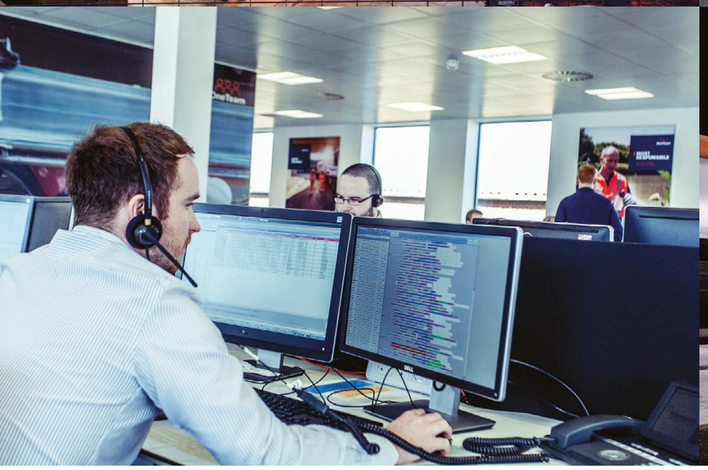
Hanson UK

Hanson
HEIDELBERGCEMENT Group

Nuclear New Build

Right first time, every time



About Hanson UK

Hanson is a leading supplier of heavy building materials to the construction industry. We produce aggregates (crushed rock, sand and gravel), ready-mixed concrete, asphalt, cement and cement-related materials and operate around 300 manufacturing plants in the UK, employing over 3,500 people.

We are part of Heidelberg Materials, one of the largest building materials manufacturers in the world, which employs 60,000 people at 3,000 locations across 60 countries. The Group is the global market leader in aggregates and also has leading positions in cement and ready-mixed concrete.

In the UK our core products and services are:

- Sand and gravel (from land and sea)
- Crushed rock
- Cement and cement-related materials including Regen GGBS (ground granulated blastfurnace slag)
- Ready-mixed concrete
- Asphalt
- Road surfacing and contracting

Reaching net zero carbon by 2050 is a responsibility we take very seriously and we are committed to fulfilling our role in meeting the UK government's ambitions.

Our route to decarbonisation has been ongoing for many years and we have made significant headway, cutting CO_2 emissions by more than 50% since 1990.

We have a roadmap in place, which includes a number of important areas that will help us achieve net zero, including:

- Increased use of alternative raw materials and alternative fuels
- Carbon capture and storage
- Fuel switching to hydrogen
- Use of reduced CO_2 products
- Improvements in plant efficiency and processes across our operations
- Water and biodiversity – water conservation and enhancing the natural environment
- Quality processes and systems – management systems for continual improvement

1,200+ Hanson-liveried vehicles

10 packed products plants

178 ready-mixed concrete plants

6 marine aggregate dredgers

47 sand, gravel and rock quarries

3 cement plants

37 asphalt plants

3 grinding plants making Regen (ground granulated blastfurnace slag)

