

PPN 06/21 carbon reduction plan

Introduction

Heidelberg Materials UK is committed to fulfilling our share of the global responsibility to keep the rise in worldwide temperature well below 1.5°C.

Our route to decarbonisation has been ongoing for many years and we have made significant headway. We have already reduced our CO₂ emissions in the UK by 50% since 1990, bringing us considerably closer to our goal of becoming net-zero by 2050 at the latest.

In 2022 the Heidelberg Materials Group announced new targets to accelerate our journey towards net zero carbon by 2050. By 2030, we aim to:

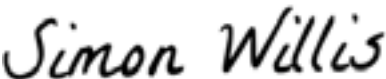
- Cut CO₂ emissions to 400kg per tonne of cementitious products.
- Generate 50% of gross revenue from low-carbon and circular products and solutions.
- Offer circular alternatives for half of our concrete products.

To reach net zero carbon by 2050, we are involved in several industry-leading carbon reduction projects. These include carbon capture and storage at our Padeswood cement plant planned to be in operation by 2028 – and a successful world-first net zero carbon fuel mix trial at our Ribblesdale plant in 2021. We have also trialled a novel carbon capture solvent at our Ketton cement works in 2024 and have a hydrogen demonstration project planned for our Criggion asphalt plant in 2025.

Effective management of our CO₂ emissions is of key importance to us. Our long-term success depends on sustainable business practices and the UK executive team has given its full backing by launching a dedicated carbon working group, which includes a carbon innovation manager to ensure that continuous CO₂ emission reductions are achieved.

In September 2023, Heidelberg Materials UK achieved certification to PAS 2080, the carbon management standard for buildings and infrastructure, which we operate in accordance with.

Yours sincerely,



Simon Willis
Chief Executive Officer, Heidelberg Materials UK



Ribblesdale cement plant, Clitheroe, Lancashire

Carbon reduction plan

Supplier name: Heidelberg Materials UK

Publication date: January 2025

Heidelberg Materials UK

Heidelberg Materials UK is a leading supplier of heavy building materials to the construction industry. We produce and sell four main product types – cement, aggregates, asphalt, and ready-mixed concrete - and also provide contracting services. Our recycling business line works across all of these areas to deliver circularity. We are part of Heidelberg Materials, one of the largest building materials manufacturers in the world. We are the global market leader in aggregates and also have leading positions in cement, concrete, and other downstream activities.

Our basic raw materials are used to make value added products:

- Crushed rock and sand are mixed with bitumen to make asphalt for road surfacing.
- Sand, gravel, and limestone are mixed with cement/ground granulated blastfurnace slag (GGBS) to make ready-mixed concrete.
- Aggregates and cement are put into handy sized bags for selling through builders' merchants and DIY stores.
- Recycled aggregates, asphalt, and concrete are also produced through our recycling business line to help in our journey towards a circular economy.

We operate over 300 sites across England, Wales and Scotland including three cement plants, three GGBS plants, 50+ aggregate quarries, 25+ wharves and depots, 35+ asphalt plants and 150+ ready-mixed concrete plants, as well as 40 sites recently gained from our acquisition of Mick George Limited.

The vast majority of Heidelberg Materials UK's CO₂ emissions are produced by our three cement plants. The cement production process is highly CO₂ intensive due to the chemical reaction required to form clinker (the precursor to cement) from limestone releasing CO₂. For this reason, reducing the carbon footprint of cement is particularly challenging. Despite this, the carbon impact for all of our operations for Scope 1 emissions is down 16.1% from 46.2 kg CO₂/tonne in 2016 to 38.8kg CO₂/tonne in 2023.

Commitment to achieving net zero

Heidelberg Materials UK makes essential materials to build our future and reaching net zero carbon by 2050 is a responsibility we take very seriously. We are committed to fulfilling our role in meeting the UK government's ambitions and our parent company, Heidelberg Materials, has signed the Science Based Target Initiative's (SBTi) Business Ambition for 1.5°C and joined the UN's Race to Zero campaign.

