Environmental Impact Assessment - Screening Checklist Report
Outhead, Eden Estuary, St Andrews

Request for Screening Opinion under Regulation 10 (1) of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017

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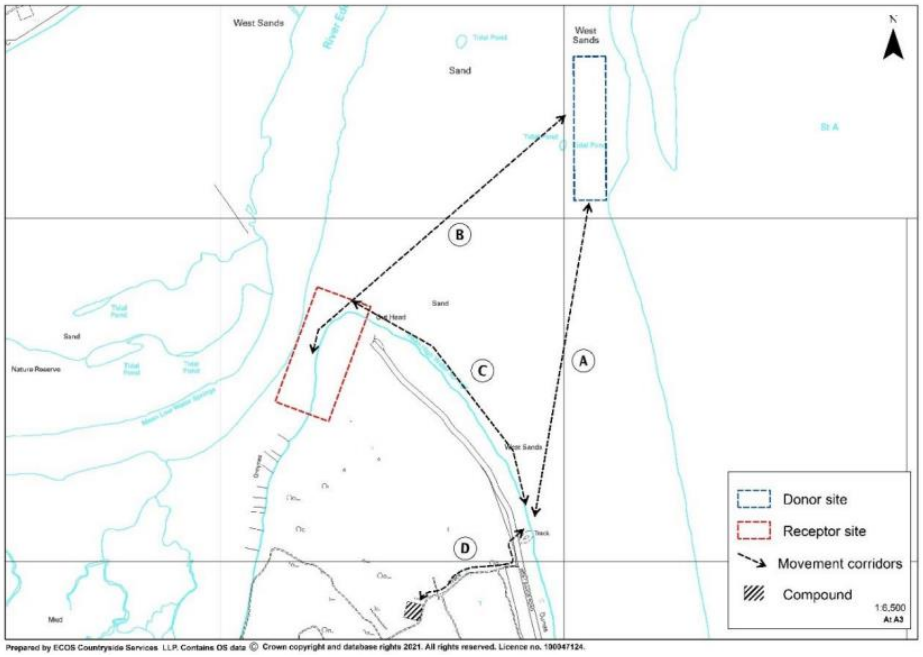
63163 / June 2023 / V6

EIA Screening Overview

Legislation	Request for Screening Opinion under Regulation 10 (1) of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017.
Project Title	St Andrews Links Trust Outhead Delivery Phase
Boundary Co-Ordinates	**Deposit Area below MHWS** NW - NO 493197 NE - NO 493197 SW - NO 492194 SW - NO 492194 **Removal Area below MHWS** NW – NO 501205 NE – NO 502205 SE – NO 502201 SW – NO501201
Reference Plans	63163-27-011-P01 Marine Scotland License Application, Removal and Deposit Areas and 63163-27-012-P01 General Arrangement Showing Extent of Marine Scotland License Application Deposit Area
Consenting and Licensing	A Marine Licence Application for construction projects will be submitted to Marine Scotland (MS-LOT) under the Marine (Scotland) Act 2010 ("The Act"). The licensable activities which are included in this proposal are the removal of sand from the donor area (Part 4, Section 21(6) of The Act), which is all below Mean High Water Springs ("MHWS"), and the deposit of sand below MHWS (Part 4, Section 21(1) of The Act) - only part of the deposit area is below MHWS. Fife Council have been consulted under The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 and have confirmed EIA is not required for the deposit of sand above MHWS.
Simple Project Description	There are 3 main elements to the proposals; • Removal of sand from the donor area at Outhead in an area of accretion; • Recharge at the receptor site to restore the dune face and beach level within this area to address erosion; and • Planting of the dune face with dune grasses (Marram and Lyme) and stabilised with temporary chestnut pale fencing. Once the recharge is completed, there will be a period of annual monitoring through fixed point photography and topographic survey. The proposed recharge design is a straightforward replication of the two previous recharges which have been undertaken successfully and without incident or criticism, the most recent providing dune restoration that lasted for 15 years. The third recharge, hauling sand and shaping, will take place over a pre-selected spring tide series over 10 days. The proposed working window would be during March with planting in April / May Sand will be removed from the same donor site used for the two previous Out Head recharges, 2001 and 2008, location is NGR NO 498202 (This is ideal because that area has been proved to replenish very quickly and is a known area of long-

	term accretion. Approximately 12,000-15,000m3 of sand will be transported to the receptor site on the south west interface with the Eden Estuary. Working will take place over both low tides each day. Sand will be extracted to a maximum depth of 0.5m over an area of approximately 200x200m using a single 360-degree backhoe excavator loading three or four "Moxy" type dump trucks following agreed movement corridors per Figure below (ECOS Countryside Services LLP). Three machine movement corridors (A,B and C) will be used for gaining access to the donor site, hauling sand to the receptor site and return to a safe storage over high tide. Working will be limited to a low tide window of a few hours which will "roll" according to the times of low tide. All refuelling and maintenance will be completed at the remote site compound (D).  Work at the receptor site will involve tipping and bulldozing sand into place to create a new 200m long sand cliff, with a top platform approximately 10m wide. A slope will extend seawards to a depth of 25-30m, previous recharges extended to approximately 40m. The profile will reflect previous recharges, although it may be slightly steeper. An upper bench, raised slightly higher than the existing eroded ridge, will be transplanted with cell grown marram plants of local provenance, or transplants taken from adjacent dunes, at a density of 5 plants per square metre. Prior to marram planting, a series of chestnut pale fences will be installed across the face. After planting these fences will be closed at the toe with another public exclusion fence. Anti-erosion roll bags will be temporarily placed inside the toe fence to limit initial losses for 6-12 months
Project Grid	Site Address: Out Head, Eden Estuary, St Andrews KY16 9SF

