Havant
BOROUGH COUNCIL

Coastal Partners

Environmental Statement

CHAPTER 17 – Conclusions

Langstone FCERM Scheme

January 2025

Langstone FCERM Scheme Environmental Statement

Chapter 17

Conclusions

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17. Conclusions

17.1 Introduction

This Environmental Statement (ES) has been prepared to support the Planning Permission and Marine Licence applications for the proposed Langstone Flood and Coastal Erosion Risk Management (FCERM) Scheme.

This document supports two key permitting regimes for the Langstone FCERM Scheme:

- Issue of Planning Permission by Havant Borough Council (HBC); and
- Issue of a Marine Licence by the Marine Management Organisation (MMO).

This document has fulfilled the main purposes of the ES:

1. Identify and reduce impacts of the proposed scheme on the wider environment and its interest features and identify opportunities to improve the environment through the scheme's delivery.
2. Fulfil the requirements of the following EIA legislation:
   a. The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended).
   b. Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended).
3. Describe the proposed scheme.
4. Document how the EIA process has influenced the design and the proposed construction methods and enabled potentially significant impacts to be avoided.
5. Provide a description of the option selection process, how alternatives to the proposed scheme were considered and the reasons for promoting the preferred options.
6. Identify, assess, and evaluate potentially significant impacts resulting from the construction of the proposed scheme. Then determine the significance of the predicted residual environmental effects.
7. Identify appropriate mitigation and management measures required to avoid, reduce or remedy adverse impacts identified through the assessment process.

17.2 Summary of Construction Phase Impacts

Table 17.1 below provides an overall summary of the findings of the ES and lists the potential environmental impacts that are predicted to arise during the construction phase of the proposed scheme. The significance of each of the potential impacts is stated, along with any mitigation measures that are recommended to reduce or avoid adverse impacts. The residual impact (i.e., the significance of the potential impact remaining following mitigation) is also stated.

Table 17.1: Summary of Construction Phase potential impact pathways, mitigation measures and residual impacts

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
(Chapter 8) Temporary loss and/or disturbance of intertidal sediment habitats and saltmarsh vegetation during construction and maintenance works	A small area (maximum / worst case 0.57 ha) of intertidal habitat will be affected for the short duration of the construction and/or maintenance works. The impact is of low magnitude for intertidal sediment and medium magnitude for saltmarsh. The habitats are very high value but have low sensitivity to abrasion / disturbance. Therefore, overall, without mitigation, the impact is considered to be of **minor adverse significance for intertidal sediment** and **moderate adverse significance for saltmarsh.**	Works will be undertaken from the landward side wherever possible and where foreshore working is required, this will be restricted to a maximum of 20 metres seawards of the existing defences, marked by the silt curtain, to limit the extent of foreshore disturbance. The silt curtain and temporary working area boundary will be set out to ensure that areas of *Spartina* swards are protected and excluded from the haul route / working area to ensure this habitat is not damaged during the works. Where access is required on the foreshore, removable temporary haul routes will be installed to minimise disturbance to the intertidal habitat. The area excavated for construction of the new sea walls will be reinstated to existing foreshore levels, with foreshore material placed back in the reverse order to that in which it was excavated to ensure that the sediment layers are returned in the order they were prior to the works. With the mitigation measures outlined above, the residual impact on the saltmarsh and intertidal sediment habitats is expected to be of **minor adverse significance**.
(Chapter 8) Noise and vibration impacts on marine mammals, fish and benthic ecology	Piling is required in Frontages 2, 3, 4 and 5 of the proposed Scheme. <u>Airborne noise</u>: The haul out sites used by seals in Chichester and Langstone Harbours are over 4 km from the proposed Scheme and therefore a **negligible impact** is expected on seals from	To avoid the transmission of impulsive noise into the water column, piling on the foreshore will only be undertaken in the dry (when the surface of the substrate is above the current tide level). Installation of piles will be undertaken using vibro piling techniques as standard. Percussive piling will only be used when necessary to achieve the required design depth. If percussive piling is required, a soft start procedure will be implemented for a minimum of 20 minutes to encourage any marine ecological

