Broughty Ferry to Monifieth

Active Travel Route NCN 01

Dighty Bridge

Marine Licence Application

January 2023

APPENDIX 04

Report to Inform

Appropriate Assessment

BROUGHTY FERRY TO MONIFIETH ACTIVE TRAVEL ROUTE (NCN01)

Black-headed gulls, (Chroicocephalus ridibundus), Dighty Burn outfall © ECOS

REPORT TO INFORM APPROPRIATE ASSESSMENT

Version 6: Oct 7th 2022

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BROUGHTY FERRY TO MONIFIETH ACTIVE TRAVEL ROUTE (NCN01) REPORT TO INFORM APPROPRIATE ASSESSMENT (RIAA)

INTRODUCTION

Authors

Principal authors are **Alasdair Macleod (Macleod Consulting)** and **David Bell (ECOS Countryside Services LLP)** who, respectively, have specialist knowledge of local coastal engineering and ecology. Alasdair Macleod through many projects in the area including the Riverside Nature Park, marine aspects of the V&A@Dundee, flood protection works at Broughty Ferry, Central Waterfront land assessments, and several wastewater outfalls. David Bell has been involved in WeBS bird counts on the Tay since 1976 and currently counts three key WeBS sectors on the Firth of Tay namely, Inner Tay, Invergowrie, and Broughty Ferry-Barry Buddon (Monifieth). Previously he has covered Tay Bridge-Broughty Ferry (Stannergate), Eden Estuary low and core WeBS counts (for six years), St Andrews Bay and is still involved in the WeBS low tide counts on the Eden. Since establishing ECOS in 1987 he has undertaken professional contracts on the Tay which have included a Tay Estuary data collation and review on contract to SNH, estuary wide bird surveys to inform the delineation of the original SPA boundaries, several years of through the tide inter-tidal waterfowl counts on the Inner Tay, one year's open water waterfowl survey on the Inner Tay as well as many smaller EIA contracts targeting specific Tay locations e.g. V&A footprint, Dundee Airport emergency slipway, sand dredging licences.

The Project

This report, to inform appropriate assessment (RIAA), has been written using the standard **Scottish Natural Heritage (SNH) Habitats Regulations Appraisal proforma**. The proforma is not suitable for every site but is ideal for the relatively low impact active travel route (NCN01) between Broughty Ferry and Monifieth, see **Figures 1 & 2.**

This report is an update to an earlier 2021 version, which was prepared to inform statutory and public consultations on the proposals, including those required in advance of lodging an application for a Marine Licence to undertake proposed works below high water.

The project proposals were subsequently refined to reflect the comments received, a technical and budgetary review of the proposed structural form of the Dighty Bridge and the need for temporary inter tidal access to enable re profiling of the existing rock armour to the east of the Dighty Bridge. These changes initiated the need for this updated RIAA (September 2022 Version 6) which supersedes all previous versions.

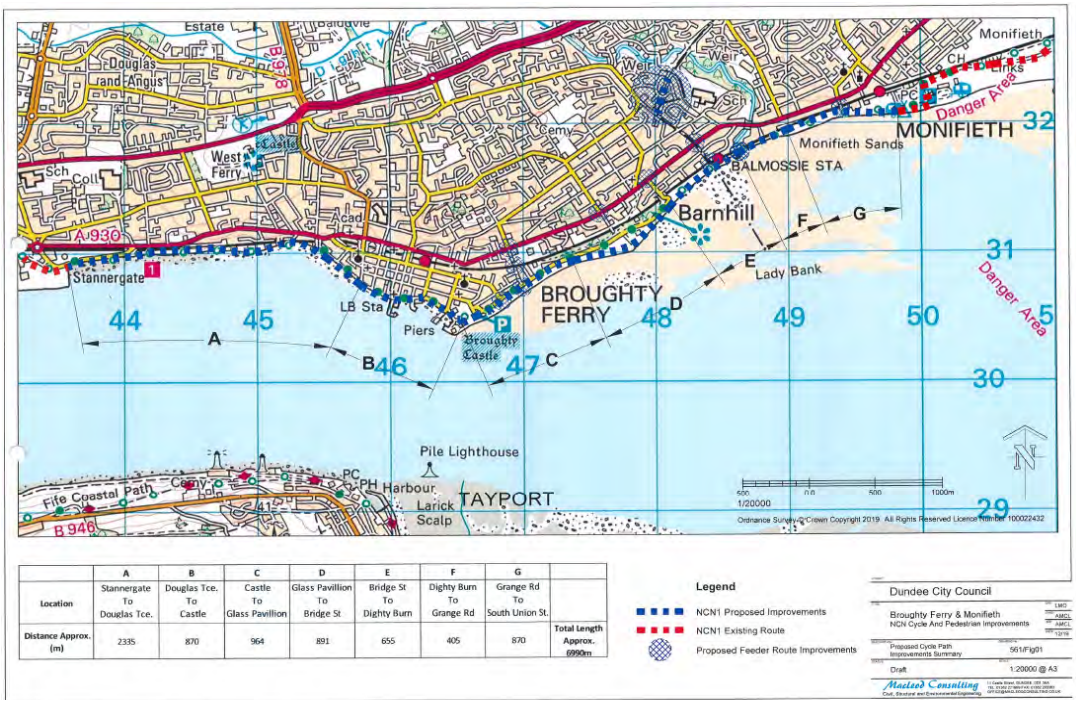
Figure 1. NCN01 Route Summary, existing route as known July 2022

The primary benefit of the new route will be provide an improved NCN01 Active Travel route between Broughty Ferry to Monifieth, prioritising; pedestrians and cyclists over motorised vehicles. Providing improved placemaking and biodiversity to public open spaces., see **Image 1**.

Image 1. Amenity grassland behind the dune interface east of the Glass Pavilion

Figure 2 and Table 1 summarise the main elements of the proposed project

Further project details are available at this link *https://www.broughtyferryactivetravel.com;*



	A	B	C	D	E	F	G	
Location	Stannergate To Douglas Tce.	Douglas Tce. To Castle	Castle To Glass Pavillion	Glass Pavillion To Bridge St	Bridge St To Dighty Burn	Dighty Burn To Grange Rd	Grange Rd To South Union St.	
Distance Approx. (m)	2335	870	964	891	655	405	870	Total Length Approx. 6990m

Figure 2. NCN01 Route Improvement Summary.

Table 1: Broughty Ferry – Monifieth NCN01: Cycle and Pedestrian Improvements Project Outline: For Proposed Route (Refer Figure 2)				
Fig 2	***Location***		***Dist.***	***Summary of Proposed Works***
Ref	***From***	***To***	***(m)***	***For Detail (Drawings 30 - 36 on Fig 3) see Web Page:*** https://broughtyferryactivetravel.com/get-involved/
A	Stannergate	Douglas Tce.	2,335	Surfacing, lighting, and drainage improvements all on existing established route. – Now Complete
B	Douglas Tce.	Castle	870	4.0m – 5.0m wide pedestrian / cycle route along new river wall to Broughty Ferry Flood Protection Scheme. – Now complete
C	Castle	Glass Pavilion	964	Increased width pedestrian / cycle route from Castle to The Esplanade along a reprofiled beachfront promenade and accessible ramp to beach. A secondary route which combines Castle Green recreation area into Windmill Gardens The Esplanade segregated cycleway and improved footway between roadway and rear slope of existing dunes. – Works progressing Aug 22 to Feb 23.
D	Glass Pavilion	Bridge St.	891	Continuation of segregated cycleway and new footway along the Esplanade with a secondary shared pedestrian / cycle route and associated lighting added through amenity grassland to rear of existing rip rap and established dunes.
E	Bridge St.	Dighty Burn	655	Replacement of hardcore access road and footpath with a combined 5m wide shared pedestrian / cycle pathwith lighting replacement of amenity grassland areas with Biodiverse wildflower meadows.
F	Dighty Burn	Grange Rd	405	Replace existing 1m wide cycle / footbridge over Dighty Burn with a new 5m wide shared pedestrian / cycle bridge.Realignment of existing rip rap on short section east side of burn. Widening, surfacing, and lighting improvements to remainder of existing route.
G	Grange Rd.	South Union St	870	Widening, surfacing, and lighting improvements to existing paths.
		Approx. Total Distance =	**6,990m**	

The proposed works between **Stannergate and Douglas Terrace**, see **Figure 2** (Sections A and B), are all on, or adjacent to, the existing footpath, whilst the path between **Douglas Terrace and Broughty Ferry Castle** will be formed within the previously consented Broughty Ferry Flood Protection Scheme. The sections between **Broughty Ferry Castle and Union Street to the east of the Riverside Caravan Park, Monifieth primarily occupy existing carriageway and footway however** do move off the existing infrastructure onto greenspace adjacent to Natura Sites and require assessment, see **Figure 2**, (Sections C to G) and Figure 3 below.

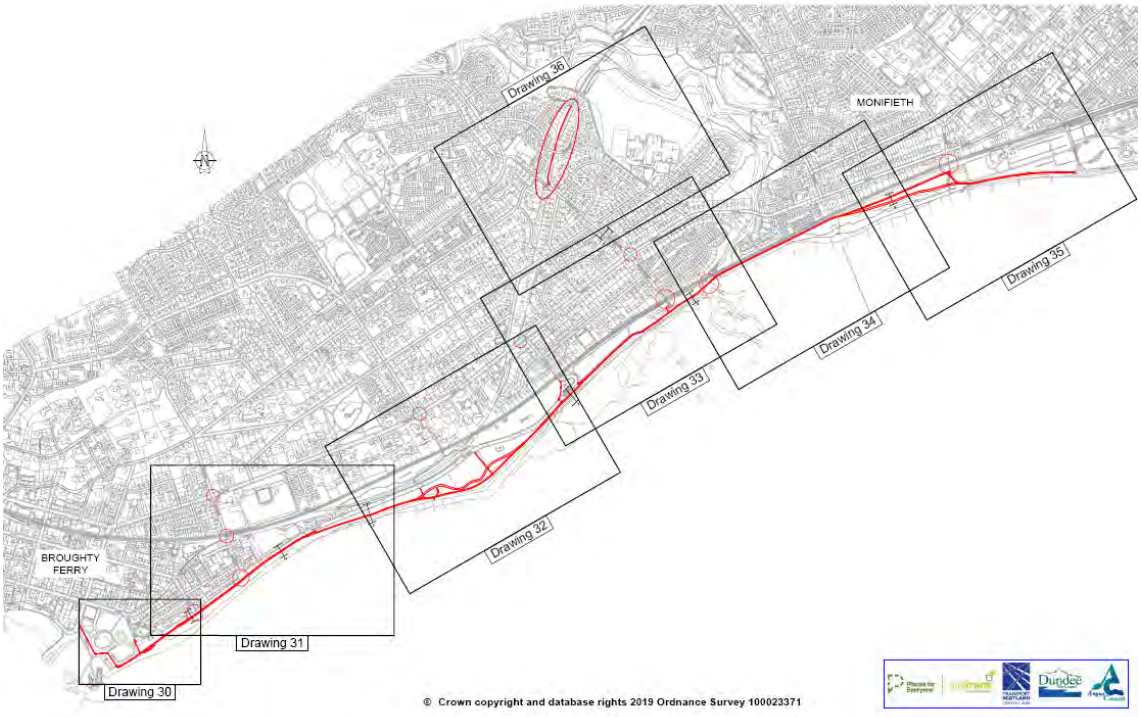


Figure 3. NCN01 Route between Broughty Ferry and Monifieth, including Inland Seven Arches sector

The proposed new active travel route closely follows the existing NCN01 route, with seaward incursions that are contained within existing amenity grassland, disturbed coastal grassland and existing hardstanding for car parking. Except for the 5-10m wide seaward extension to improve access to the beach at the Windmill Car Park and works at the proposed new Dighty Burn crossing, there will be no works within designated sites, thereby avoiding significant direct impacts. Indirect impacts, disturbance and construction related activities, are potential issues.

