

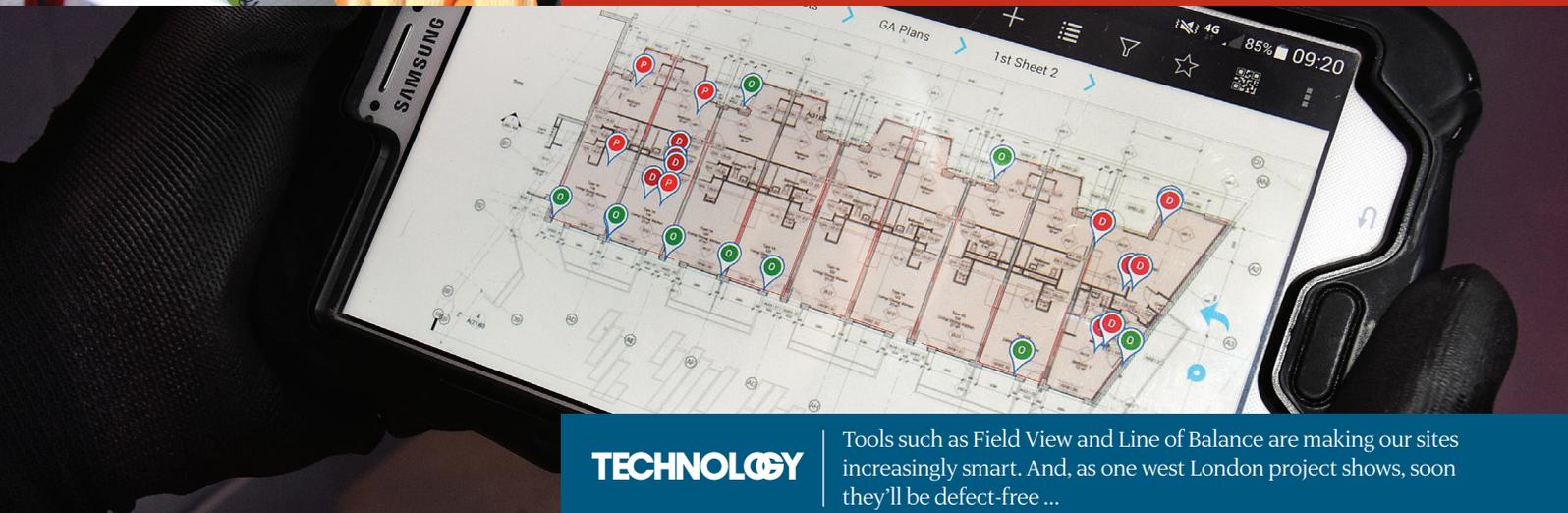
PEOPLE TECHNOLOGY & INNOVATION

JANUARY 2016



PEOPLE

From on-site support to in-depth training at the industry-leading Housing Quality Academy, we look after our staff throughout their careers – after all, they're our biggest asset



TECHNOLOGY

Tools such as Field View and Line of Balance are making our sites increasingly smart. And, as one west London project shows, soon they'll be defect-free ...



INNOVATION

Major investments in initiatives such as off-site manufacture and our new Design Manual are transforming the way we work, improving quality and consistency



EXCITING TIMES



Charlie Scherer, chief operating officer, Willmott Dixon Housing

Welcome to the new “People, Technology and Innovation” publication from Willmott Dixon Housing. The housing landscape has altered dramatically in the past few years and we have worked closely with our suppliers and clients to ensure that Willmott Dixon Housing adapts and grasps the opportunities created. This publication gives an overview of the steps we are taking to fulfil our pledge to our clients of building the best homes, first time, every time.

To succeed in the modern housing environment we must tackle head on the key concerns of the UK construction industry: a shortage of skilled workers, which leads to variable product quality; and lack of predictability regarding completion dates. The multi-faceted approach we have developed as a result exploits technology, but relies on our ability to attract and nurture the best talent. Over the next 13 pages you will see the innovations our colleagues have created. I think you will agree exciting times lie ahead.

