Kent Flood Risk Management Committee

Lydd Sea Defences

(Folkstone to Cliff end Strategy, FOCES)

Sam Gawad: Flood Defence Engineer

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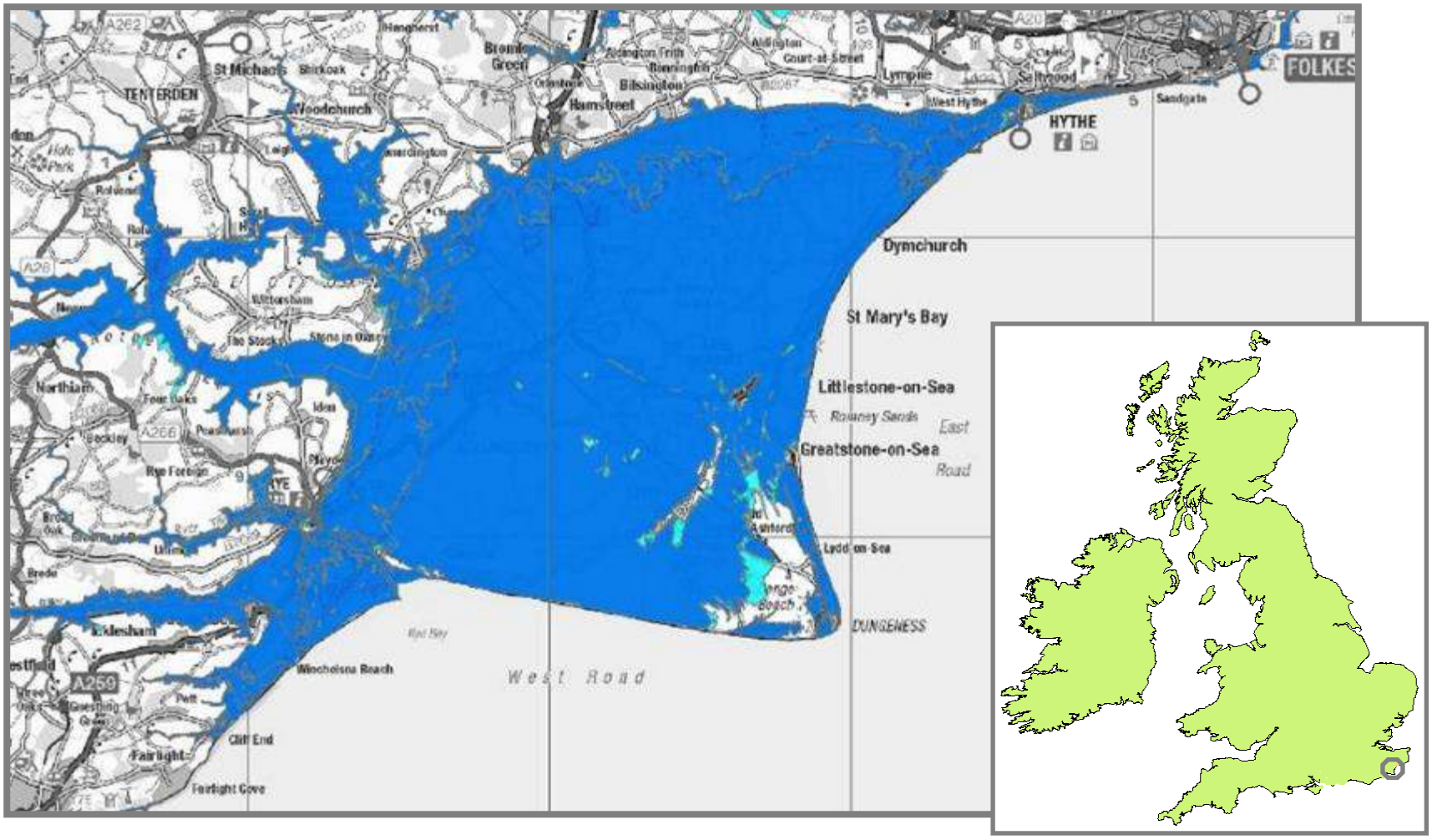
Flood Risk – Romney Marsh, Below Mean High Water



