56 Both a desk study and field survey were undertaken in order to inform the assessment of potential impacts. The field survey comprised a drop down video assessment of the benthic habitats present across Stranraer harbour and the surrounding vicinity, a benthic grab sampling survey to quantify the faunal communities present, and an intertidal survey to assess for the presence of any Priority Marine Features present across the foreshore in close proximity to the proposed development. The extent of the drop down video and grab sampling surveys was informed by the sediment plume modelling exercise undertaken for the project.

5.57 The survey was undertaken in late May 2025 in accordance with advice from NatureScot. Initial findings from the surveys suggest that no Priority Marine Features were present within either Stranraer Marina or the area of seabed likely to be subject to secondary impacts arising from dredging operations. Intertidal seagrass beds were documented along the beach to the east of Stranraer, though these are thought to be outside the zone of influence from any potential impacts arising from the development.

Fish and Shellfish Ecology

5.58 The EIAR assesses the potential impacts of the proposed development to subtidal and intertidal areas that may provide suitable habitat for fish and shellfish species. This has included consideration of water quality impacts, resuspension of contaminated sediments, underwater noise and the potential impacts of creating new artificial habitats.

5.59 A desk study was carried out to ascertain the fish communities expected be present within the vicinity of Stranraer and the wider Loch Ryan area. Several species of commercial fish are found in Loch Ryan, including herring, hake, cod and mackerel, of which herring, cod and mackerel are also listed as Scottish Priority Marine Features (PMFs). Multiple species use Loch Ryan as a spawning and/or nursery area, including sprat, hake, plaice, anglerfish, spurdog, cod, whiting, mackerel, blue skate, flapper skate and ling. Both Atlantic salmon and sea trout are found in the Loch Ryan area; Atlantic salmon is protected under Annex II of the Habitats Directive, and both are PMF species. For elasmobranch species, basking shark, thornback ray, tope, spurdog, smooth hounds, blue skate and flapper skate are all found in the wider Solway Firth area, and whilst some species may be present within Loch Ryan, basking sharks in particular are not thought to be present in the vicinity of Loch Ryan.

5.60 Loch Ryan and the adjacent Solway Firth area provides spawning and nursery grounds for multiple shellfish species, principally Native oysters, which form the largest extant native oyster bed in Scotland. Native oysters are a PMF and listed under OSPAR Annex V.

5.61 Fish and shellfish populations within the vicinity of the project have been assessed as being of high sensitivity to potential impacts arising from the proposed works. This is due to the potential presence of a number of fish species which are listed as PMFs or are migratory species.

5.62 To consider changes in sediment concentration within the water column as a result of dredging during the construction phase, the anticipated dredge plume has been modelled. Modelling suggested that any sediments mobilised by the dredging process will likely settle out relatively quickly over a limited area. Coupled with the short duration of dredging, this indicates that any increase in suspended sediment concentrations associated with the project is expected to remain low. Short-term increases in turbidity are therefore considered to have an overall significance of slight adverse to fish populations.

5.63 Dredging during the construction phase has the potential to release contaminants including heavy metals, PAHs, and PCBs into the water column by disturbing sediments. All contaminants identified within the sediments at Stranraer were however present at relatively low levels. The

short-term activity and low ecotoxicological risk therefore presents an impact on fish assessed as being negligible.

5.64 To consider the impact of underwater noise on fish, any noise expected to be generated during the construction phase has been modelled, with the greatest potential impacts considered as from impact piling. The sensitivity and potential for effect depends on fish physiology; fish that utilise their swim bladders in hearing being the most sensitive. Modelling demonstrated that injury or disturbance would occur if an individual was at close proximity to the source, although the population impact from this is expected to be low. Additionally, impacts to invertebrate species occurs at a threshold higher than that modelled, thus any significant harm to shellfish is considered unlikely.

5.65 Underwater noise generated during the operational phase by any future maintenance dredging is not likely to be greater than that generated during the construction phase. Any increase in noise from marine traffic is also considered to be negligible.

5.66 The proposed development has the potential to increase habitat for epibenthic communities on underwater hard substrates, which can in turn lead to fish aggregations. Literature has shown that increasing fish aggregations has the potential to promote juvenile populations by providing food and shelter. However, this may also alter communities, increase nutrient loading and introduce new species. When considering the amount of existing structures, some increases in fish populations may be expected, but these are unlikely to have a large effect on natural population dynamics.

5.67 In order to reduce potential impacts on fish and shellfish ecology, mitigation measures have been proposed. These include the introduction of a soft start procedure during piling operations to allow fish to move from the affected area prior to any injuries being sustained from underwater noise. It has also been suggested that piling operations are timed to avoid peak fish spawning, which is likely to occur between February and June within Loch Ryan, to further help minimise any detrimental impacts to populations.

5.68 It is concluded that the residual impact of construction and operational activities is considered to be low significance for all groups of fish and negligible for invertebrate shellfish.

5.69 The potential for cumulative effects arising from the proposed development in combination with other planned activities has the potential to increase overall ecological impact on the marine environment. However, other considered activities are considerably further up Loch Ryan and

outside the zone of influence from any predicted impacts from the proposed works, or else have no detrimental impacts associated.

Marine Mammals

5.70 Chapter 14 (Marine Mammals) of the EIAR and associated appendices present the results of both desk based and field survey in relation to Marine mammals and sets out the baseline conditions and likely baseline conditions for these highly mobile receptors within the site boundary and wider marine environment.

5.71 The chapter then goes on to identify potential effects of the proposed development both during construction and operation.

