Dawlish Warren Beach Management Scheme 2017

Post-Scheme Review Update

Exe Estuary Management Partnership

15 February 2022

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Post-Scheme Review

‘Dawlish Warren Beach Management Scheme.. has since seen beach level change at a rate earlier than predicted’

‘Study is required to review existing scheme monitoring and management in light of data collected since scheme completion’

Study to:

- Review & Recommend management options against objectives
- Update Monitoring & Management Plan (MMP)
- Produce a technical lessons learnt report

- MMP Stakeholder workshops July, November, December 2021
- Draft reports, presentations, minutes and actions circulated
- Draft Options investigation report and ‘summary’ document ongoing
- To issue for wider consultation in March and April/May

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Review of scheme objectives and planning conditions

Primary Scheme Objectives – FCERM and Environmental drivers

No.	Dawlish Warren BMS objectives	Status – achieved / not met / partially met
1	Reduce risk of erosion and flooding to people, property, infrastructure and commercial assets and activities, locally at Dawlish Warren village.	Achieved through the new flood defence at the Visitor Centre
2	Continue estuary-wide storm sheltering function through to 2040s for people, property, infrastructure and commercial assets and activities.	Currently achieved. Geotubes at the Neck are key to meeting this objective. There is a question mark over the relative importance of the small and large geotubes in meeting this objective; if they function separately or together to achieve this; and if the large geotube alone would still achieve this objective.
3	Achieve SSSI favourable condition by 2030.	Not being met. NE advice is that this will not be met with exposed geotube in place.
4	Achieve SAC condition favourable/unfavourable recovering by 2030 to comply with Habitat Regulations.	Not being met. NE advice is that this will not be met with exposed geotube in place.
5	No adverse impact on the Exe Estuary SPA conservation objectives to comply with Habitat Regulations.	Achieved.
6	Delivery to meet the accelerated programme requirements.	Achieved – EA objective

Lessons Learnt

Coastal Modelling methods

- scheme applied a **generally appropriate** range of methods to assess and predict coastal change
- recent improvements so **further modelling & analysis could now be applied** for similar schemes

Hydrodynamics (waves, tides, currents)

- scheme **applied data available** at the time
- **updated coastal monitoring data** improves understanding of processes that drive coastal change eg
- nearshore waves for '**low order' events varied by up to ~0.6m**
- **events occurred 3-4 times more frequently than predicted**
- these variations **cause differences between predicted and observed beach and dune erosion**

Geomorphology (landform change)

- **modelling reliant on above** therefore **variations impacted sediment transport predictions**
- **larger differences at the neck** section and shallower beach profile resulting in greater dune recession

Climate change predictions

- **sea level rise and increasing storminess predictions changed significantly** over the last decade
- scheme used UKCP09 climate change now superseded by **UKCP18 guidance**
- **l**imited influence since scheme but increased sediment transport rates **will become measurable**

Lessons Learnt recommendations

Coastal Modelling methods

- accurate modelling remains **difficult**
- **qualitative expert judgement should be given equal weighting**
- removal of assets often results in observed change being much **greater than modelled**.

Value of coastal monitoring

- need continuous record and **broader range for uncertainty** not current ±10% for wave and tides

Sensitivity to climate change

- **for schemes sensitive to shorter term changes** in tide levels and wave climate

Communication of uncertainty and risk

– **rate of change not appreciated** and all need to **understand uncertainty and risk better**

Rate of physical change versus rate of regulatory decision-making

- regulatory and technical governance take **5-10 years for complex strategy/scheme development**
- **is this is too long to implement coastal change schemes ?**

