

CarbonCAP & Earth Friendly Concrete®

Reduce your project's carbon footprint



THE CONCRETE PEOPLE

If a reduced carbon footprint is an important part of your project's specification then Capital Concrete can help you achieve your goals.

Concrete is the most widely used building material in the world, offering many advantages over other building materials.

Technical benefits such as stability, heat and fire protection mean it is chosen repeatedly for use in the construction of modern buildings and infrastructure. However, concrete and specifically cement has a high carbon intensity. As the demand for more sustainable solutions with lower embodied carbon content increases, Capital Concrete has developed a comprehensive range of concrete mixes to help reduce carbon intensity without compromising performance. An Environmental Product Declaration verified by a third party is available for this range of mixes.

Capital Concrete aspires to work with customers and clients to help them achieve third-party verified carbon neutral / net zero carbon construction targets.

CarbonCAP

▶ Reduction of up to **30%** embodied carbon*

CarbonCAP ultra

▶ Reduction of up to **60%** embodied carbon*

CarbonCAP prime

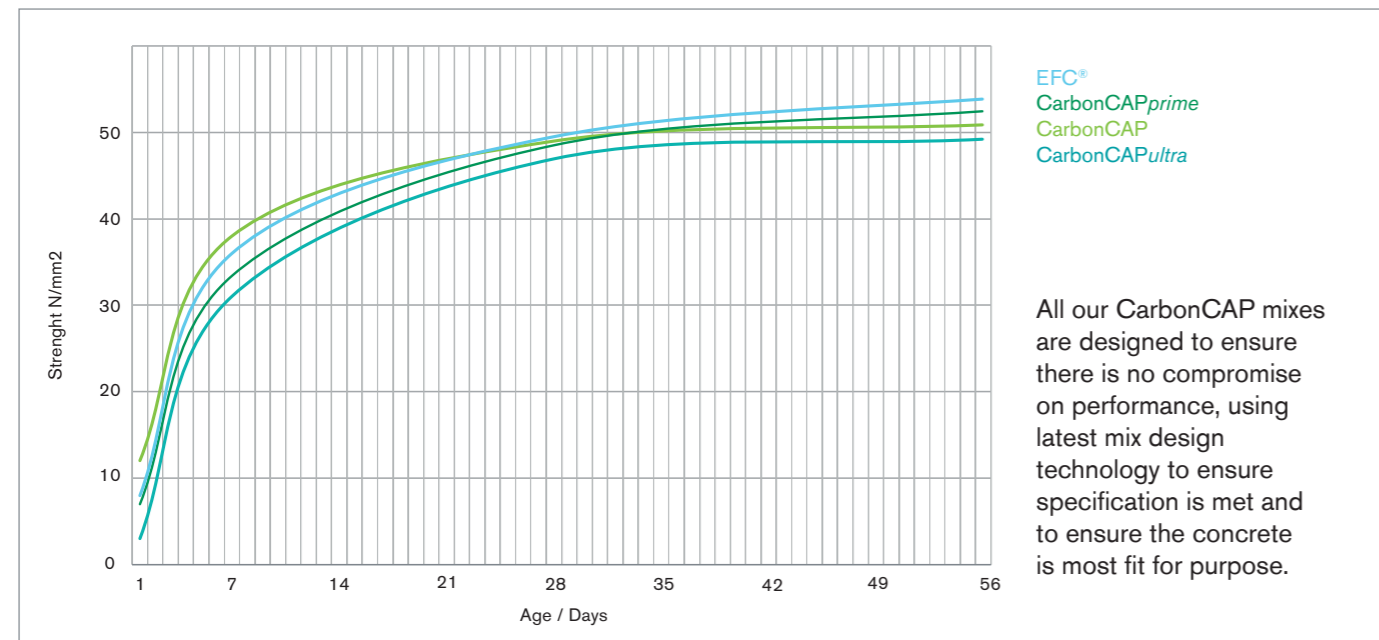
▶ Reduction of up to **50%** embodied carbon*

EFC®

▶ Reduction of more than **75%** embodied carbon*

* when compared to equivalent CEM I concrete.

Typical CarbonCAP performance for a grade C32/40 concrete mix



CarbonCAP is available in a range of compressive strengths from C8/10 through to C50/60.

Benefits and Applications

The CarbonCAP range can be utilised in all applications where traditional concrete is used. For example, slabs, walls, columns, footings, traditional slip form paving including machine paving, deck units and tunnel segments in major infrastructure projects.

