Bridgwater Tidal Barrier

CECA Presentation

Tuesday 21st October 2025



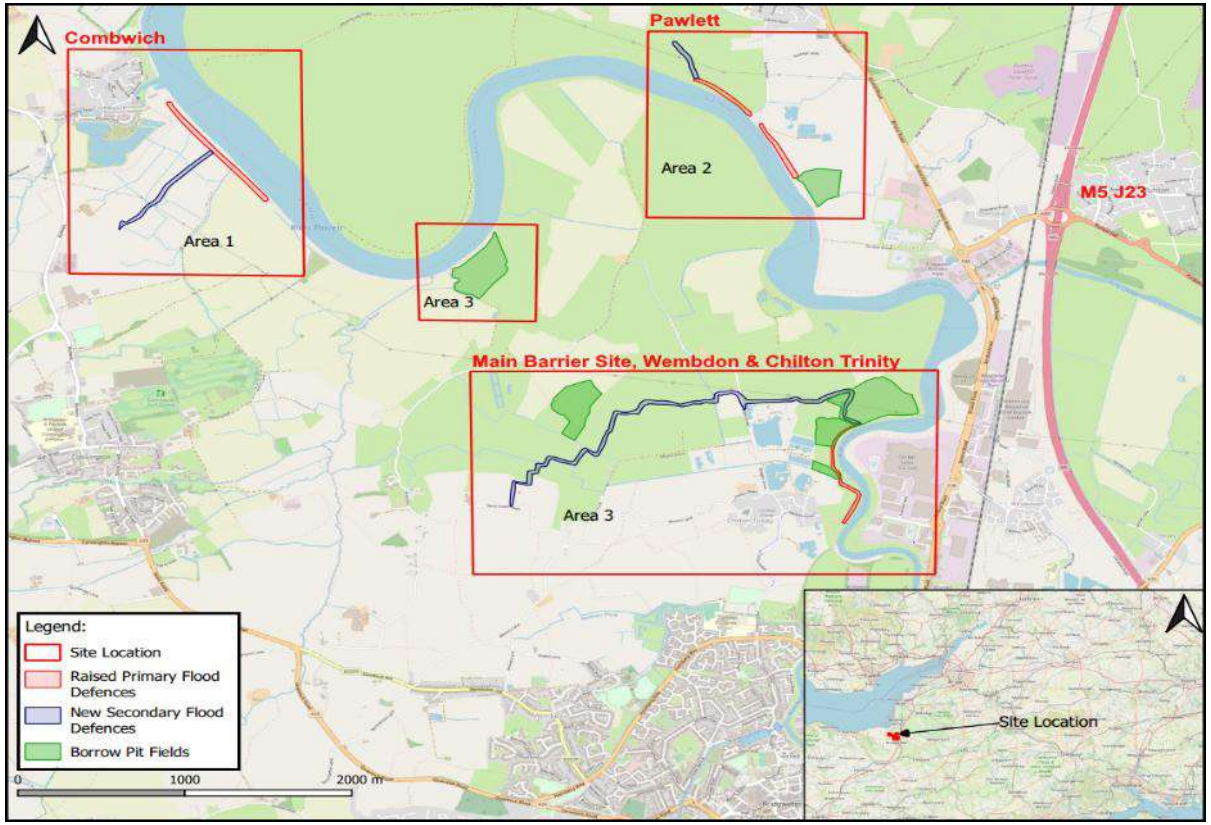


Project Background

The Project is located within Bridgwater, Somerset. The site is split across three geographical areas;

- Area 1 – Combwich
- Area 2 – Pawlett
- Area 3 – Chilton Trinity

- Bridgwater **Quayside Partial Collapse** of West Quay river wall in **November 2011**
- **Flooding event in 2014** includes widespread flooding of the Somerset Levels & Moors
- **165** properties suffered **internal flooding** and Bridgwater itself partly flooded
- DEFRA approve the inclusion of a **Tidal Barrier** in Somerset's flood action plan following the flooding events in 2014







Bridgwater Tidal Barrier (BTB)

- Partnership between the Environment Agency (EA) and Somerset Council
- Bridgwater Tidal Barrer Transport Work Act Order (**TWAO)** made by the Secretary of State on 25th March 2022 – Known as the **Bridgwater Tidal Barrier Order 2022**
- Construction of a **Tidal Barrier Structure** on the River Parrett - 1 in 200 year standard of protection (SoP) in 2125
- 7km of **Downstream Defences** to Bridgwater and surrounding communities - 1 in 200 year SoP until 2055, alignment future proofed to enable further raising, to provide SoP up to 2125.



£249m
project value

7km
embankment works included in the project



11,000+
homes better protected from tidal flood risk



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Enhancing Resilience

4,500 OM2 capital programme benefits:

- **3,000 OM2 A&Bs** – properties moved from higher flood risk band to a lower risk band
- **1,500 OM2A.NRP** - non-residential properties receiving benefit

Better protects **key infrastructure**

- M5, A38 and the Main Railway Line to the Southwest
- Hinkley Point C
- Gravity Enterprise Zone

Enhanced **Eel and Fish passage** in Rivers Parrett & Tone

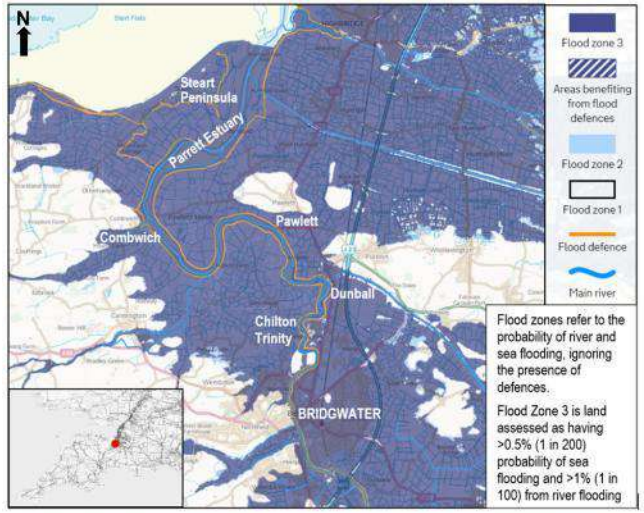
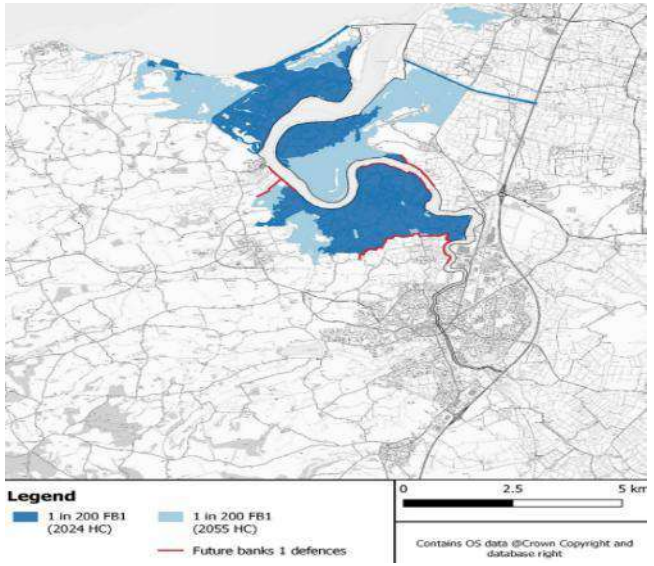