19 rail depots and wharves supplied by road, rail and sea

1 joint venture rail company, Mendip Rail

Hanson vision by Simon Willis

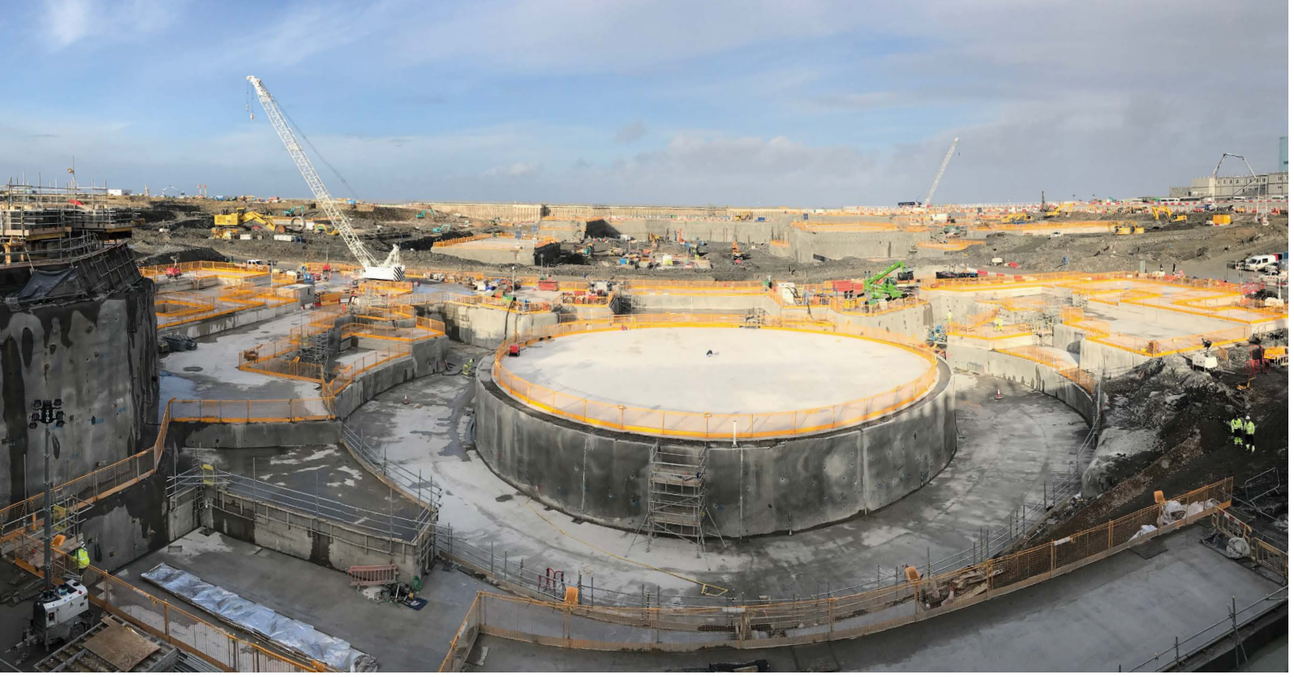
We are committed to our customers and delivering excellence in the products and services we offer.

We recognise the importance of top-level customer service and are investing in our people, our production plant and digital solutions to drive continuous improvement.

Working sustainably is also critical to our business: the very nature of what we do means we have to think long-term, plan ahead and invest for the future.

We are fully committed to decarbonising our business and supporting our customers on their decarbonisation journey. As a result, our roadmap to reaching net zero by 2050 has become integral to everything we do.

We're adapting our operations, driving lower carbon and sustainable product innovation, developing digital solutions and changing methods of transportation, as well as providing clear and transparent information to our customers and stakeholders.



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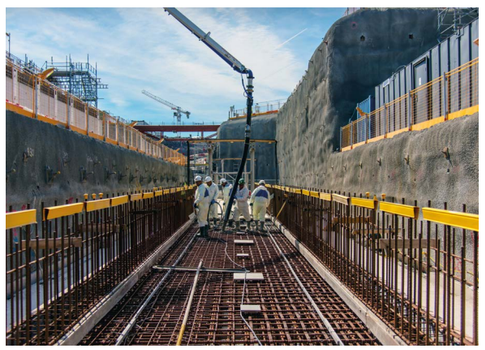
New nuclear in the UK

Nuclear power forms a significant part of the UK government's plan to provide 60 GWe of new generating capacity. A number of sites have been identified, with Hinkley Point C in Somerset the first of a new low-carbon generation of nuclear power stations to be built in the UK for almost 30 years.

Hinkley Point C is Europe's biggest construction project and will include two nuclear reactors to provide low-carbon electricity for around six million homes. Hanson is supplying three main clients delivering the construction of Hinkley Point C: Bylor (a joint venture between Bouygues and Laing O'Rourke), Kier BAM (a joint venture between Kier and BAM Nuttall) and Balfour Beatty. We will be delivering five million tonnes of cement, concrete, aggregates and asphalt over eight years. This includes producing high quality 'nuclear concrete' for the reactor buildings, their foundations and protective shell, as well as for site infrastructure.

Hanson operates seven client-owned concrete plants and sources third-party specialist materials from Belgium, Sweden and France as well as the UK.



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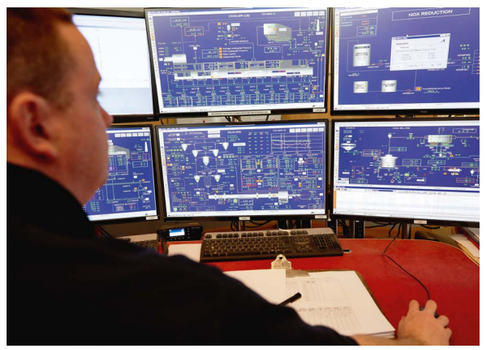
Capital investment to drive performance

Hanson is carrying out a significant investment programme to improve efficiency and environmental performance. Our approach is based on generating growth through value-creating investments, underpinned by safe working practices and a continuous drive towards customer service excellence.

