Richard Dowling – Engineering Inspector, Department of Transport
Barry Lennon – Senior Engineer Roads Section, Offaly County Council

Roads over Peat Pilot Project

Session 2: Roads over Peat Pilot Project

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- Construction
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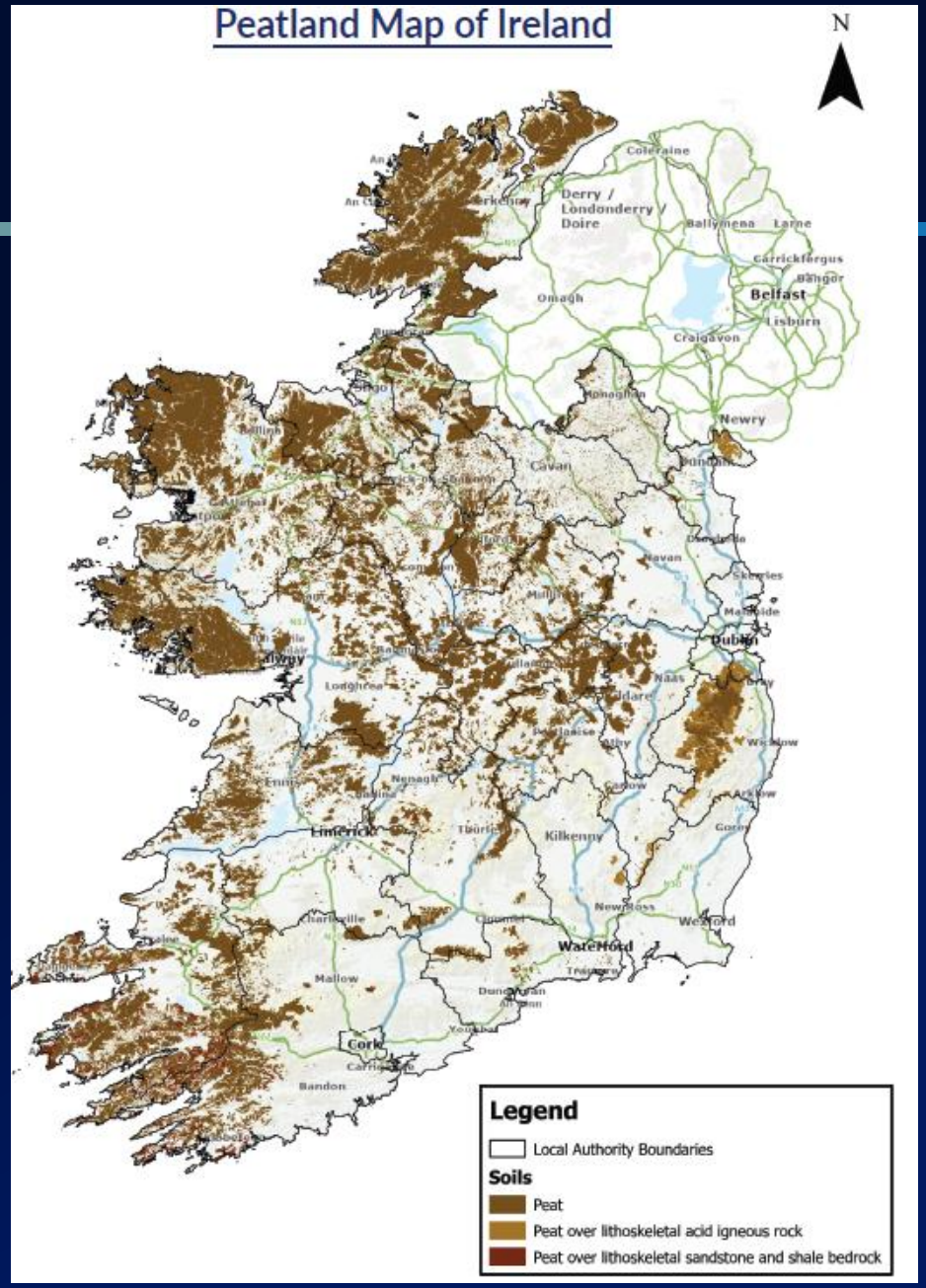
Overview of Peat Roads in Ireland

- Approximately 15.1% of Irish roads are constructed over peat.
- Peat roads are an expensive maintenance challenge for LAs.
- Issue with peat roads are likely to get worse with climate change.



