QUALITY DELIVERY

QD

ISSUE 12 JULY 2017

ROMFORD'S ONE TEAM
leisure centre challenge

Building on Better Awards
What they mean for Willmott Dixon Construction

The Design Consortium
Quality delivered through collaboration

After project completion
mi|aftercare improves the customer experience

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WELCOME TO THE TWELFTH ISSUE OF

QUALITY DELIVERY

Hello! and welcome to the QD magazine.

I **hope you enjoy it** and, more importantly, I hope you learn something from it.

During the last few months, the QD team have been carrying out audits on a significant sample of our Construction and Interiors sites. A report summarising the findings will be made available to all in Q3 this year, but I would not be giving anything away by commenting on two things that have struck me thus far.

Firstly, the improvements in how we collectively tackle quality are noticeable. We all recognise that we may be on a long journey toward defect free handovers becoming the norm, but it is clear that we have started on the journey and made important steps.

Secondly, there is an increasing willingness among us all to try and share knowledge about quality – which is best achieved by engaging with our colleagues and supply chain partners on the subject. While no individual can know everything about construction, collectively our knowledge is limitless.

Which brings me back to where I started: learning through sharing knowledge and involving others. Benjamin Franklin wrote: ***"Tell me and I forget. Teach me and I remember. Involve me and I learn."***

Remember this when you get the chance to share your knowledge and to learn from others.

Martin Adie

Martin Adie, national engineer, Willmott Dixon

Rumana Shaukat, quality delivery manager

BE INSPIRED BY QUALITY!

As we enter another summer holiday season, I hope you enjoy and draw inspiration from this latest QD magazine.

This time we feature Romford Leisure Centre (whose project team appears on the front cover), we talk to the Chartered Quality Institute, we find out how to achieve the perfect decorating finish on a new course at the Dulux Academy, and we chat to Paragon Carpets. We also look at how to maintain and build on customer relationships through mi|aftercare. As ever, there are some great learning points to take on board.

We have been busy conducting **Quality Delivery Audits** across the business; it is exciting to see the great work we are involved in and the enthusiasm of our people for quality. Well done to all and keep going!

Quality Delivery and IHS training – since October 2013
- Over 1,729 people (92%) have been trained at 271 sessions

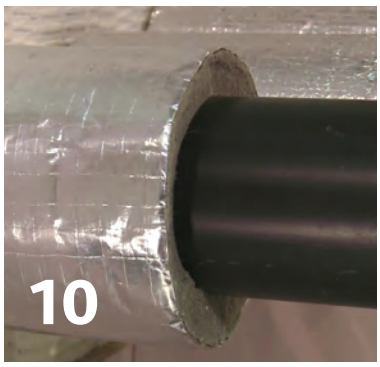
Remember – you can do anything with a quality mindset.

Finally, we really value your feedback, so please do let us know of any exciting new developments relating to quality that we can feature in the next issue at the end of the year.

QD MAGAZINE
Editor: Rumana Shaukat

COVER IMAGE: Project team at Romford Leisure Centre. Back row, from left: Josh Daniels, assistant building manager; Denis O'Toole, senior building manager; Matthew Withey, senior building manager; Adrian Smith, project manager, Central Essex Interiors. Second row, from left: Mason Newman, project engineer, Kershaw Mechanical Services; Martin Stacey, contracts manager, Kershaw Mechanical Services; David Motton, building manager; Dennis Vink, logistics manager. Third row, from left: John Ferry, site supervisor, PC Cooney; Roger Calton, building manager; Tom Clark, assistant project engineer, Kershaw Mechanical Services. Front row, from left: Jim Whitworth, construction manager; Peter Marsh, senior project supervisor, Kershaw Mechanical Services

IN THIS LEARN FOR QUALITY EDITION:



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SAY HELLO TO... Trello

All about a free online tool that’s making short work of collaboration.

The use of a new online aid for communicating among project team members and supply chain partners has been trialled in Bristol. It adds to the armoury of resources, such as the Hub (intranet) and IHS (database of standards and regulations), that is helping Willmott Dixon realise its goal of defect free project delivery.

Trello software allows users to organise and prioritise work. It’s an app that’s free for anyone to download and can be used on phone, tablet and desktop computer. According to construction manager **Mark Wolverson**, who used it on a recent project to extend and refurbish part of Bristol Royal Infirmary (BRI), it’s a sophisticated, electronic version of a ‘to do’ list that until now would have utilised post-it notes stuck on a board in the site office.

Mark said: “Trello is especially useful when teams are focusing on part of a project in a concentrated burst of activity and allows those involved to see exactly what needs to be done when and by whom. In this context, it’s a development of the ‘sprint board’ devised by national planner Stuart Gray to list, prioritise and track activity, particularly in the final phases of a project.

“Once registered with Trello (www.trello.com/signup) anyone can create a project board, which can be either public or accessible only to team members, then add topic lists and activity cards that are used to track an element of work until it is completed.

“An unlimited number of individuals, from Willmott Dixon or supply chain partners, can accept invitations to join the board and can then see in real time as lists and cards are created and work progresses. They can also create lists and edit cards, for example confirming when activity that is their responsibility has taken place.

Mark Wolverson

LEARNING POINTS

1. Try using Trello to track work during periods of concentrated activity
2. Involve project team members and supply chain partners
3. Include Trello in planning and review meetings

Weekly meeting: Trello takes centre stage on the big screen

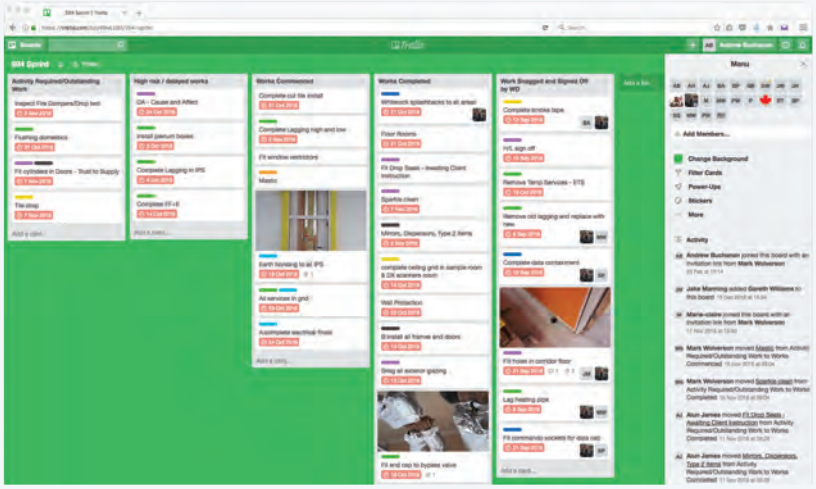
Lists might be ‘outstanding items’, ‘works commenced’, ‘works completed’ and ‘works inspected and signed-off’, with cards moved from one list to another by dragging and dropping. Cards can be colour coded for easy tracking and moved from one list to another, stickers chosen from a selection to lend emphasis, and photos can be taken and added to cards where a visual record is needed.”

As Trello can be used anywhere, not just at a desk, it carries with it all the benefits of an office based system, without the physical restrictions. As a dynamic way of communicating information and charting progress it is extremely flexible, it can also be used when participants meet to review work.

Mark added: “During the BRI (Bristol Royal Infirmary) project, we held daily work reviews using Trello and once a week site supervisors met to review and plan for the next two weeks. On those occasions, relevant Trello boards would be viewed on a large screen in the meeting room.

“Trello’s usefulness in improving collaboration proved itself time and again during the Bristol project.” QD

BELOW: Typical Trello project board showing lists, cards and menu with activity log



> **“The use of Trello at the BRI enabled supply chain partners to interact not only with the management team but each other.”**
> JONATHAN OWEN, WILLMOTT DIXON

> **“I found it useful. It was good to have when walking around site and also acted as a good sign off procedure when in supervisor meetings.”**
> BILLY ANDREWS, J J INTERIORS

WANT TO KNOW MORE?

