

Environmental Action Plan

Project name	Littlehampton Arun East Bank Tidal Walls Flood Defence Scheme
Project 1B1S reference	Original Reference: IMSO001021
Region and Area	South East
Date	~~February 2015~~ 15 September 2017
Version number	~~12~~ 14
Author	~~Bob Antonini~~ Revised by K Panayotou (GHD)

Revision history

Revision date	Summary of changes	Author	Version number
May 2013	First issue, Final	A. Honeysett	1
Nov 2013 onwards	First live version	B. Antonini	3 onwards
Sept 2017	Second Issue, Draft	K Panayotou	13

Approvals

Name	Signature	Title	Date	Version
Fiona Brown	Fiona Brown	Director, Halcrow Group (Ch2mhill)	29-5-13	1
Imran Bukhari	Imran Bukhari	Project Director Europe, Halcrow Group (Ch2mhill)	29-5-13	1
Richard Woodward		NEAS		3 to 12
Jasmine Ghorashi		Operations Director, GHD	15-09-17	13
Tania White	Not yet given	NEAS Project Officer		13

Distribution

Name	Title	Date	Version
Cian Cronin	Senior Planner (Strategic Development), Arun District Council	30-5-13	1

Littlehampton Arun East Bank Tidal Walls

Richard Woodward	Senior Environmental Project Manager, National Environmental Assessment Services, Environmental Agency	30-5-13	1
Peter Borsberry	NCMPS Project Manager, Environment Agency	30-5-13	1
Tania White	NEAS Project Manager, Environment Agency		13

Purpose

This Environmental Action Plan (EAP) summarises the actions required to implement the environmental mitigation delivering 25 meters of flood defence works that were not completed during Littlehampton Arun East Bank Tidal Walls scheme in 2013. This version of the document derives from earlier mitigation specified for the substantive scheme as agreed as part of the Environmental Statement (ES) - following Environment Agency Operational Instructions. It sets out specific objectives and targets defining the way we aim to deliver the final works to complete the remaining 20m of Arun Flood Defence during the implementation phase of the project (detailed design, construction and post-construction phases). It also details roles and responsibilities of those involved in the proposal, and relates to all **temporary** and **permanent** works.

These actions form part of the contract documentation and must be adhered to.

Roles

It is the contractor's responsibility for ensuring the EAP commitments are delivered.

The National Environmental Assessment Service (NEAS) are responsible for agreeing any changes to the EAP and for signing off, or agreeing to the signing off of, the actions.

The contractor and Project Manager are responsible for advising NEAS on any changes to method statements or the planned construction work as these may result in changes to the EAP or additional consultation with statutory consultees. NEAS will assess the significance of these changes and determine the appropriate course of action.

Site practices shall conform to the EAP. Any additional environmental management actions arising from subsequent consultations must be agreed by the project team. Project designs shall include suitable provision to mitigate negative environmental impacts during temporary works, permanent operation and maintenance.

The personnel involved in administering the EAP are set out below. The named individuals are subject to change and confirmation.

- Environment Agency Project Manager (EAPM): **Peter Borsberry**
- Environment Agency NEAS Senior Environmental Project Manager (SEPM) (NEAS Officer): Tania White
- Supervisor's Consultant Design Manager: **-Matthew East**
- Representatives on site (Supervisor): **Richard/ Barry?**
- Engineering Construction Contract Project Manager (ECC PM): **Deborah Nutt**
- Contractor's Project Manager on site: **Barry Holt**
- Environmental Clerk of Works (ECW): tbc **CH2M**
- Landscape Consultant to Supervisor : **N/A**

The contractor is also responsible for implementing good environmental practice on site, in line with their own EMS. The ECW Consultant will monitor adherence to the EMS. Typical issues include:

- Any working hour restrictions
- Vibropiling constraints and adherence to soft start and temperature constraints
- Stoppage to allow archaeological /ecological call out, and mitigation if required

- Monitoring of flood warnings
- Dust suppression measures
- Traffic management
- Site waste management
- Materials management
- Vehicle maintenance and management
- Pollution prevention and control (including storage, refuelling and incident response)
- Response procedures e.g. services strike, contaminated land
- Hazardous materials handling and storage
- Noise management
- Securing and delineation of working areas including signage

Environmental Audits

The appended template should be used when undertaking any site audits during construction. Such audits can be undertaken by the NEAS Officer or delegated by NEAS to the ECW or other individuals. Technical assistance can be obtained from functional staff as appropriate. Site audits can potentially highlight good practice and can be separate to the review of EAP actions as undertaken in progress meetings. They do not replace the regular checks undertaken by the ECW during the works; no set template has been provided for this.

Environmental Incident Reporting system

All environmental incidents must be reported to the Environment Agency Incident Hotline **0800 80 70 60** as per the [Environmental Incident Reporting Poster](#) at the earliest opportunity and then to the ECC Project Manager, Site Supervisor, EAPM and Environment Agency NEAS Officer. In addition, near misses must be reported via the hotline where there was/is the potential for a significant impact and where lessons can be learned.

Initial reports for such incidents and near misses must be followed by a written report using the contractor's in-house forms. This must include the following information (project/location, date, contractor, NIRS reference number, details of what happened, cause of incident, lessons learned). This final and comprehensive investigation report is to be provided by the Contractor to the ECC Project Manager, EAPM and Safety, Health and Environment Manager within 14 days.