The inland **Seven Arches** section, see **Figure 4**, is not included in this assessment as it would not have any adverse impacts on European designated sites for the following reasons:

- Its distance from any Natura Site. The Seven Arches section is approximately 600m from the coast and 135m from the Dighty Burn, which is approximately 650m from its estuarine outfall;
- Urban development completely isolates it from any of the coastal processes; and
- Lack of any ecological connectivity with any Natura Site qualifying features.

Works to implement the project commenced in 2020 with completion programmed to take place in late 2023 / early 2024. A summary of the programme implementation phasing is summarised below within Table 2.

Table 2 : Indicative Programme		
Off Line	**START**	**FINISH**
Lighting at Seven Arches, North Balmossie	May 2021	August 2021
Junction Improvements on Esplanade	Jan 2024	April 2024
(Footbridge / Underpass Signage Improvements at Panmure Street,	Complete	
A930 Traffic controlled crossing points at Bridge Street and Panmure Street	Jan 2023	Sept 2023
On Line	**START**	**FINISH**
Stannergate to Douglas Terrace: Lighting.	Complete	October 2021
Douglas Terrace to Castle: Flood Protection Scheme.	Complete	July 2022
Castle Green / Mill Street	Feb 2023	May 2023
Esplanade (Castle – Bridge Street): On Line Path Improvement / Widening Works.	July 2022	August 2023
Revised Dighty Bridge: Design Consents	March 2022	March 2023
Bridge over Dighty Burn and Rip Rap Realignment.	February 2023	December 2023
Dighty Burn – S Union Street Monifieth: Path Works.	March 2023	December 2023
Path Works: Bridge St to Dighty Burn.	March 2023	December 2023
Esplanade to Dighty - Biodiversity Planting	May 2023	September 2023
Glass Pavilion to Bridge St Remote Path (Riverfront)	March 2023	May 2023

NATURA SITE(S) DETAILS

Name of Natura Sites potentially affected & current status

Adjacent to the NCN01 lie four European designated nature conservation sites.

- Firth of Tay and Outer Eden Estuary **Special Area of Conservation** (SAC)[1]
- Firth of Tay and Eden Estuary **Special Protection Area** (SPA)[2]
- Firth of Tay and Eden Estuary **Ramsar Site** (Ramsar)[3]
- Outer Firth of Forth and St Andrews Bay **Special Area of Conservation** (SPA)[2]

Figure 4 shows the location of the Natura Sites relative to the proposed route.

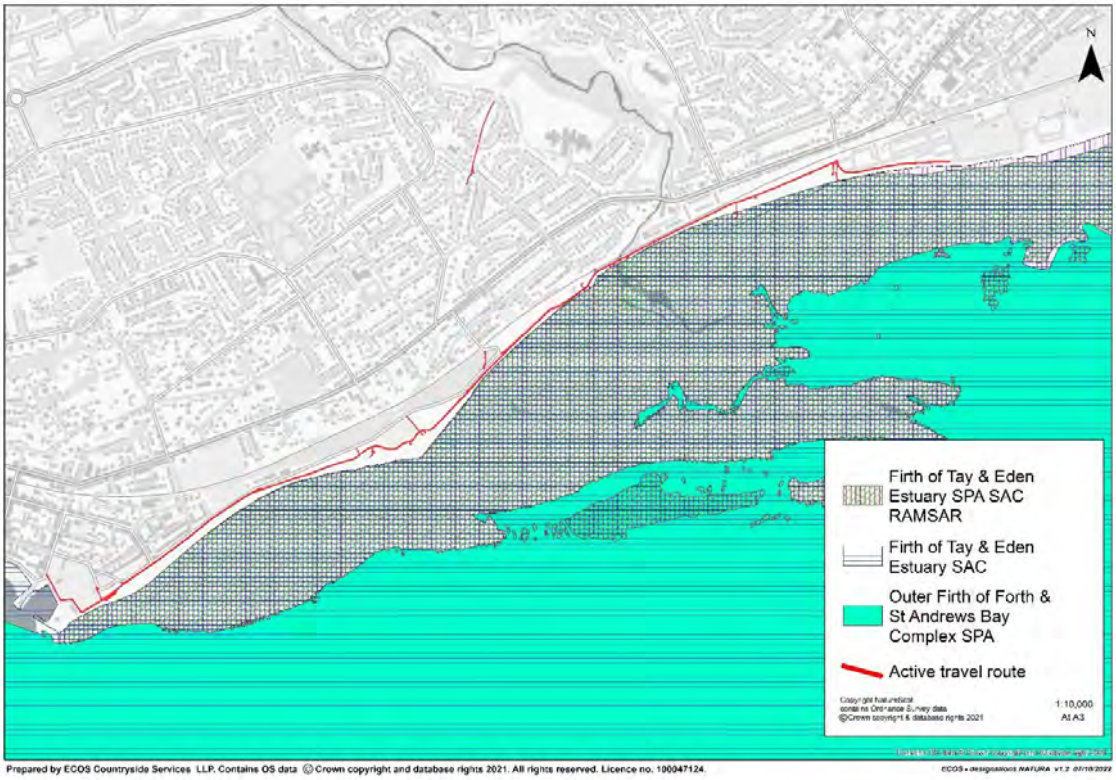


Figure 4 Statutory nature conservation site boundaries, as downloaded from SNHi October 2022

The qualifying interest and potential effects for the Ramsar are the same as for the SPA; therefore, from this point forward, only the SPA will be assessed on the assumption that assessment is fully applicable to the Ramsar.

Name of component SSSIs

- Barry Links SSSI
- Eden Estuary SSSI
- Monifieth Bay SSSI
- Tayport-Tentsmuir Coast SSSI

Natura Site qualifying interest(s) and condition of interest(s)

Table 3 summarises data collated from SNHi. Further details of all designated nature conservation sites are available at the following link *https://www.nature.scot/information-hub/snhi-data-services.*

1 EC Habitats Directive (92/43/EEC)
2 EC Directive on the Conservation of Wild Birds (2009/147/EC)
3 Ramsar Convention Internationally Import Wetlands, Iran 1971

Table 3 European Designations Summary			
	Designation Date	**Area**	**Qualifying Features and Condition**
Firth of Tay and Outer Eden Estuary Special Area of Conservation *(SAC EU CODE UK0030311)*	*17 March 2005*	*15,441.63ha*	**Habitats** Intertidal mudflats and sandflats - **favourable maintained**, 31/12/2002 **Estuaries** - not assessed Subtidal sandbanks - **favourable maintained,** 04/07/2002 **Species** Common seal **- unfavourable declining,** 22/08/2013
Firth of Tay and Eden Estuary Special Protection Area *(SPA EU CODE 9004121)*	*2 February 2000*	*6,947.62ha*	[Redacted]

Table 3 European Designations Summary			
	Designation Date	**Area**	**Qualifying Features and Condition**
Forth of Tay and Eden Estuary Ramsar Site *(RAMSAR)* *EU SITE CODE (UK13018)*	*2 February 2000*	*6,918.42ha*	**Criterion 3a** Regularly supports in winter over 20,000 waterfowl with a 1990/91-94/95 winter peak mean of 48,000 waterfowl, comprising 28,000 wildfowl and 20,000 waders. **Criterion 3c** Regularly supports internationally important wintering populations of pink-footed goose *Anser brachyrhynchus*, greylag goose *A. anser*, bar-tailed godwit *Limosa lapponica* and redshank *Tringa totanus.*
Outer Firth of Forth and St Andrews Bay Special Area of Conservation *(SPA)*	*3 December 2020*	*2,720.68Km²*	[Redacted]

Conservation objectives for qualifying interests for the SAC and SPAs

*(a) **SAC** Conservation Objectives for Qualifying **Habitats***

To avoid deterioration of the habitats of the qualifying habitat thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and to ensure for the qualifying habitat that the following are maintained in the long term:

- **Extent of habitat on site (SAC/COH1)**
- **Distribution of the habitat within site (SAC/COH2)**
- **Structure and function of the habitat (SAC/COH3)**
- **Processes supporting the habitat (SAC/COH4)**
- **Distribution of typical species of the habitat (SAC/COH5)**
- **Viability of typical species as components of the habitat (SAC/COH6)**
- **No significant disturbance of typical species of the habitat (SAC/COH7)**

*(b) **SAC** Conservation Objectives for Qualifying **Species***

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features and to ensure for the qualifying species that the following are maintained in the long term:

- **Population of the species as a viable component of the site (SAC/COS1)**
- **Distribution of the species within site (SAC/COS2)**
- **Distribution and extent of habitats supporting the species (SAC/COS3)**
- **Structure, function and supporting processes of habitats supporting the species (SAC/COS4)**
- **No significant disturbance of the species (SAC/COS5)**

*(c) **SPA** Conservation Objectives for Qualifying **Species***

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term:

- **Population of the species as a viable component of the site (SPA/COS1)**
- **Distribution of the species within site (SPA/COS2)**
- **Distribution and extent of habitats supporting the species (SPA/COS3)**
- **Structure, function and supporting processes of habitats supporting the species (SPA/COS4)**
- **No significant disturbance of the species (SPA/COS5)**

European interests to be assessed

Qualifying interests to be screened for impact, and if necessary, assessed for severity of impact are those listed in ***Table 3.***

Baseline characterisation for SPA and SAC qualifying habitats and species

(a) Habitats

The qualifying habitat interests of the SAC support the ornithological interests of the Firth of Tay SPA and, to a lesser extent the Outer Firth of Forth and St Andrews Bay Complex SPA. Between Broughty Ferry and Monifieth the coastline is dominated by sand dunes, with and without rock armour protections, beyond which a mosaic has formed comprising mud and sandflats, dominated by bare substrate with local *Arenicola* beds, interspersed with cobbles and associated fucoid cover.