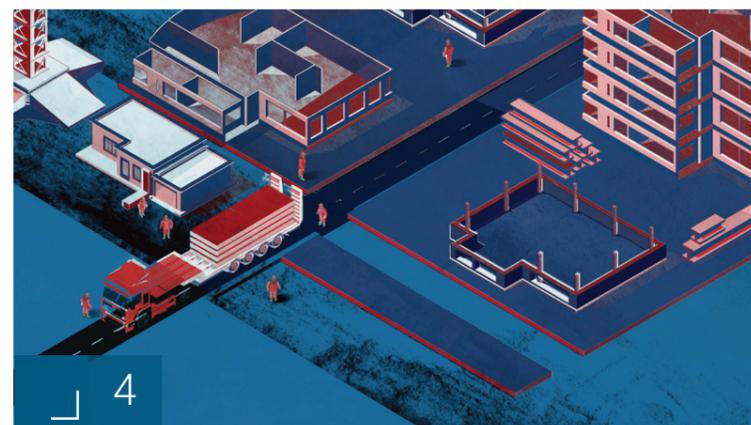
We have introduced a number of important strategies. From welcoming new recruits to tapping into wise heads; from cutting-edge kit to honing the tried and tested; and from exploring new relationships to valuing old partners – we believe we have a comprehensive and robust plan to deliver.

For instance, we are confident that, through our agreements with experts in off-site manufactured (OSM) homes – Robertson Timber Engineering and Fusion Building Systems – we now have a ready platform and the capacity to build over 1,000 OSM homes a year. Our efficiency measures, such as our Design Manual and experience in using the next generation of Building Information Modelling (BIM), mean we can reduce on-site resources by 15 per cent (see right) to help combat the lack of skilled resources, while improving the quality of the homes we build.

The government has said it wants the country to build 1 million homes by 2020. Through the smart use of our people, technology and innovation we can ensure our clients play a prominent part in building the homes Britain needs.

I hope you enjoy the publication and find it useful. Please feel free to contact me for further information at any time.

CONTENTS



4



6

4-5

Time to deliver

A radical three-pronged strategy to boost housing supply

6-8

People

P6 Introducing our new compliance team – mentors, auditors and so much more **P7** First-hand experience of our comprehensive induction and career plans **P8** Lessons in defect-free delivery at the Housing Quality Academy

9-11

Innovation

P9 Quality meets efficiency in our latest generation of off-site manufactured homes **P11** Our new Design Manual’s vital role in underpinning standardised processes

12-15

Technology

P12 On site at our trailblazing defect-free project **P14** An essential guide to all of our cutting-edge tech **P15** A closer look at BIM and our bespoke MiProject and MiAftercare tools



10

15%
REDUCTION
IN ON-SITE
RESOURCES

=

3% +
AVOIDING REWORK
Housing Quality
Academy,
Increasing Skills, BIM

3% +
LEANER PROCESSES
Line of Balance,
FieldView,
MiProject

5% +
OFF-SITE
MANUFACTURE

4%
LEANER DESIGNS
Design Manual,
Standard House
Types

TIME TO DELIVER

A clear plan of action is needed if the industry is to meet the government's target of 1 million homes by 2020. Which is why Willmott Dixon Housing is investing heavily in a three-pronged strategy focused on people, technology and innovation

Three simple words: people, technology and innovation. Easy to say, but for Willmott Dixon Housing these words are absolutely crucial in ensuring we reach our goal of being the number-one choice for our clients.

As Charlie, our chief operating officer, set out on page 2, there are major issues affecting the whole construction industry that we must address. First, a shortage of skilled construction workers, which leads to variable product quality; and, second, a lack of predictability regarding completion dates.

We have worked closely with our clients and suppliers to find solutions and shape our products and services accordingly. Crucially, we have backed our teams with the technology and knowhow needed to deliver our raised expectations.

The fruits of our labours are set out in this infographic overview and in detail over the following pages.