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
	airborne noise emissions during construction activities. Underwater noise: The subtidal channels in Langstone and Chichester Harbours are important habitat for seals (which are a high value and sensitivity receptor). Therefore, without mitigation, the generation of impulsive underwater noise during marine piling activities could have a **moderate to major adverse** effect on seals. If marine piling was to occur within the water column at Langstone, it could have an impact of medium magnitude on fish, which have a high sensitivity and value, and therefore the impact on fish would potentially be of **major adverse significance**. The available evidence indicates that shellfish and benthic invertebrates are not sensitive / have low sensitivity to underwater noise and therefore this impact will be of **negligible significance** to shellfish and benthic invertebrates.	receptors present to move away from the area. Should piling cease for a period greater than 10 minutes, then the soft start procedure will be repeated once piling is recommenced. With the implementation of the mitigation measures outlined above, the impact of underwater noise on seals, fish, shellfish and benthic invertebrates during the construction works will be of **negligible significance** as the pathway of transmission from the source (piling) to the receptors will be removed as piling will not take place within the water body.
(Chapter 9) Priority and broad habitat loss through vegetation clearance and/or construction of sea defences.	Priority Habitats: moderate adverse significance	Priority Habitats: • Any wet woodland understorey habitat removed will be replaced with a native wetland mix of shrubs as outlined in the landscaping plans and planting schedule. • 27m of species rich hedgerow will be planted in same location to replace the hedgerow removed during vegetation clearance and additional areas will be planted with a hedgerow seed mix as outlined in the landscaping plans and planting schedule.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
	Broad habitats: moderate adverse significance	• All priority habitat losses, gains and environmental improvements for the Langstone FCERM Scheme are outlined in the draft BNG Plan and will be submitted for approval prior to commencement. **Residual Impact: Negligible and Beneficial** Broad habitats: All broad habitat losses, gains and environmental improvements for the Langstone FCERM Scheme are outlined in the draft BNG Plan and will be submitted for approval prior to commencement. **Residual Impact: Negligible and beneficial**
(Chapter 9) Permanent loss of notable plant species through the removal of the existing defences.	Moderate adverse significance	• Either translocate the Golden Samphire plants from the old revetment at Frontage 3 to areas with suitable conditions and/or create areas with suitable conditions for assisted colonisation. • Areas of vegetation that will not be removed but contain notable species (e.g. Golden Samphire in Frontage 2) should be mapped, demarcated and protected throughout the works to avoid any harm. **Residual Impact: Negligible**
(Chapter 9) Pollutants and dust affecting priority habitats and notable plant species	Moderate/ minor adverse significance	• Fuel and other chemicals to be stored at least 10m away from the sensitive habitats, in nearby compounds and to be fully bunded to 110% of the maximum storage capacity and maintained in a secure and clear manner. • All fuelling operations, servicing of equipment and fuel storage to take place at least 10m away from sensitive habitats. • Spill kits will be available at all fuelling locations and carried by all plant working in sensitive areas. • Any spillage shall be immediately contained, removed from site and disposed of to a licensed tip. • A supply of water and means of dispensing it will be available on site to dampen down dust, haul routes and material stockpiles.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		Residual Impact: Negligible
(Chapter 9) The spread of non-native invasive plant species from vegetation clearance and construction activities such as trampling and plant movements.	Major adverse significance	• A pre-commencement survey will be undertaken and a 7m buffer zone will be marked around any Japanese Rose and/or Three-cornered Garlic plants found. • A Schedule 9 Plant Management Plan will be implemented and adhered to for plants/material retained on site. • All material within the 7m buffer zones removed from site will be clearly identified to the waste carriers as potentially containing Japanese Rose and/or Three-cornered Garlic and taken to a suitably licensed disposal site, or appropriately disposed of on site. • Ensure that imported materials are free from Japanese Rose, Three-cornered Garlic and other invasive species where possible. **Residual Impact: Negligible**
(Chapter 9) Disturbance to roosting, foraging and commuting bat species from vegetation clearance and construction activities	Major adverse significance	• Any trees to be felled or pruned will be assessed from the ground level for the potential bat roost features, as even unoccupied bat roosts are protected by law. Emergence/re-entry surveys will be conducted at a suitable time of year on any additional tree due to be felled or pruned where medium/high/confirmed potential bat roosting features are identified. • Where possible all work on trees will be carried out in Spring (mid-March to end of April) before young are born, or Autumn (September to late October) after the young are weaned and independent before hibernation. However, these times are climate dependent and can vary from year to year. • Soft felling will be used as a precautionary method to remove trees / branches, including the five identified trees with negligible PRFs located around the proposed access junction between Langstone Road and the compound entrance. Soft felling requires the trees to be cut down in sections, with each section carefully lowered to the ground. Once lowered,

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		the sections must be left in situ for 24 hours, to give any temporary roosting bats time to move away to another roost site. • To minimise risk of affecting foraging bats, avoid night working using artificial lighting. If essential, lights should be directed and shrouded to avoid light illuminating potential foraging areas e.g. tree lines. • Habitat improvement opportunities including tree planting, creation of hedgerows, creation of wildflower and coastal meadows will be implemented to create a beneficial impact to roosting, foraging and commuting bats once the habitats have established. The installation of bat boxes will be implemented to create a beneficial impact for roosting bats. **Residual Impact: Minor adverse significance and beneficial**
(Chapter 9) Impacts to reptiles from vegetation clearance and construction activities	Major adverse significance	Frontage 5 Due to the low reptile population and the good connectivity of areas of reptile habitat in this frontage, the main method of mitigation will be vegetation management undertaken to encourage reptiles to move into adjacent habitats. Reptile fencing and/or close-cropped strips will be located to stop recolonisation of de-risked areas from adjacent suitable habitat that will act as reptile safe areas throughout the works. These reptile safe sites will not be impacted by the construction works. The following measures will be taken during the vegetation management and reptile de-risking: • During the active season (March to October - subject to suitable weather conditions), vegetation management (staged cutting down to ground level) will be used to encourage reptiles to move into safe zones. • The cutting programme will aim to work in a directional manner cutting progressively toward the nearest reptile safe area. • Once it is considered that all reptiles will have moved into safe zones, all safe zones will be constrained by close crop mowing along the zone boundaries and/or reptile fenced to best practice standards.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		• Following vegetation management hand capture under Alternative Cover Objects (ACO) will be undertaken, to demonstrate that the area is clear of reptiles. Any captured animals will be translocated into the nearest reptile safe area. Capture will be undertaken five days a week, once per day in suitable weather conditions. Capture operations will continue for a minimum of 15 days and then until no animals have been seen or captured for five consecutive days with suitable weather conditions. • As most of the habitat is alongside habitats that will be retained and/or are with tree protection zones no destructive search will be carried out following vegetation management. • Close cropping will continue around the Frontage boundaries and reptile fencing will be placed around the Frontage boundaries where necessary (attached to the heras fencing) to ensure reptiles do not return to the site during the construction works. Vegetation will be kept short within the Frontage boundaries to further deter reptiles during the construction works. The reptile fencing will be checked regularly to ensure it is in good working order. <u>Frontage 2</u> Vegetation management and in situ reptile translocation within the Frontage boundaries is planned for Frontage 2. Reptile fencing and/or close-cropped strips will be located to stop recolonisation of de-risked areas from adjacent suitable habitat that will act as reptile safe areas throughout the works. These reptile safe sites will not be impacted by the construction works. The following measures will be taken during the vegetation management and reptile de-risking: • During the active season (March to October - subject to suitable weather conditions), vegetation management (staged cutting down to ground level) will be used to encourage reptiles to move into safe zones and/or where that is not feasible into focus areas. • The cutting programme will aim to work in a directional manner cutting progressively toward the nearest reptile safe area.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		• Once it is considered that all reptiles will have moved into safe zones, all safe zones will be constrained by close crop mowing along the zone boundaries and/or reptile fenced to best practice standards. • Following vegetation management hand capture under Alternative Cover Objects (ACO) will be undertaken, to demonstrate that the area is clear of reptiles. Any captured animals will be translocated into the nearest reptile safe area. Capture will be undertaken five days a week, once per day in suitable weather conditions. Capture operations will continue for a minimum of 30 days and then until no animals have been seen or captured for five consecutive days with suitable weather conditions. • If considered necessary, e.g. in areas where capture is difficult, a destructive search will be carried out This will follow best practice procedures presented and use two suitably qualified and experienced ecologists observing/checking and capturing any reptiles and covering both the excavation and the deposition areas. • Close cropping will continue around the Frontage boundaries and reptile fencing will be placed around the Frontage boundaries where necessary to ensure reptiles do not return to the site during the construction works. Vegetation will be kept short within the Frontage boundaries to further deter reptiles from recolonisation during the construction works. The reptile fencing will be checked regularly to ensure it is in good working order. A full Reptile Mitigation Strategy will be prepared and submitted for approval prior to commencement. A draft Reptile Mitigation Strategy has been submitted with this application. **Residual Impact: Negligible**
(Chapter 9) Impacts to West European hedgehog from vegetation clearance and construction activities	Moderate / minor adverse significance	• Any dense vegetation clearance (e.g. hedgerows / along the Hayling Billy trail) should initially be checked for hedgehogs prior to removal. • Any piles of leaf litter and similar material should initially be cleared by hand, to avoid harm to sleeping or hibernating hedgehogs. • No excavations should be left open overnight, they should be covered and / or provide a means of escape (e.g. scaffold plank laid at 45 degrees).

