



## Next steps

Our teams have the experience and expertise to help at all stages of our client's projects, from design to delivery, pre-tender and tender through logistics planning to supply, test and quality accreditation. By working with CEMEX you will have access to our full range of resources both in the UK and globally. Our commitment is to offer a dedicated team and response to meet your project requirements. This new approach offers a single point-of-contact in CEMEX and one who can access our full range of resources to deliver the best games ever and support the regeneration of the Thames Gateway area.

We are ready to share your vision for the Thames Gateway.

Please contact:

Steve Large,  
CEMEX UK Operations Ltd,  
CEMEX House, Evreux Way,  
Rugby, Warwickshire CV21 2DT.

Mobile: 07748 181382



[www.cemex.co.uk](http://www.cemex.co.uk)



CEMEX is a progressive, growing and forward-looking company. Our aim is to be the number one building solutions company in the UK in terms of quality, technical excellence and customer service.

**CEMEX – Building the future**



## The **London Thames Gateway**

**WORKING WITH CEMEX** TO REALISE THE VISION

For more information on any of the products and services included in this brochure please contact our Helpline:

Tel: 0800 667 827

E-mail: [gb-enquiries@cemex.com](mailto:gb-enquiries@cemex.com)

**CEMEX UK Operations Ltd**  
CEMEX House, Evreux Way, Rugby,  
Warwickshire CV21 2DT



“The Games bring lasting economic, social and environmental benefits to London through regeneration and the creation of a lasting legacy.”

ODA



# The vision and the challenge

## A single vision

In 2012, the World's focus will be fixed firmly on London but long before then all the partners in this inspirational project will have to demonstrate they can meet the challenge. 2012 is thus a race for industry long before the athletes arrive. The entire Thames Gateway regeneration project is a winner for the region, the city and the UK but to achieve those goals only the construction industry's best will be good enough.

## Sustainable construction

For CEMEX, sustainability is not limited to environmental concerns such as waste, carbon dioxide or dust emissions. Rather, it is the platform for realising improvements in productivity, delivery and quality.

Sustainable construction involves planning all aspects of a project, from base materials to the management of the finished building and includes issues such as:

- Health and safety
- Employee well being
- Noise
- Community relations
- External reporting on progress –  
i.e. local employment and material sourcing.

The management and delivery of sustainability must also be sufficiently flexible to capture the many stakeholder requirements, while providing solid data to verify goals and claims.

## Meeting the challenge

CEMEX has an international reputation for meeting major challenges and exceeding expectations.

Challenges for 2012 and the Thames Gateway initiative include:

- **Developing effective working partnerships at all levels of design and construction** – CEMEX has a well proven partnership systems approach, working with clients, local authorities and government agencies to achieve the best results at all times
- **Improved logistics** – CEMEX has a system of river and rail transport in London to minimise road haulage which has already saved thousands of vehicle movements
- **High volume delivery in short timescales** – CEMEX has a complete range of plants and depots across London and the South East producing concrete, asphalt and providing expert facilities for handling recycled materials along with aggregate from across the UK
- **Maintaining the highest health and safety standards** – CEMEX has an excellent record and has won UK awards for its health and safety standards
- **Advanced technical support** – CEMEX is an innovative manufacturer, experienced in rising to new challenges and with world-class technical support

## Shared goals

- Exemplary health and safety
- Development of skills and innovation
- Best practice in supply chain management
- Lifetime costing and operability
- Fair employment
- Ethical sourcing

“In 2012 the World's focus will be fixed firmly on London but long before then all the partners in this inspirational project will have to demonstrate they can meet the challenge.”



## Integrated solutions

CEMEX is a global building solutions company providing reliable and high quality products and services to customers and communities in more than 50 countries. In the Thames Gateway, CEMEX is a market leader and has an unrivalled supply network of locations and plants. This offers flexibility with a service base that has a local understanding of the likely construction and logistics challenges.

### Partnerships

CEMEX has a long track record of achieving the best solutions in collaboration with its partners. In the UK it has led the way in many areas including:

- Implementation of internet billing
- Use of e-commerce to improve communications with clients
- Major project collaboration

CEMEX has also supported industry-wide initiatives designed to improve skills, raise efficiency and to enhance the environment. For example, partnerships with the Wildlife Trusts and Butterfly Conservation groups have been widely recognised through industry awards.

In the 2005 Quarry Products Association Restoration Awards, CEMEX and the Suffolk Wildlife Trust were awarded a Restoration Award with Outstanding Merit – the Chairman’s Trophy - for their Lackford Lakes project. The site, near Bury St Edmunds, has become a 240-acre nature reserve with extensive educational and community opportunities.



