

ST PANCRAS CHAMBERS

HISTORY IN THE MAKING



Greg Fitzgerald

After nearly a century of decay, St Pancras Chambers has been restored to its former glory. Critical acclaim from the world's press is testimony to the success of the work undertaken by many specialist tradesmen to bring this extraordinary building back to life. This volume is a celebration of the construction skills involved in the restoration at the St Pancras Renaissance Hotel – a £100m+ scheme for our client Manhattan Loft Corporation.



James Armitage

When we first became involved and James Armitage, Building Division's then MD, made his first visit there he was acutely aware it was unlike anything we had tackled. With imagination, commitment, and much hard work from staff and our supply chain partners, we have succeeded. The Hotel opened for business on 5th May 2011, and is trading well.

It was a huge team effort and all 175 contractors deserve credit - they are listed at the back of this volume.

We have chosen just fourteen supply chain partners to interview and to represent a cross-section of key trades, and their stories are told within. The challenge of bringing back to life one of the landmark buildings of London was remarkable, and we learnt much to take into other projects as a result.

It has been a unique construction project. I do hope that you find these interviews and pictures of interest.



Greg Fitzgerald
Chief Executive, Galliford Try plc



"UNLIKE SOME OF THE OTHER TRADES, THE ST PANCRAS JOB DIDN'T PRESENT US WITH A MASSIVE AMOUNT OF UNKNOWNNS."

GARY BUTCHER, MANAGING DIRECTOR
ANGEL INTERIORS (UK)

Photo: Jarina Holubecki



Gary Butcher started his decorating career aged 16 as an apprentice at the old, established firm of Campbell Smith & Co. in Stoke Newington. By 19, he had become the youngest foreman in the company's history, running a prestigious job at the Foreign & Commonwealth Office. Angel Interiors has experience of working on the decorative schemes of many Grade I listed buildings: Royal Albert Hall – Prince of Wales Room; Leighton House Museum and Strawberry Hill House, to name but a few. "Unlike some of the other trades, the St Pancras job didn't present us with a massive amount of unknowns," says Gary. "Our methodology was already well in place." Before winning the Galliford Try contract, Angel Interiors had also worked on a private residential apartment at St Pancras and this proved to be invaluable preparation for the hotel work.

Gary explains that the heritage decoration work in the hotel was tendered on the basis of the Crick Smith report. This contained an analysis of the previous decorative paint schemes to establish the number

and colour of previous layers, though not exact designs (the samples taken being too small). This report provided an overall methodology by which it could be decided where the heritage decoration was to be reinstated and also which particular schemes to reinstate.

Angel Interiors tendered for all seven of these 'Historic' areas and won two of them. By splitting the heritage decoration package, Galliford Try was able to spread the risk among several high quality contractors and give more firms the chance to work on this outstanding heritage building.

Both the Ladies' Smoking Room and Gilbert Scott hotel suite had ornate ceilings, which formed the bulk of the work for Angel Interiors. Work to reinstate the original, 1870s decoration on the ceilings in both rooms followed a similar pattern: reveal; colour matching and tracing; base decoration and forms and finally intricate and delicate brush work, including gilding.

Above & right: It took a team of five people about 10 weeks to recreate the Ladies' Smoking Room ceiling. The Gilbert Scott Suite ceiling took 4-5 people about six weeks.

Right: The Ladies' Smoking Room, before restoration.

Bottom right: Gary Butcher putting the finishing touches to the Gilbert Scott Suite ceiling.



FACTS AND FIGURES

COMPANY NAME

Angel Interiors (UK)

CORE SERVICES

Specialist decoration and restoration.

PROJECT ASPECT(S) WORKED ON

Hotel – listed building.

CONTRIBUTION TO PROJECT

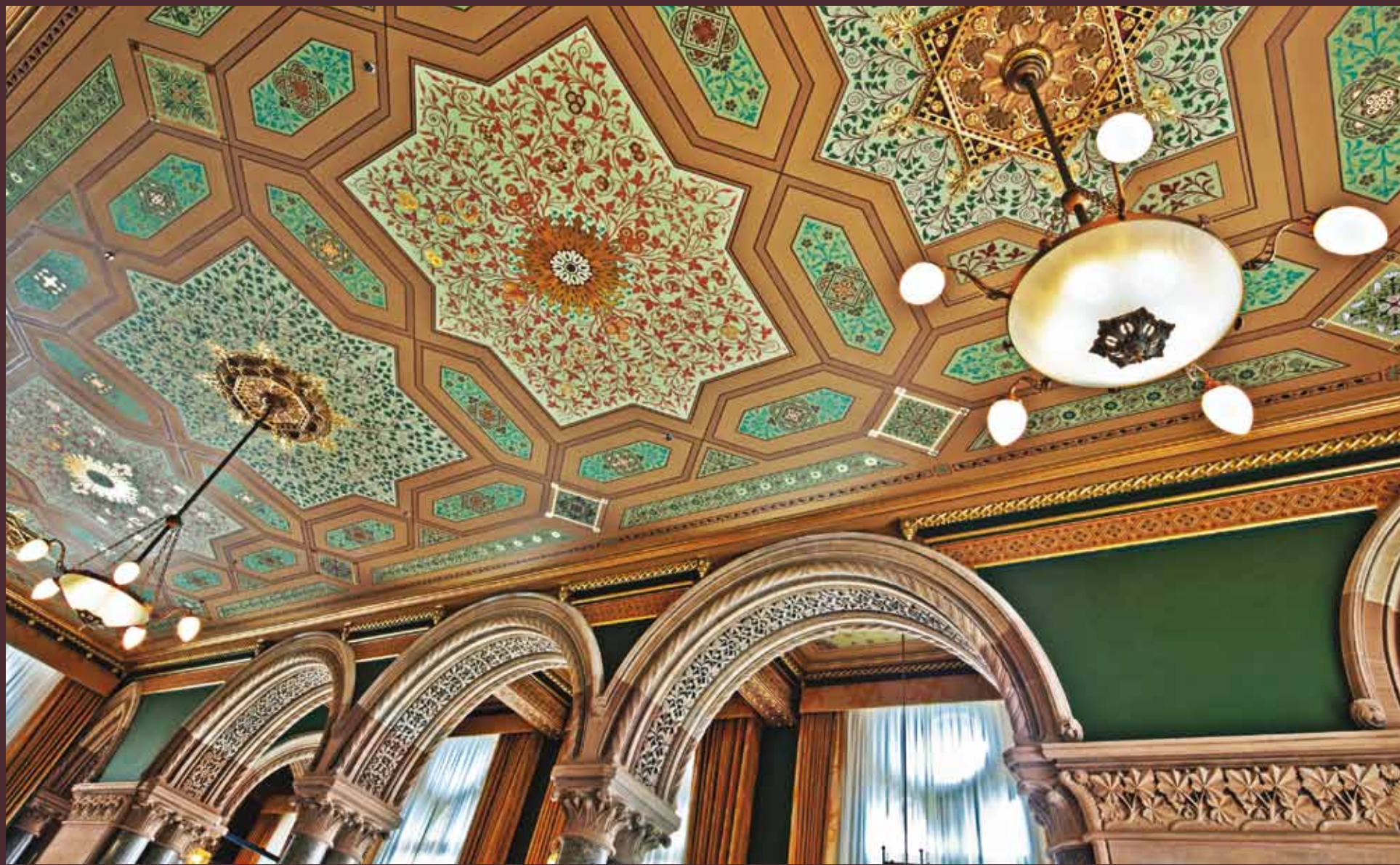
Reinstatement of the heritage decorative schemes in the Ladies' Smoking Room and Gilbert Scott hotel suite.

NUMBER IN INSTALLATION TEAM

Maximum on site – 8, led by Managing Director Gary Butcher and foreman Paul Fordham.

FURTHER INFORMATION

www.angelinteriors.com



The original ceilings had been covered in white emulsion and various other paints. Peeling paint revealed earlier layers and timber blocks had been screwed onto the surface in places to strengthen areas of friable plaster. To establish the scheme and colours, every scrap of overpainting was first removed with a scalpel blade.

To match the colours exactly, an area was then cleaned of its yellowed varnish using conservation methods. Paints were hand mixed to match all the colours in the scheme and then signed off by RHWL's project architect.

Every inch of the decoration was photographed and the patterns very carefully measured and traced. The ceilings were then covered in a protective varnish and painted over with fireproof intumescent paint. This preserves the original, whilst complying with fire regulations. "If the original decoration wasn't painted over, it could never be used as a public space," explains Gary.

Using photographs, tracings, measurements and the chandelier points as references, the designs were then re-drawn on the blank ceilings. The Ladies' Smoking Room ceiling was not square and had many geometrical discrepancies. Furthermore, one end of the room was curved. Adjustment of the geometric pattern therefore had to be done incrementally and by eye.