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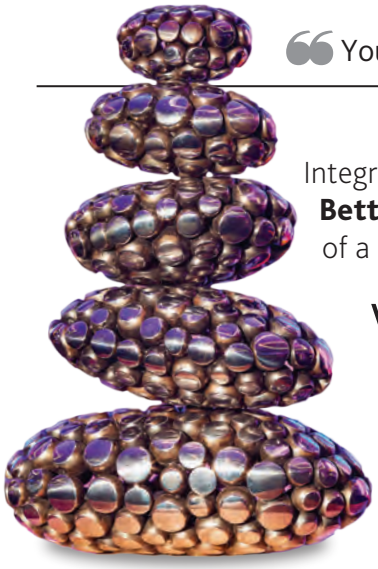


Integral to the Building on Better strategy launched in 2016, the first annual **Building on Better awards for Construction** were presented at the beginning of May – the climax of a process begun last year in which local and regional contenders were selected to go forward to the national event.

WINNERS RECOGNISED FOR SUCCESS

Chief operating officer, Construction, John Waterman, whose initiative the Building on Better awards are, said the programme underlined Willmott Dixon's commitment to engage, develop, empower and recognise its people: "I was amazed on taking on my present role to find there was no national scheme to recognise the incredible work our people do," he said. "Introducing the awards was a logical step and they are proving a key motivator."

The awards recognise the commitment of teams and individuals to the Building on Better principles, such as putting customers first, adopting a one team approach and delivering defect free projects.

Project of the Year was awarded to the **Met Office** (see page 6) because of its outstanding credentials, including zero defects, delivery on time, a high customer satisfaction score, one team approach and profitable outcome. It was a textbook model in both preconstruction and delivery, among other things making full use of BIM (Building Information Modelling) and observing rigorous safety standards.

Quality Hero of the Year was awarded to Birmingham senior building manager, **Marc Turner**, for his exceptional work at Boole Technology Centre, with Cardiff construction manager **Mark Wolverson** as runner-up.

The trophies presented to the winners were all made from stainless steel by Davey Boyall of Hertfordshire-based designers and metalworkers, Arcangel. The Team of the Year trophy of five finely-balanced pebbles represented working together and inter-dependence, while the Quality Hero, Customer Hero and LCO of the Year each received a forward leaning figure representing commitment.

Although the trophies for Team of the Year will next year pass to the winners of the Building on Better awards 2017, each winner received a miniature trophy as a keepsake – a 'pebble' made from the same stainless steel as the larger trophies and with the same tactile qualities. QD

> **"Introducing the Building on Better awards was a logical step and they are proving a key motivator."**
> JOHN WATERMAN

BELOW: John Waterman presenting Marc Turner with his Quality Hero award

Mark Wolverson, Quality Hero runner-up

LEFT: Wales and the West team – LCO of the Year

BELOW: smoothing off the pebbles given as a keepsake to every winner

BUILDING ON BETTER AWARD WINNERS

- Quality Hero of the Year: Marc Turner, Birmingham
- Customer Hero of the Year: Wayne Bramley, Manchester
- Project of the Year: The Met Office, Cardiff
- Team of the Year: HSE Team, Manchester
- LCO of the Year: Wales and the West
- Award for Outstanding Behaviour in Exceptional Circumstances, aka the Sonny Bill Williams Award: Simon Abbott, Birmingham

HIGH PRESSURE CHALLENGE

Recognised as Project of the Year in the Building on Better Construction Awards 2016, Willmott Dixon’s high profile, £20m, 66-week contract to build a home at Exeter Science Park for the **Met Office’s £97m American-made supercomputer** posed some unique challenges for the Exeter-based project team.

The powerful new supercomputer – the Met Office’s third and 15 times larger than its predecessor – can process hundreds of thousands of weather readings from all over the world and is **one of the 25 fastest and most powerful computers in existence.**

Two principal structures make up the complex: a long, rectangular, single storey, **3,000 sq m IT Hall** housing the computer itself and, next to it, a **1,050 sq m highly distinctive two storey office (the Collaboration Building)**. Both presented construction issues that were addressed using careful phasing of works, value engineering, partnership working and other measures.

M&E

A large proportion (some 50 per cent) of the contract consisted of M&E (mechanical and electrical) works associated with the supercomputer. Its size and the heat generated, for example, requires an extensive cooling system and, to protect against power loss, there are two high voltage power supplies, plus a battery room and 24ft generator.

Steve Killer, assistant building manager, explained that a 500m metre network of chilled water cooling pipes runs the length of the IT Hall in a one metre deep void beneath the raised access floor: “As the pipework had to be installed before the access floor, knowing in advance where to position the 7,500 floor support pedestals was essential. Using a full size template of the pipework supplied by Seattle-based computer manufacturer, Cray, we were able to mark the position of each pedestal on the concrete slab, so that the pipes could be laid without the risk of clashes.

“This, coupled with the use of BIM modelling, helped to co-ordinate the various elements and trades within the IT Hall efficiently.”

MET OFFICE PROJECT PROFILE

CLIENT
The Met Office

COMPLETED
October 2016

PROCURED
through Scape

BREEAM
excellent environmental rating

100% defect free handover

“The geometry of the Collaboration Building posed many interesting challenges...”

STEVE KILLER

VALUE ENGINEERING

In consultation with the architect, Atkins, the team was able to save time and money by value engineering construction of the IT Hall. Steve continued: “We were able to substitute the original approach of a concrete structure and single ply roof with a steel frame and

The Collaboration Building with IT Hall on the left

and other interested parties." SARAH ROBERTS, UK SALES MANAGER, PARAGON CARPET TILES

Above left: squares drawn on the concrete slab in the IT Hall show where the access floor supports will be located; above: scaffolding passing through the steel frame of the Collaboration Building allowed access to the soffits

IT Hall: living wall on south elevation

insulated cladding and roof, resulting in a quicker, better quality, all round less expensive solution.

"The geometry of the Collaboration Building posed many interesting challenges, the most significant of which was to integrate natural ventilation into the glazed south façade of the building. The site team identified this as a risky detail in terms of guaranteeing the weathering of the louvers; the associated ductwork within the building also took up valuable free space while preventing natural light flooding through the building.

"We proposed that the client opted for a more discrete ventilation system that could be concealed within the floor void and utilise areas in the recessed doors to accommodate the louvers – an option the client couldn't refuse and a scenario where we could guarantee a robust, long-lasting alternative."

WORK SEQUENCING

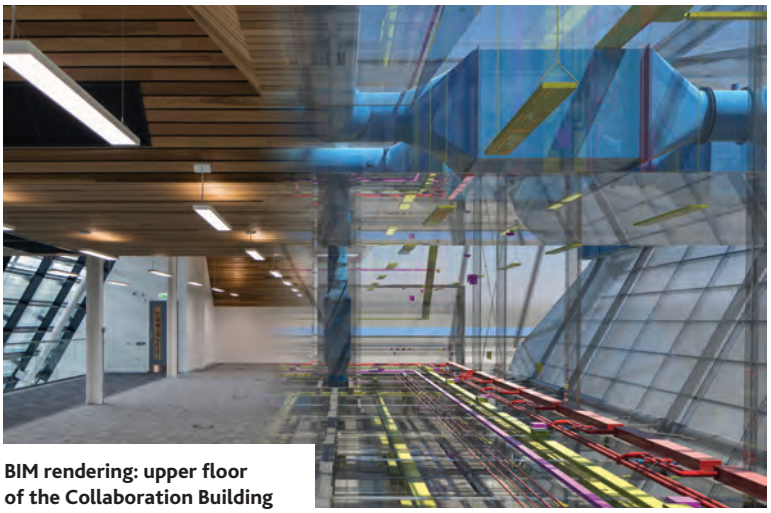
The unusual design of the Collaboration Building – a parallelogram with hexagonal cross-section – brought its own challenges in work sequencing. Because of its 60 degree rake both front and back, the internal and external timber-clad roof soffits had to be fully installed, with all M&E installed and tested, before the scaffolding was dismantled and glass curtain walling installed; as the scaffolding was erected through the sloping steel framework, no further access to the soffits would have been possible once the glass was in position.

