

Barmouth North CRMP Scheme Phasing – Briefing Note – October 2021

Summary

Gwynedd Council have proposed that construction works for Barmouth North CRMP scheme are to be phased. This is primarily due to internal funding concerns. Without phasing the work Gwynedd will not have the required match funding for the full scheme. Due to the way that works in Gwynedd are funded they would therefore not be able to commence construction in the next few years. Phasing of the work would allow for some of the work to be completed under CMRP. This approach, however, comes with risks and disadvantages.

Decision Required

A decision is needed on whether a phased approach is acceptable for Barmouth North. This is needed as soon as possible if the scheme is to continue under current CRMP timescales.

Introduction

Gwynedd City Council have provided Welsh Government with an Outline Business Case for a Coastal Defence Scheme at Barmouth North. The development of this project has been funded via the CRMP programme. Defences in Barmouth North are currently in poor condition and are at risk from structural damage, erosion and overtopping.



Figure 1: Storm damage to set back walls (left and centre) and overtopping (right) during 2014 storm event

The current defences at North Barmouth are comprised of a linear sloped revetment and wave return wall. Overtopping risk is further managed by primary and secondary setback walls. Timber groynes are present along the frontage, although have failed to significantly reduce the beach lowering which has occurred at the northern end of the promenade.

The preferred option for the scheme consists of improvements to the existing defences, and replacement and raising of the current primary and secondary setback walls. Erosion protection will also be provided to these defence through a mixture of rock armour in the north of the study area and beach nourishment in the south.

This scheme will reduce flood risk to **447 properties** and will provide a 2% annual exceedance probability (AEP) or 1 in 50 year standard of protection which includes 50 years of climate change. This is approximately equivalent to a 0.5% AEP or 1 in 200 year present day standard of protection.

After 50 years the proposal is for Managed Realignment at the northern end of the scheme with further work to stabilise the beach in the south. This is in line with the Shoreline Management Plan.

The estimated cost of the scheme, from OBC to construction is £23,248k. The present value (PV) cost over the 100 year appraisal period (including management realignment in 2069) is estimated as £30,357k. Over this 100 year period the estimated Benefit Cost Ratio (BCR) is 2.3.

Phasing of the Scheme

Gwynedd City Council have proposed the construction work is phased.

Phase 1 would consist improving, replacing and raising the setback walls. This work would provide the full level of flood risk reduction offered by the scheme and under the current programme would be completed in 2022. Phase 1 cost from OBC to completion would be £9,986k (non-discounted cost). This would give a BCR of 1.0 over an assumed 10 year life. The cost of the construction phase alone is estimated as £9,252k.

Phase 2 would consist of rock armour and beach nourishment which would provide erosion protection to the revetment and is required to extend the life of the defence to last the full 50 years. This work would nominally be completed in 2025. Without this work the new defences would have an approximate life of 10 years. Phase 2 cost from OBC to completion would be £19,718k (non-discounted cost). This would increase life of the defences to last the full 50 years. The cost of the construction phase alone is estimated as £18,564k.

This is total of £29,704k which is £6,456k more than completing the scheme in one go. This increase in cost is due to double counting of costs, such as preliminary costs, and inflation. This would give a BCR of 2.1 over the 100 year appraisal period.

The primary reason for phasing this work is because Gwynedd cannot achieve match funding for the whole scheme at this time. Gwynedd's funding is awarded in 4 year tranches and they have informed us that the next funding window is in 2024 and they would be able to find the match funding for the remaining works at that time. Gwynedd have informed us that this work is their top priority and are confident that funds will be available at this time. Match funding for phase 1 has been confirmed for this financial year (or next if needed)

Phasing the works in this manner would also allow for Phase 1 to be completed under CRMP. Without this phasing no work would not be possible prior to the CRMP deadline.

Advantages and disadvantage of phasing the works

Advantages

- Early increased protection - As soon as Phase 1 works are complete properties will have an increased standard of protection (the full standard of protection offered by the scheme). The defences will be more robust and less

Does the scheme include anything about the work required to move to a managed realignment option?