A further complication was that three areas had been re-plastered, thus destroying the original scheme. The largest of these areas, about 2m square, was unfortunately in the most awkward, curved, part of

the ceiling – making it impossible to extrapolate the missing design geometrically. Instead, the design had to be fitted back into this area by trial and error and it was re-drawn three times before arriving at the correct solution.

English Heritage had specified that a Dulux acrylic eggshell base be used to reinstate the decorative schemes throughout the building. Acrylic paint was suitable for walls, including those in the Ladies' Smoking Room – having mostly flat colours with no fine decoration – but Gary Butcher did not think it would give the best results on the highly detailed ceilings. "Pencil brush work needs the flow of oil paint," he explains. Fortunately, in the private residential apartment they had previously completed, Angel Interiors had already been able to establish the principle of using oil-based, rather than acrylic paint on the most intricate areas – without compromising the fire barrier protection. "We had quite a fight and it took a number of weeks," he says.

The Gilbert Scott hotel suite presented an altogether different decorative challenge. When a huge mirror was removed for restoration, an area of the original wallpaper was discovered behind it. The client decided to recreate the wallpaper and Angel Interiors entrusted this specialist project to Allyson McDermott, a wallpaper conservation and restoration expert. "No one has made a paper like this for 100 years," says Gary Butcher. (See article page 7-8.)

As well as two magnificently recreated heritage decorative schemes, there is another legacy of Angel Interiors' work at St Pancras. The Heritage Lottery Fund (HLF) runs a bursary scheme for apprenticeships, providing 80 placements every 2 years. Lisa Ferguson joined Angel Interiors on a 2-year HLF bursary placement and worked at St Pancras for much of that time, subsequently becoming an Angel Interiors employee in February 2011. "That was quite some apprenticeship to have had!" says Gary Butcher ■



Right: Every scrap of overpainting was removed with a scalpel blade to reveal the entirety of the original scheme. Reveal of the Ladies' Smoking Room ceiling took 100 man days.



Photo: Bob Ryan/Galliford Try

Bottom Right: Tracing the design in the Ladies' Smoking Room.

Far Right: Paints are hand mixed to match all the colours in the scheme and painted on numbered cards for easy reference and to avoid confusion. In the Ladies' Smoking Room scheme, 30 different colours were identified.



Photos: Angel Interiors (UK)



Left: Each traced design was transferred onto waxed paper and cut out with a scalpel. This forms a 'master stencil' which is used to create the working stencils. Using the same master ensures that the stencils are identical. The working stencils are carefully sealed so that each can be used up to 60 times – another factor in ensuring accuracy. "The work has to look accurate from the top of the birdcage scaffold, not just from the ground," says Gary Butcher.

GILDED WALLPAPER IN THE GILBERT SCOTT HOTEL SUITE

The recreation of 19th Century gilded wallpaper by Allyson McDermott

ORIGINATION, SET UP AND PROCUREMENT

We attended on site to record the surviving wallpaper, take measurements of the room, and take samples of both the paper substrate and gilded/printed layers. The large section of surviving wallpaper over the fireplace was photographed in sections to allow for greater accuracy and detail. Once in the studio, these images were digitally manipulated on the computer to build a series of pattern repeats, both horizontally and vertically. These were then printed off actual size on a large format digital printer. Once checked and reformatted, these provided the basic design from which to prepare the artwork and colour separations for the stencils and the carved wooden blocks. Specialist suppliers were sourced and specifications/instructions issued. The blocks took approximately three months to carve.

INVESTIGATION, RESEARCH AND ANALYSIS

An extensive programme of research, investigation and analysis was necessary, in order to identify the materials and methodology used in the original manufacture of the wallpaper. It is a particularly complex design using multiple, highly sophisticated techniques, all of which required identification and understanding before procurement and manufacture could begin.

Samples were taken from all the walls and examined using polarising microscopy. Chemical analysis was also used where necessary to indicate, for example, the type of paper, pigments and media used. Lower magnification under raking light also helped identify the method of manufacture, whether the gold was applied as leaf and which areas were painted, stencilled or block printed.

It also became clear that an imitation leather effect had been applied to the paper surface, an additional challenge to be considered when recreating the paper.

Each of these elements and materials was tested for effective application, aging characteristics and compatibility with the paper substrate. Whilst the blocks were being carved and the stencils cut, colours were mixed and the paper gilded in preparation.

ANALYSIS:

- Examination under 10x and 60x showed the use of a ground preparation layer beneath the gold, probably a gold size rather than glue, as would be expected.
- The colours were all applied thinly in varnish glazes.
- The paper was stained with both Herzberg and Phloroglucinol, indicating a mixture of fine cotton and lignin containing fibres.
- The paste used to hang the wallpaper contained starch.



Top: Analysis and research
Middle: Gilding the paper with 22 carat gold leaf
Bottom: Section of final printed design

Photos: Allyson McDermott



Above & right: The finished wallpaper in the Gilbert Scott Hotel Suite. Photos: Tim Crocker

TO SUMMARISE THE PROCESS:

On six different weights, types and surfaces of paper, and in accordance with the analytical findings;

- The paper was sized using an animal glue and percentage and drying times were tested and proofed.
- The gold was applied, leaf-by-leaf onto the sized paper. Both loose and transfer leaf were tested for accuracy and ease of application. Three different types of gold were used.
- Each of the samples prepared above underwent a programme of artificial aging to establish and compare the response and longevity of the materials and techniques used in each process.
- The preliminary artwork for the blocks and stencils was tested, proofed, registered and modified as appropriate.
- Pigmented glazes and varnishes were mixed, applied and tested on each of the samples of gilded paper described above.
- Pigmented varnish and oil-based media were mixed and tested for use with both blocks and stencils, each requiring different consistencies and characteristics. Each was tested on the gilded samples as described above.





"WE BECAME ONE OF THE 'FAMILY' OF TRUSTED LONG-TERM SUB-CONTRACTORS – THERE FOR THE DURATION."

PETER O'MALLEY, CONSTRUCTION DIRECTOR
ATLANTIC CONTRACTS

Photo: Atlantic Contracts



Atlantic Contracts' involvement with the St Pancras project began with a Residential carpentry and joinery package worth £1.5m. But as the project evolved, their work expanded. And, as Construction Director Peter O'Malley puts it: "We became one of the 'family' of trusted long-term sub-contractors – there for the duration."

Atlantic Contracts have a 15 year record with Galliford Try – working with them on projects such as West Kent College, Westminster Academy, Threadneedle St., Coworth Park and The Grove, Watford (another Five Star Hotel). Atlantic Contracts' experience with a very wide spectrum of quality work – bespoke carpentry through to heritage restoration – stood them in good stead for the St Pancras project. In addition, their off-site capability would prove invaluable. The Atlantic operatives were hand-picked from 180 carpenters in their South East Division. The

work would be very varied, so they needed to have a flexible attitude - and be sympathetic to heritage buildings.

Project manager Daren Coates remembers his first day on site: "It was eerie, dark and dismal." As the labyrinth of rooms was opened up to reveal yet more rooms, Atlantic found more and more work appearing. "One challenge was the unknown. When a sheet of ply was taken off, you could uncover an elaborate screen that then had to be replicated," says Daren.

The scale and scope of Atlantic Contracts' work at St Pancras is impressive. The 'first fix' (carried out in the residential apartments) involved trimming out for new stairs; re-instating rotten or defective timbers; structural works to floors and roof, and forming new mezzanine floors.



Photo: Bob Ryan/Galliford Try

Top left: Atlantic Contracts refurbished the mahogany panelling in The Booking Office Bar and carried out joinery in the prestigious hotel suites.

Top: Refurbished heritage staircase in hotel lounge.

Above: The on-site workshop in the Presidential Suite contained a floor-board planer; vacuum system for removal of sawdust; portable bench saw and pillar drill.

FACTS AND FIGURES

COMPANY NAME

Atlantic Contracts
(Part of the Masterson Holdings Group)

CORE SERVICES

Bespoke carpentry and joinery fit out.

PROJECT ASPECT(S) WORKED ON

Residential and Hotel
(Chambers building and West Wing).

CONTRIBUTION TO PROJECT

Bespoke carpentry and joinery fit out in residential apartments, heritage hotel and new build extension. Restoration aspects included: refurbishing all heritage doors, floorboards, skirting, panelling, architraves, balustrades and handrails in the Chambers building.

NUMBER IN INSTALLATION TEAM

Construction Director Peter O'Malley; Commercial Director Alastair Cole; Project Manager Daren Coates; Surveyor Simon O'Shea; Buyer Ryan Hayes plus four foremen; 30+ Carpenters; 2-3 Gangermen (feeding materials); 8 Labourers to carry; 4 of their own Apprentices and two from Galliford Try.

