Sustainability in Highway Design and Asset Management

Laura Traseira-Piñeiro

Project Engineer

QRIS Materials Intelligence

Peter Wells

Highways Asset Manager

via

QRIS Materials Intelligence

Laura Traseira-Piñeiro

Project Engineer

QRIS Materials Intelligence

Peter Wells

Highways Asset Manager

via

QRIS Materials Intelligence

Laura Traseira-Piñeiro

Project Engineer

QRIS Materials Intelligence

Peter Wells

Highways Asset Manager

via

QRIS Materials Intelligence

Sustainability and Digitalisation in Infrastructure Design

What, why, how?

ORIS Materials Intelligence

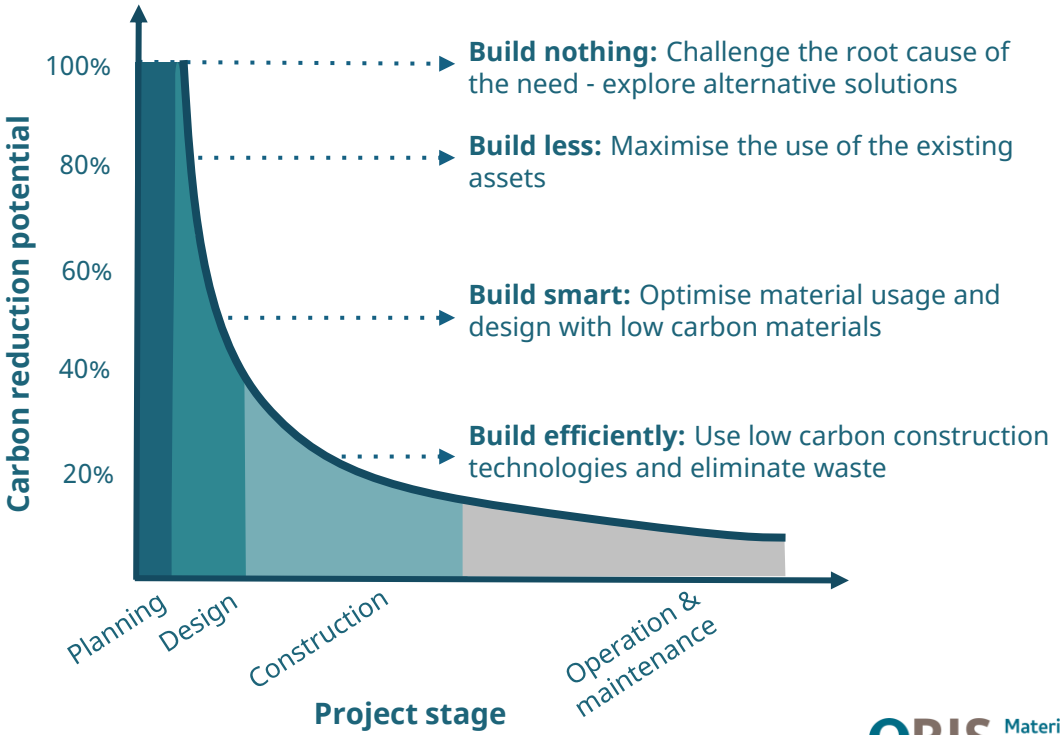
Principles of Pavement Sustainability in Road Construction

Importance of due diligence at an early stage of the project

25% of the global GHG emissions come from the **transportation sector**

The predominant sector is **road transportation**, accounting for **75%**

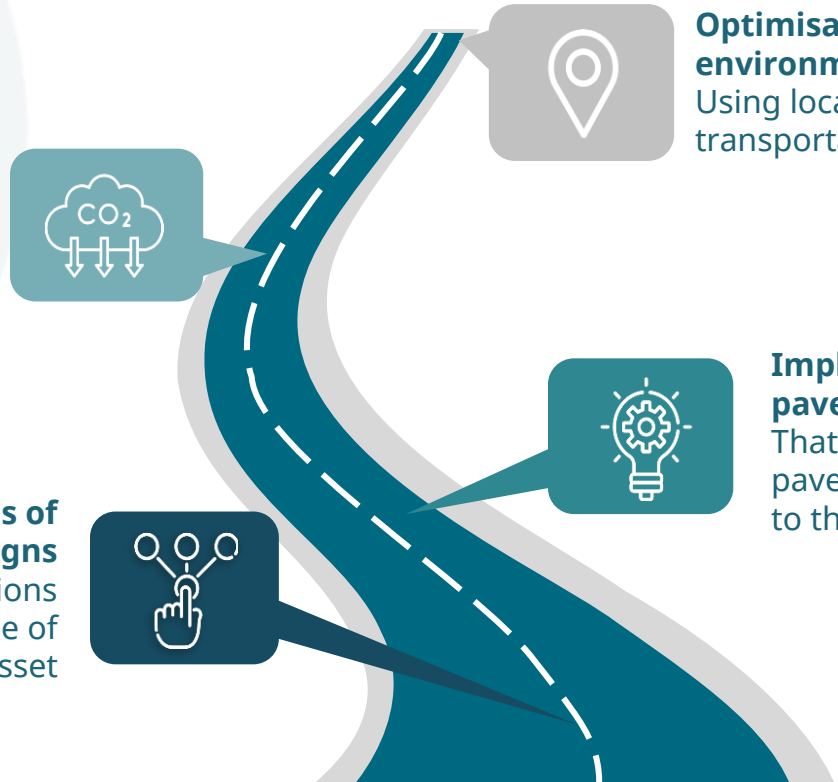
Up to **25%** of those GHG emissions correspond the **road infrastructure** construction and maintenance