ENSURING QUALITY

The project was carried out to BIM Level 2 which, in conjunction with 3D modelling after the steel frame was erected, helped avoid clashes, for instance between structural and M&E components. Potential clashes could be viewed on mobile devices by those involved, aiding collaboration between project teams and saving money even before construction began.

A 100 per cent defect free handover was achieved through early involvement of supply chain partners, among other factors. This was crucial to their understanding of the project, while the use of design images at induction helped anyone working on the project recognise what a landmark structure the Collaboration Building is. QD

Eggs-acting project: hens rescued from a nearby battery farm helped sustain the site team



BIM rendering: upper floor of the Collaboration Building

KEY SUPPLY CHAIN PARTNERS

M&E
N G Bailey

STEEL FRAMES TO BOTH BUILDINGS
William Hayley Engineering

EXTERNAL CLADDING
Central Cladding

EXTERNAL WORKS
Dancourt

LEARNING POINTS

1 Plan pedestal locations by user templates

2 Look for better design solutions for customer usability

WANT TO KNOW MORE?

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Senior design manager Graham Page explains why Cobham's **Design Consortium** was launched and how other **Construction** Local Company Offices (LCOs) are following suit.

CHANGE THE WORLD DESIGN TOGETHER

Cobham's first annual Design Consortium conference took place in October

A DESIGN PROBLEM SHARED

We launched the Design Consortium because we realised that what we were doing wasn't good enough. We were repeating mistakes that were affecting the quality of what we delivered to our customers.

These mistakes can easily be avoided by working closely with our designers to share problems and remove barriers to finding solutions. The Consortium brings designers, suppliers, manufacturers and assemblers together to deliver a one team product for our customers.

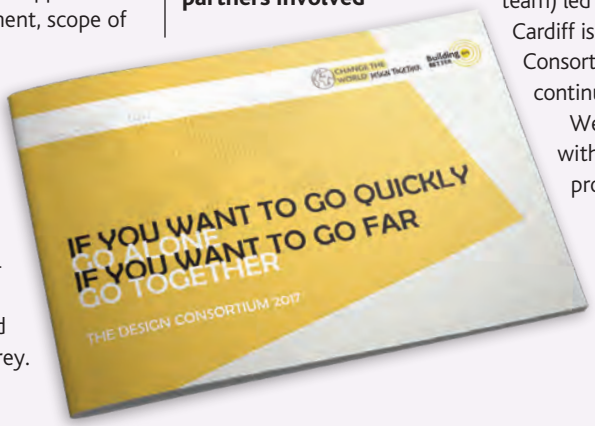
The Cobham Design Consortium was launched in July 2016 and the idea was so liked by our chief operating officer, **John Waterman**, that he decided it needed a national focus involving procurement directors from all five LCOs.

Jeff Foster, preconstruction manager from Birmingham LCO, has led a Siit (Strategic innovation and improvement team) to develop a consistent approach to consultant selection, deeds of appointment, scope of services and KPI measurements.

The Cobham LCO Consortium comprises six architects, three specialist leisure architects, four civil and structural engineers, four mechanical, electrical and plumbing engineers and, recently, three planning consultants. They were all chosen because of their like-minded businesses and growth mind-set. Cobham's first annual conference was held in October 2016 at Horsley Towers in Surrey.

Graham Page

CHAPTER AND VERSE: this new booklet sets out the Design Consortium philosophy and introduces the partners involved



It decided that strategic improvements across a range of issues were needed and five teams were formed around the LCOs' five pillars for improvement:

The **PEOPLE** Pillar team, led by **Nick Marshall** from KSS Architects, is considering relationships, honesty and trust. The challenge is to encourage people to admit mistakes so we can learn from them, trusting that their honesty will not be used against them.

Simon Dunstan of GT3 Architects is leading the **CUSTOMER** Pillar, which is considering how to develop a high performance brief to help customers realise their vision.

Lyons O'Neill Structural Engineers are leading the **PRODUCT** Pillar. **Kevin Lyons** heads the team looking into agreeing the right level of information needed at the various design stages to enable our estimators to predict costs accurately.

Big Data is being considered by **Jeff Stibbons** of Bond Bryan who leads the **LEGACY** team. They are considering the 100 year building – how to make buildings useable for their whole life and beyond.

The **GROWTH** Pillar team is led by **Cora Kwiatkowski** of Stride Treglown Architects whose first task is to work with our estimating team to develop a shared cost plan that will help our consultants design to cost.

The teams presented their initial findings to the Consortium in May, while Cardiff, Birmingham and Manchester LCOs are currently launching their selected partnerships.

Hitchin, which recently launched its Consortium, is collaborating with Cobham to develop a consortium of specialist consultants.

A new Fiit (Focused innovation and improvement team) led by **Mark Cottrell** from Construction Cardiff is co-ordinating development of the Design Consortium to ensure a consistent approach and continual improvement across all LCOs.

We will naturally learn, evolve in parallel with each other and improve the service we provide our customers. QD

WANT TO KNOW MORE?

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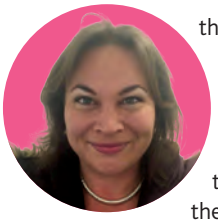
THE PERFECT FINISH

A special training course designed to iron out defects during the **plastering and decorating** stages has been trialled and is now going live with its first sessions.

To register for the decorating course, contact Johannah Mateus

PRODUCT ACADEMY

Originally the idea of **Construction Hitchin's Product Pillar team**, purchasing co-ordinator **Johannah Mateus** saw an opportunity to add value by working with mandated partner AkzoNobel to up-skill teams and improve quality on site. She said the course aims to get people working collaboratively to recognise what good looks like and the specifics to watch out for in achieving the perfect finish: "The handover to decorating is an important stage that should not be crossed until the QD checklist has been signed off.

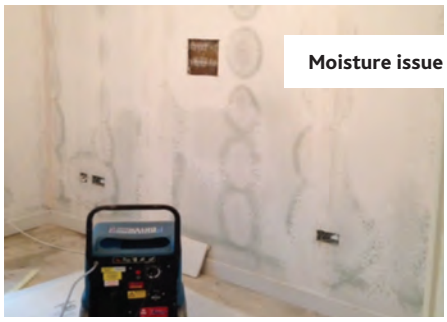


"Feedback from those evaluating the trial course – including supply chain partners Greens Decorators, Express Drylining and British Gypsum, as well as Willmott Dixon people – has been extremely constructive. For example, senior building manager, **Ryan Williams**, said the course was particularly useful on technical issues, such as the importance of drying times and why paint can look patchy; build quality manager, **James Billingham**, added that the course was well run, facilitated by time served tradesmen. The issues behind many defects we come across are simply explained."

According to Birmingham senior build manager **Allun O'Brien**, improving what the customer sees at handover will have a massive impact: "Understanding the causes of poor paint finishes and the basic steps to avoid them will help ensure that the customer's first impressions are of astonishment," he said.