FURTHER INFORMATION

www.mastersonholdings.co.uk

www.atlanticcontracts.co.uk

The 'second fix' included the restoration of all apartment and hotel room doors. The 300+ doors had been taken off and were in plywood 'coffins'. Each had to be matched up with their original opening. New doors to match existing had to be manufactured and installed. Old doors beyond repair were used for spares – English Heritage insisted on the re-use of salvaged original materials where possible.

The existing floor had to be regularised and reinstalled, but ideally 'heritage' timber should not leave the site. So, with very limited space, Atlantic set up a joinery workshop at St Pancras to process the floorboards. The Presidential Suite was chosen for this, but first it had to be fire and soundproofed. The floorboards – up to 6m in length – had to be carried down narrow corridors and turned into rooms. Each had to be de-nailed, using hand-held metal detectors, planed and replaced. This task took six months!

Original picture/dado rails, panelling, skirting and sections of architrave were restored and re-fitted – with new to match existing made and fitted where necessary. Every floor had a different, ornate architrave moulding and special cutters had to be made up to replicate them.

Items of original joinery were disassembled, cleaned and re-glued – any missing or damaged sections being replicated by specialist craftsmen. Heritage joinery work required a lot of hand carving and included the refurbishment of the mahogany panelling in The Booking Office Bar and refurbishment of original staircases, balustrades and handrails.

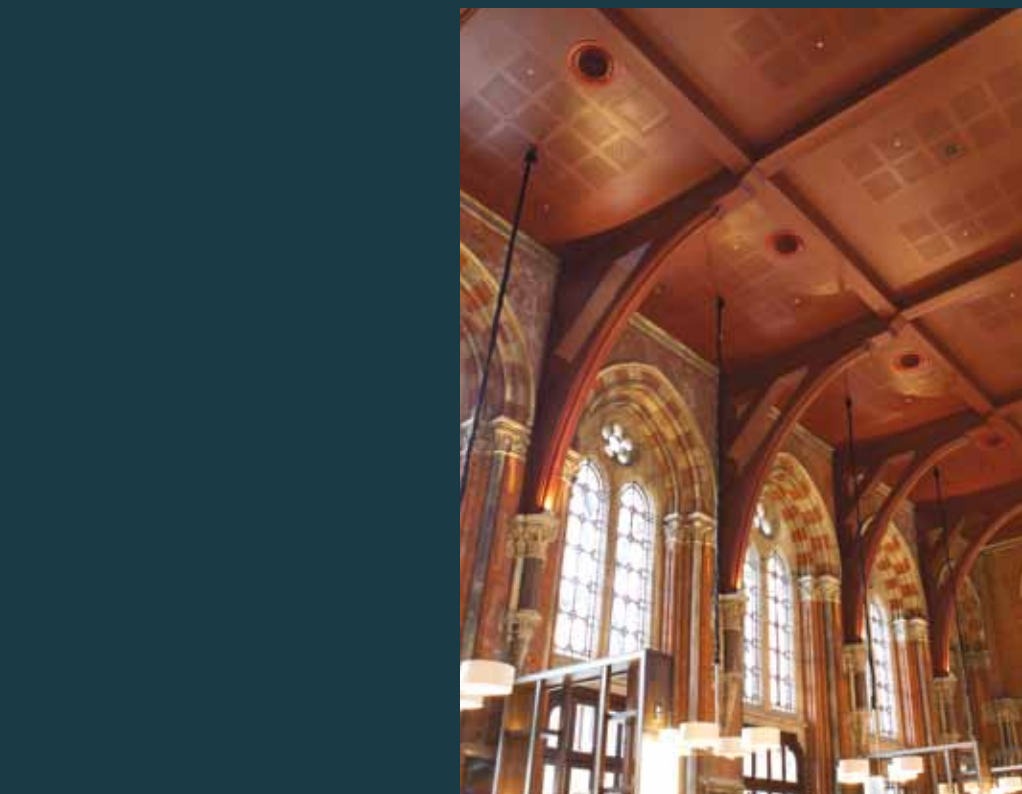
A collaborative approach was used for the joinery restoration work. Meetings were held with English Heritage, the Architects and the Plaster Restorers to look at work in situ and discuss structural implications and issues of matching.

The 'final fix' included overhauling the existing ironmongery and producing ornate, handmade handles and door knobs to match existing. Bespoke work in the Chambers building included: the complete joinery fit-out of the meeting rooms and Presidential Suite; all joinery in the toilets and panelling in the treatment rooms in the Basement Spa; buffet counters in the Club Lounge; seating booths in the bar and leather seats, planters and a new reception desk in the main foyer.

The logistics of moving large joinery installations down corridors and into small spaces proved extremely challenging: the solution was to transport items in kit form as much as possible. Pre-production meetings were held on site where installers, foremen, architects and joiners met and agreed how to design with access in mind, thus producing a bespoke piece in kit form, with joints invisible once constructed.

Atlantic Contracts made all of the bespoke hotel joinery off-site. They used both of their workshops – in Leicestershire and Herefordshire – to "split the risk". All timber was FSC accredited. It was sourced from the EU and a sample provided for all new installations. FSC veneers from Holland and Belgium were hand-selected. Leather for seating was imported from America and marble for desk tops was sourced from Italy, with visits to the quarry to ensure the Interior Designer's requirements were met.

Atlantic Contracts run their own apprenticeship scheme and Daren Coates says that St Pancras was a great place for trainees to learn. "They saw the full scope of the carpentry trade. It was a unique job: there's so much knowledge contained within that building. Each day threw up new challenges and we probably won't come across a lot of the work again. Your average job length is 20-30 weeks – we were at St Pancras for 3 years! It's a job we're proud of and we didn't really want it to end. When you leave a project like this, it's hard to go onto another job." ■



Above left & above: Bespoke work in the Chambers building included: buffet counters in the Club Lounge, seating booths in the bar and high quality joinery in the guest bathrooms.

Left: Original doors had to be restored. All repairs had to be done sympathetically, using 'traditional' joints where old and new materials met.



Far left: False gallows brackets (red) in The Booking Office Bar, the former ticket office. These were manufactured to match the existing building fabric.

Left: Heritage joinery work included refurbishment of original staircases, balustrades and handrails. A lot of hand carving was required.



Photo: Bob Ryan/Galliford Try



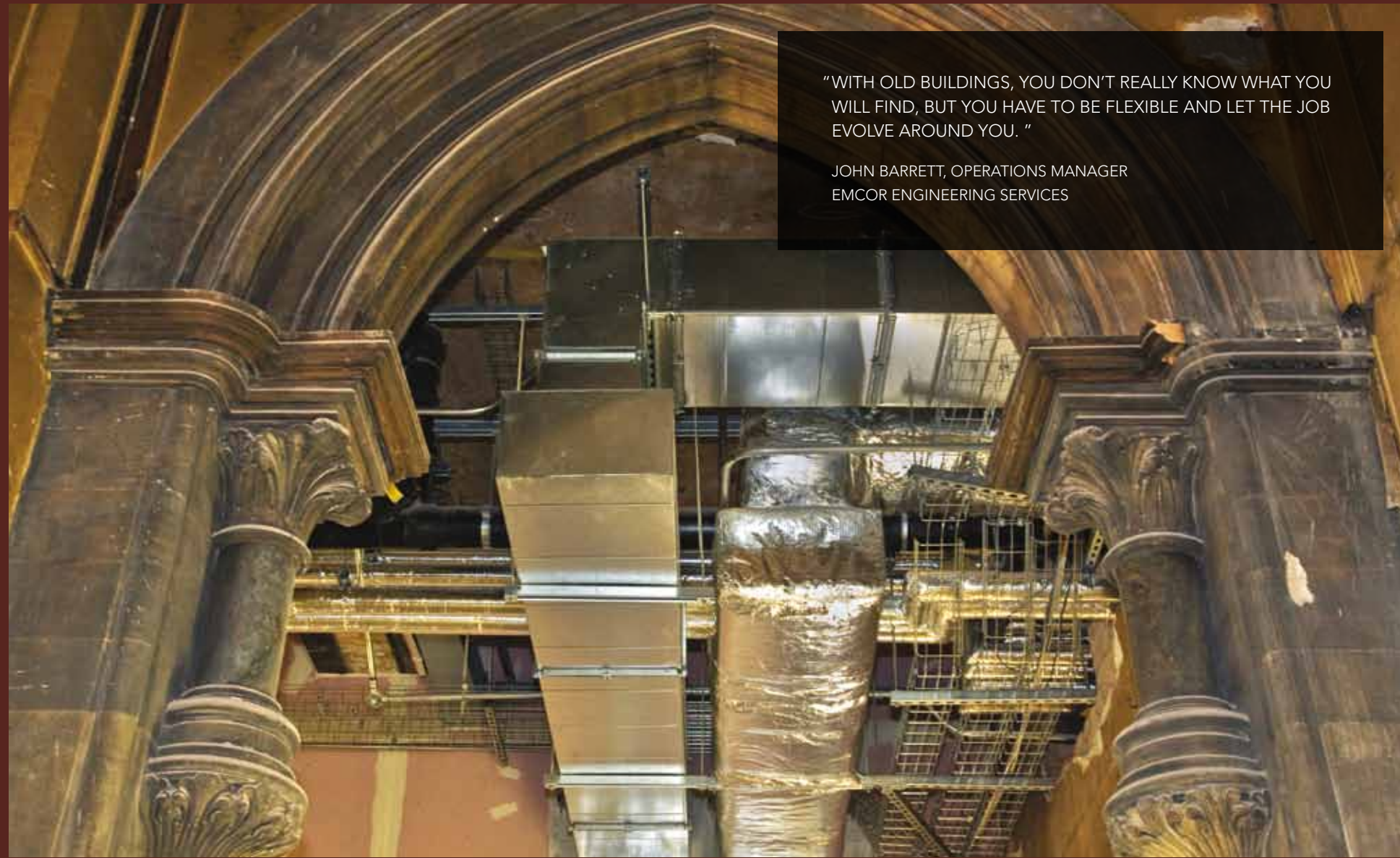
Left: The heritage floorboards – up to 6m in length – were de-nailed and planed on site, before being replaced. This task took six months!