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		Residual Impact: Negligible
(Chapter 9) Impacts to invertebrates from vegetation clearance and construction activities.	Moderate adverse significance	• The area to be cleared in Frontage 1A and 2 should be checked for any stag beetle larvae and / or adults by a suitably qualified and experienced ecologist. Any stag beetles or larvae found should be carefully translocated to a suitable natural or purpose-built habitat close by. • Create areas with loggeries / log piles / log pyramid features within the landscaping plans along the Hayling Billy trail footpath in Frontages 1A and 2, to encourage female stag beetles to lay their eggs within / near the rotting wood features. **Residual Impact: Negligible and Beneficial**
(Chapter 9) Temporary loss or damage to trees from site clearance and construction works.	Moderate adverse significance	• All of the recommended tree works should be undertaken by an approved and experienced tree contractor as outlined in the Arboricultural Method Statement prior to any construction contractors commencing works on site. • Erect the protective fencing as specified and shown on the Tree Protection Plan BJH03/04 at appendix BH3 (Haverson, 2024). Barriers are to be 'Fit for Purpose' to exclude construction activity and must be maintained to ensure that they remain rigid and complete and in the original setting out positions. These checks will need to be incorporated into a schedule of site monitoring visits to be agreed with the contractor subject to phased development operations and subsequently copies of these site visit reports will need to be copied to the LPA. • A copy of the Tree Protection Plan is to be pinned up in the offices on site for all site staff to see. The area within the fenced off construction exclusion zone is to be regarded as sacrosanct and the fencing shall not be taken down or relocated at any time without the prior written approval of the monitoring arboriculturist or local authority tree officer, unless this has already been agreed as part of the planning application consent process and is detailed in writing and shown on a plan.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		• The following prohibitions shall apply within the area enclosed by the Tree Protection Fencing [Construction Exclusion Zone]: - No mechanical digging or scraping once the initial ground cover vegetation has been cleared and the site fenced off. - No storage of plant, equipment or materials - No vehicular or plant access - No fire lighting - No handling, discharge or spillage of any chemical substance, including cement washings - No action likely to cause localised water-logging - No change in ground levels • All site works storage areas and compounds/welfare units/toilet blocks and any mixing areas are to be located outside of and well clear of retained tree RPA's. • All Utility Service connections are to be located outside of tree RPA's. **Arboricultural Expert Monitored 'Hand Digging' works [for works within tree RPZ's]:** • Break out hard surfacing with appropriate drills and hand held tools stopping as soon as bare earth is reached - which may include the use of a mini digger with a pneumatic 'pecker' attachment or for large plant working entirely from the foreshore and outside of tree RPZ's. • Clear away the debris and arisings from the work face. • An Arboricultural Expert is to be called in to monitor the 'Hand Digging' works with forks [or air spades or similar acceptable low impact technology] ONLY initially and shovels and spades at a later date at the discretion and direction of the Arboricultural Expert. • If roots are encountered then they are to be carefully worked around and if they are 25mm or less in diameter and not found 'en masse' then the Arboricultural Expert will sever them at the trench edge with clean and sharp bypass secateurs to allow works to continue. In the event that the roots are over 25mm in diameter then the priority must be to retain them

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		and find a 'work around' solution (e.g. packing around them with sharp washed sand and then wrapping in hessian to protect them). **Ground Protection Measures:** • Whilst there is no anticipated specific need for these works it may be found that to access an area to work on it (i.e. the Mill Lane footpath link) then ground protection must be laid to give access to hand operated machinery as per BS5837:2012 Section 6.2.3.3 Recommendations. • The Tree Protection Plan will be monitored as outlined in the Arboricultural Method Statement (Haverson, 2024). **Residual Impact: Negligible**
(Chapter 9) Permanent loss or damage to trees from site clearance and construction works.	Major / moderate adverse significance	• Where specific trees are shown for removal to facilitate the layout of the Scheme (on the Tree Protection Plans), they are to be cut down in a controlled manner to avoid damage to other trees and their surroundings. The stumps are to be ground out by machine except where they are shown to be coppiced and these will be cut down to ground level and allowed to re-shoot and contribute to the general shrubbery and low canopy cover in the future (see Haverson (2024) for further details). • All of the recommended tree works should be undertaken by an approved and experienced tree contractor prior to any construction contractors commencing works on site. • Any trees and scrub removed will be replaced with an equal or greater number of appropriate species, sizes and quality. A BNG plan will detail how this will be delivered, a draft version has been submitted with this application. See draft landscaping plans and planting schedule for further details. **Residual Impact: Negligible**
(Chapter 9)	Beneficial	• Replanting will be undertaken as advised by the draft BNG Plan, Landscape Plans and Planting Schedule and shall be carried out no later