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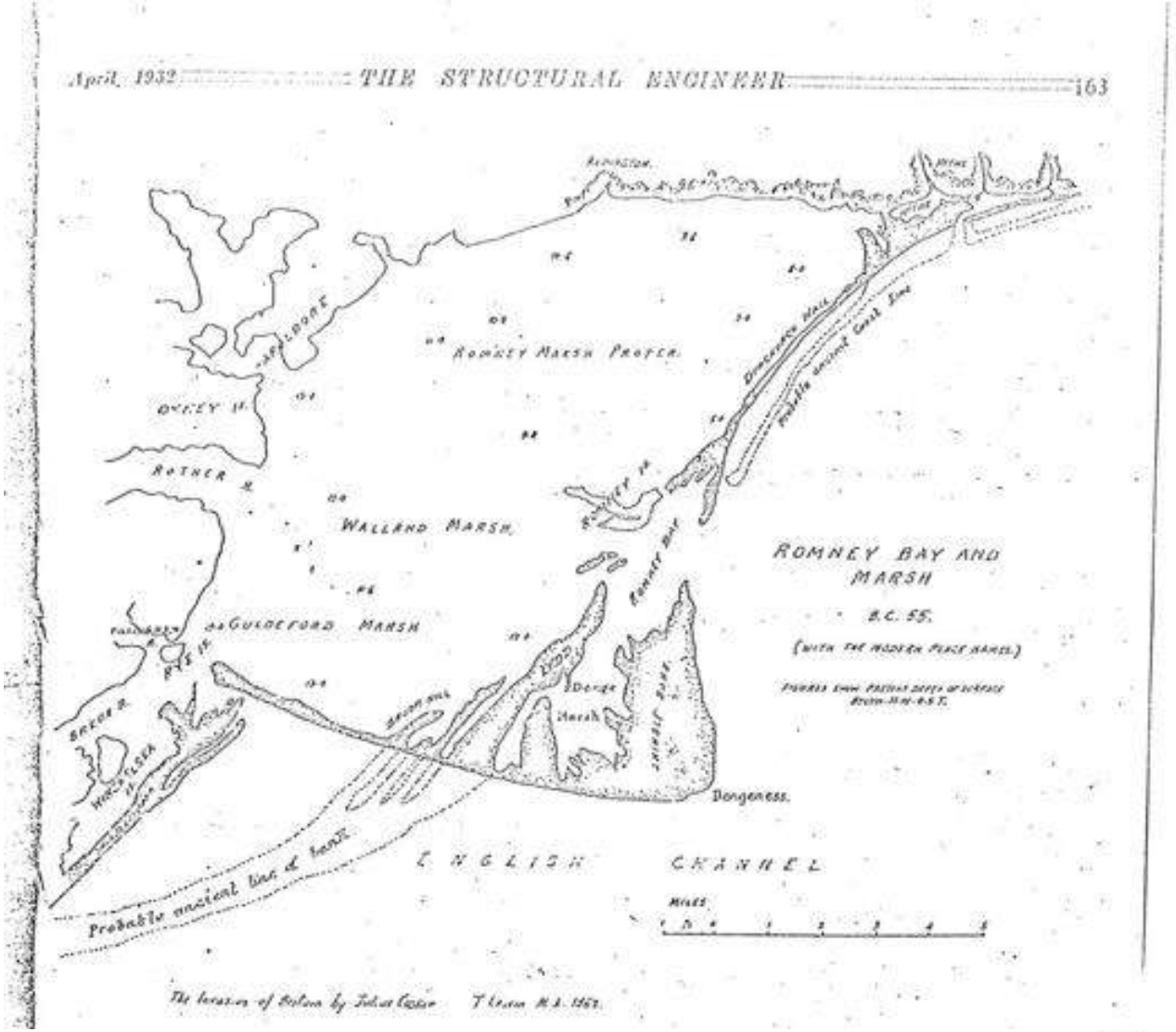
Historic Map of Romney Marsh – 55BC



'The Structural Journal – The Sea Wall in Kent, April 1932'