<table>
<tr><td>Reference</td><td>National Grid Reference: NO 49278 19487 (site of eroding dune)
Deposition Area: 1.99 ha
Removal Area: 4.37 ha
Elevation: Approximately 0 m to 9 m AOD</td></tr>
<tr><td>Determining the Need or Otherwise for Statutory Environmental Impact Assessment (EIA)</td><td>Under The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, developments falling within a description in Schedule 1 to the 2017 EIA Regulations always require EIA. Development of a type listed in Schedule 2 to the 2017 EIA Regulations will require EIA if it is in an environmentally sensitive area or is likely to have a significant effect on the environment by virtue of factors such as its size, nature or location.

The scheme does not fall within any of the categories listed within Schedule 1 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 and therefore does not automatically require an EIA. Development of a type listed in Schedule 2 will require EIA if it is in an environmentally sensitive area or is likely to have a significant effect on the environment by virtue of factors such as its size, nature or location. Coastal defence works are listed under Schedule 2 under 10 (m).

<table>
<tr><th>Schedule 2 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 - Column 1 - Description of development</th><th>Column 2 - Applicable thresholds and criteria</th></tr>
<tr><td>10 (m) Coastal work to combat erosion and maritime works capable of altering the coast though the construction, for example, of dykes, moles, jetties and other sea defence works excluding the maintenance and reconstruction of such works.</td><td>All Development</td></tr>
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</table>

The proposed removal and deposition areas overlap with three designations – Firth of Tay and Eden Estuary Special Protection Area (SPA), Firth of Tay and Eden Estuary Special Area of Conservation (SAC) and Eden Estuary Site of Special Scientific Interest (SSSI). As a result of the environmental designations and the description of development, this EIA Screening Report has been produced to support a formal EIA Screening Request to Marine Scotland for the licensable activity.</td></tr>
<tr><td>References</td><td>The following baseline information has been used to inform this EIA Screening:
• The Fife Shoreline Management Plan (2011)[1] included policy positions for units along the Fife Coast. Outhead is the stretch 49-50. Policy looks to ‘Hold</td></tr>
</table>

[1] https://www.fife.gov.uk/__data/assets/pdf_file/0020/270461/Fife-SMP-2011-Summary2.pdf)

	the Line'. The Fife Shoreline Management Plan is to be updated based on findings of Dynamic Coast. • A.F. Rennie, J.D. Hansom, M.D. Hurst, F.M.E Muir, L.A. Naylor, R.A. Dunkley, C.J. MacDonell (2021). Dynamic Coast: Adaptation and Resilience Options for St Andrews Links. CRW2017_08. Scotland's Centre of Expertise for Waters (CREW)[2] • Eastwood, K. M. (1977) Some aspects of the sedimentology of the superficial deposits of the Eden estuary, Fife, Scotland. Unpublished PhD thesis, University of St Andrews, 346pp • Maccaferri Ltd. (2017) St Andrews Royal & Ancient Golf – Case History. Coastal Protection: Polymeric Coated Woven Gabions & Reno Mattresses. Revision 02, February 2017 • Eden Ecology Ltd (2008) Environmental Impact Assessment, Environmental Statement, Proposed Beach Nourishment of Outhead Dune System. • Posford Duvivier Environment (2000) Feasibility Study for Foreshore Recharge on the Eden Estuary April 2000. Scottish Natural Heritage Commissioned Report F99LJ02 • Erosion at St Andrews Links Preliminary report prepared for St Andrews Links Trust by Hydraulics Research Wallingford, 1991 • Jarvis, J and Riley, C. (1983). Sediment Transport in the mouth of the Eden Estuary. Estuarine and Shelf Science. • Jarvis, J. The performance of gabion protection & sand recharge at Pilmour Links, Outhead, St. Andrews University of St. Andrews, School of Geography & Geoscience (annual reports from 2001-2007). • Jarvis, J. (2007) Summary Report on performance of Outhead beach nourishment project. Report to Links Trust.
Baseline Information	• Range of available desk-based environmental information, including studies already commissioned by the client; • NatureScot website and Scotland's Environment Web – information on nature conservation designations etc.; • SEPA website and Scotland's Environment Web - information regarding flooding, water quality, groundwater, pollution prevention etc.; • Historic Environment Scotland and Scotland's Environment Web – Listed Buildings, Scheduled Ancient Monument Records etc.; • SNH Handbook on Environmental Impact Assessment, Version 5, 2018; • OS Maps, Plans, Data; • British Geological Society Published Mapping and Coal Authority Mapping; • Fife Local Biodiversity Action Plan (February 2019); • Fife Council Local Development Plan adopted September 2017 with accompanying supplementary guidance; and • Specialist advice from our team of environmental scientists, geologists, hydrologists, ecologists and landscape architects
EIA Screening Team	The EIA Screening has been produced by Kim McLaren, Director, Environment with support from specialists: • Kim McLaren, Director, Ironside Farrar - BSc (Hons), MSc, MIEnvSc, PIEMA, CEnv • Mark Chapman, Director, Ironside Farrar – BSc (Hons), MSc, MICE, CEng