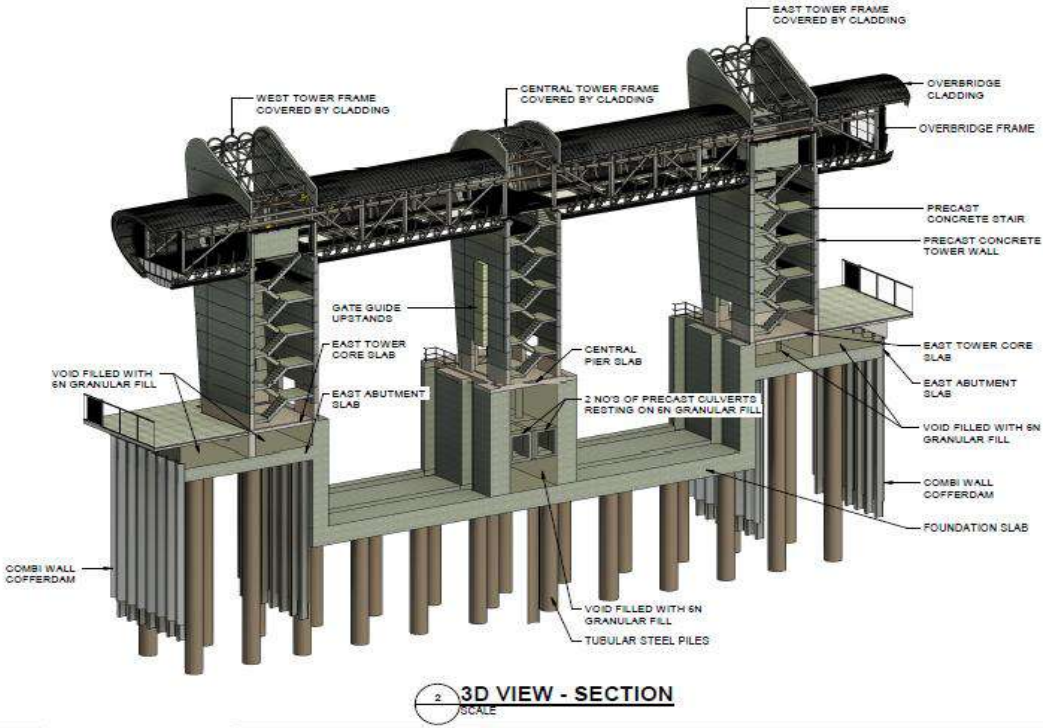
Figure 2. Project location and flood zones (source: Environment Agency Flood Map for Planning accessed May 2023)





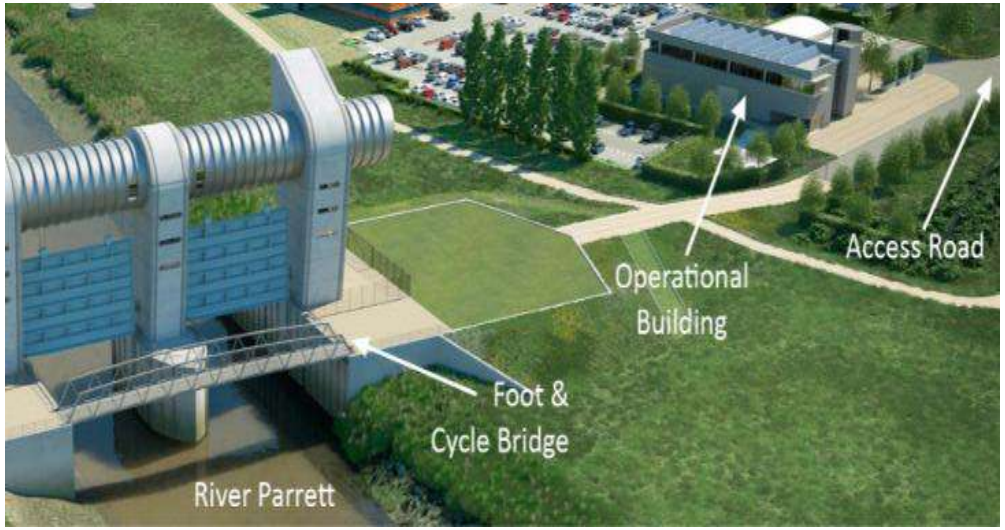
Barrier Overview









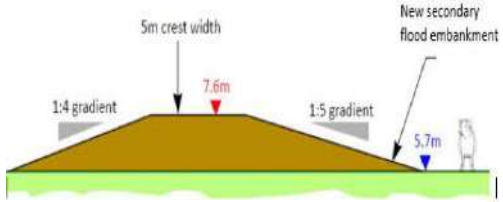


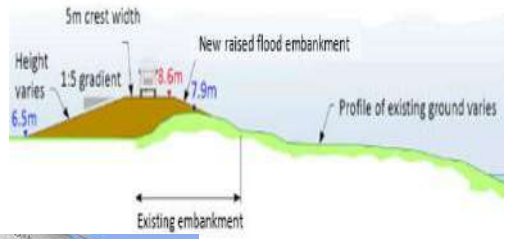
Downstream Defence Overview

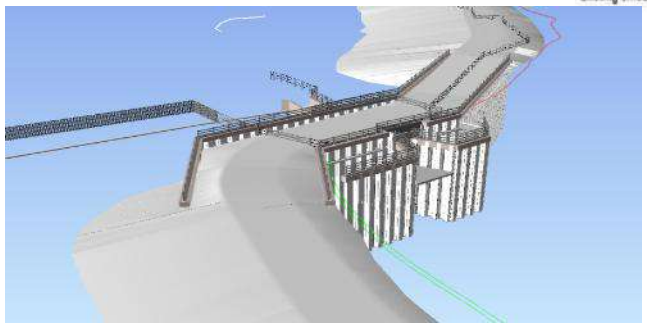
- 3No - sheet piled structures & 600m seepage cut of wall
- 8No – New Culvert Structures
- 3km - Upgrade of existing Primary Banks (65,000m3)
- 4km - Construction of new secondary Banks (77,800m3)
- 5No – Borrow Pits created
- Ecology Enhancement

