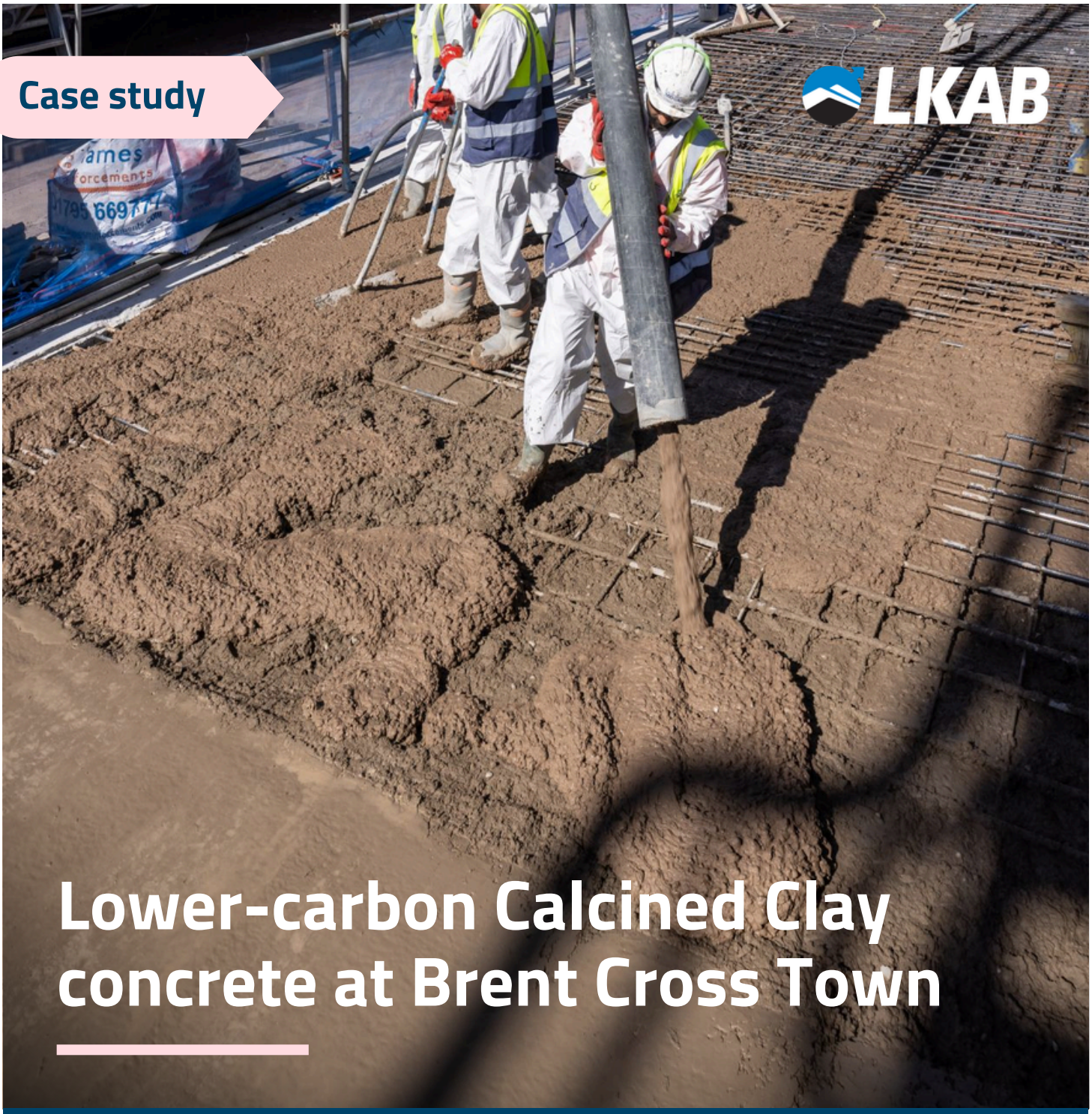
Case study



Lower-carbon Calcined Clay concrete at Brent Cross Town

Brent Cross Town in North London has become the first UK development to successfully use Calcined Clay concrete in a permanent structural application within a residential building. At Plot 15, LKAB Minerals' Calcined Clay was incorporated into concrete supplied by Capital Concrete, replacing 30% of the cement content in the mix.

The project demonstrates how Calcined Clay can provide a practical route to lowering the embodied carbon of concrete while supporting the transition towards more sustainable construction materials.

Project Overview

Project Name	Plot 15, Brent Cross Town
Location	London
Project Sector	Residential
Project Description	Mid-rise residential building providing 200 homes
Application	Permanent suspended slab
Product Used	Calcined Clay
Mix	CEM II/B-Q
Key Partners	Capital Concrete & Related Argent



The challenge

Reducing embodied carbon within concrete requires practical alternatives to conventional cement and established supplementary cementitious materials. However, introducing a less commonly used material into permanent structural works brings additional considerations.

Although Calcined Clay concrete has been permitted within British Standards since 2019, its use in UK construction remains limited. For the Brent Cross Town project, one of the main challenges was building confidence across the project team regarding its long-term performance, placement and finish.

Close collaboration between Related Argent, Capital Concrete & LKAB Minerals and the wider project team was central to addressing technical considerations and successfully bringing the material to site.

The solution

A concrete mix incorporating LKAB Minerals' Calcined Clay was developed by Capital Concrete for the permanent suspended slab.

The Calcined Clay replaced 30% of the cement content, reducing reliance on conventional cement while maintaining the performance required for structural concrete. The Calcined Clay used for the project was produced from damaged waste brick material, providing an additional circular-economy benefit.

The 35m^3 pour used C50/60 concrete with an S4 consistency. The concrete was supplied from Capital Concrete's Cricklewood facility and placed using a mobile concrete pump.

Application and performance

The concrete achieved the required S4 consistency during slump testing and was successfully pumped, placed and float-finished with no issues being reported by the concrete gang or pump operator. Although the anticipated working life was cited as 2.5 to three hours, individual loads were placed in approximately one hour.



Strength development was positive. The C50/60 concrete achieved a mean compressive strength of 54 MPa after seven days, while laboratory testing showed that characteristic strength was achieved after 14 days. Laboratory results at 28 and 56 days recorded strength above the required level, indicating that further refinement of the mix may be possible.

Key benefits of using Calcined Clay

The Brent Cross Town project provides practical evidence of how Calcined Clay can be incorporated into structural concrete.

Key benefits demonstrated included:

- 30% of the cement content replaced with LKAB Minerals' Calcined Clay.
- A 10% reduction in embodied carbon compared with equivalent concrete mixes previously used at Brent Cross Town.
- Support for circular-economy principles, through the use of Calcined Clay produced from damaged waste brick material.
- Successful placement and finishing, with no issues reported by the concrete gang or pump operator.
- Positive strength development, with the C50/60 concrete achieving a mean compressive strength of 54 MPa after seven days.

These results demonstrate that Calcined Clay is not simply a future opportunity for lower-carbon concrete. This project shows that it can be successfully incorporated into a permanent structural application today.



Project collaboration

The project team worked collaboratively to address considerations around specification, shrinkage, strength and application before the concrete was placed. This included specification reviews, compressive-strength and shrinkage testing, and technical discussions across the project team.

The experience highlighted an important consideration for the wider adoption of Calcined Clay: introducing alternative cementitious materials requires technical evidence and close collaboration throughout the supply chain.

The successful use of Calcined Clay concrete in permanent works represents an important step for lower-carbon construction in the UK, highlighting its potential to reduce emissions while supporting circular-economy principles.

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