



Hanson Mersey Gateway
Capability

Who we are

Hanson, a professional partner



About Hanson

Hanson is the UK's leading supplier of heavy building materials to the construction industry.

We produce aggregates (crushed rock, sand and gravel), ready-mixed and precast concrete, asphalt and cement-related materials and a range of building products including clay bricks and roof tiles, lightweight and dense concrete blocks and concrete pavers.

Hanson is part of the HeidelbergCement Group, employing 52,500 people across five continents. HeidelbergCement is the global leader in aggregates and a leader in cement, concrete and heavy building products.

Hanson's UK business is split into five business lines: Hanson Aggregates, Concrete, Asphalt and Contracting, Cement and Building Products – together operating over 350 manufacturing sites and employing approximately 4,800 people.

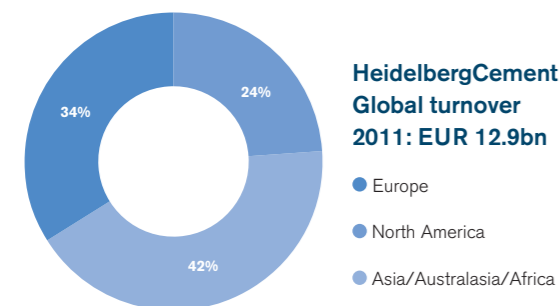
Our operations

We have a comprehensive UK-wide spread of production sites that enable us to supply contracts large or small, while minimising transport costs. We operate 58 sand, gravel and rock quarries and a fleet of trailing suction dredgers, which extract sand and gravel from the seabed around the UK and European coastlines. We have three cement plants and three grinding mills making Regen – Ground Granulated Blast furnace Slag (GGBS), a cement replacement in ready-mixed and precast concrete.

We have 20 factories producing bricks, lightweight and concrete blocks and precast concrete products and more than 220 asphalt and ready-mixed concrete plants. A network of depots and wharves, supplied by road, rail and sea, ensures the efficient transfer of materials to areas of greatest demand and where local materials are not readily available.

Hanson in the UK

- A broad product range
- Brought together in a single organisation
- Co-ordinated and cohesive
- Easy to trade with
- Customer focused
- Continuous investment
- Growth and innovation across the product range
- Providing solutions, not just products
- Health and safety, and sustainability focused.



“Sustainability is no longer a ‘nice to have’ accessory for business – it is an essential requirement, and is built into all our goals and policies”

Patrick O’Shea
Hanson UK – Chief Executive Officer

HeidelbergCement, a global business

- No. 1 in aggregates (No. 2 UK)
- No. 3 in ready-mixed concrete (No. 2 UK)
- No. 3 in cement (No. 1 UK)
- 52,500 employees
- 2,500 locations in 40 countries