### Sustainability

CEMEX is committed to sustainable development. This commitment is evident in our efforts to ensure the well-being of our employees, protect the environment, build infrastructures and contribute to the development of our communities.

#### • Recycling

CEMEX is increasingly involved in the supply of recycled and secondary materials. These materials include recycled aggregates, Lytag, asphalt and glass.

#### • Blended Cements

CEMEX has a range of factory blended Portland composite cements for a more sustainable product with enhanced performance.

CEM II - Contains a minimum quantity of fly ash, a by-product from Coal Fired Power Stations that would otherwise go to landfill.



CEM III - Contains a minimum quantity of Ground granulated blastfurnace slag (GGBS), a by-product from Iron manufacturing that would otherwise go to landfill.

#### • Permeable Paving

CEMEX have developed Uni-Ecoloc, a high performance concrete block permeable paving (CBPP) system which allows water to drain through voids filled with granular material. The system is designed to drain water in a more sustainable fashion than conventional techniques and is suitable for use in Sustainable Urban Drainage Systems (SUDS). Uni-Ecoloc can also be mechanically installed to reduce health & safety risks and increase the speed of laying.

#### • Logistics

CEMEX is familiar with using a balanced and innovative approach to logistics in order to achieve operational and environmental benefits on large scale projects, and has won a variety of major awards for specific rail, barge and road solutions.

#### • Efficiency

By operating as efficiently as possible, investing in alternative fuels and raw materials, CEMEX conserves energy and natural resources and reduces waste and emissions. This has led to industry awards, including the Green Apple Award for Science and Technology.

### Health and safety

In 2005, CEMEX was the overall winner of the Quarry Products Association Health and Safety Best Practice awards after winning nine individual awards. In 2006, CEMEX won 7 gold medals, 3 gold awards and the prestigious gold award for managing occupational road risk in the Royal Society for the Prevention of Accidents Occupational Health and Safety Awards. Also in 2005, CEMEX achieved a 35% reduction in the number of reported employee Lost Time Injuries as a result of its Safety campaign ‘Stop and Think’, which involves:

- Safe behaviour training
- Hazard alert reporting
- Refresher campaigns



### Research and development

CEMEX has pioneered the development of new materials including innovative road coatings, such as the revolutionary Glasphalt and high performance concrete mixes. The technical department in the UK has an excellent reputation and is experienced in providing advice and support in relation to large scale projects.

### Fair employment

With over 50,000 employees in more than 50 countries worldwide CEMEX knows its primary asset is its people. CEMEX supports all aspects of equal opportunities legislation and is committed to developing the skills and talents of its global team.


“What contractors can start thinking about now are their quality and health and safety systems. We’ll be demanding an extraordinary level on these.”