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
Permanent gain of trees and vegetation (during operation).		than the first planting and seeding season following the completion of the development. • Any trees or plants which, within a period of 5 years from the date of planting die, are removed or become seriously damaged or diseased shall be replaced in the next planting season with others of similar size and species. **Residual Impact: Beneficial**
(Chapter 10) Noise from construction works on site displacing birds in the local area	SPA/Ramsar non-breeding/overwintering birds - **Major Adverse Significance** SPA/Ramsar non-breeding/overwintering birds using functionally linked land - **Major Adverse Significance** SPA breeding seabirds **– Major adverse Significance.** Egret/Heron breeding colony-**Major Adverse** Significance Terrestrial breeding birds**- negligible**	<u>Frontage 1A</u> • Wacker plate or compacting plant with a similar noise profile not to be used between chainage 120-188 during the overwintering bird period October-March inclusive. <u>Frontage 2</u> • No construction work to be undertaken during the overwintering bird period October-March inclusive. <u>Frontage 3</u> • Piling work between chainage 0-66 and all construction work between 100-152 will not be undertaken during the overwintering bird period October-March inclusive. <u>Frontage 4</u> • No construction work to be undertaken during the overwintering bird period October-March inclusive. <u>Frontage 5</u> • No construction work to be undertaken between chainage 0-95 or piling / trench sheet installation work between chainage 96-185 during the overwintering bird period October-March inclusive.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		• To minimise risk of disturbance to egret and heron roost, no night working and particularly no artificial lighting between chainage 112-221. • An appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts to nesting egrets and herons at Langstone Millpond during the nesting period March to August inclusive. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance on nesting birds in this colony will be implemented until nesting attempts have been completed. Details of this watching brief will be set out within the final CEMP. <u>All Frontages</u> • Installation of piles will be undertaken using vibro piling techniques as standard. Percussive piling will only be used when necessary to achieve the required design depth. If percussive piling is required, a soft start procedure will be implemented for a minimum of 20 minutes. Should piling cease for a period greater than 10 minutes, then the soft start procedure will be repeated. • To avoid the transmission of impulsive noise into the water column, piling on the foreshore will only be undertaken in the dry (when the surface of the substrate is above the current tide level). • For any work proposed within the over-wintering bird period, October-March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be provided within the final CEMP, which will be submitted for approval by the LPA / Natural England prior to the commencement of construction activities. In the event of severe weather, defined as frozen ground conditions reported by over half of the meteorological stations in England/Wales, after 7 consecutive days (allowing for short (24-48 hours) periods of thaw) an expert review will be undertaken by the project ecologist and, if necessary, work may be restricted or halted. After 14 consecutive days of frozen ground conditions and if a statutory suspension is announced, all works will cease during the suspension period. Details of this process will be laid out within the final CEMP. Delivery of the above mitigation and particularly the robust application of an ornithological watching brief should ameliorate adverse effects to **minor adverse significance**.
(Chapter 10) Visual disturbance from construction works on site displacing birds in the local area	SPA/Ramsar non-breeding/overwintering birds – **Major Adverse** Significance SPA/Ramsar non-breeding/overwintering birds using functionally linked land - **Major Adverse** Significance SPA breeding seabirds **- negligible**	<u>Frontage 3&4</u> • No construction work to be undertaken during the overwintering bird period October-March inclusive. <u>Frontage 5</u> • No construction work to be undertaken between ch 0-110during the overwintering bird period October-March (inclusive). • All vegetation clearance should be undertaken outside of the bird nesting season March-August inclusive, to avoid disturbance of the egret/heron nesting colony.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
	Egret/Heron breeding colony-**Major Adverse** Significance Terrestrial breeding birds**- negligible**	• No site personnel to enter the woodland area around the egret/heron nesting colony during the bird breeding season March-August inclusive. <u>All frontages</u> • For any work proposed within the over-wintering bird period, October-March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g., a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of screening barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be included within the final CEMP, to be confirmed once a contractor has been appointed. • In the event of severe weather, defined as frozen ground conditions reported by over half of the meteorological stations in England/Wales, after 7 consecutive days (allowing for short (24-48 hours) periods of thaw) an expert review will be undertaken by the project ecologist and if necessary, work may be restricted or halted. After 14 consecutive days of frozen ground conditions and if a statutory suspension is announced all works will cease during the suspension period. Details of this process will be laid out within the final CEMP. With the mitigation above the residual impact is expected to be of **minor adverse significance**.
(Chapter 10) Temporary loss of bird habitats	SPA/Ramsar non-breeding/overwintering birds - **Minor Adverse Significance**	<u>Frontages 1A, 2 and 5</u> • All losses of potential nesting habitat will be addressed in the BNG Plan and CEMP and will be submitted for approval prior to commencement.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
	SPA/Ramsar non-breeding/overwintering birds using functionally linked land - **Minor Adverse Significance** SPA breeding seabirds **- negligible significance.** Terrestrial breeding birds -**Minor Adverse Significance in short-term**	• A range of nest boxes suitable for species present will be erected in adjacent habitats prior to commencement of site clearance, details will be provided within the CEMP. <u>Frontages 3, 4 and 5</u> • Works will be undertaken from the landward side wherever possible to minimise disturbance of the foreshore. Where foreshore working is required, this will be restricted to a maximum of 20 metres seawards of the existing defences and will be clearly demarcated by the silt curtain. • The area excavated for construction of the buried apron of the new sea walls will be reinstated to existing foreshore levels using material retained from the excavation. Methods will be finalised once a contractor has been appointed and confirmed within the CEMP and BNG plan. A silt curtain will be deployed and maintained throughout construction of these frontages to avoid increased water turbidity of adjacent areas.
(Chapter 10) Disturbance to nesting birds	SPA breeding seabirds **– Negligible/Minor adverse** Egret/Heron breeding colony -**Moderate Adverse** Significance Terrestrial breeding birds **- moderate adverse** significance	<u>Frontage 1A, 2 and 5</u> • All suitable bird nesting habitat within working areas to be cleared outside of the bird nesting period (no bird nesting habitat to be cleared between March to August inclusive). If this is not possible all potential habitat to be checked by a suitably experienced and qualified ecologist prior to commencement. • All losses of potential nesting habitat losses will be addressed in the BNG Plan and CEMP and will be submitted for approval prior to commencement. • A range of nest boxes suitable for species present will be erected in adjacent habitats prior to commencement of site clearance. Details will be provided within the CEMP. <u>Frontage 5</u>