5.72 The chapter presents information which determines those species either confirmed in the site and study area and those which are most likely to occur taking into account habitat conditions and notably water depth within Loch Ryan which are relatively shallow and likely to be a limiting factor in the distribution of some marine mammals.

5.73 The EIA examines the potential effects of construction and operation activity taking into account detailed information presented in relation to water quality underwater noise and coastal processes. The following potential effects are considered:

- Injury or disturbance as a result of construction stage piling operations (impact and vibratory piling);
- Construction stage disturbance;
- Construction stage pollution;
- Operational disturbance;
- Collision with vessels during operation; and
- Operational pollution.

5.74 A series of other potential effects such as permanent and temporary habitat loss are considered as potential effects but not identified as significant and so no mitigation is identified for such impacts.

5.75 Where consideration of the potential effects above identify potential significant impacts a series of mitigation measures are identified this includes embedded mitigation within the project which acknowledged potential operational disturbance at an early stage. Similarly embedded mitigation to protected water quality during operation is set out within the Water Quality chapter.

5.76 Key construction stage mitigation which is identified during construction and operation include the following:

- Using a soft start to impact piling which reduces the risk of injury or associated significant disturbance to marine mammals
- Employing a marine mammal observer during impact piling works
- The development of a construction stage CEMP which will be adhered to throughout the construction phase to minimise construction stage pollution. This will include biosecurity protocol, spill prevention and containment and emergency response procedures.

5.77 Following the application of mitigation measures no significant effects are identified in relation to marine mammals as a result of the proposed development.

Terrestrial Biodiversity and Ornithology

5.78 Chapter 15 and associated appendices of the EIAR present the results of both desk based and field survey in relation to terrestrial biodiversity and ornithology and sets out the baseline conditions and likely baseline conditions for these highly mobile receptors within the site boundary and wider marine environment.

5.79 The chapter then goes on to identify potential effects of the proposed Marina Development both during construction and operation.

5.80 The chapter presents information which determines those species either confirmed in the site and a wider study area. Baseline conditions have been identified using the following surveys undertaken between 2023 and 2024.

- Winter / non-breeding bird surveys undertaken between October – March;
- Summer / breeding bird surveys undertaken between May – August; and
- UKHab survey of terrestrial habitats within the study area.

5.81 The baseline presented also draws form desk based information available from the British Trust for Ornithology and local biological records

5.82 Chapter 15 examines the potential effects of construction and operation activity taking into account detailed information presented in the terrestrial ecology and ornithology baseline but also documented in relation to water quality, underwater noise and coastal processes. The EIA

discusses the following potential effects taking into account of the details of the proposed development:

- Disturbance to breeding and non-breeding birds as a result of construction stage piling operations and or general visual disturbance as a result of construction operations;
- Permanent and temporary habitat;
- Construction stage pollution;
- Operational disturbance; and
- Operational pollution.

5.83 Where consideration of the potential effects above identify potential significant impacts a series of mitigation measures are identified this includes embedded mitigation within the project which acknowledged potential effects at an early stage. Similarly embedded mitigation to protected water quality during operation is set out within the Water quality chapter.

5.84 Key construction stage mitigation which is identified during construction and operation include the following:

- Using a soft start to impact piling which reduces the risk of injury or associated significant disturbance to marine mammals;
- Avoiding sensitive seasons and / or tidal states to limit construction disturbance to breeding and non-breeding birds;
- An Ecological Clerk of Works will be employed for the duration of construction works to monitor wildlife surrounding construction operations and monitor compliance with; and
- The development of a construction stage CEMP which will be adhered to throughout the construction phase to minimise construction stage pollution. This will include biosecurity protocol, spill prevention and containment and emergency response procedures.

5.85 Following the application of mitigation measures no significant effects are identified in relation to marine mammals as a result of the proposed development, the assessment takes into account the potential for the project to interact with other planning applications or marine projects in the vicinity.

5.86 The potential for cumulative effects arising from the proposed development in combination with other planned activities has been assessed and it is considered there will be no significant cumulative impacts.

Transportation

5.87 The EIA evaluates the potential effects on transport and movement due to the proposed Stranraer Marina expansion. It covers the project's construction and operation, focusing on traffic generation, access impacts, and transportation infrastructure.

5.88 The chapter details the types of vehicles expected to be involved, including construction vehicles, delivery trucks, and personal vehicles. It also estimates the volume of traffic during different phases of the project, providing a clear picture of how the development will impact local transport.

5.89 The chapter evaluates changes to the existing road network and potential upgrades that may be necessary to accommodate the increased traffic. It also assesses the impacts on local traffic patterns, ensuring that the development does not adversely affect the community's daily commute.

5.90 During the construction phase, the assessment identifies significant short-term traffic impacts due to the movement of materials, equipment, and workforce. It analyses potential congestion, road safety issues, and infrastructure wear and tear. To mitigate these disruptions, the chapter proposes several measures, such as temporary diversions and a Construction Traffic Management Plan (CTMP).

5.91 In the operational phase, the assessment predicts ongoing transportation impacts from increased visitors to the marina. It evaluates potential increases in travel times and the demand for parking. The chapter anticipates an increased parking demand and assesses the adequacy of current parking facilities. It also considers the need for new parking provisions or adjustments to management strategies to accommodate the influx of visitors.