Summary of scope of works

Short-duration and small scale works are proposed to be carried out to the east bank of the River Arun to complete a substantive project to manage the risk of tidal flooding to the town of Littlehampton in West Sussex. The original scheme extended along the east bank of the River Arun for approximately 2.5km north from the harbour mouth at Littlehampton (NGR TQ 02827 to 01315). The works will involve a number of improvement works being that were carried out to the existing flood defences including the construction of new sheet piled walls; raising of existing earth embankments and setting back of previous embankments to create saltmarsh/mudflat habitat. A summary of the works in each area is provided below:

The proposed works closes a small gap in the Reach 4 flood defence. The main portion of the Reach 4 tidal wall was delivered in 2013 by the Environment Agency, at the east bank of the River Arun for a length of approximately 2.5km from the harbour mouth upstream and is consistent with a 1 in 300 year standard of flood protection. One 20m section of the tidal wall flood defence, located along the river frontage of 47 River Road, was not completed as part of the previous works as it was to be forthcoming within another scheme. This unprotected section of the riverside remains as a flood risk, and reduces the effectiveness of the flood defence system built to date.

The proposed works comprise installation of a raised new vertical sheet piled flood defence wall, approximately 26 meters in length, to be installed riverward of the existing timber retaining structure, working from a jackup barge. The piling, topped with a wall will meet the alignment, height and design of the adjacent recently constructed tidal defence walls to the north and south of the section. Fill will be placed landward of the piling wall to infill the gap between the existing timber retaining structure and the new sheet pile. Concrete capping beams will be put into place and connected to existing beams to form a closed connection. The duration of the Project will be approximately 8 weeks and is planned to complete between late October and April, in accordance with seasonal requirements.

Reach 1FD (Flood Defence works) A new sheet piled vertical flood defence wall installed directly riverward of the existing sheet piled wall and capped with a decorative precast concrete coping. The wall will be approximately 300m long and 1.3m higher than the existing defence. The wall will generally be 0.5m higher than the new river promenade level and will comprise a new visually transparent railing for health and safety. The level difference between existing and proposed will be transitioned using a combination of pedestrian and seating steps, planting slopes and ramps. These elements will be arranged in a simple repetition along the whole length of Reach 1 and 2. A new footpath adjacent to Arun Parade will be provided at the lower level.

Reach 1PR (Public Realm works) Extensive public realm works landward side will comprise high quality in-situ decorative concrete paving, planting complementing the coastal landscape character, bespoke timber seating, low terraced corten steel (a ready rusted steel used in architectural applications) walls to the planting and a high quality co-ordinated range of replacement street furniture such as litter bins, finger post signs and lighting. Accessibility features including steps and ramps will be located on desire lines and access points to adjacent land uses. Replacement access to the river will be provided.

Reach 2FD (Flood Defence works) A new sheet piled vertical flood defence wall installed directly riverward of the existing sloping concrete revetment and capped with a decorative precast concrete coping. The wall will be approximately 150m long and 1.0m higher than the existing defence and landside works will comprise extensive public realm works to match the proposal for Reach 1. The wall will generally be 0.2m higher than the river promenade level and will comprise a new visually transparent railing for health and safety. The position of the piles will create a wider area between the river and Pier Road creating space for seating and steps up to the raise promenade.

Reach 2PR (Public Realm works) The extensive public realm enhancement works described for Reach 1 above will be extended into Reach 2. Replacement access to the pontoons will be

provided. The fish kiosk will be moved temporarily during construction and the promenade widened in this locality to provide more waiting and circulation space.

Reach 3 (private frontage) A raised new vertical sheet piled flood defence wall installed riverward of the existing wall and capped with concrete. The wall will be approximately 100m long and 1.0m higher than the existing wall. Replacement access to the pontoons will be provided and private gardens will be reinstated.

Reach 4PQ (Pharos Quay) In the southern end of this frontage (approximately 40m) a retaining wall will be installed to a height of approximately 1.0m above footpath level. This retaining wall will take a landward alignment and will be installed alongside the footpath. Vehicular and pedestrian access to the private quay (Pharos Quay) will be provided. Works to the northern end of this frontage (adjoining to the footbridge) comprise a new vertical sheet piled wall with concrete cap to a level approximately 0.9m higher than the existing wall. This reach will be landscaped to reflect the Conservation Area status and will included a raised area to allow people to gain a view of the river with an area of low level ground cover planting between the footpath and raised area.

Reach 5 The river facing walls of the Arun View pub will be flood proofed using concrete and flood glass units. The walls alongside the patios will be raised using flood glass units and access to the pontoons will be reinstated. Along the wharves, a 300m length (approximately) of the existing flood defences will be raised by construction of a 0.4m high reinforced concrete wall. To the southern/eastern end of this part of the reach the existing concrete cap will be raised, but the majority of this reach works will comprise a retaining wall constructed in-situ on an alignment immediately landward of the existing wall.

Reach 6 The existing flood defence level will be raised by 0.8m through installation of approximately 600m length of steel sheet piled wall driven through the existing embankment, aligned along the riverward side of the existing embankment crest. In the northern 200m length of this reach, the existing embankments will be raised by 1.0m with imported fill. The scour protection at the top of the existing embankment will be repaired using open stone asphalt (which will be of a similar construction detail to the existing protection). The embankments would be reseeded as required with a species rich seed mix.

Reach 6R (Realignment)

The objective in this area is to promote a salt marsh and mudflat with scour protection at the toe of the A259 highway embankment. The salt marsh and mudflat will be created by removing part of the existing flood embankment and re-using approximately 50% of the material to raise existing ground levels behind. The scour protection will be provided by grassing the highway embankment slopes to the 120 yr design life elevation of 5.45m Above Ordnance Datum.

A working platform will be created along the toe of the highway embankment to allow future maintenance of the scour protection and highway embankment. The elevation of this working platform will be approximately 3.85m Above Ordnance Datum (which will be above current ground levels) so that it is accessible during the design life of the scheme (100 years). The platform will be constructed from the remaining 50% of the flood bund material. A 50m section of new earth flood embankment will be constructed using imported fill to join the realigned flood defence with the existing defence.