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		An appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts to nesting egrets, herons and Cetti's warbler at Langstone Millpond during the nesting season. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g. a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions, to cessation of construction activities. If other measures are not sufficient to avoid significant disturbance on nesting birds in this colony protective measures will be implemented until nesting attempts have been completed. Details of this watching brief will be within the final CEMP. De-risking by the appropriate seasonal removal of potential nesting habitat will reduce the potential of impacts on common and widespread species and due to the distance and lack of habitat directly affected for Cetti's warbler, this will be negligible. Potential impacts to terrestrial breeding birds and the nesting colonies of little egret, grey heron and cattle egret are more difficult to accurately predict, due to limited research on these species, however anecdotally they are considered of low sensitivity to disturbance. Delivery of the above mitigation should ameliorate most adverse effects to a residual impact of **minor adverse significance**.
(Chapter 11) Ground disturbance across the scheme has the potential to disturb deposits with	Currently unknown - Low to High potential	• Pre-construction purposive geoarchaeological boreholes targeted on sedimentary sequences with the greatest geoarchaeological potential to recover samples for palaeoenvironmental assessment, dating and, if required, analysis. • A limited program of Palaeolithic geoarchaeological test pitting in the area of Head-Brickearth deposits in Langstone Meadow to establish

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
a geoarchaeological interest		requirements for further mitigation, such as an archaeological watching brief, during construction.
(Chapter 11) Potential below ground remains of archaeological interest	Currently unknown - Low to High potential	• A programme of archaeological monitoring during construction, to be agreed within an Archaeological Mitigation Strategy • A limited program of Palaeolithic geoarchaeological test pitting in the area of Head-Brickearth deposits in Langstone Meadow to establish requirements for further mitigation, such as an archaeological watching brief.
(Chapter 12) Landscape Impact	**Receptor Sensitivity: High** **Magnitude of Effect: Minor/Slight** Landscape changes would be generated by activities such as the operation of construction plant, introduction of contractor's compounds, storage areas, security fencing and signage; and the associated construction traffic movements which would be transient and temporary in nature. Construction activities such as vegetation clearance, building of structures and earth movements, would result in a disruptive character to the local landscape during the works.	Construction best practice as set out in the Construction Environmental Management Plan (CEMP). Measures could include features such as secure perimeter fencing, screen bunds, and maintaining a tidy site. **The impact would be moderate. This would not be significant.**
(Chapter 12) Visual Impact	<u>View Point 1</u> Receptor Type: PRoW users Receptor Sensitivity: **Very High** Magnitude of Impact: **Negligible** Significance of Effect: **Negligible Adverse**	**Frontage 1A** • Proposed new embankment on the existing footpath. • Reinstate New footpath on top of the new embankment. • Opportunities for native planting. • Potential seating, wayfinding and interpretation opportunities. • Proposed widening of shared cycleway/pathway from 1.9m to 3m to comply with highway standards.

Potential Impact Pathways	Significance of impact		Mitigation and Residual Impacts
	<u>View Point 2</u> Receptor Type: Northerly Road Receptor Sensitivity: **Medium**	Magnitude of Impact: **Minor** Significance of Effect: **Negligible Adverse**	**Frontage 2** • Proposed widening of shared cycleway/pathway from 1.9m to 3m to comply with highway standards. • Ecological measures such as bat boxes to be included along the route. • Potential to enhance landscape, green space, footpaths, and benches. • Opportunity for wayfinding, interpretation boards and benches. • Reinstatement areas along improved shared cycleway/pathway to include species rich wildflower seeding, hedgerow and coastal meadow. **Frontage 3** • Proposed retaining wall and hand railings along the steps and ramp. • New retaining wall to be brick cladded. • New ramp, steps and handrails to be consistent with the overall landscape strategy. • Potential for interpretation boards, seating, wayfinding. • New planters to the car park. **Frontage 4** • Proposed guardrails with chain access for kayaks and boats. • Resurface existing pathway to match proposed pathway. • Historic Langstone Wadeway - opportunity for interpretation panel on land near here to explain history. **Frontage 5** • Integrate seating and pathway resurfacing. • New earth embankment and reinstatement areas grass seeded to agricultural use.
	<u>View Point 3</u> Receptor Type: PRoW users, Recreational users of Chichester Harbour Receptor Sensitivity: **Very High**	Magnitude of Impact: **Moderate** Significance of Effect: **Minor Adverse**	
	<u>View Point 4</u> Receptor Type: Recreational users of Chichester Harbour Receptor Sensitivity: **Very High**	Magnitude of Impact: **Moderate** Significance of Effect: **Moderate Adverse**	
	<u>View Point 5</u> Receptor Type: Shipwrights Way – Long distance walking route Receptor Sensitivity: **Very High**	Magnitude of Impact: **Minor** Significance of Effect: **Negligible Adverse**	

Potential Impact Pathways	Significance of impact		Mitigation and Residual Impacts
	<u>View Point 6</u> Receptor Type: PRoW users Receptor Sensitivity: **High**	Magnitude of Impact: **Moderate** Significance of Effect: **Moderate Adverse**	New tree planting and native hedgerow.
	<u>View Point 7</u> Receptor Type: Recreational users of Chichester Harbour Receptor Sensitivity: **Very High**	Magnitude of Impact: **Moderate** Significance of Effect: **Moderate Adverse**	
	<u>View Point 8</u> Receptor Type: PRoW users Receptor Sensitivity: **High**	Magnitude of Impact: **Moderate** Significance of Effect: **Moderate Adverse**	
	<u>View Point 9</u> Receptor Type: Recreational users of Chichester Harbour Receptor Sensitivity: **Very High**	Magnitude of Impact: **Moderate** Significance of Effect: **Moderate Adverse**	