Photos: Atlantic Contracts



Left: Restoration of the mahogany Moroccan balustrade at the bottom of the Grand Staircase was a major challenge. It had to be taken apart and the damaged or missing individual pieces replicated on a lathe before re-assembly. This was done off-site in the Leicester workshop.



"WITH OLD BUILDINGS, YOU DON'T REALLY KNOW WHAT YOU WILL FIND, BUT YOU HAVE TO BE FLEXIBLE AND LET THE JOB EVOLVE AROUND YOU. "

JOHN BARRETT, OPERATIONS MANAGER
EMCOR ENGINEERING SERVICES

EMCOR Engineering Services is part of one of the world's leading mechanical and electrical specialist contractors. EMCOR UK's involvement with St Pancras began as a member of CORBER, the construction consortium for the rail terminus. They first collaborated with Galliford Try on enabling works packages to station/hotel interfaces, after which a Residential contract was negotiated. EMCOR UK's package subsequently grew into the largest of any contractor working on the St Pancras hotel project.

EMCOR had an excellent track record on relevant jobs – for example, Winfield House (The US Ambassador's residence) and the National Gallery. Operations Manager John Barrett had extensive experience of heritage buildings, such as the huge and ornate Royal Holloway College Founder's Building at Egham. He project-managed the electrical work element of the fire restoration at Windsor Castle for Lowe and Oliver, but says that "St Pancras was the biggest challenge of them all".

"With old buildings, you don't really know what you will find, but you have to be flexible and let the job evolve around you," says John. "You have to be bold and dynamic – and you have to have dialogue with other people."

The scale of EMCOR UK's job was immense: all the services they were installing – fire alarms, sprinklers, public address, duct work, pipe-work and electrical – run through the whole building. Apart from the scaffolders, EMCOR UK were the only contractor with site-wide responsibility. Due to its massive footprint, covering the whole site was, in itself, a huge challenge. John estimates that it is nearly 1km from the 7th floor of the West Wing to the 1st floor of the South Chamber!



Top: The complexity of services within the Hotel Club Lounge. All the services they were installing – fire alarms, sprinklers, public address, duct work, pipework and electrical – run through the whole building.

Top left: Major services went through the basement corridors.

Above: Residential Apartment Bathroom.

FACTS AND FIGURES

COMPANY NAME

EMCOR Engineering Services
– part of EMCOR Group (UK)

CORE SERVICES

Mechanical, electrical and public health services.

PROJECT ASPECT(S) WORKED ON

Residential and Hotel – Chambers building and new build West Wing.

CONTRIBUTION TO PROJECT

Mechanical, electrical and public health services, including installation of sprinkler system and primary plumbing.

NUMBER IN INSTALLATION TEAM

20 at management level, led by Operations Manager John Barrett, plus a maximum of 150 operatives and sub-contractors on site.

FURTHER INFORMATION

www.emcoruk.com



Photos: Bob Ryan/Galliford Try



Above: Most of the main services for the hotel and private apartments run under the old taxi-rank, now the hotel lobby and reception.

Above: Logistics were challenging. Equipment for one of the main plant rooms being lifted with a 500 tonne crane into the roof-space of Barlow House. A section of the roof had to be removed, so that chillers, pumps and air-handling units could be installed in 'kit' form.

The Chambers building had many quirky aspects and these proved challenging when 'setting out'. No room was the same, so a repetitive or modular approach couldn't be used. Instead, EMCOR found that they had to be very 'hands on' and physically examine each room's idiosyncrasies.

Specifications were also coming in from the architect, M&E consultant and interior designers. In order to finalise room layouts, EMCOR UK employed a full-time specialist over four months to coordinate all setting-out information in one understandable and buildable drawing.



Above: Fitting and assembly of the underfloor heating in the hotel reception.

When getting services into their locations, the Chambers building presented many obstacles. For example, the chimneys were full of rubble. Over 400 flues had to be cleaned and aluminium liners put in to install ventilation. In the basement, getting the services through 'pinch points' where there was no depth to the floor proved challenging.

EMCOR had to work with suitable regard to the heritage nature of the Chambers building. Risers had to be formed sympathetically and services had to be re-routed around sensitive aspects. For example, chasing out was not allowed on certain heritage walls – so service runs had to drop down to skirting level or go through an MDF duct instead.

One of the main plant rooms presented particular challenges. A section of Barlow House roof had to be removed and part of Midland Road shut over a weekend so that the equipment – chillers, pumps and air handling units – could be lowered in sequentially in 'kit form' with a 500 tonne crane. Due to the Grade I listing, the equipment in the plant room could not be suspended from the heritage beams in the roof – so it was instead supported by 'goalpost brackets' fixed to the floor.

In Barlow House roof, EMCOR UK's careful choice of materials – a piping system called 'Victaulic' that could be prefabricated off-site – removed the need for welding and eliminated any fire risk. In other areas, using plastic piping or the 'Mapress' system also greatly reduced the amount of welding done at the site. All materials – pipe and cable etc. – were

purchased locally: EMCOR UK were committed to using local suppliers by iCAM, a local business support project between Camden and Islington Councils.

With many of the Chambers building's challenges remaining hidden until exposure, EMCOR UK operatives had to be "flexible, dynamic, adaptable and open to change," says John. "Working with the other trades needed immense coordination. We might go so far with a job, but then not be able to finish it straight away, which could be frustrating."

"With so many different parties, it was hard to get a coordinated view. Collaboration and regular dialogue was the key. Rather than having big meetings, we held lots of small workshops, where problems were solved on a more individual basis."

John says that there were good relationships throughout between EMCOR UK and Galliford Try. "I didn't have to write a single contractual letter to Simon Frawley – Galliford Try's Project Director – at any time during the whole job. Which, for a project that size, was quite unique! If there was a problem, we'd sit around and talk about it instead."

"There was trust at all levels and we always felt included in decision making. There was nothing formal in place, but we went about it as though we were partners. This project was a massive team effort all round between EMCOR UK, Galliford Try and all the other sub-contractors." ■



Farnham Joinery gained the opportunity to tender for the St Pancras contract through their membership of iCAM, a local business support project between Camden and Islington Council that facilitates the obligations of large contractors to procure locally. iCAM organised a 'Meet the Buyers' event at which Farnham and two other local joinery firms were able to have a fifteen minute face-to-face meeting with the Galliford Try buyers in order to profile their company as fit for tender.

The initial contract was for the supply of replacement Gothic arch windows, but further opportunities arose from there. The contract ended up being worth just over £100,000. "Very welcome in a depressed economic climate," says joint owner Jane Langan.

Managing Director Frank McLoughlin has built up an extensive knowledge of listed building

restrictions and how they can be worked alongside building regulations and new energy requirements. However, the building's Grade I status meant certain compromises had to be made. For example, old, worn windows were updated with high quality modern replacements, but the Grade I listing indicated that these replacements should be single, rather than double-glazed.

The windows varied in size and type: opening sashes, fixed sashes and casements. Farnham also supplied some doors. Many of the windows were very large, which made them more awkward to manoeuvre during the production process. For instance, one window had 6 casements and measured 3000 x 2400mm. Farnham's team of experienced joiners were all involved in the various aspects of production and Frank McLoughlin, along with Workshop Manager Pawel Lesniak, checked each finished piece before it left the workshop.

Above: Farnham installed windows in the main lobby and reception area.

Right: Old, worn windows were updated with high quality modern replacements.



FACTS AND FIGURES

COMPANY NAME

Farnham Joinery

CORE SERVICES

High-end architectural and purpose made joinery.

PROJECT ASPECT(S) WORKED ON

Hotel and residential apartments.