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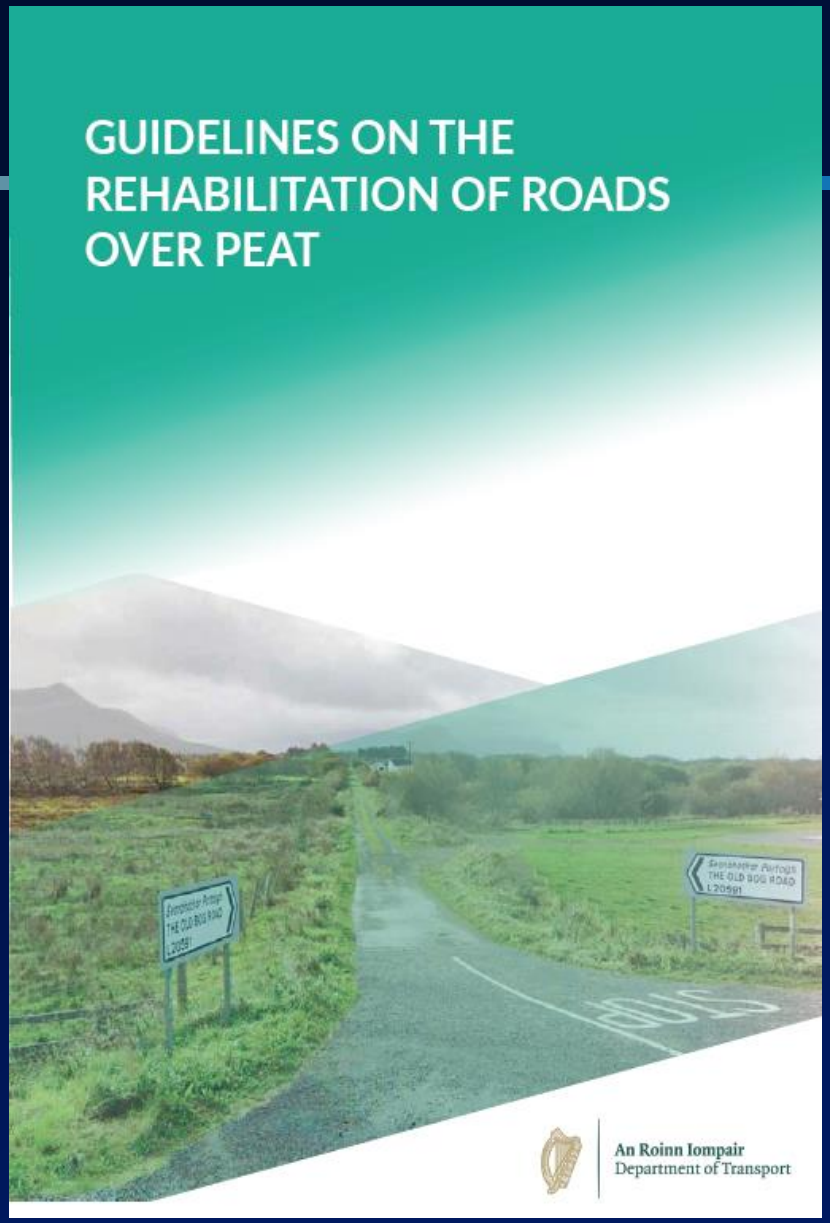
Updated Guidelines on Rehabilitation of Peat Roads

- Policy Development include:
  - National Development Plans NSOs
  - Climate Action Plan: 51% emission reduction by 2030 & net zero by 2050.
- Asset management capabilities and requirements have developed via MapRoad AMS and TIIs Pavement Asset Management System.
- Advancement of technologies including Ground Investigation Techniques and Geosynthetics.

Technical Working Group	
Chair: Mr Dominic Mullaney	
• Clare CoCo • Donegal CoCo • Kerry CoCo • Mayo CoCo • Monaghan CoCo	• Offaly CoCo • Westmeath CoCo • DoT& DoTSO • TII • RMO



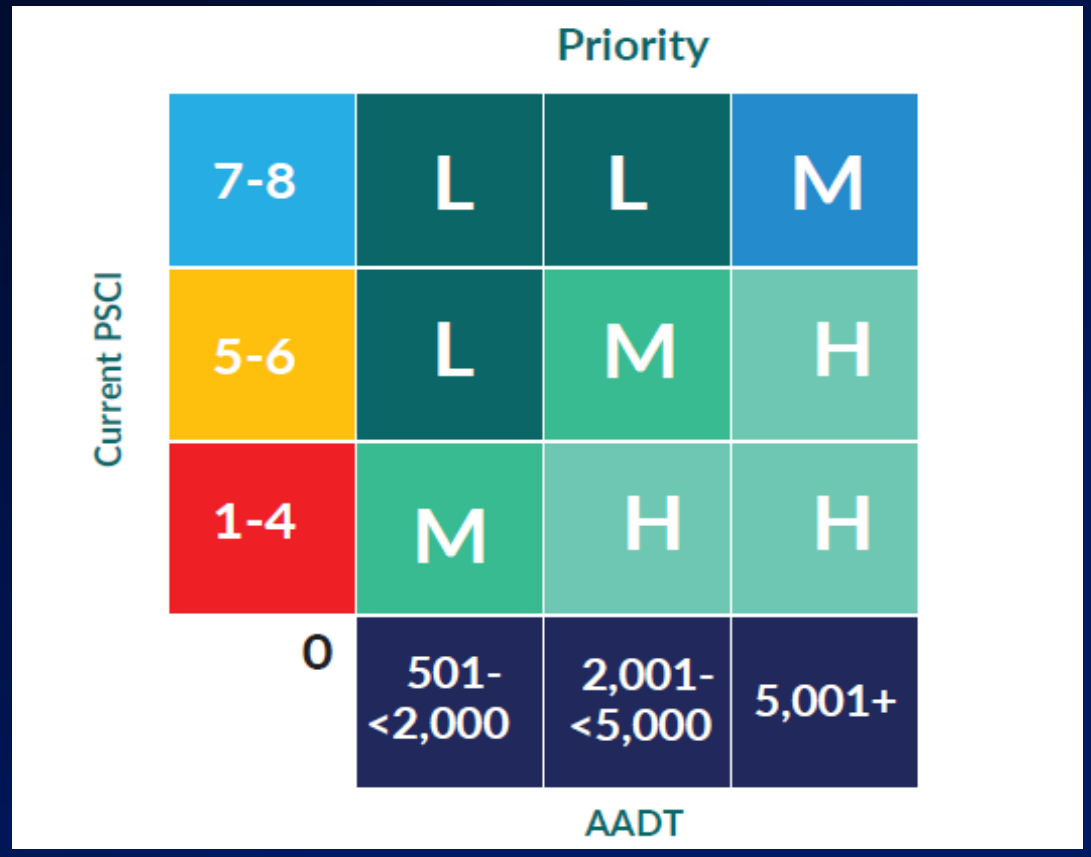
Updated Guidelines on Rehabilitation of Peat Roads

- Design Process:
  - Desktop Study.
  - Visual Inspection.
  - Pavement Investigation.
  - Drainage Considerations
  - Ground Investigation
  - Environmental Considerations

Updated Guidelines on Rehabilitation

- Intervention Strategies:
  - Priority Matrix.