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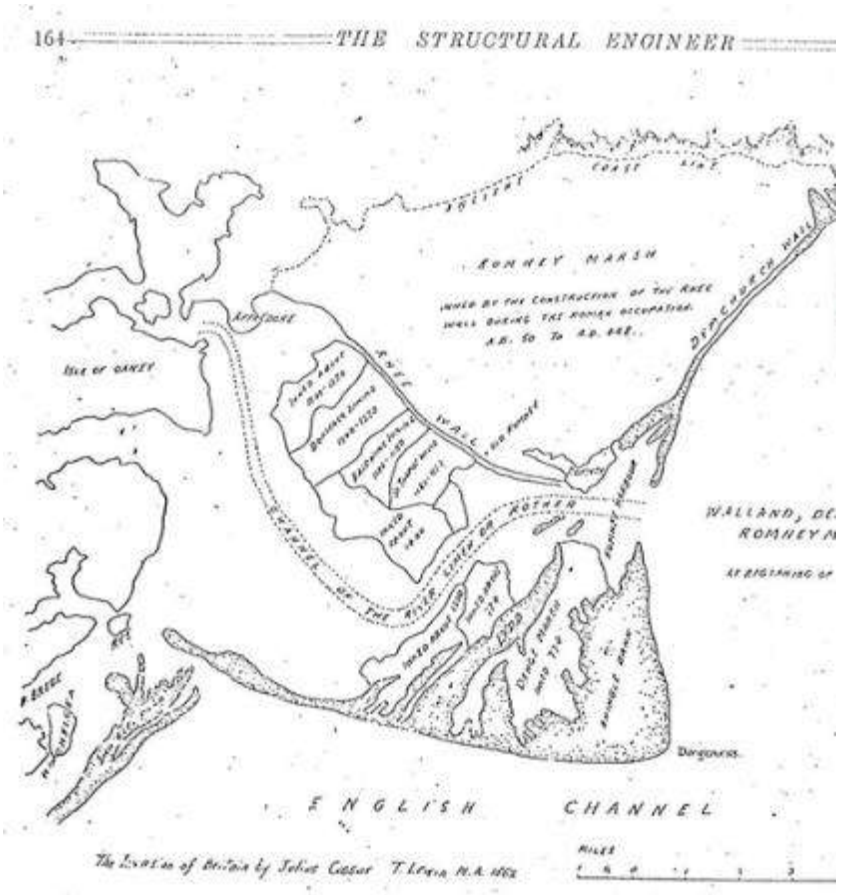
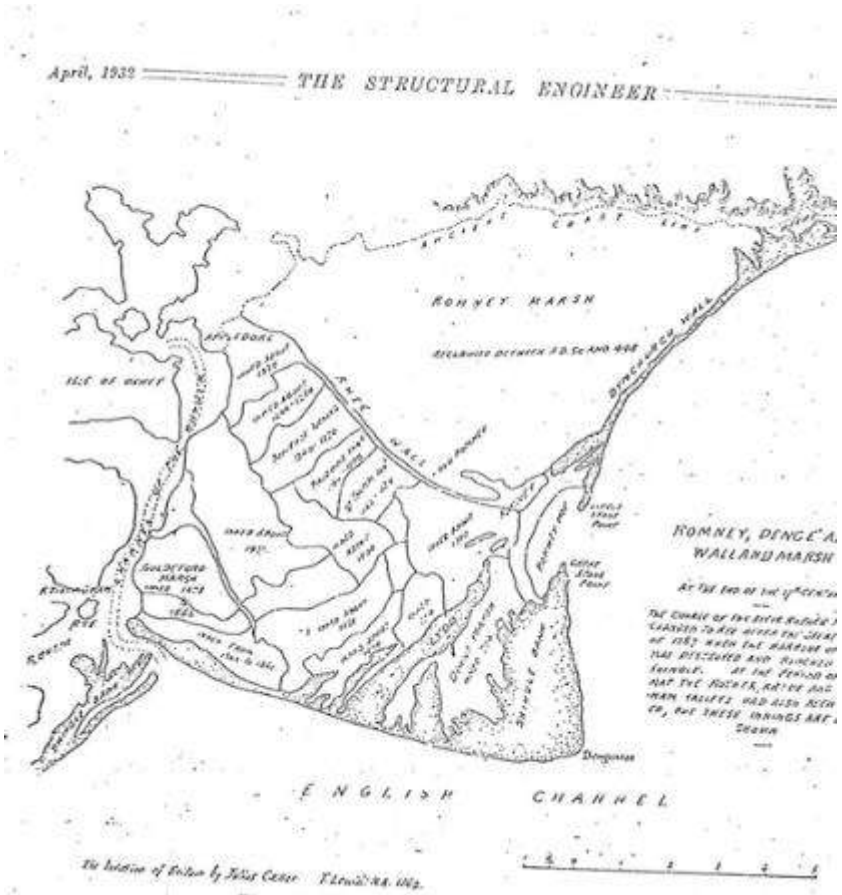
Romney Marsh 14th Century