(b) Species

The inter-tidal sandflat habitat at Monifieth is noted for its sanderling, although these are no longer associated with Monifieth despite the SSSI designation for this species (DB pers obs) and therefore not a consideration in this RIAA. Common seals are associated with the upstream tidal sandbanks of the Middle Tay, Tentsmuir Point in the outer estuary and the Edenmouth to the south.

Feeding birds are primarily found on the extensive offshore opportunities over low tide and therefore not likely to be impacted by any of the proposed works. The upper beach is heavily visited throughout the year and states of the tide. Human disturbance is high, with walkers, dog walkers (commercial and personal), jet skiers, kite surfers, sea anglers, as well as the normal beach recreation in the summer months, all contributing and therefore acting as a primary disturbance source between the birds and the proposed works.

At high tide there is a small permanent main bird roost on the Balmossie stormwater outfall. Redshank and Turnstone are the main species using the casement as a refuge, see **Image 2**. They are also frequently disturbed but seem well habituated and steadfastly return after the disturbance source has moved on.

Image 2. Roosting Redshank and Turnstone on the Balmossie stormwater outflow

The following observations relating to the Dighty Burn are based on monthly WeBS counts undertaken by David Bell for the BTO core sector between Broughty Ferry and Buddon Ness, and they confirm a slightly broader interest than just the high tide roost.

- Main roosting species are Redshank (0-100+); Turnstone (0-100+) and Dunlin (1-10+).
- When disturbed, high tide roosting birds may use adjacent shore in front of the pumping station or, rarely, move to the lifeboat station jetty sub-roost or Barry Buddon main roost.
- On neap tides the Balmossie pumping station rock armour and shore may support Ringed Plover (0-75+).

[Redacted]

- Moulting Goosander are a notable feature offshore in July and August, when 0-100+ birds may be present.

STAGE 1: PROJECT DESCRIPTION

Consultee: Scottish Natural Heritage (SNH)

Competent Authorities: Angus Council and Dundee City Council

1.1 The Proposal

Dundee City and Angus Councils are working together to develop proposals to improve the coastal route from the Grassy Beach to Monifieth to create a continuous, off-road walking and cycling route that can be enjoyed by people making longer-distance journeys on the National Cycle Network 1 (NCN01) as well as many undertaking local shorter walks and rides.
A draft set of proposals have been widely consulted upon and refined to arrive at final proposals for both the route and the links from the residential areas and town centres in Broughty Ferry and Monifieth. The route and package of measures formed the basis of a successful application for funding under the Sustrans Places for Everyone programme in 2020.

1.2 The Project

A summary of the proposals is included within **Table 1.** Further detail on the proposals can be viewed online at the DCC designated web site, see https://broughtyferryactivetravel.com/. This report is intended to inform the appropriate assessment of the sections of the proposals between Broughty Ferry Castle and Union Street in Monifieth (Sections C – G on **Figure 2**). With the exception of the works required to improve amenity and access to the beach east of the Castle and install a new bridge over the Dighty Burn, the works are all above MHWS. Path construction will require removal of existing soils / footpath and importing granular material and macadam to widen existing routes and form the new route. Locally, interpretative signage and seating will be incorporated to improve amenity and attractiveness of the route.

1.3 Project Design

The design of the route requires to adhere to Sustrans' specification and guidance for a national cycle route. Where appropriate, pedestrians and cyclists have been segregated on different routes but where there are site limitations, such as the rear of the Esplanade dunes and east of the Dighty Burn where the available width is limited, the route is to be shared. The vertical alignment has also been selected to follow as closely as practical the existing ground levels.
The landscape design proposals have sought to incorporate mitigation, compensation, and enhancement measures to ensure that both the legal duty to enhance biodiversity is met AND the project maximises the potential of the natural capital of the route. Layout drawings outlining the current landscape proposals are included within **Appendix A** and include:

- Local profile changes to create topographical interest in areas where the existing amenity ground is flat.
- Creation of low maintenance wildlife-habitat along both the seaward interface and landward amenity areas between the route and the existing infrastructure.
- Like for like compensation for loss of habitat using only locally sourced materials and native seed mixes of local provenance.

The existing footway crossing the Dighty Burn is less than 1.0m in width and creates a real pinch point on the route, see **Image 3a; 3b; and 3c** below.

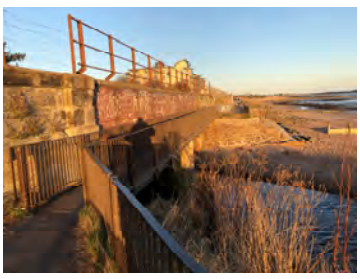
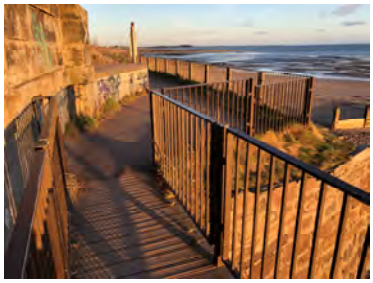




Image 3a, 3b and 3c: Existing Footbridge Over Dighty Burn

It is therefore proposed to construct a new 5.0m wide bridge to the south of and independent from the existing rail bridge on which the existing footbridge is supported. The structural form and associated construction sequence have been the subject of extensive review and refinement to conclude that a three span structure supported on piers with landfall protected by modified rock armour is the preferred option. The design is intended to avoid any significant alteration in the existing Dighty Burn through flow in all tidal states and to avoid any permanent alteration to the foreshore area upstream or downstream of the footprint of the new structure, see **Figure 5 and Figure 6** for plan and sections illustrating the outline proposals.

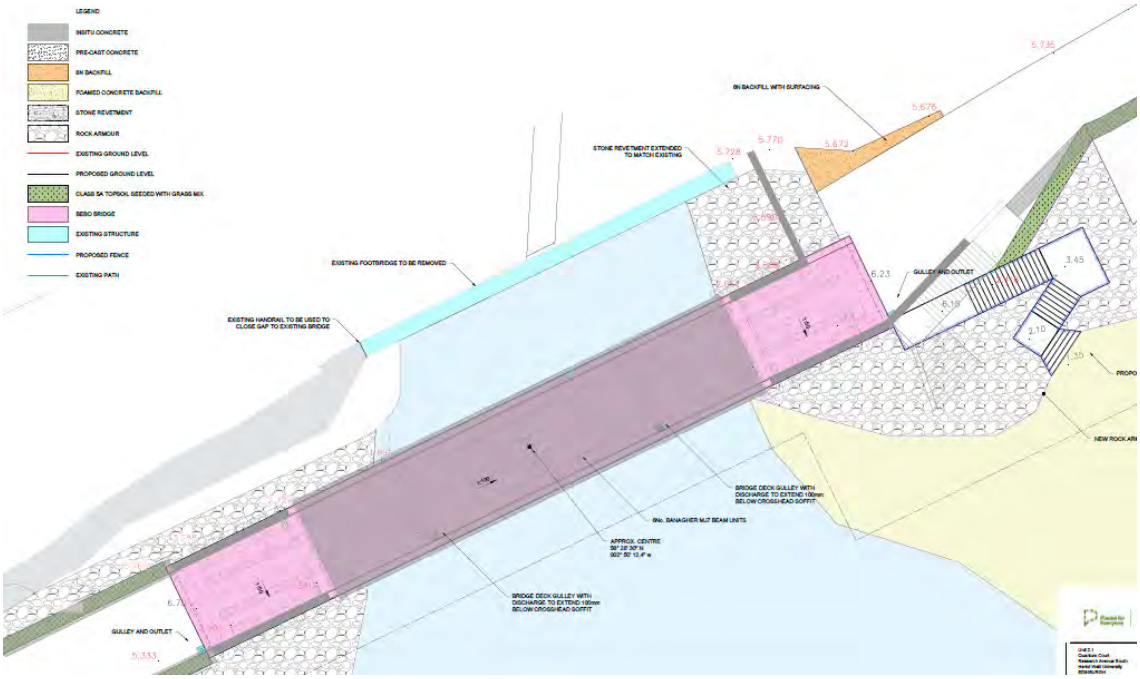


Figure 5: Proposed Dighty Burn Bridge Plan

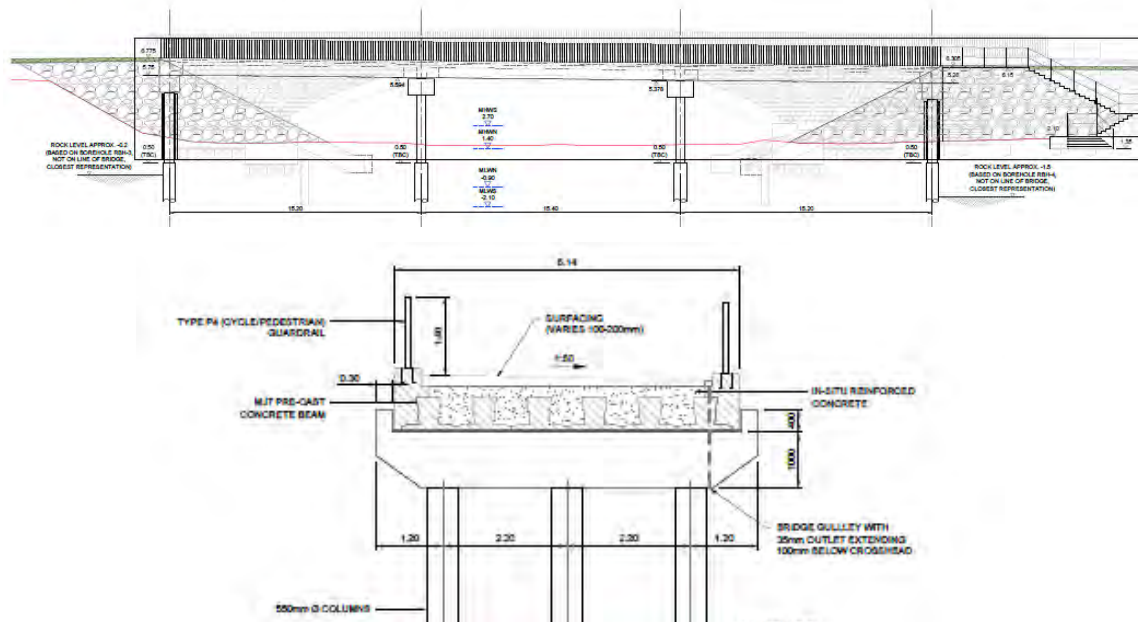


Figure 6: Proposed Dighty Burn Bridge Sections

The design of the bridge structure will require four new piers below MHWS and within the Dighty burn outflow area, as illustrated on **Figure 7** below.