Potential Impact Pathways	Significance of impact		Mitigation and Residual Impacts
	<u>View Point 10</u> Receptor Type: Residential – Langstone High Street Receptor Sensitivity: **Very High**	Magnitude of Impact: **Moderate** Significance of Effect: **Negligible Adverse**	
	<u>View Point 11</u> Receptor Type: Wayfarer's Way Receptor Sensitivity: **Very High**	Magnitude of Impact: **Moderate** Significance of Effect: **Moderate Adverse**	
	<u>View Point 12</u> Receptor Type: PRoW users Receptor Sensitivity: **Very High**	Magnitude of Impact: **Moderate** Significance of Effect: **Minor Adverse**	
	<u>View Point 13</u> Receptor Type: PRoW users, users of Warblington Cemetery and St Thomas á Beckett Church Receptor Sensitivity: **Very High**	Magnitude of Impact: **None** Significance of Effect: **Neutral**	

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
	<u>View Point 14</u> Receptor Type: Hayling Billy Line/Shipwrights Way Receptor Sensitivity: **High** Magnitude of Impact: **Moderate** Significance of Effect: **Moderate Adverse**	
(Chapter 13) Changes in the route, volume, composition or speed of traffic during construction	Overall, on the A3023 an increase of approximately 6 HGV movements and 60 vehicle movements daily over the duration of the works will result in less than 10% change in the estimated average daily flow (**Table 13.2**), resulting in a medium magnitude of change and suggesting a **moderate adverse impact** without mitigation. Additionally, along Langstone High Street (access route 4), there will be a slight increase of approximately one HGV and one vehicle a day over 30 weeks. This is considered to have the potential to result in a low to medium magnitude of change, also suggesting a worse case **moderate adverse impact** without mitigation. For Langstone Avenue the magnitude is considered lower as traffic increase along the road only across the southern tip resulting in a **minor adverse impact** without mitigation.	Appropriate management measures will be employed to limit impacts particularly on traffic delays caused by site deliveries and HGV movements. This includes a traffic marshal in attendance and a suitable dedicated turning circle identified. Such measures will be confirmed within the final CTMP which has been drafted as part of this submission. With mitigation in place, the effect of the Proposed Development on changes in traffic is considered to be **Minor Adverse.**
(Chapter 13)	A medium magnitude of change is anticipated from a short term and temporary loss of some	Appropriate management measures will be employed. This includes ensuring all footpath closures and reduction in parking spaces will be minimised where

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
Reduced accessibility (construction)	parking spaces, suggesting a **moderate adverse impact** without mitigation. In addition Temporary footpath and cycle diversions are proposed during construction which is considered to result in a low to medium magnitude at worst suggesting a **moderate adverse impact** without mitigation.	possible and all path diversions will have appropriate signage. Any changes will be short term and temporary. Such measures will be confirmed within the final CTMP. With mitigation in place, the overall effect of the Proposed Development on changes in accessibility is considered to be **Minor Adverse.**
(Chapter 14) Airborne noise due to construction activities and traffic movements	Due to the sensitivity of receptors (residential) to airborne noise, the significance of the impact, without mitigation measures in place, is considered to be **moderate adverse.**	• Best practice measures will be adopted throughout the construction period in accordance with guidance regarding mitigation measures 4, 6, 7 and 8 of the British Standards BS5228-1 'Code of practice for noise and vibration control on construction and open sites'. Best practicable methods will be adopted to keep noise emissions to a minimum. • Installation of piles will be undertaken using vibro piling techniques as standard. Percussive piling will only be used when necessary to achieve the required design depth. If percussive piling is required, a soft start procedure will be implemented for a minimum of 20 minutes. Should piling cease for a period greater than 10 minutes, then the soft start procedure will be repeated. • A Section 61 application will be submitted to the LPA which will outline the planned works, the working hours of the site and measures to mitigate the potential noise and vibration impact by best practical means. This will be inclusive of a percussive piling method statement should the need for percussive piling arise. • Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use. • Haul routes within the site boundary will be well maintained. • Rubber linings in, for example, chutes and dumpers will be used to reduce impact noise. • The site speed limit will be restricted to 10mph.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		• Drop heights of materials will be minimised. • Plant and vehicles will be sequentially started up rather than altogether. • Exhaust silence systems or acoustic engine covers will be used as appropriate. • As far as reasonably practicable, sources of significant noise will be enclosed. • Plant will always be used in accordance with manufacturers instructions. Care will be taken to use site equipment away from noise sensitive areas e.g., in close proximity to residential properties. Where this is not possible due to the nature of the works, advance warning will be given. Where possible, loading and unloading will also be carried out away from sensitive areas. • Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturers specifications. • Screening e.g., noise barriers and blinds will be used as appropriate. • A communication strategy will be in place to ensure residents are kept up to date with Scheme progress and informed of any upcoming noisy work. • Piling activities will be restricted to daytime hours only (07:00 to 19:00). With the mitigation measures outlined above, the residual impact on sensitive receptors (residential) to airborne noise is expected to be of **minor adverse significance.**
Ground borne vibration **(Chapter 14)**	Due to the sensitivity of receptors to ground borne vibration, the significance of the impact, without mitigation measures in place, is considered to be **moderate adverse.**	• If practicable, a hydraulic press piling method will be considered to limit the potential impact of vibration at sensitive receptors. This method (if acceptable ground conditions are present) would apply where piling works are taking place within less than 10 m to the properties listed in **Table 14.22**.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
		• A vibration risk assessment will be carried out in relation to vibratory (movax) and percussive piling, should these piling methods be required in close proximity to the receptors shown in **Table 14.22** With the mitigation measures outlined above, the residual impact on sensitive receptors to ground borne vibration is expected to be of **minor adverse significance.**
(Chapter 15) Temporary loss and/or disturbance to residents and tourism.	The proposed works will result in the loss of amenity space including reduced car parking at the Ship Inn and compound located at Langstone Meadows. In addition, the imposition of a diversion route and closure to vehicular and pedestrian paths during the works. Disruption will be localised and temporary as detailed in Section 15.6.1.	As detailed in Section 15.6.1, the impacts will be short term and other alternative amenities are located close by. Mitigation is proposed including path diversions and appropriate signage. Overall magnitude of change is considered low, and impacts assessed as **Minor Adverse.**
(Chapter 15) Temporary loss and/or disturbance to leisure / recreational interests within the area, including obstruction to footpaths within the footprint of works.	A range of recreational activities take place in the vicinity of the proposed Scheme including long distance footpaths and shared paths that intercept with the proposed works. Disruption will be localised and temporary as detailed in Section 15.6.2.	As detailed in Section 15.6.2, mitigation is proposed including path diversions and appropriate signage. Overall magnitude of change is considered low, and impacts assessed as **Minor Adverse.**