CONTRIBUTION TO PROJECT

Manufactured approximately 40 windows and doors, all being produced in own workshops. Fitting was carried out by carpenters on a sub-contractual basis for Galliford Try. Also supplied over 500 sq m of solid American white oak flooring for The Booking Office Bar.

NUMBER IN INSTALLATION TEAM

Managing Director/Owner Frank McLoughlin (on site surveying and liaison with Galliford Try); Workshop Manager Pawel Lesniak (overseeing production); plus Farnham's team of 6 experienced joiners.

FURTHER INFORMATION

www.farnhamjoinery.co.uk



Photo: Tim Crocker



Left: many of the windows had arch tops - such as the large Gothic remakes to the front of the building.



Above: Farnham Joinery supplied over 500 sqm of solid American white oak flooring for The Booking Office Bar.

Having worked with English Heritage on period properties before, the firm has much experience of reproducing heritage features. Many of the windows had arch tops – such as the large Gothic remakes to the front of the building, which also had complicated joints that had to be replicated exactly. Many of the cills and shaped overpanels also had to be exact copies of the originals.

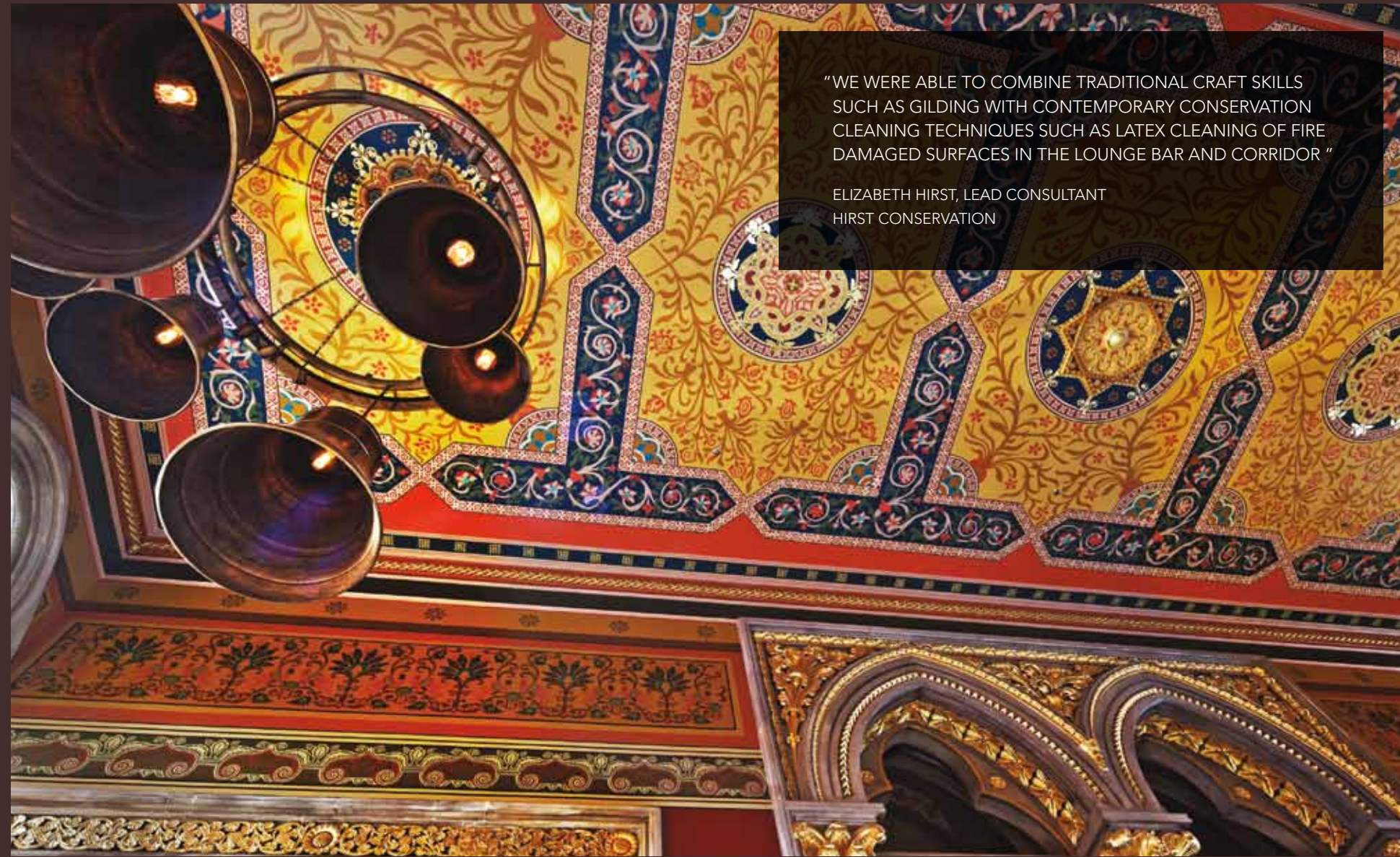
Jane Langan explains that, with great attention being paid to small details, reproduction work of this quality is very time consuming. For example, in order to exactly profile mouldings, special cutters have to be made up. "Patience is required, but it's far more satisfying than just mass-producing conventional sash windows."

The windows were all manufactured in hardwood for stability and durability. A micro-porous paint was applied using the in-house spray booth. This finish allows the timber to breathe more naturally, thus prolonging the life of the window. Glass was supplied by a small local company, JTS Glass, who were able to deliver same day replacements to site for broken panes.

Farnham Joinery buy their timber from James Latham, one of the biggest importers in the country. Their timbers are of the highest quality, all FSC accredited, with a full chain of custody traceability – which, Jane says, is increasingly being requested by clients in these more environmentally aware times. To make their operation even more sustainable, Farnham have installed a briquette maker and boiler for off-cuts, thus saving on energy and reducing their contribution to landfill.

Jane Langan says that from the outset they could sense the pressure to deliver exactly what was required and to tight deadlines. They realised that this high profile project would be under public scrutiny as well as client pressure; not to mention the constraints being imposed by English Heritage. However, she says that, in spite of the pressure, they developed a very good working relationship with the Galliford Try site team, who were always "professional, courteous and helpful - not to mention having a good sense of humour!"

"Being part of such a prestigious project was not only a great experience, but very good for the company profile, and it will hopefully generate new business for the future." ■



"WE WERE ABLE TO COMBINE TRADITIONAL CRAFT SKILLS SUCH AS GILDING WITH CONTEMPORARY CONSERVATION CLEANING TECHNIQUES SUCH AS LATEX CLEANING OF FIRE DAMAGED SURFACES IN THE LOUNGE BAR AND CORRIDOR "

ELIZABETH HIRST, LEAD CONSULTANT
HIRST CONSERVATION

Elizabeth Hirst visited St Pancras Chambers some years ago to survey the condition of its ceilings. She says that this encounter made her really want to work on the building - especially on the painted finishes. Her wish was finally granted when, in 2007, Galliford Try asked Hirst Conservation to undertake a plaster survey. They subsequently acted as consultants for the plaster repairs and also replicated the original, highly decorative schemes in the public spaces.

"For us, working on a Grade I listed building is 'business as usual' as we largely work on listed buildings and the way we work is geared towards that," says Elizabeth Hirst. "Conservation is usually about minimal intervention and the use of like-for-like materials, sensitive to the historic fabric of such buildings."

The company employs a permanent team of highly experienced conservators and analysts from a wide range of conservation disciplines in order to address the complex and inter-related issues encountered in building conservation. The staff have a broad range of skills and are all used to working on building sites.

With limited time to do the plaster survey, Hirst Conservation arrived on site in November 2007, before any work had begun on the services. "It was freezing cold, the lighting was poor and the area was very dirty. There was a strong smell of soot from the fireplaces, which was quite eerie! I felt the past: you had the sense of all the people using those spaces before - especially lighting the fires. I could imagine the chambermaids scurrying down the corridors," says Elizabeth.



Photo: Bob Ryan/Galliford Try

Top: Hirst Conservation replicated the original, highly decorative schemes in the public spaces - such as the fire-damaged Gilbert Scott Lounge Bar. The original paints were lead based - however, modern paint systems were specified for reasons of health and safety, reversibility, longevity and reduced environmental impact.

Above: Surveying team in the Ladies' Smoking Room. Over seven hundred rooms, and adjoining staircases/ corridors were surveyed.

FACTS AND FIGURES

COMPANY NAME

Hirst Conservation

CORE SERVICES

Historic building and fine art conservation and consultancy.

PROJECT ASPECT(S) WORKED ON

Residential and Hotel - Chambers building.

CONTRIBUTION TO PROJECT

Condition surveys of historic plaster and fire damage; specialist consultation for plaster repair; stonework cleaning; replication of original decorative schemes in the public spaces.

NUMBER IN INSTALLATION TEAM

Lead Consultant Elizabeth Hirst plus team of specialists: Plaster Consultant Tim Pretty; Paint Researcher Rhiannon Clarricoates; Materials Chemist and Stone Consultant Paul d'Armada. A team of 12 of Hirst's Conservators undertook the site restoration work.