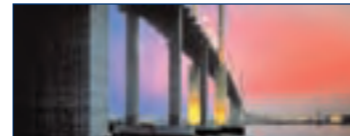
**Jack Lemley**  
ODA Chairman

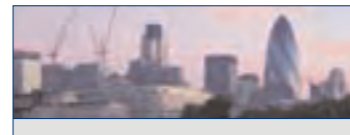
# Applications and solutions


Sector/Application	Project Examples	Solutions
 <b>SPORTS STADIA</b>	<b>Millennium Stadium, Cardiff</b>	<b>Readymix concrete</b> - 47,000m <sup>3</sup> as well as a self-compacting concrete for columns supporting the four masts which support the sliding roof. 20,000 tonnes of construction aggregate, 80,000 tonnes of concreting aggregate and 1,000m <sup>3</sup> of mortar for brick and block work. <b>Lytag lightweight aggregate</b> - Over 600 tonnes, a sustainable alternative to natural aggregate was used to provide excellent drainage for the turf. <b>Dense Blocks</b> - Approx. 65,000m <sup>2</sup> of close textured blocks for exterior exposed walling.
	<b>Wembley</b>	<b>Readymix concrete</b> - Total supplied 75,000m <sup>3</sup> . 4,500m <sup>3</sup> supplied for the largest UK non-stop pour in 2003 (over 20 hours), using over 500 tonnes of aggregates per hour. CEMEX also provided up to 8 technical staff who were on site with technicians making over 240 test cubes to confirm the quality of the concrete. <b>Cement</b> - A total of 17,500 tonnes. <b>Fly ash</b> - A total of 7,500 tonnes.
	<b>National Ice Centre, Nottingham</b>	<b>Readymix concrete</b> - 9,000m <sup>3</sup> for use in the construction of the UK's premier ice skating venue. Also supplied 265 metres of self-compacting concrete for the floor of its Olympic-size skating arena, which covers 1,800m <sup>2</sup> .
	<b>Millennium Stadium, Manchester</b>	<b>Self-compacting concrete</b> - to anchor blocks supporting the roof of the stadium.
	<b>Ascot</b>	<b>Readymix concrete</b> - 30,000m <sup>3</sup> supplied from three plants using slag cement for the main contractor Laing O'Rourke, using a concrete frame structure and stadia elements, aggregates and admixtures also utilised. Project required and achieved high quality surface finishes.
 <b>ROADS AND PARKING</b>	<b>M25</b>	<b>Readymix concrete</b> - 80,000m <sup>3</sup> of which 40,000m <sup>3</sup> of structural concrete, 20,000m <sup>3</sup> of piling concrete and further 20,000m <sup>3</sup> of slip formed concrete into the central reservation barriers and slot drains. <b>Fly ash</b> - Adopted in all of the various concrete mixes to ensure conformity with the sulfate resisting requirements of the concrete used in bored piles. <b>Admixtures</b> - Water reducing for all piling and structural concrete, and a combination of water reducing and air entraining for the slip formed concrete.
	<b>White City</b>	<b>Readymix Concrete</b> - 114,000m <sup>3</sup> for client PC Harrington with approx. 30,000 tonnes of cement & 10,500 tonnes of GGBS being used respectively. The project established high strength mixes for use throughout utilising GGBS and also Permatite, using fly ash blended cements. Originally, two plants established on-site to meet demand and aggregates
	<b>Lowry Centre, Manchester</b>	<b>Bespoke Precast</b> - 20,000 tonnes supplied for car park structures.
	<b>Royal Bank of Scotland HQ</b>	<b>Uni-Ecoloc</b> - 5,000m <sup>2</sup> of permeable block paving to comply with Sustainable Urban Drainage Systems for car parking areas.
	<b>M6, Relief road</b>	<b>Cement</b> - 75,000 tonnes. <b>Fly ash</b> - 22,000 tonnes. Supplied to CAMBBA Construction Group, a joint venture site batched project between Carillion, Alfred McAlpine, Balfour Beatty and AMEC.
 <b>RAIL</b>	<b>CTRL</b>	<b>Cement</b> - 40,000 tonnes. <b>Fly ash</b> - 120,000 tonnes. Supplies to many of the Channel Tunnel Rail Link contractors for track beds, walkways and precast concrete tunnel lining segments over the last 3 years. <b>Precast</b> - 86 miles, or 275,000 units, for troughing, lids and accessories for vital signalling and communications. <b>Bespoke Precast</b> - 400 tonnes of wall and roof segments for Stratford Box.
	<b>Docklands Light Railway</b>	<b>Concrete sleepers</b> - 2,000 pre-tensioned sleepers for construction of ballasted section of the City Airport extension. <b>Readymix concrete</b> - 16,500m <sup>3</sup> concrete for precast concrete tunnel lining segments and 60,000m <sup>3</sup> for other on-site work, provided from CEMEX plants at Dagenham, Canning Town, Stepney and Angerstein Wharf. <b>Cable troughing</b> - 10km of reinforced concrete cable troughing.
	<b>London Underground</b>	<b>Concrete Sleepers</b> - 3000 supplied in 3 types for ongoing track renewal project.
	<b>Tring New Platforms</b>	<b>Bespoke Precast</b> - 5 new platforms all with 'Safe-Step' equalling approx. 20,000 tonnes.

Sector/Application	Project Examples	Solutions
 <b>HOUSING</b>	<b>Bellway Homes, Milton Keynes</b>	<b>Dry Silo Mortar</b> - 1,450 tonnes supplied.
	<b>Barratts, Wellingborough</b>	<b>Dry Silo Mortar</b> - 1,400 tonnes supplied.
	<b>Local Authority, Leicestershire</b>	<b>Russell Roof Tiles</b> - Council re-roofing 2 million tiles to compliment existing clay on surrounding properties. Only supplier to offer bespoke delivery service to occupied sites to improve efficiency and keep inconvenience to a minimum.
	<b>National Partnerships</b>	<b>Various</b> - CEMEX has a variety of ongoing contracts with national and regional housebuilders for the supply of concrete, mortar, aggregates, blocks, roof tiles, precast and CBP.

Sector/Application	Project Examples	Solutions
 <b>GROUND WORKS</b>	<b>Stratford Box</b>	<b>Cement</b> - Land remediation work for Skanska on the main London CTRL interchange at Temple Meads. Both CEM I and Earthfix (cement/ckd blend) supplied totalling 4,500 tonnes.
	<b>Heathrow, T5</b>	<b>Cement</b> - Carrying out stabilisation work for McCordles with approx 600 tonnes CEM I used so far.
	<b>Milton Keynes</b>	<b>Cement</b> - Stabilisation work for Geotherma supplying around 500 tonnes of CEMEX Extra (a CEM II, blended cement).