All CarbonCAP and Earth Friendly Concrete mixes are designed to ensure there is no compromise on performance, using latest mix design technology to ensure specification is met and suitable for end use.

Independently Verified

An EPD is available for all mixes within the range. This details the LCA (Life Cycle Analysis) showing the carbon intensity of each mix to be used in the project, independently verified by a third party.

See page 4 for more on EPD's

High Durability

- ▶ Acid and sulphate resistant,
- ▶ Fire resistant to AS1530 Part 4 2005.
- ▶ Chloride ion ingress resistant.

Sustainability

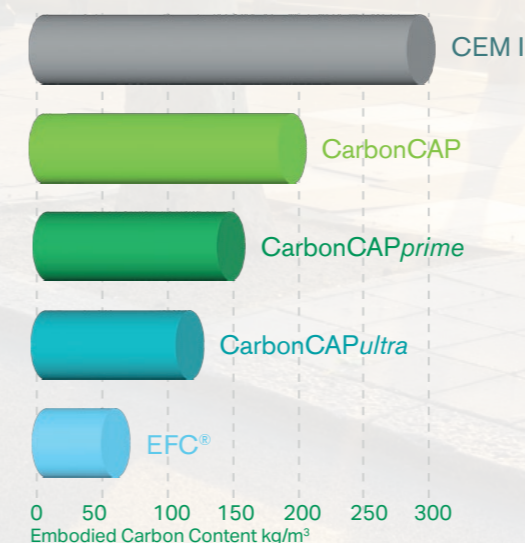
Mixes within the CarbonCAP range have lower levels of embodied carbon on account of their use of supplementary cementitious materials in whole or part substitution for Portland Cement.

See the graph below.

Visual

- ▶ Looks great, natural off-white colour
- ▶ Clean off-form finish
- ▶ Compatible with colour pigments and oxides.
- ▶ Placed by pump or skip.

Typical embodied carbon content for a grade C32/40 concrete



Heat of Hydration

CarbonCAP concrete has a lower heat of hydration thereby reducing potential for early-age thermal cracking.

Setting Times

CarbonCAP concrete can be designed to achieve a range of setting times.

For more specific technical support please contact one of our team on 020 3974 0520

What is Earth Friendly Concrete?

Earth Friendly Concrete or EFC[®] is an Alkali Activated geopolymer concrete made from a binder consisting of Ground Granulated Blast Furnace Slag (GGBS), Pulverized Fuel Ash (PFA), which has been developed by Wagners.

Key features of EFC[®] versus other concrete

All the benefits of the CarbonCAP range plus...

Sustainability

EFC[®] uses **ZERO** Portland Cement and has a low level of embodied carbon, typically 75 – 87% less embodied CO₂ when compared to an equivalent concrete.

Performance - *Benefits*

- ▶ Better than traditional concrete in marine situations with a high chloride resistance.
- ▶ Available with strength grades from 10 to 60 N/mm².
- ▶ 30% higher flexural tensile strength
- ▶ High early strength achievable
- ▶ 40% less shrinkage (typically 350 μ ϵ)
- ▶ Very low heat development (circa ~15°C) Less susceptible to thermal cracking, especially with deep sections

Existing Standards

Earth Friendly Concrete is a relatively new technology to the UK however, it has achieved compliance with DIN EN 196-2 and DIN 1045-2 in Germany and is subject to rigorous ongoing testing across its use globally. EFC[®] mix design approval is assisted by the use of test data for a route to specification, and Wagners together with Capital Concrete can help you achieve this.



What is an Environmental Product Declaration?

Environmental Product Declarations are critical to achieving carbon neutral or net zero carbon construction targets. EPDs take into consideration all the steps that lead from raw material through manufacture, distribution and usage.

In the construction sector conducting an EPD provides a number of tangible benefits:

- ▶ EPDs provide a tool to reduce environmental impact by evaluating and comparing concrete mix options to select the lowest impact choice. This enables cost-efficient benchmarking.
- ▶ EPDs facilitate compliance with whole life carbon regulations. Governments are increasingly recognising the need to legislate to reduce whole life carbon in construction. Life Cycles Assessments (LCAs) are a mandatory part of many of the new laws and policies and they are based on use of EPDs.
- ▶ EPDs facilitate the attainment of certification credits in BREEAM, LEED v4 and many other certification schemes.
- ▶ EPDs are underpinned by international standards such as ISOs 14040 and 14044. This helps to ensure consistency, reliability and independence from commercial pressure.
- ▶ Improve transparency. Clients, investors, tenants and others are increasingly seeking transparency over a building's environmental impacts.