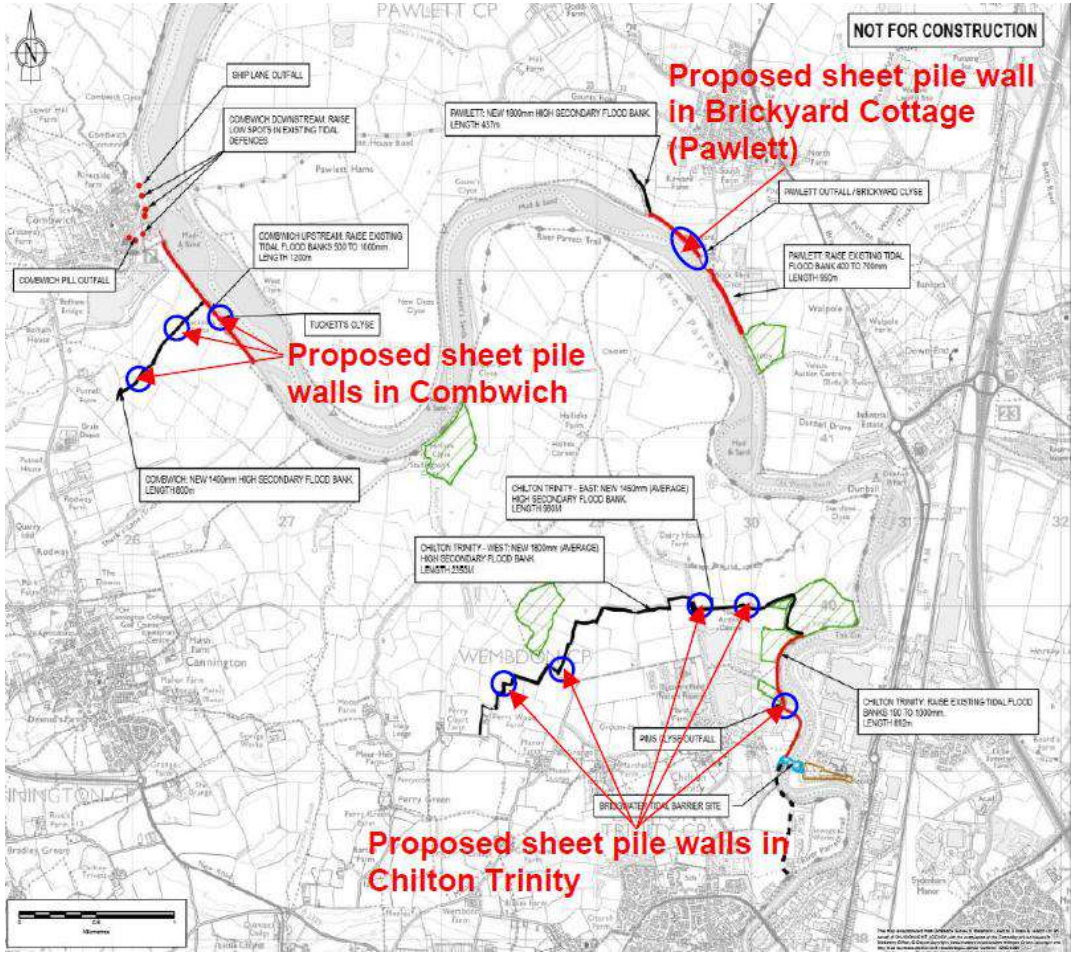


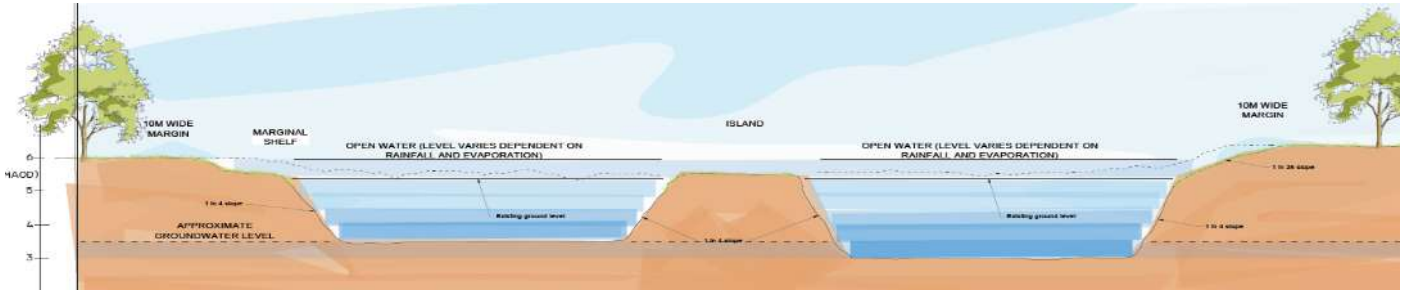












Barrier Enabling Works Overview

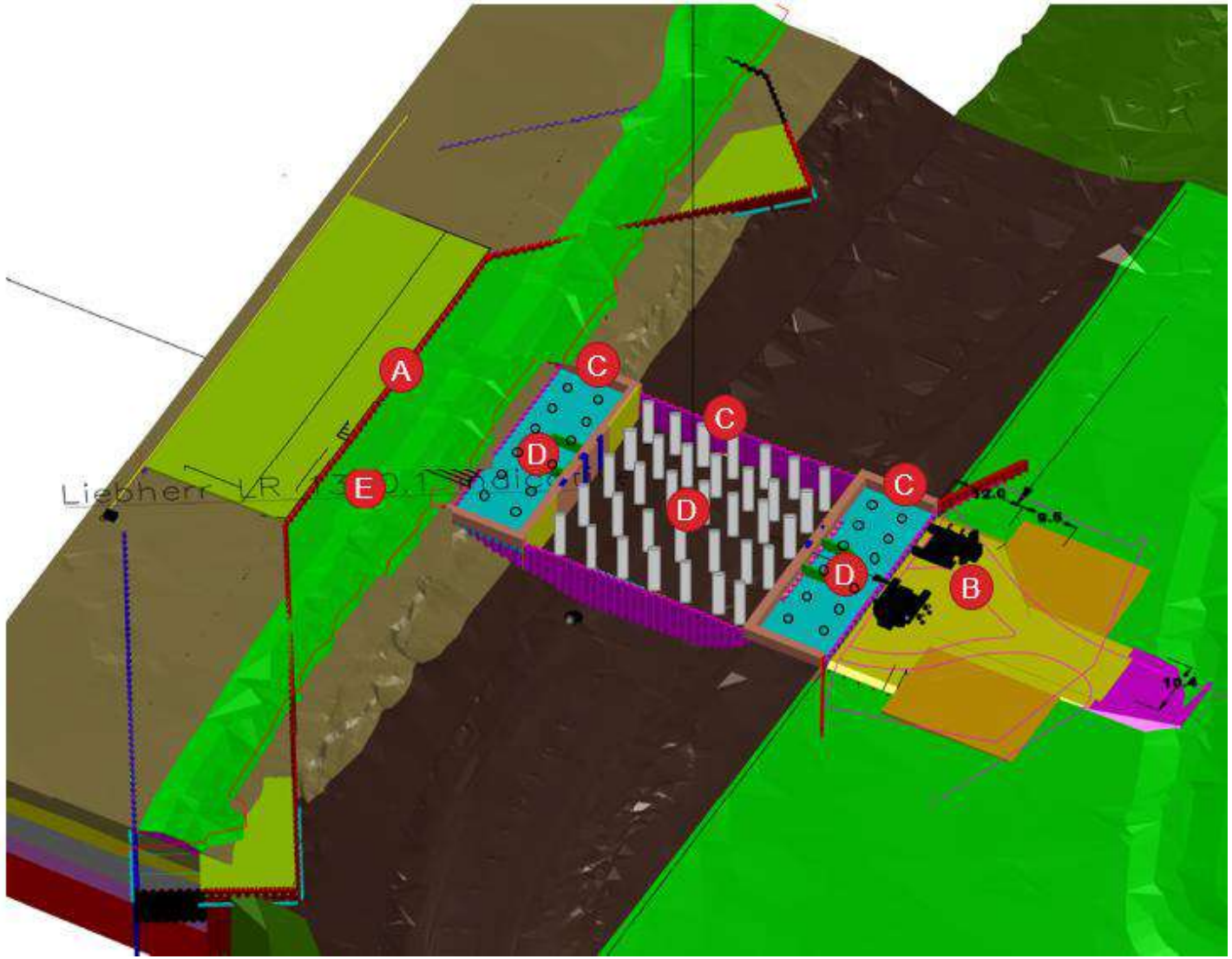
A. Bypass Channel - Installation of Sheet Piling plus Associated Temporary Works