Run for Willmott Dixon by AkzoNobel at its Dulux Training Academy in Slough, the course looks at all aspects of painting preparation and execution, including the crucial stage when the drylining team hands over to the decorating team. Allun continued: "Unless the substrate has been properly prepared and the decorators know what products to apply, there is every chance of achieving a poor finish." Some of the most common risks to achieving a good paint finish – and ways to reduce them – are covered in the course. QD

Show through of substrate colour



Moisture issue

Poor plasterboard joints

BESPOKE SPECIFICATION TOOL

AkzoNobel's new specification tool for Willmott Dixon is live on the Hub:

- **At PRECONSTRUCTION, the tool will ensure we get the right specification and correct tender prices for costing;**
- **For OPERATIONS teams, the tool will provide site work instructions, specifications and aftercare information;**
- **The tool will help us communicate what we expect of SUPPLY CHAIN PARTNERS, allowing them to deliver right first time.**

TOP 10 DECORATING DEFECTS

1. **Grinning (show through of the under surface)**
2. **Poor cutting in**
3. **Poor ceiling lines (missed at handover to decorating)**
4. **Peeling or flaking paint**
5. **Obvious brush marks**
6. **Gritty gloss work from painting on unclean surfaces**
7. **Poor environmental control, eg dust, temperature**
8. **Poor preparation of surfaces**
9. **Poor undercoating, thinning of paint to make it go further**
10. **Poor site conditions, eg bad lighting at plastering and decorating stage, incorrect tools**

LEARNING POINTS

1. **Book yourself on a decorating course**
2. **Review and design out top decorating defects**
3. **Adequately prepare the substrate**

WANT TO KNOW MORE?

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Skimping on **passive fire protection** can reveal itself several years after a project has been handed over, so it pays to

DO IT BY THE BOOK...

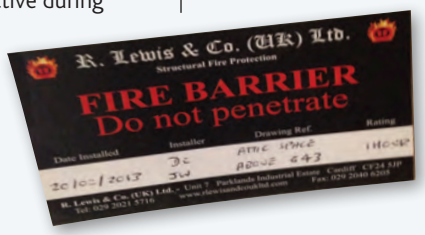
Passive fire protection (PFP) is part of a building's structural fire protection and fire safety. Its purpose is to contain or slow the spread of fires by means of fire-resistant walls, floors and doors, remaining inactive during normal conditions, but becoming active in a fire situation.

The consequences of skimping on PFP often show themselves several years after a project has been completed. This invariably occurs when building users instigate a third party fire compartment inspection, which is a statutory requirement in public buildings. Classed as building fabric defects, which remain Willmott Dixon's responsibility for up to 12 years, they can be difficult and costly to put right, often because working in a live environment is involved – quite apart from the serious risks they pose to people and property.

The answer, says principal customer service manager, Paul Lane, is to make sure that products are certified and that specialist PFP contractors using trained labour are used:

"Anyone involved in providing a fire protection package at any level, for instance by specifying the materials or appointing the installer, shares legal responsibility for its effectiveness. PFP should be considered right from the start of a project, with supply chain contracts specifying exactly what the PFP provider should be doing. Resources to help project teams and supply chain partners to ensure a quality installation include QD checklists (GP-FM-OP-32) covering internal fire stopping measures (structural steel, doors and service penetrations) and superstructure fire protection (sprayed and board).

"There is also a **QD checklist video on fire protection**, showing what to check, with good and bad examples of PFP measures." QD



PFP measures should be clearly labelled

PFP CONTRACT

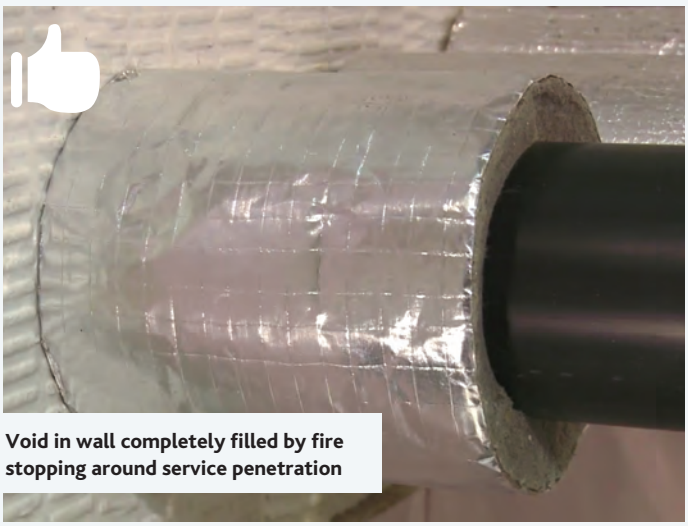
The PFP contractor should:

- **provide a plan for inspecting and testing PFP measures**
- **carry out their own quality assurance checks and confirm that certified installers have been used**
- **where structural steel is involved, use an approved independent inspection agency to carry out tests and inspections**
- **label each PFP item with a reference number, installation date and information such as the period of fire resistance**
- **make sure that any PFP measures temporarily removed by follow-on trades, for instance penetration seals around air handling equipment, are properly reinstated**
- **use the QD checklists**

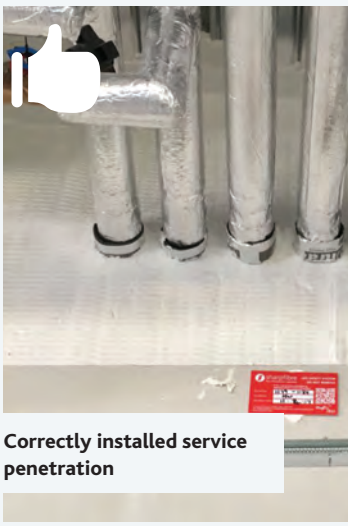
"PFP should be considered right from the start of a project, with supply chain contracts specifying exactly what the PFP provider should be doing..."

PAUL LANE

Correctly fitted collar



Void in wall completely filled by fire stopping around service penetration



Correctly installed service penetration

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Pictured with Rockwool hosts, from second left: Mike Chaney, supply chain manager, Construction Wales and the West; Martin Adie, national engineer; Dave Moran, supply chain manager, Construction Birmingham; Dougie Gardiner, supply chain manager, Construction Cobham; Steve Doyle, supply chain manager, Construction Hitchin; Kevin Dundas, product manager; Steve Watson, national supply chain manager

VISIT TO ROCKWOOL

A party of Willmott Dixon Construction supply chain managers and representatives from Central Purchasing, visited Rockwool's factory at Bridgend, south Wales, to see for themselves how the company's insulation is made and to find out what support and advice is available to project teams.

The visit was hosted by fire protection specialist SIG and Rockwool, whose fire stopping products SIG distributes. In a presentation from Rockwool fire protection consultant, Carrie Blackshaw, the delegation heard about the importance of using PFP products carrying third party certification, for example from the Loss Prevention Certification Board, IFC Certification and the BWF's Certifire scheme.

Installers should also be certified, for instance by UKAS (the government's UK Accreditation Service). Rockwool require third party accreditation for their recognised fire protection installers who, under their schemes, are subject to inspections of ongoing work.

certifire

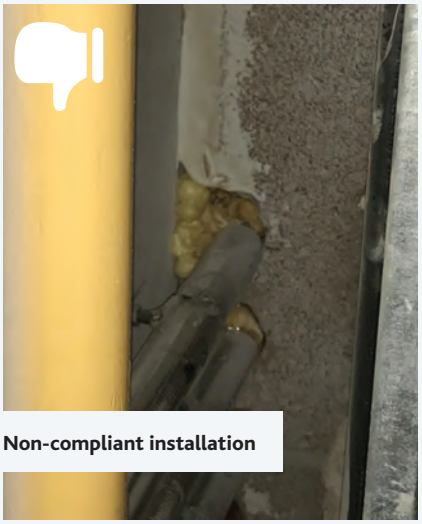
certification

UKAS PRODUCT CERTIFICATION 175

LOSS PREVENTION CERTIFICATION BOARD LPCB

ROCKWOOL AND SIG FIRE STOPPING SUPPORT

ROCKWOOL – Bob Westcombe (UK fire protection manager): 07970 142817 | bob.westcombe@rockwool.com
SIG – Nigel Gillingham (national manager): 07768 316016 | nigelgillingham@sigplc.com



Non-compliant installation

Non-compliant installation

LEARNING POINTS

1. **Provide a plan for the inspection and testing of PFP measures**
2. **Review fire protection video and use the QD checklists**
3. **Ensure installers are certified**

WANT TO KNOW MORE?