[2] https://www.dynamiccoast.com/reports

	• David Bell, Partner ECOS Countryside Services LLP - BSc (Hons) • Prof Alastair Dawson, BSc (Hons), MSc, PhD

Characteristics of Development

Context

The Eden Estuary is a mild hydraulic environment, with wind and waves prominently from the southwest. The primary impact of this is erosion by the swash effect on unprotected dunes and the transport of material northeast along the upper beach. The outer estuary, particularly the Outhead dune system, is a more dynamic system with periods of accretion and erosion. The Indicative River and Coastal Flood Map (Scotland) available on the SEPA website records the site as high risk of coastal flooding.

Since 1912 concerns have been expressed due to erosion in the Eden Estuary, the area is subject to considerable pressures, including climate change, primarily due to a lack of buffer and hard engineering along its high-water mark. Hence a series of hard engineering interventions commenced from 1930 to the 1990s. In 2001 and 2008, projects were undertaken to renourish and sand recharge sand volumes (c. 13,000m3) in the low-lying land behind and adjacent assets, including the Jubilee Course.

However, Monitoring conducted in 2018 of the Jubilee/Eden dunes has noted that the dune restored in 2001 and 2008 without gabion toe has retreated, and the beach level has dropped. The dune now presents a steep west-facing cliff that struggles to hold vegetation, presenting a hazard in terms of the unstable nature of the cliff top edge, and signage warning walkers has been installed.

St Andrews Links Trust commissioned the 'Dynamic Coast' programme. The final report (August 2021) concluded that coastal sections and low-lying areas are potential flood corridors and recommended approaches to mitigate some of these issues over 0-30 years. The proposed restoration seeks to repair the eroded dune and raise beach apron levels only, as in 2008.

Land Use

The Eden estuary is constrained around its high-water mark by various land uses, including recreation (principally golf), agriculture, industry, and farming. Since the 1800's hard engineering projects have substantially modified natural processes, with 62% of the Eden now behind some form of hard engineering.

Existing Coastal Defences

Historically coastal sea defences have been installed along the western edge of Out Head, including gabion baskets and groynes. The groynes are of unknown age, and the associated concrete blocks are still present, along with the remains of wooden posts. Vertical gabion baskets were initially installed in 1978. The gabions extend over 1 km along the estuary adjacent to the Eden course and end 300 m short of the northernmost point of Out Head. Additional sloped gabion baskets were constructed in 2000, and further repairs to the gabion structure were carried out in 2008 (Maccaferri Ltd 2017).

Site of Erosion

The localised retreat of the dune faces has been noted on the western edge of Out Head. A prominent area of concern is a sand dune located approximately 300 m southwest of the northernmost point of Out Head, immediately north of the end of the gabion baskets. The dune is approximately 6 metres in height relative to the beach's interface and is close to assets, including

the Old Course, with greens located less than 40 metres back from the dune. The location of the eroding dune is approximately NO 49278 19487.

Previous Sand Recharges

The site has been the focus of previous sand recharge operations carried out by St Andrews Links Trust and project partners in order to protect the low-lying land and adjacent assets including the Jubilee, Eden and Old courses. These previous sand recharges used soft engineering and nature-based solutions to maintain the coastline under a 'hold the line' scenario. Recharges were undertaken in 2001 and 2008, and multiple smaller recharges have been carried out by the Links Trust since 2010 under license from Marine Scotland and consent from NatureScot and Fife Council.

Environmental Designations

The Eden estuary has several environmental designations due to its habitats and species composition, and these are important considerations to the shape of proposals brought forward and the level assessment that will be presented as part of the planning application:

- Eden Estuary SSSI designated for its mudflats, saltmarshes, sand dunes and scrub. Nationally or internationally important populations of 13 species of waders and waterfowl occur in winter or on passage.
- The Firth of Tay-Eden Estuary SPA is designated for its bird assemblages and includes marsh harrier, little tern and bar-tailed godwit.
- The Firth of Tay-Eden Estuary SAC is designated for its intertidal habitats, subtidal sandbanks, and common seal.
- Firth of Tay and Eden Estuary RAMSAR designated for bird assemblies that include Marsh harrier, little tern, velvet sector and bar-tailed godwit.
- The Eden Estuary LNR is designated for its estuarine features and comprises key habitats and wildlife recognised in a suite of designations.

The proposed design comprises filling up the beach area as far as the raised dune crest, leaving the crest in situ. Sand recharge would start approximately at a mid-tide level and be filled at a shallow gradient up the beach. The filling works would commence at the end of the existing gabion system and be tapered south in a radius to ensure the area of existing erosion at the gabions is protected and that the sand ties in with the adjacent beach levels. It would extend north up to the approximate point where the berm starts to extend inland. The proposed removal and deposition areas are shown on drawing 63163-27-009-P01 Proposed Removal and Deposition Area.