Peer Reviews

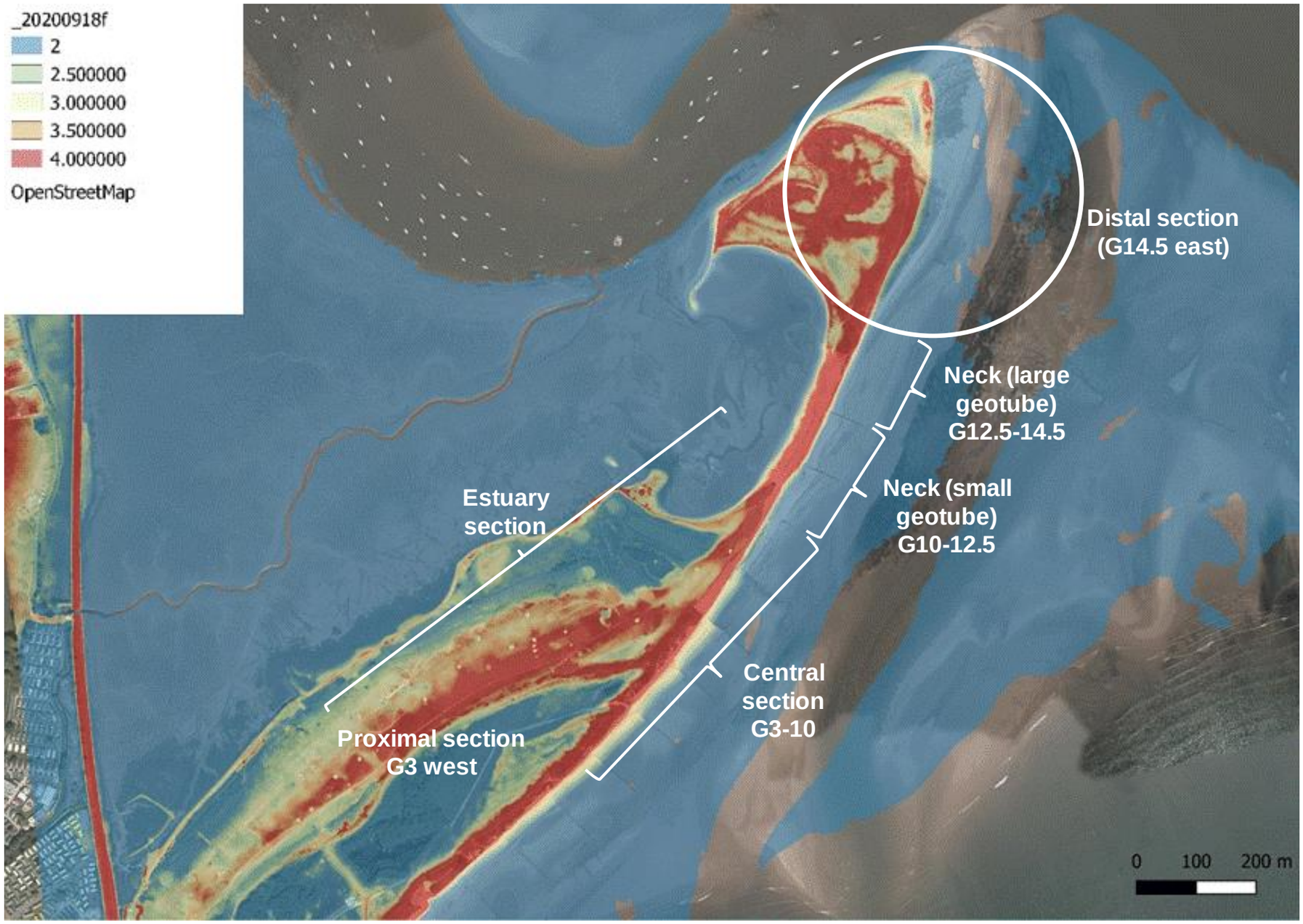
Dawlish Warren Management Units under review