B. Construction of Precast Concrete Column (PCC) piled Working Platforms

C. Three Cell Cofferdam - Installation of Sheet Piling plus Associated Temporary Works

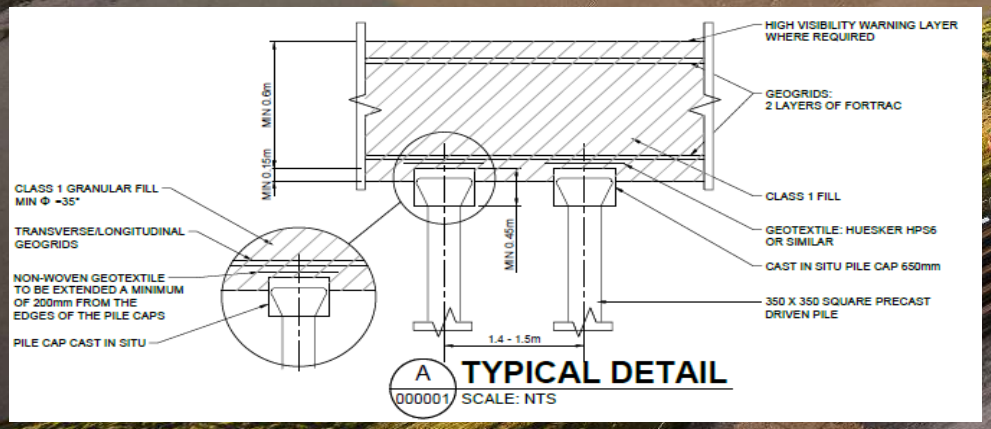
D. Installation of the Permanent Works Tubular Piles

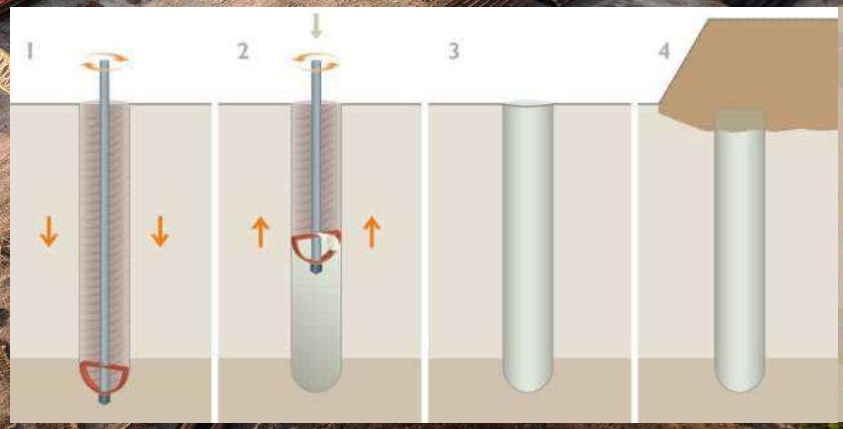
E. Excavation of the Bypass Channel within the river and scour Protection

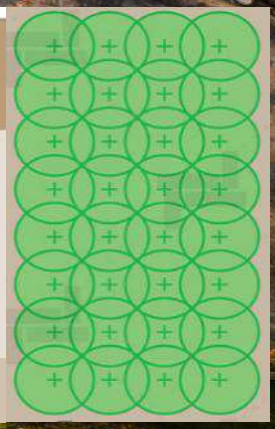


Precast Concrete Column (PCC) piled Working Platforms

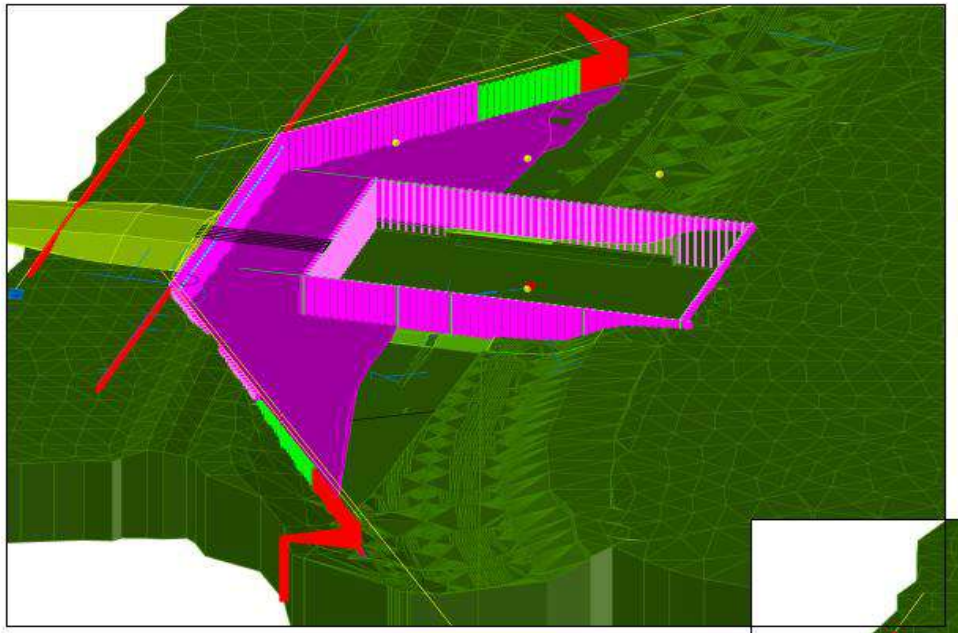
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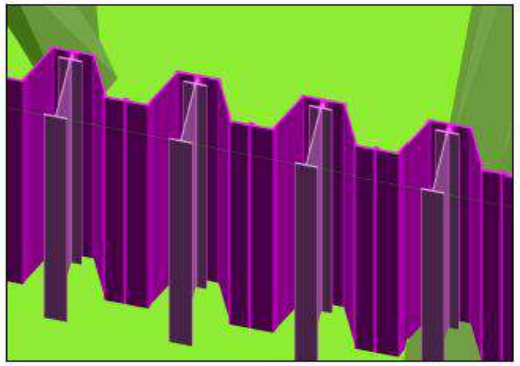