Due to the type of our manufacturing operations, the only greenhouse gas that is relevant is CO₂ and our net zero commitments relate to CO₂ only.

We have a roadmap in place that will help us achieve net zero by 2050. It includes improvements in plant efficiency and processes across our operations and the increased use of alternative raw materials and alternative fuels. We are also involved in several industry-leading carbon reduction projects, most notably, a carbon capture and storage (CCS) facility at our Padeswood cement works in north Wales as part of the HyNet North West project, which will allow us to produce evoZero® net zero cement.

Other initiatives include the formulation of a hydrogen-based net zero fuel mix for use in cement kilns and a novel carbon capture solvent being trialled at our Ketton cement works, as well as a hydrogen-based net zero asphalt production trial for 2025, all of which are industry-leading projects.

Heidelberg Materials UK has a dedicated cross-functional working group, chaired by one of our board members, tasked with ensuring that we meet our targets. Their efforts have been recognised, earning us a place on CDP's Climate Change A-list every year from 2019 to 2024.

2030 sustainability commitments

We have developed revised UK sustainability commitments for 2030 and beyond to address the challenges we face in creating a more sustainable and resilient future. They reflect the Heidelberg Materials Group sustainability strategy but take key UK drivers into account. Net zero is one of the four cornerstones of these commitments which are at the heart of everything we do and give us clear and measurable goals to help build a more sustainable future.

In addition, we hold several ISO accreditations, including ISO 14001 (environmental management) and ISO 50001 (energy management), and have also implemented the carbon management standard PAS 2080. These further demonstrate the environmental management measures we are taking and our commitment to the goals we set ourselves.



Baseline emissions footprint

Baseline emissions are a record of the greenhouse gases produced in the past. They are the reference point to measure current and future reductions.

Baseline year: 2016

Heidelberg Materials UK is a manufacturing business and therefore the total of our scope 1 and 2 emissions are significantly larger than our scope 3 emissions.

Scope 1 and 2 emissions have been monitored, recorded and internally verified since 2010 (and also externally verified by Lucideon since 2013).

We have started to record and monitor scope 3 emissions to our own internal standards and reporting procedures. This process is ongoing and the published scope 3 emissions for the baseline year are estimated. Heidelberg Materials UK has launched a project to improve its accuracy going forward.

Our cement plants and several of our asphalt plants are subject to the UKETS regulations and their formal verified declarations are made to the Environment Agency and Natural Resources Wales on an annual basis.

The baseline year has been set to 2016 as this is used as the basis for our carbon reduction target in line with SBTi's, the Heidelberg Materials CO₂ reduction strategy and Heidelberg Materials UK's 2030 commitments.

Baseline year emissions

Emissions	Total tonnes CO ₂ (tCO ₂ e)
Scope 1	1,986,423
Scope 2	203,049
Scope 3	456,877 (estimate)
Total emissions	2,646,349

Current emissions reporting

Reporting year: 2023

2023 year emissions

Emissions	Total tonnes CO ₂ (tCO ₂ e)
Scope 1	1,515,430
Scope 2	3,656
Scope 3	208,668 (Categories 4, 5, 6, 7 and 9)
Total emissions	1,727,754

The Scope 3 emissions reported are from categories four, five, six, seven and nine (Procurement Policy Note (PPN) 06/21). Heidelberg Materials UK has an on-going project with the aim of determining the Scope 3 emissions from categories one, two, three and eight that are relevant to our operations.