Location of the Development

The site is located at Out Head, a sandy coastal headland situated east of the River Eden and east of St Andrews Bay in northeast Fife. Out Head is formed of a build-up of accreted sand and dunes at the mouth of the Eden Estuary. The St Andrews Links golf courses (the Old, New, Jubilee, Eden, Strathtyrum and Balgove) are situated upon and south of Out Head. The licensable activities which are included in this proposal are the removal of sand from the donor area (Part 4, Section 21(6) of The Act), which is all below Mean High Water Springs ("MHWS"), and the deposit of sand below MHWS (Part 4, Section 21(1) of The Act) - only part of the deposit area is below MHWS.

Potential for Likely Significant Environmental Effects?

Potential impacts relate to:

- Temporary mobilisation of sand during the works
- Localised geomorphological changes

- Temporary disturbance to protected species within the Eden Estuary
- Temporary disturbance to users of the beach and golf course

Whilst the proposed development is in a sensitive location, with appropriate mitigation identified through work done to date together with further detailed assessment and consultation with NatureScot and Marine Scotland, the proposals are not considered to give rise to significant environmental effects.

Mitigation

In accordance with the EIA Regulations, mitigation has been specified as follows:

- **Design** – The proposed design has been informed by past successful recharges and independent geomorphological and ecological advice. The design has been further refined with advice from NatureScot and Marine Scotland.
- **Ecological Survey and Assessment** – Baseline data collated will inform EcIA and RIAA to address potential disturbance to breeding and resting common seals and qualifying bird species during key periods. The RIAA has been discussed and scoped with NatureScot including via site visit.
- **Geomorphology Report** – a more detailed report on the preferred option, as discussed with NatureScot.
- **Construction Environmental Management Plan** – produced in line with best practice to detail the mitigation to be applied during the recharge works informed by the chosen contractor, who has to prove a track record of implementing previous recharges at Outhead in a sensitive manner working closely with the project environmental team and ECOW.
- **Timing of the works –** to minimise disturbance during sensitive periods for seals and birds as well as avoiding peak winter storms and optimising planting for marram.
- **Duration of the works** – The works are of short duration to minimise disturbance with sand movement over c. 14 days with marram and fencing installed over a similar timescale.
- **Environmental Awareness –** the appointed contractor will be made aware of environmental sensitivities. Environmental management information and method statements will be agreed upon before starting works to protect the environment and known ecological sensitivities.
- **Monitoring** – a monitoring programme will be carried out using fixed point photography and an annual topographic survey to review the movement of sand and the impact of future storms.

The application includes a **Construction Environmental Management Plan (CEMP)** in line with best practice. The purpose of the CEMP is to ensure that construction work considers aspects of environmental protection within the context of compliance with local legislation and minimising the impacts on people, natural heritage interests and the wider environment. The CEMP seeks to ensure that potential environmental impacts identified through a range of environmental studies (in this case, ecological reporting and geomorphological reporting) will be managed appropriately. Production of, and adherence to, a CEMP allows a proactive approach to controlling potentially polluting activities to prevent adverse public health impacts, nuisance, and hazards to the natural and human environment. The key areas identified as mitigation are summarised as follows:

- **Timing of Activities** – to avoid adverse impacts on seals or bird interest and to optimise the marram planting.
- **Environmental Awareness and Oversight** – Toolbox Talks, Induction and oversight by Ecological and Environmental Clerk of Works (ECOW)
- **Control of Construction Activities** – defined working areas, compound area, haul routes and fencing and signage
- **Pollution Prevention and Control** – spill prevention and education associated with machinery used in coastal location in proximity to sensitive water environment
- **Public Engagement** – pre-application consultation and construction stage information to local community / beach users etc

Conclusions

We conclude through completion of this EIA Screening exercise that there are no likely significant effects arising from the proposed development subject to the application of appropriate mitigation, and **therefore, in our opinion, statutory EIA is not required**. The following **non-statutory environmental reporting will be submitted** with the planning and marine licensing applications:

- Planning Statement with Design Drawings
- Construction Environmental Management Plan (CEMP)
- EcIA and Report to Inform Appropriate Assessment (RIAA)
- Geomorphological Report

EIA Screening Checklist

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
(a) Size of the development			
Will the development be out of scale with the existing environment?	No	No	There has been a long-running programme of dune restoration along the dune cordon surrounding St Andrews Links incorporating West Sands beach. This programme has successfully restored the main dune ridge along the West Sands, and the northwest shoreline within the Eden estuary, a programme of two beaches and dune recharges completed in 2001 and 2008. The purpose of the recharge was to protect the Jubilee course and associated recreational and habitat-rich land behind the dune ridge. Since the last recharge, erosion has progressed, leaving an eroded high and steep-faced dune. An option for a further recharge and 'nature-based solution' is recommended within the 'Dynamic Coast'. The proposed recharge is focussed on a 200m section of eroding coastline and has been informed by long-term monitoring and independent geomorphological assessment. The proposed recharge is considered in scale with the existing environment.