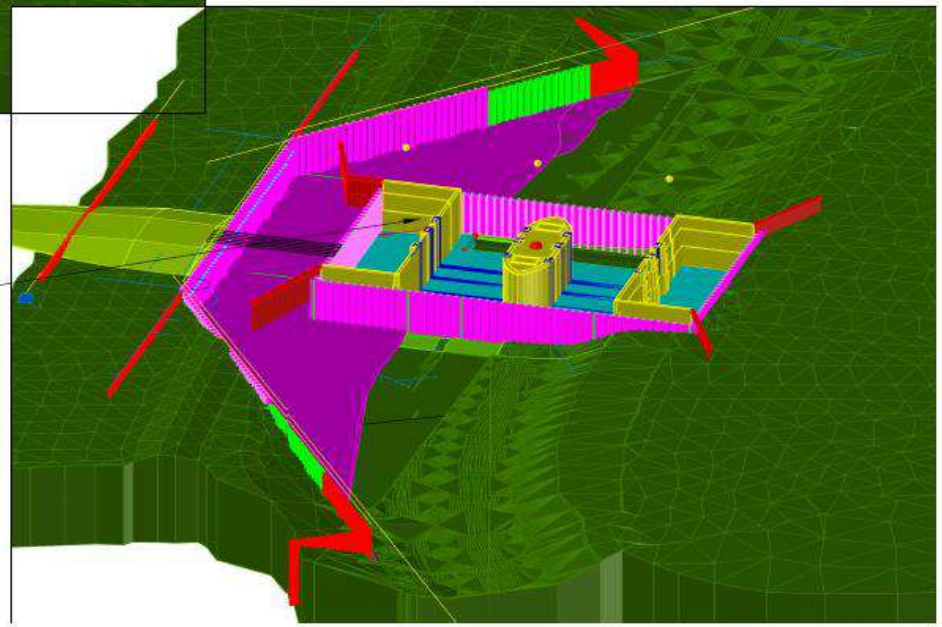




Buildability – Cofferdam & Bypass Channel as dug withing River Channel



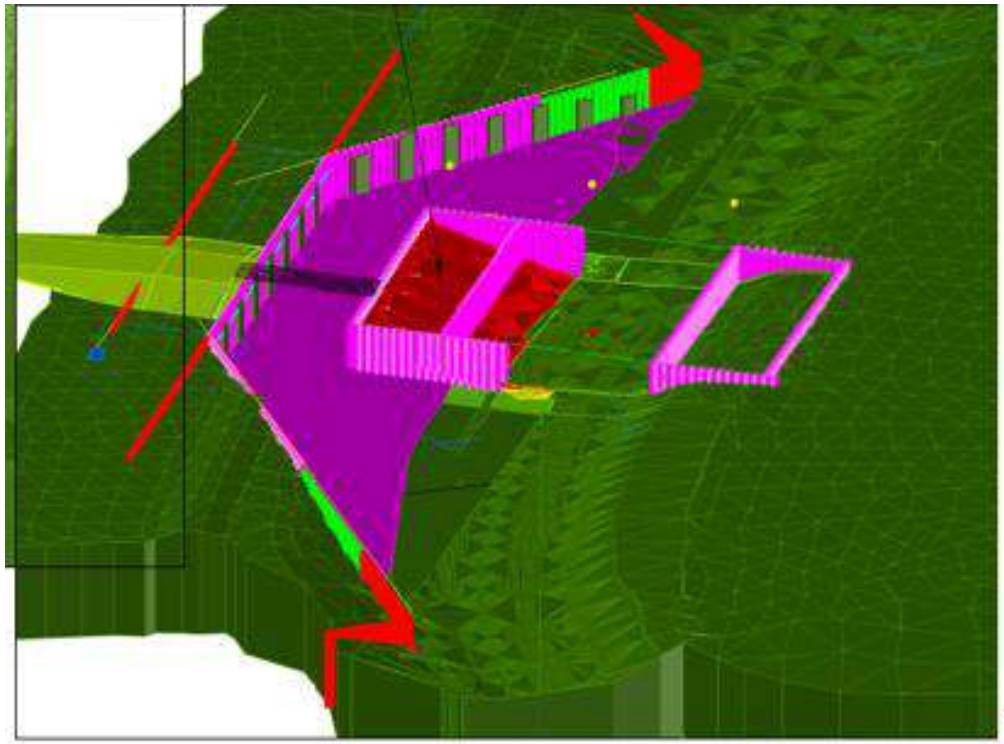




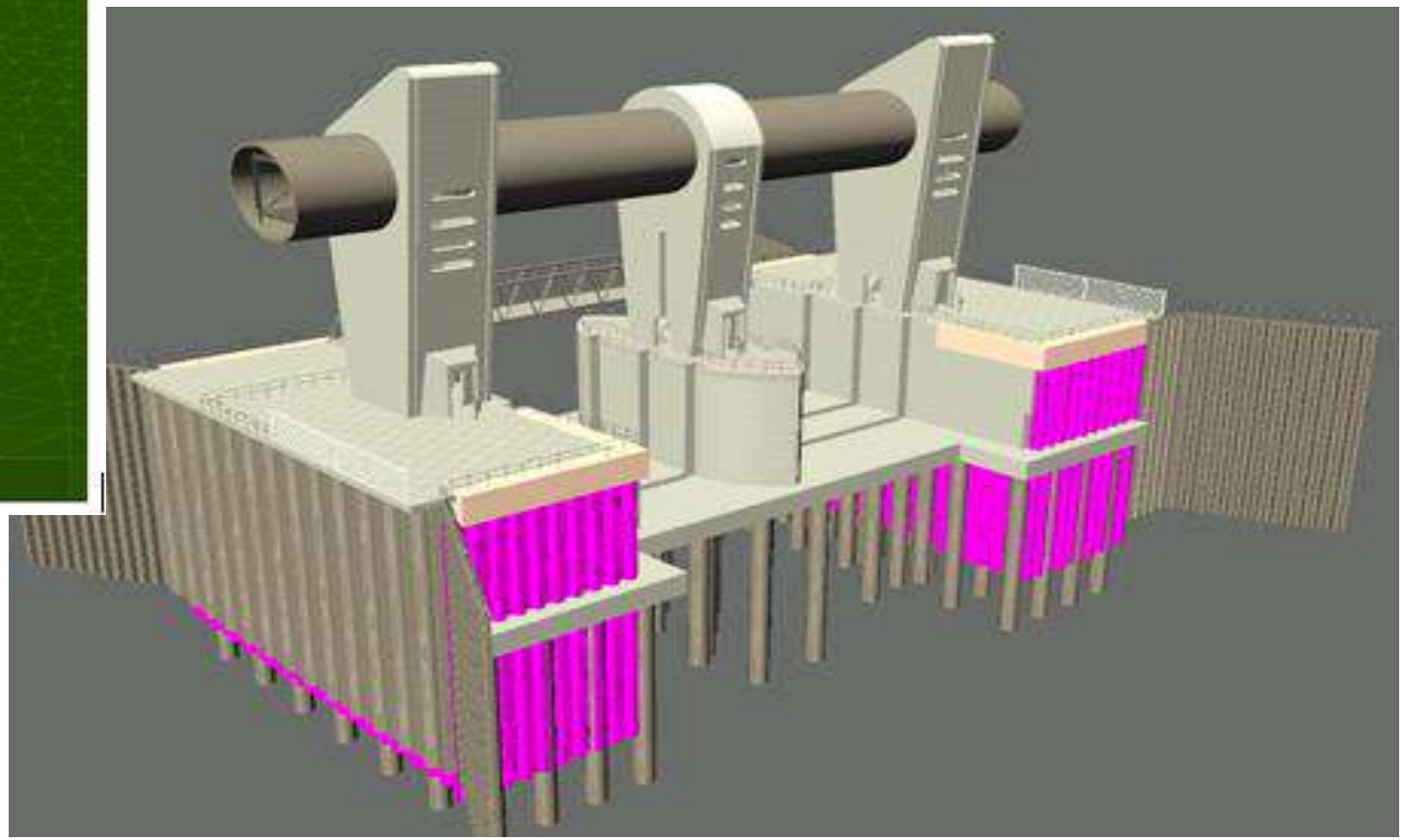
Cofferdam Framing to facilitate construction of foundations

Layout of Cofferdam & Bypass Channel – shown in existing River Channel with Bypass Channel and Cofferdam excavated

Integrated Cofferdam Cont.