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HOT AND COLD IN ONE

The latest in a succession of Willmott Dixon Construction **leisure centres**, the new scheme at Romford poses challenges because of its tight site and busy location.

A **£28 million** ice rink and swimming pool complex is taking shape in the centre of Romford, Essex, on a former car park site of under an acre.

Planned for completion early in 2018 and one of a number of regeneration initiatives taking place in the town, Willmott Dixon Construction’s Hitchin-based team is having to devise working methods to meet the constraints imposed by a hectic urban location and tight site.

The latest in a succession of leisure centres delivered by Willmott Dixon, the project is unusual in that it combines in the same building an eight lane, 25m swimming pool and a 56m x 26m ice rink, both of competition standard – only the third time this has been attempted anywhere in the world.

London Plan: 20 per cent of energy used must be renewable

The ice rink is located on level three of the building, above the pool. Operations manager, **Simon Cook**, said the difference in temperature between the pool below and the ice rink above could provide the ideal conditions for condensation forming as warm air hits the cold slab above the pool:

“Our solution has been to isolate the pool from the rink by installing a 200mm layer of extruded polystyrene insulation on top of the 200mm structural slab and beneath the 125mm cooling slab that contains the refrigeration pipework.”

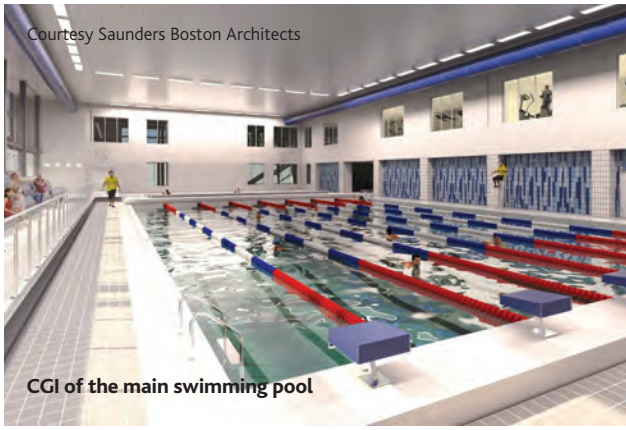
ACCESS

Site access and logistics are an ongoing challenge. The closest neighbouring property is just 1.6m away and roads adjacent to the site are busy bus and commuter routes. Vehicle movements are therefore having to be carefully planned; an online delivery management and crane hook booking system has been devised so that all deliveries are co-ordinated with a logistics manager from the project team to avoid disruption.

Also because of the tight access, the site was piled and the swimming pool excavated before steelwork arrived, as this would have been difficult to carry out once the frame was up.

ENERGY EFFICIENCY

The new centre will meet the London Plan requirement that 20 per cent of energy used should be renewable. This will be achieved by **80+ photovoltaic panels** on the roof and by a combined heat and power scheme. Energy use within the building is minimised where possible using **LED** lighting throughout the building – longer lasting than compact fluorescent lamps or incandescent light bulbs and with reduced maintenance costs.

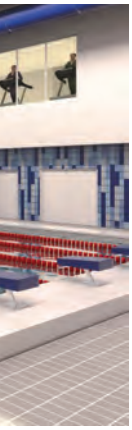

Courtesy Saunders Boston Architects

CGI of the main swimming pool

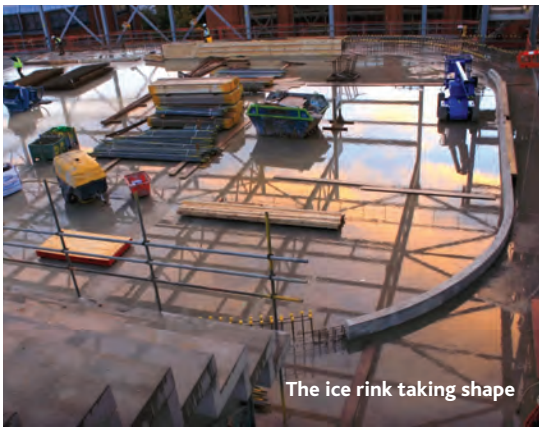
CGI showing how the ice rink will look

ROMFORD LEISURE CENTRE

Pools: main pool – 8 lanes x 25m with moveable floor and 250 spectator seats; teaching pool – 17m x 8m | **Ice rink:** 56m x 26m with 800 spectator seats | **Fitness suite:** up to 100 stations | **Dance/exercise/aerobics studio:** 200 sq m **Poolside sauna and steam room** | **Meeting room:** 30 sq m | **Café/bar** | **Changing, staff and plant rooms, toilets and first aid facilities**



Danpalon cladding being installed



The ice rink taking shape

Courtesy Saunders Boston Architects

LEARNING POINTS

1 **Hold workshops and get specialist advice, eg from ice rink installers**

2 **Appoint a logistics manager where site access is restricted**

3 **Ensure correct sequencing of works**

4 **Involve operator's facilities management team in early installation**

CLADDING

Conceived by architects Saunders Boston as a "shimmering ice cube", the leisure centre is the first Willmott Dixon project to use 'Danpalon' a blue, translucent polycarbonate rainscreen. LED strips will be fixed to the cladding to enhance the appearance of the building at night.

> **"Our supply chain partners were in place very early on and have fed into the design and to decisions about logistics and the construction sequence."**
>
> SIMON COOK

COLLABORATION

Simon continued: "This is a truly collaborative project. Supply chain partners were in place very early on and have fed into the design and to decisions about logistics and the construction sequence. These include the sequencing and excavation of the pool and surrounding areas to create a platform from which to build the structure within the footprint of the building.

"The platform accommodated up to two 160 tonne mobile cranes, two 65ft cherry pickers and a telehandler, as well as articulated lorries delivering steel. We have also worked closely with supply chain partners to ensure the correct sequences were adopted for the façade works, bearing in mind the limited space available around the building. We have benefited too from the **extensive experience of the ice rink installers**, Icetech, in designing and planning the works, while our customer, London Borough of Havering, has found their advice about the future operation of the rink invaluable.

"Many workshops have been held with specialist goods and works supply chain partners and we have begun a series of visits by the operator's facilities management team. They are seeing the installation from first fix onwards and getting to understand the building they will eventually operate and maintain – for example, service runs, including means of access and isolation, before they are concealed behind ceilings and finishes.

"Finally, the supply chain partners have made full use of Field View for quality inspections and checking." QD

WANT TO KNOW MORE?