Romney Marsh 17th Century



‘The Structural Journal – The Sea Wall in Kent, April 1932’

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Folkestone to Cliff End Strategy

Much of Romney Marsh is below the present day high tide level and 14,500 homes, 700 businesses and nationally important critical infrastructure are at risk of flooding.

In the coming years, climate change and rising sea levels will increase the number of people affected by flooding and erosion.

This map describes our ongoing work to reduce flood risk to homes and businesses for the next 100 years.

Completed schemes

The strategy identified the following schemes:
- Pett Level coastal defence scheme
Completed in 2007. Approx. £450,000 is spent each year on shingle recycling to maintain the defence.
- Rother Tidal Walls West
Completed in 2008 at a cost of £3.6 million.
- Littlestone to St. Mary's Bay sea defences
The Littlestone scheme was completed in 2004, a new rock groyne at Greatstone was constructed in 2014 and 53,000m³ of shingle recharge was placed at Littlestone in spring 2016.
- Dymchurch Frontage A and B
Completed in 2011 at a cost of £60 million.

Rother Tidal Walls East

This scheme will work with the Rother Tidal Walls West scheme to reduce the risk to east Rye. Works will include:
- Improving the structural integrity and height of the existing embankments
- Constructing new embankments

Outline design: 2015-2017
Business case development: 2018-2019
Construction: 2020-2022

Hythe Ranges

Along this 3.5km frontage we will:
- Refurbish the existing timber groynes
- Shingle recharge to the existing beach
- Strengthen the existing revetment at Dymchurch Redoubt with rock armour
- Construct new defence at Fishermans Beach

Outline design: 2015-2017
Business case development: 2018-2019
Construction: 2020-2022

Romney Sands

This scheme will work with the shingle recharge at Littlestone and the dune management at Greatstone.
Works are likely to include:
- a beach management plan for both the Littlestone and Romney Sands frontages
- construction of a small scale flood wall at Varne Boat Club

Outline design: 2015-2017
Business case development: 2017-18
Construction: 2018-19

Broomhill Sands

This scheme was completed in Spring 2016 and covered a 2.4km frontage from Camber to the western boundary of Lydd Ranges. Works included:
- Construction of a 2km wave wall and rock armour revetment
- Construction of 8 timber groynes
- Shingle recharge to the Suttons area of beach

Scheme cost: £30 million

Lydd Ranges

The works along this 7.4km frontage will include:
- Improving and strengthening the existing 'green wall' embankment
- Installation of a 1.8km groyne field and shingle recharge
- Refurbishment of existing outfalls onto beach
- Providing compensatory habitat

Outline design: 2016-17
Business case development : 2018-2019
Construction : 2020-2022

Managing flood risk on Romney Marsh

Legend
- Ongoing scheme development
- Scheme complete
- Effective natural defences
- Area at flood risk
- Managed by other organisation