Overall PSCI Rating	Treatment Measures	Surface	Structure
10	**Routine Maintenance**	Excellent	
9		Very Good	
8	**Resealing & Restoration of Skid Resistance**	Fair	Good
7		Poor	
6	**Surface Restoration** – Carry out localised repairs and treat with surface treatment or thin overlay.	Fair	Fair
5		Poor	
4	**Structural Overlay** - Required to strengthen road. Localised patching and repairs required prior to overlay.	Poor Overall	
3			
2	**Road Reconstruction** - Needs full depth reconstruction with extensive base repair.	Very Poor Overall	
1		Failed Overall	



Updated Guidelines on Rehabilitation of Peat Roads

- Intervention Strategies:
  - Intervention Types
  - Types and Uses of Geosynthetics.

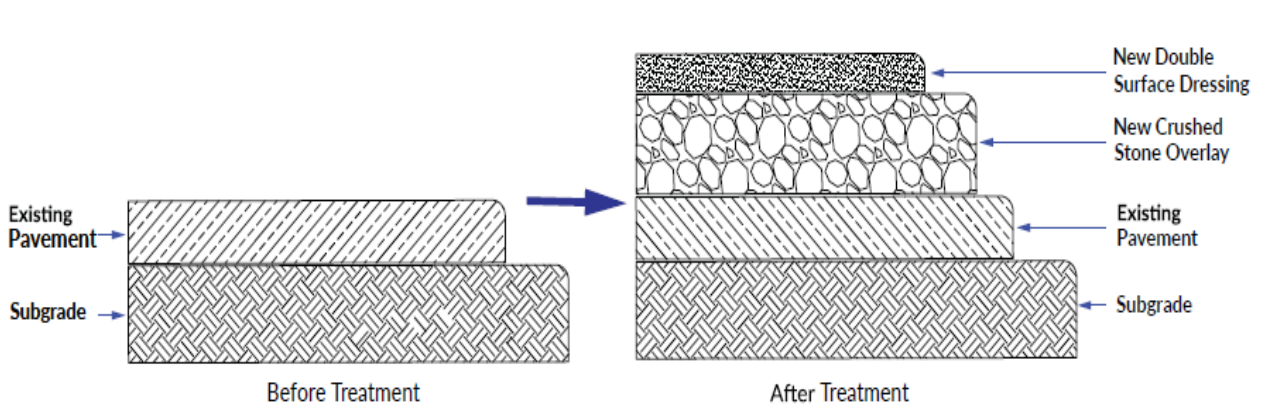


Figure 4.2.1 : Treatment Type 1

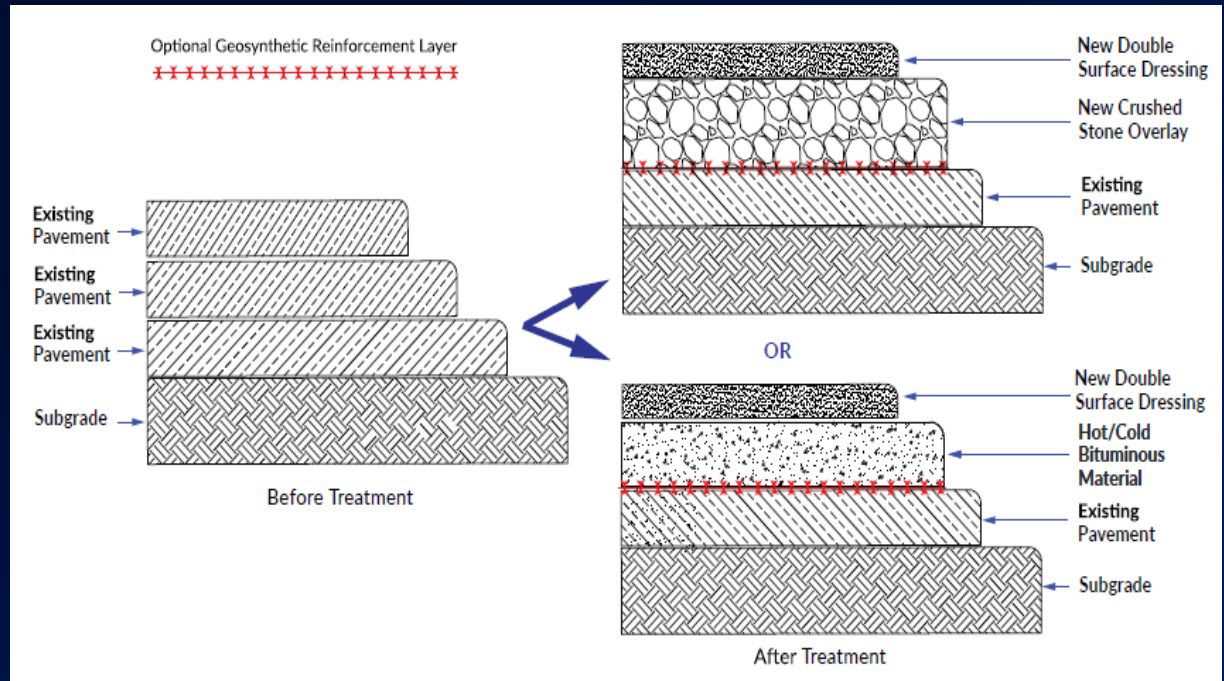


Figure 4.2.5 : Treatment Type 5

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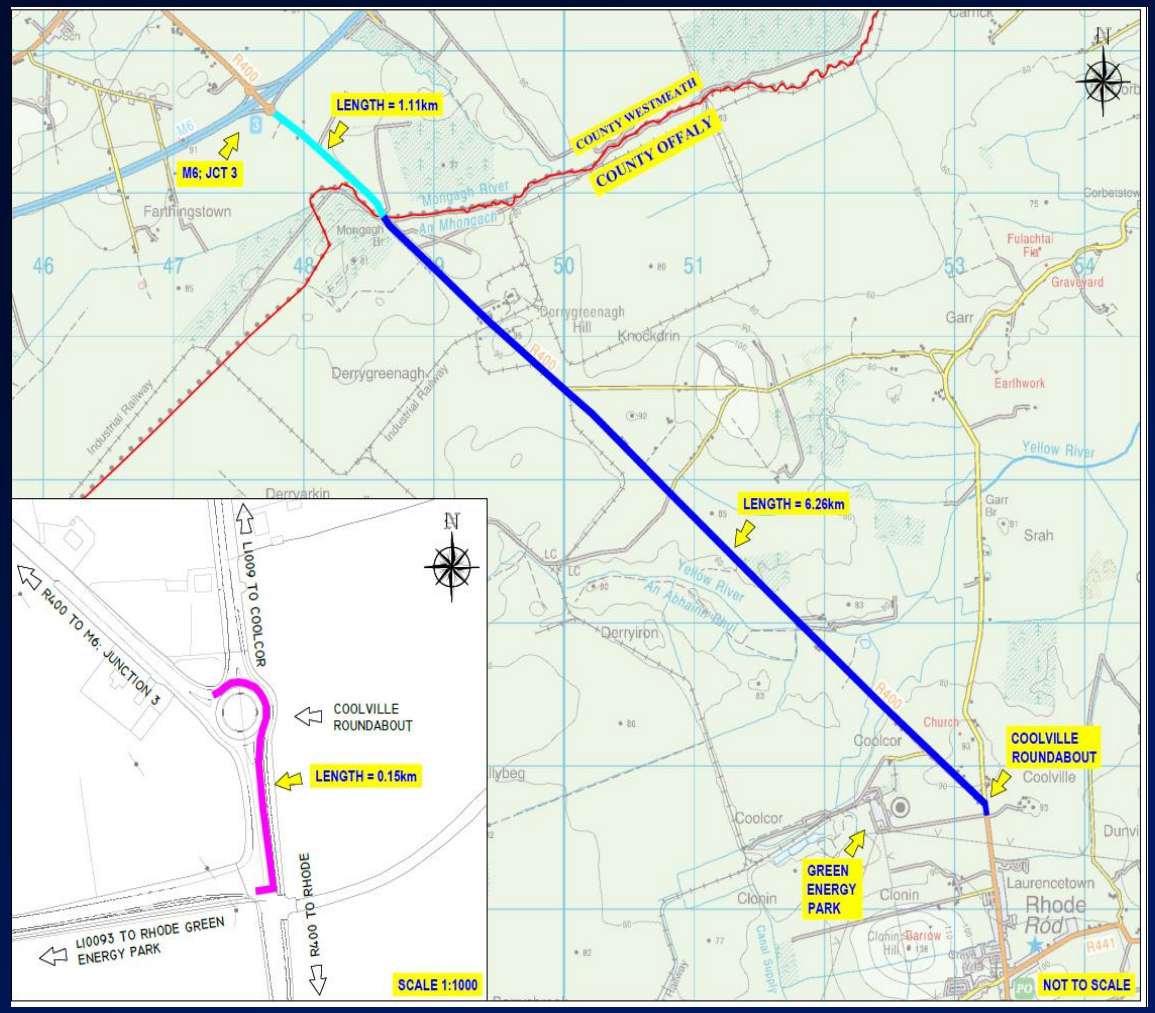
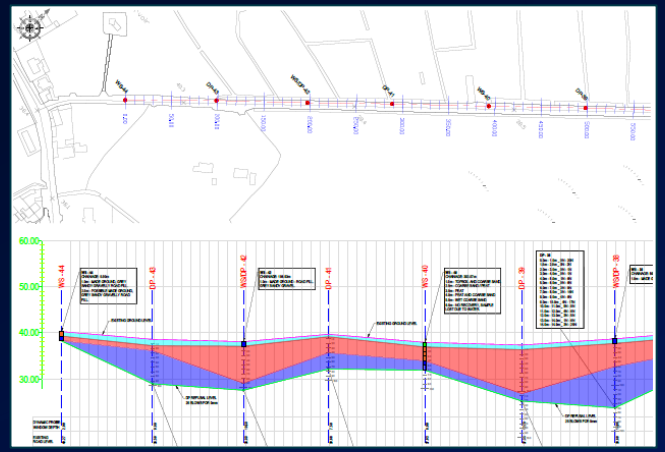
Introduction