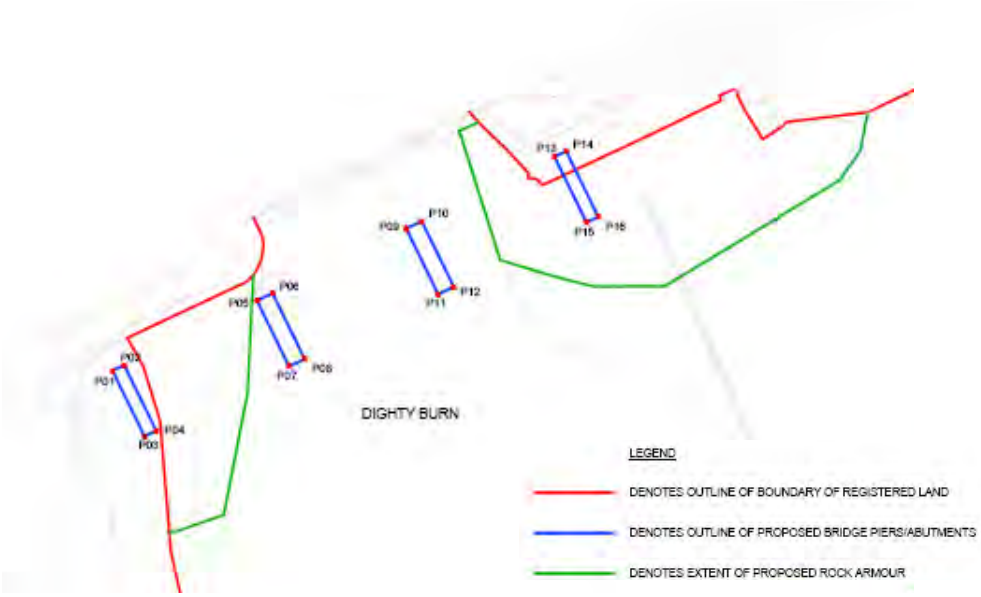


Figure 7: Proposed Dighty Burn Bridge: Footings and Rock Armour Modifications,

Pedestrian access to the beach area adjacent to the Windmill car park is poor, see **images 4a, 4b and 4c**. Without improvement the pedestrian and cycle through route would be restricted and therefore proposed to install additional steps and a DDA compliant access ramp within a 575m^2 projection into the upper beach area south of the existing river wall, see **Figure 8.**

Image 4a, 4b and 4c: Existing River Wall and Upper Beach at Windmill Car Park

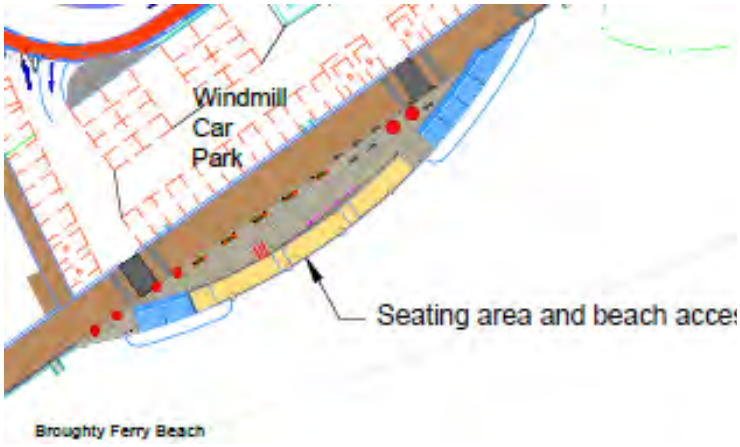


Figure 8: Outline Proposals for Improving Access Steps and Ramp(s) at Windmill Car Park

1.4 Timing

The timing of the completed and proposed works is summarised in Table 2. In relation to possible effects on the designated sites both the build out at Windmill car park and the section east of Bridge street will commence construction in early 2023 with the below high water works associated with the Dighty Burn bridge commencing in March / April 2023 and completed by September / October 2023.

Landscaping, planting, and seeding would be timed to maximise the likelihood of success.

1.5 Construction Methods

The majority of the route construction would take place in a linear form using relatively small excavation and material transport plant.

The works to install improved access to the beach from the Windmill car park can largely be undertaken from the car park area but will, for a short period, require access from the slip way at the castle to excavate and place foundations for the steps and ramps being constructed along the upper beach. This is the same route used by the tractors and excavators which are used to mechanically rake the beach and re profile areas where excessive windblown sand has accumulated, see **Image 4b and 4c**.

For the larger plant required for foundation piling and craneage to lift bridge beams into place at the Dighty Burn crossing a temporary working platform above MHWS will be required. There is no suitable access to the proposed temporary platform from the Monifieth direction and access from the west (Balmossie) is constrained due to existing below ground sewer chambers and pipework.

A temporary inter tidal access to the Dighty Burn bed and the upper beach east of the Dighty has historically been used for lowering the bed of the burn to the south of the rail bridge and for the installation of foreshore protective rock armour and groynes either side of the Dighty Burn, see Image 5.

Image 5: Inter-Tidal Substrate at Dighty Burn (Note existing track below high water)

For the bridge construction and the placement of rock armour including the regrading of a section east of the Dighty burn it is proposed to utilise the same intertidal route from west of the Balmossie sewerage pumping station. The anticipated extent of the temporary intertidal access routes and the working platform are illustrated on Figure 9.

Figure 9: Anticipated Extent of Required Temporary and Permanent Works Below MHWS Over Inter-tidal Area for new bridge construction.

The bridge construction footprint for the current preferred option is summarised in **Table 4**. In terms of permanent effect, the final design requires four piers totalling 56m² or 0.0056ha, whilst the rock armour modification footprint is 1.3747ha. Temporary works of short duration will affect 1.13ha.

Table 4. Dighty Bridge Footprint Summary			
Temporary works	Access Working Platform (A) (Green)	0.35ha	
	Access and Working Area for Rock Arrmour re Profiling (B)	0.45ha	
	Access Route from West to Working Platform (C)	0.33ha	
	Intertidal Temp Works at Windmill Car Park	0.23ha	
	Total Temporary Working Platform and Access Areas (ha)		1..36ha
Permanent works	Four New Bridge Piers	56m2	
	Extension to Existing Rock Armour Below MHWS to East and West of Dighty Bridge	533m2	
	Re Profiling of Rock Armor Below MHWS to East 0f New Bridge	2,425m2	
	Beach Access Projection at Windmill Car Park	572m2	
	Total Permanent Bridge Footprint (ha) =		0.31ha
	Combined Temporary and Permanent Footprint =		1.67ha

STAGE 2: ARE THE PROPOSALS RELATED TO CONSERVATION MANAGEMENT OF THE NATURA SITE(S)?

The proposals are **not** directly connected with, or necessary to, conservation management of the Natura Sites.

STAGE 3: IS THE PROPOSAL LIKELY TO HAVE A SIGNIFICANT EFFECT ON THE NATURA SITE(S)?

As the project is not in any way connected to the conservation management of the SAC or SPAs then the potential effects of this development must be screened to determine if an appropriate assessment is required, see **Table 5**.

Table 5: Stage 3: Screening to Identify if Proposals "Likely to Have Significant Adverse Effect"			
Natura Site Screening	**Qualifying feature**	**Screened in or out (YES/NO)**	**Reasons**
Firth of Tay and Outer Eden Estuary Special Area of Conservation (SAC)	• **Habitats** - *Estuaries.*	**NO**	• The scale of NCN01 estuarine disturbance footprint is approximately 1.67ha (0.011%) of the 15,441.63ha SAC. • Temporary Dighty works contributing 1.36ha, which is the majority of the disturbed area and is impacted for one season only. • Permanent loss to the new bridge abutments, rock armour reprofiling and the Windmill car park build out represents the remaining 0.31ha (0.002%) and is such a small area that the SAC estuaries feature will not be significantly impacted due to large scale of the feature and the processes that support it.
	• **Habitats** - *Mudflats* and sandflats not covered by seawater at low tide.	**YES**	• Proposed works to the walling at the Windmill car park, to the east of the Castle, will permanently affect a very small area of sandflat, <600m^2 (0.06ha), and a temporary inter tidal disturbance during construction of 0.23ha where the existing soils comprise mobile sand interfaces with the existing concrete wall and steps. • Replacement of the Dighty Burn footbridge will necessitate temporary construction access over the inter-tidal habitat and temporary raised platform to form foundations for footbridge support structures affecting 1.13ha. • Constructing new abutments and modifying existing rock revetments either side of the Dighty outflow will result in a permanent loss of 0.25ha .
	• **Habitats** - *Sandflats* which are slightly covered by seawater all the time.	**NO**	• Sub-tidal sandbanks in the Tay are remote from all proposed work, most works being above the MHWS and very minor inter-tidal works at Balmossie / Dighty and Windmill car park. Large scale dynamic coastal processes that create and support the formation of sub-tidal sandbanks will not be affected by the proposed very small scale NCN01 works either during construction or operation.
	• **Species** - Common or harbour seal (*Phoca vitulina*)	**NO**	• There are no common seal haulouts in proximity to the proposed route, the nearest being on sandbanks between the Tay Road and Rail Bridges, or across the outer estuary, at Tentsmuir Point NNR. Distances of 6km and 4.5km respectively.
CONCLUSION: Likely short-term significant adverse effect on one primary habitat: inter-tidal mudflats and sandflats not covered by seawater at low tide.			

Table 5: Stage 3: Screening to Identify if Proposals "Likely to Have Significant Adverse Effect"			
Natura Site Screening	**Qualifying feature**	**Screened in or out (YES/NO)**	**Reasons**
Firth of Tay and Eden Estuary Special Protection Area (SPA)	[Redacted]	**NO**	[Redacted]

Table 5: Stage 3: Screening to Identify if Proposals "Likely to Have Significant Adverse Effect"			
Natura Site Screening	**Qualifying feature**	**Screened in or out (YES/NO)**	**Reasons**
	Redshank	**YES**	• Construction of the new Dighty Burn footbridge is likely to result in short term disturbance to the redshank roost on the Balmossie outlet and disturbance to foraging redshank at the Dighty outflow area. • Small short term and very small permanent losses of feeding opportunity due to disturbance of substrate and disturbance to feeding redshank. • The permanent new bridge support structures are below MHWS
	Oystercatcher	**YES**	• Oystercatcher feed on the amenity grassland behind the dunes where there will be permanent loss of feeding opportunity, approximately 0.8ha, and disturbance to feeding oystercatcher on adjacent amenity grassland.
	Turnstone (Un-named assemblage feature)	**YES**	• Construction of the new Dighty Burn footbridge will result in short term disturbance to the turnstone roost on the Balmossie outlet.
	[Redacted]	**YES**	[Redacted]
CONCLUSION: Likely significant adverse effect on four SPA qualifying ornithological interests.			