ORIS Materials Intelligence

Principles of Pavement Sustainability in Road Construction

Pathway for carbon reduction in road infrastructures



Optimisation of the sourcing environment
Using local sources to reduce transportation distances

Selection of low-carbon materials
Such as the use of recycled materials or industrial by-products

Implementation of innovative pavement solutions
That can extend the lifespan of the pavement and improve its resilience to the climate change

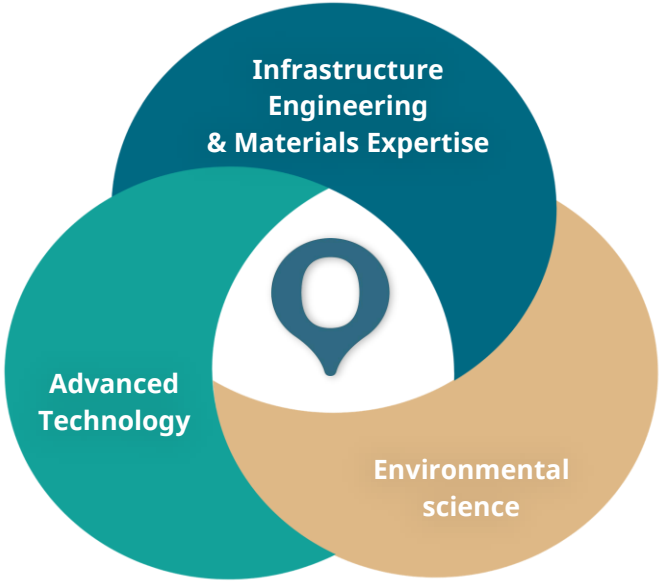
Comparative analysis of pavement designs
Assessing multiple solutions considering the lifecycle of the asset

ORIS Materials Intelligence

Digital Solutions Driving Sustainability in Road Infrastructure

Leveraging digitalization for an informed decision making

Road infrastructure projects



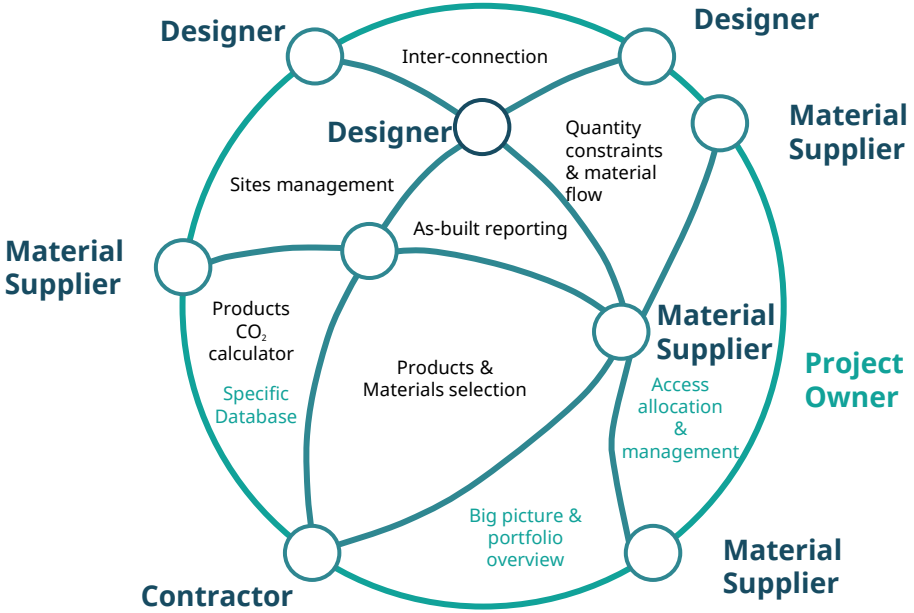
.....driven by the collaboration across three key expertise

ORIS Materials Intelligence

Digital Solutions Driving Sustainability in Road Infrastructure

Leveraging digitalization for an informed decision making

Road infrastructure projects



....strengthening the connection between project stakeholders

ORIS Materials Intelligence

With **ORIS,** designing
sustainable infrastructure
is as **simple as ABCD**

Assess

key multi-criteria impacts on your infrastructure projects

Benchmark

materials suppliers & alternatives to optimise your costs

Compare

designs scenarios to meet & exceed your client's requirements

Decide

on consistent results basis with your stakeholders and deliver to the market faster

ORIS Materials Intelligence

ORIS, the sustainability platform for infrastructure

Suppliers mapping

Materials assessment

Equipment assessment

Operations assessment

Decision-support dashboard

Projects portfolio

BIM Integration (Autodesk & open BIM Module)

Life Cycle Assessment (LCA A1 to A5)