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Building A Highly Successful Track Record

We've been using all our CarbonCAP mixes including EFC® for a number of years across varied projects throughout Greater London with great success.



EFC at Keltbray Plaistow Wharf

Capital Concrete has supplied 2,500m³ of Earth Friendly Concrete (EFC®) to Plaistow Wharf, Silvertown for Keltbray's new waste treatment facility. The facility, which is owned by the Port of London Authority, will handle hazardous and non-hazardous construction, demolition, and excavation waste, disposing upwards of 350,000t a year. Thanks to its material properties, EFC® was able to save Keltbray resources as well as reducing embodied carbon when constructing the project's 10,000m² of ground bearing slabs. Its increased flexural strength and lower shrinkage allowed for thinner slabs and larger bases without the need for steel reinforcing mesh.

Luke Smith, Managing Director of Capital Concrete says:

"Since its arrival at Capital, we have seen more and more clients adopt EFC® as a low carbon, high performance alternative".

**CO2 saved:
800 tonnes**



HS2 completes largest ever UK pour of carbon-reducing concrete on Euston station site

The team constructing HS2's new Euston station has undertaken the largest ever UK pour of Earth Friendly Concrete (EFC®) – a material that reduces the amount of carbon embedded into the concrete, saving over 76 tonnes of CO₂ overall. John F Hunt, working for HS2's station Construction Partner, Mace Dragados joint venture, completed the 232 m³ concrete pour in early September. EFC®, supplied by Capital Concrete, has been used as a foundation slab that will support polymer silos used for future piling works at the north of the Euston station site. Whilst the foundation is temporary, it will be in use for two years, and historically would have been constructed with a more traditional cement-based concrete. The use of the product helped support HS2's objective of net-zero construction by 2035, and achieve its goal of halving the amount of carbon in the construction of Britain's new high speed rail line.

**CO2 saved:
76 tonnes**

Martin Needham, John F Hunt's Senior Project Manager, said:

"Our ambition is to reduce carbon emissions during construction at every possible opportunity. The pour to create the temporary slab at Euston was the perfect opportunity to utilise the cement free, Earth Friendly Concrete."

"We chose to use the EFC®, not only for the over 70% saving in embodied carbon, but also for its excellent characteristics. It has an increased tensile strength, enabling thinner slab designs and therefore a reduction in overall volume of both concrete and reinforcement."

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Supplies to Skanska Costain Strabag Joint Venture

HS2's 'Central Section' in London is being solely supplied by Capital Concrete. Capital Concrete have already supplied a substantial amount of material to enabling works for the Central Section, including 952m³ of high GGBS blend concrete in a single pour carried out over the busy pre-Christmas period in December 2021, which involved over 100 truck deliveries in a single shift.

**CO2 saved:
155 tonnes**

Jack Sindhu, Technical Manager at Capital Concrete, explains how the specialist properties of the mix itself can benefit the project.

"The use of a high GGBS blend levels in mixes reduces the likelihood of any thermal cracking in the concrete and provides a low embodied carbon and sustainable concrete," says Jack. "The inclusion of limestone coarse aggregate is also beneficial, for thicker sections cast as it provides a lower thermal conductivity and shrinkage."

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Sustainable Concrete for deep Raft Pour Modebest Wood Wharf G10

The raft slab with a depth of 3.725m has been supplied with 1200m³ of 70% GGBS Blend C40, which falls within our CarbonCAP Ultra range.

**CO2 saved:
220 tonnes**

Jack Sindhu, Technical Manager at Capital Concrete, stated, "The concrete mix was developed with a low binder content pumpable mix with low thermal coefficient aggregate and to achieve a low heat of hydration. The Peak temperature recorded was 51°C with a temperature differential of 21°C."