The A259 highways embankment will be protected by the addition of earthworks to form the working platform and the scour protection. Native trees and shrubs will be planted on the road embankment to replace the planting lost. A coastal grass seed mix would be planted on the riverward side of the embankment and a species rich mix on the landward side.

Relevant contact details

Project Sponsor	Dave Robinson – 01903 832663
Project Executive (EA)	Peter Borsberry - +442030257272
Project Manager (EA)	Oliver Sykes – +44 203 025 7201
NEAS (EA)	Tania White – <u>+44 208 47 49828</u>
Consultant PM	Debroah Nutt – +44(0)7810 850491
Contractor	Barry Holt (TVO/Mackley's) – 01273 492212
Site Supervisor	tbc
ECW	tbc
Landscape Consultant	For the substantive scheme that informed design of this scheme- Kirsty Barker

Littlehampton Arun East Bank Tidal Walls

Environmental Action Plan

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
Pre-construction							
General							
A1	To ensure that the works are undertaken in line with the EAP requirements with minimum environmental impact	Appoint an Environmental Clerk of Works (ECW) to supervise the duration of the works.	Reach 4	EA PM			October 2017
A1a	To ensure that the works are undertaken in line with the EAP requirements with minimum environmental impact	~~Appoint a Landscape Clerk of Works (LCW) to supervise works during the public realm works Reaches 1 and 2 and other works in Reaches 4 and 6~~ Appoint an ECW to supervise works and also an archaeological supervisor (on call) Reach 4	~~All reaches~~ Reach 4	EA PM (ECW) Contractor (Archaeological)	~~Nil~~ Refer planning statement regarding on call procedure		~~LDA appointed as sub-consultant~~
A2	To comply with waste management Licensing Regulations (WMLR)	~~To produce and comply with a SWMP and CL:AIRE code of practice declaration or apply for relevant waste management exemption~~	Reach 4	Contractor		~~Qualified person appointed by Contractor.~~	August 2014 ~~CL:AIRE declaration not considered applicable as excavated material will not be re-used for fill~~
A3	To obtain licence from MMO	~~Licence obtained~~ variation request in progress	Reach 4	GHD under contract but managed by NEAS	Identify conditions of planning and MMO license	Comply with Marine Licence conditions (Contractor)	02092018 following extension. Copy to be kept in site office
A4	Location of material/storage areas	Confirm final locations sufficiently in advance of works to enable any necessary environmental assessment/mitigation e.g. ecological, archaeological to be completed prior to construction Any alternative areas will require appropriate ecological assessment particularly for proximity to trees and archaeological assessment	~~All reaches~~ Reach 4	Contractor	ES	Ongoing Storage proposed at Tarmac wharf and within 47 River Road. Areas to be surveyed and confirmed applicable prior to	

Littlehampton Arun East Bank Tidal Walls

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						commencement of work	
A5	To ensure works in sensitive areas are carried out following good working practices and reducing environmental impacts	<i>Method statements to be produced to reduce environmental impacts on sensitive areas within the working area including archaeological WSI, ecological method statements for protected species, piling and fish impacts, traffic management and logistics plan, landscape and habitat management plan, pollution response plan, piling risk assessment/sediment management plan and site waste management plan</i>	All Reaches	Consultant/Contractor		Ongoing for: WSI (plan complete but some actions ongoing throughout scheme)	Complete for: Protected species Piling and fish impacts Piling risk and sediment plan SWMP (Reaches 1 and 2) Traffic Management Plan Pollution response Piling risk assessment Landscape and Habitat Management SWMP (Reaches 3 – 6)
Human Beings							
A6	To minimise disturbance to the local community and users of the works area access route.	<i>Notify all affected consultees of planned commencement of works and their expected duration:</i> - All Statutory consultees - Landowners - Local residents and Businesses	All reaches	Contractor	ES		Complete for all Reaches
Flora and Fauna							
A7	Minimise disturbance to breeding birds	<i>Ensure all vegetation e.g. scrub and tall grassland is removed outside the bird breeding season (March – August)</i> <i>If vegetation needs to be removed during the active bird breeding season, all areas to be cleared need to be checked by an ecologist immediately prior to</i>	Reaches 4 PQ, 6 & 6R	Contractor	ES		Complete for Reaches 4PQ, 6 and 6R

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
		removal (ecologist will remain on call throughout duration of works)					
A8	To protect reptiles and their habitats	Reptile translocation programme to be undertaken prior to works commencing within Reach 6, including R6 Realignment Reptile Method statement (MS) to be followed	Reaches 6 & 6R	Consultant (reptile translocation) Contractor (habitat clearance under ecological supervision)	ES Reptile Method Statement		Translocation and destructive search complete for Reaches 6
A9	Minimise disturbance to bats and trees	Ensure all trees to be removed which have potential for bats are checked by a specialist bat worker in Autumn 2013. If no evidence, trees can be felled in January 2014 under ecological watching brief. Follow recommended mitigation works within bat technical note e.g. section felling of high risk trees and endoscope inspections by specialist ecologist where required If any signs of bats are found, works need to stop and Natural England consulted	Reach 6R	Contractor/ECW (bat specialist)	ES Phase 1 Refresher & Bat potential assessment Technical Note		Surveys and supervised felling complete for Reach 6. Complete
A10	To minimise disturbance to retained trees and vegetation within the works area	Tree root protection zones to be marked out and fenced in accordance with British Standards. If avoidance is not possible a protective layer is to be used to prevent soil compaction	Reaches 4PQ, 5, 6 & 6R	Contractor	Landscape and Environmental Masterplans Tree Survey Plans		Complete in all Reaches.
A11	To prevent the spread of Ash dieback <i>Chalara fraxinea</i>	Survey all areas of trees and scrub that are to be removed as part of the works for Ash dieback (summer 2013 and immediately prior to felling) If recorded or an ash tree is suspected of having the disease, it must be reported to the relevant government body and all guidelines followed	Reaches 6 & 6R	Environmental clerk of works (ECW)/Ecologist	Forestry commission website-Chalara dieback of ash (<i>Chalara fraxinea</i>): http://www.forestry.gov.uk Bio-security guidelines http://www.forestry.gov.uk/website/forestry.nsf/byunique/infd-8zlmq4	No ash trees to be impacted and no signs of die-back observed in retained trees. To be monitored throughout scheme	
A12	Prevent the spread of Japanese knotweed	Carry out a spraying programme for the containment of Japanese knotweed prior to works commencing	Reach 5	Contractor	Japanese knotweed method statement Japanese knotweed code of practice (EA)		Complete. All works adjacent to JK patches finished. ECW to monitor periodically.