5.92 Parking provision is a significant consideration in the assessment. The chapter anticipates an increased demand for parking due to the expansion. The EIA process assesses the adequacy of existing car parks and evaluates whether they can handle the expected increase in visitors. Additionally, the assessment considers the need for new parking provisions or adjustments to current parking management strategies to ensure that the increased demand is met without causing inconvenience to visitors or the local community.

5.93 The assessment is guided by several key pieces of legislation, guidance, and policy. NPF4 emphasises sustainable transport solutions, integration with land use planning, and mitigation of

adverse impacts. The SWestrans Regional Transport Strategy[22] focuses on sustainability, connectivity, and community needs, while the Local Development Plan 2 (LDP2) promotes sustainable transport options and reduced car dependency.

5.94 The methodology for the assessment includes consultation with Transport Scotland and DGC. The study area is defined by key locations and transport infrastructure around the marina, with years of assessment set for the baseline year 2024, interim future baseline 2026, and future baseline 2028. The impact assessment uses guidelines from the Institute of Environmental Management and Assessment (IEMA) to evaluate impacts on severance, driver delay, pedestrian delay, non-motorised user amenity, fear and intimidation, road safety, and hazardous loads.

5.95 The findings of the assessment indicate that the construction phase will have short-term impacts, including increased traffic and potential severance of pedestrian routes. Mitigation measures such as temporary diversions and CTMPs are proposed to minimise these impacts. In the operational phase, long-term impacts are minimal, with measures to encourage sustainable travel and improve transport options.

5.96 To ensure effective mitigation and monitoring, the construction phase will be managed by the Principal Contractor through a CTMP, which will also consider projects in the Masterplan area. During the operational phase, an Employee Travel Plan will be implemented to promote sustainable transport among the marina's staff.

5.97 The proposed Stranraer Marina expansion is expected to have some short-term moderate adverse impacts during construction, which can be mitigated for affected parties through planned measures. Long-term impacts are minimal, with potential positive effects on sustainable travel options.

Air Quality and Dust

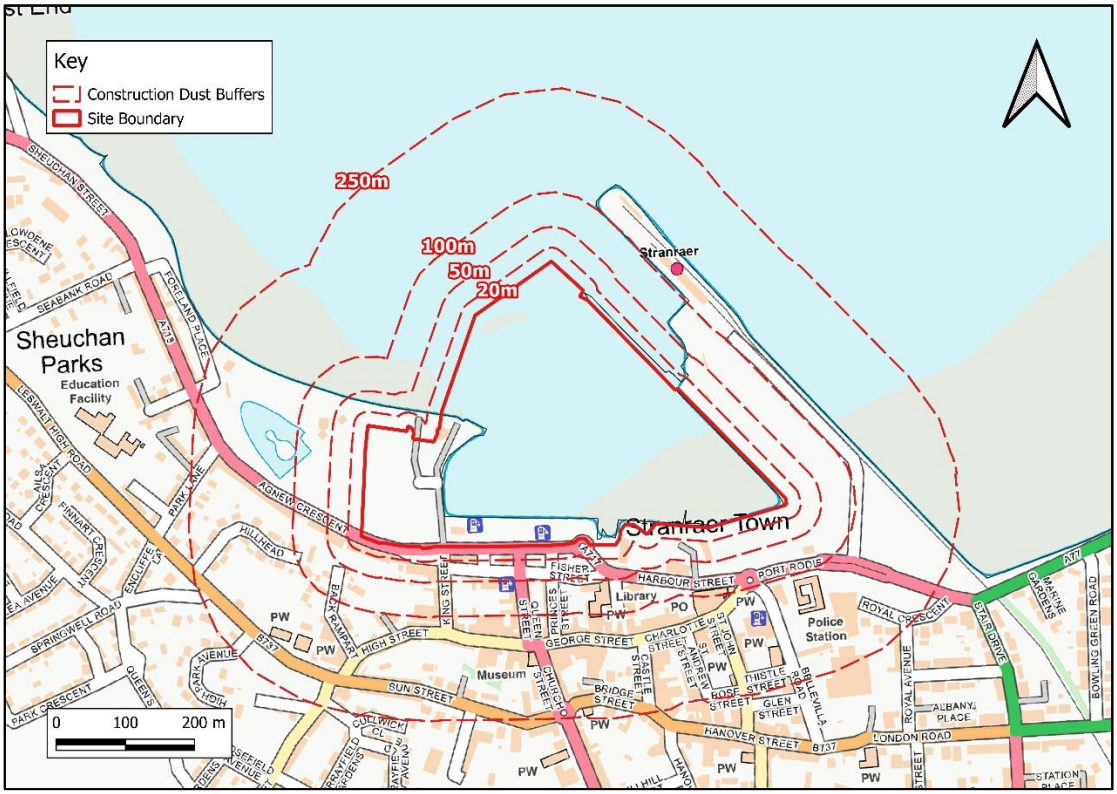
5.98 The air quality impacts from the construction phase and once the proposed development is fully operational have been assessed. The assessment has been conducted by air quality experts, exercising professional skills and judgement to the best of their abilities, and have given professional opinions that are objective, reliable, and backed with scientific rigor.

[22] SWestrans regional transport strategy: https://www.swestrans.org.uk/strategies-publications-and-accounts/regional-transport-strategy-and-delivery-plan/strategy

5.99 The background concentrations of NO_2, PM_{10}, and $PM_{2.5}$ have been characterised by drawing on information from Department for Environment Food and Rural Affairs (Defra) maps, Scottish Air Quality Database background maps and the published results of local authority Review and Assessment (R&A) studies of air quality, including local monitoring and modelling studies.