17.3 Summary of Operational Phase Impacts

Table 17.2 below provides an overall summary of the findings of the ES and lists the potential environmental impacts that are predicted to arise during the operational phase of the proposed scheme (i.e., long lasting impacts and mitigation required). The significance of each of the potential impacts is stated, along with any mitigation measures that are recommended to reduce or avoid adverse impacts. The residual impact (i.e., the significance of the potential impact remaining following mitigation) is also stated.

Table 17.2: Summary of Operational Phase potential impact pathways, mitigation measures and residual impacts

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
(Chapter 8) Permanent loss of intertidal habitat under the footprint of new defence structures and due to coastal squeeze	In Frontages 3, 4 and 5, there will be a permanent loss of 172m^2 of intertidal sediment habitat under the footprint of the new structures. This littoral coarse sediment habitat is within the existing vehicular access route used by frontline properties and is therefore already significantly impacted. The area of habitat loss is of low to medium magnitude, but the habitat is of very high value and has a high sensitivity, so the impact is considered to be of **moderate to major adverse significance**.	Opportunities for intertidal habitat creation and/or improvement to offset the footprint losses have been considered as part of the detailed design work but are extremely limited within the proposed Scheme area given the very linear and narrow nature of the Scheme and the heritage requirements and constraints on cladding and finishes. Given that there are no opportunities to offset within the Scheme area, the footprint intertidal habitat losses from the proposed Scheme will be added to the SSD HCRP for compensatory habitat delivery. This will ensure that the habitat losses are offset and there will be a **negligible significance** impact on intertidal habitats overall.
(Chapter 10) Loss of feeding areas for birds through permanent loss of intertidal habitat from scheme footprint and coastal squeeze	Permanent loss of SPA/Ramsar- **Moderate to major adverse significance** Permanent loss of functionally linked land **- negligible** Loss of water column habitat - **negligible**	Opportunities for intertidal habitat creation and/or improvement to offset the footprint losses have been considered as part of the detailed design work but are extremely limited within the proposed Scheme area given the very linear and narrow nature of the Scheme and the Conservation Areas / Listed Building heritage requirements and constraints on cladding and finishes. Given that there are no opportunities to offset within the Scheme area, the footprint intertidal habitat losses from the proposed Scheme will be added to the SSD HCRP. This is described further within the Information for HRA in Appendix C and considered to result in a residual impact of **minor adverse significance** for the permanent loss of SPA/Ramsar habitat.

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
(Chapter 10) Disturbance / displacement of birds during any maintenance and repair work required during the lifetime of the sea defence	All receptors - **Moderate adverse significance**	• Where possible, apart from urgent and emergency repairs, no construction work to be undertaken during the overwintering bird period October to March inclusive. • If urgent or emergency work is proposed within the over-wintering bird period, October to March inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g. a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic barriers, implementation of timing restrictions to cessation of construction activities if other measures are not sufficient to avoid significant disturbance to the over-wintering birds. Details of this watching brief will be within the CEMP/RAMS. • If any works are required in close proximity to the nesting egrets and herons at Langstone Millpond during the nesting period March to August inclusive, an appropriate ornithological watching brief by a suitably qualified and experienced ecologist will be undertaken to assess any impacts. Significant disturbance will be determined by expert opinion and, if required, consultation with relevant bodies, but could be reached by unacceptable daily effects or cumulatively, e.g. a pattern of effect amounting to an adverse impact. Appropriate management measures will be put in place immediately to address it. Such measures could range from the installation of acoustic/visual barriers, implementation of timing restrictions to cessation of construction activities, if other measures are not sufficient to avoid significant disturbance on nesting birds in this colony protective measures will be implemented until nesting attempts have been completed. Details of this watching brief will be within the CEMP/RAMS. As such, it is expected that there will be an impact of **minor adverse significance** for residual impacts from temporary disturbance of the intertidal

<table>
<tr><th>Potential Impact Pathways</th><th>Significance of impact</th><th>Mitigation and Residual Impacts</th></tr>
<tr><td></td><td></td><td>habitat during maintenance activities in the operational phase of the proposed Scheme.</td></tr>
<tr><td>(Chapter 12)
Landscape</td><td>Receptor Sensitivity: Very High
Magnitude of Effect: Negligible

Throughout the ages historic areas have adapted to changing circumstances, and will continue to do so. The presence of the development would have by year 15 softened and almost amalgamated into the surrounding area. The design has been approached with understanding and sensitivity, and by Year 15 would not affect the character or sense of place.</td><td>Mitigation: The hard landscape materials and street furniture will be sympathetic to surrounding architecture, appropriate to their surroundings and historic context, including the Conservation Area and Listed Buildings. Materials, furniture, new planting and seeding will reinforce local character and create a sense of place while increasing the biodiversity of the local landscape. PRoW, cycle routes and long distance walking routes will be re-opened and provide the same access.

The impact would be neutral. This would not be significant.</td></tr>
<tr><td>(Chapter 12)
Visual Impact</td><td><table>
<tr><td><u>View Point 1</u>
Receptor Type:
PRoW users
Receptor Sensitivity:
Very High</td><td>Magnitude of Impact:
None
Significance of Effect:
Neutral</td></tr>
<tr><td><u>View Point 2</u>
Receptor Type:
Northerly Road
Receptor Sensitivity:
Medium</td><td>Magnitude of Impact:
Negligible
Significance of Effect:
Neutral</td></tr>
</table></td><td>Frontage 1A

• Proposed new embankment on the existing footpath.
• Reinstate New footpath on top of the new embankment.
• Opportunities for native planting.
• Potential seating, wayfinding and interpretation opportunities.
• Proposed widening of shared cycleway/pathway from 1.9m to 3m to comply with highway standards.