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
A13	~~To check the works area for the presence of badgers~~	~~A pre-construction survey to be carried out a minimum of 3 months prior to works commencing.~~	~~Reach 6 & 6R~~	~~Consultant~~	~~ES~~	~~To be carried out late winter 2013/14~~	~~Complete, no signs recorded.~~
Air and Noise							
A14	To obtain consent under Section 61 of the Control of Pollution Act 1974	Apply for a consent under Section 61 from Environmental Health department of Arun District Council	All reaches Reach 4	GHD (S61 Application) Contractor	ES	Confirm with EHO that previous S61 is acceptable or if revision is required	Complete 25-10-2013 for Reaches 1 and 2; Received for Reach 3 on the 23-09-2014 Applied for in Reach 4 but written confirmation received from EHO that working to current methodology will be acceptable whilst the application is processed.
A15	To minimise noise impacts on landowner, residents and users of the reaches.	Site operations to be designed to minimise noise emissions wherever possible. Design measures to include the following mitigation measures: - Local residents must be kept fully informed about timing and the nature of any noisy works, including compound locations and any traffic management - Works to be programmed and phased in order to restrict impacts in any one area to the minimum time - The contractor must comply with the Considerate Contractors Scheme and a representative should be on site to answer any queries - Temporary hoarding around the site to be in place, particularly in Reaches 1 and 2 where works are close to residential and business by agreement - Works to be undertaken during normal working hours of 08:00 – 18:00 Monday to Friday and 08:00 – 13:00 on Saturday	Reaches 1FD, 1PR, 2FD, 2PR, 3, 4, 4PQ & 5	Contractor	ES MMO Application & consent under section 61 of Part III of The control of Pollution Act 1974		Complete for Reaches 1 and 2. All piling works in Reach 4 complete and no noisy operations being carried out in Reach 5. Piling complete in Reach 3b

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
		- Over water works to be undertaken during hours of 09:00 – 17:00 Monday to Friday and 09:00 to 13:00 on Saturday (MMO) - No working on Sundays or bank holidays except in exceptional circumstances and with prior arrangement with Arun District Council					
A16	To minimise vibration impacts on landowner, residents and users of the reaches.	Site operations to be designed to minimise vibration emissions above a level of 6mm/s PPV where this is technically feasible and where such a level will not affect adjoining structures. Resonance-free vibrators will be utilised for the driving of the piles Percussion hammers may be utilised in unavoidable situations where an obstruction has occurred and caused piling utilising the vibration hammer to cease. Use of percussive hammer will be subject to approval of site manager, GHD designers, and building vibration consultant. A soft start procedure will be incorporated and piling only undertaken what water temperatures are consistent with the limits stated in the MMO. Pre – construction condition surveys to be carried out to ascertain stability of the structure (both building and existing flood protection wall and its potential resistance to vibration	Reaches ~~1FD, 2FD, 3, 4 & 4PQ~~	EA (to carry out condition surveys) Contractor (to design operations to minimise vibration) Vibration consultant on call for duration of works	Littlehampton R4 Design Basis Report – Buildability Statement		~~Complete for Reaches 1 and 2~~ ~~Complete in Reaches 3 and 4 as piling works are finished.~~
Water							

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
A17	To minimise any potential impacts on water quality during construction	~~A piling risk assessment/sediment management plan is to be produced to identify specific risks to the environment including sediment re-suspension~~	~~All Reaches~~ Reach 4	~~Contractor~~	~~NEAS and Area Environment Management Team to review plan content~~		Complete
		A silt curtain shall be installed around the perimeter of the works and barge to capture / contain any sediments mobilised due to piling or other foreign containments that may be released due to an incident.	All Reaches Reach 4	Contractor		Method statement agreed. First timber pile to be removed under monitoring to decide whether mitigation measures required.	Complete
Traffic and Transport							
A18	To minimise disruption to local traffic	Agree details of a traffic management plan with West Sussex County Council Highways Department There is no TMO. The project will require short duration deliveries which will be managed so that no road closure are required and deliveries are made during normal site operating hours.	All Reaches Reach 4	Contractor	Design basis report – buildability statement		Complete October 2013 September 2017
Geology and Hydrogeology							
A19	To minimise disturbance of asbestos within buildings to be demolished	~~A refurbishment and demolition asbestos survey of all existing buildings and structures that require demolition to be undertaken including shelter Reach 1, bait hut in Reach 2 revetment and the bitumen in Reach 6 scour blocks.~~	~~Reaches 1PR, 2PR, & 6~~	~~Consultant~~	~~ES, Landscape and Environmental Masterplans~~	~~Only the shelter in Reach 1 found to contain asbestos. This has been demolished by specialist contractors~~	~~Complete, report produced by VSL~~
Landscape and Visual							
A20	To ensure that the works are undertaken in accordance with a landscape and habitat management plan	Prepare a landscape and habitat management plan	All Reaches	Consultant	ES		Complete, report produced March 2014