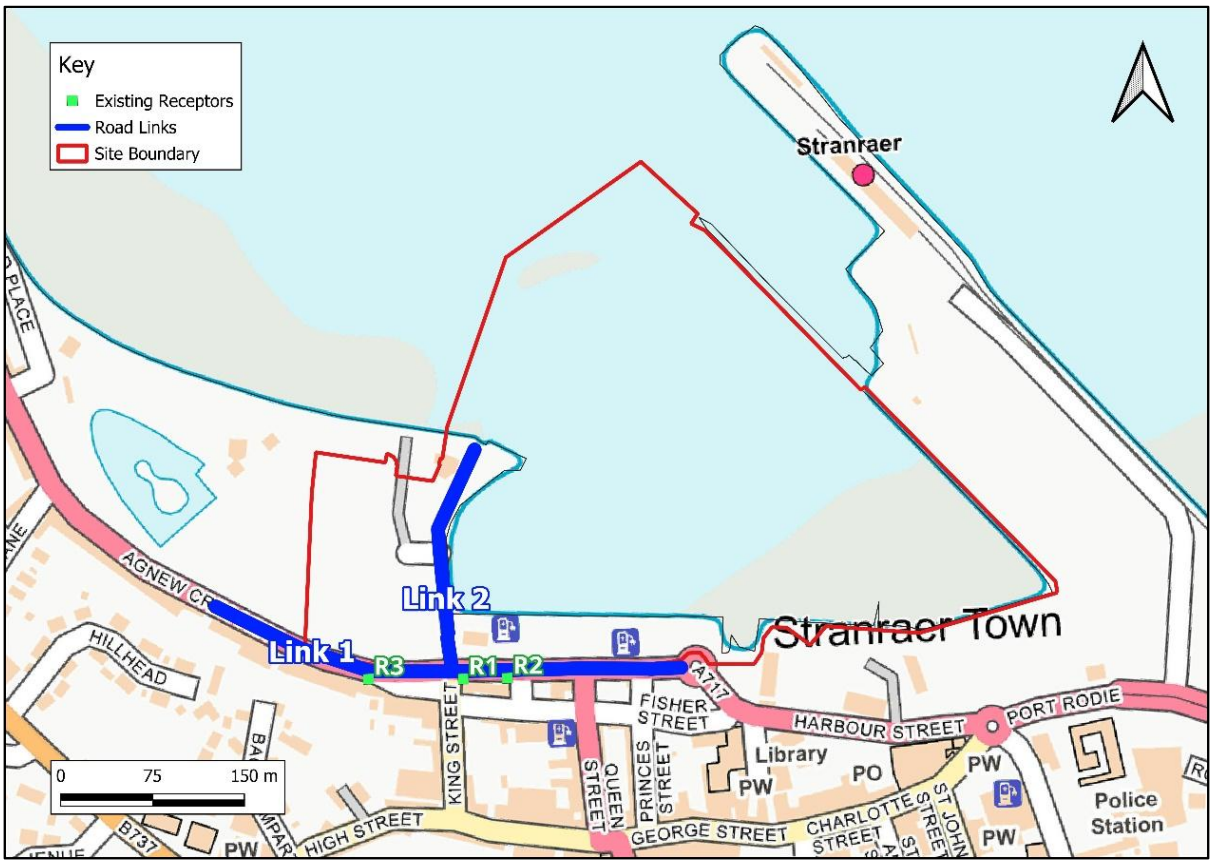
5.100 For the construction phase, the most important consideration is dust. Without appropriate mitigation, dust could cause temporary soiling of surfaces, particularly windows, cars and laundry. The study area for the dust impact is shown in Figure 5.2 below. The mitigation measures provided within the Air Quality chapter should ensure that the risk of adverse dust effects is reduced to a minimum. The residual effects during the construction phase are 'negligible'.

Figure 5.2: Construction Stage Dust Buffers



5.101 Regarding the construction and operational phase traffic emission impacts of the development on the surrounding area, pollutant concentrations at the facades of existing receptors are not expected to exceed the relevant air quality strategy objectives. The locations of the modelled receptors and road links are shown in Figure 5.3 below. The impact of the proposed development on the local area is considered to be 'not significant' for both phases.

Figure 5.3: Locations of the modelled receptors and road links



5.102 No further mitigation for the construction or operational phases is recommended outside those incorporated into the design of the project and those listed in the Mitigation, Monitoring and Residual Effects section of the chapter.

5.103 Using professional judgement, the resulting air quality effect of the Stranraer Marina expansion scheme is considered to be 'not significant' overall.

5.104 The proposed development does not, in air quality terms, conflict with national or local policies. There are no constraints to the development in the context of air quality.

Climate Change

5.105 The EIA assesses the potential effects of the proposed development on and from climate change. Climate change in the context of environmental impact assessment (EIA) can be considered broadly in two parts:

- The potential impact of changes in climate on the proposed development; and
- The impact of greenhouse gas emissions (GHGs) caused by the proposed development, which contribute to climate change.

5.106 The baseline environment is considered as the current climate conditions experienced at the site (i.e. current temperatures and rainfall) for the purpose of assessing the potential impact of changes in climate on the proposed development. Future baseline climate has been sourced from climate projection data for the local area.

5.107 The baseline environment with regards to the assessment of GHGs, is the current site use, i.e. the existing Stranraer Marina and activities associated with its operation (i.e. use of electricity within buildings, use of fuel by vessels and vehicles travelling to and from the marina).