Taking a long-term view, which looks beyond current political and market factors, our investment strategy will ensure we remain profitable and enable us to achieve our goal of being best in class.

Capital investment has been spent on a range of projects designed to improve customer service, save energy and reduce emissions, including new marine dredgers, energy efficient vehicles and improvements to quarries, plant and systems, as well as project-specific investment for Hinkley Point C.



Investment in washing facility to meet nuclear standards

Super-clean stone is needed to produce the extremely high quality nuclear concrete for Hinkley Point C so Hanson has invested in a £1.42 million operation to produce washed stone at Whatley quarry for the project.

It is the biggest investment at the site for 30 years and can deliver up to 150 tonnes of washed 10mm or 20mm aggregates an hour into four specially-built reinforced concrete storage bays.

An 80-metre conveyor takes material from the main storage bins up to a rinsing station where the filler dust is washed off to ensure the aggregate meets the project's demanding quality requirements. A 70-metre conveyor then transfers the washed stone to the four 15-metre by 12-metre bays, which are used to quarantine and store the washed limestone before despatch to the nuclear power station construction site.

Fleet upgrades improve efficiency and reduce emissions

Hanson has made significant capital investment in upgrading and replacing vehicles in its 1,200-strong fleet. Including 180 eight cubic metre capacity truck mixers, which feature a new drum developed with manufacturer McPhee. It is 15 per cent lighter than a conventional mixing drum meaning it can carry more product, reducing lorry journeys. The trucks are also more manoeuvrable, have a glass door for improved visibility and the latest Euro 6 low emission engines.

'Moving floor' vehicles have also been added to our delivery fleet, featuring a remote controlled, 'no tipping' design.

This allows for a more measured release of asphalt: the load is discharged by a series of sweeping rams which push the material out of the truck and into the asphalt paver or stock pile.

All the traditional health and safety risks associated with tipping articulated trucks – high winds, uneven ground or overhead trees and cables – are eliminated and the trailers are perfect for sites in tunnels or underpasses.

They also offer 40 per cent larger capacity, meaning fewer and more efficient road movements. 54 moving floor vehicles are being used to supply the Hinkley Point C construction site.

Logistics and supply chain management

Hanson UK operates four businesses lines (cement, aggregates, concrete and asphalt/contracting), which maximises efficiency and allows each division to focus on its specialist area.

Corporate and staff functions are grouped together with a national overview, creating a unified approach and allowing us to share best practice.

The supply chain function operates from our national customer service centre at Syston in Leicestershire and is managed by regional transport teams that control the daily activities of our fleet of around 1,200 Hanson-liveried vehicles.

Our entire fleet has achieved gold standard in the Fleet Operator Recognition Scheme (FORS), a voluntary accreditation scheme that promotes best practice for commercial vehicle operators.

Our marine aggregates business operates six trailing suction dredgers, supplying sand and gravel to wharves around the UK, while Mendip Rail, our joint venture rail business, manages deliveries from key supply units into rail depots in London and south east England. Our combined logistics fleet delivers an average of 750,000 tonnes of aggregates, asphalt, cement and 80,000 cubic metres of ready-mixed concrete every week from over 300 supply units nationwide.

We recognise that logistics is more than simply product distribution. It encompasses customer service, getting the right product at the right quality to the right place on time, every time, and with the best and most sustainable use of transport. Our large-scale use of rail and water for transporting our raw materials allows us to optimise logistics and ensure the lowest cost and highest sustainability balance.

Bespoke logistics for Hinkley project

Major projects with complex delivery schedules often demand a bespoke approach to logistics management and this is exactly what Hanson has put in place for the Hinkley Point C project. A dedicated logistics team has been set up at our Chipping Sodbury site, alongside other members of the project team, to plan, book and control all deliveries into the construction site.

There is a restriction in place on the number of HGV deliveries – and the routes they are permitted to take – with a maximum of 375 deliveries per day Monday to Friday and 187 on Saturday. No deliveries are permitted on Sundays or Bank Holidays. This means careful planning and on-time deliveries are vital.

The dedicated Hanson team plans the supply of materials into the site and books deliveries within a one-hour time slot up and is able to monitor the trucks in real time.

Image © EDF 2018

Our people

Almost all of Hanson's 85-strong Hinkley project team have come from outside the business, bringing open minds and facilitating a questioning approach.