Sector/Application	Project Examples	Solutions
 <b>BRIDGES / BARRIERS</b>	<b>Dartford Crossing</b>	<b>Readymix Concrete</b> - 200,000m <sup>3</sup> involved setting up 3 site plants to supply Trafalgar House construction and piling company. CEMEX supplied continuous pours of concrete over 6 weeks to fill the bridge caissons that support the towers. The project involved a high degree of technical input by using low-heat concrete developed to slipform the towers during winter-working conditions.
	<b>Westminster Bridge, London</b>	<b>Lytag lightweight aggregate</b> - to raise strength of sub standard components to support 40 tonne vehicles and address corrosive metal on Grade II listed structure with min disruption. Existing timber replaced with 40N/mm <sup>2</sup> structural
	<b>Kingston Bridge, London</b>	<b>Lytag lightweight aggregate</b> - to widen and strengthen historic multi-span masonry arch bridge. 40N Lytag concrete with max oven dry density of 1,800Kg/m <sup>3</sup> used for saddle slabs and spandrel walls to reduce weight on the precast
	<b>Northallerton, Prison</b>	<b>Bespoke Precast</b> - security barriers, with one wall unit weighing approx. 5,000 tonnes.

Sector/Application	Project Examples	Solutions
 <b>COMMERCIAL / HI-RISE</b>	<b>Baltic Exchange Site</b>	<b>Lytag lightweight aggregate</b> - Used for 180m high Swiss RE building with 41 floors and 1 underground area. 3,000 tonnes supplied for 4-12mm Lytag coarse aggregate used in structural concrete and 4/8mm Lytag for no-fines screed.
	<b>Canary Wharf, London</b>	<b>Lytag lightweight aggregate</b> - 42 storey office building with a total height 210m. Composite floors supported on a steel frame around a central reinforced concrete core. Lytag used in C50 mix to reduce concrete weight.
	<b>Broadway Plaza, Birmingham</b>	<b>Bespoke precast</b> - Over 250 tonnes of concrete designs for street furniture.
	<b>Leicester University</b>	<b>Dry Silo Mortar</b> - 1,500 tonnes supplied over 6 months with 1-2 loads every day for student accommodation and leisure facilities.

Sector/Application	Project Examples	Solutions
 <b>AIRPORTS</b>	<b>Heathrow, T5</b>	<b>Fly ash</b> - 130,000 tonnes supplied over 5 years via rail, becoming the first UK company to develop and use an innovative, intermodal, environmentally friendly bulk transport system. <b>Lytag lightweight aggregate</b> - Over 7,000 tonnes of no-fines lightweight screed for terminal and satellite building to cover an area approx. 125,000m <sup>2</sup> .
	<b>East Midlands Airport</b>	<b>Bespoke Precast</b> - Control tower units weighing over 200 tonnes. <b>Construction Services</b> - 200mm of flexible bituminous material to refurb extensive areas of existing rigid airfield pavement and widening the shoulders of the taxiways to form a 'v' shaped drainage channel.
	<b>Southampton</b>	<b>Lytag lightweight aggregate</b> - 1,500 tonnes used as arrestor beds.



# CTRL London Tunnels

COMPLETE CONCRETE SOLUTIONS

## The challenge

Constructing the four London tunnels – totalling 35 kilometres – for the Channel Tunnel Rail Link presented a number of concreting challenges. Concrete plant machinery had to be customised to accommodate the alignment of the tunnels and the varying cant. A mix design was also needed for the walkways which measured up to 1.4 metres high so that they would stand up immediately without the need for temporary support.

“CEMEX developed a very dry mix that could instantly be moulded to the required walkway shape.”

## Partnerships

Working with contractor for London Tunnels West, Nishimatsu-Cementation Skanska Joint Venture (NCS JV) CEMEX developed a very dry mix using certified Fly Ash to make the concrete cohesive. The Fly Ash is a by-product from coal-fired power stations, which would otherwise go to landfill. After processing it is used in addition to cement providing improved water reduction and better long-term strength.

The resulting concrete could instantly be moulded to the required walkway shape by the slipform paving machine. The walkways immediately stood erect without subsiding, even when weight was applied. A tight, high-standard, blemish-free surface finish was also achieved due to the rounded shape of ash particles.

The tunnels required 40,000 tonnes of Fly Ash and a further 40,000 tonnes of cement. In total 120,000 tonnes of Fly Ash was provided to many of the Channel Tunnel Rail Link contractors including NCS JV, Hochtief/Murphy, Nuttall/Hanson, Malling Holzman and Costain/Skanska/Bachy Soletanche.

“In total 120,000 tonnes of Fly Ash was provided to many of the Channel Tunnel Rail Link contractors.”

