Forward Plan for taking forward project to develop long-term scheme for the BMP frontage, alongside ongoing monitoring and maintenance works in the immediate future.

Activity	2016		20	17		2018					20	19			20	020		2021			
	Q4	Q1	Ω2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Ω2	03	Q4	Q1	Q2	O3	Q4	Q1	Q2	Q3	Q4
A. Funding Investigations																					
A1. Undertake further work to fully confirm the level of funding contribution that can be delivered to robustly evidence this in the business case when it is eventually submitted to the Environment Agency's NPAS. If as a result of that further work it is shown that a greater level of funding contribution can be confirmed as being deliverable, then it may be possible to re-consider taking forward Option S4 as the preferred option instead of Option S1, depending on what the final confirmed level of funding contribution is.																					
B. Scheme Development																					
B1. Appoint consultant to undertake scheme development work.																					
B2. Numerical modelling planning to define specification for field data collection.																					
B3. Procure and undertake field data collection (bathymetry survey, wave and current monitoring, sea bed sediment sampling).																					
B4. Develop, calibrate and validate numerical spectral-wave model.																					
B5. Develop, calibrate and validate numerical hydrodynamic (tide) model.																					
B6. Develop, calibrate and validate numerical wave and tide model / sediment transport model.																					
B7. Derive updated nearshore extreme wave and water levels (joint extreme probability) along the BMP frontage; to include assessment of wave and water level climate that could be expected along the River Sid western wall under a scenario of further East Beach erosion.																					
B8. Use updated nearshore extreme wave and water levels (joint extreme probability) to drive updated overtopping analysis; to include assessment of overtopping potential that could be expected along the River Sid western wall under a scenario of further East Beach erosion.																					
B9. Review and refine National Receptor Database (NRD) data to ensure as many properties as possible are accurately defined in the NRD to inform updated economic damages assessment.																					
B10. Use updated overtopping analysis to drive updated flood modelling to determine updated economic damages assessment (also using refined NRD data).																					
B11. If budgets allow, it would be beneficial to undertake contingent valuation survey to inform refinement of amenity benefits assessment to make this aspect of the economics appraisal more robust.																					
B12. Use wave model to drive shoreline evolution model (to be developed, calibrated and validated) in order to assess potential alongshore sediment transport rates.																					
B13. Use updated nearshore extreme wave and water levels (joint extreme probability) to undertake beach profile cross-shore response modelling (to be developed, calibrated and validated) to assess mobility of beach under storm conditions.																					

Activity	2016	2017					20	18			20	19			20)20		2021			
	0,4	Q1	0 5	Q3	Q4	Q1	0 5	Q3	Q4	Q1	05	03	Q4	Q1	Q2	Q3	Q4	Q1	0 5	Q3	Q4
B14. Use validated models to assess scheme options to develop Option S1 or S4 (depending on funding investigation outcomes). This work is to include assessment of:																					
Size, length, spacing, placement (including leaving gap between groyne head and cliff toe), orientation and number of groynes required on East Beach to achieve maintenance of beach levels.																					
 Impacts of shortening existing structures, including training wall, and adding new structures upon flood and erosion risk and sediment transport (shoreline and nearshore), including impacts under prolonged periods of south-easterly and south-westerly conditions compared to typical conditions. 																					
 Role of SWW outfall upon sediment transport patterns with new scheme layout. Volume and placement of initial beach recharge as part of scheme 																					
 construction. Potential volume and frequency of future maintenance beach recharge and recycling. 																					
B15. Use modelling results to develop outline scheme design (including costs using early contractor involvement) and inform accompanying Environmental Impact Assessment (to include Landscape/Seascape Visual Impact Assessment, Water Framework Directive Assessment and Habitats Regulation Assessment (Appropriate Assessment)).																					
B16. Undertake public consultation.																					
B17. Prepare Outline Business Case, including refinement of economic case and confirmation of funding contributions.																					
B18. Gain approval of Outline Business Case from Environment Agency.																					
B19. Based on outline design, specify, procure and undertake geotechnical investigations to inform final design.																					
B20. Procure contractor to deliver scheme as D&B contract.																					
B21. Contractor to undertake final design work, including final costings and development of final business case.																					
B22. Undertake public consultation.																					
B23. Gain approval of Outline Business Case from Environment Agency.																					
B24. Gain all required consents (including planning and marine licence).																					
B25. Scheme construction (to include in- and out-surveys before and after construction works).																					
B26. Undertake ongoing public engagement during construction works.																					
B27. Review and update BMP to reflect newly constructed scheme details and more recent monitoring data.																					
B28. Post-scheme monitoring.																					
C. Ongoing Monitoring																					
C1. Ensuring work of the SWRCMP continues as a minimum to provide ongoing capture of data to inform future management decisions at Sidmouth.																					