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
Will it lead to further consequential development or works (e.g. New roads, extraction of aggregate, provision of new water supply, generation or transmission of power, increased housing and sewage disposal)?	No	No	N/A
Are there potential cumulative impacts with other existing development or development not yet begun but for which planning permission exists?	No	N/A	N/A
Should the application for this development be regarded as an integral part of a more substantial project? If so, can related developments which are subject to separate applications proceed independently?	No	No	N/A
(c) Use of Natural resources			
Will the construction or operation of the development use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?			
• land (especially undeveloped or agricultural land)?	No	No	N/A
• water?	No	N/A	N/A
• minerals?	No	N/A	N/A
• aggregates?	No	N/A	N/A
• forests and timber?	No	N/A	N/A

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
• energy, including electricity and fuels?	No	N/A	N/A
• any other resources?	No	N/A	N/A
(d) Production of waste			
Will the development produce waste during construction or operation or decommissioning?			
• spoil, overburden or mine wastes?	No	N/A	N/A
• municipal waste (household and/or commercial)?	No	N/A	N/A
• hazardous or toxic wastes (including radioactive)?	No	N/A	N/A
• other industrial process wastes?	No	N/A	N/A
• surplus product?	No	N/A	N/A
• construction or demolition wastes?	No	N/A	N/A
• redundant machinery or equipment?	No	N/A	N/A
• contaminated soils or other material?	No	N/A	N/A
• agricultural wastes?	No	N/A	N/A
• any other solid wastes?	No	N/A	N/A
• liquid or solid wastes in suspension?	No	N/A	N/A
(e) Pollution and waste			
Will the development release pollutants or any hazardous, toxic or noxious substances to the air? Emissions from:			
• combustion of fossil fuels from stationary or mobile sources?	No	N/A	N/A
• production processes?	No	N/A	N/A
• materials handling, including storage or transport?	No	N/A	N/A

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
• construction activities, including plant & equipment?	Yes	No, with mitigation	The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of the construction plant through appropriate CEMP and Construction Method Statements.
• dust or odours from handling of materials, including construction materials, sewage & waste?	No	N/A	N/A
• incineration of waste?	No	N/A	N/A
• burning of waste in open air (e.g. Slash material, construction debris)?	No	N/A	N/A
• any other sources	No	N/A	N/A
Is there a potential risk from:			
• leachates?	No	N/A	N/A
• Escape of wastes or other products/by-products that may constitute a contaminant in the environment?	No	N/A	N/A
Will the development cause noise and vibration or the release of light, heat energy or electromagnetic radiation?			
• from the operation of equipment e.g. Engines, ventilation plant, crushers?	Yes	No, with mitigation	The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of the construction plant through appropriate CEMP and Construction Method Statements. Works will be undertaken during

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
			agreed working hours to minimise impacts on visitors to the beach and golfers as well as natural heritage interests. Measures to control noise will be implemented in accordance with 'BS5228: Control of Noise and Vibration on Construction and Open Sites'. The works will be temporary and of short duration. Information on the project will be posted on the St Andrews Links Trust websites, on boards adjacent to the works site and in the local press to inform the public that the area will be inaccessible for the short duration of the works. The project implementation will be overseen by an Ecological Clerk of Works in line with mitigation recommendations in the EcIA and HRA (e.g. haul route advice) as informed by consultation with NatureScot. Sensitive periods for seals and birds have been avoided through timing of works to minimise potential impacts e.g. noise / disturbance.
• from industrial or similar processes?	No	N/A	N/A
• from blasting or piling?	No	N/A	N/A
• from construction or operational traffic?	Yes	No, with mitigation	The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of the construction plant through appropriate CEMP and Construction Method

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
			Statements. Works will be undertaken during agreed working hours to minimise impacts on visitors to the beach and golfers. Information on the project will be posted on the St Andrews Links Trust websites, on boards adjacent to the works site and in the local press to inform the public that the area will be inaccessible for the short duration of the works. Vehicle routes to the receptor and donor areas will be agreed upon and clearly demarcated. The project implementation will be overseen by an Ecological Clerk of Works in line with mitigation recommendations in the EcIA and HRA as informed by consultation with NatureScot. Sensitive periods for seals and birds have been avoided through timing of works to minimise potential impacts e.g. noise / disturbance.
• from lighting or cooling systems?	No	N/A	N/A
• from sources of electromagnetic radiation (effects on nearby sensitive equipment as well as people)?	No	N/A	N/A
• from any other sources?	No	N/A	N/A
(f) Risk of Accidents, having regard in particular to substances, technologies used			
Will there be a risk of accidents during construction or operation of the development which could have effects on people or the environment?			
• from explosions, spillages, fires etc from storage, handling, use or production of hazardous or toxic substances?	No	N/A	N/A