ORIS Materials Intelligence

Hazel Road: Advancing Sustainable Infrastructure

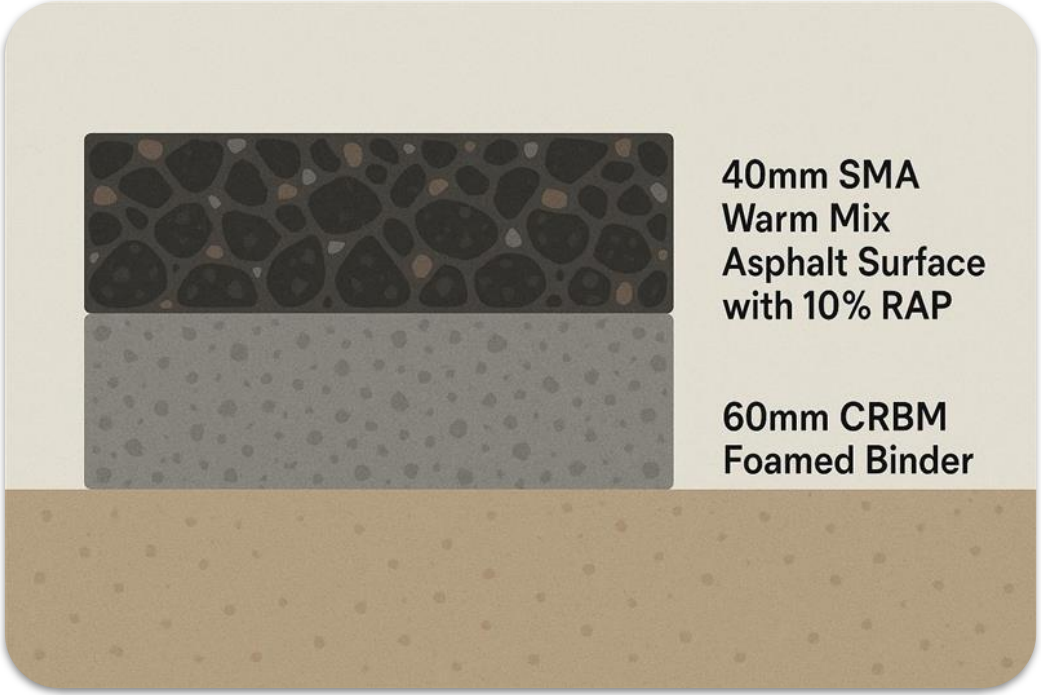
Project Overview

ORIS Materials Intelligence

Project description

Hazel Road, Ollerton

- Hazel Road was a carriageway maintenance scheme completed in February this year.
- The scheme was designed to receive a 100mm inlay treatment



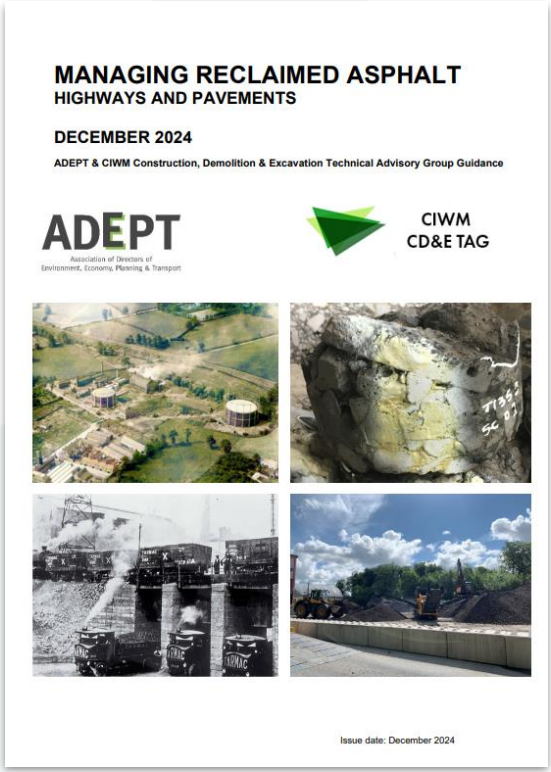
JORDAN ROAD SURFACING LTD

BREEDON

ORIS Materials Intelligence

Project description

Managing Asphalt Waste Containing Coal Tar (AWCCT)



- AWCCT is classified as hazardous and was present in all the cores taken.
- The option to recycle is less harmful to the environment than all alternatives.
- Use of cold recycled materials can provide a compliant and cost effective route - testing is essential.
- The ADEPT guidance is an excellent resource.

QRIS Materials Intelligence

Project description

Why Cold Recycled Bound Material (CRBM)?

- The CRBM production site was less than a mile away
- Compliant treatment of AWCCT - under a permit
- Supported by standards - SHW 948 and B9228
- Rigorously tested
- Cost benefits
- Less energy used in production of the material