Commented: Yes this has been costed

Commented: Why do we have a BCR for 100 years when the scheme is likely to only be in place for 50 years given the move to MR?

Commented: This BCR includes for costs and benefits post the MR

Commented: Could you add in the construction phase alone for phase 1.

Commented: Could you add in the construction phase alone for phase 2

likely to fail and could need repairs in a storm event. Emergency funding for such works has been provided recently.

- Phase 1 could meet the CRMP deadline. Gwynedd believe that Phase 1 works can potentially be consented under permissive powers. This will enable works to be accelerated to potentially meet the CRMP deadline.
- Costs will be spread over a longer period of time, reducing the strain on Welsh Government's capital programme for funding the full scheme post CRMP.
- Lower value for Phase 1, reducing the burden on the CRMP budget which is already over budget.
- Gwynedd believe that it would be beneficial to construct the scheme in phases as this will result in less disruption, although this would occur in two separate years.

Disadvantages/Risks

- The phased approach is estimated to cost approximately £6.5 million more (OBC to construction).
- As both phases are protecting the same properties it is unclear at which stage we would be able to claim these properties. This could lead to us having to justify the £19 million Phase 2 works with no properties associated. Phase 2 works will nominally increase the standard of protection as they will reduce wave run-up, however, this difference is expected to be relatively small. This difference would require detailed assessment to calculate.
- There is a risk that the second phase work is not completed. The BCR for the Phase 1 work on its own is 1.0 but this is highly dependent on the assumed asset life of 10 years which may be reduced by successive big storms.
- Phase 1 works will be vulnerable to large storms until Phase 2 work are completed. There is a chance that these defences will be damaged and require remedial works before Phase 2 works can be completed. It should be noted however, that damages to the existing defences are likely to be greater without Phase 1 in place.
- It is possible that phasing of the works will be rejected on consenting grounds. Gwynedd are conducting early engagement on this.
- There is a risk that Gwynedd Council will be unable to obtain the match funding for phase 2
- Due to the large cost of the scheme it will be difficult for the main capital programme to accommodate construction in one year for the Phase 2 works or if the scheme were to be removed from CRMP. The scheme would likely have to be constructed over a number of years anyway. It is likely additional funding will need to be sought to fund this work.

Commented [REDACTED]: This is the main risk from a Programme perspective

Neutral

- Construction and material costs are currently high. It is unknown what the impact will be on delaying works as material costs could go up or down.

Alternative Options Considered

Delay all works until 2025

Commented [REDACTED]: I think this is a disadvantage.

Commented [REDACTED]: had it in neutral as the only way we would be able to avoid this is if we did the whole works through CRMP. I guess this is possible but vanishingly unlikely. This therefore isn't a specific disadvantage of phasing.

Delaying works to allow Gwynedd to arrange further internal funding. This will reduce the risk of new defences being damaged. Properties benefiting can be claimed once the scheme is complete. This could potentially reduce costs, however, cost may increase as the whole scheme will be subject to inflation. It should be noted that costs could decrease if material costs reduced which are currently very high, this would also reduce the cost difference between the phased and un-phased options.

Works cannot be completed under CRMP. Properties will not benefit from early flood protection. The scheme is likely to have to be constructed over a number of years anyway to allow for it to be accommodated in the main capital programme. This may mean that the scheme may not be completed until around 2028.

Extension to the CRMP deadline

Due to Gwynedd's funding constraints this extension is unlikely to be sufficient to allow the full works to be completed under CRMP as they will not be able to find the full match funding.

Terminate the project

This area is top priority for Gwynedd. Without this project 447 properties in Barmouth North will remain at current levels of flood risk and existing defences will continue to deteriorate, requiring further investment to maintain. Sunk costs for option development will be lost.

Preferred option

Commented [REDACTED] : [REDACTED], I think we should provide a preferred option to [REDACTED], however I think Technically you are happy with the phased approach but for a programme perspective I am less comfortable.