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
• from events beyond the limits of normal environmental protection e.g. Failure of pollution control systems?	No	N/A	N/A
• from any other causes?	No	N/A	N/A
• could the development be affected by natural disasters causing environmental damage (e.g. Floods, earthquakes, landslip, etc)?	Yes	No, with mitigation	The timing of the works will be important to ensure access to the donor site and receptor site and to avoid periods of storm activity to allow the recharge to stabilise and the fencing and marram to be planted.
Will the development involve use, storage, transport, handling or production of substances or materials that could harm people or the environment (flora, fauna, water supplies)?			
• use of hazardous or toxic substances?	No	No	N/A
• potential changes in occurrence of disease or effect on disease carriers (e.g. Insect or water borne diseases)?	No	No	N/A
• effect on welfare of people (e.g. Change of living conditions)	No	No	N/A
• effects on vulnerable groups (e.g. The elderly)?	No	No	N/A
Other characteristics: potential physical changes (topography, land use, changes in water bodies etc) from construction, operation or decommissioning of the development			
• Permanent or temporary change in land use, landcover or topography including increases in intensity of land use?	Yes	No, with the appropriate design	The recharge is similar in scale to previous works. The proposed works are small in scale and are a nature-based solution to a focused area of erosion between a section of existing gabions and accreting beach and coastline at Outhead and West Sands.

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
• clearance of existing land, vegetation & buildings?	No	No	N/A
• peat land disturbance and / or degradation leading to; Carbon release, damage to habitats, affecting land stability or hydrology?	No	No	N/A
• creation of new land uses?	Yes	No, with the appropriate design	The recharge is similar in scale to previous works. The proposed works are small in scale and are a nature-based solution to a focused area of erosion between a section of existing gabions and accreting beach and coastline at Outhead and West Sands.
• pre-construction investigations e.g. Boreholes, soil testing?	No	No	N/A
• construction or demolition works?	Yes	No, with the appropriate design	There will be movement of sand (12,000-15,000 m3) from the donor site to the receptor site. The sand will be used to restore a 200m stretch of the eroded dune on the west shore of Outhead. The works will be undertaken during suitable spring tidal conditions. The sediment movements will be carried out using a known and specialist contractor who will be responsible for Health and Safety, public access and cordon, environmental and work practice best practice implementation. The recipient work site will be closed off to the public. The harvest site will be managed by the contractor with additional marshalling and advocacy by local

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
			staff to minimise public access issues. The harvest and recipient sites are of low recreational attraction and generally quiet as regards public access. Both donor and recipient sites are far from any residential area and are not obvious as regards visual amenities or audible disturbance. The donor site will be excavated along high points of sandbar beach within the licenced area using sensitive trenching methods to a maximum depth of 0.5m. The plant used will be two 13-ton excavators feeding 22-ton dumpers with a maximum beach movement of 1km. The sand will be deposited above the MHWM into the designated restoration areas, where this sediment will be profiled to form a higher upper beach level rising into a single west-facing sand dune. This dune will be fenced in the upper part forming the dune face to prevent public access and encourage sand building and stabilisation. The dune face will, as soon as practicable, be planted with dune grasses (Marram and Lyme) harvested from onsite. The duration of the sand movements operation is not expected to exceed 14 days and is likely to be less. Fencing and transplanting of dune grasses will take another 14 days. The project implementation will be overseen by an Ecological Clerk of Works in line with

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
			mitigation recommendations in the EcIA and HRA as informed by consultation with NatureScot.
• temporary sites or housing for construction workers?	Yes	No	There will be a simple welfare compound on land shown as position D on the ECOS Figure included in section 1.
• above ground buildings, structures or earthworks Including linear structures, cut & fill or excavations?	Yes	No, with the appropriate design	The recharge is similar in scale to previous works. The proposed works are small in scale (12,000-15,000 m3) and are a nature-based solution to a focused area of erosion between a section of existing gabions and accreting beach and coastline at Outhead and West Sands.
• underground works including mining or tunnelling?	No	No	N/A
• reclamation works?	Yes	No, with the appropriate design	The recharge is similar in scale to previous works. The proposed works are small in scale (12,000-15,000 m3) and are a nature-based solution to a focused area of erosion between a section of existing gabions and accreting beach and coastline at Outhead and West Sands.
• dredging?	No	No	N/A
• coastal structures (seawalls, piers)?	No	No	A nature-based solution to erosion in a specific location.
• offshore structures?	No	No	N/A
• production and manufacturing processes?	No	No	N/A
• facilities for storage of goods or materials?	No	No	N/A

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
• facilities for treatment or disposal of solid wastes or liquid effluents?	No	No	N/A
• facilities for long term housing of operational workers?	No	No	N/A
• new road, rail or sea traffic during construction or operation?	Yes	No, with mitigation	The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of the construction plant through appropriate CEMP and Construction Method Statements. Vehicle routes to the receptor and donor areas will be agreed upon and clearly demarcated.
• new road, rail, air, waterborne or other transport Infrastructure including new or altered routes and Stations, ports, airports etc?	No	No	N/A
• closure or diversion of existing transport routes or Infrastructure leading to changes in traffic movements?	No	No	N/A
• new or diverted transmission lines or pipelines?	No	No	N/A
• impounding, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	No	N/A
• stream crossings	No	No	N/A