N

Scale 1:150,000

0 1 2 3 4 5 Miles

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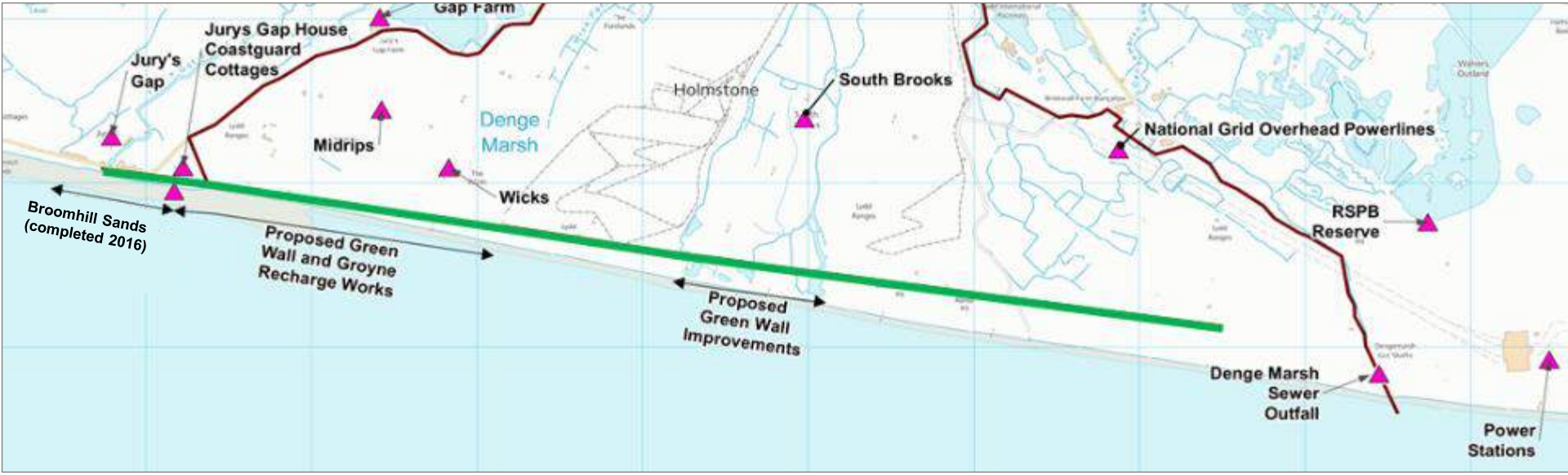
Lydd Frontage

- The frontage has a number of environmental designations (SSSI, SPA, SAC, Ramsar and Natura 2000)
- Shingle loss on the frontage causing the beach levels to drop exposing the clay sea wall.
- This sea wall protects the wider area of Romney Marsh; **14,500** Homes, **700** Business, including critical national infrastructure such as Lydd airport, Dungeness Nuclear power station and MOD ranges.

Lydd Ranges outline scheme design
– Hold the Line (25 years)



Works at 3 main areas along the 7.4km frontage:

- Jury's Gap to the Wicks (1.8km groyne field)
- South Brooks (1km at set back Green Wall)
- Denge Marsh Sewer Outfall

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Lydd Sea Defences – In Construction

- https://vimeo.com/592156207/5b32a36ae2

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The Future:

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Environment Agency Net Zero by 2030

- 45% Reduction CO2(e) – Project Target
- In real terms, this means cutting approx. 6750ton CO(e) from the project

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Managing Our Carbon

- **Managing Our Carbon Usage:**
- We developed a carbon report which showed the areas we needed to focus on.

- This enabled us to;
- Review & Agreed Baseline
- Compare Baseline/Tender/Actual Data
- Make timely decisions
- Review progress to target