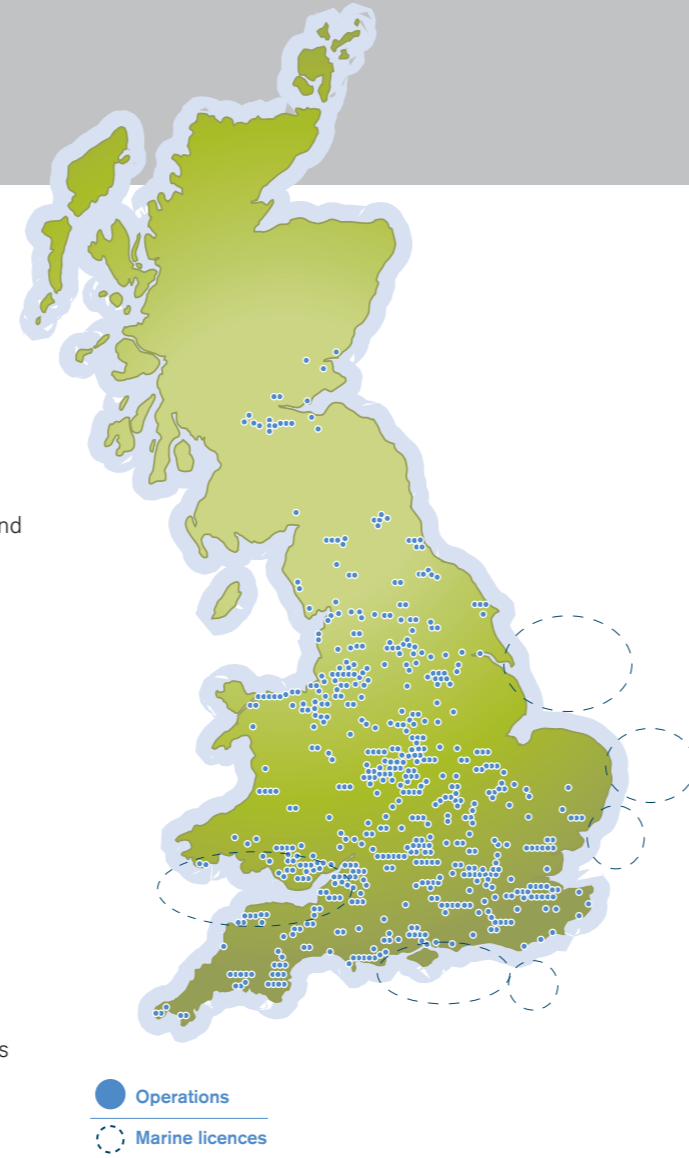
What makes us different

Five clear business lines offering the broadest range of products and services in the heavy building products market.

We produce aggregates, concrete, asphalt, cement and building products from over 350 manufacturing sites, allowing us to produce the broadest range of product and service solutions in the UK heavy building products market.

Our UK operations	
Quarries – sand and gravel	31
Quarries – crushed rock	27
Marine dredgers	8
Aggregates depots and wharves	18
Ready-mixed concrete plants	193
Site concrete plants	17
Asphalt plants	35
Recycling/landfill	17
Cement plants	3
Cement depots and wharves	6
Regen (GGBS) plants	3
Bagged products plants	14
Precast concrete and flooring plants	3
Brick works	8
Concrete/aircrete block plants	8
Block paving plants	1
TOTAL	392

- Strong 'local' expertise, resource and supply of materials
- Vast experience in supply of heavy building materials for bridge construction projects – Second Severn Crossing and Queen Elizabeth II Bridge
- Hanson is the only UK manufacturers of GGBS (No. 1 supplier in the UK Market), which significantly improves structural durability
- Our Portland cement produces 5% less CO₂ per tonne than the industry average using the most energy-efficient dry-process kilns
- Our kilns burn up to 65% alternative fuels, such as Cemfuel, AWDF, Profuel and Tyres, all these would otherwise be taken to landfill
- Can offer temperature matched curing and temperature monitoring for critical mass section concrete
- To facilitate design we provide advice on materials and previous case studies and mixes from over 50 years of UK experience in GGBS
- Can offer in-depth support on and off site for things such as curing times and striking times.



Benefits

Use of Regen (GGBS) in bridge construction



Spinnaker Tower, Portsmouth



Sea Defences, Blackpool

Regen is a cementitious material that is mainly used in concrete. It is manufactured from blast furnace slag, a by-product from the blast furnaces that produce iron. The benefits of using Regen in concrete include:

- Greatly reduced environmental impact
- Significantly improved durability
- Reduced early-age temperature rise
- Lighter colour



Second Severn Crossing, South West England/South East Wales

The use of Regen in concrete used for bridge construction is extremely beneficial. Minimising heat of hydration to reduce thermal cracking is of critical importance in mass concrete pours. High temperatures in concrete can generate stresses that could result in early-age thermal cracking. The use of Regen reduces the heat of hydration and acts as an effective solution to the problem.

The use of Regen in concrete also greatly increases resistance to sulfate attacks. Alkali-silica reaction (ASR) is one such example, ASR can cause extensive cracking of the concrete known as map cracking. The damage occurs in parts of the concrete structure exposed to moisture. Regen significantly reduces the risk of ASR occurring and with some reactive aggregates is the only recommended preventative measure.

Regen does not require the quarrying of virgin materials and the slag used in its production save potential landfill. Currently, the UK uses around two million tonnes per annum of GGBS as a cement substitute, which:

- Avoids CO₂ emissions by about two million tonnes
- Saves three million tonnes of quarrying
- Reduces primary energy use by 2,000 million kWh
- Saves a potential landfill of nearly two million tonnes

Our locations

Hanson, our North West capability

We have a comprehensive spread of production sites within the North West, enabling us to meet the demands of a wide range of construction projects.

Cement & Regen (GGBS)

- Cement – UK leader in production and supply (No. 1 in cementitious products)
- Regen – UK leader and exclusive supplier
- Locally based modern cement plant at Padeswood with extensive capacity, with back up from Ribblesdale cement plant.