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
• Abstraction or transfers of water from ground or surface waters?	No	No	N/A
• changes in water bodies or the land surface affecting drainage or run-off?	No	No	N/A
• transport of personnel or materials for construction, operation or decommissioning?	Yes	No, with mitigation	The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of the construction plant through appropriate CEMP and Construction Method Statements. Vehicle routes to the receptor and donor areas will be agreed upon and clearly demarcated.
• long term dismantling or decommissioning of restoration works?	No	No	N/A
• ongoing activity during decommissioning which could have an impact on the environment?	No	No	N/A
• influx of people to an area either temporarily or permanently?	No	No	N/A
• introduction of alien species?	No	No	N/A
• loss of native species or genetic diversity?	No	No	N/A
• any other changes?	No	No	N/A
2. LOCATION OF THE DEVELOPMENT			
(a) Existing land use			

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
Are there existing land uses on or around the location which could be affected by the development, e.g. Homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, water catchments, functional floodplains, mining or quarrying?	Yes	No, with mitigation	The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of the construction plant through appropriate CEMP and Construction Method Statements. Works will be undertaken during agreed working hours to minimise impacts on visitors to the beach and golfers. Information on the project will be posted on the St Andrews Links Trust website, on boards adjacent to the works site and in the local press to inform the public that the area will be inaccessible for the short duration of the works. Vehicle routes to the receptor and donor areas will be agreed upon and clearly demarcated. The project implementation will be overseen by an Ecological Clerk of Works in line with mitigation recommendations in the EcIA and HRA as informed by consultation with NatureScot. Sensitive periods for seals and birds have been avoided through timing of works to minimise potential impacts e.g. noise / disturbance.
(b) Relative abundance, quality and regenerative capacity of natural resources in the area			
Are there any areas on or around the location which are occupied by sensitive land uses e.g. Hospitals, schools, places of	No	No	N/A

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
worship, community facilities, which could be affected?			
Is the development located in a previously undeveloped area where there will be loss of greenfield land?	No	No	N/A
Are there any areas on or around the location which contain important, high quality or scarce resources which could be affected by the development?			
• groundwater resources	No	No	N/A
• surface waters	Yes	No, with mitigation	The Eden Estuary is adjacent to the removal and donor areas. The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of the construction plant through appropriate CEMP and Construction Method Statements.
• forestry	No	No	N/A
• agriculture	No	No	N/A
• fisheries	Yes	No, with mitigation	The Eden Estuary is adjacent to the removal and deposition areas. The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of the construction plant through appropriate CEMP and Construction Method Statements.
• tourism	Yes	No	The Outhead site is adjacent to the Jubilee Course which is part of the world famous 'home of golf' at St

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
			Andrews. The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of the construction plant through appropriate CEMP and Construction Method Statements. Works will be undertaken during agreed working hours to minimise impacts on visitors to the beach and golfers. Information on the project will be posted on the St Andrews Links Trust website, on boards adjacent to the works site and in the local press to inform the public that the area will be inaccessible for the short duration of the works. Vehicle routes to the receptor and donor areas will be agreed upon and clearly demarcated.
• minerals	No	No	N/A
(c) Absorption capacity of the natural environment			
Are there any areas on or around the location which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the development?	Yes	No, with mitigation	The project site is wholly within the Tay/Eden Natura complex (SAC/SPA) and the Eden Estuary SSSI. Further Designations: The site is also a RAMSAR site and a Local Nature Reserve. Fife Coast and Countryside trust, on behalf of Fife Council, manages the Eden Estuary LNR. A Report to Inform Appropriate Assessment (RIAA) informed by survey work and baseline is required to assess the potential for likely significant effects on the qualifying species, cited species and habitats and to define the potential for

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
			disturbance or impact upon these features. The Competent Authority (Fife Council and Marine Scotland) will be required to undertake an Appropriate Assessment.
Are there any other areas on or around the location which are important or sensitive for reasons of their ecology?			
• wetlands, watercourses or other waterbodies	Yes	No, with mitigation	The project site is wholly within the Tay/Eden Natura complex (SAC/SPA) and the Eden Estuary SSSI. Further Designations: The site is also a RAMSAR site and a Local Nature Reserve. Fife Coast and Countryside trust, on behalf of Fife Council, manages the Eden Estuary LNR. A Report to Inform Appropriate Assessment (RIAA) informed by survey work and baseline is required to assess the potential for likely significant effects on the qualifying species, cited species and habitats and to define the potential for disturbance or impact upon these features. The Competent Authority (Fife Council and Marine Scotland) will be required to undertake an Appropriate Assessment.
• the coastal zone	Yes	No, with mitigation	The project site is wholly within the Tay/Eden Natura complex (SAC/SPA) and the Eden Estuary SSSI. The site is also a RAMSAR site and a Local Nature Reserve. Fife Coast and Countryside trust, on behalf of Fife Council, manages the Eden Estuary LNR. A Report to Inform Appropriate Assessment (RIAA) informed by survey work and baseline is required to