40mm SMA
Warm Mix
Asphalt Surface
with 10% RAP

60mm CRBM
Foamed Binder

ORIS Materials Intelligence

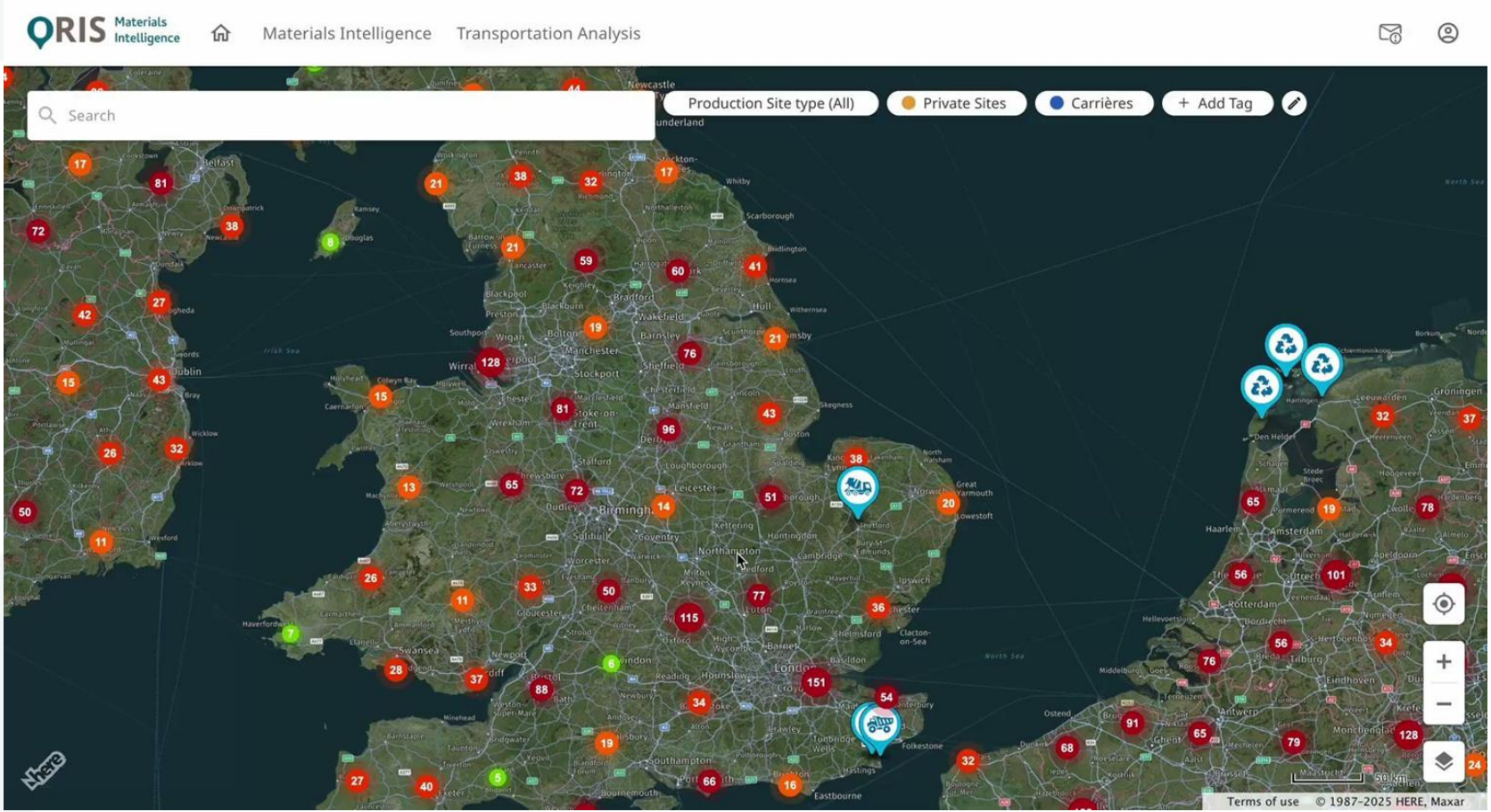
A sustainable and cost effective approach