Proximal section

Central section

Neck and distal sections

Estuary section

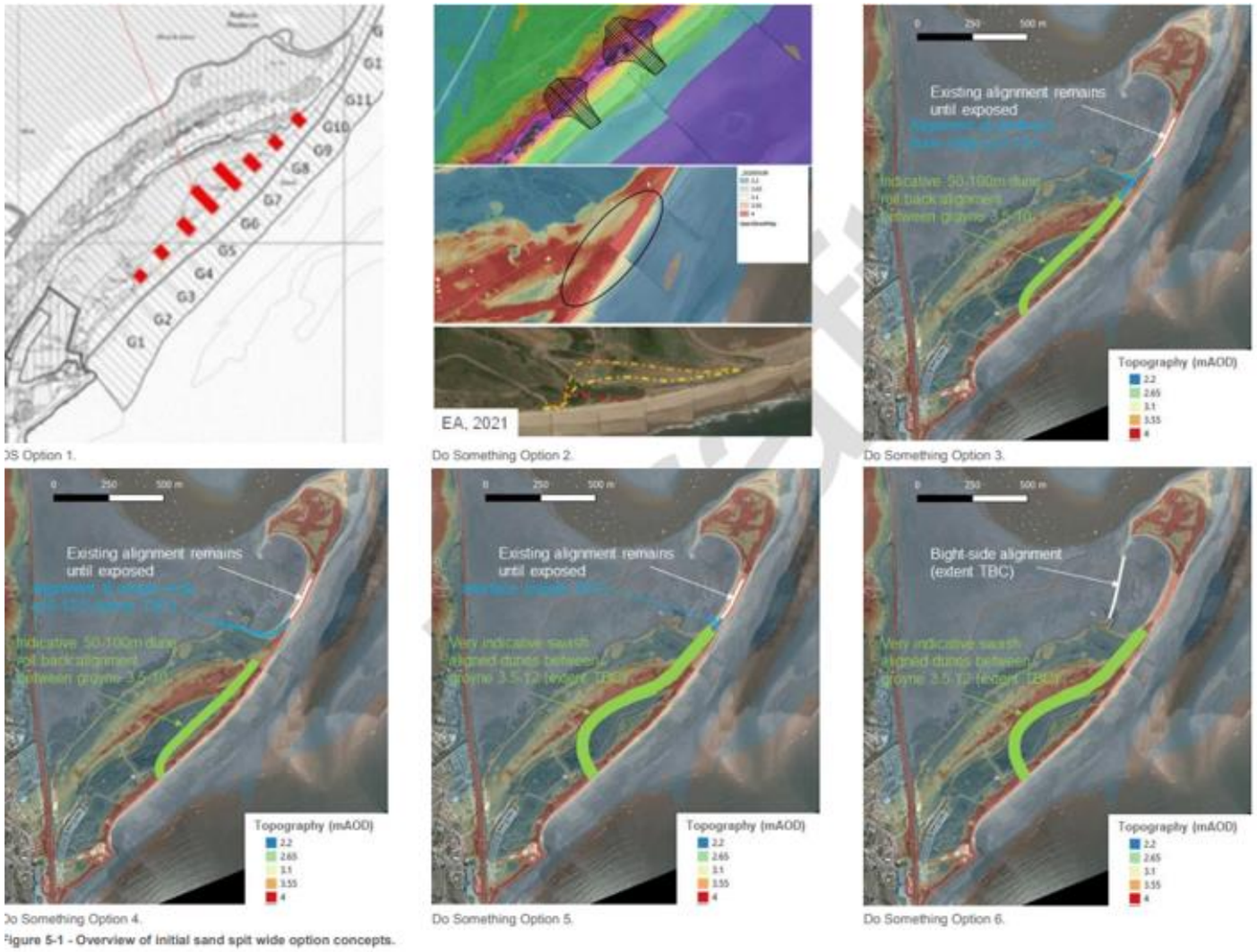


High level management options assessed

Do Nothing – geotube and groyne removal as exposed/degraded

Do Minimum: continued maintenance of scheme

Do Something:



DS Option 1.

Do Something Option 2.

Do Something Option 3.

Do Something Option 4.

Do Something Option 5.

Do Something Option 6.

Figure 5-1 - Overview of initial sand spit wide option concepts.

This slide is draft highlight information for discussion. Any information in this slide does not indicate any option preference or decision-making.

Overview

- **FCERM options driven by economics -** maintaining spit v in-estuary improvements
- Strategy found **'switch' to in-estuary improvements** in 2040s… **now 2030s**
- **Ongoing uncertainty -** environmental drivers, range of options, potential impacts, modelling accuracy, funding therefore…
- Recommend ***'This is what we think, what do you think?'*** approach to progress

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So 'what do we think ..'

Summary of draft FCERM-driven proposals

Proximal section
. No further beach recharge
. Revetment improvements when needed
- Ongoing groyne maintenance

Central section
- Ongoing groyne maintenance until have no function. Removal before 2049
- Potential for dune re-profiling/trials dependent on environmental drivers, support and permissions

Neck section
- Small geotube repairs during 2022
- Removal of small geotube by 2027 to help restore SSSI/SAC 'favourable' condition as part of assent
- Ongoing maintenance or adaptation of large geotube tbc if exposed prior to removal before 2049
- Ongoing groyne maintenance until have no function. Removal before 2049

Distal section
- Outside of Beach Management Scheme boundary
- Potential to remove relic groynes 16-18 as no FCERM function; improves H&S and natural function
- No active removal of old gabion mattresses & stone
- No maintenance or improvements other than to 'make safe' for H&S and avoiding pollution risk

Estuary section (of spit) – no change/works proposed

'what do you think?'