Table 5: Stage 3: Screening to Identify if Proposals "Likely to Have Significant Adverse Effect"			
Natura Site Screening	**Qualifying feature**	**Screened in or out (YES/NO)**	**Reasons**
Outer Firth of Forth and St Andrews Bay Special Area of Conservation (SPA)	***Breeding*** Arctic tern; common tern; gannet; guillemot; herring gull; kittiwake; Manx shearwater; puffin; shag	**NO**	***Breeding birds*** Qualifying breeding bird species are seabirds nesting on islands in the Forth Estuary that will not be affected by the proposed project and are therefore screened out.
	[Redacted]	**NO**	[Redacted]
CONCLUSION: No likely significant adverse effect on SPA qualifying breeding or non-breeding qualifying ornithological interests.			

Mitigation measures to address potentially adverse impacts identified in Table 5 are summarised in **Table 6**

Table 6: Mitigation Measures to Address Potentially Significant Adverse Effects Identified

Natura Site	Qualifying Feature	Likely Significant Adverse Effect	Mitigation
Firth of Tay and Outer Eden Estuary Special Area of Conservation (SAC)	• **Habitats** - Mudflats and sandflats not covered by seawater at low tide	• Permanent habitat loss of **0.05ha** to the Windmill car park works	**SACHM1** • Proposed works to the concrete walling at the Windmill car park will affect a very small area of mobile sand at the existing concrete wall and steps. Habitat loss due to the new structure will be kept to a **minimum**, approx. 0.06ha. • As far as possible, all construction materials, machines and support equipment will be sited on the adjacent car park with the Construction Management System (**CMS**) limiting periods of access and routing on the beach.
		• The temporary loss of **1.13ha** of inter-tidal habitat during footbridge construction will result in a short term adverse impact lasting one season.	**SACHM2** • Replacement of the Dighty Burn footbridge will necessitate construction access over the inter-tidal habitat and formation of a temporary storage / working area above MHWS. See **SPARK1 - SPARK3** for mitigation proposals. • Bridge design will **minimise** the need for / size of any support below existing MLWS.
		• Permanent loss to new bridge and modified rock armour will result in a permanent loss of **1.43ha**.	**SACHM3** • CMS to **minimise** footprint and number of machine passes with mitigation to include route marking to avoid transgressions.
Firth of Tay and Eden Estuary Special Protection Area (SPA)	***Article 4.2: Redshank***	• Construction of the new Dighty Burn footbridge will result in short term disturbance to the redshank roost on the Balmossie outlet.	**SPARK1** • Contractor's CMS to be agreed with SNH in advance, and to include restricting the main footbridge construction works to avoid the peak roosting period, September - March inclusive. **SPARK2** • Inter-tidal movements over low and flowing tides to be kept to a **minimum** to reduce disturbance to feeding redshank.

Table 6: Mitigation Measures to Address Potentially Significant Adverse Effects Identified			
Natura Site	**Qualifying Feature**	**Likely Significant Adverse Effect**	**Mitigation**
		• Temporary loss of **1.13ha** of inter-tidal habitat during footbridge construction will result in a short term loss of feeding opportunity for one season due to disturbance of substrate and displacement to feeding redshank. • The permanent loss of **1.43ha** of inter-tidal substrate on the upper shore to the Dighty Bridge and a **0.05ha** loss for the new Windmill car park beach access.	**SPARK3** • The raised working platform must be lined with a suitable barrier and raised using only inert infill i.e., locally sourced igneous rock. All materials brought in to construct the temporary platform must be removed on completion. • Access to the raised working platform will be taken across the inter-tidal mud/sandflat, either on existing damaged substrate or across a temporary sectional trackway. Final option to be determined by the CMS. • The contractor must clearly mark the inter-tidal working areas for construction activities and there must be no machine transgressions beyond the agreed footprint. • No storage of arisings beyond the agreed footprint or agreed storage areas. • CMS must include an agreed Pollution Plan with which all construction staff are familiar. • Agree final contractor's CMS in advance with SNH.
	Article 4.2: Oystercatcher	• Oystercatcher feed on the amenity grassland behind the dunes where there will be a permanent loss of **0.8ha** of feeding opportunity and local disturbance to feeding oystercatcher on adjacent amenity grassland.	**SPAOC1** • Strip amenity grassland during the period April-September to minimise disturbance to feeding oystercatcher, which would normally be absent during this period. **SPAOC2** • If works are to progress over more than one season, then strip in phases to reduce the overall duration of loss of feeding opportunity.
	Article 4.2: Turnstone	• Construction of Dighty Burn footbridge will result in short term disturbance to the turnstone roost on the Balmossie outfall.	**SPATT1** • As for SPARK1 – 3 inclusive.

Table 6: Mitigation Measures to Address Potentially Significant Adverse Effects Identified			
Natura Site	**Qualifying Feature**	**Likely Significant Adverse Effect**	**Mitigation**
	[Redacted]	[Redacted]	[Redacted]
		• A summer moulting goosander flock often uses the Dighty outfall to Riverside Caravan Park section of the north shore for high tide resting and could be disturbed by construction works.	**SPAWA3** • The summer moulting goosander flock is temporarily flightless and only present over high tide. Use is intermittent and the preferred resting places are the offshore posts that are not submerged by water over high tide. Due to distance from the works (0.4km) these resting birds will not be disturbed. A small number, usually less than 20 birds, may frequent the Dighty outflow area if public disturbance is low and could be disturbed. To allow goosander at the Dighty to quietly move away from the area of works, agreed CMS to include a soft start for all works commencing around high tide in July and August.

Table 6: Mitigation Measures to Address Potentially Significant Adverse Effects Identified			
Natura Site	**Qualifying Feature**	**Likely Significant Adverse Effect**	**Mitigation**
	GENERIC MITIGATION AND ENHANCEMENTS		**GENERIC1** • Due to mitigation by design, there will be no significant direct impacts on SPA because the NCN01 realignment generally lies above the MHWST. **ENHANCEMENT1** • Post-construction disturbance to birds feeding, resting, and roosting on the shoreline will be reduced because a proportion of walkers and dog walkers currently using the beach and inter-tidal area are likely to choose the new man-made route in preference to the beach and mudflat. **ENHANCEMENT2** • From the point of completing construction, the realigned NCN01 will reduce disturbance to the high tide redshank and turnstone roost at the Balmossie stormwater outlet and the adjacent ringed plover beach roost. NCN01 proposals will move the existing water's edge footpath to the north and away from the roost. A new blackthorn scrub planting along the water's edge and adjacent ground between the new path and the roost will further discourage access and reduce disturbance in the short - long term.

STAGE 4. ASSESSMENT OF THE EFFECT OF THE NCN01, AS IDENTIFIED DURING SCREENING, ON QUALIFYING FEATURES, IN RELATION TO THEIR SAC/SPA CONSERVATION OBJECTIVES

After screening the potential effects of the development on the Natura Sites there are **likely significant adverse effects on four SAC/SPA qualifying species** requiring further assessment, see **Table 7 and Table 8** below which presents an assessment of impact on the SAC and SPA conservation objectives (COs).

Table 7: Assessment of the Potential Effect of the Proposals on Qualifying Features in Relation to SAC Conservation Objectives for Firth of Tay and Outer Eden Estuary Special Area of Conservation (SAC EU CODE UK0030311)

Natura Site	Feature Likely to be Adversely Affected	Objective 1 Extent of habitat on site	Objective 2 Distribution of habitat on site	Objective 3 Structure and function of the habitat	Objective 4 Processes supporting the habitat	Objective 5 Distribution of the typical species of the habitat	Objective 6 Viability of typical species as components of the habitat	Objective 7 No significant disturbance of the species of the habitat
Firth of Tay and Outer Eden Estuary Special Area of Conservation (SAC EU CODE UK0030311)	**Inter-tidal mudflat and sandflat**	Inter-tidal mudflat and sandflat form a significant part of the 15,441ha SAC. However, the construction footprint of the Dighty Burn footbridge works, through machine access, temporary working platform and temporary in-river support will be approximately 1.36ha. This is not a significant adverse impact because it is so small, 0.009%, the	The proposals will result in a small total permanent loss of approximately 0.35ha of inter-tidal mudflat habitat, 0.002%, and therefore have no significant adverse impact on its distribution. The wall extension will result in the loss of approx 0.05ha on beach comprising mobile sand.	There will be no change to the overall structure and function of the habitat as determined by physical process + sediment/water chemistry. Previously compacted machine access routes, in use over the last ten years will be re-used. A CMS pollution plan will avoid any local chemical change.	Estuarine processes are dynamic, operate on a very large scale outwith the influence of the small scale Dighty burn works.	Substrate compaction due to machine access and working platform will result in a short term change to the substrate; however, these should be quickly reversed with disposition of new sediment loads from the burn and seaward sources from tidal cycles.	Storm events can dramatically change the numbers and distribution of infauna. Estuarine infauna are highly adapted to responding to cycles of physical change on a much larger scale than the Dighty bridge construction. Neither species nor abundance will be adversely affected.	At the Dighty outflow, numbers of species are likely to be very limited by the freshwater inflow and fluctuating tidal effects. Associated species displaced by the works will quickly return to previous numbers. Such challenges are typical of a dynamic estuarine ecosystem.

Table 7: Assessment of the Potential Effect of the Proposals on Qualifying Features in Relation to SAC Conservation Objectives for Firth of Tay and Outer Eden Estuary Special Area of Conservation (SAC EU CODE UK0030311)								
Natura Site	**Feature Likely to be Adversely Affected**	**Objective 1** **Extent of habitat on site**	**Objective 2** **Distribution of habitat on site**	**Objective 3** **Structure and function of the habitat**	**Objective 4** **Processes supporting the habitat**	**Objective 5** **Distribution of the typical species of the habitat**	**Objective 6** **Viability of typical species as components of the habitat**	**Objective 7** **No significant disturbance of the species of the habitat**
	(Contd.) : Inter-tidal mudflat and sandflat	impact is of short duration, only one season. The preferred access track option will follow previous machine access routes used to construct and maintain the stormwater outfall and rock revetments. A permanent loss of 0.31ha to the new Dighty Burn bridge and the new Windmill car park pedestrian access is not significant due its small size, 0.002%, and the poor infauna within the substrate footprint.	The loss of mobile sand in the system will not be significant given the huge volumes of mobile sand in the SAC.					