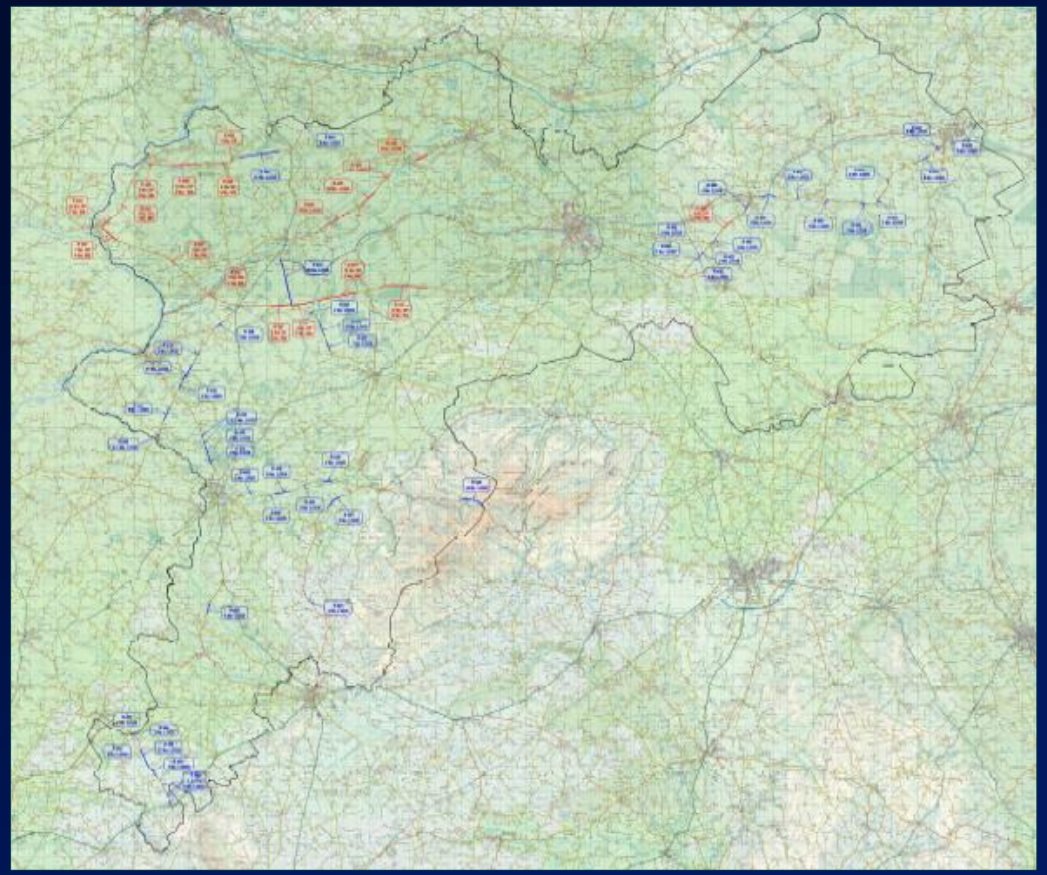
- R400 – Link from the M6 to Rhode – Strategic Link servicing Green Energy Proposals/Data Centers/Wind Farms/Proposed Gas PowerStation.
- Peat Subgrades to a depth of up to 7m.
- AADT – 2200
- % HGV – 13-15% due to the level of Heavy Industry serviced by this route.
- Difficult to maintain given the many defects and the constant loss of the vertical alignment due to failures/collapses.
- Initial Iteration of the Pilot in 2023 involved the excavation of the Peat Subgrades across a 600m section to maximum depths of 4.6 m at a cost of € €1,877,744.00 incl VAT which equates to €3,129,573./km



2019-2020: Initial Geotechnical Investigation

- Funding in 2019 & 2020 of €175,000
- 2019 Traffic Survey AADT
- Site investigation Contractors Appointed
- 400 Dynamic Probes and Window Samples taken around the County
- Site Investigation Reports
- 130 Long section Drawings





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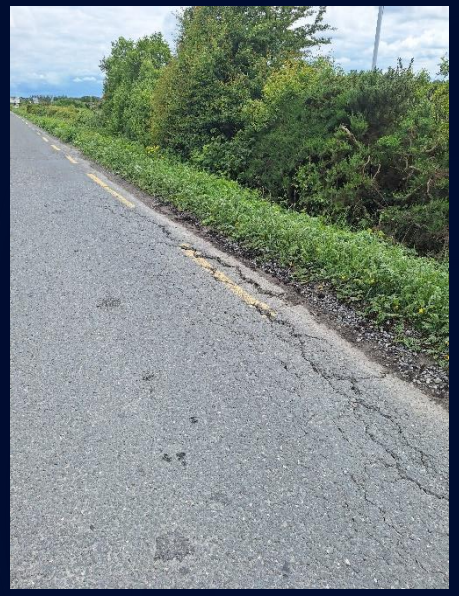
R400 Existing Condition



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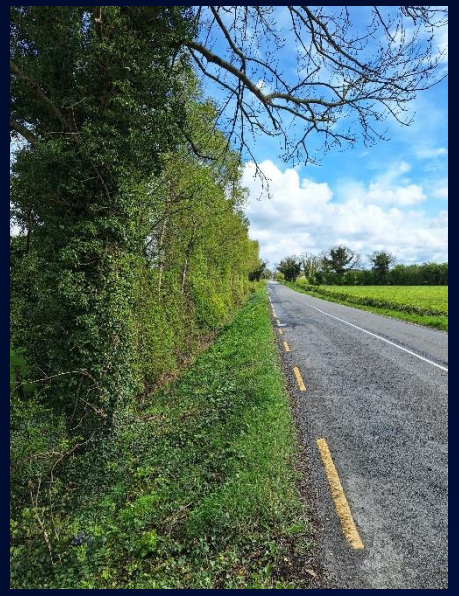

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1. The R400 showed all the typical pavement failures:
   - Surface Defect: Ravelling & Bleeding
   - Pavement Deformation: Rutting & Surface Distortion
   - Cracks: Alligator and Edge Breakup Cracks
   - Surface Opening: Patching, Potholes & Road Disintegration

