Technical Note

JBA Project Code	2021s1221
Contract	Brighton Marina to Shoreham Harbour FCERM
Client	Brighton & Hove City Council
Date	14 February 2023 and updated 25 May 2023
Author	G James BSc (Hons) QCIEEM
Reviewer / Sign-off	Charlie Dwight BSc (Hons) CEcol MCIEEM
Subject	Biodiversity Net Gain Justification Report

1 Introduction

1.1 Site Location

The Proposed Development and existing sea defences considered under the Proposed Development are located in Brighton and Hove in East Sussex and Shoreham in West Sussex. The Site comprises of six areas along the seafront, which are between approximate Ordnance Survey (OS) Grid References (NGR) TQ2341 0490 and TQ3344 0328 and covers approximately 500.3 hectares (ha).

- Area 1: Shoreham frontage (entirely within Adur District Council (ADC) boundary). Located on western frontage of Shoreham Port in front of Carats Café and a row of beach huts.
- Area 2: Shoreham frontage (partly within ADC boundary and partly within BHCC boundary). This area covers the area located along the central Shoreham frontage fronting Basin Road.
- Area 4: Lorry Park, Western Esplanade and Hove Deep Sea Anglers Club (entirely within Brighton and Hove (BHCC) boundary). This area covers the eastern section of Shoreham Port Authority frontage (known as asset 574/3814) which is a beach ridge consisting of concrete rubble armour with shingle. The area between the beach and the road is known as the lorry park. This area also includes the beach fronting Western Esplanade, a row of private housing. The fronting beach is owned by the residents of Western Esplanade. The eastern section of Area 4 covers the coastal frontage in front of Hove Lagoon.
- Area 5: Kings Esplanade (entirely within BHCC boundary). This is an area of residential and business properties that is located south of the A259 directly on the sea front with only a narrow promenade area between the property and the beachfront.
- Area 6: Kemp Town (entirely within BHCC boundary). This area covers the area from Royal Crescent east to Brighton Marina in the eastern area of Brighton known as Kemp Town. This is an area of accreting beach which has been used as a source of beach material for recycling programmes by BHCC on three previous occasions in recent years: May 2010, Autumn 2013 and Spring 2017.
- Area 7: Shoreham outer layby beach (entirely within ADC boundary). This covers an area of beach from the east breakwater at the mouth of the River Adur to the western edge of Area 1.

There are numerous residential and commercial properties located adjacent to the six areas:

- The western extent of the Site is Shoreham Port, Carats Café, Shoreham Power Station, and an industrial units and warehouses associated with Shoreham Port are located adjacent to areas 1, 2 and 7.
- Area 4 is located adjacent to residential properties and the Hove Deep Sea Anglers Club.
- Area 5 is located adjacent to seafront leisure facilities including King Alfred Leisure Centre and residential properties.

- Area 6 is located adjacent to Brighton Marina, which includes a boatyard, supermarket and leisure facilities.
- Area 7 is located adjacent to Shoreham Harbour. This covers an area of beach from the east breakwater at the mouth of the River Adur to the western edge of Area 1.

The proposed scheme entails works at each of the six locations, however, planning permission is being sought only for the construction of two rock armour revetments (one in Area 2 and one in Area 4) and a footpath, along with access steps, in Area 2 only. All other works undertaken will be as permitted development.

1.2 Methodology

A UKHab survey was undertaken by Gareth James BSc (Hons) QCIEEM in June 2022 and updated by Gareth James and Max Robards in October 2022 with Gareth James undertaking another walkover in November 2022. The majority of habitats on site were mapped to level 4 of the UK Habitat Classification scheme (UK Habitat Classification Working Group, 2018a) implemented using the field key (Carey & Butcher, 2018) with reference to the relevant definitions (UK Habitat Classification Working Group, 2018b). Secondary codes were added where relevant to provide information on the management and environment relating to any particular habitat parcel.