FURTHER INFORMATION

www.hirst-conservation.com



Above & Right: Ceiling restoration in the Gilbert Scott Lounge Bar.

The survey involved assessing the nature and extent of damage to the internal historic plasterwork in over 700 rooms and adjoining staircases and corridors – and producing detailed specifications for tender purposes. Planning and listing regulations meant that as much original material as possible had to be retained, so all defects requiring repair were recorded: plaster losses, fractures, holes and unstable areas. This was all quantified and the repair methods specified.

Of the main challenges faced by the Hirst team, Elizabeth says: “The size of the building meant that simply navigating your way round for surveying was difficult. In addition, there were time constraints. So we had to be extremely organized: with a team of 7-8 people spread out over such a large area and in so many rooms, we had to ensure that all rooms were surveyed and rooms weren’t surveyed twice!”

“Processing such a large amount of information and making it accessible for the client was also challenging. This meant very long hours and many discussions on how to present the data in a meaningful way.”

Hirst Conservation then specified the exact mortar mixes for the plastering works. Careful analysis of the original plaster ensured that the new material would be compatible with the old. This is particularly important for any patch repairs. As the work progressed, mortar mixes were sampled regularly and analysed in Hirst’s laboratory to check for consistency.

“For the next three years, as Consultants for repairs to the historic fabric, we visited every week to ensure the correct materials were being used and work was being done appropriately – to include attention to detail and the important aftercare. We were contactable at all times,” explains Elizabeth.

“Inevitably, there can be a difference in requirements between modern planning – to include fire regulations – and conservation. For example, we recorded the painted ceiling in one of the interiors for the purposes of reinstatement. The decoration was in good condition, but had to be covered over with opaque intumescent paint to comply with fire regulations, and the design then repainted over the top. However, this did mean that the original paint stratigraphy was maintained underneath. Clear intumescent varnishes are relatively new and are the subject of ongoing research and evaluation by Hirst and the producers of the coatings. These varnishes are likely to be used on future conservation projects.”

Elizabeth thinks that, inevitably, working as part of such a large team and alongside so many differing trades provided a learning curve for everyone. Being both huge and complex, the St Pancras project presented many challenges – but also many opportunities. “The project was ideal for us as we were able to combine all of the varied skills of our multi-disciplinary team. We were able to combine traditional craft skills such as gilding with contemporary conservation cleaning techniques such as latex cleaning of fire damaged surfaces in the Lounge Bar and corridor,” she says.

“It was a privilege to work on such a prestigious building and it was particularly satisfying being there from the start of the project right through to completion. It is rare for a Grade I listed building to revert back to its original use, so this was a particularly interesting project. My team felt the building’s amazing atmosphere and I really believe this assisted the whole workforce: enabling them to undertake their work so competently – as if inspired by the past.” ■

Top: Finished restoration of Heritage plasterwork.

Bottom: Significant plasterwork repairs were undertaken in the Chambers building.

"IT'S NICE TO WALK PAST AND BE ABLE TO TELL EVERYONE WE BUILT ST PANCRAS!"

BARRY JOHNSON, SENIOR CONTRACT MANAGER
IRVINE-WHITLOCK



Photo: Janina Holubecki

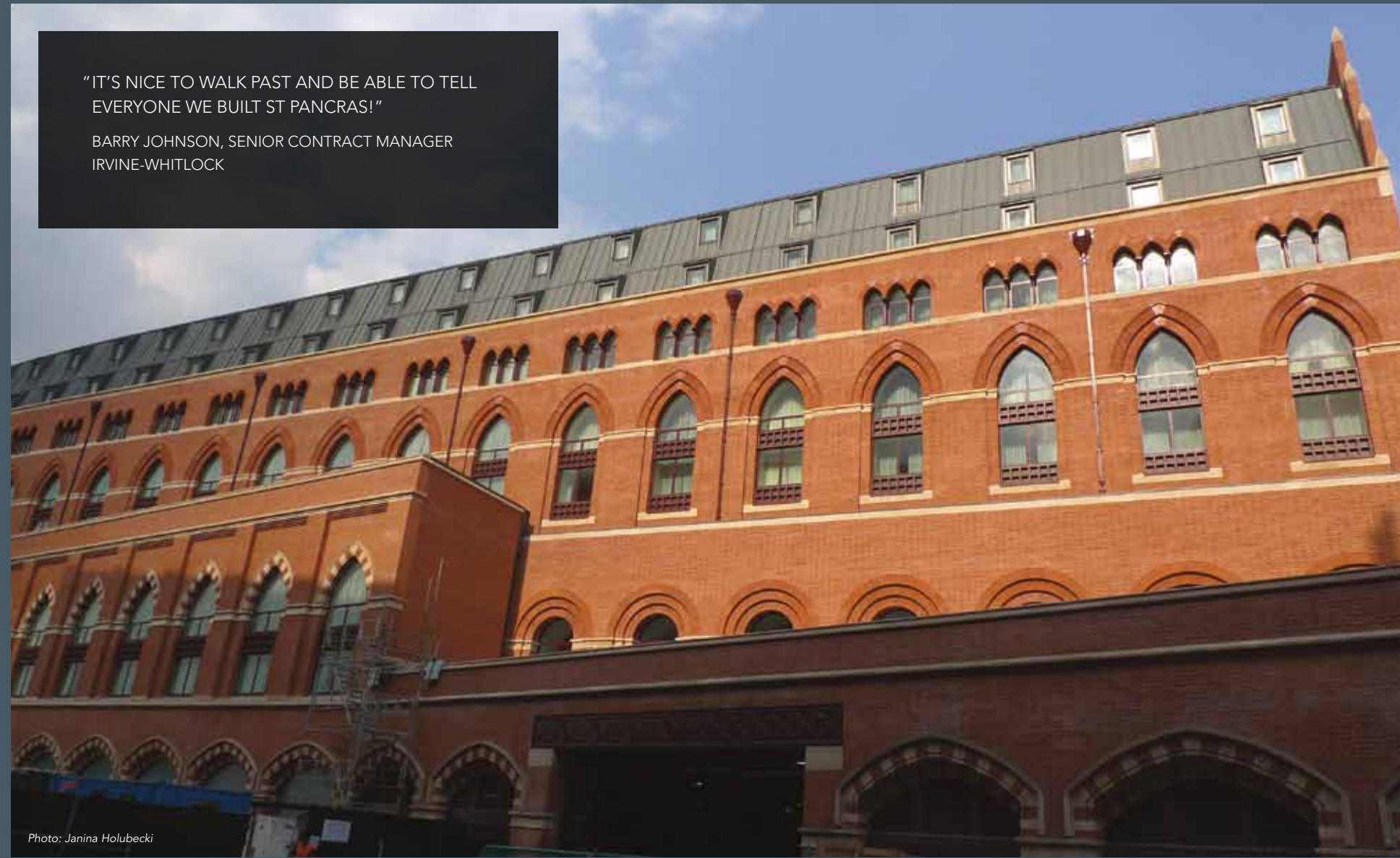


Photo: Janina Holubecki

In Victorian times, St Pancras was the largest rubbed and gauged brickwork project in the world. Specialist walling contractors Irvine-Whitlock proved themselves up to the task of reviving this technique when the western elevation of the rail terminus became Supreme Winner at the 2006 Brick Awards. For the new build West Wing of the hotel, Irvine-Whitlock were once again creating intricate brickwork detailing – this time with a modern twist.

The western elevation of the station is a traditionally built structure. But the West Wing of the hotel is a modern steel framed building, clad partly in a prefabricated, structural insulated panel (SIP) system. To create a west-facing facade that is visually in keeping with the brick of the listed building and the new western elevation, Irvine-Whitlock were contracted to create matching brickwork cladding over the steel frame.

Irvine-Whitlock have much experience of steel framed systems – one example being the British

Library Conservation Centre on Euston Road, just opposite the West Wing itself. Other construction projects include: 49 Park Lane – an office block next to The Dorchester Hotel; Cabot Circus, Bristol and Southgate Shopping Centre, Bath. The company had worked with Galliford Try before on an office development for BP in Knightsbridge, next door to Harrods.

The firm had never used the rubbed and gauged technique before building the station's western elevation. Barry Johnson says that very close contact with the Heritage Advice team when working on the rail terminus stood them in good stead for the West Wing. "The main principles were already in place and we had won the Advisers' confidence."

Irvine-Whitlock had already researched the materials in order to construct the station building. Tests had revealed that the original facing bricks were of Triassic clay; Leicestershire being the only area where this clay is found in the UK. (This was no surprise as cont...



Top: For the hotel's new West Wing, 172,000 Charnwood handmade facing bricks were cut to height by Bulmer Brick. Behind these are 60,000 Charnwood handmade standard imperial backing bricks.