2. Narrow verges with steep banks.

3. Existing Cross section:
   - Layers of previous surface dressing
   - Over 804
   - Over, the original capping layer which was built off the peat sub-grade

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Approach

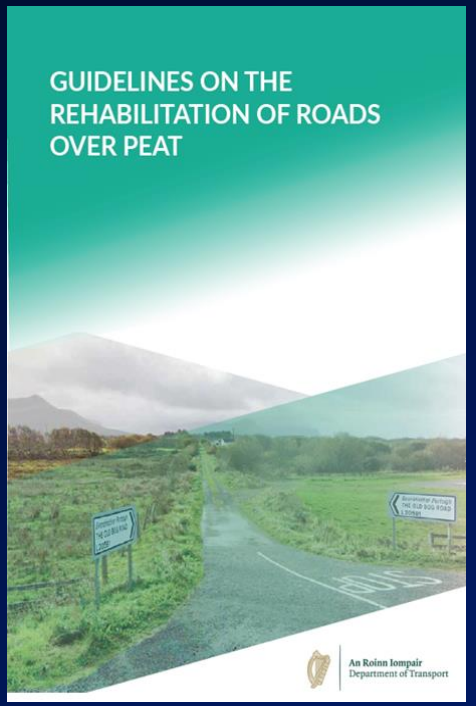
Design Team- Offaly County Council Road Design Team, Department of Transport and AGL Consulting Geotechnical Engineer.

The scheme was formulated in line with the criteria as laid out within the DRAFT 'Guidelines for the Rehabilitation of Roads Over Peat'.

Design and Tender documentation were validated by Chandler KBS

The Design was underpinned by detailed Geotechnical Investigation which included Trail Pits, Boreholes, window samples, shear vanes and material laboratory testing.

AGL CONSULTING GEOTECHNICAL ENGINEERS



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Offaly County Council

Funding

- The scheme was match funded by Offaly County Council using Own Resources to complement the €1,000,000 allocation from the Department of Transport as provided under the 2024 Road Grant Allocation.

- Offaly County Council have and continue to complement the annual allocation from the Department of Transport with Own Resources Funding as follows:
    - 2024 Initial DOT Road Grant – €15,754,150
    - Offaly County Council Own Resource Funding - € 3,809,529
    - 2025 Initial DOT Road Grant – € 17,235,400
    - Offaly County Council Own Resource Funding - € 3,951,269

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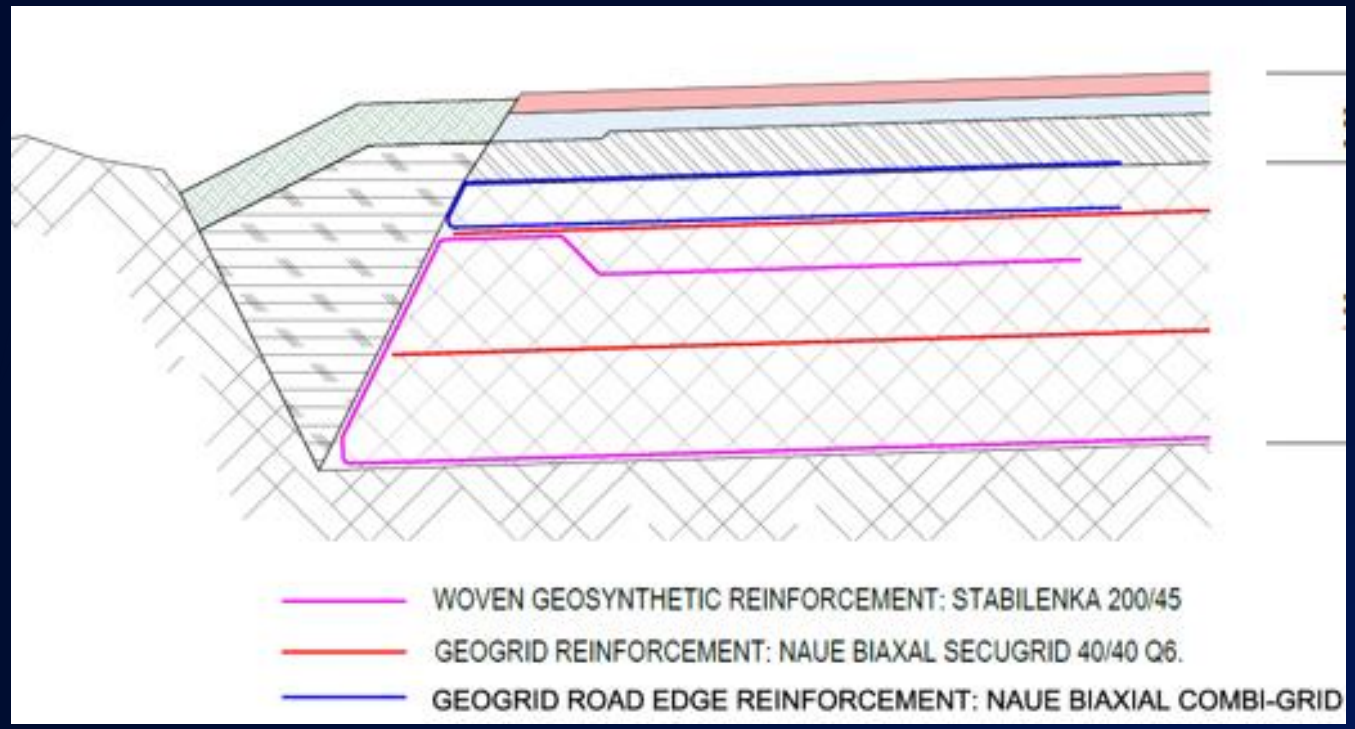
AGL Final Foundation Design



Final Cross Section Detail:

800mm-1.0m of Class 6F2 capping, 150mm of Clause 804 subbase Approx. 170mm thick road pavement.