Table 7: Assessment of the Potential Effect of the Proposals on Qualifying Features in Relation to SAC Conservation Objectives for Firth of Tay and Outer Eden Estuary Special Area of Conservation (SAC EU CODE UK0030311)								
Natura Site	**Feature Likely to be Adversely Affected**	**Objective 1** Extent of habitat on site	**Objective 2** Distribution of habitat on site	**Objective 3** Structure and function of the habitat	**Objective 4** Processes supporting the habitat	**Objective 5** Distribution of the typical species of the habitat	**Objective 6** Viability of typical species as components of the habitat	**Objective 7** No significant disturbance of the species of the habitat
Mitigation Measures	(Contd.) : Inter-tidal mudflat and sandflat	SACHM1; SACHM2; SACHM3	SACHM1; SACHM2; SACHM3	SACHM1; SACHM2; SACHM3	SACHM1; SACHM2; SACHM3	SACHM1; SACHM2; SACHM3	SACHM1; SACHM2; SACHM3	SACHM1; SACHM2; SACHM3
CONCLUSION		***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***

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Table 8: Assessment of the Potential Effect of the Proposals on Qualifying Features in Relation to SPA Conservation Objectives for Firth of Tay and Eden Estuary Special Protection Area (SPA)						
Natura Site	**Feature Likely to be Adversely Affected**	**Objective 1** **Population of the species as a viable component of the site**	**Objective 2** **Distribution of the species within site**	**Objective 3** **Distribution and extent of habitats supporting the species**	**Objective 4** **Structure, function and supporting processes of habitats supporting the species**	**Objective 5** **No significant disturbance of the species**
Firth of Tay and Eden Estuary Special Protection Area (SPA)	**Redshank *(Tringa totanus)***	The wintering and migrant population of redshank on the north shore of the Tay roost at the Balmossie outlet, on the lifeboat station jetty or, rarely, at Buddon Ness. These are not the only Tay roosts within the SPA, there are larger roosts at Riverside, Dundee and on Lucky Scaup. Edenside saltmarsh on the Eden Estuary at Guardbridge being the largest and most important in the SPA. Peak numbers using the Balmossie roost rarely exceed 150 birds representing less than 7.5% of the latest combined five-year average peak means, 2014/15 to 2018/19 for the Tay and Eden, of 1998 birds *(Frost et al. 2020).*	The SPA covers 6,947.62ha, a very large area, compared to the small area of likely impact at one point along a very convoluted estuarine coast. Only one roost of lower significance in terms of number roosting is likely to be disturbed and few feeding birds. The Construction Method Statement (CMS) will mitigate potential disturbance and limit damage to substrates. Therefore, there will be no change to overall redshank distribution in the SPA.	The construction footprint affecting redshank is limited to the footbridge works area of approximately 1.13ha. Disturbance to the inter-tidal habitat will be small, approximately 0.016%, of short duration over one season and reversible. The habitat impacted at the Dighty is of lower importance to redshank than the prey-rich offshore mudflats and potential prey populations will naturally recover within a few seasons. The Dighty outfall inter-tidal habitat has very low salinity and does not therefore support significant preferred prey populations e.g., *Corphium* and *Hediste (Nereis).* Therefore, there will be no significant change to the extent and distribution of	There will be a very short term physical change to one very local part of the local environment. CMS mitigation will be in place to prevent pollution of the watercourse during construction and operation. Mitigation measures will include a pollution plan to prevent chemical changes to the Dighty outfall substrates. Supporting processes are estuary wide and will not be significantly affected by the proposed works.	Significant disturbance to high tide roosting birds will be avoided, see Objective 2. Low tide disturbance is not likely when birds are feeding well offshore, on a spring tide as far away from works as 1km. Timing of the main footbridge works will ensure that the peak roosting period, September-March, is avoided. Duration of construction disturbance will be limited to one season. The total constriction period will be around six months.

Table 8: Assessment of the Potential Effect of the Proposals on Qualifying Features in Relation to SPA Conservation Objectives for Firth of Tay and Eden Estuary Special Protection Area (SPA)						
Natura Site	**Feature Likely to be Adversely Affected**	**Objective 1** **Population of the species as a viable component of the site**	**Objective 2** **Distribution of the species within site**	**Objective 3** **Distribution and extent of habitats supporting the species**	**Objective 4** **Structure, function and supporting processes of habitats supporting the species**	**Objective 5** **No significant disturbance of the species**
	(Contd.) : **Redshank *(Tringa totanus)***	Feeding, and occasionally bathing, redshank numbers at the Dighty outfall rarely exceed five birds (DBELL pers. obs.). In the overall context of full use of the whole SPA there will be no adverse change in the viability of the population, 92.5% of the roosting populations will be undisturbed and very few feeding birds will be impacted.		habitat supporting redshank.		
Mitigation Measure		**GENERIC1; SPARK1; SPARK2; SPARK3; ENHANCEMENT1; ENHANCEMENT2**	**GENERIC1; SPARK1; SPARK2; SPARK3; ENHANCEMENT1; ENHANCEMENT2**	**GENERIC1; SPARK1; SPARK2; SPARK3; ENHANCEMENT1; ENHANCEMENT2**	**GENERIC1**	
Conclusion for Qualifying Feature		***For this assessed qualifying feature, this conservation objective will continue to be met during and after development.***	***For this assessed qualifying feature, this conservation objective will continue to be met during and after development.***	***For this assessed qualifying feature, this conservation objective will continue to be met during and after development.***	***For this assessed qualifying feature, this conservation objective will continue to be met during and after development.***	

Table 8: Assessment of the Potential Effect of the Proposals on Qualifying Features in Relation to SPA Conservation Objectives for Firth of Tay and Eden Estuary Special Protection Area (SPA)						
Natura Site	**Feature Likely to be Adversely Affected**	**Objective 1** **Population of the species as a viable component of the site**	**Objective 2** **Distribution of the species within site**	**Objective 3** **Distribution and extent of habitats supporting the species**	**Objective 4** **Structure, function and supporting processes of habitats supporting the species**	**Objective 5** **No significant disturbance of the species**
	Turnstone **(*Arenaria interpres*)**	Turnstone on the north shore of the Tay roost in the same locations as the redshank. They differ from many waders, being highly mobile, often feeding over high tide on undisturbed sections of shoreline rather than roosting. The latest combined Tay and Eden five-year average peak count is 156 birds. *(Frost et al. 2020*). Balmossie is the main roost with lower numbers recorded at Buddon Ness and at the Broughty lifeboat station jetty. The two latter roosts offer a viable alternative to Balmossie for short term use if disturbed. It should be noted that turnstones are rocky shore specialists and the Tay is a sub-optimal habitat, the Scottish population being supported outwith soft	As for redshank.	Turnstone do not make use of the Dighty outflow for feeding, preferring to forage on the cobble shore and strandlines.	As for redshank.	

Table 8: Assessment of the Potential Effect of the Proposals on Qualifying Features in Relation to SPA Conservation Objectives for Firth of Tay and Eden Estuary Special Protection Area (SPA)						
Natura Site	**Feature Likely to be Adversely Affected**	**Objective 1** **Population of the species as a viable component of the site**	**Objective 2** **Distribution of the species within site**	**Objective 3** **Distribution and extent of habitats supporting the species**	**Objective 4** **Structure, function and supporting processes of habitats supporting the species**	**Objective 5** **No significant disturbance of the species**
	(Contd:) **Turnstone** **(*Arenaria interpres)***	estuaries. Their presence on the north shore of the Tay is encouraged by the fucoid covered stones, cobbles and boulders on the inter-tidal mud and sandflats and winter detritus accumulations on the strandline.				
Mitigation Measures		**GENERIC1; SPARK1; ENHANCEMENT1; ENHANCEMENT2**	**GENERIC1; SPARK1; ENHANCEMENT1; ENHANCEMENT2**	**GENERIC1; SPARK1; ENHANCEMENT1; ENHANCEMENT2**	**GENERIC1;**	
Conclusion for Qualifying Feature		***For this assessed qualifying feature, this conservation objective will continue to be met during and after development.***	***For this assessed qualifying feature, this conservation objective will continue to be met during and after development.***	***For this assessed qualifying feature, this conservation objective will continue to be met during and after development.***	***For this assessed qualifying feature, this conservation objective will continue to be met during and after development.***	

Table 8: Assessment of the Potential Effect of the Proposals on Qualifying Features in Relation to SPA Conservation Objectives for Firth of Tay and Eden Estuary Special Protection Area (SPA)						
Natura Site	**Feature Likely to be Adversely Affected**	**Objective 1** Population of the species as a viable component of the site	**Objective 2** Distribution of the species within site	**Objective 3** Distribution and extent of habitats supporting the species	**Objective 4** Structure, function and supporting processes of habitats supporting the species	**Objective 5** No significant disturbance of the species
	[Redacted]	[Redacted]	[Redacted]	As above.	As above.	

Table 8: Assessment of the Potential Effect of the Proposals on Qualifying Features in Relation to SPA Conservation Objectives for Firth of Tay and Eden Estuary Special Protection Area (SPA)						
Natura Site	**Feature Likely to be Adversely Affected**	**Objective 1** Population of the species as a viable component of the site	**Objective 2** Distribution of the species within site	**Objective 3** Distribution and extent of habitats supporting the species	**Objective 4** Structure, function and supporting processes of habitats supporting the species	**Objective 5** No significant disturbance of the species
	[Redacted]		[Redacted]			
Mitigation Measures		GENERIC1; SPAWA1; SPAWA2; ENHANCEMENT1; ENHANCEMENT2	GENERIC1; SPARK1; ENHANCEMENT1; ENHANCEMENT2	GENERIC1; SPAWA1; SPAWA2; SPAWA3; ENHANCEMENT1; ENHANCEMENT2	GENERIC1	
Conclusion for Qualifying Feature		*For this assessed qualifying feature, this conservation objective will continue to be met during and after development.*	*For this assessed qualifying feature, this conservation objective will continue to be met during and after development.*	*For this assessed qualifying feature, this conservation objective will continue to be met during and after development.*	*For this assessed qualifying feature, this conservation objective will continue to be met during and after development.*	
OVERALL CONCLUSION		***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	***For all assessed qualifying features, this conservation objective will continue to be met during and after development.***	

STAGE 5: CAN IT BE ASCERTAINED THAT THE PROPOSAL WILL NOT ADVERSELY AFFECT THE INTEGRITY OF THE SITE?

In light of the foregoing assessment, it has been shown that, for potentially adversely affected features, habitat and species-specific mitigation measures will ensure that the conservation objectives of the SAC and SPA will be met during and after construction and the proposal will not have an adverse effect on the integrity of the SAC or SPA. New footpath routing will have a long term positive benefit for birds roosting at the Balmossie stormwater outlet.