Emissions reduction targets

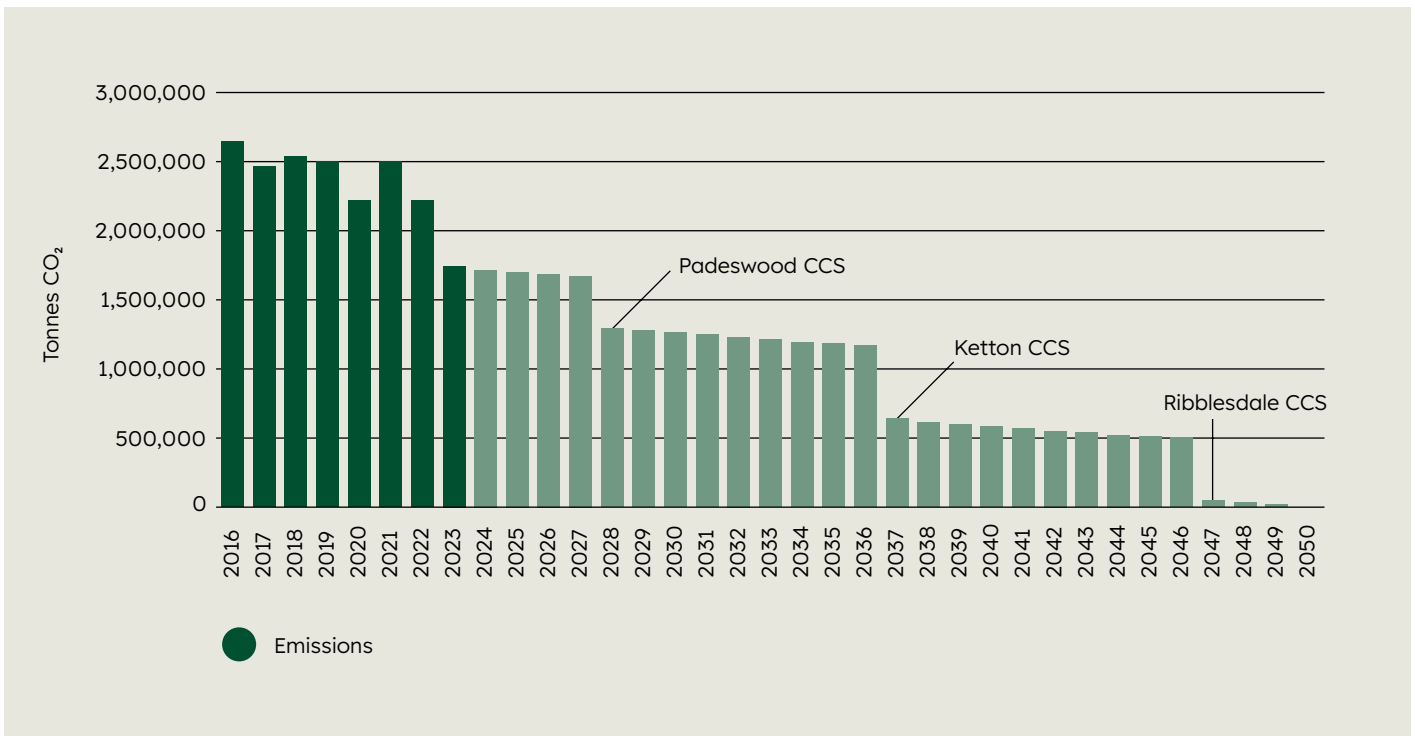
Heidelberg Materials UK reports and monitors absolute and specific CO₂ emissions. However, our CO₂ reduction targets are set on a specific per tonne basis to prevent carbon emission data being obscured by varying sales volumes between years. As a result, a carbon reduction target set on a specific per tonne basis is more meaningful as it better reflects the progress we are making. However, Heidelberg Materials UK has set itself the target of reaching net zero carbon by 2050 in terms of both absolute and specific CO₂ emissions.

To continue our progress towards achieving net zero, we have adopted the following targets, which are also part of our 2030 commitments:

- Scope 1 emissions: 15% reduction by 2030 (baseline: 2016).
- Scope 2 emissions: 65% reduction by 2030 (baseline: 2016).
- Scope 3 emissions: 15% reduction in delivery transport by 2030 (baseline: 2019).
- Car and van fleet: 100% fully electric or hybrid (cars) and 50% fully electric or hybrid (vans) by 2025.