Each member of the team undergoes an intensive three-month training programme, which includes familiarisation with procedures, experience of working in a concrete plant and site orientation as well as a five-day Institute of Leadership & Management course on nuclear safety culture. Our employees are offered a range of training opportunities to allow them to continually develop.

We also offer a structured, two-year graduate trainee manager programme and a Leadership, Education and Development (LEAD) higher management apprenticeship programme for enthusiastic school leavers, which offers the chance to develop supervisory skills in a hands-on environment.

We aim to be a fair, inclusive and diverse company that values meritocracy, openness and transparency. To support this, we have a fairness and respect commitment, sponsored and led by the executive team, and are a corporate member of Women in Science and Engineering (WISE), a national campaign which aims to increase the participation, inclusion and success of women in science, technology and engineering.

Hanson's 85-strong Hinkley project team is led by Stewart Cameron, head of nuclear operations.

One team

"Pouring 1,000,000m³ of concrete is an achievement under any circumstances. But keeping the supply flowing safely and consistently every week to the high standards specified for nuclear projects is a real testament to the focus and flexibility of the Bylor/Hanson team at Hinkley Point C. We've created a high-volume operation and ensured the safety, consistency and quality of the product at every stage. That's not always easy to do, because the faster and slicker you become at things, the more likely you are to have issues with consistency. Due to close collaboration and meticulous planning between the specialists from Bylor and Hanson, that's not been an issue we have had to deal with at Hinkley Point C."

Peter Abel, concrete project leader, Bylor

Health and safety

From senior directors to the factory floor, Hanson's workforce is committed to achieving the highest standards of health, safety and welfare for our colleagues, customers and the general public. Throughout the business, health and safety is our top priority and our target is zero harm.

We operate a comprehensive health and safety management system of responsibilities, rules, procedures and safe working practices which provides the backbone of effective management.

However, our focus is on individuals taking responsibility for themselves and their colleagues with the aim of creating an inter-dependent workforce where everyone looks out for each other.

We recognise that nuclear new build requires an exacting standard when it comes to health and safety, which is why we have embedded a strong safety culture into everything we do.

Nuclear safety culture

Nuclear safety culture isn't just health and safety – it is about getting every aspect that could impact on the delivery of a fully compliant component or project right first time, every time. All Hanson employees involved in the supply chain have adopted the culture and are trained in its significance.

Nuclear safety is everyone's responsibility and we get it right every time by complying with internal procedures and manufacturing specifications at all times. We have actively cultivated a questioning attitude and encourage everyone to openly communicate any concerns.

We have also developed an online training package which has been completed by around 450 employees from the teams and sites that make up the Hinkley supply chain.

It covers the basics of what nuclear safety culture is and what our responsibilities are, from individuals to board level, and is available to all employees.

Refresher training is carried out at least once a year to ensure we have individual commitment (nuclear safety is my job); leadership commitment (our management is structured to ensure we walk the talk) and corporate commitment (we are a nuclear company).

This quality and right first time nuclear safety culture extends to the whole Hinkley Point concrete team. It is an open and honest partnership made up of Bylor, Hanson and other suppliers of materials that form the constituents of the nuclear grade concrete to be placed at Hinkley. Collectively we are called Team Concrete, with no company names used.

This granite slab donated from Hanson's Hingston Down quarry in Cornwall is being used as a heavyweight health and safety reminder at Hinkley Point C.

Setting the standard for nuclear safety

We are one of the first companies in the UK to be certified to the new BS EN ISO 19443 quality management standard for those supplying products and services that are important to nuclear safety. The system is based on ISO 9001, combining best practice in quality and applying its principles to the nuclear sector while enhancing many areas to ensure long term impacts are assessed to reflect this highly regulated sector.

Principles for a strong nuclear safety culture

1. Everyone is personally responsible for nuclear safety
2. Leaders demonstrate commitment to safety
3. Trust permeates the organisation
4. Decision-making reflects safety first
5. Nuclear technology is recognised as special and unique
6. A questioning attitude is cultivated
7. Organisational learning is embraced
8. Nuclear safety undergoes constant examination

Our products

A wide range of Hanson products are being used on the Hinkley Point C construction site including cement, aggregate, marine sand, Regen GGBS (ground granulated blastfurnace slag) and asphalt.

The materials are being supplied from two cement plants, four quarries, three asphalt plants, a marine dredger and a Regen GGBS plant with deliveries by road, rail and ship.

The Hanson Cement technical team has been involved in the Hinkley project since 2009. This long-standing relationship with EDF and contractor Bylor has helped us ensure our cement and Regen GGBS meet the project's rigorous product specifications.