5.108 Embedded mitigation measures incorporated into the design of the proposed development have been identified prior to the impact assessment. Such measures largely comprise climate resilient design informed by flood modelling (see Chapter 10: Flood Risk Assessment), alongside appropriate management plans to enable climate resilience during the operation of the proposed development. Additionally, the installation of all-electric heating and hot water systems, mechanical ventilation and heat recovery, low energy lighting, and solar has been included within the design of the coastguard and marine research facility which enable the reduction of operational energy use, and therefore associated emissions.

5.109 Regarding the assessment of the impact of climate on the proposed development, a climate change risk assessment has identified key hazards to the proposed development and its users during its operation. These largely arise from flooding, extreme weather and temperatures and may lead to impacts such as damage to the proposed development, and health risks to its users. Accounting for embedded mitigation measures, no impacts on the proposed development and its users from climate change have been identified as significant. The assessment of climate risk during the construction and decommissioning of the proposed development has been scoped out on the basis that it is anticipated that work practices will evolve with time to adapt to any future climatic conditions.

5.110 With regards to the assessment of GHGs caused by the proposed development during its construction, associated emissions have been calculated to total 28,469 tCO_2e (arising from the emissions associated with the construction materials and fuel consumed from construction plant, vehicle movements, and dredging activities). In the absence of any embedded mitigation measures to reduce such emissions, it cannot be considered that the construction of the proposed development aligns with national decarbonisation policy, and as such has been assessed to have a moderate adverse effect, which is significant in EIA terms.

5.111 Additional mitigation has been identified to reduce such construction phase emissions, and will be undertaken by the appointed construction contractor throughout the construction phase. Emissions reduction measures include the consideration of lower carbon materials when procuring construction materials, re-using dredged material on-site within the reclaimed land to avoid the sourcing of virgin materials, completing a pre-demolition audit to identify existing materials that could be re-used on site, co-operation with the wider material supply chain, and efficient construction practices.

5.112 While the above measures cannot be quantified at this stage, it is considered that they align with good practice and national decarbonisation policy, and as such emissions arising from the construction of the proposed development have been assessed to have a minor adverse residual effect, which is not significant in EIA terms.

5.113 Operational emissions arising from the use of energy and fuel (i.e. within buildings on site, and from vessels and vehicles travelling to and from the proposed development) have been quantified, with annual emissions totalling 336 tCO_2e (additional to the quantified baseline of 9 tCO_2e). This value is likely to decrease throughout the proposed development's lifetime, as national policy targets for decarbonisation enable a reduction in emissions associated with electricity and fuel consumption. Accounting for the embedded mitigation measures outlined above, it is considered that the operation of the proposed development aligns with national decarbonisation policy, and as such emissions associated with the operation of the proposed development have been assessed to have a minor adverse effect, which is not significant in EIA terms.

5.114 Emissions associated with the decommissioning of the proposed development arise from the disassembly of the features on site, transport to a waste facility, and ultimate disposal. Such emissions have been estimated to total 19,777 tCO_2e. However, this likely presents a large overestimate, as emissions associated with fuel consumption are expected to have achieved good levels of decarbonisation by the decommissioning phase, in line with national decarbonisation targets. As such, work practices undertaken during the decommissioning phase

will align with national decarbonisation policy, and have been assessed to have a minor adverse effect, which is not significant in EIA terms.

Noise and Vibration

5.115 The EIAR presents the assessment of likely significant noise and vibration effects resulting from the proposed development. Unwanted noise and vibration can lead to adverse impacts on existing residential amenity and public health. As such, it is important that the impacts of noise and vibration predicted from the construction and operation of new developments be assessed and mitigated as far as reasonably practicable.

5.116 An assessment of noise and vibration during construction, and noise during operation, has been undertaken. The existing sound environment has been characterised through on site observations and noise monitoring, from which the significance of any impact has been determined.

5.117 In order to determine existing baseline noise levels, an attended sound survey was undertaken at two locations during the daytime and night-time period, to capture ambient and background sound levels representative of the Noise and Vibration Sensitive Receptors (NVSRs).

5.118 At both locations road traffic noise was dominant, however Market Street was notably busier, with noise from use of the car parks along this road contributing to the acoustic environment. Throughout the surveys, there was no audible noise from boats within the marina.

Photograph: 11: Stranraer Marina from ML1 during the daytime survey

Photograph 12: Stranraer Marina from ML1 during the night-time survey

5.119 The assessment has considered:

- Noise impacts during construction of the proposed development
- Vibration impacts during construction of the proposed development
- Noise impacts during operation of the proposed development

5.120 A quantitative construction noise and vibration assessment was undertaken, using details provided by the appointed Contractor for the works. The assessment concluded that there was the potential for significant adverse effects at nearby sensitive receptors. Therefore, additional mitigation and management strategies will be required to minimise, as far as reasonably practicable, the likelihood of these effects. Mitigation measures will include the application of Best Practicable Means (BPM) and noise and vibration monitoring throughout the duration of the works. The assessment has identified that noise from traffic generated during construction is unlikely to result in significant adverse effects.

5.121 In regard to the operation of the proposed development, the exact details on the end users of the development are not currently available. Therefore, noise limits have been set at noise sensitive receptors, with the aim of avoiding adverse impacts. With adherence to these limits, noise during operation will be not significant. The assessment has identified that noise from traffic generated during operation is unlikely to result in significant adverse effects.

5.122 Cumulative effects of noise and vibration of the proposed development with other developments have been assessed. Overall, the assessment has not identified any significant adverse cumulative effects.