## Precast solutions

CEMEX also produced a total of 85 miles, or 275,000 units, for troughing, lids and accessories used for vital signalling and communications alongside the Channel Tunnel Rail Link tracks. In addition, 400 tonnes worth of bespoke precast wall and roof segments were supplied to Costain/Skanska/Bachy for the Stratford Box. This contract included 25 rectilinear wall panels and 38 profiled roof panels.

“85 miles, or 275,000 units, for troughing, lids and accessories used for vital signalling and communications alongside the Channel Tunnel Rail Link tracks.”



# Heathrow Terminal 5

## FLY ASH, LYTAG AND LOGISTICS SOLUTIONS

“The combination of CEMEX’s technical expertise along with its proven track record in projects of this size made it the ideal choice.”

**John Harden, Head of Construction**  
BAA

### Fly Ash performance

Fly Ash was the material of choice for making concrete for aircraft parking areas and floor slabs for BAA’s Terminal 5 at Heathrow. In May 2003 CEMEX signed a five-year agreement worth over £4 million with BAA to supply 130,000 tonnes of Fly Ash.

Fly Ash was chosen because it provides benefits both to the plastic and hardening properties of the concrete. BAA has found that Fly Ash consistently gives the extra durability required in concrete pavements, whilst providing the good cohesion required for their placing techniques.

### Specific needs

John Harden, Head of Construction at BAA said: “We had very exacting requirements when searching for a supplier for this project. The materials and expertise needed for constructions such as airport terminal buildings and aircraft standing areas are very specific indeed. The combination of CEMEX’s technical expertise along with its proven track record in projects of this size made it the ideal choice.”

### Multimodal transport (ISO Tanks)

Environmental considerations were also critical. CEMEX has been able to supply by rail, using specially manufactured ISO-Veyor units. In conjunction with inBulk Technologies, CEMEX became the first company to develop and use an innovative, intermodal, environmentally friendly bulk transport system. This system can be used on rail or sea as well as road. The containers can be transferred between road-going flat-bed trucks, rail-based rolling stock and a variety of ships, enabling the optimum solution to be arranged for each journey.

Peter McColm, Laing O’Rourke Bulk Materials Manager for Terminal 5 said: “The planning permission for the Terminal 5 project requires all of the bulk materials including Fly Ash to be transported to site by rail. The intermodal ISO Tank solution that CEMEX has developed was ideal to enable us to transport the tanks

by rail to our logistics centre and then transfer them by road to the construction site two miles away.”

Consisting of a cylinder-shaped container with a 34m<sup>3</sup> capacity, the ISO-Veyor unit has been constructed within the frame dimensions of a standard 30’ commercial container, but can carry greater weights. The payload restriction is due to the road transport limits of 44 tonnes gross vehicle mass; in tests 30 tonnes of ash and 38 tonnes of cement have been loaded.

The containers are filled at source, remaining sealed until the point of delivery, removing the need for immediate handling of the contents. Another benefit is that the units can be left on site as a method of weatherproof storage until their contents are required.

Their use on this contract has saved over 2.1 million road miles, with the associated financial and environmental benefits.

### Internal floors

Over 7000 tonnes of Lytag lightweight aggregate was also supplied by CEMEX for the internal floors of the terminal and satellite buildings. The no-fines lightweight screed was laid to a thickness of 65mm to cover an area approx. 125,000m<sup>2</sup>.

“BAA has found that Fly Ash consistently gives the extra durability required.”

“The intermodal ISO Tank solution that CEMEX has developed was ideal.”

**Peter McColm, Bulk Materials Manager**  
Laing O’Rourke



# M25 motorway widening

## CONCRETE SOLUTIONS

### Dedicated facilities

CEMEX supplied the 80,000m<sup>3</sup> of ready-mixed concrete needed for widening the M25 from junction 12 to 15 as part of a £148 million contract involving bridges, underground installations, carriageway resurfacing and new safety barriers.

To meet this demand CEMEX erected a dedicated concrete batching plant on land it owned adjacent to the site to ensure that concrete could be supplied day and night. The dedicated plant was capable of supplying up to 100m<sup>3</sup> of concrete an hour but at peak times the project required additional capacity, which CEMEX met using four of its other established plants in the area. At the height of the project the company had a total of 15 dedicated truck mixers delivering concrete.

### Local materials

Where possible local materials were used to minimise traffic and contractor Balfour Beatty established a recycling centre on the site to process materials from the site excavations.

“CEMEX erected a dedicated concrete batching plant, capable of supplying up to 100m<sup>3</sup> of concrete an hour, adjacent to the site.”