Regen GGBS is a by-product of the steel industry, which is ground into a fine powder for use as a cement substitute in ready-mixed and precast concrete. Replacing one tonne of cement with Regen reduces the embodied CO_2 of concrete by around 900kg and increases its durability.

Our aggregates, cement and Regen are being supplied for the concrete used in the critical structures, which will help ensure natural and man-made disasters are not capable of breaching the nuclear core:

- Base: aggregates and concretes strong enough to withstand an earthquake or tsunami
- Inner containment: shielding concretes, able to withstand internal pressures in an accident scenario
- Outer containment: shielding concretes and an aircraft protection shell built to withstand collision from a commercial airliner. The aircraft protection shell covers 50% of the safeguard buildings and reactor containment building
- Water systems: concrete for tunnel segments and marine heads to continually cool reactors

The 'nuclear concrete' is produced by Hanson to exacting standards. Every batch must be the same and must comply with the stringent quality standards laid down by the Office for Nuclear Regulation.

Trials of the mix design for Hinkley began in 2013 and it took three years of development and testing to ensure concrete of the required quality can be produced consistently.

The approval process for concrete involved:

- six months in the UK with admixture studies and development work
- a year of formal studies in France
- over 11 cubic metres batched in laboratory mixers
- over 1,000 separate flow and slump studies
- 5,000 specimens to manufacture and data manage
- 84 separate technical reports

We are also supplying and laying asphalt for the access roads to the Hinkley Point site in a £10 million agreement with the Kier BAM joint venture, which includes 100,000 tonnes of asphalt and 40,000 tonnes of cement bound granular material.

In addition, we are supplying approximately 5,500 tonnes of base, binder and surface course to build roads and car parks for contractor Laing O'Rourke's accommodation campus.

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Shotcrete

Hanson operates two dedicated site plants to produce Shotcrete for the Kier BAM joint venture. The specialist sprayed concrete includes CEM 1 cement from our Ketton works in Rutland, which offers unique qualities that are particularly well suited to this application.

Shotcrete was used for slope stabilisation as part of the earthworks contracts and provided reduced rebound – and therefore waste – as well as rapid and successful adhesion, saving time.

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Getting the right mix

Every shipment made from Ribblesdale cement works in Lancashire is tested by our quality control technicians to ensure it meets the tight specification for use in Hinkley's nuclear concrete. As well as daily sampling during production, each of the three-weekly rail loads to Avonmouth, near Bristol, is checked. All the information is available on Hanson's compliance control system, which can be viewed by the clients to see the quality of material being produced.

GGBS testing facility in south Wales

Hanson has invested in a product testing facility at its Port Talbot Regen GGBS works to meet the Hinkley project requirement for testing cement and GGBS five times a week. Previously the plant sent material to Hanson's national laboratory in Scunthorpe for physical and chemical analysis but this resulted in a 24-72 hour turnaround for results. The new facility allows the plant to have up-to-date data without the need to shut-down and await analysis from Scunthorpe.