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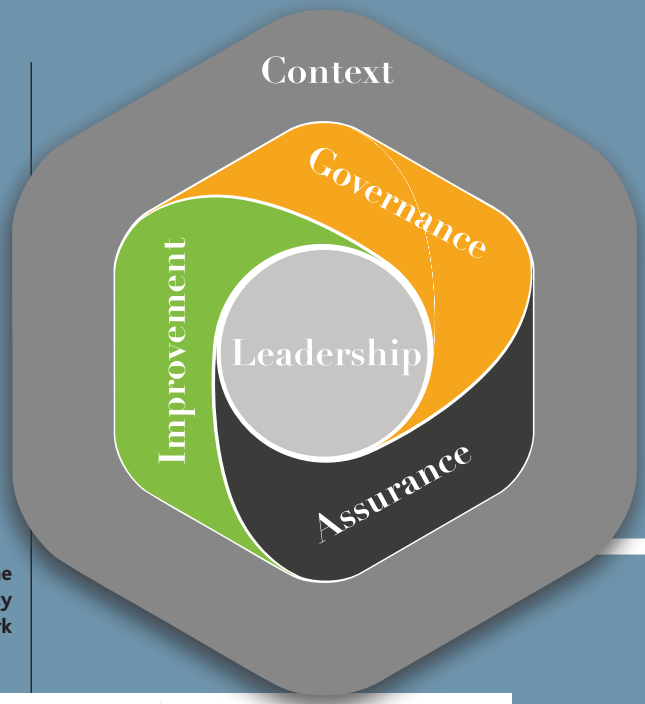
THE FIGHT FOR QUALITY

With roots dating back to World War One, when it was established as an engineering inspectorate by the Ministry of Munitions (to tackle accidental detonations in factories), the **Chartered Quality Institute (CQI)** is the body for quality professionals in the UK and overseas.



RIGHT: The CQI's competency framework

The CQI has a membership of 20,000 in 150 countries, including 10,000 management system auditors, and works to promote quality in public and private sector organisations regardless of size.

Vince Desmond, acting CEO, said that the UK began to focus on quality assurance in the 1980s at a time when UK industry faced intense and growing competition from Japan. It led to creation of the international quality standard ISO9001.

"It is only in the last 10-15 years that 'quality management' has been widely accepted as an integral part of an organisation, covering not just its products and services, but the needs of all stakeholders, including employees, shareholders and customers," explained Vince.

The scope and role of the quality professional is set out in the headings of the CQI's Competency Framework: governance, assurance, improvement, context and leadership. The framework encourages organisations to regard the quality professional as a business partner who can help projects succeed through excellence in planning, quality assurance and mitigating risk.

The cost of poor quality in construction is being examined by the CQI's Construction Special Interest Group (ConSIG), one of nine such groups covering sectors ranging from defence to pharmaceuticals. Their remits are, among other things, to address their own quality-related sector challenges and technical issues. ConSIG's Cost of Quality working group is chaired by former Crossrail and HS1 Head of Quality **Daniel Keeling**:

"The consequences of poor quality were dramatically shown in January 2016 by the collapse of nine tonnes of masonry at a primary school in Edinburgh," said Daniel. "An independent report found that factors to blame included inadequate supervision of the laying of bricks and the positioning of wall ties and the quality assurance processes used by the supply chain and main contractor to verify the quality of the construction. We are

> **"It is only in the last 10-15 years that 'quality management' has been widely accepted as an integral part of an organisation"**
> VINCE DESMOND

QUALITY IN CONSTRUCTION

Crossrail, currently the largest construction programme in Europe, is a standard bearer for quality in the sector. Recognising a lack of skills in construction, the company has worked with the CQI to ensure that quality occupies a central position in the project, requiring, for example, that all supply chain businesses tendering for work have a CQI-qualified quality professional (or equivalent) in place. The CQI helped Crossrail develop a training programme for all quality managers working on the project; this is designed to see that quality is applied uniformly and that problems are dealt with consistently.

World Quality Day is held on the second Thursday of every November and co-ordinated by the CQI. It provides a focal point for organisations to involve their people in thinking and talking about quality. This year's theme will be 'celebrating everyday leadership'. Willmott Dixon will be holding activities at sites and offices to mark the day.

WORLD QUALITY DAY 2017

compiling our own report on the consequences of poor quality post handover. It is being prepared over three years in partnership with University College London to quantify the cost to the sector of poor quality. We hope to be able to propose measures that reduce failure rates, such as sharing knowledge of failure with the supply chain and creating a culture of quality among all project partners, all in order to improve customer satisfaction with project outcomes.

QUALITY TRAINING

Among the host of training (www.quality.org/training) offered by the CQI, ConSIG's Competency working group is developing a 'managing quality' training course for use across the sector. Group chair **Neil Mellor** said the course, when complete, would be available via the CQI to construction workers, supervisors and project managers in courses lasting from half a day to four or five days: He added:

"We are putting the final touches to the syllabus. The main advantage of attending the course will be a universally recognised, fully transferrable qualification that takes the place of internal courses provided by individual companies for their people."

The Competency working group is also helping construction professionals understand the context in which they work by amassing a body of knowledge on construction-related topics. Contributions are welcome from any part of the industry. To find out more, visit: www.quality.org/ConSIG QD

WANT TO KNOW MORE?

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WILLMOTT DIXON
SINCE 1852

QUALITY IS FREE!

There's a host of free – or nearly free – resources out there designed to inform, educate and train if only you know where to look.

Information and guidance comes in the form of CPD (Continuing Professional Development) modules, courses provided by supply chain partners, instructional videos from Willmott Dixon's own library, and all kinds of resources contained in websites, such as those of the NHBC, LABC (Local Authority Building Control) and ASFP (Association for Specialist Fire Protection).

VIDEO TRAINING:

- **Willmott Dixon** video training library, which can be shared with supply chain (www.willmottdixontraining.co.uk and on the Hub: http://thehub/app/medialib/collection.asp?uid=24&)
- **ASFP** fire stopping videos (http://asfp.org.uk/webdocs/ASFP%20Video%20library.php)
- **Concrete Society** (http://www.concrete.org.uk/)

FREE CPD COURSES:

- **Building** (www.building.co.uk/professional/cpd)
- **CIOB** (www.constructionmanagermagazine.com/cpd-articles/)
- **CIBSE** (www.cibsejournal.com/cpd)
- **CPD** (https://cpduk.co.uk/)
- **RIBA** (www.ribacpd.com/onlinecpd/companies)
- **IEMA** (https://www.iema.net/eia-quality-mark/eia-quality-mark-resource-webinars)

MANUFACTURER HELP:

- **British Gypsum** training (www.british-gypsum.com/technical-advice/training)

OTHER INFORMATION SOURCES:

- **NHBC** (www.nhbc.co.uk/Builders/ProductsandServices/TechnicalStandards)
- **LABC** News (www.labc.co.uk/news)
- **Robust Details** (www.robustdetails.com)
- **Chartered Quality Institute** (www.quality.org)
- **IHS** – for standards and building regulations, plus Network Rail and London Underground standards – access via Hub>Quality Delivery>Quality Quick Links
- **NEC Contracts** (www.neccontract.com) – access via Hub>Company Secretary>NEC Standard form contracts (http://thehub/app/homepage/home.asp?group_uid=33&managehomepage=n&)

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Paragon's Strobe range comes in eight colourways, with a ninth as an accent colour to accompany any of the others. Pictured: Strobe Flex

THE MAGIC OF CARPET

It might be one of the last items to be installed in a project, but carpet is typically specified at the design stage before tendering, just like any other construction element. Quality product and fitting of this highly visible component is critical for a successful outcome.

With its eye-catching, hard wearing, good value products, mandated supply chain partner, Paragon Carpet Tiles, based in Rotherham and part of family-owned National Floorcoverings, is helping Willmott Dixon teams deliver defect-free projects across the country.

Established in 1997, the company manufactures some 25 ranges of loop and cut pile tufted carpet tiles and entrance matting, producing in 2016 more than 1.6 million sq metres. The education sector – schools, universities and student accommodation – accounts for around 60 per cent of the company's business, while office/commercial installations make up the rest.

ENVIRONMENTAL AWARENESS

UK sales manager, **Sarah Roberts**, said that Paragon's environmental credentials and social conscience set it apart from competitors: "Our 9,100 sq metre manufacturing facility is the lowest CO_2 per square metre producing carpet tile factory in Europe and 80 per cent of our sales are of BREEAM A+ rated products.

"In partnership with a UK social enterprise company, we operate a scheme, the 3R System, that 'Recovers' used tiles so they don't go to landfill, and 'Recycles' them for 'Reuse' as an affordable option for people on low incomes.