Aggregates

- Six local crushed rock quarries and a sand wharf with extensive reserves of limestone, high PSV and marine dredge aggregates
- Europe's largest producer of marine-dredged sand and gravel.

Asphalt & Contracting

- Strategically located assets within two miles from the scheme and local surfacing gangs
- Two asphalt plants within close proximity of the Mersey Gateway Bridge
- 24/7 production capability.

Concrete

- UK market leader – four static plants located within close proximity of the site, with additional support from nine extra plants located within the area
- Supported by a regional fleet of over 50 truck mixers
- Extensive national fleet of mobile concrete plants offering tailored solutions based on the clients needs
- Ability to use Hanson's unique floating concrete plant
- Fully integrated project delivery team with extensive knowledge of major projects
- Local capacity and control of supply chain for all products, to include: cement, Regen, crushed rock and marine sand.



Floating concrete plant, Canary Wharf



1. Runcorn concrete plant

Products available: Ready-mixed concrete
Output: 36m³ per hour
Delivered by:

2. Warrington concrete plant

Products available: Ready-mixed concrete
Output: 42m³ per hour
Delivered by:

3. Garston concrete plant

Products available: Ready-mixed concrete
Output: 60m³ per hour
Delivered by:

4. Ellesmere concrete plant

Products available: Ready-mixed concrete
Output: 42m³ per hour
Delivered by:

5. Padeswood cement plant

Products available: Cement
Output: 850,000 tonnes per annum
Delivered by:

6. Scunthorpe Regen (GGBS) plant

Products available: Regen (GGBS)
Capacity: 560,000 tonnes per annum
Delivered by:

7. Abergele quarry

Products available: Aggregates, carboniferous limestone
Capacity: 550,000 tonne per annum
Delivered by:

8. Penmaenmawr quarry

Products available: Aggregates, ordovician microdiorite
Capacity: 650,000 tonne per annum
Delivered by:

9. Runcorn asphalt plant

Products available: Asphalt
Output: 120 tonnes per hour
Delivered by:

10. Wigan asphalt plant

Products available: Asphalt, low energy asphalt (ERA)
Output: 140 tonnes per hour
Delivered by:

11. Garston wharf

Products available: Marine sand (all types)
Annual licence capacity permitted: 300,000 tonnes
Wharf stocking capacity: 18,000 tonnes
Delivered by:

Key

- Asphalt plants
- Concrete plants
- Regen plants
- Cement plants
- Aggregate quarries
- Wharf

Delivery method

- Barge
- Lorry
- Ship
- Train
- Ready-mix lorry

Case studies

Our UK bridging capability

Kincardine Bridge

- **Bridge project:** Crossing point for the A378
- **Start/finish dates:** 2006/2007
- **Bridge type:** Pier bridge
- **Length:** 1.2km (50m main span)
- **Structure:** Multi-span, incrementally launched segments, concrete mono piles (5m dia), cages, hollow column stems
- **Production:** In situ concrete pour, down -10°C and pumped up to 850m
- **Main Contractor:** Morgan Sindall
- **Product and volume supplied by Hanson:**
 - Regen (GGBS/Scunthorpe), cement (Ribblesdale), aggregates and concrete (site plant)
 - Mix design high workability 4hrs, then rapid strength gain plus “rich mix” glass finish
 - CEM I and 70% Regen (GGBS) mixes (durability DC 3/4 ground conditions, environmental aspects, colour, control of heat of hydration)
 - Concrete volume 52,000m³
 - Regen volume 4,000m³



Kincardine Bridge, Fife, Scotland

The Second Severn Crossing

- **Bridge project:** Crossing point for the M4 motorway, over the Severn Estuary
- **Start/finish dates:** 1992/1996
- **Bridge type:** Cable-stayed
- **Length:** 5km (456m main span)
- **Structure:** 150m concrete pylons, precast cross beams, composite deck and twin box girder viaduct
- **Production:** Precast on shore and shipped into position
- **Tidal range:** 14.5m
- **Main Contractor:** Laing-GTM
- **Product and volume supplied by Hanson:**
 - All aggregate, cement (Ketton), Regen (GGBS/Llanwern) and asphalt/laying
 - C70 concrete mixes for piles, foundation and bridge segments (6500 ton ship at 20 knots)
 - CEM I and between 20% and 70% Regen (GGBS) mixes (durability, control of heat of hydration and colour)
 - Concrete volume 320,000m³
 - Regen volume 60,000m³