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- The 3 cell cofferdam presented an opportunity to integrate the cofferdam into the outer abutment walls.
- The change allowed the raft slab to be raised within the abutment

Tubular Piles

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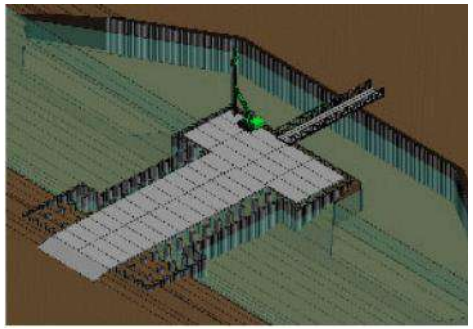
The piling operation would typically be:

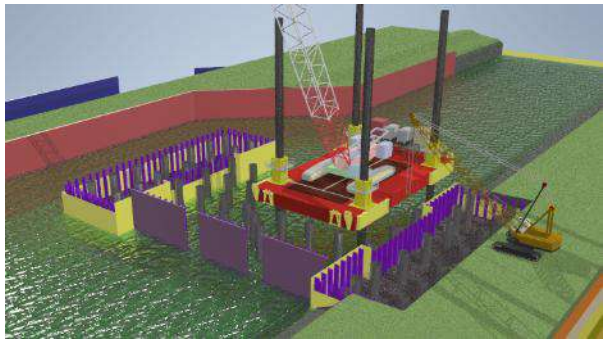
1. Set up over pile position
2. Vibro drive tubular casing into mudstone (impact hammer may be required)
3. Drill through overburden within pile casing
4. Open hole drill into Mercia mudstone bedrock using augers, and excavation and cleaning buckets.
5. Insert and hang the reinforcement cage at the design level
6. Concrete through a tremie to the bottom of the bore until the concrete rises to ~1.0m above design cut off level.