"We also support the recycling of waste materials recovered from the environment, such as nylon fishing nets, that can be regenerated as polymers and reprocessed into yarn for making carpet. Some of our own carpet tiles are made from such yarns."

Much of the carpet manufacturing waste that would ordinarily go to landfill, mainly edge trimmings and reject tiles, is shredded (coarsely, then finely) into a flock. This is used by the cement industry as SRF (Solid Recovered Fuel) – a direct substitute for fossil fuel. SRF powers kilns and ash created from the burning process is used in cement clinker (lumps or nodules).

In 2016, 359.14 tonnes of Paragon's processing waste were dealt with this way, contributing to the 406.5 tonnes that were recycled or reused altogether.

QUALITY CONTROL

Quality control plays a key part in the manufacturing process, with checks applied at each of the three main stages.

Sarah continued:

"In practice, our quality control measures find very few defects in the carpet tiles we produce. Problems are more likely to arise as a result of poor fitting and/or storage on site.

"Freezing temperatures cause tiles to shrink and, if laid before they have acclimatised, they can 'dome' as they expand back to their original size." Paragon tiles have been specified

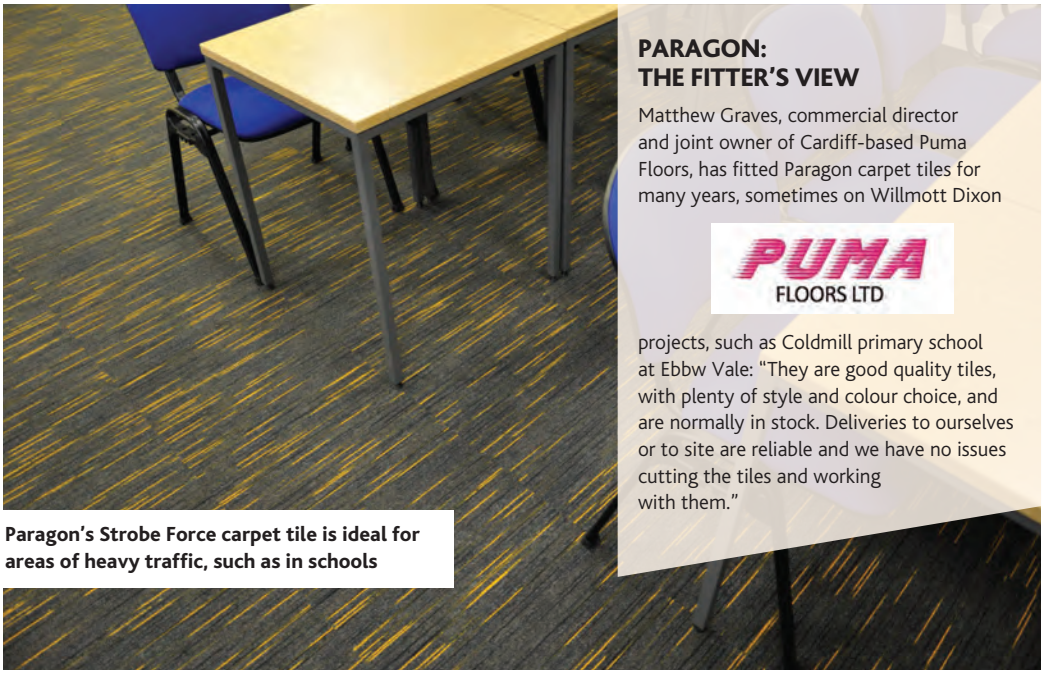
PARAGON: RECYCLING FACTORY WASTE

28.84 tonnes

1.22 tonnes

17.30 tonnes

100% yarn waste



Paragon's Strobe Force carpet tile is ideal for areas of heavy traffic, such as in schools

PARAGON: THE FITTER'S VIEW

Matthew Graves, commercial director and joint owner of Cardiff-based Puma Floors, has fitted Paragon carpet tiles for many years, sometimes on Willmott Dixon projects, such as Coldmill primary school at Ebbw Vale: "They are good quality tiles, with plenty of style and colour choice, and are normally in stock. Deliveries to ourselves or to site are reliable and we have no issues cutting the tiles and working with them."

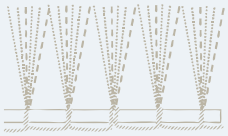
PUMA FLOORS LTD

in numerous Willmott Dixon projects, most recently Hereford Academy, two schools in Ebbw Vale and a custody suite for South Wales Police in Bridgend.

Although Paragon keeps in touch with the project teams, their carpet is specified right through to the installation and fitting is carried out by works partners appointed by Willmott Dixon. Supply chain managers can advise on their selection.

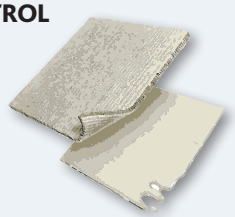
Fitting guides for all Paragon products are available at: www.paragon-carpets.co.uk/cm-guides/ QD

PARAGON: QUALITY CONTROL



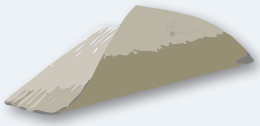
TUFTING

- Computer controlled machinery is pre-programmed with product specifications to ensure consistent, repeatable quality
- Product specification parameters are manually checked at the start of every shift and at a product and/or colour change



LATEX APPLICATION

- Premium latex is purchased 'ready to use' as opposed to mixing on site. A supplier's certificate of conformity accompanies every batch of latex delivered
- Weight and evenness of latex application is checked on every roll



TILE BACKING

- All tiles undergo a final inspection
- Tile specification is randomly checked at least hourly and at every product and/or colour change.
- Product performance is randomly checked for size stability, tuft retention, accelerated wear and flammability

WANT TO KNOW MORE?

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The main production line at Paragon's Rotherham factory

Checking the quality of Paragon carpet tiles

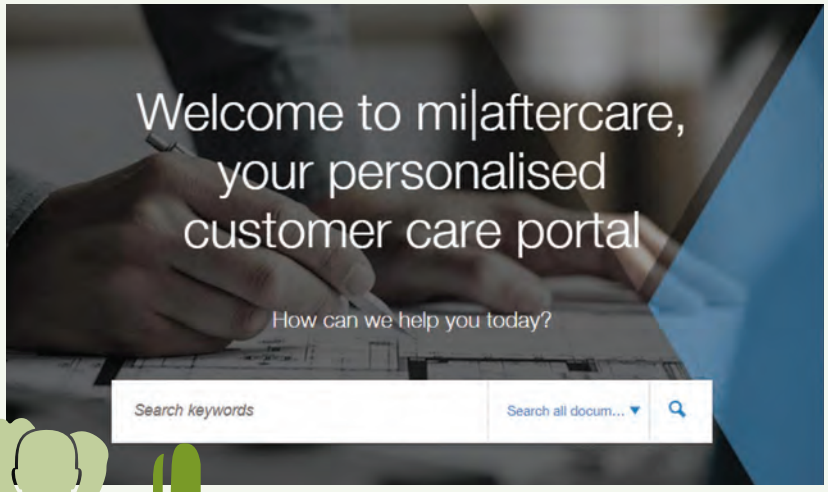
LEARNING POINTS

1. **Store tiles adequately and acclimatise them to normal use environmental conditions**
2. **Reduce waste by using environmentally friendly products**

HAPPY EVER AFTER...

mi | aftercare

mi|aftercare allows customers to self-diagnose problems using its fast, efficient user-friendly features



A system designed to give Willmott Dixon customers a better aftercare experience, and also to bear down on costly emergent defects once a project has been completed, is being introduced.

Conceived by operations director **Simon Ramage** and framework director **Scott Corey**, with detailed input from the customer service and quality delivery teams, the **mi|aftercare initiative** consists of two main elements.