Second Severn Crossing, South West England/South East Wales

Queen Elizabeth II Bridge

- **Bridge project:** Crossing point for the M25 motorway, over the Thames at Thurrock
- **Start/finish dates:** 1988/1991
- **Bridge type:** Cable-stayed
- **Length:** 812m (305m main span)
- **Structure:** 137m concrete pylons, CFA piles, cages, hollow column stems
- **Production:** In situ concrete pour in caissons and underwater in coffer dams
- **Shipping height:** 57.5m
- **Main Contractor:** Trafalgar House
- **Product and volume supplied by Hanson:**
 - Regen (GGBS/Purfleet), cement (Ketton)
 - C70 concrete mixes for piles, foundation and bridge segments (6500 ship at 10 knots)
 - CEM I and 70% Regen (GGBS) mixes (durability DC 3/4 ground conditions, colour, control of heat of hydration)
 - Regen volume 40,000m³



Queen Elizabeth II Bridge, Dartford

Case studies

Our global bridging capability

Hanson and HeidelbergCement have proven expertise and capabilities in bridging projects throughout the world.

These are just a few examples:

Megyeri Bridge – Hungary

Overview

Arching over the River Danube at the most Northern point of the capital, the Megyeri Bridge is the longest bridge of Budapest, and that of the whole River Danube. It is Hungary's first cable-stayed river bridge, part of the M0 highway around Budapest. The Megyeri Bridge completed in 2008, was the last section to complete the M0 ring road around Budapest.

The 1,862m-long bridge is divided into five sections on a total of 28 supports. The central element is the 590m-long cable-stayed bridge over Danube with spans of 145m, 300m and 145m.

The A-shaped reinforced concrete pylons with pre-stressed hollow beam cross-sections are 100m tall and include a total of 29 casting segments with variable concreting heights between 2.55m and 4.07m. The pylon supporting members are inclined towards to the centre of roadway at an angle of under 13.3° and have a range of different cross-sections.



Key Facts

Start/finish dates: 2006/2008

Bridge type: Cable-stayed

Structure: 100m high reinforced concrete pylons

Length: 1861,35m

Width: 36,16m

Height: 99,68m

Main Contractor: Hídépítő Zrt/Strabag

Product and volume supplied:

- Pile C20/25 concrete
- Bridge structure, pylon: C30/37, C35/45 concrete – 60,000m³
- Cement used CEM I 42,5 N
- Blaine lower than 3,500µm
- C3A not higher than 8-9 %



Svinesund Bridge
Country: Norway /Sweden
Bridge project: Svinesund Bridge
Start/finish dates: 2003/2005
Main contractor: Bilfinger Berger AG
Product and volume supplied: 35,000m³ of concrete

Bømlo Bridge
Country: Norway
Bridge project: Bømlo Bridge
Start/finish dates: 2001
Main contractor: Triangle Contractors (NCC + HBG Holland)
Product and volume supplied: 10,000m³ of ready-mixed concrete and CEM II/A-V 42,5 cement

Golden Ears Bridge
Country: Canada
Bridge project: Golden Ears Bridge
Start/finish dates: 2006/2009
Main contractor: Bilfinger Berger
Product and volume supplied: 160,000m³ of concrete

Rędziński Bridge
Country: Poland
Bridge project: Rędziński Bridge
Start/finish dates: 2008/2011
Main contractor: Mostostal and Acciona Infraestructuras
Product and volume supplied: 11,000 tonnes of cement CEM I 42,5R

Kőröshegy Viaduct
Country: Hungary
Bridge project: Kőröshegy viaduct
Start/finish dates: 2004/2007
Main contractor: Hídépítő Zrt
Product and volume supplied: 150,000m³ of concrete

Anzac Bridge
Country: Australia
Bridge project: Anzac Bridge
Start/finish dates: 1989/1995
Main contractor: Baulderstone Hornibrook Engineering Pty Ltd
Product and volume supplied: 40,000m³ of concrete

Danube Bridge
Country: Hungary
Bridge project: Danube Bridge (on M8 highway)
Start/finish dates: 2005/2007
Main contractor: Hídépítő Zrt
Product and volume supplied: 60,000m³ of concrete

Bridge over lake Koberny
Country: Czech Republic
Bridge project: Bridge over lake Koberny
Start/finish dates: 2009/2012
Main contractor: Metrostav D4
Product and volume supplied: 24,200m³ of concrete

Hanson UK

14 Castle Hill, Maidenhead SL6 4JJ T: 01628 774 100 E: enquiries@hanson.com W: www.hanson.co.uk