Activity	2016		20	017		2018				2019					20	20		2021			
	Q 4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q 4	Q 1	07	Q3	Q 4	Q1	6	g	Q4	Q1	Q2	Q3	Q4
C2. Current location of regularly monitored beach profiles is not sufficient to provide a good basis upon which to assess beach volume changes. Additional beach survey profile locations both within the groyne bays and along East Beach and the coast further east towards Beer Head, would be preferable, and there should be no further changes to the regularly surveyed profile positions in the future such that a long-term dataset is developed to inform future management. EDDC to work with PCO/SWRCMP to achieve this.																					
C3. Post-storm beach profile surveys need to be captured along the same profiles each time, and broadly to the same extent (i.e. to MLW position ideally).																					
C4. The sediment pathway between the beaches and the nearshore to offshore remains uncertain and more regular (annual) bathymetry surveys of the nearshore area particularly between the existing reefs and the beach, supported by sediment sampling of the seabed, would help to enhance understanding. This annual surveying is in addition to bathymetry surveys undertaken about every 5 years as part of the SWRCMP.																					
C5. High quality aerial photography should be flown every 2-4 years. This is particularly needed along the cliffs of East Beach and further east. Along Cliff Road atop East Beach, this should also be supported by 6-monthly cliff top monitoring of distance to cliff edge from a defined datum.																					
This monitoring is in addition to aerial photography flown every 2-4 years as part of the SWRCMP should also continue.																					
C6. Undertake regular monitoring of all defence assets in a consistent way (including the offshore breakwaters – which needs a baseline condition survey and profiles to be established as a minimum in the near future) to guide future maintenance works and thus ensure the condition and residual life assessed as part of the BMP is maintained and provided.																					
This should be annual visual inspections each spring and post-storm inspections as required.																					
D. Ongoing Maintenance																					
D1. The River Sid Western Wall (upstream of Alma Bridge) is in generally fair condition. However, along the toe of the structure severe scour has developed and, due to lack of available design drawings for this wall, it is uncertain exactly what the level of risk associated with this is.																					
As such, investigations should be undertaken in the near future to inform future management decisions.																					
D2. River Sid Training Wall (downstream of Alma Bridge) requires immediate action to stabilise it. As a minimum it requires concrete patching of cracks and holes, addressing corrosion and abrasion in the steel sheet pile toe, and construction of scour protection along the toe. Also needs to address risk of instability from wave loading on western side of training wall where there is no material on eastern side. Measures to reduce wave reflection off both sides of the training wall would also be beneficial to reduce wave scour.																					
D3. Exposed reinforcement along access ramp at Jacobs Ladder Beach needs to be addressed in near future to prevent risk of failure if structure is to be maintained to maximise its predicted residual life.																					

Activity		2017				2018				2019				2020				2021			
	0,4	Q1	Q2	Q3	δ4	Q1	Q2	03	Q4	Q1	07	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	03	Q4
D4. There are a number of areas where there are significant 'fall from height' risks from access ramps from promenade to beach along the frontage (particularly between the groyne bays) and the training wall. East Devon District Council to undertake public safety risk assessments and take appropriate actions on an ongoing basis. To be guided by annual visual inspections of defence assets (refer to "C6" above).																					
D5. Ensure that maintenance works, when undertaken, utilise appropriate methods and materials in order to maximise effectiveness and extend structure life as long as possible into the future.																					
E. Other																					
E1. As the aim of the BMP is to reduce rate of erosion and not prevent it along East Cliff/East Beach, there is a need to plan for adaptation in this area in the face of future coastal change such that a plan is in place for when the time comes to implement it in the future. The emerging East Devon Local Plan includes commitment to identify Coastal Change Management Areas. This area at Sidmouth (i.e. Cliff Road etc.) should be																					
included in a Coastal Change Management Area as soon as possible.																					
E2. The Standard of Protection against wave overtopping is low for pedestrian safety during storm events and so measures to deter pedestrians accessing the promenade along the BMP frontage during storms would be appropriate. EDDC to work with EA to manage risk appropriately in future.																					
E3. Work in partnership with other asset/land owners to provide FCERM measures in a sustainable, integrated way. In particular, East Devon District Council, Environment Agency, South West Water and Devon County Council (Highways).																					