1.3 Biodiversity Net Gain

Under the Environment Act 2021, all planning permissions granted in England (with a few exemptions) will have to deliver at least 10% biodiversity net gain from an as yet unconfirmed date, expected to be in November 2023. Biodiversity Net Gain (BNG) can be quantified using Defra's Biodiversity Metric (version 3.1 at the time of assessment) and habitats will need to be secured for at least 30 years. This sits alongside:

- a strengthened legal duty for public bodies to conserve and enhance biodiversity,
- new biodiversity reporting requirements for local authorities, and
- mandatory spatial strategies for nature: Local Nature Recovery Strategies or 'LNRS'.

The Biodiversity Metric 3.1 calculation tool (Natural England, 2021) was used to calculate all biodiversity losses and gains for this site, following the good practice principles (Baker et al., 2016) and guidelines (Baker et al., 2019). Increase in habitat units is achieved through compensation and enhancement measures.

2 Habitat loss & compensation for the scheme

2.1 Loss and Temporary Impact of coastal vegetated shingle owing to the scheme

In the absence of compensation, the works will result in a permanent loss of 0.03ha of coastal vegetated shingle within Area 4 (within a Basin Road South Local Wildlife Site (LWS), due to placement of new rock armour to form a rock armour revetment. A further 0.07ha of coastal vegetated shingle will be subject to temporary impacts (minor disturbance of seedbank) during the construction of a coastal new footpath within Area 2.

Coastal vegetated shingle is identified as an irreplaceable habitat, and this habitat type is found across all areas apart from Area 5 (Hove Beach). It is found in a varying range of condition types with the best example being at the Basin Road South LWS (Area 4). Permanent losses of this habitat type are required to be compensated at an 8:1 ratio, to

ensure all habitat trading deficits associated with any loss of this high distinct habitat are balanced through appropriate compensation.

2.2 What is coastal vegetated shingle?

Coastal vegetated shingle is a priority habitat and is an extremely rare habitat type which displays both ecological and geomorphological interest (Green & McGregor, 1990) and has a very limited global range. Many of the species found within this habitat type are shingle specialists. Coastal habitats are dynamic and are dominated by wave and storm events and as such are constantly changing (Smith, 2009).

2.3 Issues around coastal squeeze and location of compensatory coastal vegetated shingle within Brighton & Hove and Adur & Worthing boundaries

Throughout the life cycle of this project, JBA ecologists have looked at various locations for the delivery of compensatory coastal vegetated shingle within Brighton & Hove and Adur & Worthing administrative boundaries. The search covered the following sites:

- Brighton Beach (to east of Palace Pier) – unsuitable due to human disturbance and large music events held in this location
- Rottingdean Beach – unsuitable due to human disturbance and coastal vegetated shingle already in this location
- Saltdean Beach – unsuitable due to human disturbance and coastal vegetated shingle already in this location
- Shoreham Port & Southwick Beach – most suitable location
- Shoreham Beach Local Nature Reserve (LNR) – unsuitable due to presence of coastal vegetated shingle already in this location.
- Volk's Railway – unsuitable due to human disturbance and large music events held in this location

A meeting was held with the Brighton & Hove City Council Estates Team who offered a small strip of land adjacent to Volk's Railway for compensatory coastal vegetated shingle, however, this was considered unsuitable due to human disturbance and large-scale music events in this location and would be impracticable for safeguarding.

Shoreham Port & Southwick Beach are the most favourable locations to deliver compensation, as this is where the loss of coastal vegetated shingle will occur. The main issues surrounding the location of compensatory coastal vegetated shingle is coastal squeeze and making sure that the habitat is secured and safeguarded for 30 years and will be viably functionable. The areas of shingle beach between Shoreham Harbour and Brighton Marina are all urban on the landward side of the beach, the succession of urbanisation has led to fragmented pockets of coastal vegetated shingle now occurring along this section of the Sussex coastline. After an extensive search for suitable locations, two proposed locations for the delivery of compensatory coastal vegetated shingle are described below in Section 2.4.