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
			assess the potential for likely significant effects on the qualifying species, cited species and habitats and to define the potential for disturbance or impact upon these features. The Competent Authority (Fife Council and Marine Scotland) will be required to undertake an Appropriate Assessment.
• mountains, forests or woodlands	No	No	N/A
• nature reserves and parks	Yes	No, with mitigation	The Eden Estuary is a Local Nature Reserve. Mitigation has been recommended as part of the Ecological Impact Assessment and Report to Inform Appropriate Assessment which addresses potential impacts on designated sites and sensitivities.
Are there any areas on or around the location in which species and habitats of Local Biodiversity Action Plan importance are present?	Yes	No, with mitigation	The Eden Estuary is internationally important for the habitats and species supported, and the LBAP recognises these in its priorities for protection and management. The EcIA includes an assessment of LBAP priorities and measures which can be incorporated into the design or mitigation during the works to protect these features. The project implementation will be overseen by an Ecological Clerk of Works in line with mitigation recommendations in the EcIA and HRA as informed by consultation with NatureScot. Sensitive periods for seals and birds have been avoided through timing of works to minimise potential impacts e.g. noise / disturbance.

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. For breeding, nesting, foraging, resting, overwintering, migration, which could be affected?	Yes	No, with mitigation	The Eden Estuary includes coastal, estuarine and wetland habitats. Waders, wildfowl and water birds are present in number during winter. Birds included in the relevant designations which cover the site include winter assembling birds with an optimal period of site use being October-March. Non-breeding birds may remain during the summer months, and peak counts may vary and include spring and autumn passage periods. Common seals, grey and harbour seals all use the estuary and Fife coastline. A CEMP has been produced based on advice in the EcIA and RIAA. The project implementation will be overseen by an Ecological Clerk of Works in line with mitigation recommendations in the EcIA and HRA as informed by consultation with NatureScot. Sensitive periods for seals and birds have been avoided through timing of works to minimise potential impacts e.g. noise / disturbance.
Are there any inland, coastal, marine or underground waters on or around the location which could be affected?	Yes	No, with mitigation	Across an area extending from West Sands to the Eden estuary, the dominant coastal process is the northwards transport of sand by coastal currents. Sediment is also exchanged offshore between the Eden estuary and the North Sea. However, the main tidal channel that extends from the Eden estuary to the North Sea acts to restrict the northward

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
			transport of coastal sediment beyond West Sands. In addition to coastal sediment transport by waves, significant volumes are transported and deposited across beach and dune areas by wind (aeolian) processes. The proposed recharge takes sand from an accreting area to place along the dunes where erosion is taking place. The geomorphology reporting indicates that the recharge is a medium-term solution. It is expected that placed recharge material will be transported seaward through the Eden channel and back to the donor area. This sand movement is not significant relative to the size of the wider system.
Are there any groundwater source protection zones or areas that contribute to the recharge of groundwater resources?	No	No	N/A
Are there any areas or features of high landscape or scenic value on or around the location which could be affected?	Yes	No, due to scale and appropriate design	The Jubilee Links and the area of Outhead is locally designated as a Local Landscape Area in the Fife Local Development Plan as 'The Links' and are also designated as Greenbelt. The proposed recharge is small scale and, even with re-profiling of the dune face, would be 'not significant' in landscape terms.
Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected?	Yes	No, with mitigation	The construction phase will require vehicles and plant equipment. The design team and contractor will address construction stage impacts, including the management of construction plant through

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
			appropriate CEMP and Construction Method Statements. Works will be undertaken during agreed working hours to minimise impacts to visitors to the beach and golfers. Information on the project will be posted on the St Andrews Links Trust websites, on boards adjacent to the works site and in the local press to inform the public that the area will be inaccessible for the short duration of the works.
Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected?	No	No	N/A
Is the development in a location where it is likely to be highly visible to many people?	Yes	No, due to scale and appropriate design	The Jubilee Links and the area of Outhead is locally designated as a Local Landscape Area in the Fife Local Development Plan as 'The Links'. West Sands and the Eden Estuary are well used by the local community and visitors alike. The Jubilee Course is the third championship course at St Andrews and the quality of the coastline is a significant feature in terms of the overall quality of the visitor experience. The proposed re-charge is small scale and even with re-profiling of the dune face would be 'not significant' in visual terms.

CHARACTERISTICS OF THE DEVELOPMENT	Yes / No briefly describe	Significant Impact?	Comments
Are there any areas or features of historic or cultural importance on or around the location which could be affected?	Yes	No	A requirement was noted from Historic Scotland on consultation on MS-LOT license 00008754 (West Sands recharges) to put in place a protocol for archaeological finds. This has been drafted and will be deployed for all future sand harvest operations.
Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. Where existing legal environmental standards are exceeded, which could be affected?	Yes	No	There is a historic former landfill to the east of the receptor site. This was a facility for the disposal of the gasworks waste and municipal waste and surface contamination remediation was completed in 2020. This area is unaffected by the sand recharge works.
Is the location of the development susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions e.g. Temperature inversions, fogs, severe winds, which could cause the development to present environmental problems?	Yes	No, the purpose of the project is to address erosion and effects of storm conditions	The northern part of West Sands, St Andrews, in addition to the northern area of Tentsmuir Sands represents two areas in eastern Scotland that have a long-term history of net sediment accretion. The proposed recharge location has been subject to ongoing erosion through wind and wave action / storm events. The proposed 'nature-based' solution targets the erosion features through placement of sand from a donor area that would then be sprigged with marram to stabilise.