

# Enhancing Road Resilience and Sustainability on Kirkstone Pass with Tufflex D PMB



# Summary

Kirkstone Pass is a mountain pass in the lake district. At an altitude of 1,489 feet, it is the district's highest pass traversed by road. Given the demanding location and steep gradients of up to 25%, selecting a material capable of withstanding harsh environmental conditions was critical to the success of this resurfacing project. To meet the extreme demands of the environment, the team selected Tufflex D PMB for its proven ability to deliver high performance under challenging conditions. This high-performance product was specifically chosen to enhance the durability, safety, and longevity of the road surface. Its technical advantages not only supported faster installation but also ensured long-term resilience, making it ideal for steep gradients, heavy traffic, and extreme weather conditions. The following performance characteristics highlight why Tufflex D was the optimal choice:

## Key Performance Benefits

- Superior deformation resistance
- Class 3-wheel track rutting performance
- Lower void content to prevent water ingress
- High bitumen softening point for enhanced durability
- Improved fatigue and skid resistance
- Greater tyre contact and reduced rolling resistance

These attributes ensured faster installation, exceptional long-term durability, and reliable traction for vehicles and cyclists in all weather conditions.



## Environmental and Social Impact

The project was designed to overlay the existing surface, with selective patching to ensure structural integrity. This approach:

- Avoided disturbing tar-bound materials, reducing hazardous waste
- Minimised carbon emissions from heavy machinery and logistics
- Supported a more sustainable construction process
- Reduced time on site, minimising disruption to the local economy, tourism and road users

## Carbon Reduction Achievements

- 34.5 tCO<sub>2</sub>e was saved during the scheme
- The use of Tufflex D is projected to save an additional 11 tonnes of CO<sub>2</sub> annually, thanks to its extended lifespan, with additional carbon savings from fewer interventions.

## End-User and Stakeholder Benefits

End users now benefit from significantly improved travel experiences, with shorter journey times thanks to a reduction in road repairs and disruptions. The smoother road surfaces not only enhance comfort but also contribute to safer travel conditions, particularly for cyclists who are more vulnerable to uneven terrain. These improvements in infrastructure have led to a noticeable boost in overall road safety, making daily commutes and leisure travel more efficient, reliable, and enjoyable for all.

In addition, enhanced road conditions have improved connectivity for both people and businesses, facilitating easier access to services, suppliers, and customers. This stronger transport network supports economic growth by reducing logistical barriers and encouraging regional collaboration. Local tourism also receives a boost, as safer and more pleasant travel routes attract visitors and make it easier to explore nearby attractions, helping to sustain and grow the local economy.

## Conclusion

The Kirkstone Pass project exemplifies how strategic planning, innovative materials, and sustainable practices can deliver outstanding results. Tufflex D PMB proved to be the ideal solution for a challenging environment, offering long-term performance, reduced environmental impact, and enhanced user satisfaction.