ORIS Materials Intelligence

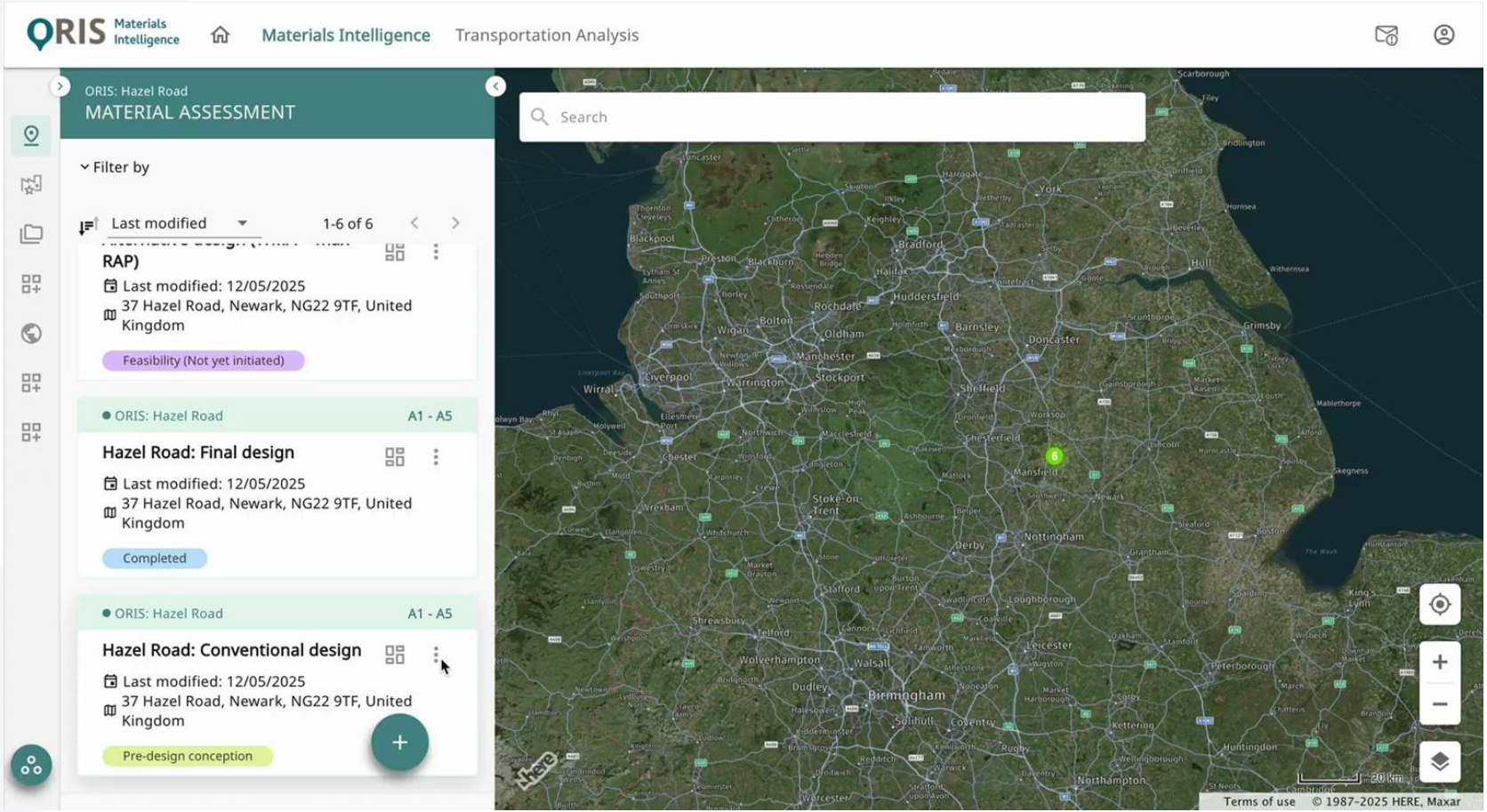
Applying ORIS Materials Intelligence

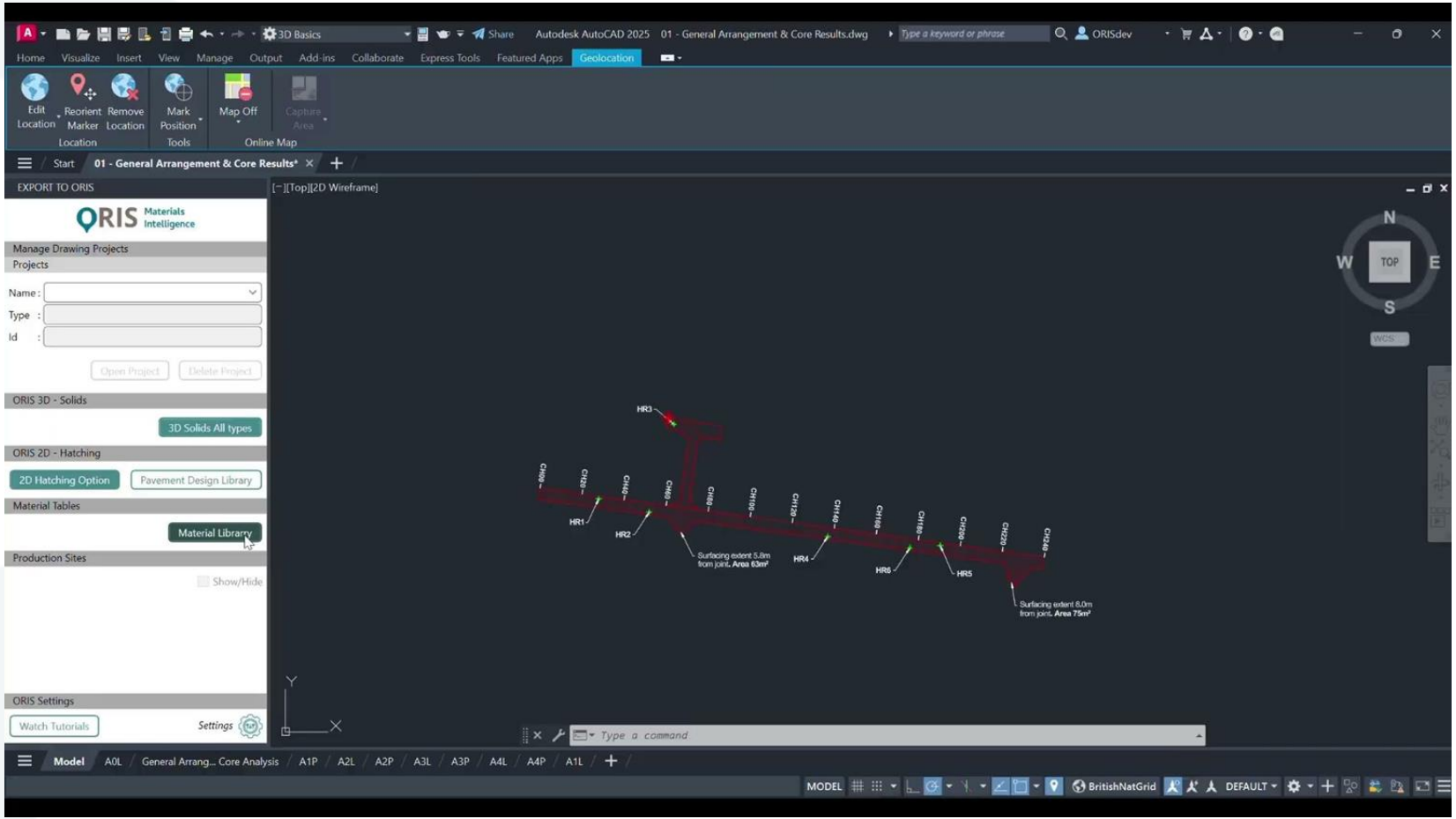
Optimising solutions and empowering data-driven decisions