Frontage 2

• Proposed widening of shared cycleway/pathway from 1.9m to 3m to comply with highway standards.
• Ecological measures such as bat boxes to be included along the route.
• Potential to enhance landscape, green space, footpaths, and benches.
• Opportunity for wayfinding, interpretation boards and benches.</td></tr>
</table>

Potential Impact Pathways	Significance of impact		Mitigation and Residual Impacts
	<u>View Point 3</u> Receptor Type: PRoW users, Recreational users of Chichester Harbour Receptor Sensitivity: **Very High**	Magnitude of Impact: **Minor** Significance of Effect: **Negligible Adverse**	• Reinstatement areas along improved shared cycleway/pathway to include species rich wildflower seeding, hedgerow and coastal meadow. **Frontage 3** • Proposed retaining wall and hand railings along the steps and ramp. • New retaining wall to be brick cladded. • New ramp, steps and handrails to be consistent with the overall landscape strategy. • Potential for interpretation boards, seating, wayfinding. • New planters to the car park. **Frontage 4** • Proposed guardrails with chain access for kayaks and boats. • Resurface existing pathway to match proposed pathway. • Historic Langstone Wadeway - opportunity for interpretation panel on land near here to explain history. **Frontage 5** • Integrate seating and pathway resurfacing. • New earth embankment and reinstatement areas grass seeded to agricultural use. New tree planting and native hedgerow.
	<u>View Point 4</u> Receptor Type: Recreational users of Chichester Harbour Receptor Sensitivity: **Very High**	Magnitude of Impact: **Minor** Significance of Effect: **Slight Adverse**	
	<u>View Point 5</u> Receptor Type: Shipwrights Way – Long distance walking route Receptor Sensitivity: **Very High**	Magnitude of Impact: **Negligible** Significance of Effect: **Neutral**	
	<u>View Point 6</u> Receptor Type: PRoW users Receptor Sensitivity: **High**	Magnitude of Impact: **Negligible** Significance of Effect: **Slight Adverse**	

Potential Impact Pathways	Significance of impact		Mitigation and Residual Impacts
	View Point 7 Receptor Type: Recreational users of Chichester Harbour Receptor Sensitivity: **Very High**	Magnitude of Impact: **Minor** Significance of Effect: **Slight Adverse**	
	View Point 8 Receptor Type: PRoW users Receptor Sensitivity: **High**	Magnitude of Impact: **Minor** Significance of Effect: **Slight Adverse**	
	View Point 9 Receptor Type: Recreational users of Chichester Harbour Receptor Sensitivity: **Very High**	Magnitude of Impact: **Minor** Significance of Effect: **Slight Adverse**	
	View Point 10 Receptor Type: Residential – Langstone High Street Receptor Sensitivity: **Very High**	Magnitude of Impact: **Negligible** Significance of Effect: **Neutral**	

Potential Impact Pathways	Significance of impact		Mitigation and Residual Impacts
	View Point 11 Receptor Type: Wayfarer's Way Receptor Sensitivity: **Very High**	Magnitude of Impact: **Minor** Significance of Effect: **Slight Adverse**	
	View Point 12 Receptor Type: PRoW users Receptor Sensitivity: **Very High**	Magnitude of Impact: **Minor** Significance of Effect: **Neutral**	
	View Point 13 Receptor Type: PRoW users, users of Warblington Cemetery and St Thomas á Beckett Church Receptor Sensitivity: **Very High**	Magnitude of Impact: **None** Significance of Effect: **Neutral**	
	View Point 14 Receptor Type: Hayling Billy Line/Shipwrights Way Receptor Sensitivity: **High**	Magnitude of Impact: **Minor** Significance of Effect: **Neutral**	
(Chapter 13) Changes in accessibility (operation)	The scheme will improve and safeguard footpaths and cycleway by providing improved flood protection and access between Langstone and Hayling Island by protecting the highway. Overall,		N/A

Potential Impact Pathways	Significance of impact	Mitigation and Residual Impacts
	considering the high sensitivity of users the impacts of the proposed scheme from changes in access during operation have been assessed as **major/moderate beneficial impact**.	
(Chapter 15) Impacts on recreation and amenity through the design of the scheme and associated landscaping / access improvements.	The proposed Scheme will provide improvements to amenity and recreation with the widening of the Billy Line (Frontage 1A and 2) and footpath (Frontage 4). In addition to improved access to the foreshore with new steps and ramp.	As detailed in Section 15.7.1 the proposed Scheme will provide benefits to recreation and amenity through improved access, benches, and interpretation boards to improve enjoyment of the public open space and a wider appreciation of the area. Overall impacts assessed as **Minor Beneficial.**
(Chapter 15) Impacts to residents and the local economy through the reduced flood risk to residential property and businesses.	The proposed Scheme will provide protection to properties and critical roads from a flooding now and in 100 years' time.	As detailed in Section 15.7.2 the proposed Scheme will provide significant benefits in relation to physical health through the reduction of injuries during flooding events but also improved psychological health of people at risk of flooding. Overall impacts assessed as **Major/Moderate Beneficial.**

17.4 Recommendations

The mitigation measures identified in **Table 17.1 and 17.2** to avoid significant impacts during the construction and operation of the proposed scheme will be used to inform the final Construction Environment Management Plan (CEMP), which will be issued to the contractors and adopted for the construction of the proposed scheme. The final CEMP will also clarify the responsibilities and requirements all parties involved in construction will include in the Works Information provided to the contractors to ensure that they are contractually bound to abide by those responsibilities and requirements.

An Outline CEMP has also been submitted as part of the proposed scheme application. Furthermore, at the Scoping stage, it was agreed that a Contaminated Land Method Statement and Materials Management Plan would be prepared to include mitigation measures which ensure no significant effects on land quality and hydrology, or water and sediment quality. It is proposed these are conditioned.