The geogrid/geosynthetic reinforcement comprised the following:
1 No. basal layer of Stabilenka 200/45 geosynthetic reinforcement placed as a single continuous layer at the base of the capping transversely across the road width.

2 No. internal layers of Naue Secugrid 40/40 biaxial geogrid placed within the Class 6F2 capping longitudinally along the length of the road. Overlaps of adjacent geogrids was permitted.

1 No. layer of Naue Biaxial Combi-Grid 40/40 Q6 reinforcement placed longitudinally as a single continuous layer at the top road edge section of the foundation.

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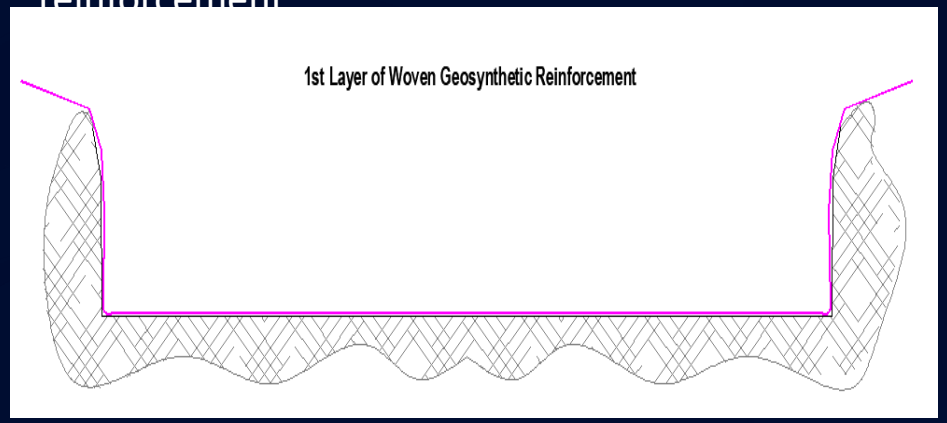
Foundation Construction Sequence: – Laying of Stabilenka 200/45 geosynthetic reinforcement



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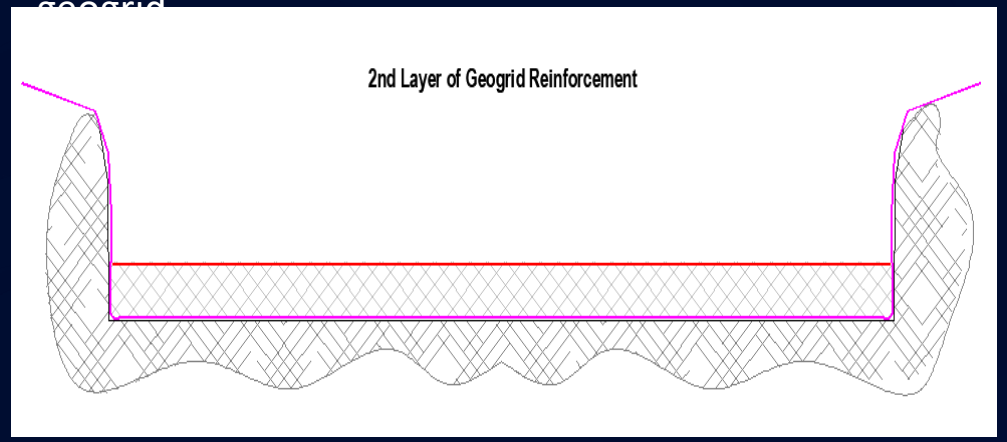
Foundation Construction Sequence: – Laying of Naue Secugrid 40/40 biaxial geogrid



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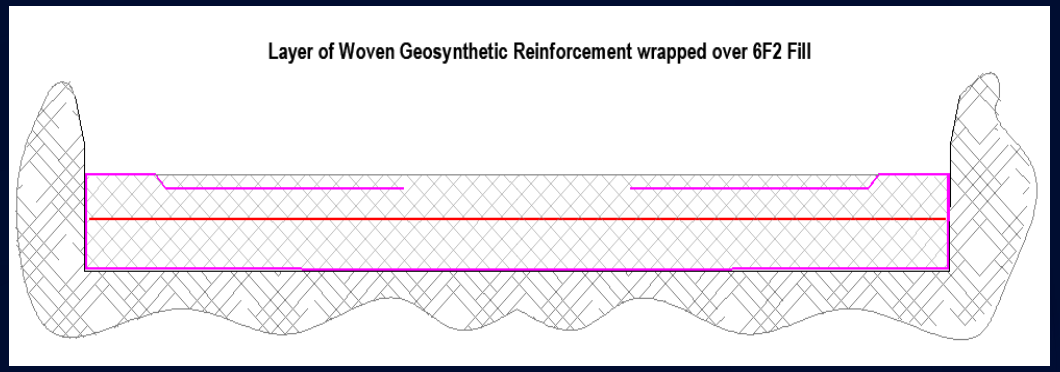
Foundation Construction Sequence: – ‘Wrapping Over’ off the Stabilenka 200/45