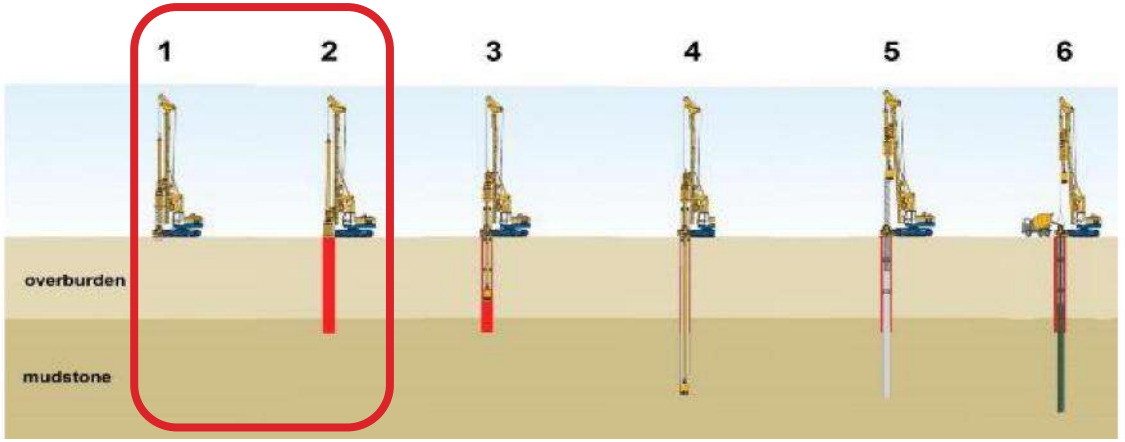






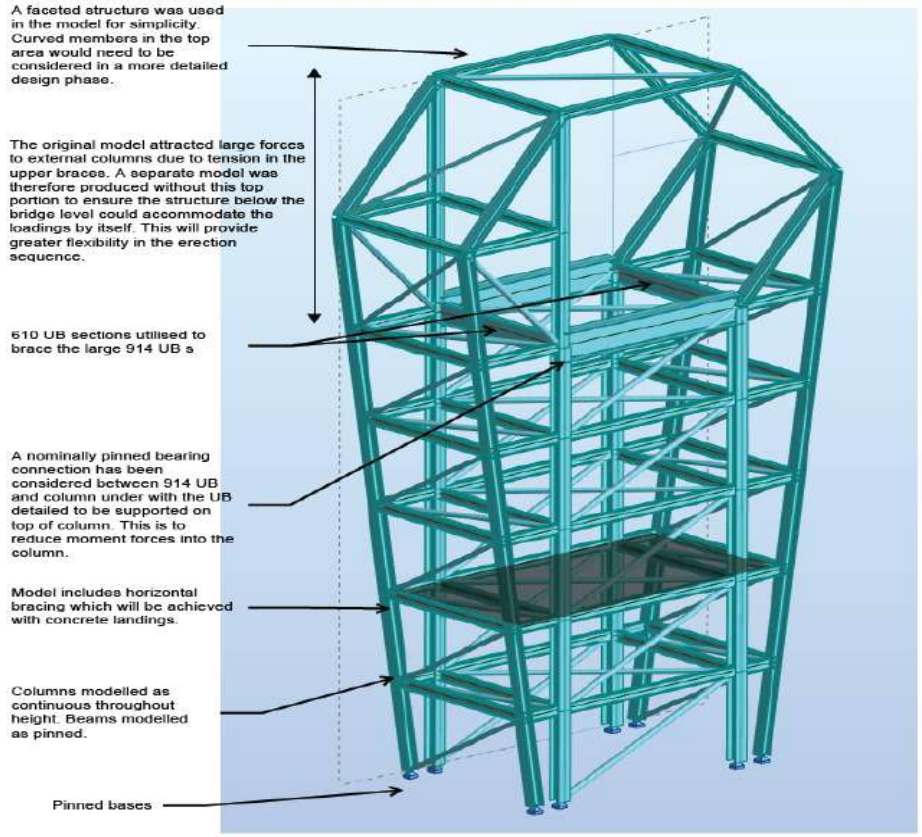


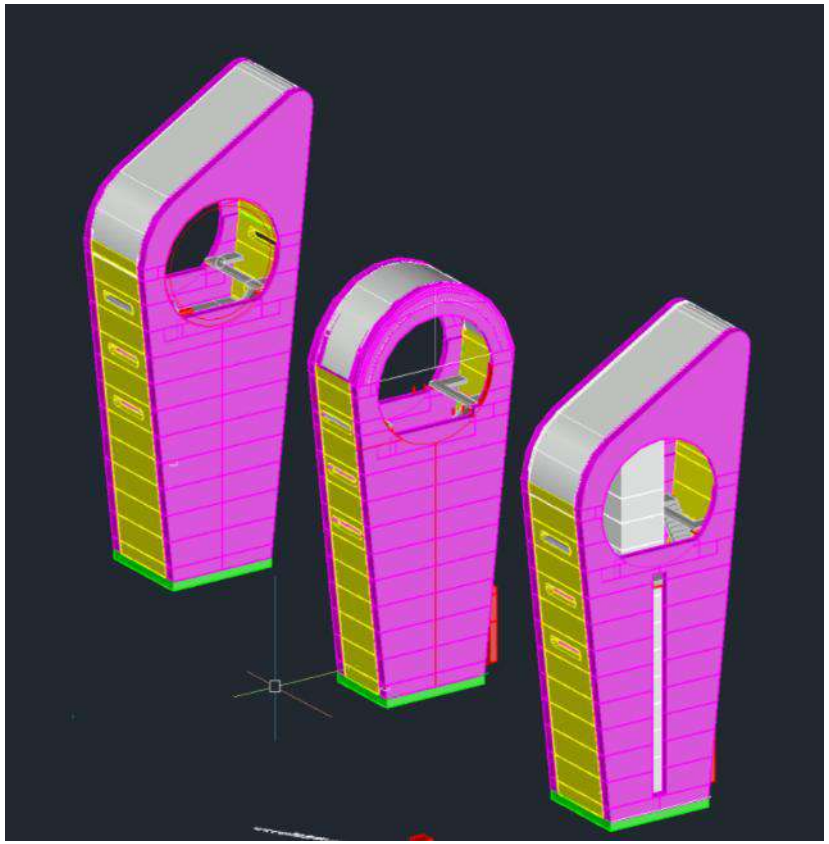


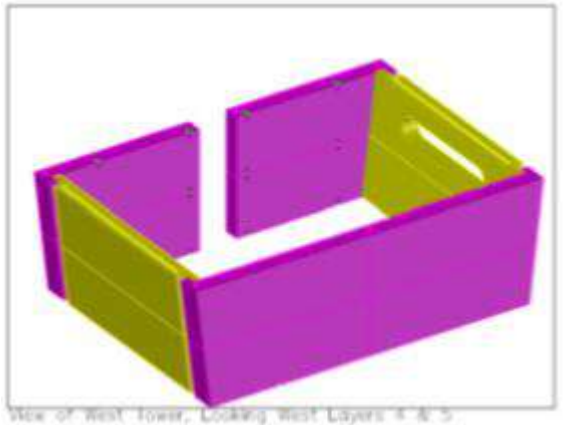


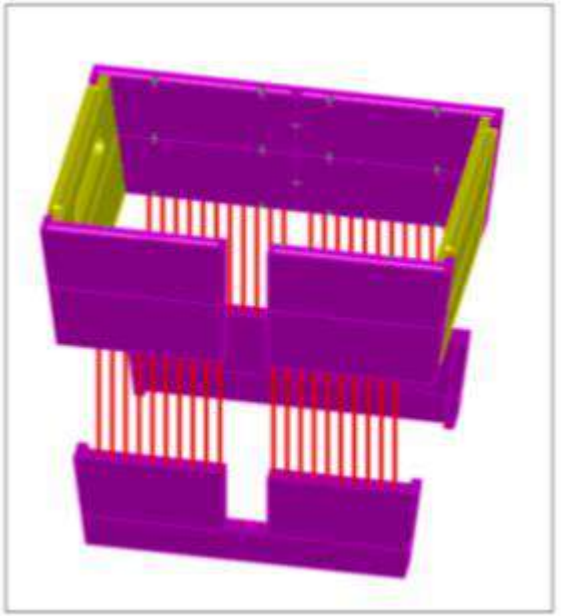
innovation
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Modular Build (MMC) – Towers









Challenge
Look to introduce a modular build approach to the three towers and reduce in-situ concrete

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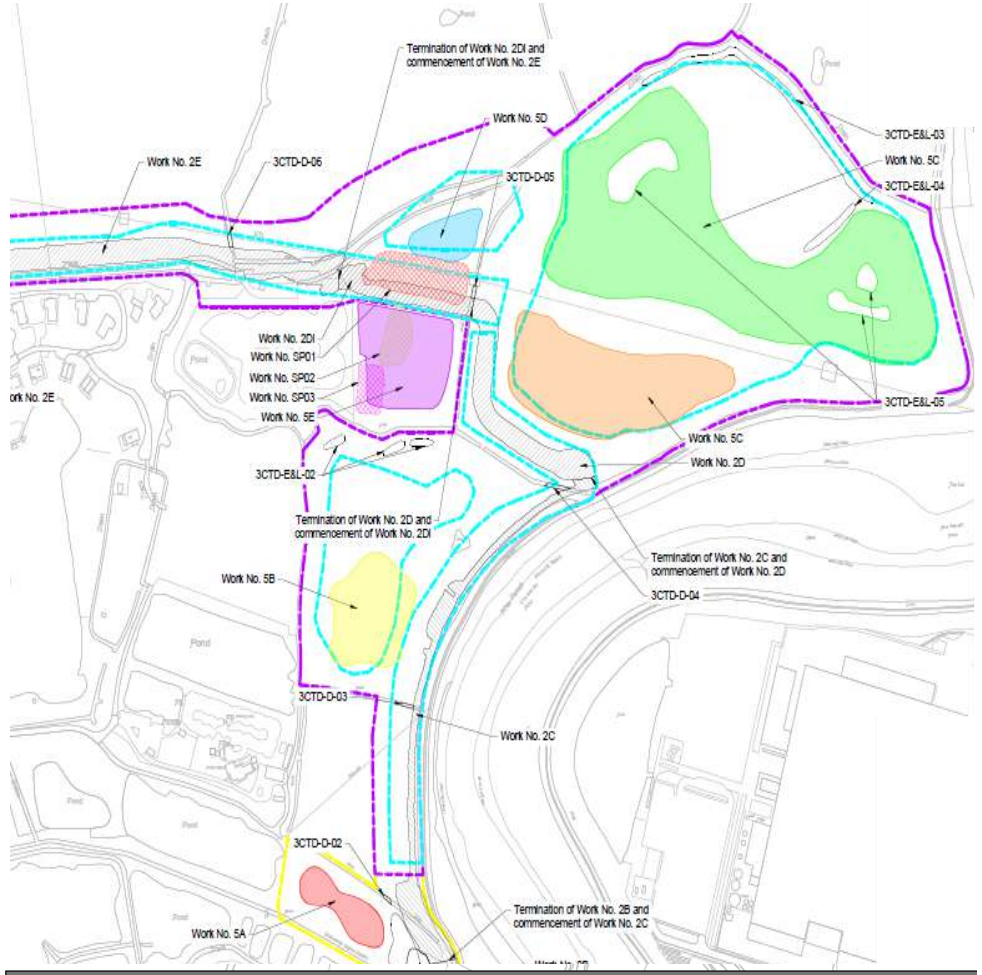
Outcome
Pre cast modular units now to be used for construction of the Towers

Site Won Material

Key Objective for the project to minimise import of bulk material and reduce the carbon footprint and negative impacts on heavy vehicle movements.