IN-COMBINATION EFFECTS

There are no known adverse in-combination impacts with the Broughty Ferry Floodwater Scheme.

OVERALL CONCLUSION OF THE RIAA

There will be no adverse effect on the integrity of the SAC or SPA, and it is concluded that the conservation objectives for qualifying habitats and qualifying species features will continue to be met during and after development.

ADVICE SOUGHT

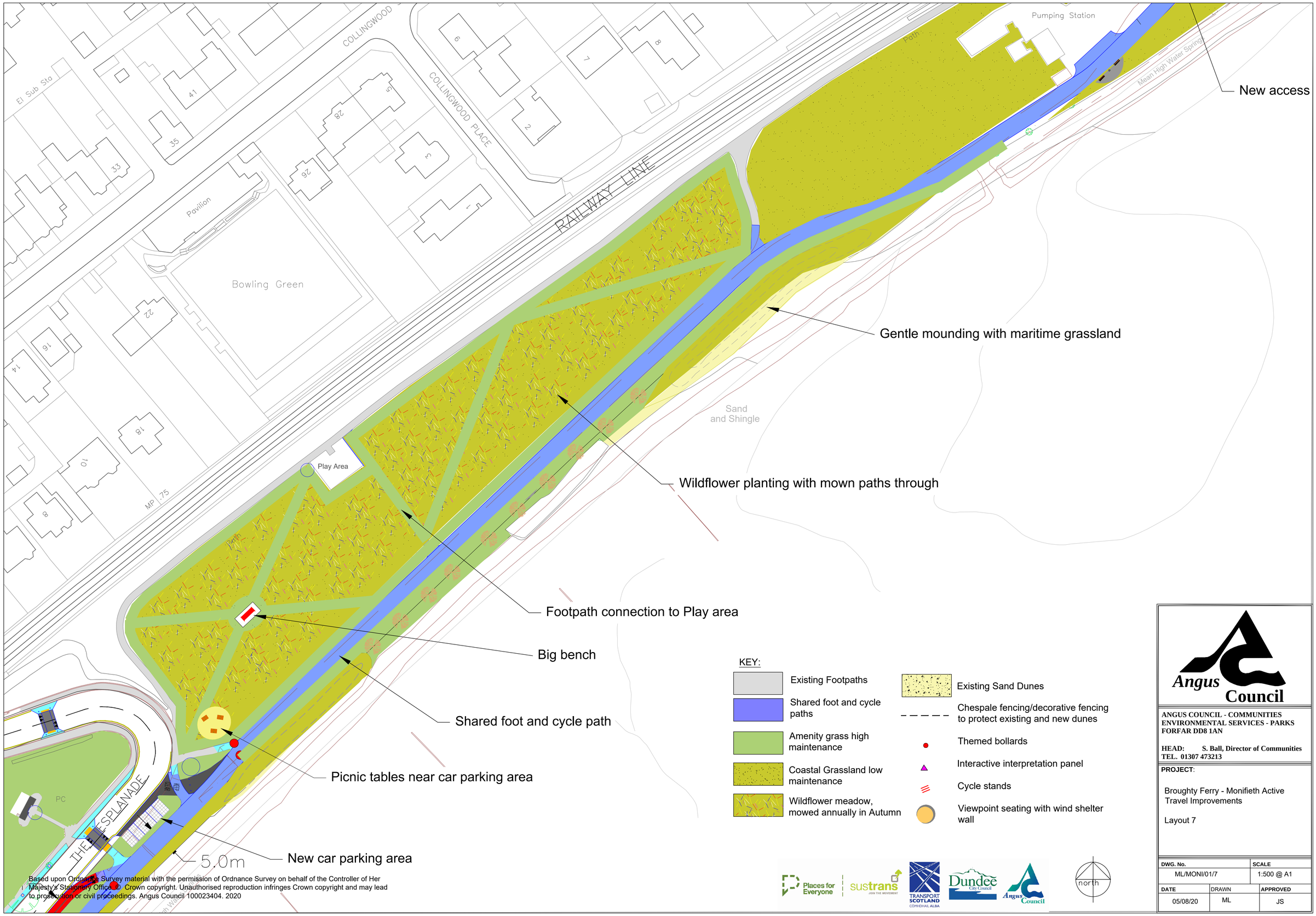
Version 1 of this RIAA was reviewed by Eleanor Stamp and Carolyn Deasley, SNH. They gave advice, constructive criticism and helpful written comment by email, 3rd April 2020. All points raised in their email have been addressed in this updated version, **Version 6**

Main references

1. *Balmer et al (2013). Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland. BTO.*
2. *Forrester, R & Andrews I (eds.) (2007). The Birds of Scotland. Pub. Scottish Ornithologists Club*
3. *Frost, T.M., Austin, G.E., Calbrade, N.A., Mellan, H.J., Hearn, R.D., Robinson, A.E., Stroud, D.A., Wotton, S.R. and Balmer, D.E. (2019) Waterbirds in the UK 2017/18: The Wetland Bird Survey. BTO/RSPB/JNCC. Thetford.*
4. *Frost et al. (2020) Waterbirds in the UK 2018/19: The Wetland Bird Survey. BTO/RSPB/JNCC. Thetford.*
5. *Hockin et al. (1992) Examination of the Effects of Disturbance on Birds with Reference to Importance in Ecological Assessments. Journal of Applied Ecology 36, 253-286*
6. *JNCC Standard Natura Site data forms.*
7. *Scottish Natural Heritage (February 2014) Nature Casework Guidance: How to consider plans and projects affecting Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) version 9. (http://www.nature.scot/natura-casework-guidance-how-consider-plans-and-projects-affecting-special-areas-conservation-sacs)*
8. *SNHi – all Natura Site data*
9. *Smit, C.J. & Visser, G.J.M. (1993) Effects of disturbance on shorebird: a summary of existing knowledge from Dutch Wadden Sea and Delta area. Wader Study Group Bulletin 68:6-19.*
10. *Thom, V.M. (1986) Birds in Scotland. Poyser.*
11. *Calbrade et al. (2018) **Waterbirds in the UK2014/15: The Wetland Bird Survey**. BTO/RSPB/JNCC in association with WWT*

*Frost, T.M., Calbrade, N.A., Birtles, G.A., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. & Austin, G.E. (2021). **Waterbirds in the UK 2019/20: The Wetland Bird Survey.** BTO, RSPB and JNCC, in association with WWT. British Trust for Ornithology, Thetford.*

APPENDIX A
Landscape Drawings



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TEL. 01307 473213

PROJECT:

Broughty Ferry - Monifieth Active Travel Improvements

Layout 7

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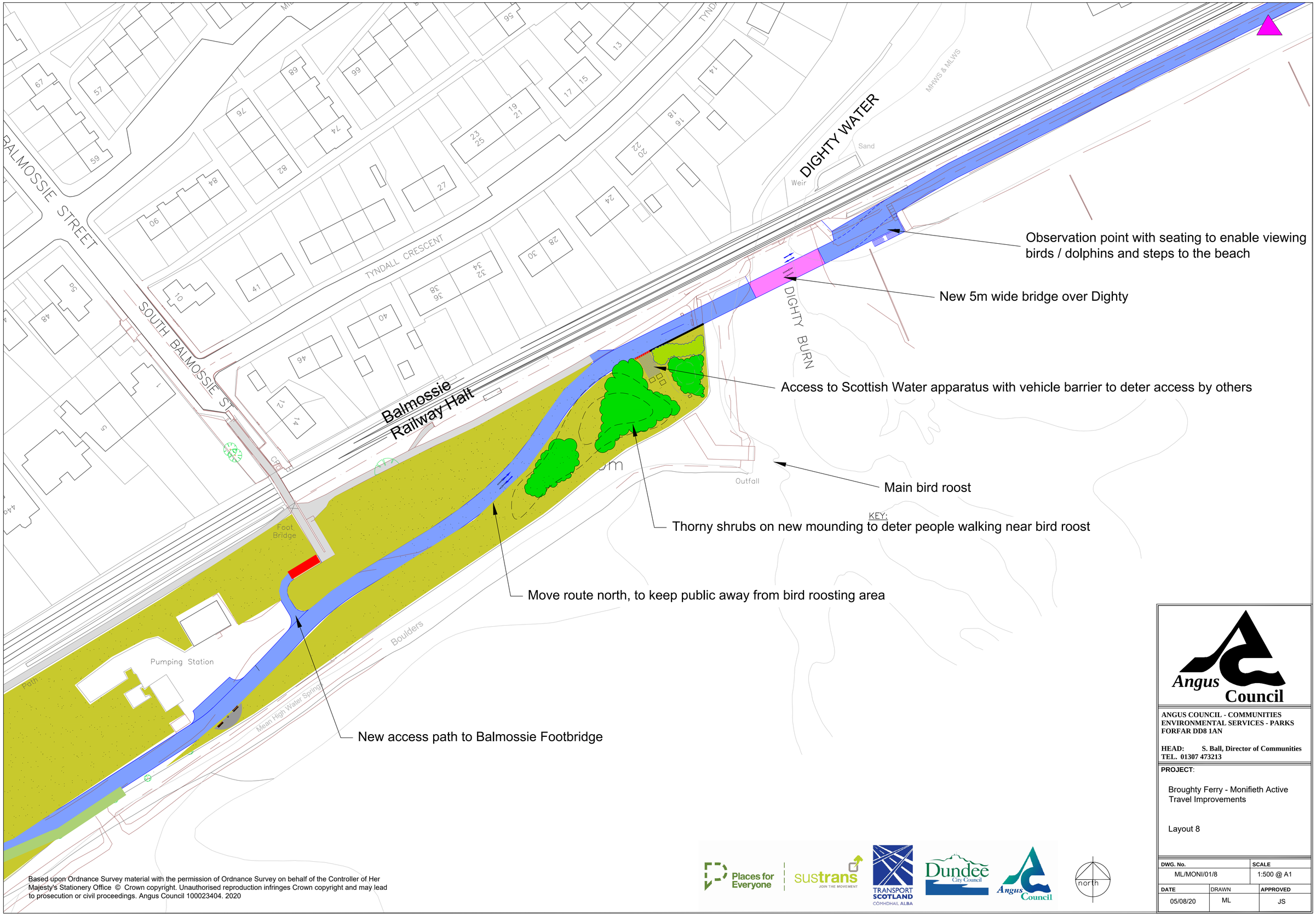
DATE	DRAWN	APPROVED
05/08/20	ML	JS