### Range of mixes

Fly Ash was adopted in all the various concrete mixes to ensure conformity with the sulfate resisting requirements of the concrete used in bored piles. Using this material also contributed to high-quality finishes and controlled the setting characteristics required for the slip-formed concrete used in the central reservation vertical barriers.

CEMEX also provided water-reducing admixtures for all piling and structural concrete, while a combination of water reducing and air entraining admixtures was used in the slip formed concrete. Overall a range of mixes was developed to meet the needs of the client:

- High early strength mixes with 24-hour strengths of 20 N/mm<sup>2</sup> were supplied to allow early access for traffic using temporary carriageway crossovers
- High workability sulfate resistant piling concrete
- Slip formed air-entrained concrete for the central reservation barriers
- A range of structural grade concretes for refurbishment works

A UKAS accredited laboratory was also set up on the site to monitor the quality of the concrete and raw materials to ensure compliance with the requirements of the Highways Agency specification. During periods of 24-hour working CEMEX technical staff worked alongside the main contractor's team to ensure that high levels of conformity were achieved.

This section of the M25 carries over 200,000 vehicles a day; the highest traffic levels in Europe. The two-year project started in January 2004 and when complete made a significant improvement to traffic flow in this previously congested area.

“At the height of the project CEMEX had a total of 15 dedicated truck mixers delivering concrete.”

“CEMEX technical staff worked 24 hours a day to ensure that the quality of the concrete and raw materials met the Highways Agency specification”



# Millennium Stadium

COMPLETE CONSTRUCTION SOLUTIONS

## Raising the roof

CEMEX products are key components in keeping the spectators and the pitch dry in the Millennium Stadium, Cardiff. In addition to providing a special self-compacting concrete for the columns supporting the four masts which in turn support the sliding roof, CEMEX supplied Lytag to give improved drainage beneath the pitch itself.

The 72,500 capacity all-seater stadium is the largest retractable roof stadium in the world.

Since opening in June 1999, the Millennium Stadium has welcomed over 1.3 Million visitors per year. It has a footprint of 40,000m<sup>2</sup> and a bowl volume of 1,500,000m<sup>3</sup>.

## Supply solutions

CEMEX supplied 47,000m<sup>3</sup> of concrete for the stadium as well as 1000m<sup>3</sup> of mortar for brick and blockwork. CEMEX also provided 20,000 tonnes of construction aggregate and 80,000 tonnes of concreting aggregate, plus 600 tonnes of Lytag lightweight aggregate.

CEMEX also supplied over 65,000m<sup>2</sup>, or six loads a day over a one year period of dense blocks in 100mm and 140mm thicknesses, which complied to a compressive strength of 7n/mm<sup>2</sup>. The specification also required a close textured finish, which is ideal for durability, economy and colour co-ordination as they were utilised for exterior use without any additional rendering or paint work.

CEMEX also continues to supply the Millennium stadium each year with approximately 2,500 tonnes of limestone dust for the World Speedway Championships.

“CEMEX provided a special self-compacting concrete for the columns supporting the four masts which in turn support the sliding roof.”

## Hallowed turf

When the entire 10,000m<sup>2</sup> of the hallowed turf – formerly the Cardiff Arms Park ground – was taken up and replaced in 2004 the new pitch was laid by Inturf and comprised over 7400 modules or seed trays. Each of these trays contained Lytag which was used in preference to gravel to give excellent drainage. The Lytag was mixed with sand and soil and sown with dwarf perennial ryegrass.

“20,000 tonnes of construction aggregate and 80,000 tonnes of concreting aggregate, plus 600 tonnes of Lytag were supplied by CEMEX.”



# Delivering innovation

## LOGISTICS SOLUTIONS

### Award winning logistics

CEMEX has a unique, highly capable, flexible and award winning logistics team. With an own fleet of over 1000 vehicles and access to a substantial pool of reliable sub-contract hauliers, CEMEX rank in the top 20 Logistics organisations in the UK, making more than 4 million deliveries annually, with:

- A fleet of tankers, tippers and curtain-siders; coupled with rail wagons, multimodal rail tankers, barges and short sea vessels, giving flexibility to ensure on-time successful delivery to any type of location
- A wide range of experience in delivering to complex, secure, potentially hazardous and busy sites
- Dedicated planning, development, training, health & safety & environment, fleet engineering and haulier teams have a track record of successful leading edge project activity and safety records
- Collaboration on major projects and with various clients to develop optimum logistical solutions ranging from transport to facilities and infrastructure.