Littlehampton Arun East Bank Tidal Walls

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Archaeology and Cultural Heritage							
A21	Gain approval for archaeological method statements	Prior to works commencing, approval of archaeological methods statement by the county archaeologist and EA archaeologist is required Archaeological consultant to remain on call for duration of works, if any items of interest are noted during the works, the archaeologist shall be called to site. Works will cease until the archaeologist has confirmed to resume	Reach 4	Contractor and ECW	ES-WSI	~~Informally agreed, awaiting formal approval.~~ Archaeology South East instructed by consultant.	Complete October 2013-ECW or Site supervisor at completion of works
A22	~~To record historic iron railings around Ferry Wharf~~	~~Photographic recording to be undertaken to create an archive of the features.~~ ~~Archaeological sub contractor to undertake recording to approved methods statement~~	Reach 4	Contractor	ES, Archaeological Written Scheme of Investigation (WSI)		Complete Dec 2013
A23	~~To record historic flood embankments and wooden features~~	~~Photographic/topographic archaeological recording) to be undertaken as agreed with WSCC/ADC archaeological advisor~~ ~~Archaeological sub contractor to undertake recording to approved methods statement~~	Reach 6R	Contractor	ES, Archaeological WSI		Complete Dec 2013

Littlehampton Arun East Bank Tidal Walls

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During construction							
General							
B1	To ensure that works are undertaken in line with the requirements of the EAP with minimum environmental impact	All construction staff to attend environmental toolbox talks on the mitigation proposed (e.g. by archaeologist (on call) Include ecological actions such as soft-start percussion piling after water temperature monitoring)	Reach 4	Contractor/ECW			Complete for 13/11/2013 On commencement- Nov 2017
B2	To minimise disturbance to human beings, and flora and fauna in the vicinity of works and access routes	Delimit works area and access routes: - Clearly mark the boundaries of the works area before the start of works - Clearly mark the boundaries of the access routes prior to mobilisation ~~Types of fencing to be agreed with the contractor's representative~~ All works (apart from access to the site) are to be contained within the works boundaries as identified on the project drawings, and the site boundary of the Tarmac Wharf. Pedestrian access along nearby footpaths will be momentarily disrupted due to vehicle access for deliveries to the site, pedestrian movements during such periods will be controlled by site staff.	Reach 4	Contractor		Ongoing	
Human Beings							
B3	To keep the local community and consultees informed of progress.	Site contact to be provided on signs outside working area Dedicated site public liaison officer to be available	Reach 4	Contractor		Ongoing	Complete
B4	To minimise general disturbance to the local community and visitors to the area	Keep working area tidy and compact Dust suppression to be carried out e.g. during long periods of dry weather Only essential construction plant to access works areas, all other non-construction traffic to park within the main compound area in Reach 5 4.	~~All Reaches~~ Reach 4	Contractor		Ongoing	Complete

Littlehampton Arun East Bank Tidal Walls

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		Provide appropriate signage <i>Programming of works in R1 and R2 to avoid impacts on main tourist season as far as possible. Maintain provision for deliveries to businesses.</i>					
B5	To minimise disturbance to human beings in the vicinity of the works and access routes	Maintain working area/access route fencing for duration of the works Maintain pedestrian access to Reaches 1 and 2 and across footbridge in Reach 4	All reaches	Contractor		Ongoing	
B6	Minimise ground contamination risk to site workers, visitors and nearby residents	Any contaminants found during site investigations to be mitigated for within the health and safety plan, by provision of standard site hygiene measures e.g. no eating, drinking or smoking, washing facilities and PPE provided if required) and the management of soil to prevent dust generation Works must not continue beyond March 2018	Reach 4	Contractor		Ongoing	
B7	To minimise disturbance of asbestos within buildings/structures to be demolished	<i>If asbestos is recorded within buildings to be demolished a sequence of removal of asbestos-containing materials will be carried out by a competent contractor, if required</i>	Reaches 1PR, 2PR & 6	Contractor	Asbestos Survey Report (TBC)	Roof of the shelter in Reach 1 demolished by specialist contractor.	Complete
B8	To minimise impact on residential gardens	Reinstate gardens as required, to at least their former condition	3b	Contractor		Ongoing	
Flora and Fauna							
B9	Minimise disturbance to existing habitat	~~Undertake site clearance along the access routes and working area in accordance with the site clearance specification under supervision of suitably qualified ecologist.~~ Embankment works to work from the crest and/or a landward direction. Pile driving works from jackup barge Securely fence the works area and access route Provide appropriate signage ~~Use existing haul routes where possible (as specified in the traffic management plan — see also 'Traffic and Transport')~~	All reaches Reach 4	Contractor	ES Design Basis Report – Buildability Statement Traffic Management and Logistics Plan	~~Site clearance works finished on all reaches.~~ Fencing, signage and haul road actions ongoing	