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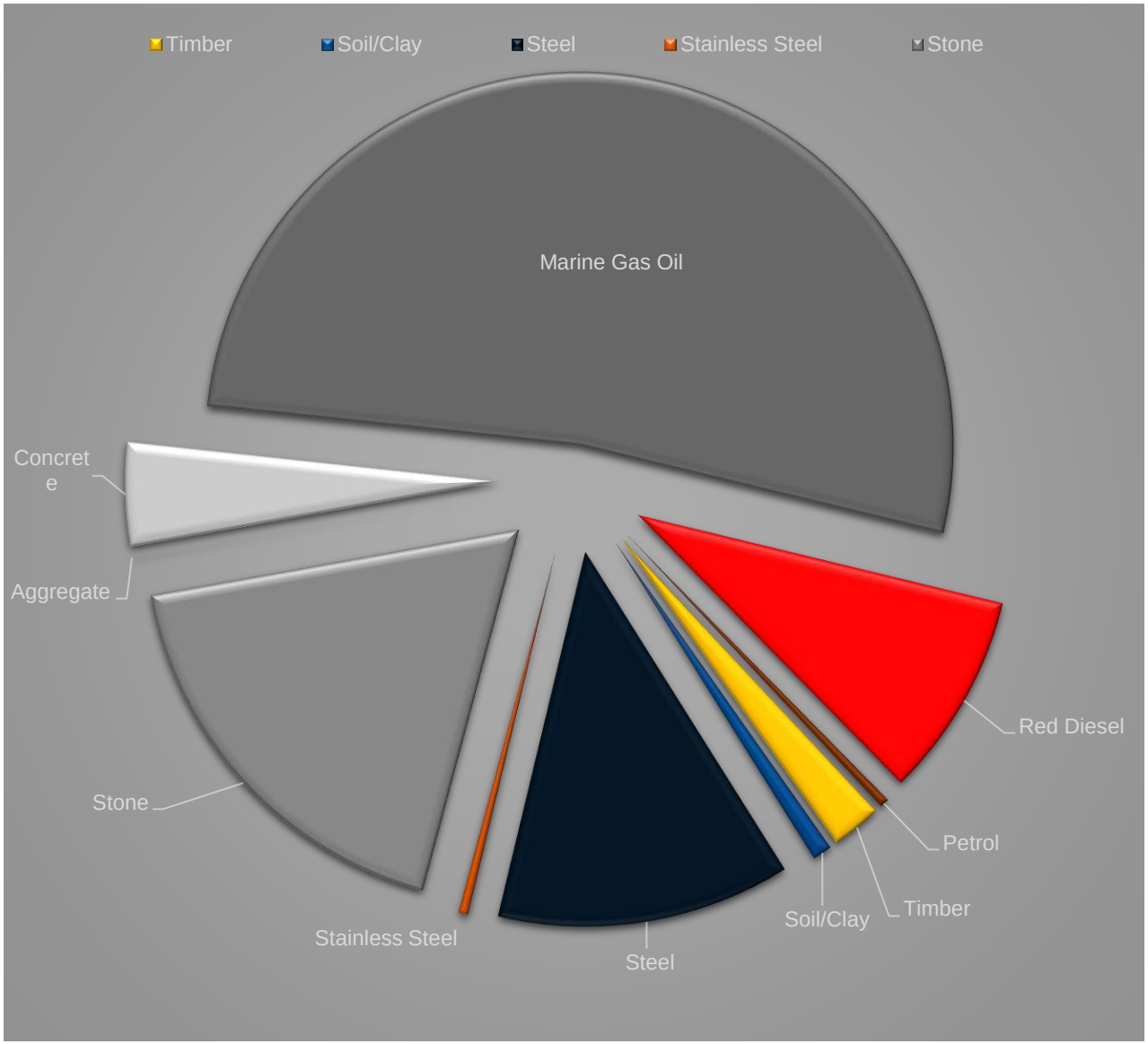
Targeted Approach to Carbon Reduction



Hierarchy Of Carbon Producers

1) MGO
2) Rock
3) Steel
4) Concrete
5) Red Diesel
6) Others

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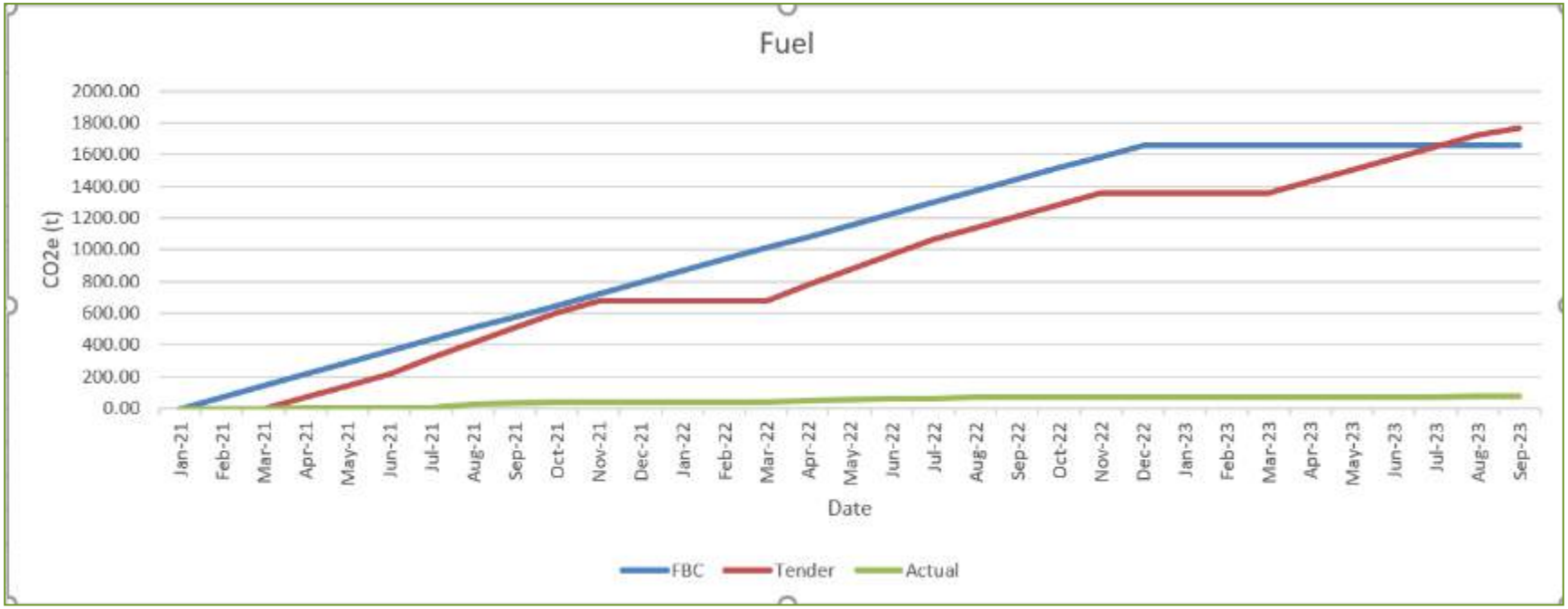
Replace Diesel with HVO (Hydrated Vegetable Oil)