Plant Locations

1. Bow

Chapman Road, Bow,
London E9 5DW

2. Cricklewood

Cricklewood
Railway Yard,
400 Edgware Road,
London NW2 6ND

3. Croydon

Endeavour Way,
Beddington Farm Road,
Croydon,
Surrey CR0 4TR

4. Enfield

Jeffreys Road,
Enfield EN3 7UA

5. Feltham

Falcon Way
Trading Estate,
Feltham TW14 0UQ

6. Rainham

Launders Lane,
Rainham,
Essex RM13 9GJ

7. Romford

Hainault Road,
Little Heath,
Romford,
Essex RM6 5SS

8. Silvertown

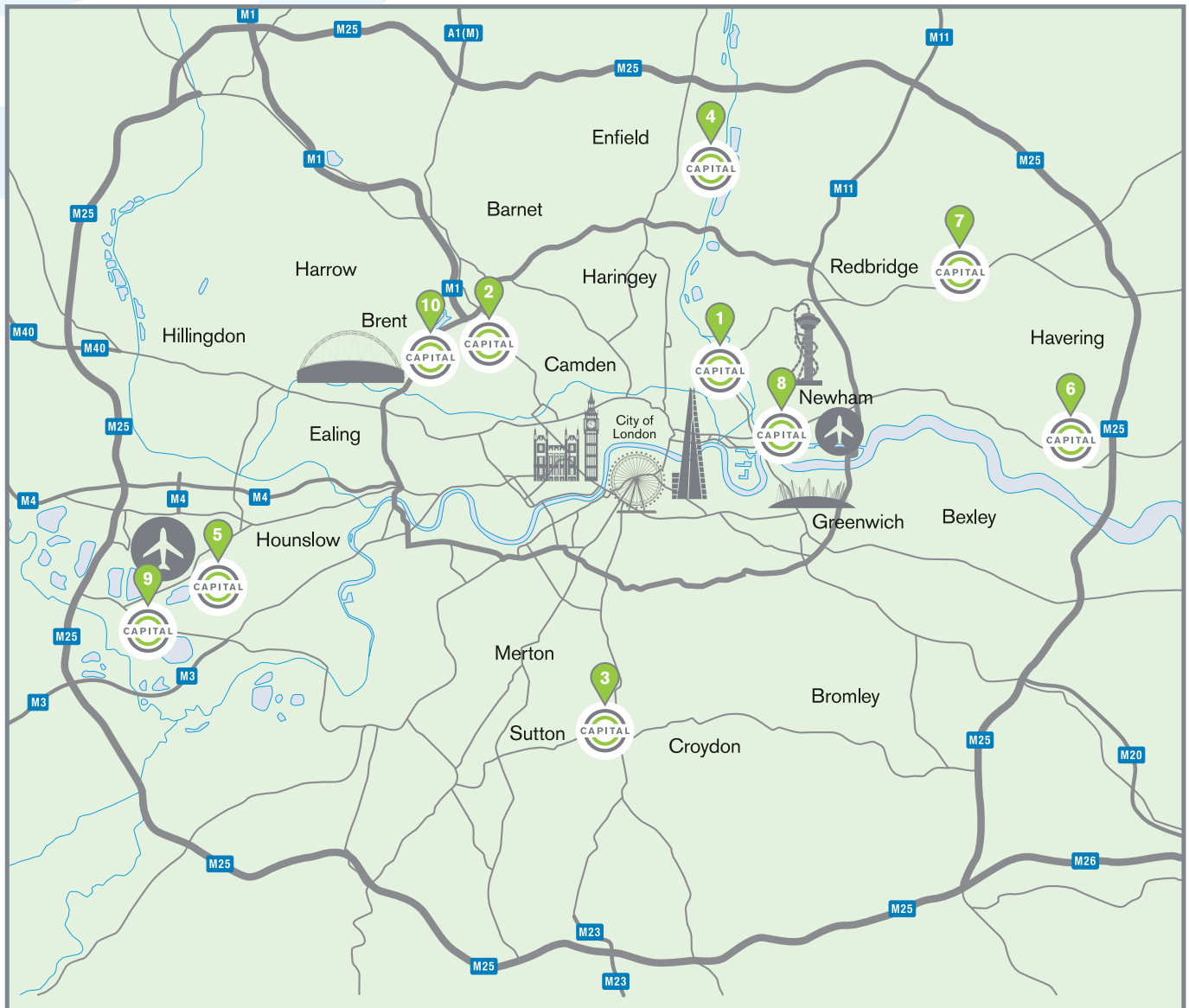
Peruvian Wharf,
North Woolwich Road,
Silvertown E16 2AB

9. Staines

Ashford Road,
Laleham,
Middlesex TW18 1QF

10. Wembley

Neasden Rail Siding,
The Rail Yard,
Drury Way,
London NW10 0JJ



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