Littlehampton Arun East Bank Tidal Walls

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B10	~~Minimise disturbance to inter-tidal habitats~~	~~All works to be carried out using sensitive working practices as outlined within EA guidance notes e.g. PPG5.~~ ~~Protective matting to be placed on saltmarsh habitats prior to tracking vehicles across it, if required.~~	Reach 6 & 6R	Contractor		Ongoing	
B11	Potential presence of protected species during construction	If protected species are found cease works in that area and consult an ecologist/ECW ~~Any excavations left overnight should be left with a ramp to enable any animal to escape.~~ Consult Natural England to agree mitigation and working methods where required	All reaches Reach 4	Contractor	~~Protected Species Method Statements~~ Preliminary Ecology Investigation Report	Ongoing, to be monitored by ECW	
B12	~~To minimise potential disturbance to breeding birds~~	Maintain cut vegetation as short sward until end of construction period	Reaches 6 & 6R	Contractor			Complete, all nesting habitat has been removed
B13	Disturbance to bats	If emergency works are to be carried out outside of normal working hours, ensure any lighting that is used is angled away from the river corridor	Reaches 6 & 6R Reach 4	Contractor	Although this item relates to Reaches 6 and 6R only, best practice for working around waterways		Completion
B14	To minimise disturbance to reptiles	Any further clearance of vegetation/topsoil stripping should be carried out under supervision of a suitably qualified ecologist Maintain cut vegetation as short sward until end of construction period Suitable vegetation removed as part of the clearance works e.g. small logs, wood chippings (small amounts), grass cuttings (small amounts) is to be used to create hibernacula and carry out enhancement works within the reptile receptor site.	Reaches 6 & 6R	Contractor			Complete
B15	To minimise impacts to existing aquatic invertebrate communities within the drainage ditch	Any works carried out adjacent to the drainage ditch to follow guidance provided by the Environment Agency e.g. PPG 5	Reach 6	Contractor	PPG 5		Complete: All works adjacent to drainage ditch finished

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
B16	To minimise the impact of piling on fish/eels and elvers	~~Piling and impact to fish method statement to be followed.~~ ~~It was agreed with EA Fisheries team that percussion piling could continue beyond dusk till the Section 61 curfew of 6pm between November – March. If works extend into April, river water temperatures to be monitored.~~ ~~Driving of the piles shall utilise a resonance-free vibrator hammer. Piling works shall be restricted to hours identified within the MMO licence.~~ ~~If the temperature exceeds 10C additional mitigation measures will be required including working at low tide (Reach 4) and installing cushions/baffles around the piles prior to works commencing.~~	Reach ~~1FD, 2FD, 3, 4~~	Contractor / ECW	~~ES~~ ~~Piling and Impacts to Fish Method Statement~~ ~~EA fisheries team (if further advice is needed)~~ ~~MMO Licence~~ ~~WFD~~	~~Method Statement written and approved. Contractor to follow.~~ ~~Agreement with EA Fisheries team 16th January 2014~~ ~~MMO licence amendment applied for 16th January 2014~~ ~~Soft start piling employed w/c 5th May 2014 following water temperature exceeding 10C. This action will be relevant to upcoming piling in reach 3.~~	~~Complete November 2014, all piling works finished~~
B17	To protect trees and hedgerows retained within the working area	~~No storage, excavations and/or compaction impacts within tree protection zones~~ ~~Tree protection to be carried out in accordance with BS5837:2012 'Trees in relation to design, demolition & construction – recommendations'~~	Reaches ~~4PQ, 5, 6 & 6R~~	Contractor	~~Landscape and Environmental Masterplans~~ ~~Tree Survey Plans~~	~~Ongoing, ECW to monitor~~ ~~Installed throughout most of Reach 6 in May 2014. Tree protection fencing removed Sept 2014 on completion of construction works.~~ ~~Tree protection fencing installed around solitary remaining tree in R4.~~	~~Complete November 2014~~
B18	To prevent the spread of invasive plant species e.g. Japanese knotweed	~~Where required continued treatment of Japanese knotweed to be carried out~~ ~~Invasive plant species method statement to be followed~~	Reach ~~6~~	Contractor	~~Invasive Plant Species method statement~~ ~~Japanese knotweed code of practice (EA)~~		~~Complete. All works adjacent to JK patches finished. ECW to monitor periodically.~~

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
Air and Noise							
B19	To minimise disturbance to the local community	Keep to agreed working hours Adopt best practicable means to reduce noise impacts as defined in the Control of Pollution Act 1974, including the employment of good site practice to minimise noise and vibration impacts from the works, (see also 'Human Beings'). All plant and equipment to be properly maintained and operated in accordance with the manufacturer's recommendations with any noise control measures in place. Use ~~shielded percussion hammers where available~~ resonance free vibrators Use shielded percussion hammers where available in the event an obstruction to piling occurs. Approval to proceed to be provided by site manager, GHD design, and vibration consultant. Equipment is to be shut down when not in use for a period longer than 5 minutes Deliveries will only arrive during daytime hours, preferably during the working hours of the site. ~~Regular noise monitoring to be undertaken on a four weekly basis to ensure compliance with levels agreed with ADC~~ Vibration monitoring to be undertaken to a schedule agreed between Arun District Council Environmental Health Dept and the contractor and will be undertaken near the foundations of sensitive buildings to ensure that adequate levels of control are being employed.	~~All Reaches~~ Reach 4	Contractor	~~ES~~ Planning Statement	Ongoing, ECW to monitor as scheme progresses	
Water							
B20	To minimise potential impacts of sediments on water quality during construction operations	Implement agreed sediment management plan, including minimisation of silt release, monitoring of any silt plume & appropriate response plan Ensure any temporarily excavated material (to facilitate piling) is stored above high water level	All Reaches	Contractor	~~Piling Risk Assessment/~~ ~~Sediment Management Plan~~ ~~Pollution response Plan~~	Ongoing	