The targets apply to our cement/GGBS, aggregates, asphalt, recycling and concrete operations.

At the end of 2023, absolute CO₂ emissions have decreased by 34.7% – an estimated 918,595 tonnes – and we predict further reductions by 2030 and 2040 on the pathway to achieving net zero by 2050.



The graph shows our total CO₂ emissions from 2016 to 2023 and projected emissions from 2023 to 2050. We anticipate CO₂ emissions will drop in 2028 thanks to our investment of more than £600 million in a CCS unit at the Padeswood cement plant. Further significant reductions are expected when our two remaining cement plants will install CCS units. We anticipate that this will be around 2037 and 2047.

Carbon reduction projects

Heidelberg Materials UK has implemented several groundbreaking and innovative CO₂ emission reduction projects, which have enabled us to significantly reduce our carbon emissions since our baseline year of 2016. The list includes past, current and future projects.

Cement

evoZero (available from 2025)

Heidelberg Materials is the world's sole supplier of carbon captured net zero cement, evoZero, which is available in the UK. The project, part of the Norwegian government's Longship initiative, is the first industrial-scale carbon capture effort in the cement industry worldwide. The CCS facility can capture 400,000 tonnes of CO₂ per year, equaling 50 per cent of the plant's emissions. Once captured, liquefied CO₂ will be transported by pipeline to the storage site under the North Sea, where it will be permanently stored.

Carbon capture and storage (CCS)

CCS involves capturing CO₂ emissions from a cement plant before they are released into the atmosphere and transferring them to a storage facility, such as an exploited oil or gas field. Once operational, our CCS plant at our Padeswood cement works in north Wales will be able to remove 800,000 tonnes of CO₂ per year and will produce evoZero carbon captured net zero cement as early as 2028.

Heidelberg Materials UK is a partner in the HyNet North West consortium, which aims to create the world's first low-carbon industrial cluster by using hydrogen and CCS. In October 2024 the UK Government confirmed up to £21.7 billion of funding to launch the UK's first carbon capture sites. The announcement is an exciting new step towards installing carbon capture technology at Padeswood and establishing the UK's first net zero cement works as part of the HyNet decarbonisation cluster.

Hydrogen fuel feasibility study

In a successful world first trial in 2021, we demonstrated the use of a net zero fuel mix at our Ribblesdale cement plant using hydrogen technology. If this were to be fully implemented for the whole kiln system, could save nearly 180,000 tonnes of CO₂ emissions each year at Ribblesdale alone. Unfortunately, hydrogen storage and transportation are technically challenging and, at present, economically unviable, presenting a major challenge.

To overcome this, Heidelberg Materials UK has conducted a groundbreaking project to establish the feasibility of using ammonia as a source of hydrogen for use as a fuel in cement kilns. Ammonia provides a more energy dense and cost-effective source of hydrogen and could allow for widespread use of the previously demonstrated net zero fuel mix. Heidelberg Materials UK is currently looking at opportunities to pursue this technology further.

C-Capture trial

After the success of our carbon capture feasibility study with C-Capture at our Ketton cement works, Heidelberg Materials UK began a trial of the technology in 2024. The scheme is part of C-Capture's national XLR8 CCS project, which aims to demonstrate that its next generation carbon capture solution can be used in hard to abate industries.

It uses a solvent to selectively capture CO₂, which can then be compressed and sent for storage in safe, geological reserves or used in other areas such as the fertiliser and oil and gas industries. The process requires 40 per cent less energy than other carbon capture technologies, creating an opportunity for significant energy savings.