Underwater Noise

5.123 Chapter 20 of the EIAR presents the results of a technical desktop study considering the potential Brief to Temporary[23] effects of underwater noise on the marine environment from the proposed berth expansion, dredging and breakwater extension at Stranraer Marina, Dumfries and Galloway, Scotland. The effects are quantified by modelling the ranges from the noise source to a set of species-specific noise limits set by best available scientific guidance for both fishes and marine mammals.

[23] Brief Effects are those lasting less than a day; and Temporary Effects are those lasting less than a year. (EPA, 2022) p.51:

5.124 To establish the likely effects of underwater noise, modelling was carried out to establish reasonable worst-case estimates for the noise emissions for the various activities, the noise transmission through the underwater environment and the ranges to which the noise is likely to exceed acoustic thresholds for hearing injury, temporary (minutes to hours) impairment and behavioural disturbance, following best scientific international and local guidance.

5.125 While the technical chapter does not assess the population impacts of noise, nor its significance, it provides the likely ranges of adverse effects such as hearing injury, temporary hearing impairment and behavioural disturbance. Chapter 13 (Fish and Shellfish Ecology) and Chapter 14 (Marine mammals) of Volume 1 use these results to assess the magnitude and significance of the effects.

5.126 The outcome of this technical chapter shows that there is a large variation in the expected effect ranges between activities and animals:

Impact piling:

5.127 Given a soft start to the impact piling (30 minutes of quieter impact piling), sufficient time is allowed for sensitive animal to clear the nearby area (<500m) that any hearing injury is unlikely.

5.128 There might be temporary hearing impairment for harbour porpoise to a range of 1500m for the impact piling for animals within (underwater) line-of-sight of the impact piling. Other animals have risk ranges for temporary hearing impairment <520m.

Sheet piling/Vibratory piling:

5.129 This activity is not sufficiently loud to cause hearing injuries to fleeing animals, with a risk of temporary hearing impairment to ranges of <200m.

Dredging, Rock dumping and operational noise:

5.130 These activities will be dominated by the vessel noise, some temporary hearing impairment a possible risk for animals within 30 m of the vessels. This is not unique for this project, but true for motorised vessels in general.

Behavioural effects:

5.131 While the noise from the activities potentially exceeds thresholds for behavioural disturbance to ranges of >4km this does not mean that animals will be disturbed to this range, as we can expect animals living close to areas of higher vessel traffic (such as Loch Ryan) to be accustomed to vessel noise and thus have a higher tolerance.

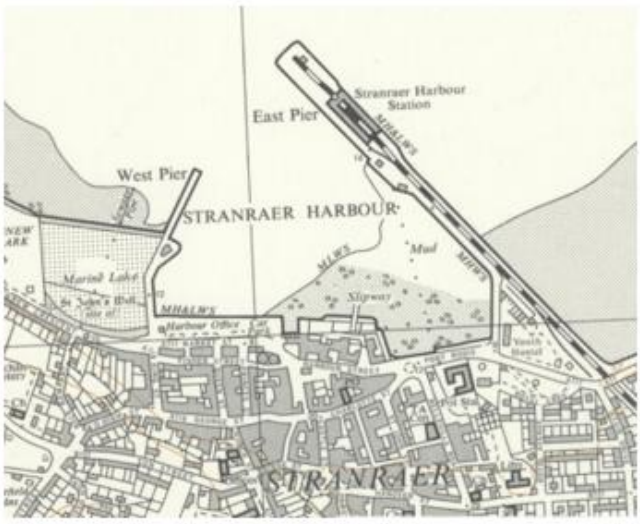
Soils, Geology and Contamination

5.132 The purpose of the ground conditions chapter of the EIAR is primarily to assess the effects to the receptors (site end users, water environment and the built environment) of the proposed development from complete pollutant linkages recorded within the onshore ground conditions. This includes an assessment of numerous pathways such as direct and dermal contact, ingestion, inhalation and leaching. Should complete pollutant linkages exist, appropriate mitigation will be specified to break the linkage.

5.133 This assessment is undertaken using a combination of documentary records, such as historical maps, as shown below and physical intrusive investigation works.

Figure 5.4: Map Extracts

1893 Map Extract



1967 Map Extract

5.134 The physical intrusive instigation works (borehole and trial pits), were used to establish the ground conditions on site, and also allow the collection of samples of the soils and groundwater beneath the site.

Photograph 13: Apparatus used to establish ground conditions

5.135 A combination of the documentary records and the physical intrusive works has been used to establish the baseline conditions; upon which any potential impacts of the development have been assessed against.

5.136 Where the assessment identifies the need for mitigation measures, these will be appropriately specified and detailed within the chapter.

Construction Phase Impacts

5.137 During the construction phase, the assessment identifies any potential linkages with respect to the identified receptors; such as, construction works and the Water Environment. Where required mitigation measures will be adopted, such as, implantation of appropriate Personal Protection Equipment (PPE) for construction works.

Operational Phase Impacts

5.138 In the operational phase, the assessment establishes whether any pollutant linkages will exist on completion of the development. As with the Construction Phase Impacts, where the assessment identifies that linkage exists, appropriate mitigation measures will be put in place. These measures include the installation of ground gas protection systems within future buildings, or the formation of an environmental capping layer within future soft landscaping.

Cultural Heritage

5.139 The cultural heritage impact assessment has considered the potential effects of the construction and operation of the proposed development upon cultural heritage assets, both terrestrial and marine.