Above left: In the West wing, there are 58 arched windows, incorporating 1,150 individual red rubber bricks.

FACTS AND FIGURES

COMPANY NAME

Irvine-Whitlock

CORE SERVICES

Specialist walling contractors.

PROJECT ASPECT(S) WORKED ON

Hotel – new build and listed building.

CONTRIBUTION TO PROJECT

Brick and stonework 'cladding' of new build West Wing (incorporating 58 arched windows); decorative fibreglass 'waffle' panels in gable ends and windows; some lead work and flashings; repairs to brick and stonework of listed building.

NUMBER IN INSTALLATION TEAM

50 maximum – including 30 bricklayers; Senior Contract Manager Barry Johnson; Project Manager Paul Barton; 3 Site Managers (one managing restoration work on Taxi Rank).

FURTHER INFORMATION

www.irvine-whitlock.co.uk



Photo: Paul Barton, Irvine-Whitlock

Above & left: On the Gothic arches, the joints are only 2mm wide and for these, a sand-free lime putty was used.



materials for the original works were all imported from the Midlands.) The facing bricks were hand made in Leicestershire by Charnwood Forest Brick but fired in a modern gas kiln – the consistent temperature resulting in less wastage than a traditional kiln. After firing, the Charnwood handmade bricks were cut by Bulmer Brick Cutting to an exact height to ensure maximum accuracy – rubbed and gauged brickwork has much smaller tolerances than normal brickwork.

Some of the original Victorian 'red rubber' bricks were cleaned up and given to Bulmer Brick to provide a colour range. It took 12 months to achieve an exact match. Made from Sussex clay, red rubbers are fired in oversize blocks in a traditional kiln. These special, soft red bricks are first cut accurately to shape and then, after laying, given a final 'rub' in situ to ensure that they are completely flush. They were also cut by Bulmer Brick Cutting, using a redesigned standard masonry cutting saw bench that was able to maintain accuracy over an extended period.

The original stone had come from an extinct quarry, but research identified Ancaster Hard White from Lincolnshire as the closest match for the station's Gothic arches.



Above left & left: Some of the red rubber bricks had to be cut exactly to size on site. Great care was taken to match the existing 5mm jointing on the facing bricks. Hardwood jointers were made up to ensure accuracy.



Photo: Paul Barton, Irvine-Whitlock

Above (both): Arches were built over polystyrene forms and these were re-used.

For the West Wing stonework, Stretton stone (from the same area) was used. The largest blocks of stone on the gable ends weighed 1 tonne. Lifting them into place represented a major challenge.

Over 80 trial mortar mixes had been made up by Lime Technology before one of the correct colour and consistency was found. On site, the pre-mixed dry mortar powder was stored in a 29 tonne silo and mixed as required: this reduced waste. When bricklaying work started on the station, the bricks were found to absorb the water from the lime mortar too quickly. Soaking the bricks before laying gave more time to lay the bricks and shape the joints before the mortar became unworkable.

Great care was taken to match the existing 5mm jointing on the facing bricks: Irvine-Whitlock's bricklayers made up hardwood jointers to exactly the right width. On the Gothic arches, the joints were even finer – only 2mm – and for these, a sand-free lime putty was used.

Barry Johnson says that the biggest challenge of the West Wing was acoustic separation. Initially, the ties and brackets of the West Wing's brick cladding were secured straight onto the steel frame structure. This caused the vibration from trains underneath to be conducted straight up to the bedroom areas.



Photo: Paul Barton, Irvine-Whitlock

Above: Acoustic separation pads had to be designed and installed between the main steel frame and the brickwork ties.

As the station building had been traditional, solid brickwork, this problem had not been anticipated. A solution had to be developed rapidly: acoustic pads, designed by AKS Ward Structural Engineers, were subsequently fitted between the main steel frame and the brickwork ties.

The modern steel frame and windows had entirely different tolerances to the brickwork. For small areas where these tolerances had accumulated unfavourably, Bulmers sent uncut red rubber bricks, which were then cut exactly to size on site.

In terms of logistics, Barry Johnson describes St Pancras as a "very tight site". But problems were alleviated by keeping a store of materials in their own compound across the road at the British Library and also by having their own truck on site to move materials around. The BIW electronic data management system was also found to be very helpful in managing their work. "It was particularly good for getting drawings signed off quickly," says Barry.

The West Wing of the St Pancras hotel is a fusion of revived traditional techniques and modern building structures and innovations. Barry Johnson is proud of the result. "It's nice to walk past and be able to tell everyone we built St Pancras!" ■

SUPPLY CHAIN INTERVIEW
KNIGHT BUILD

Below: Steps to the main Hotel lobby and reception and external forecourt York stone paving.



Photo: Knight Build



Photo: Janina Holubecki

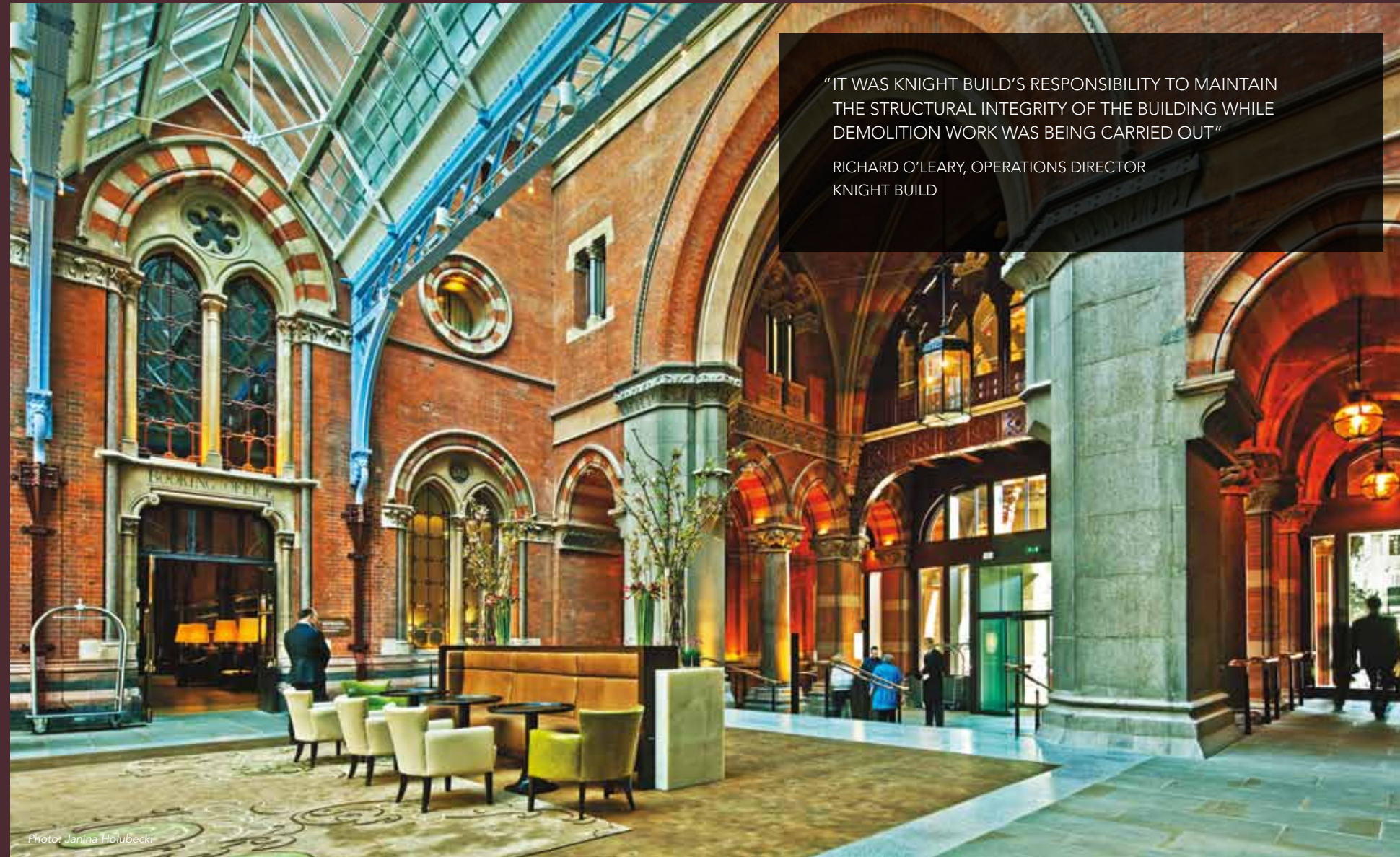


Photo: Janina Holubecki

"IT WAS KNIGHT BUILD'S RESPONSIBILITY TO MAINTAIN THE STRUCTURAL INTEGRITY OF THE BUILDING WHILE DEMOLITION WORK WAS BEING CARRIED OUT"
RICHARD O'LEARY, OPERATIONS DIRECTOR
KNIGHT BUILD

Working in confined spaces and at night; tunnelling under Midland Road to connect drains to the main sewer; carrying 125,000 bags of concrete mix, sand, cement and rubble in or out of the building by hand. This sounds like a list of things that had to be endured by the original Victorian builders of St Pancras. In fact, it describes some of the working conditions imposed upon Knight Build by the location, status and very nature of the building as the firm carried out their vital preliminary work – upon which would rest the modern reincarnation of St Pancras Chambers.