- via 'summary' document feedback

- via MMP in March/April

- via EEMP in April/May

- potential for more engagement depending on feedback

Update of Exe Estuary Strategy drivers

Present day flood risk generally unchanged

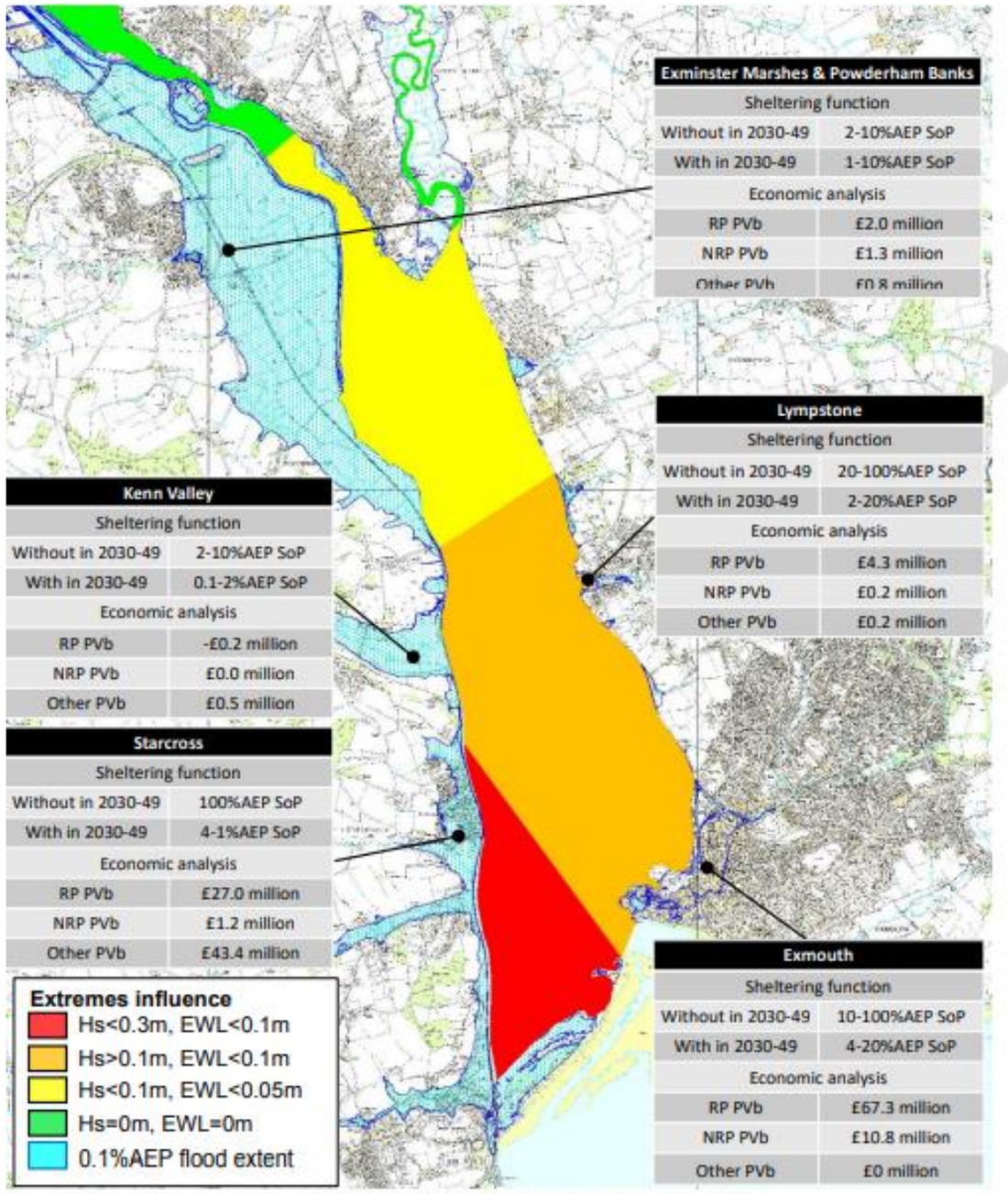
Future flood risk increases more rapidly

Economic damages and benefits increase

DW storm sheltering function benefits Railway, Exmouth and Starcross the most

Priority schemes (nearly) complete
- Exmouth
- Starcross and Cockwood
- Dawlish Warren
- Lower Otter Restoration Project
- Clyst St Mary

'By 2030' schemes at Topsham and Powderham Banks likely higher grant funding



Note: this diagram does not include the recent DWBMS, S&CTDS and Exmouth TDS.

Figure 5-2 – Previous assessment (VBA, 2014) of sheltering function influence on wave and tide climate.