Product quality

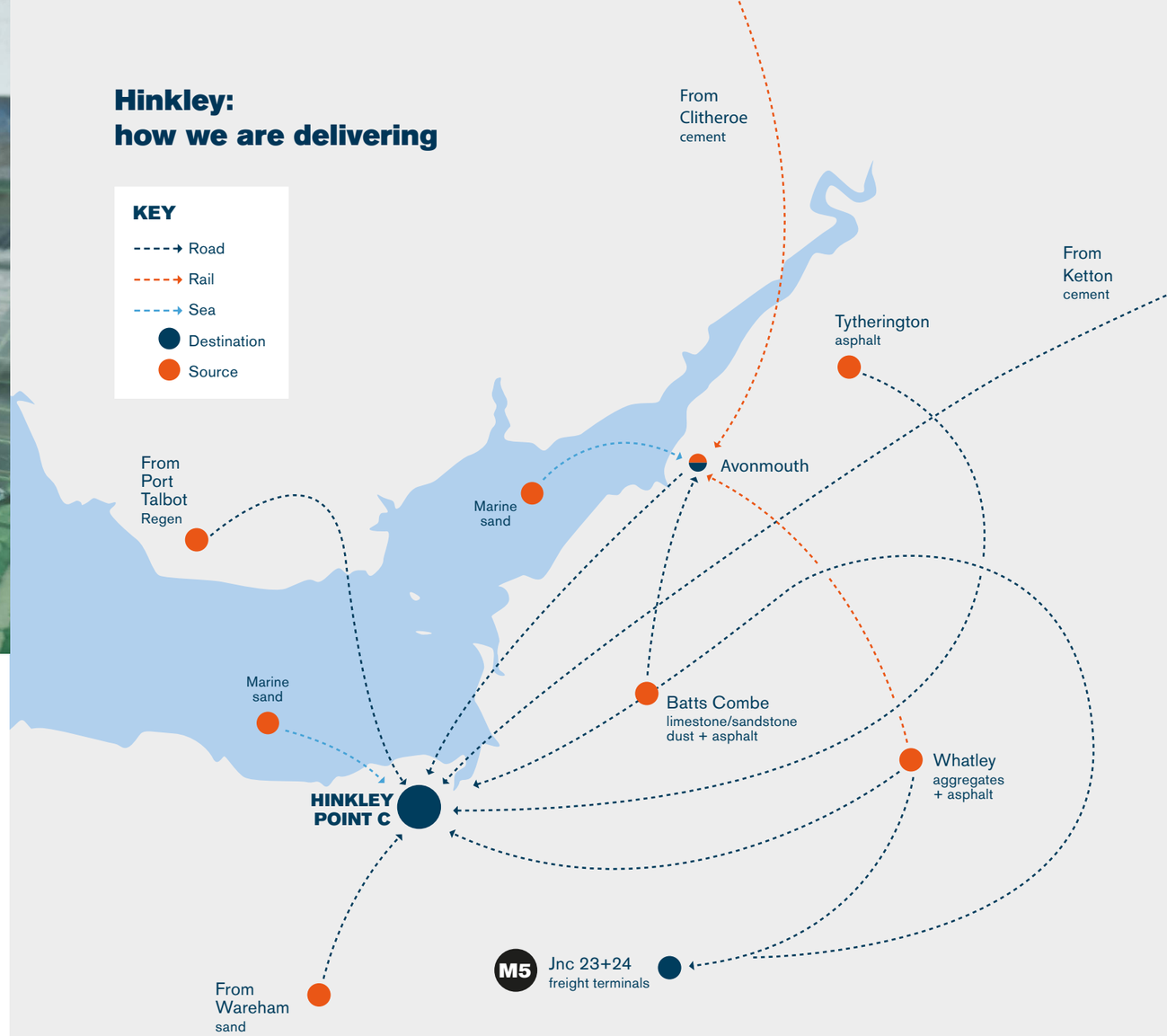
Product consistency and compliance is vital on nuclear projects and each product used at Hinkley is covered by a Book of Technical Specifications (BTS). This sets out the criteria products must meet before being approved for supply to the project: often more stringent than the European or British Standards.

We supplied five years' worth of data to show our products met the requirements of the BTS, demonstrating our commitment to the project, the consistency of our products and our integrity as a business.

We also use inspection and test plans (ITPs) in conjunction with our usual quality systems to differentiate our nuclear products. These detail all aspects of the day-to-day operation of our sites and supply chain that could have an impact on product quality and include the specifications for each stage of our processes. The ITPs have been approved by the Hinkley project team and are audited quarterly to ensure they remain fit for purpose.

Hanson's Hinkley project team includes nine quality control technicians, spread across the supply locations and on site who are responsible for ensuring that the ITPs are executed at site and 'right first time' is achieved.

They sample and test every load of material for the project to ensure it meets the requirements and are responsible for communicating the data to the project team through weekly and monthly reports. They also go to other sites to conduct internal audits on ITPs.



Major project support

We have a strong, experienced major projects team who have helped to deliver some of the UK's largest infrastructure projects including Crossrail, Thames Gateway, Terminal 5 Heathrow Airport, the Channel Tunnel rail link into St Pancras and the Olympic Park.

This, coupled with our strong asset base and logistics capabilities, makes us an ideal partner for supplying a range of construction materials to the UK's nuclear new build programme as well as other nationally significant infrastructure projects. At the same time, we can meet the key sustainability criteria of responsible sourcing, appropriate use of secondary materials and low-carbon solutions.

Early involvement with design teams and contractors is imperative. We like to work with contractors and clients at the project concept stage to ensure correct product and build methods are specified to simplify designs, maximise project targets, reduce waste, meet sustainability targets and generate value.

We recognise that partnering relationships can bring significant mutual benefits by providing an open, honest communications platform to the ultimate benefit of the end client. Our existing agreements are characterised by efficiency, openness, co-operation and continuous improvement.

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