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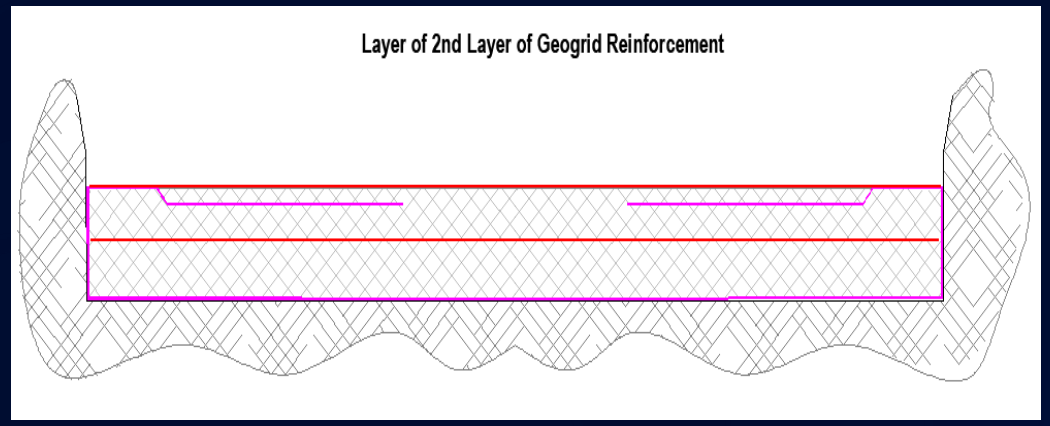
Foundation Construction Sequence: – Placing of 2nd Layer of Naue Secugrid (laid longitudinally)



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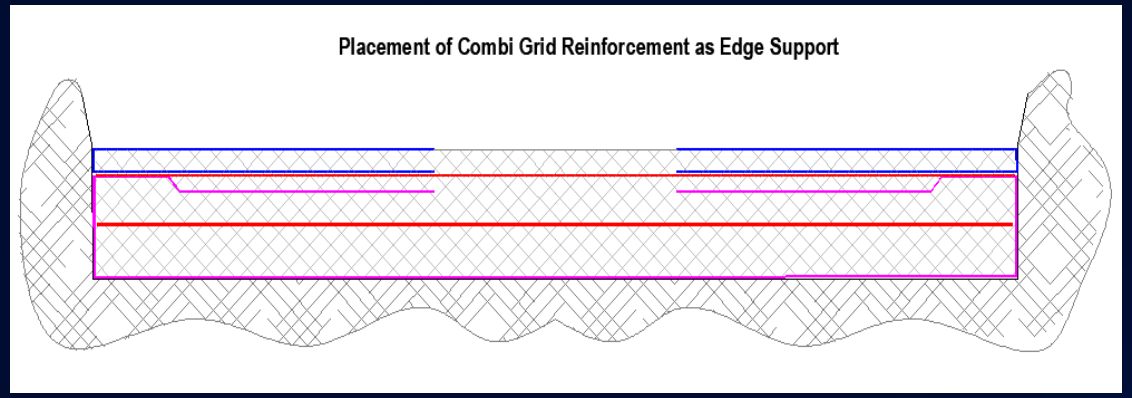
Foundation Construction Sequence: – Placing of Naue Biaxial Combi-Grid 40/40 Q6



1.

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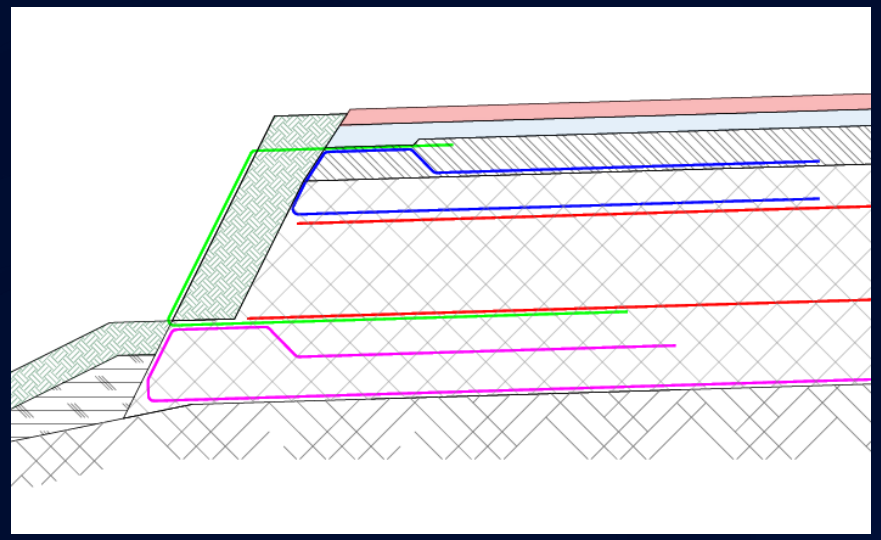
Trial Edge Detail: – Placing of Green Terramesh facing to create a permanent 70 degree vegetated slope face



Key Points, Post Testing and Monitoring

Key Points:

- Full Width Reconstruction – Diversion Route Coordination is critical.
- Data Collection is critical both pre and post works and most be continuous.
- Alignment and compliance with the soon to be released ‘Guidelines for the Rehabilitation of Roads over peat is essential.
- Communication with all Stakeholders, Landowners, Residents, Emergency services
- Geotechnical Investigation works as early as possible to aid design
- Laying of the geosynthetics – Coordination with the Designer
- Coordinating the post testing, FWD & RSP surveys etc

Post Test and Monitoring:

- As-Built Topography Survey
- Water Table Reading from Standpipe Installed
- Falling Weight Deflectometer (FWD)
- Road Surface Profiler - IRI and Rut Depth

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Barry Lennon – Senior Engineer Roads Section, Offaly County Council

THANK YOU

Join the Q&A session at Slido.com and enter 3873601 or via the QR Code.
Questions must include name and associated Local Authority to be considered by the panel.

LASNTG Local Authority Services National Training Group

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