The quality, efficiency and safety of our operations have been recognised through a number of Industry awards in the last few years, including:

- Global Cement Awards – Innovation in Transport 2006



- Motor Transport Awards 2005 – Efficiency In Operations

- Chartered Institute of Logistics & Transport Award for excellence in freight transport 2005

- ROSPA - Gold Award Occupational Safety 2005

### Short sea and inland waterways

CEMEX is the first company to introduce major freight transport on the River Severn in over 30 years. Over 10 years, a total of nearly 3 million tonnes of aggregate will be carried by barge on the River, saving 34,000 lorry journeys in Gloucestershire and Worcestershire per annum.

The Department for Transport's Freight Facilities Grant was awarded to CEMEX in September 2004. This grant was used to help develop the facilities and was in recognition of the environmental benefits derived from the removal of heavy lorry traffic from local roads.

The barges used in the project have a capacity of 350 tonnes – the equivalent of 18 HGV loads or 36 lorry movements. Moving freight by water uses fuel efficiently,

Moving freight by water uses fuel efficiently,

produces low emissions, low noise and is visually unobtrusive.

The fuel consumed by one lorry in a week can operate a freight barge for a whole year and this development is contributing towards the Government's targets of transferring 3.5% of all road freight to the waterways.

In addition, CEMEX has its own ambitious targets to reduce fuel consumption across its range of operations.

CEMEX successfully transports bulk cement from Grimsby to Leith in Scotland, making use of two dedicated vessels. Through this activity, CEMEX has developed innovative engineering solutions to quickly load and unload the boats. Our network of terminals capable of receiving sea going vessels includes an operation at Tilbury, Northfleet and Angerstein Wharf (Greenwich).

### IT solutions

CEMEX is dedicated to the use of IT to enhance the business and drive our customer service.

One system that has successfully been integrated is a GPS Vehicle Tracking System which provides:

- Improved visibility of fleet activities through real-time vehicle tracking
- Automatic Vehicle Location (AVL)

- Soft Telematics information.

This has led to improved efficiency and control of the distribution operation and customer service, with the added benefits:

- Driver monitoring
- Fully interfaced with planning and customer order systems
- Real-time updating of vehicle locations
- React to prevent customer delays
- RF tags on the trailer are linked to the telematics unit, allowing instant identification of loaded products and removing delivery errors

### Modelling and development

An integral part of our operation is a dedicated team, providing resource to run or support development and modelling projects. With a wide range of backgrounds and extensive project experience, the team cover strategy to implementation

across all areas of the supply chain.

### Supply services

**SMART SILO** is a new bulk cement supply service, combining convenience with reliability it automatically monitors bulk cement silo stock levels, analyses and predicts usage, then uses this information to seamlessly replenish stock.



- Fitted to existing silos, it uses strain gauges to monitor usage and provide real-time inventory information
- Stock levels monitored every hour and readings automatically transferred via GPRS to the SMART SILO computer system
- Data used to predict future usage
- Information is used by Logistics and Customer Services to automatically place orders on the customer's behalf

**24/7 LOAD** is our new out of hours delivery service, easing pressures on congested sites and allowing them to start the day with full silos of cement and/or bins of aggregate. CEMEX successfully supply a number of customers and our own concrete plants with cement and aggregate, outside of standard operating hours. This is in addition to our extensive experience with 24 hour delivery of coated materials.





# Worldwide expertise

## CONSTRUCTION SOLUTIONS

CEMEX has been at the forefront of stadium and major architectural developments in all of our other global locations, and has the capacity to leverage its expertise.

The following are just a few examples:

### Turner Field Stadium, Atlanta (US)

First built to hold track and field events in the 1996 Olympic Games in Atlanta, the Turner Field stadium is now home to the Atlanta Braves baseball team. To extend the use of the \$200 million, 85,000 seater stadium beyond the duration of the games, it was converted into a 49,000 seater for the Braves. Its unique design had to accommodate two different configurations and a 7-month construction conversion time. Precast concrete was ideal for easy disassembly and re-use from one configuration to the next.

As many elements as possible were built into the Olympic stadium, with the foundations for the baseball outfield stands covered by the track and field area ready for the future structure.

Precast units were used throughout for the tub sections, seating rises, columns, raker beams, aisle slabs, railing panels, tie beams and walls. In total, 3,100 units were manufactured for the stadium and 2,100 of the original pieces remained in place following the conversion.

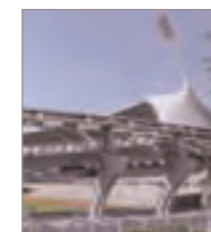
“Its unique design had to accommodate two different configurations and a seven month construction conversion time.”

### Olympic Stadium, Seville (Spain)

Spain's Olympic Stadium in Seville was constructed using 112,000 cubic metres of ready mixed concrete and an additional 1,100 cubic metres of special steel-fibre reinforced concrete for the athletes' access ramp into the stadium.