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
		<i>All discharges to be in accordance with appropriate consents</i>					
B21	To minimise any potential impacts of other contaminating materials on water quality during construction	<i>Implement rigorous adherence to appropriate methods (Environment Agency Pollution Prevention Guidelines) for working over and adjacent to water, including specific appropriate checks and controls before pontoon work (higher risk) activities commence</i> <i>Works to be completed prior to March 2018</i>	<i>All Reaches Reach 4</i>	Contractor	~~Pollution Prevention Guidelines No. 5, 21 and 23~~ GPP 5, PPG 6, GPP 8, PPG 14 and GPP 21	<i>Ongoing</i> <i>Monitor risk around jet blasting of capping beam in reaches 1 and 2</i>	
B22	To minimise any contribution to flood risk during construction	<i>Large stockpiles of materials/machinery to be outside the floodplain where possible.</i> <i>Register with the EA flood incident management team for notification of flood warnings</i> <i>Existing wall will be retained until all sheetpiles have been driven. Temporary flood bags will be utilised onsite for situations with anticipated flood levels above the existing wall height.</i>	<i>All Reaches Reach 4</i>	Contractor	Flood Defence Consent Design Basis Report – Buildability Statement Planning Statement	<i>Ongoing</i>	
B23	To prevent permanent impacts to drainage systems disturbed by the works	<i>Any drainage system disturbed must be reinstated and replaced to at least their pre-construction standard</i>	<i>All Reaches Reach 4</i>	Contractor	Flood Defence Consent	<i>Ongoing</i>	
Traffic and Transport							
B24	To minimise impacts on local transport routes	~~Implement the agreed traffic management plan~~ ~~Limit movement of construction plant between working areas~~ ~~Limit movement to approved access routes as specified in the Traffic Management Plan as agreed with Arun District Council~~ ~~Limit movements including deliveries to working hours and avoid peak traffic flows, where possible~~ ~~Load restrictions to be observed and roads to be kept clean of mud/debris from site~~ ~~Provide turning space and parking on site for plant, staff and visitors~~ ~~Implement appropriate diversion routes~~	<i>All Reaches Reach 4</i>	Contractor	~~ES~~ ~~Traffic Management and Logistics Plan~~ Design Basis Report – Buildability Statement	<i>Ongoing</i>	

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
		Utilise Tarmac wharf for delivery / loading of sheetpiles onto barge					
B25	To minimise impacts on river navigation	Consultation with Littlehampton Harbour Board to be carried out throughout construction particular on activities that could affect the river network. All vessel and pontoon movements to be agreed with Harbour board which will be suspended when commercial shipping is navigating to and from Tarmac's Wharf. ~~Alternative access points to be provided and adequately signed when pontoon access is disrupted.~~	Reaches ~~1FD, 2FD,~~ 3, 4 & 5	Contractor	Harbour Master to Contractor Correspondence	~~Ongoing for Reach 3b~~	
Geology and Hydrogeology							
B26	To protect soils and geology	~~Any stripped topsoil is to be suitably stored, separated from other soils and reused for reinstatement landscaping wherever possible~~ Avoid unnecessary handling of topsoils, particularly when wet	All Reaches	Contractor		Ongoing	
B27	To reduce the amount of waste soils	The generation and disposal of surplus or unsuitable soil materials is to be avoided as far as practicable by adoption of the guidance published in CL:AIRE 'The definition of waste: development industry code of practice' Disposal of waste materials unavoidably generated during construction is to be disposed of via licensed waste contractors to appropriate disposal sites in accordance with the Site Waste Management Plan. Any waste soils generated on site that are suitable are to be reused where possible Waste generated on site is to be stored safely in designated areas and in appropriate containers in accordance with the Site Waste Management Plan	All Reaches Reach 4	Contractor	Site Waste Management Plan	Ongoing	~~SWMP issued to VSL for Reaches 1 and 2 on the 22/10/13.~~ SWMP for remaining reaches issued in Sept 2014.
B28	To minimise disturbance to soils as a result of temporary haul road construction	~~Where temporary haul routes or similar are required (Reaches 5 and 6) and it is planned to remove these on the completion of the works, care is to be taken to minimise mixing of haul routes materials with the underlying ground~~	Reaches 6 & 6R	Contractor		Ongoing	Works complete but haul road still in place

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
		<i>Once haulage routes and stockpile areas are no longer required, restoration is to be undertaken to restore the site in accordance with the design proposals in accordance with best practice (Defra, 1998)</i>					
B29	To reduce the risk of spreading unknown contamination	<i>If further contamination is encountered during construction, further assessment will be required. Any excavated suspect materials to be stockpiled separately from other arisings until such time as the nature and composition of the materials has been confirmed</i> <i>An appropriate method of construction management (a construction environment management plan) is to be put in place to protect construction workers, including the provision of appropriate personal protective equipment</i> <i>No disposal of in-situ materials offsite is proposed.</i>	All Reaches	Contractor		Ongoing	
Landscape and Visual							
B30	Visual appearance of works area and access route	<i>Keep working area compact and tidy</i> <i>Ensure temporary lighting levels and direction of lighting does not cause visual intrusion at properties</i> <i>All materials and machinery to be stored in compound area</i> <i>Any chemicals (if any) to be securely stored on site or removed from the site overnight.</i>	All Reaches Reach 4	Contractor		Ongoing	
B31	To ensure that the works are undertaken in accordance with the landscape design and landscape and habitat management plan	<i>Implement in full the landscape design and landscape and habitat management plan</i> <i>All planting as specified in the planting plan. New intertidal zone and scour protection in Reach 6 to be brushed with a layer of topsoil to encourage re-colonisation.</i> <i>Any additional planting removed is to be replaced with appropriate species as approved by the LCW</i>	All Reaches	Contractor	<i>ES inc landscape masterplan and details</i> <i>Planting Plan</i> <i>Landscape and Habitat management Plan</i>	<i>Ongoing</i> <i>Issues identified with finish of concrete (R1and2) and handrailing in Reach 4</i>	
Archaeology and Cultural Heritage							