The first element addresses the time and cost involved (some £800k a year) of producing multiple sets of O&M (operation and maintenance) manuals for each project. These are typically compiled in haste during the final stages of a project and are later subject to loss and/or lack of use. The result: teams spending time on O&M information during the critical completion phases of a project and our customers experiencing poor quality maintenance information making our buildings vulnerable to emergent defects. Simon explained: "mi|aftercare solves this by allowing for sets of digitised O&M manuals to be collated throughout the construction process. Whenever an order is placed with a supply chain partner, a list of documents needs to be uploaded once their work is complete is specified. Once uploaded to the mi|aftercare system, the documents are reviewed for accuracy by a project team member and either approved or rejected. Approved documents are tagged with key words.

"As soon as their building is handed over, customers will own a complete, word searchable set of manuals that can be accessed 24/7 from any device. They will then be able to self-diagnose problems that arise and in many cases resolve issues swiftly without needing to log a defect."

ANALYSING BUILDING INFORMATION

The second element of mi|aftercare gives customers who have not been able to resolve an issue themselves the necessary tools to notify customer service teams quickly and easily with a description and pictures of the problem and its location.

Digital project manager **Paul Mant**, who worked with a team of people from across the business to formulate a brief for the software developer, said the system was not just about improving the defect management process for all parties: "mi|aftercare intelligently gathers and analyses information, recognising trends and helping us to make sure the same issues don't recur on future projects.

"The defects management aspect is being rolled out on a number of projects in each LCO across Construction, Partnership Homes and Interiors. After trials in each division, the O&M element will go into full use on all new projects, starting in pre-construction. Once fully established, mi|aftercare is set to benefit Willmott Dixon, our supply chain partners and our customers." QD

Contact your local customer service team to learn more.

KEY FEATURES

- Tagged, word searchable O&M manuals make information easy to find and allow customers to self-diagnose issues
- Reduced need for printed O&M manuals supports sustainability
- Simple to use defect logging tool
- Easy step-by-step defect resolution
- Data is analysed for trends to help prevent defects on future projects

MI | AFTERCARE DEFECT RESOLUTION SEQUENCE

1 **CUSTOMER** visits mi|aftercare and either finds solution from O&M manuals or logs defect

2 **WILLMOTT DIXON** receives defect notification and assigns supply chain partner

3 **SUPPLY CHAIN** partner notified of defect, timeframe to resolve and proposes dates to attend

4 **CUSTOMER** agrees date for supply chain partner to attend

5 **SUPPLY CHAIN** partner deals with issue and uploads evidence of resolution

6 **CUSTOMER** notified the issue is resolved and provides feedback on service

7 **WILLMOTT DIXON** notified the defect is resolved, closes defect and records feedback

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Learning from the experiences of others is one of the best ways to gain knowledge quickly in order to help avoid project delays, poor quality and costly mistakes.

LEARNING FROM OTHERS

There are numerous sources of knowledge, some of it online, some presented verbally or in videos and some simply posted on site office noticeboards. Here is a flavour of how knowledge is being made available across Willmott Dixon:

SECTOR LEARNING

Growing by the day, the sector learning resource is available on the Hub as a downloadable document. Key project experiences are listed by categories – including education, transport and leisure – and added as and when a lesson is learnt that could benefit others working in a similar field. For example, under ‘law and order’, knowledge gained on the Bridgend custody suite project includes advice that cell toilet and sink specifications should be agreed early on, so that recesses can be cast into precast cell walls.

‘WHAT GOOD LOOKS LIKE’ PRESENTATIONS

These are another way of sharing experiences. According to quality delivery manager **Graham Thornton**, in the Construction Northern region, bi-monthly ‘What good looks like’ sessions are attended by Operations teams who discuss in an open forum lessons learnt, best practice and setting standards that they have experienced on their sites: “They are an effective way of getting teams talking to one another about quality.

“The North West’s first ‘What good looks like’ event was held in March 2016 and is building in strength. The latest was held at Blackpool’s West Division police headquarters site and attended by 37 of the operations team, where a lessons learnt session took place about Blackpool’s Victoria Hospital car park. It concluded with a walk round the car park to help understand the lessons learnt first-hand.”

In London, where Willmott Dixon is funding construction of Moberly leisure centre from development of 100 new homes in Westminster, project team members took part in a quality delivery presentation to the site team, focusing on the target outcome of handing over a defect free project. It included a section on implementing lessons learnt from other projects and drew attention to sector learning available on the Hub.

> **“[‘What good looks like’ sessions] are an effective way of getting teams talking to one another about quality.”**
>
> GRAHAM THORNTON

WALKABOUT: Operations teams tour Blackpool’s Blackpool’s West Division police headquarters

...AND DON’T FORGET

The Yellow Book: product design information

Quality Alerts

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Romford’s Quality Award Board

NOTICEBOARDS

Sharing knowledge and what to look out for can be as quick and simple as posting photographs on a site noticeboard. This is happening around the country, for instance at the Romford leisure centre project (see pages 12 and 13) where a ‘Quality award board’ displays pictures highlighting good and bad practice and recognising ‘quality heroes’. Elsewhere, quality noticeboards carry posters, quality alerts and other quality-related material. QD

QUALITY LINKS

Quality Delivery Homepage found here: Hub > Areas > Quality Delivery

QD

YOUR QUALITY QUERIES

Q: Where can I find the QD make ready checklist template?

A: Hub > Areas > Quality Delivery > QD Make Ready Checklists

Q: Where can I find Quality Alerts?

A: Hub > Information > Knowledge portal > Quality Delivery > Quality & Technical library > Quality Alerts

Q: Who can I go to for help on Field View?

A: Hub > Field View > Field View User Group Members

Q: How do I get hold of some Quality Delivery coasters?

A: Contact Rumana Shaukat for coasters. For use as follows: a) site/office meeting rooms and b) your personal workspace

Q: Where can I find the Certificates of Registration?

A: Hub > Areas > Approvals, Accreditations and Memberships page

Q: Where can I find NHBC standards?

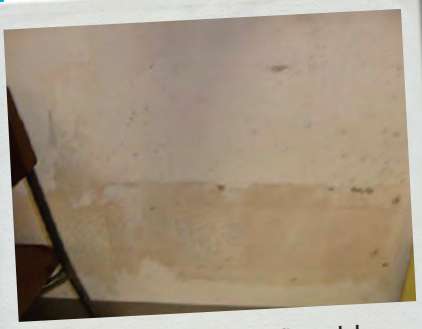
A: NHBC standards – http://www.nhbc.co.uk/

Q: Where can I find the Lifetime Homes Design Guide?

A: Hub > Areas > Quality Delivery > Select IHS > Select CIS – http://thehub/app/fileshare/view.asp?uid=22056&

SPOT THE DEFECT

Defects can have far reaching consequences. Here are some typical ones that could have been easily avoided – and with them the need for costly remedies.



Damp caused by a wet floor slab when the walls were constructed. **SOLUTION:** ensure the slab is as dry as possible when internal walls are built. Before closing up, check that the floor in the void is dry.

These gaps in external wall insulation will contribute to heat loss and could cause condensation within the wall construction. **SOLUTION:** Check often that there are no gaps in the insulation, which should be installed according to manufacturers' recommendations.

This is typical of debris found in the gullies and drainage channels of a shower room that was causing flooding to occur. **SOLUTION:** Shower rooms should be checked and tested before completion to make sure drains are clear and that drainage falls are sufficient.

For more about defects and quality issues see **Quality Alert** and **Common Defect** documents on the Hub. Please send us your own examples of defects to share with readers.

GOT ANY **FEEDBACK** OR A TOPIC TO **SUGGEST?**

@WillmottDixon

Get in touch

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In the next issue

In the next issue the focus will again be on how we Design for Quality.