2.4 Proposed locations of compensatory coastal vegetated shingle

The permanent loss of 0.3ha of existing coastal vegetated shingle within Area 4 (Basin South Local Wildlife Site (LWS) and temporary impacts to 0.07ha within Area 2, location of the new footpath. The loss and impacts will be compensated at an 8:1 ratio at the following locations:

- Creation of 0.9ha of new coastal vegetated shingle, located to the west of Basin Road South LWS (within BHCC)
- Ecological enhancement of 0.22ha of existing poor condition costal vegetated shingle within Area 2 (location of new footpath). The habitat is fragmented and will be enhanced to moderate condition with increased species diversity.

3 Biodiversity Net Gain

3.1 Greening the Grey: Existing concrete sea wall

To provide a Biodiversity Net Gain for the scheme, 'Greening the Grey', a concept by Naylor et al (2017), will be focused upon an existing concrete wall, located on Basin Road South. The existing concrete wall currently provides no opportunities for biodiversity and is located in an urban coastal setting, which is dominated by commercial buildings and sealed surfaces.

The wall measures 200m length and approximately 4m in height. Planting on the on the landward side will incorporate four planted cassettes, comprising native shade tolerant species and a range of bird boxes and bug hotels which will act as a stepping stone habitats, and improve the connectivity and functionality of the habitats throughout the site.

The seaward side of the wall will incorporate the creation of eight planters made from old, recycled timber groynes. These structures will be fixed to the existing concrete wall at the base of the wall. Experimental artificial habitats (i.e. biobricks) will be created upon the seaward side of wall to enable collection of sediment, seaweeds and potentially bivalves and shellfish. Provision of any natural features and habitats at this location will provide an important net gain for biodiversity.

A photo of both the landward and seaward side of the wall at present is shown below in Table 3-1.

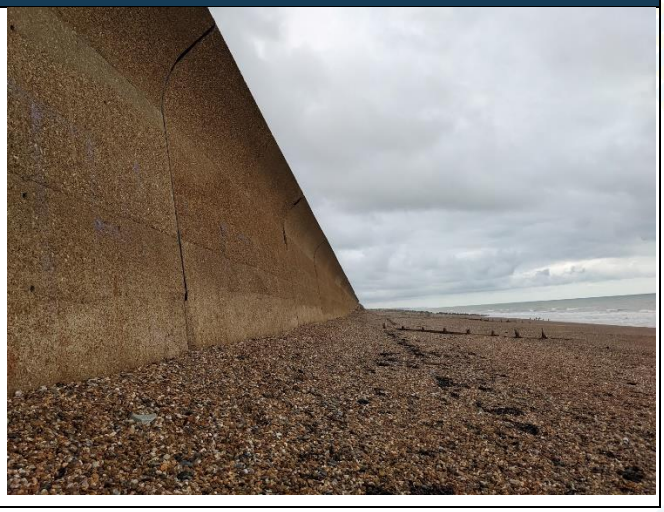
Current landward side of wall	Current seaward side of wall
	

Table 3-1: Existing concrete sea wall in current condition

3.2 Issues around the Biodiversity Metric tool outputs for this proposal

The current Biodiversity Metric tool (v3.1 at the time of assessment), was designed as a simple matrix, to help to inform decisions and not lead them. It is not sufficiently complex or equipped to assess biodiversity gains and losses for irreplaceable habitats, including coastal grazing marsh. The associated Defra Metric 3.1 user guide recommends irreplaceable habitats are compensated through a bespoke mitigation strategy, and outside of the Biodiversity Metric. Therefore, compensation where losses of coastal vegetated shingle occurred on this scheme were agreed (with the ecologist working on behalf of the local planning authority) to be compensated at an 8:1 ratio.

Similarly, the Biodiversity Metric fails to recognise the value and importance of creating new green infrastructure in an urban setting, and has subsequently only awarded low BNG (0.5 habitat units), for creation of the new Biodiversity Wall.