Carbon reduction projects

Aggregate

Rail connected quarries and depots

We operate a network of rail connected quarries and depots across the country and transport more than six million tonnes of aggregate by rail each year, reducing the number of vehicles on our roads and cutting carbon emissions. In 2023 this included the supply of bulk aggregate by rail, which was recognised at the RailFreightUK awards. We claimed top spot in the Rail Freight Project of the Year category with our project partners EKFB and Fishbone Solutions.

Enhanced rock weathering

Work has continued to explore the potential large-scale use of basalt fines from our quarrying operations to enable carbon sequestration within industries such as agriculture. It is estimated that 300kg of CO₂ can be removed from the atmosphere per tonne of basalt fines used.

Concrete

evoBuild

In October 2024 Heidelberg Materials introduced evoBuild, our global brand for low-carbon and circular ready-mixed concrete, aggregates and asphalt products, in the UK. All evoBuild products have clear sustainability credentials: they are either low carbon – providing a CO₂ reduction of at least 30 per cent compared with a standard equivalent – or circular, containing a minimum of 30 per cent recycled content or at least 30 per cent less material.

This is achieved through the use of SCM's, most commonly GGBS, to reduce the proportion of cement used in concrete mixes while retaining the strength and properties of standard concretes. By using SCM's, we have been able to achieve the lowest emissions per cubic meter of concrete in the industry.

SmartRock

Our SmartRock wireless concrete maturity system, combined with evoBuild low carbon concrete, offers significant carbon emission reductions for construction projects. By using wireless sensors to monitor concrete temperature and strength, the system allows for earlier formwork removal, speeding up construction and reducing costs. This allows SmartRock to enhance efficiency as well as reduce the carbon footprint of construction projects.





Carbon reduction projects

Asphalt

Net zero asphalt trial

Plans for hydrogen-fuelled net zero asphalt production at our Criggion asphalt plant in mid-Wales have advanced significantly. Supported by a £6.1m commitment from the Department for Energy Security and Net Zero, the project aims to demonstrate zero-emission asphalt production using hydrogen.

This initiative, part of a consortium including EDF, National Nuclear Laboratory, and Vulcan Burners, aims to replace fossil fuels with hydrogen, eliminating CO₂ emissions. After the successful completion of a feasibility study, a trial of this technology is set to commence in March 2025 and could pave the way to fully decarbonising asphalt production, marking a major step toward industry-wide decarbonisation.

Lower carbon asphalt trial

During the resurfacing of the A30 near Exeter, innovative low carbon asphalt containing polymer modified bitumen (PMB) bio-binders was trialled for the first time on the strategic road network. This asphalt, produced at our Hingston Down plant, uses a natural biogenic binder that absorbs and stores CO₂, locking it into the asphalt, even when recycled.

The approach aims to reduce carbon emissions as well as enhancing asphalt durability and ultimately lowering maintenance frequency. The trials, part of a collaboration with National Highways, aim to support its 2040 net zero carbon deadline for construction and maintenance activities.

Declaration and sign-off

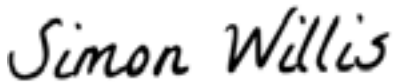
This Carbon Reduction Plan has been completed in accordance with PPN 06/21 and associated guidance and reporting standard for Carbon Reduction Plans.

Emissions have been reported and recorded in accordance with the published reporting standard for Carbon Reduction Plans and the GHG Reporting Protocol corporate standard, and uses the appropriate government emission conversion factors for greenhouse gas company reporting.

Scope 1 and Scope 2 emissions have been reported in accordance with SECR requirements: emissions have been calculated according to the methodology mandated by SECR but we have expanded the scope and report on Heidelberg Materials UK's total CO₂ emissions. The required subset of Scope 3 emissions has been reported in accordance with the published reporting standard for Carbon Reduction Plans and the Corporate Value Chain (Scope 3) Standard.

This Carbon Reduction Plan has been reviewed and signed-off by the board of directors (or equivalent management body).

Signed on behalf of the supplier:



Simon Willis
Chief Executive Officer, Heidelberg Materials UK

Date: January 2025

