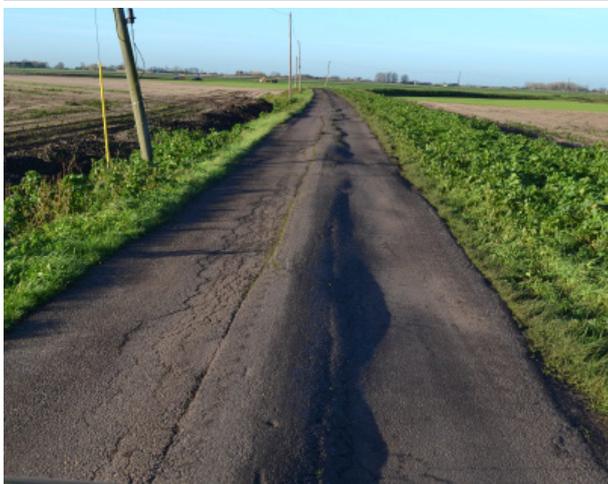


CASE STUDY

Unclassified Rural REGEN Road

‘Regen Roads provides fenland carriageways a financial saving’

Scheme:	Cambridgeshire Fens
Authority:	Cambridgeshire County Council
Client:	Skanska
Date:	July – September 2016
Area:	52,900 m ²
In-Situ Process:	150mm “REGEN Roads”
Surface:	Double Dressed (PMB) 12 & 6mm
CO2 Saving:	510 tonnes



The project involved the reconstruction of failing carriageways within Cambridge County Council's rural network.

Beginning with the principles and benefits of the In Situ Recycling process, this system of carriageway remediation was adapted and tailored to fit both the physical requirements of the network as well as fine-tuning the process to attain a product achieving both an appropriate design life and life-cycle cost, for the nature of the roads, within Cambridgeshire County Council's current budget.

In situ carriageway recycling essentially is a process of reconstruction using the materials within the existing carriageway. These materials are pulverised, re-shaped and re-engineered using blended cement binders to create a structural foundation on which in this case can be surface dressed.

The benefits include faster construction over traditional methods, greatly reduced lorry movements to and from the site, and a sustainable re-use of the existing carriageway material rather than costly removal to landfill and replacement from limited supplies of aggregate from quarried sources.

Atkins fulfil the role of Design Consultant and as supply chain partners, Stabilised Pavements Ltd are the specialist “In Situ Recycling” Contractor and Asphalt Reinforcement Services installed the finished “Surface Dressing”.





Whilst In Situ Recycling is not a new process and has been used across the UK, in line with existing Design Guides, namely TRL 386 & 611; its full extent and associated cost of the process was not regarded as appropriate for the nature of the roads under review. As such, the achievement in Cambridgeshire centres on the adaption of this process to suit the specific requirements of the local network, whilst maintaining the core benefits of this sustainable approach toward maintaining highways.

This adaption involved the following re-evaluation of the process:

- Through minimising the usual extensive suite of material testing undertaken prior to the start of the process. Instead existing survey information was shared and examined by the team collectively and combined with visual inspections carried out by the teams' Technical Operatives.
- Reducing the cement binder content - Given the shared material understanding and some trialling in this regard the binder content was reduced to 2% volume (typically 4-6% would be in line with standard design)
- Conducting a desk-top survey of the geological strata ensuring suitability of construction techniques.
- Reducing the depth of treatment. Working to a maximum depth of 150mm provides enough scope for vastly improving the shape and ride quality and has proved to be sufficient for the volumes and weights of local traffic.
- Surface Dressing to complete – a quick to apply, low cost surfacing which prevents water ingress, improves skid resistance and immediately provides a protective capping to the newly recycled foundation. Key to the success of the delivery is the prompt surfacing following the recycling works (ideally programmed for the day after completed recycling) – Asphalt Reinforcement Services have provided essential flexibility in their service to enable this to take place.

Implementing these calculated changes to the standard designs requires not only technical expertise within the collaboration but a willingness on the part of the client to adopt innovation to suit some specific needs within Cambridgeshire.

This variation to the In Situ Recycling theme has been named as “Regen Roads” reflecting both the recycling element of the process as well as the rejuvenation of the foundation through re-engineering.



The Cambridgeshire Highways team are undertaking testing and reviews of the performance of the Regen approach in order to create statistical evidence surrounding strength and durability, which in turn will be presented as a specification guide to other UK Authorities and their partners in order to provide them with a new tool for tackling structural carriageway issues.

It is our firm belief that together we have created an affordable, suitable and sustainable solution for many rural carriageways throughout the UK and are looking forward to delivering this approach accordingly.

The merits of this work can be summarised as follows:

- Environmental – Zero Waste, Carbon Savings and minimal use of newly quarried virgin aggregates.
- Innovation: pushing technical boundaries of traditional highway maintenance in order to develop a new and unique approach
- Commitment: Investment in trialling and in specialist plant and equipment to suit the delivery. Positive client approach in the team's improvement and development of the process.
- Social Benefit: Re-shaping the roads and improvements to skid resistance not only provides safer and quieter use benefitting rural communities but also encourages visitors to these areas – particularly the cycling community
- Economic Benefit: Low cost solution to a traditionally high cost maintenance issue – delivering more for less
- Expected improvement to whole life cost over individual structural repairs – currently testing is demonstrating positive results for Deflection, Skid Resistance as well as Strength and Durability.
- The Future: Further works with Cambridgeshire on their rural network, and we are looking forward to rolling the process out to other forward thinking authorities with the same structural issues.
- SPL work with the RSTA (Road Surface Treatment Association) on CPD days with Highways Teams throughout the UK, giving presentations on the in situ process. It is their intention to add Regen to these meetings in order to demonstrate and share with others, how collaboration and innovation can extend the existing suite of maintenance solutions.