Due to the difficulties in quantifying BNG for urban coastal environments using a Biodiversity Metric where irreplaceable habitats are present and enhancement opportunities are limited to 'Greening the Grey', the outputs generated by the Biodiversity Metric indicates a biodiversity net loss of -0.28% for the project as a whole.

However, when splitting the habitat parcels out per administrative boundary, Brighton and Hove receive a gain of 0.61% whilst Adur & Worthing receive a net loss of -1.94%.

A meeting was held with local authority ecologists to discuss these issues, and all at the meeting agreed that there were only two options to deliver BNG on this scheme and this would be through enhancement of existing linear or vertical urban features (creation of green walls or green roofs). Other than greening the grey of existing urban features i.e., existing walls, there are no other suitable sites within Brighton & Hove and Shoreham, that can provide suitable BNG opportunities. Where use of existing urban features is not undertaken to deliver BNG for the project use, BNG off-setting provisioned through an off-setting provider is the only alternative option open to the project. This was not considered a viable option as it will provide no benefits for local biodiversity or communities within Brighton & Hove or Shoreham. Therefore, following Principle 6 of the biodiversity net gain good practice principles

which is 'achieving the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly justified choices' (Baker et al., 2016). A bespoke Ecological Design Strategy (which falls outside the and limitations of the Biodiversity Metric) was deemed to be more appropriate for delivery of Biodiversity Net Gain for the scheme.

4 Conclusions

Whilst the Biodiversity Metric Tool fails to recognise the value of the newly created Biodiversity Wall, the overall ecological benefits associated with creation of this feature within the site to deliver BNG for the project is based on ecological expertise rather than a numeric number driven approach derived by the Biodiversity Metric. The ecological benefits for species and local communities delivered via the creation of the biodiversity wall far outweigh the very low number of biodiversity units (0.5 habitat units), quantified by the Biodiversity Metric.

In 2018, an invertebrate survey on Shoreham Beach recorded a total of 248 species with 31 of these species being considered 'notable' either on a national or county wide scale (Lyons, 2018). The beaches to the east of Shoreham Beach are mostly unvegetated and consist of shingle whilst the adjacent habitats to the beach are mainly comprised of residential properties and commercial businesses. The Biodiversity Wall will provide a stepping stone habitat and help to improve the connectivity and functionality of the habitats present throughout the site. A desk-based review of available bird data for Southwick Beach also indicated that several notable Sussex bird species had been recorded in the vicinity of the newly created Biodiversity Wall. Most of these records were of migrating seabirds offshore however there is a population of the red-listed House Sparrow *Passer domesticus* within the vicinity of Shoreham Port. Monitoring of this species in the UK suggests that there has been a severe decline in the UK population, with an estimated 71% decline between 1977 and 2008 in both rural and urban populations (RSPB, 2023). The provision for nest boxes for birds incorporated into the Biodiversity Wall will benefit House Sparrow as well as other birds using the area. The habitats found along the northern bank of Southwick Canal adjacent to the A259 support some notable species including Greenfinch *Chloris chloris* and Dunnock *Prunella modularis* whilst this area is not immediately within the footprint of these works, the Biodiversity Wall will also support these species as they forage across the wider area. The seaward side of the wall will also benefit wading birds such as Ringed Plover and Turnstone which would now have further foraging resource once colonising species established on this side of the wall.

As well as benefits to wildlife, the Biodiversity Wall will have social and educational benefits to the local community. Physical and health benefits from connecting with nature are well documented as well as improvement in mental health and emotional wellbeing. Basin Road South is frequently used by runners and cyclists, the visual aspect of the wall will make exercising or commuting along this section a more enjoyable experience. The Biodiversity Wall will also provide opportunities for research projects for aspiring ecologists in the local area and also local schools could run trips to the Biodiversity Wall to inspire children to get enthusiastic and interested in the living world.

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References

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