To achieve this Objective there where many factors influencing the outcome;

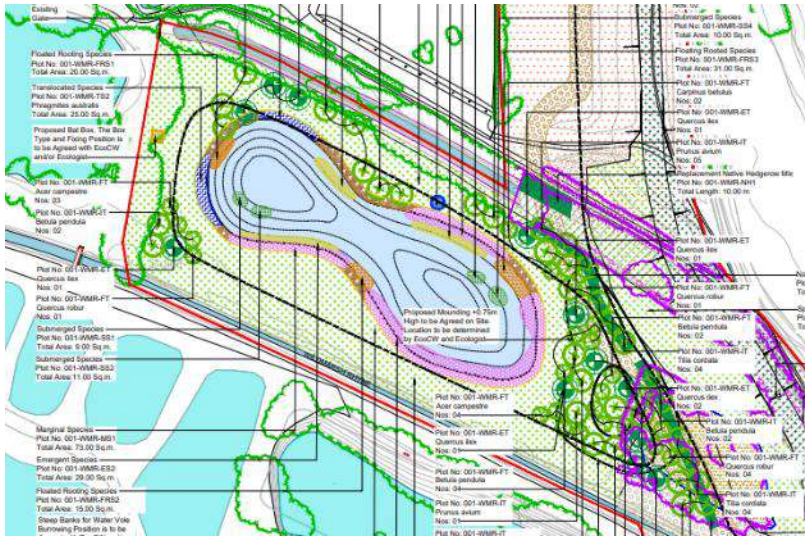
- Good Ground investigation and Soil Resource Surveys
- Archaeological/Heritage Considerations
- Ecological Consideration
- Landscape Consideration
- Material Balance - using site won material within engineered banks and re-purposing non suitable engineered material
- Settlement and surcharge
- Bulking and compacting factors
- Design and winning material balance



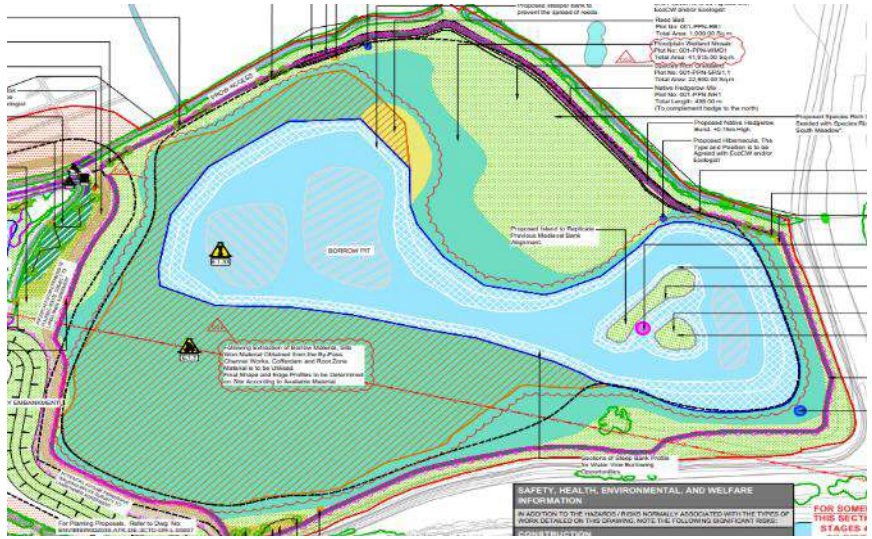
Excavated Materials Volume

Ref:	Development Stage Ref:	Description	Key	Total Excavated Volume (m³)	Volume of Topsoil (m³)	Volume of useable Class 2 (m³)	Volume of Unsuitable (m³)
Work No. 1A	Stage 2	Tidal Barrier - Bypass channel		29100	300	2000	26800
Work No. 1A	Stage 2	Tidal Barrier - South East Tie In on East Abutment		600	0	0	600
Work No. 1A	Stage 2	Tidal Barrier - Cofferdam		2200	0	0	2200
Work No. 1C & 1D	Stage 2	Express Park - Site excavations & Foundations		TBC	0	0	TBC
Work No. 5A	Stage 3	Borrow Pit - Wildmarsh Rhyne		2000	1000	1000	0
Work No. 5B	Stage 5	Borrow Pit -Pims Pit South		7980	2800	5180	0
Work No. 5C	Stage 5	Borrow Pit - Pims Pit North (North of power lines)		37500	11000	26500	0
Work No. 5C	Stage 5	Borrow Pit - Pims Pit North (South of power lines)		14500	6000	8500	0
Work No. 5D	Stage 5	Borrow Pit - Pixies Hat North		2300	1400	900	0
Work No. 5E	Stage 5	Borrow Pit - Pixies Hat South		9400	1200	8200	0
SP01	Stage 5	Stock Pile - Hump		2850	-	1450	1400
SP02	Stage 5	Stock Pile		2050	-	1050	1000
SP03	Stage 5	Stock Pile		750	-	350	400
			Totals	111150	23700	55050	32400

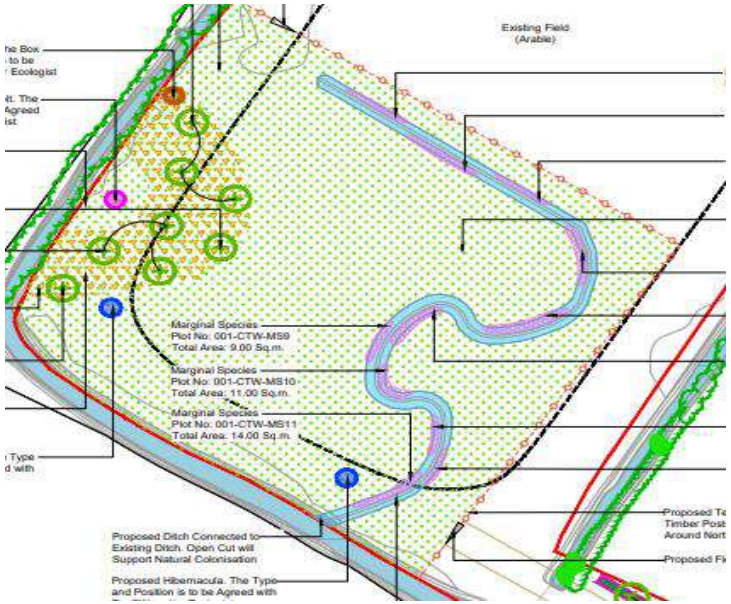
Borrow Pits & Mitigation Ditches













Summary

- Proactive ECI with a shared objective across all parties
- Build Less (PCC piles 350sq to 250sq, Tower PCC Cladding, embankment sizes, etc)
- Integrate temporary works and Permanent Works
- Pursue Modern Method of Construction and Digital first
- Challenge the status quo!





Thank you




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