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
<i>B32</i>	To record historic river walls within Reaches 1 and 2	<i>Carry out an archaeological watching brief during the replacement of the promenade in Reaches 1 and 2 to record any historic structures exposed (potentially the tops of the historic river walls).</i>	<i>Reaches 1PR & 2PR</i>	<i>Contractor (to ensure archaeological sub-contractor informed of works) Archaeological sub-contractor (to carry out works)</i>	<i>ES Archaeological Written Scheme of Investigation</i>		<i>Complete: All works to promenade are on top of existing ground level</i>
<i>B33</i>	To record any archaeology causing obstruction to sheet-piling	<i>Archaeological inspections as and when needed (if potential features are encountered). Archaeological consultant to be consulted on any monitoring requirements during temporary works excavations in Reach 6.</i>	<i>Reaches 3, 4 and 6</i>	<i>Contractor Archaeological sub-contractor (on call)</i>	<i>ES Archaeological Written Scheme of Investigation</i>		<i>Complete November 2014, all piling works finished</i>
<i>B34</i>	To record any archaeology exposed during initial topsoil strips	<i>Archaeological inspection after completion of initial topsoil strips</i>	<i>Reach 6R</i>	<i>Contractor Archaeological sub-contractor</i>	<i>ES Archaeological Written Scheme of Investigation</i>	<i>Reach 6R, an archaeologist inspected ground after full topsoil strip. Nothing recorded</i>	<i>Complete Sept 2014</i>
<i>B35</i>	To retrieve information from buried palaeo-environmental remains	<i>To pass on any further ground investigation data along the line of the scheme to the West Sussex County Archaeologist</i>	<i>All Reaches</i>	<i>Contractor</i>	<i>Archaeological Written Scheme of Investigation</i>	<i>Ongoing</i>	<i>Complete: No further excavations are planned</i>
<i>B36</i>	Reuse historic railings or record them if reuse not feasible	<i>A photographic record will be made of the historic railings prior to their removal and an assessment made of whether they can be reused. If it is not feasible to reuse them, a suitable alternative will be agreed with Arun District Council</i>	<i>Reach 4</i>	<i>-Contractor</i>		<i>Ongoing</i>	<i>Photographic record carried out in December 2013. Agreement reached with Conservation Area Officer to re-use railings on new wall. The railings have been sent off for restoration July 2014. Complete November 2014, railings re-installed</i>

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
<i>B37</i>	Protect historic timber posts in the foreshore / mudflats	<i>Ensure that the exposed posts in the foreshore / mudflats, although not expected to be impacted, are protected during construction. Physical fencing is not possible due to location but staff should be made aware of the issue and shown the location of the area to be avoided during the archaeological tool box talk. Mitigation to be put in place under supervision if impacts become likely.</i>	<i>Reach 6</i>	<i>Contractor Archaeological sub-contractor ECW</i>	<i>ES Archaeological Written Scheme of Investigation Foreshore timbers summary report (inc Figure 1 for location)</i>		<i>Complete. Works adjacent to the timbers now complete Sept 2014</i>

Littlehampton Arun East Bank Tidal Walls

Ref. No.	Objective	Action	Reach affected	Responsibility	Ref to further information	Progress and Further Action	Sign off and date
Post construction							
Archaeology and Cultural Heritage							
~~G1~~	Maintain historic information theme along the waterfront area	<i>The replacement of any historic information boards along the length of the scheme that need to be moved during construction will be subject to agreement with Arun District Council</i>	<i>Reaches 1PR & 2PR</i>	<i>Contractor</i>	<i>ES</i>	<i>Ongoing</i>	
Flora and Fauna							
C2	To reinstate habitats affected by construction	<i>All working areas will be reinstated. Vegetation on the embankment to be planted and maintained to a satisfactory level in accordance with landscape management plan</i>	<i>All Reaches Reach 4</i>	<i>Contractor</i>	<i>Landscape management plan</i>	<i>Ongoing</i>	
~~G3~~	To ensure successful implementation of the reptile translocation	<i>Suitably qualified ecologist to monitor reptile receptor sites to ensure they are suitable for reptiles</i>	<i>Receptor Site</i>	<i>EA/Consultant</i>	<i>Reptile Method Statement</i>	<i>Ongoing</i>	
~~G4~~	To ensure development of mudflat/saltmarsh habitat within realignment area	<i>Suitably qualified ecologist to monitor the development of mudflat/saltmarsh plant habitat within the realignment area</i>	<i>Reach 6R</i>	<i>EA/Consultant</i>	<i>Landscape and Habitat management plan</i>	<i>Ongoing</i>	
Landscape and Visual							
~~G5~~	To preserve and enhance the character and appearance of the area	<i>Maintain the implemented landscape planting to ensure establishment and successful mitigation in accordance with maintenance requirements. Planting in Reaches 1 and 2 to be maintained for 1 year prior to handing over to Arun District Council. Planting in Reach 4 and Reach 6 to be maintained for 5 years</i>	<i>Reaches 1, 2, 4, 6 & 6R</i>	<i>Contractor</i>	<i>ES Landscape and Habitat Management Plan</i>	<i>Ongoing</i>	

Environmental audit record

Project		Project ref.:	
Project Manager:		NEAS EPM:	
Location		Grid reference	

Site Visit Audit Details

Visit During/Post Construction:		Date of Visit:		Time of Visit:	
Audit Officer:		Photos taken (y/n):		Referenced to Pre-Photos(y/n):	

Does the Site Supervisor have an up to date copy of the EAP? Yes

General comments