### Ericsson NFL Stadium, Charlotte (US)

A striking design for the 72,000 seater Ericsson NFL Stadium was created using precast concrete seating components and structural elements combined with precast panels featuring obsidian aggregate.



### Charley Stadium, Paris(France)

In 1989 the old stadium was demolished to make way for a new 20,000 seater stadium with a striking architectural design, enhanced by the white, limestone-based

concrete. The company supplied 25,000 cubic metres of concrete from its plant at Ivry and aggregate from the Centre and Normandy regions.

### Roland Garros Stadium (France)

Over a 10 year period, CEMEX supplied 50,000 cubic metres of ready mixed concrete and aggregate for the most recent construction phase.

“CEMEX supplied a specific glass reinforced white cement.”

In Spain CEMEX have supplied specific white cement solutions for major award winning architectural designs, including:



### Sondika Airport, Bilbao(Spain)

The new Terminal Building has all the attributes and style of a major International airport.

The treatment of the different structural elements has produced a high quality aesthetical building with the functionality of modern spaces containing the newest of engineering and modern architecture.



### Oceanographic Park, Valencia (Spain)

CEMEX supplied a specific glass reinforced white cement – that acted

and had similar properties to concrete – for the construction of light panels to create a dome sanctuary that resembled a giant igloo.

“The treatment of the different structural elements has produced a high quality aesthetical building with the functionality of modern spaces.”

# Local capabilities

CEMEX has the experience to deliver major project solutions and work in partnership to supply key areas.

The table to the right highlights specific products to some of the most relevant sectors.

CEMEX operates 20 Readymix concrete plants inside the M25 and has more plants available than any other manufacturer in the East of London. In addition CEMEX has QSRMC-approved site plants to service major projects including the White City Development and Canary Wharf.

CEMEX has an outstanding network supplying East London. This network includes wharfs and depots (see map opposite), relieving the pressure on road transport and reducing lorry movements. CEMEX also has the potential to utilise waterways to transport bulk materials:

- Northfleet**  
 The aggregate processing wharf has barge-loading capability and has marine aggregates barged from here to Battersea. This back-up capability is essential for peak demand periods. Pre-cast concrete blocks, permeable paving, standard concrete block paving and specialist elements are also manufactured at Northfleet's separate state of the art concrete products factory
- Purfleet**  
 CEMEX operates a joint-venture company to process marine aggregates
- Barking Wharf**  
 Has the potential to process natural and secondary aggregates
- Tilbury**  
 CEMEX supply bulk cements for construction or remediation and is truly multi-modal with road, rail and barge options being invested in for the future
- Erith and Dagenham**  
 Both take in Limestone from a sea-quarry in North Wales. Limestone can also be railed into a London depot from the
- Dagenham**  
 Has both static and floating cement terminals along with the potential to process aggregates. The site also receives secondary aggregate from Cornwall which is a by-product of china clay processing, along with special purpose aggregates shipped to meet marine defence requirements. Lytag, CEMEX's unique lightweight aggregate for concrete, screeds or specialist fills has a dedicated storage area. Asphalt and mortar mixes are also produced at Dagenham with back-up available from existing plants where required
- Angerstein Wharf (Greenwich)**  
 Has marine aggregate processing facilities and is ideally located to potentially barge material into the River Lea. It also operates a concrete plant

Sector	Application	CEMEX Capabilities
GAMES REGION	Main stadium	Sustainable blended cements Fly ash and GGBS Readymix concrete
	Aquatics Centre	Screeds
	Hockey Centre	Bespoke precast designs Mortar solutions – Dry Silos / Readyspread
	Velopark	Marine, secondary and quarry aggregates
	Four multi-sport arenas	Lytag – lightweight aggregate
INFRASTRUCTURE	Tunnels, bridges, groundworks	Dense & lightweight blocks
		Architectural masonry Asphalt Russell Roof Tiles
RAIL	e.g. Upgrade East London Line	Sustainable blended cements, Fly ash and GGBS Readymix concrete Natural and secondary aggregates Bespoke concrete rail solutions Concrete sleepers
PAVING	Bridges, stadia, walkways	Permeable block paving - Uni-Ecoloc Concrete Block Paving - Readypave Secondary aggregates Asphalt Kiln dried sand



KEY	0 Games Region	1 Stepney	2 Canning Town	3 Angerstein	4 Barking	5 Dagenham	6 Rainham	7 Purfleet	8 Northfleet	9 Tilbury
		• Concrete	• Concrete	• Sand and gravel wharf • Concrete	• Concrete • Sand and gravel wharf • Recycled aggregate	• Recycled aggregate • Mortar • Cement storage	• Sand and gravel quarry	• Sand and gravel wharf • Concrete	• Sand and gravel wharf • Concrete • Blocks and paving	• Cement terminal and storage