5.140 A baseline study comprising desk-based research, including review of bathymetric data, and a site visit has been undertaken in order to identify cultural heritage assets that may be impacted upon by the proposed development. In line with current guidance, the cultural significance of those assets where significant effects might occur has been defined and the magnitude of impact has been determined with reference to the degree of change in cultural significance as a result of the proposed development.

5.141 The Site takes in the existing Stranraer Harbour and adjacent carparks. The harbour developed from the mid with century onwards, and all of the land within the Site was reclaimed in the latter half of the 19th century and subsequently. Historic Environment Records within the Site relate primarily to poorly located marine losses and 19th century and later harbour features. The review of bathymetry data has identified no remains of marine losses within the Site. The harbour has been extensively dredged and it is considered that the potential for substantive remains associated with marine losses to be present is negligible. There is, however, potential for fragmentary remains and isolated artefacts to be present. As the land within the Site has been reclaimed, it is considered that there is very low potential for hitherto unrecorded archaeology to be present.

5.142 The Site contains one designated heritage asset, the Harbour Office with Weighbridge (LB49655) which is a Category C Listed Building, and partially lies within the Stranraer Conservation Area. Adjacent to it are 28 And 30 Harbour Street (LB41768) which is a Category B listed building and 10 and 11 Market Street (LB41771 & LB41772) which are Category C-listed.

5.143 No predicted construction phase impacts in respect of known heritage assets have been identified. There is low potential for isolated artefacts and such to be disturbed during dredging operations. This potential will be addressed through the enactment of a protocol for the reporting of archaeological discoveries during dredging. This would allow for their recovery, but there remains some potential for loss of data. As such there may be a residual effect of slight significance. This is not significant in the terms of the EIA Regulations.

5.144 Onshore ground disturbance will be contained within modern madeground and it is considered that there is no potential for terrestrial heritage assets to be affected.

5.145 During its operational phase, the proposed development itself will for the most part result in a neutral change in the Conservation Area and its setting. However, the new sheet pile wall will obscure one of the last elements of the 19th century harbour that remains, resulting in a loss of historic character, and the substation and compound may be experienced as detracting from the Conservation Area's character and appearance. The former will be offset through a programme of historic building recording and the latter prevented by the implementation of sensitive detailed design. In addition, larger vessels using the facility may interfere with significant views that contribute to the cultural significance of the Stranraer Conservation Area. No mitigation is possible, and it is considered that there will be a slight effect upon the Conservation Area. This is not significant in the terms of the EIA Regulations.

5.146 Larger vessels will also affect views from the Category C-listed 10 and 11 Market Street resulting in residual effects of negligible significance. This is not significant in the terms of the EIA Regulations.

5.147 No other operational effects have been identified.

5.148 The potential for cumulative effects to occur has been considered. No such potential effects have been identified.

Landscape and Visual

5.149 A detailed study has been carried out to understand how planned improvements and expansion at Stranraer Marina might affect the surrounding landscape character and views. This is reported in a Landscape and Visual Impact Assessment (LVIA).

5.150 The LVIA looks at:

- What the local landscape and views are like now;
- How sensitive these are to change;
- How the development might affect landscape character and change views during construction and once the project is complete. (This includes how the changes might look from nearby footpaths, homes, parks, and roads.)

Key Findings

Construction Phase Effects

5.151 At the construction stage of the project, effects on landscape character and views are generally worse than at operation phase. This is due to the presence of construction machinery, temporary fencing / hoarding and things that aren't typically present in the area in the current situation. However, construction phase effects are temporary in nature for the duration of the construction phase.

5.152 During this phase, there is a significant adverse visual effect upon users of Stranraer Waterfront / Core Path STRA/544/1, which is within the site red line boundary. This is due to views being very close and construction works being dominating within this view.

5.153 There are no other significant adverse effects on landscape character / views at the construction phase.

Operational Phase Effects Summary

Landscape Effects

- The site is not part of any protected or specially designated landscape area.
- The local landscape is a mix of coastline, grassy land, trees, and communities in towns and villages.
- The marina area itself is already a developed space with car parks and harbour facilities.
- The changes planned fit well with the current look and feel of the site.

- There will be no major negative effects on the landscape overall.

Visual Effects – What People Will See

From Footpaths (Core Paths):

- The closest paths will have clear views of new berths, buildings, and land reclamation. These changes will be noticeable but not considered a major negative impact.

From Parks and Public Spaces:

- Some views will be partly hidden by trees, especially in Agnew Park. Any changes to views from recreational areas will be minor.

From Nearby Homes:

5.154 Some nearby homes, especially on Market Street, will have views of the development. A few homes further away, including those with views over the loch, may see small changes. In all cases, the changes are considered small and not significantly negative.

From Roads and Footpaths along roads:

5.155 People travelling along local roads and paths will notice some new features, especially nearby. Many views will be filtered by trees or too far away to clearly see changes. Again, any effects on views are minor and not significant.

Other Projects and Cumulative Effects

5.156 When looking at this project alongside others planned in the area, that are submitted for planning approval (some being approved and some still being determined) there is a slight increase in visible urban development. A few more boats might be visible in the water due to increased mooring space. These combined effects are still considered minor and not significantly harmful.

Conclusions

5.157 At construction phase there is a significant adverse visual effect on Stranraer Waterfront, Core Path STRA/544/1 users due to the contrast in view of construction works. At the operational phase, while some people close to the marina may notice small changes to their views, the overall impact of the project on the local landscape and visual experience is low. Most changes will blend in with the existing character of the area and are not expected to cause significant harm to the environment or to public enjoyment of the landscape. The proposed development will also bring about some positive benefits including increase in open space at the reclaimed land area and improvement works to existing car parks.