Geotube vandalism & damage

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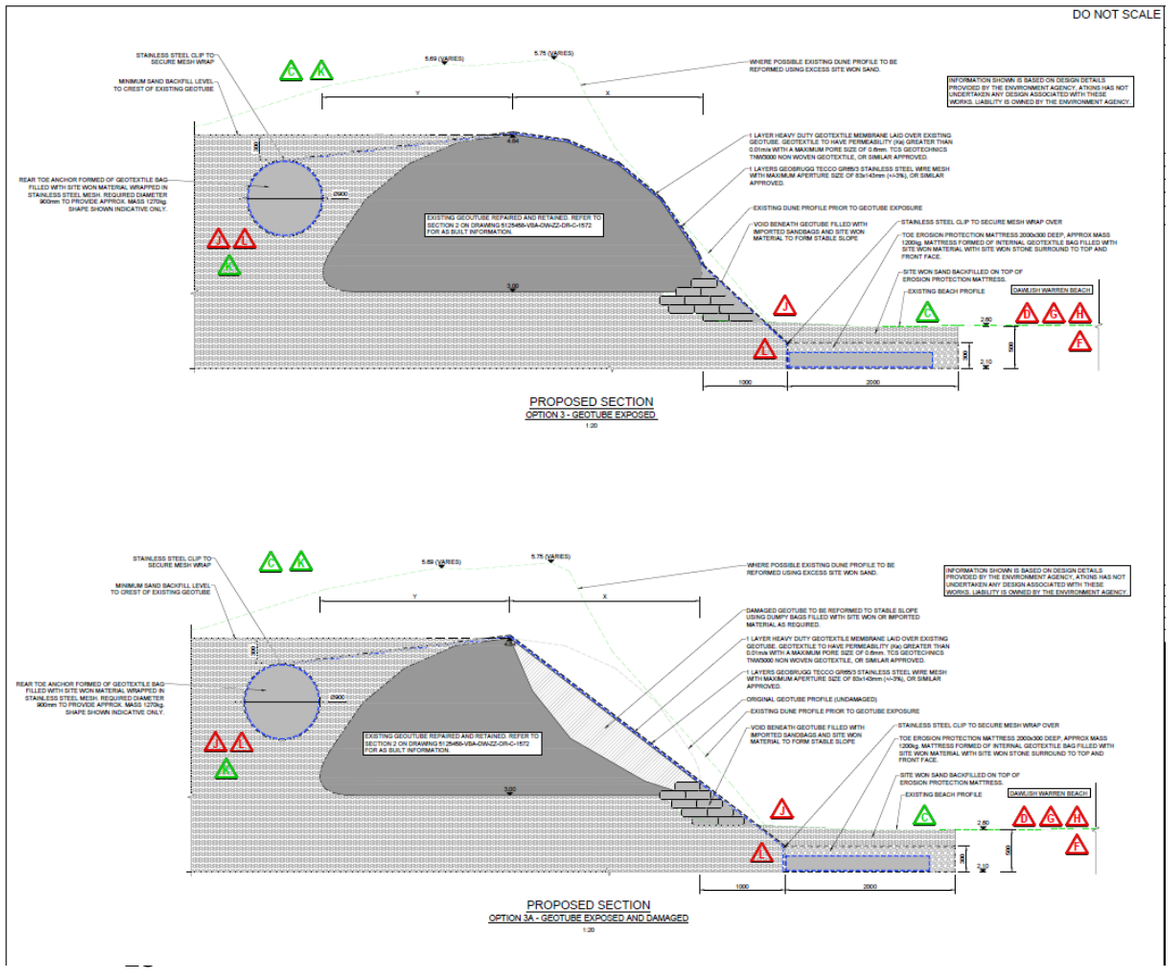
Geotube repairs

- Planned repairs now agreed with Natural England
- Assent given on condition of removal by 2027
- Awaiting confirmation from Teignbridge DC
- With approval repair works likely before autumn 2022



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Indicative works programme

2022/23

- Ongoing consultation and engagement as required
- Finalise study options and reports
- Repair works at exposed small geotube between groynes 11-12.5
- Potential to remove relic groynes 16-18

By 2027

- Withdraw maintenance of small geotube
- Removal of small geotube

By 2049

- Ongoing maintenance and improvement of Proximal section defences
- Removal of remaining geotube and groynes
- In-estuary defence improvements (with design assumption neck and distal sections flattened)

- **i.e. plan for central section roll-back and neck and distal section of spit flattening from 2030s**

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Thank you

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