Small Projects Risk Analysis Tool

Version 1.04 Contact Dave Mckeown or National Technical Manager ncpms

Environment Agency

Project Name	Sidmouth Beach Management Scheme	50%ile	£1,916,782
Project Stage	OBC	95%ile	£3,088,148
Date of Sim.	22/11/2022 17:22	MEV	£1,978,913

Step1 Hold Risk workshop
Step 2 Collate Risks and value estimates
Step 3 Assign chance of occuring
Step 4 Run Simulation

*Note 1 Time is not a simulation parameter and should be translated into a cost

*Note 2 The simulation assumes zero correlation of risks. Where correlation exists values should be collated and entered into a single row

Risk No	Risk Status	Risk Description *Cause - Risk - Impact*	Risk Owner	Chance of occurring	Minimum cost £	Most likely cost £	Maximum Cost £	Mitigation	Mitigation Owner	Assumptions
1	Live	*Weather - offshore activities - events greater than 1 in 10 - delay to seek safe harbour / unsafe conditions*		5%	£687,500	£1,375,000	£2,060,000	Marine works to be underaken in summer months. Experienced marine contractor will be well-versed in managing weather risk		Costs based on best conditions. Offshore activities assumed based on 24/7 tidal conditions only. No allowance for restricted working time due to environmental constraints
2	Live	*Suitability of material, e.g. need to sieve material to reduce fines, increasing cost (potentially an additional 2million)*		30%	£250,000	£500,000	£750,000	Design of grading to consider source availability.		N/A
3	Live	*Availability of beach material from dredged source - need to obtain from further afield*		20%	£100,000	£200,000	£300,000	Design of grading to consider source availability.		N/A
4	Live	*Beach levels lower than assumed - more beach material required to be inported and/ or change in methodology required to ensure it is buildable*		30%	£100,000	£200,000	£400,000	Continued monitoring of beach levels through Regional Monitoring Programme.		Beach levels based on average recent years - beach reached quasi-equilibrium
5	Live	*Cliff stability preventing working from the beach, may also need to amend design to ensure construction can take place safely*		80%	£464,000	£696,000	£928,000	Drone survey to detect new / increased cracks on cliff tops. Monitoring exercise to detect potential trend following weather pattern. Design to consider buildability. Further information to be provided on risk.		Work on East Beach costed allowing working from the beach - new safe method of working to be produced and works costed.
6	Live	*Construction protest*		30%	£187,500	£375,000	£562,500	EDDC to liaise closely with stakeholders, Steering Group and the public throughout scheme development.		Ongoing public consultation
7	Live	*Uncertainties of design*		50%	£190,000	£337,000	£480,000	Uncertainties to be addressed during detailed design.		Based on 1990 scheme and historic beach levels survey - comprehensive recent years survey by PCO
8	Live	*Consultant change - remodelling - change of assumptions - change of design*		80%	£30,500	£45,750	£76,250	Closely liaise with consultant to ensure smooth handover and minimise design changes		Change of consultant during detailed design due to procurement process
9	Live	*Uncertainties of Offshore Breakwater design - size and alignment of offshore breakwater both due to availble funding and limited analysis to date*		80%	£300,000	£500,000	£1,000,000	Uncertainties to be addressed during detailed design. Experienced staff and reviewers and standards designs used to date.		Experienced staff and current design standards used
10	Live	*Uncertainties of splash wall height - further modelling at detailed design stage only - current height as a compromise - required height in long term epochs could be higher than current design*		50%	£219,000	£438,000	£658,000	Uncertainties to be addressed during detailed design. Experienced staff and reviewers and standards designed used to date.		Experienced staff and current design standards used
11	Live	*Availability of rock*		30%	£200,000	£400,000	£600,000	Early contractor involvement during detailed design and procurement phases.		Based on current availble information
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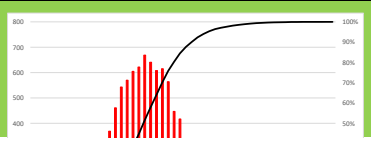
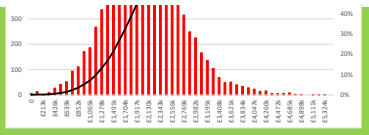
Top 5 Risks (MEV)

Rank	Risk ID	Risk Description	MEV
1st	5	Cliff stability preventing working from the beach, may also need to amend design to ensure construction can take place safely	£556,800



2nd	9	Uncertainties of Offshore Breakwater design - size and alignment of offshore breakwater both due to availble funding and limited analysis to date	£440,000
3rd	10	Uncertainties of splash wall height - further modelling at detailed design stage only - current height as a compromise - required height in long term epochs could be higher than current design	£219,083
4th	7	Uncertainties of design	£168,167
5th	2	Suitability of material, e.g. need to sieve material to reduce fines, increasing cost (potentially an additional 2million)	£150,000



Percentile Risk Distribution & Cumulative Percentile vs Value £k

For use of Project team

A brief explanation for each cost entry is provided below.

Item 1 Weather
Cost of recharge = £2m, say 50% dredger costs = £1m, work completed in 2 weeks
Assume delays of 1, 2 and 3 weeks for min, most likely and max costs giving costs of £0.5m, £1m, £1.5m
Cost of offshore breakwater = £3m, say 50% marine plant costs = £1.5m in 8 weeks = £187,500 per week
Assume delays as above giving costs of £187,500, £375,000, £562,500
Overall = £687,500, £1,375,000 and £2,060,000
Assume 5% Chance of Occurrence

Item 2 Suitability of Beach Material
Cost = £1m
Assume 25%, 50% and 75% increase in costs

Item 3 Availability of Beach Material
Dredger Cost = £1m
Increase in transport costs of 10%, 20% and 30%

Item 4 Availability of Rock
Rock costs = £2m
Assume increase of 10%, 20% and 30% in costs

Item 5 Low beach levels
Nourishment costs = £2m
Assume increase of 5%, 10% and 20% in vol and costs

Item 6 Cliff Instability
Need to use marine plant to construct groyne on East Beach
Cost of groyne = £928,000
Assume increase in costs of 50%, 75% and 100%

Item 7 Construction Protest
Assume delays of 0.5, 1 and 1.5 weeks (costs as above Item 12)

Item 8 Uncertainties in Design Beach Quantities
Assume increase in recharge costs between 10 and 25%

Item 9 Consultant Design Change
Assume increase in overall Consultancy fees between 10% to 25%. Should relate to consultant fees only

Item 10 Uncertainties in Design of Offshore Breakwater
Assume increase in cost of offshore breakwater between 10 and 50%

Item 11 Uncertainties in Design of Splash Wall
Assume increase in cost of wall between 10 and 30%