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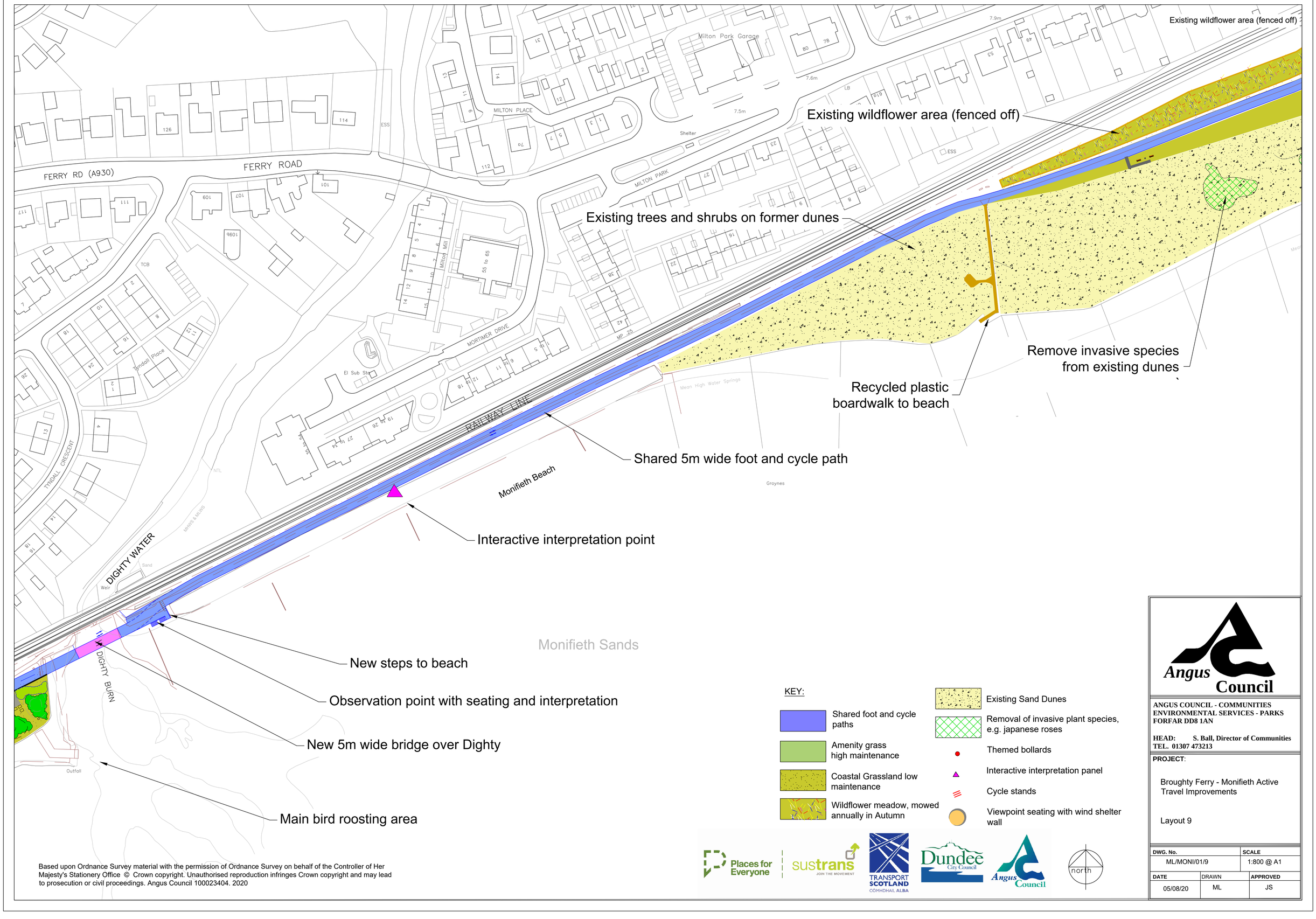
Layout 8

DWG. No.		SCALE
ML/MONI/01/8		1:500 @ A1
DATE	**DRAWN**	**APPROVED**
05/08/20	ML	JS

north



KEY:

- Shared foot and cycle paths
- Amenity grass high maintenance
- Coastal Grassland low maintenance
- Wildflower meadow, mowed annually in Autumn
- Existing Sand Dunes
- Removal of invasive plant species, e.g. japanese roses
- Themed bollards
- Interactive interpretation panel
- Cycle stands
- Viewpoint seating with wind shelter wall

Places for Everyone | sustrans JOIN THE MOVEMENT | TRANSPORT SCOTLAND COMHDHAIL ALBA | Dundee City Council | Angus Council

north

Angus Council

ANGUS COUNCIL - COMMUNITIES
ENVIRONMENTAL SERVICES - PARKS
FORFAR DD8 1AN

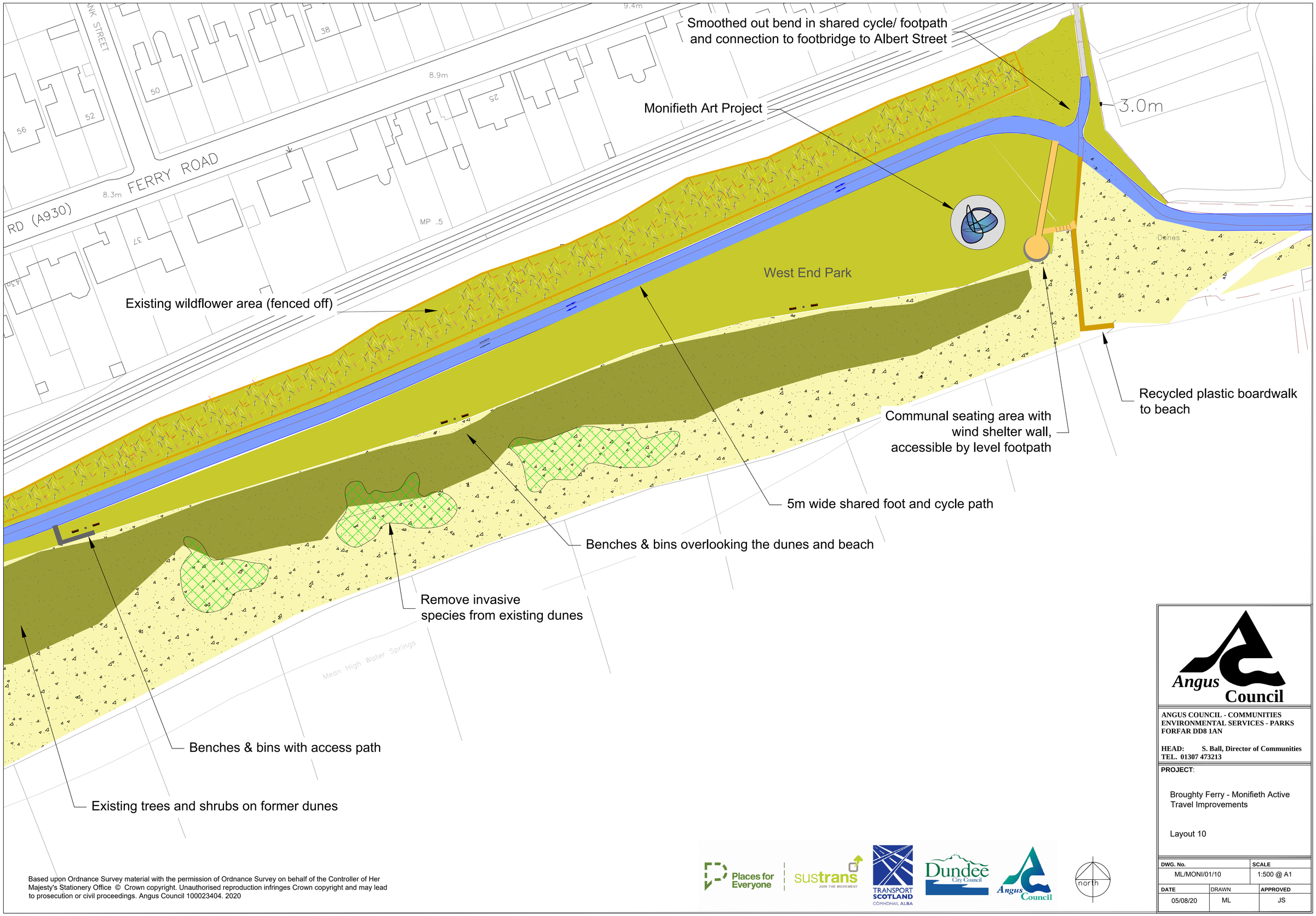
HEAD: S. Ball, Director of Communities
TEL. 01307 473213

PROJECT:

Broughty Ferry - Monifieth Active Travel Improvements

Layout 9

DWG. No.		SCALE
ML/MONI/01/9		1:800 @ A1
DATE	DRAWN	APPROVED
05/08/20	ML	JS



Places for Everyone | sustrans JOIN THE MOVEMENT | TRANSPORT SCOTLAND COMHDHAIL ALBA | Dundee City Council | Angus Council

north

Angus Council

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ENVIRONMENTAL SERVICES - PARKS
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PROJECT:

Broughty Ferry - Monifieth Active Travel Improvements

Layout 10

DWG. No.	SCALE
ML/MONI/01/10	1:500 @ A1

DATE	DRAWN	APPROVED
05/08/20	ML	JS

Lighting improvements in railway underpass leading to Monifieth Railway Station

Proposed lighting columns along South Union Street

Decorative vehicle barrier or themed bollard

Interpretation board artwork to be designed by schoolchildren through design competition

New vehicle turning circle and safe road crossing points

Remove non-native, invasive species

Shared foot and cycle path, 5m wide where possible

Existing trees and shrubs on former dunes

Tayview Caravan Park

Monifieth Beach

CARAVAN PARK

MAULE ST (A930) MAULE STREET

RAILWAY LINE

FOUNDRY ROAD

SOUTH UNION STREET

MARINE DRIVE MARINE DRIVE

RIVERVIEW DRIVE

Recreation Ground

Bowling Green

Tennis Courts

Pavilion

Kontagroa

Gerard Hall

Invertay House (Council Offices)

Swallow Apartments

Shelter

War Meml

CHURCH STREET

MILL BRAE

SOUTH STREET

Sand

Dunes

Mean High Water Springs

3.0m

KEY:

- Existing Footpaths
- Shared foot and cycle paths
- Amenity grass high maintenance
- Coastal Grassland low maintenance
- Wildflower meadow, mowed annually in Autumn
- Existing Sand Dunes
- Removal of invasive plant species, e.g. japanese roses
- Themed bollards
- Interpretation board art work
- Cycle stands
- Viewpoint seating with wind shelter wall

Angus Council

ANGUS COUNCIL - COMMUNITIES
ENVIRONMENTAL SERVICES - PARKS
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PROJECT:

Broughty Ferry - Monifieth Active Travel Improvements

Layout 11

DWG. No.	SCALE
ML/MONI/01/11	1:800 @ A1

DATE	DRAWN	APPROVED
05/08/20	ML	JS