ORIS Materials Intelligence

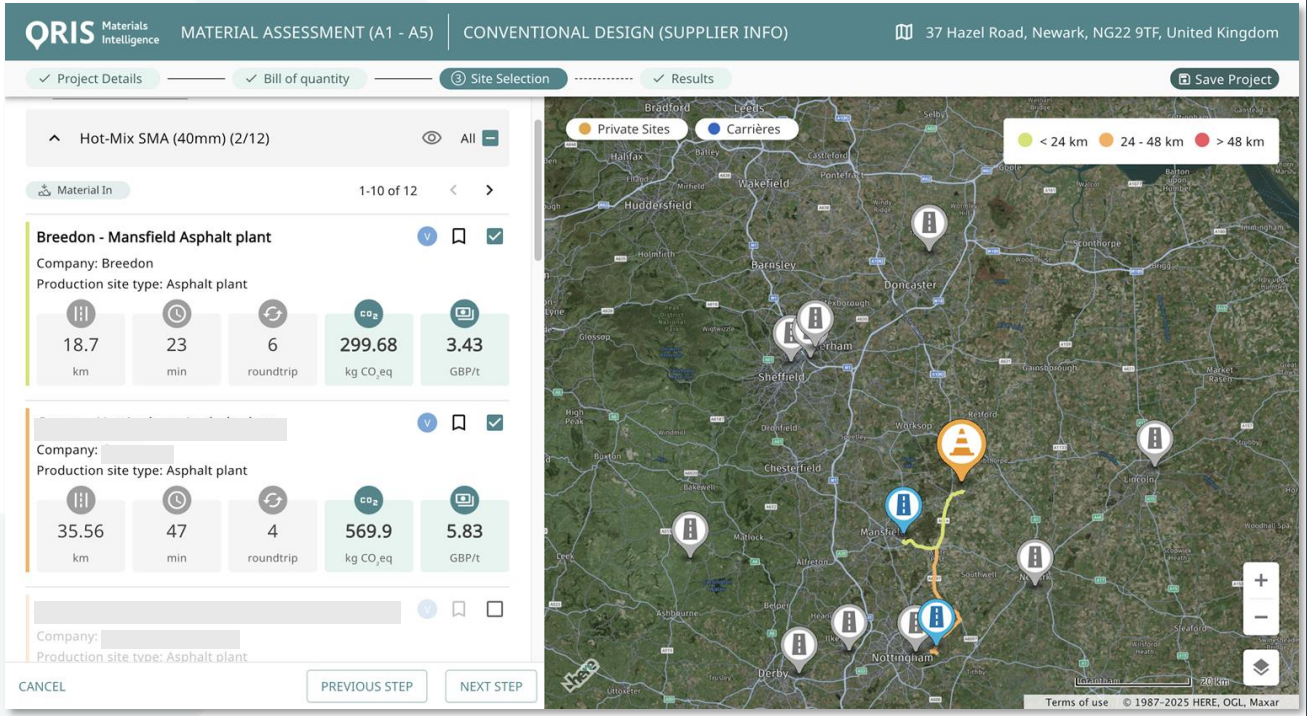


QRIS Materials Intelligence


ORIS Materials Intelligence
Materials Intelligence
Transportation Analysis
ORIS: Hazel Road
MATERIAL ASSESSMENT
Filter by
Last modified
1-6 of 6
RAP)
Last modified: 12/05/2025
37 Hazel Road, Newark, NG22 9TF, United Kingdom
Feasibility (Not yet initiated)
ORIS: Hazel Road
A1 - A5
Hazel Road: Final design
Last modified: 12/05/2025
37 Hazel Road, Newark, NG22 9TF, United Kingdom
Completed
ORIS: Hazel Road
A1 - A5
Hazel Road: Conventional design
Last modified: 12/05/2025
37 Hazel Road, Newark, NG22 9TF, United Kingdom
Pre-design conception
Search
Terms of use
© 1987–2025 HERE, Maxar



ORIS Materials Intelligence



Optimised sourcing

of construction materials

By comparing transportation KPIs of the chosen supplier with the next closest, the following reductions were achieved:

47% decrease in distance

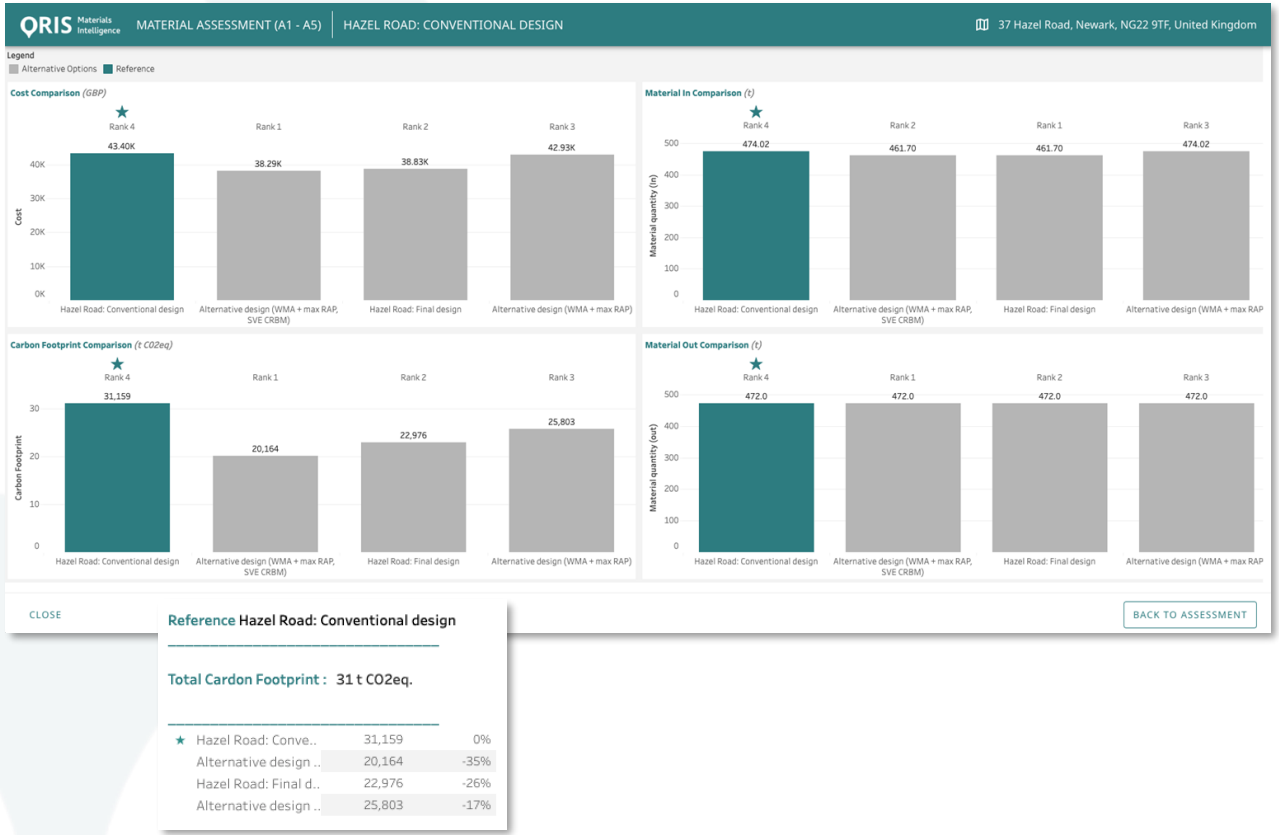
51% decrease in time

47% decrease in carbon footprint

41% decrease in cost per tonne

**Compared to procuring materials from the next closest supplier*

QRIS Materials Intelligence



Digital optioneering

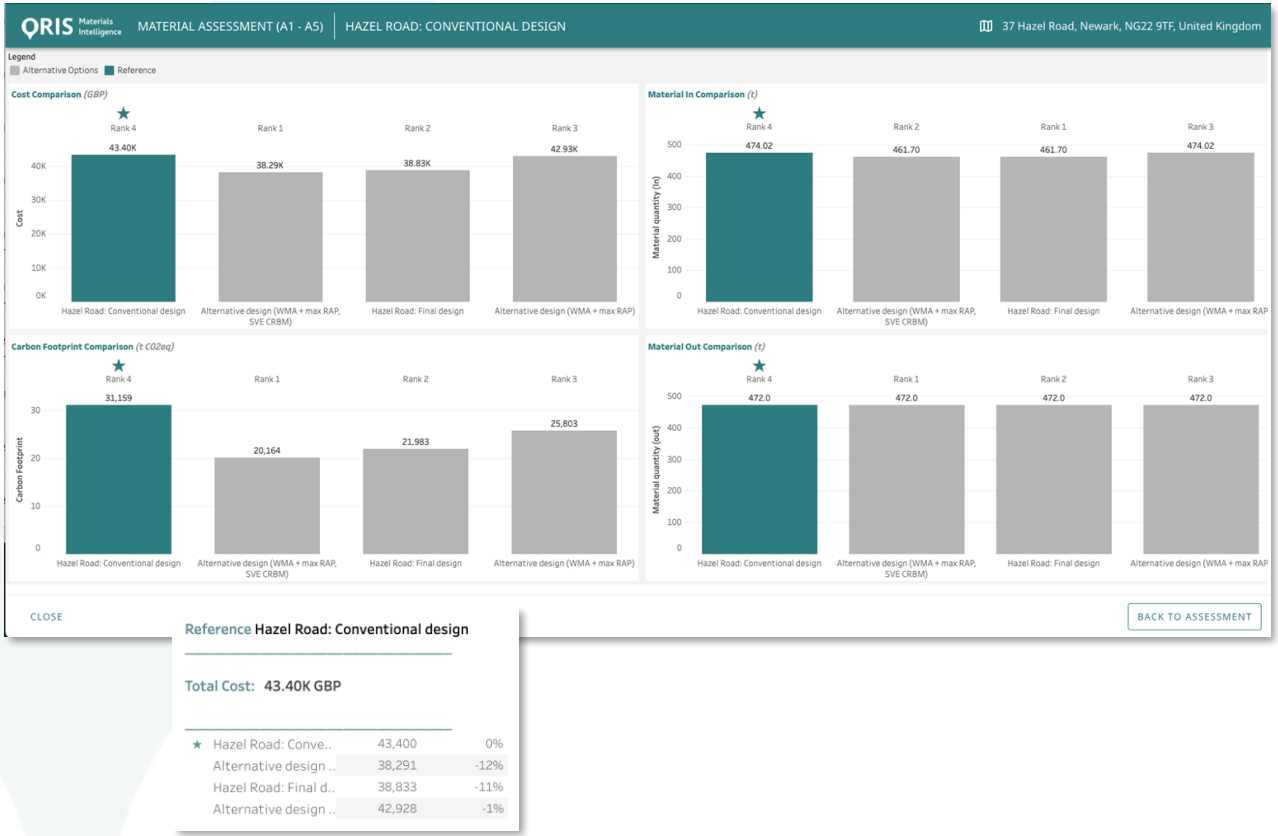
To find the most sustainable solution

The **chosen treatment**, leveraging innovative and sustainable material selection, reduced the carbon footprint by **26%*.**

Further opportunities were identified, with alternative options that could potentially lower the carbon footprint by up to **35%*.**

**Compared to a conventional material selection.*

ORIS Materials Intelligence



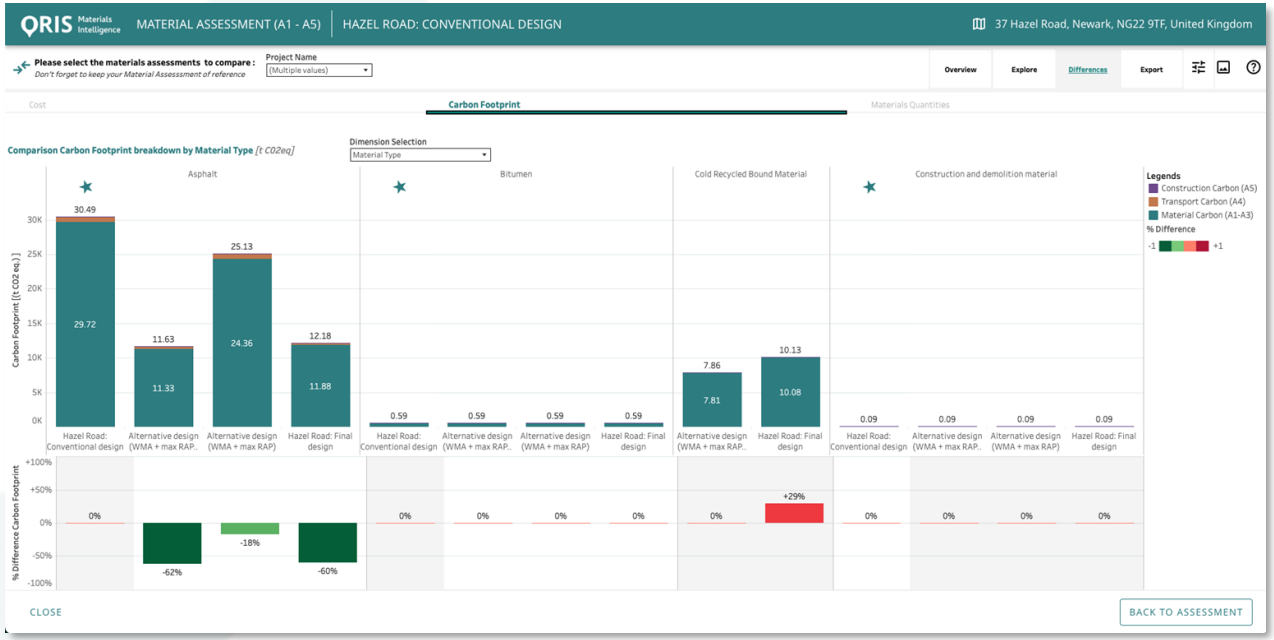
Cost efficiency

Sustainability doesn't necessarily require a higher investment

Investing in sustainable design doesn't always require a higher budget. In fact, cost savings of **11%** and **12%** were identified on the design options considering Cold Recycled bound Materials*

**Compared to a conventional material selection.*

ORIS Materials Intelligence



Data-Driven Insights

To make informed decisions

Comprehensive data analysis enables **informed, strategic decision-making,** aligning with **sustainability objectives.**

Increasing the % of RAP in the SMA didn't significantly contribute to the carbon reductions. Greater savings were achieved by using an SVE CRBM instead of a QVE CRBM.

QRIS Materials Intelligence

The Road Forward

Lessons Learned and Next Steps

Conclusions from Hazel road case study

Key Takeaways

Carbon savings can be unlocked through smart maintenance strategies

Digital tools enable smarter, faster, more sustainable infrastructure

Collaboration among all stakeholders is critical for impact

Data-driven decisions improve project outcomes on time, on budget, and with lower emissions

Scaling digitalisation is key to achieving global sustainability goals

laura.traseira@oris-connect.com

Laura Traseira-Piñeiro

Project Engineer

ORIS Materials Intelligence

peter.wells@viaem.co.uk

Peter Wells

Highways Asset Manager

via