Knight Build had worked with Galliford Try before on Mid-Kent College, Maidstone, and Greig City Technical Academy, Hornsey. They started at St Pancras with a £170,000 package in November 2008 for the construction of suspended floors to the new West Wing. The firm continued to tender for more work – and the initial contract subsequently developed into a series of packages totalling £4.5m over the next 2.5 years.

The list of specific construction works is wide ranging and includes: temporary works; installation of deep drainage (up to 6m) in the old Taxi Rank; construction of reinforced concrete floors and support beams for the new Penthouse; construction of a swimming pool in the basement of the listed building; internal paving; external hard landscaping and the supply and installation of lamp posts and bollards.

The demolition work to the original structures of the Grade I listed building proved the most challenging. For example, the old floors were constructed of corrugated iron with a bowstring truss and unreinforced concrete infill – some of which was in bad condition. This was a particular problem when constructing the apertures for new lift and stair shafts and service risers: the floor had to be framed with reinforced concrete to strengthen it – often extensively. The process was further complicated by the Grade I listing, which meant that they had to conserve as much as possible of the original structure, such as the old steel trusses.

Above & left: York stone and paving in the Hotel reception.



Photo: Knight Build

Right: Construction of the swimming pool in the basement of the listed building and finished swimming pool and spa.



FACTS AND FIGURES

COMPANY NAME

Knight Build

CORE SERVICES

General building works.

PROJECT ASPECT(S) WORKED ON

Hotel and Residential apartments.

CONTRIBUTION TO PROJECT

Demolition; structural alterations; foundations; drainage; reinforced concrete structures; floors (including suspended floors to West Wing); all external works, including York stone and granite paving, plus internal paving. Delivered morning site briefings on a daily basis and weekly 'Toolbox Talks'.

NUMBER IN INSTALLATION TEAM

40 maximum (20 operatives and another 15-20 carrying) led by Operations Director Richard O'Leary, Senior Quantity Surveyor David Prescott and 2-3 Site Managers.

FURTHER INFORMATION

www.knightbuild.co.uk

As Operations Director Richard O’Leary explains: “It was Knight Build’s responsibility to maintain the structural integrity of the building while demolition work was being carried out. The design and implementation of temporary works was therefore critical and completely bespoke Method Statements were prepared for each task.”

Knight Build expected some of the old walls to be thick, but a few exceeded even their expectations. They had to create a service tunnel between Barlow House and the Chambers, which necessitated forming holes in two 2m thick brick foundations. The location of the openings required that, in places, the structure be pre-jacked. The jacks were monitored throughout the process and support adjusted when necessary.

Because of the location and nature of the building, much of the work was intensively manual, with operatives often working in confined spaces. When Knight Build arrived on site, there were no lifts and the external hoists were not yet in place. Everything had to be carried up by hand, including thousands of bags of dry concrete mix. (A Readymix lorry was ruled out as the wet concrete would have started to set by the time it had been taken to where it was needed.) “Of a total of 40 operatives, 15-20 out were just carrying materials,” says Richard O’Leary.



Above: 135,000 Granite setts/cobbles were imported from China. Knight Build had to organise the work to take into account the 10 week journey by sea. Knight Build kept the same personnel on all paving works, which were phased - this ensured a consistent, high quality finish.



Photos: Bob Ryan/Galliford Try



Above: The basement posed particular access and egress problems. Tiny diggers and motorised barrows were taken down and, where possible, mini cranes were situated over shafts, but large quantities of demolition rubble still had to be ‘handballed’ - ie. removed by hand!



Above: Excavations in the basement were up to 6 metres deep, in very cramped conditions.

Right: Knight Build laid a total of 5,000 York stone flags, both inside the building and out. English Heritage had specified that the York stone used for paving and steps had to have a blue streak. This can be sourced at only one quarry in Yorkshire.



Photo: Bob Ryan/Galliford Try

Right: Early building works on the old taxi rank, now the Hotel reception and lobby.



Photo: Knight Build

The basement posed particular access and egress problems. Tiny diggers and motorised barrows were taken down and, where possible, mini cranes were situated over shafts, but large quantities of demolition rubble still had to be ‘handballed’.

Due to the nature of their work, Health and Safety was a critical issue for Knight Build. In the basement, particular attention had to be paid to the escape routes laid out in the Fire Plan that was already in place. As it was not an open site, operatives had to be careful not to generate sparks or fumes that might set the fire alarms off.

To reduce the noise impact on the busy London transport interchange, it was necessary to do some demolition work out of hours. Smaller lorries and skips were used to lessen impacts on neighbours and the public – skips being filled by hand to further reduce the noise and dust.

Left: Construction of reinforced concrete floors in the West Wing.

By keeping the same people on site, Knight Build were able to maximise their understanding of the issues and make communication with other trades more effective. Richard O’Leary explains that this was particularly important with the paving work, where a continuity of personnel ensured a consistency of quality, even though the work had to be phased over a year to fit around other trades’ activities.

For the forecourt – the largest of the paving jobs – Knight Build laid more than 0.5 acre of stone paving, kerbs and steps. As there were many stakeholders, sample paving panels were made up in situ for inspection and approval by the Client, the RHWL Project Architects, English Heritage and Camden Council. Once approved, the panel could then simply be incorporated into the finished paving.

Most of Knight Build’s preliminary structures now lie hidden under the work of other trades, but their paving is an exception. And, for many people, the impressive granite and York stone forecourt will be the beginning of their St Pancras experience. ■



“OFF-SITE SOLUTIONS CAN ONLY HAPPEN IN A COLLABORATIVE SPIRIT”
BRENT TYRRELL, BUSINESS DEVELOPMENT MANAGER
LAKESMERE



Photo: Bob Ryan/Galliford Try

Lakesmere had worked with Galliford Try on several previous projects: for example, Norton Canes service Area on the M6 and Leigh Technology Academy.

The new-build West Wing of the hotel was in itself a very challenging project – one which would utilise the very latest thinking in construction methods and off-site manufacture. The new building had to be visually in keeping with the existing Grade I listed façade, yet it needed to perform to the high standards of modern construction. The site also had an extremely tight footprint – with the east elevation of the new hotel situated just 300mm from the external wall of the rail terminus and therefore unsuitable for external scaffolding. Furthermore, there were high volumes of passing traffic and pedestrians immediately adjacent to the site’s west elevation. Combined with a fixed budget and tight programme schedule, these demanding challenges determined that an off-site construction method was the most viable option. Galliford Try asked Mtech Consult to look for a suitable product.

Though different to the original Architect-specified structure based on a steel stud frame, Lakesmere’s innovative product proposal satisfied the brief architecturally, logistically and structurally.

In collaboration with manufacturing partner Hemsec Installations, Lakesmere developed a bespoke, off-site design solution that combined the insulated support wall structure and the external façade in one wall panel, capable of being hoisted up onto the building and secured from inside – thus removing the need for external access.

Hemsec supplied the basic structural insulated panel or SIP. This consisted of an outer frame of FSC certified timber board injected with zero ozone depleting polyurethane foam to produce a rigid storey-height panel, 2.7 metres in length. The panel has a thermal mass similar to a larger equivalent lightweight block and makes a significant contribution to the wall U value. To comply with the stringent fire safety requirements demanded by the cont...

Above & left: The site had an extremely tight footprint – with the east elevation of the new hotel situated just 300mm from the external wall of the St. Pancras rail terminus.

Right (both): Workshop assembly. The basic structural insulated panel (SIP) consisted of an outer frame of FSC certified timber board, assembled and injected with zero ozone depleting polyurethane foam to produce a rigid storey-height panel, 2.7 metres in length.



Photos: Lakesmere

FACTS AND FIGURES

COMPANY NAME

Lakesmere

CORE SERVICES

Building Envelope Contractor.

PROJECT ASPECT(S) WORKED ON

Hotel – West Wing.

CONTRIBUTION TO PROJECT

Provided the building envelope – roof and walls – for the new build West Wing of the hotel.

NUMBER IN INSTALLATION TEAM

Design stage: Business Development Manager Brent Tyrrell and a team of 4 Lakesmere designers headed up by Daniel Mould. Off-site manufacture stage: Construction Director Anthony Kirkby, Site Manager John Pattison and team of 9. Installation: Site Manager John Pattison and team of 12.

FURTHER INFORMATION

www.lakesmere.com
www.hemsecsips.com
www.thru-wall.com