Socio Economics

5.158 Chapter 24 (Socio-Economics) of the EIAR has considered the potential effects of the construction and operation of the proposed development upon the socio-economic environment of the study area.

5.159 Socio-economics is the study of the economic and social characteristics that define a group of people, community or locality. Understanding socio-economic characteristics can help us to interpret the impacts of changes to an environment.

5.160 A socio-economic baseline study comprising desk-based research as well as stakeholder engagement was conducted and included in the Socio-Economics Constraints Report (Appendix 24.1 – Volume 2 of the EIAR).

5.161 In terms of mitigation, to help alleviate potential effects, the EIA process has considered the use of a final CEMP, which will help to mitigate against the potential receptor negative impact risks concerning:

Crime and Safety

- Receptor Concern: Risk of theft or vandalism of construction equipment.
- Mitigation: The final CEMP will include details in relation to robust security measures including a temporary hoarding, CCTV, security lighting, fencing, a control room, and guard patrols. These measures are expected to prevent significant impacts, and further assessment is not deemed necessary.

Tourism

- Receptor Concern: Potential decline in visitor numbers due to noise and visual disruption during construction.
- Mitigation: The final CEMP will include provisions for clear communication about temporary closures of tourism-related activities. It will also aim to ensure clear signage and directional markings to separate construction zones from public areas, maintaining accessibility and minimising disruption to the visitor experience.

Open Space and Public Rights of Way (PRoW)

- Receptor Concern: Reduced access and enjoyment of open spaces and coastal walkways due to construction activities.

- Mitigation: A logistics and access plan will be developed with the Local Authority to maintain pedestrian and vehicular access throughout the project. The final CEMP will also address recreational impacts and includes measures to minimise disruption to public enjoyment.

5.162 A beneficial recommendation of an Outline, Supply Chain, Skills and Employment Plan (Appendix 24.2 of the EIAR) that ensures employment/training opportunities are offered to Stranraer residents in the first instance, with expected positive effects of improved skills, training and supply chain opportunities for local residents and businesses.

5.163 During construction, the proposed development is anticipated to moderately boost local economic activity and reduce unemployment through job creation. The construction phase will also provide opportunities for skills development and education, and provide support to the local economy by increasing demand for temporary workers' accommodation.

5.164 During construction, the proposed development is anticipated to moderately boost local economic activity and reduce unemployment through job creation. The construction phase will also provide opportunities for targeted skills development and education, and provide support to the local economy by increasing demand for temporary workers' accommodation which will lead to moderate beneficial effects. However, there may be minor adverse effects on crime and safety and access to open spaces, and leisure facilities due to construction disruptions. There will be negligible effects, in EIA terms, on tourism, and leisure, recreation and community use during construction.

5.165 Once the proposed development is operational, the proposed development will continue to positively impact the local economy and employment, though to a lesser extent than during construction. It is predicted that the proposed development will significantly boost the tourism economy, improve access to open spaces, and enhance local leisure recreation and community uses when compared to the construction stage. It is considered that the proposed development will also increase demand for local shops and services when compared to the construction stage, contributing to sustained economic growth. Overall, the long-term benefits of the Stranraer Marina Expansion are expected to outweigh the minor adverse effects experienced during construction.

5.166 The potential for cumulative effects to occur has been considered. No such potential significant effects have been identified.

6.0 Mitigation, Significance and Conclusions

6.1 This EIA is an iterative process in which opportunities for embedded environmental mitigation have been considered throughout the design process of the proposed development. Where possible, environmental mitigation measures have been developed into the Design Fix, to ensure that the final development design and site layout represents the optimum approach to reduce potential environmental effects. The proposed development has been subject to a multi-disciplinary design process, which for example, has included input from Landscape Architects.

6.2 As noted within the EIAR, the construction phase of the proposed development presents the potential for some impact risks. With the implementation of standard construction and additional mitigation measures e.g. the final CEMP; Noise and Vibration Management Plan (NVMP); Dust Management Plan (DMP) and CTMP etc., it is considered that potential environmental effects can be controlled and alleviated. For some environmental topics, residual significant adverse effects on some receptors are still predicted, during the construction phase. However, these are temporary in nature during certain phases and activities of the construction phase.

6.3 It is also important to note that during construction, the proposed development is anticipated to moderately boost local economic activity and reduce unemployment through job creation. The construction phase will also provide opportunities for skills development and education, and provide support to the local economy by increasing demand for temporary workers' accommodation.

6.4 During the construction phase significant beneficial effects, in EIA terms, have been predicted for certain receptors in relation to socio economics, including: Change in Economic Output; Reduced Unemployment; Improved Education, Skills & Qualifications; and Temporary Workers Accommodation.

6.5 Once operational, no predicted significant adverse environmental effects are predicted for the proposed development.

6.6 In terms of transportation, the EIAR concludes that despite increases in traffic flows, the proposals will have an overall beneficial effect on sustainable travel and the choice of travel options in Stranraer.

6.7 From a socio-economic perspective, once the proposed development is operational, it is predicted to positively impact the local economy and employment, yielding significant beneficial effects on some receptors. It is predicted that the proposed development will significantly boost tourism and related activities, improve access to open spaces, and enhance local leisure and community uses. It is considered that the proposed development will also increase demand for local shops and services, contributing to sustained economic growth. Overall, the long-term benefits of the marina expansion are expected to outweigh any adverse effects experienced during construction.

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