Site Based Plant and Equipment



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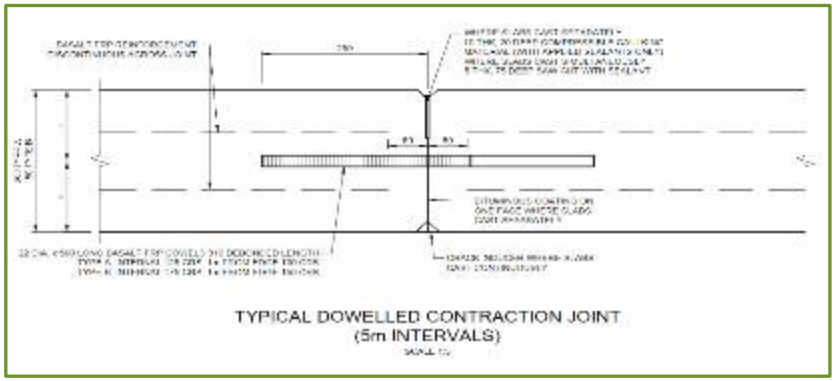
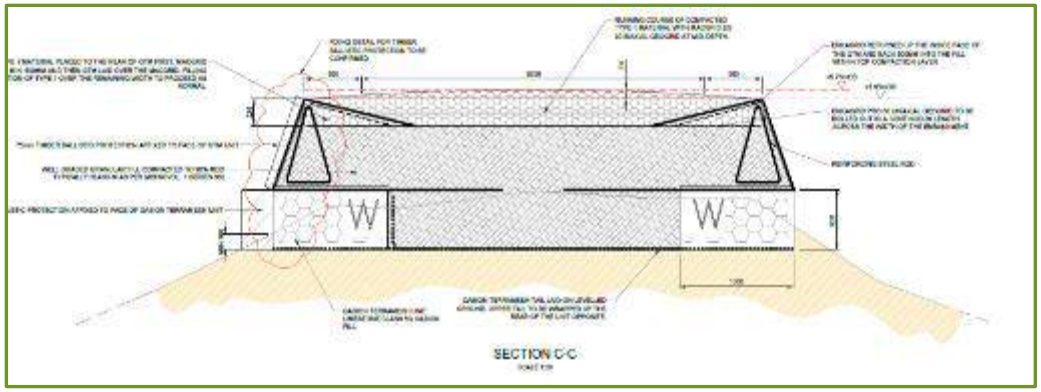
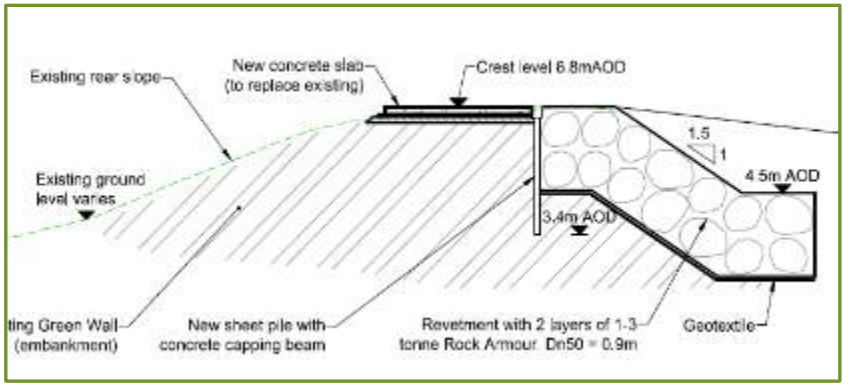
Reducing Steel Where Appropriate

