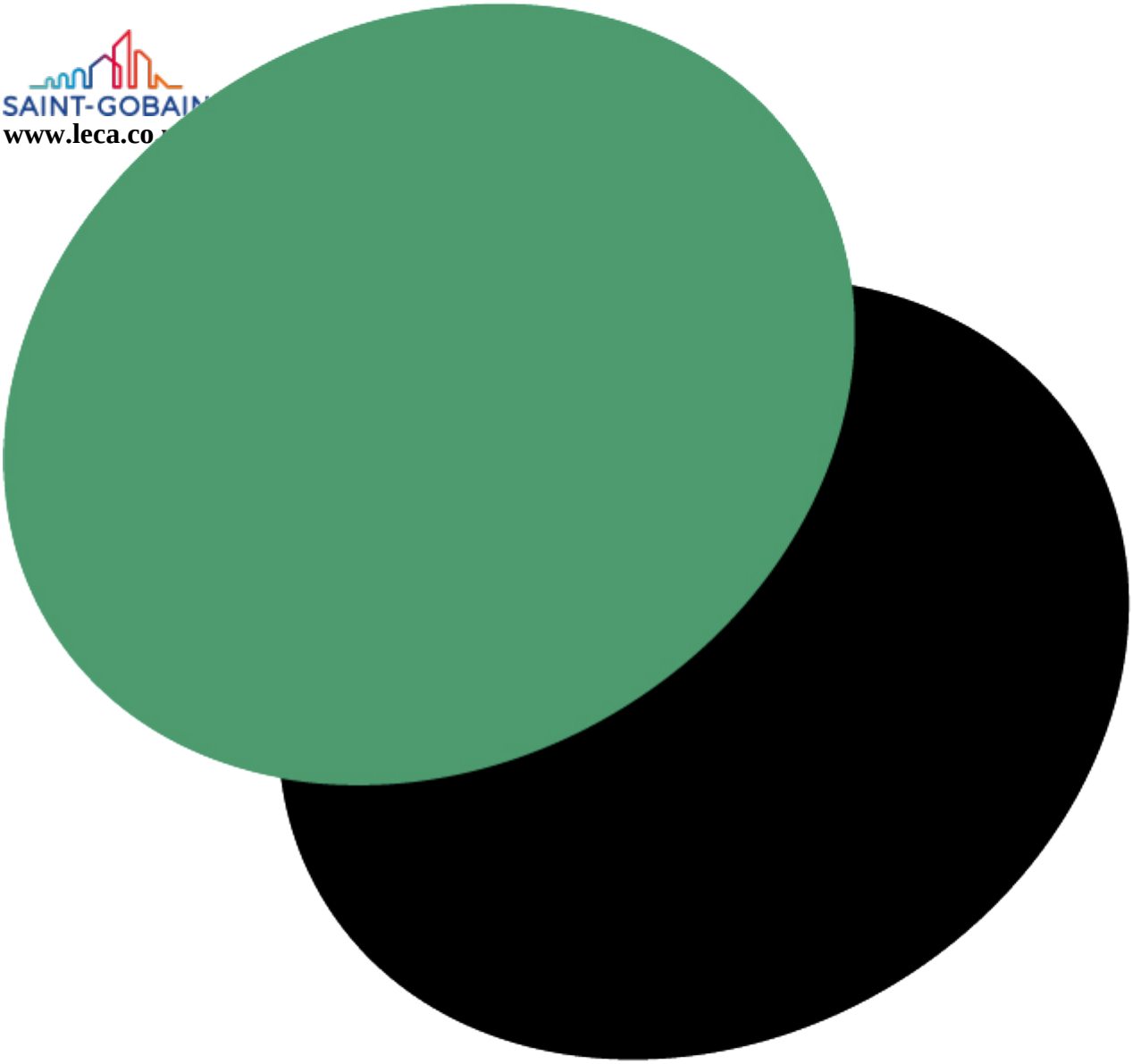

M25 JUNCTION 28 UPGRADE

M25 Junction 28 is a key interchange, linking the M25 motorway with the A12 and A1023 to Brentwood. Handling up to 7,500 vehicles per hour at peak times, congestion leads to delays and poor air quality. With a projected 30% traffic increase by 2037, National Highways launched an upgrade to boost capacity.

Key improvements include:

- A new two-lane loop road for M25 northbound to A12 eastbound traffic
- Construction of three new bridges (Alder Wood, Duck Wood, Grove) and the Grove Farm Underpass
- Realignment of the A12 eastbound off-slip road via Maylands Bridge over the Ingrebourne River
- Widening of the M25 anti-clockwise carriageway

FACTS

Amount of material: 5,600m3 of LECA LWA (10-20mm)

Interesting Fact: Over 5,600m³ of Leca® LWA was placed around the precast culvert extension before earthworks and road formation.

Delivery Method: Walking Floor

Main Contractor: GRAHAM CIVIL ENGINEERING

Geotechnical Challenge & Solution
Extending the 88m-long Grove Culvert required a lightweight, stable backfill to minimize settlement. Leca® Lightweight Expanded Clay Aggregate (LWA) was selected due to its:

- **Lightweight Composition:** Weighing <5kN/m³, reducing ground pressure.
- **Ease of Placement:** No specialized equipment needed, streamlining construction.
- **Proven Performance:** Accepted by National Highways despite not being in UK highway standards.
- **Efficient Load Management:** Minimizes differential settlement, ensuring structural integrity.

Implementation & Results
Over 5,600m³ of Leca® LWA was placed around the precast culvert extension before earthworks and road formation. Efficient logistics via Walking Floor Trucks ensured timely delivery, with up to 70m³ per load.

"Approximately 5000m³ of Leca® LWA *was placed around the precast units before the required earthworks and road formation could be constructed over the top to connect onto the junction."* – **Grace Jackson, GRAHAM Section Engineer.**

Stakeholder Insights
GRAHAM Contracts Director Dave Brown emphasized the collaborative nature of the project:

"We are pleased to have begun work on the M25 junction 28 upgrade. National Highways is a valued and longstanding client, and this scheme will play a major role in improving journey times for thousands of motorists."

National Highways Project Manager Zachary Pepper highlighted the long-term benefits:

"We would like to thank the construction team and the supply chain for the complex planning and significant progress of this much needed improvement scheme. These upgrades will improve capacity and driver safety and reduce congestion around the junction by improving the connectivity between the M25 and A12."

GRAHAM Engineering Manager, Jonathan Graham also noted previous successful applications of Leca® LWA:

“We have previously used Leca® LWA *in situations where loadings from backfill had to be kept to a minimum (e.g. Poynton Relief Road, Reading RBT).”*

“We would have no hesitation in using Leca® LWA *should a suitable scenario present itself. Indeed, given its benefits regarding reduction in loads, it is actively considered in respect of piled solutions or where consolidation is otherwise anticipated to exceed permissible limits.”*

Conclusion

The M25 Junction 28 upgrade successfully utilized Leca® LWA, demonstrating its effectiveness in complex geotechnical applications. Its lightweight properties, ease of placement, and efficient supply chain ensured project success. As a trusted solution in highway infrastructure, Leca® LWA remains the preferred choice for managing load-sensitive developments.