Using graphite reinforcement







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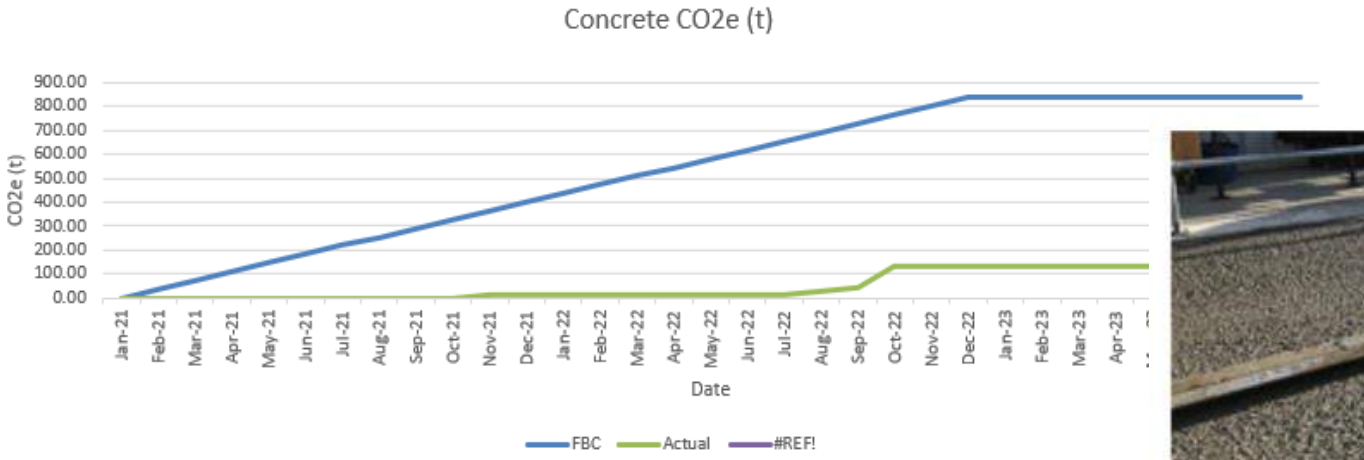
Low Carbon Concrete



1) Commissioned industry expert to oversee testing and design stage.
2) 4 independent trials slabs cast
3) Abrasion Testing
4) Flexural & Compressive Strength Testing

Earth Friendly Concrete pour

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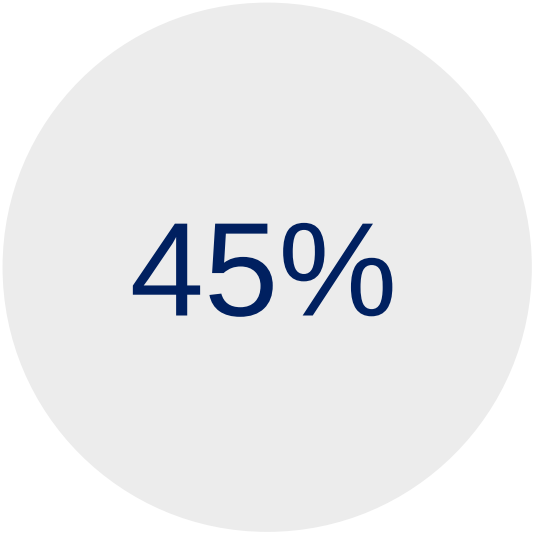
So Far…

Carbon savings with FAME / HVO in dredger

Subject to FAME availability 2023

Carbon savings with Diesel in dredger



Current position

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Creating a better place....

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