INNOVATION

Our Design Manual is key to meeting our objective of reducing site resource levels and providing well-designed projects. It is a live document that offers guidance on the details, methods and materials that we want to implement for each building element. An important aspect of this is our approach to working in partnership with our supply chain and striking agreements on core materials and products, giving certainty on costs and supply.

To further bridge the construction capacity gap, we aim to use off-site manufacturing (OSM) wherever possible and have agreed deals with Robertson Timber Engineering on timber frame and with Fusion Building Systems to provide light-gauge steel frame. This will allow us to fix supply levels and hence prices for the duration of the deals. Finally, to make the most of our supply chain, we have worked with our OSM partners to develop our own set of standard house and apartment types. By dovetailing this with our use of BIM level 2, we plan to eliminate design waste and maximise the potential of off-site components.

TECHNOLOGY

We have worked with our clients and used the experience of our teams to identify where investment in the right technology can really make a difference.

We developed our Line of Balance tool for managing and monitoring the fit-out and final delivery of housing units to our clients. Line of Balance allows us to ensure that each trade has a regular flow of work, cutting errors and waste and enabling us to accurately predict when jobs will be complete.

Our tablet-operated Field View system allows our building managers to manage the project on site in real time, using the live database of project drawings to report on inspections and process snagging and rectifications. It is already saving our teams large amounts of time in administration and improving the quality of projects.

Lastly, our award-winning MiProject and MiAftercare packages allow the client a one-stop-shop interface with Willmott Dixon during and after a project. The system reports on performance targets and, for MiAftercare, provides a searchable database of all information on a building to ensure a trouble-free occupancy. The latter element ties in with our extensive use of Building Information Modelling (BIM) to ensure design flaws are resolved before we get on site. A database of the building is also compiled to inform occupancy and future maintenance requirements.

PEOPLE

Our focus is on how we employ, retain and develop our people to be the best in our industry. We have overhauled our induction and career development programmes. New starters receive a comprehensive introduction to Willmott Dixon Housing and their role as part of our business, so there are no surprises. Similarly, existing staff have personal development plans which incorporate the six core training priorities we have identified as necessary to ensuring that Willmott Dixon Housing colleagues have the skills to deliver our defect-free housing aim.

This includes training in the new Housing Quality Academy at our dedicated training facility at Aston, Birmingham. All Willmott Dixon Housing staff attend at least once every two years to ensure they are up to speed with the latest materials and installation techniques from key manufacturers such as British Gypsum and Rockwool. We are already seeing the results of this rigorous approach across our business. The newly established improvement groups, innovation team and the over-arching compliance team ensure that we continue to build on this success.

PEOPLE

P6 ON-HAND BUSINESS SUPPORT
Our three-strong compliance team visits all of our sites to ensure they are well planned, resourced and managed

P7 NEW STARTERS
Over the first three months, our comprehensive induction process ensures the best possible start to a new job

P7 EXISTING STAFF
All staff are encouraged to develop their careers through a personal development plan. This is supported by our new six core training priorities

P8 HOUSING QUALITY ACADEMY
Launched in 2014, the HQA arms all staff with the most up-to-date knowledge from experts on key building materials and processes

PEOPLE POWER

Willmott Dixon Housing's people are our main asset and we go to great lengths to provide a working environment to challenge and inspire them. The next few pages set out exactly how we are achieving these aims – starting with a close look at the vital work of our new compliance team

The reputation of any company can only ever be as good as the quality of its product. And when it comes to housing, Willmott Dixon is taking no chances. Meet Peter Walton, Jo Weston and Tony Organ, the trio of experts ensuring that new homes get delivered on time and to budget and free of defects when the keys are handed over.

This compliance team's role is a mixture of auditor, mentor and information source – a combination that is helping to rid Willmott Dixon of the type of complaints and issues dogging housebuilders as they struggle with skills shortages.

As well as picking up issues in an auditing capacity, they are also tasked with embedding in the company an ethos of best practice and getting it right first time. As part of their operation, which began at the end of 2014, they have set up Willmott Dixon's new Housing Quality Academy in Aston, Birmingham (see page 8). More than 400 staff have already come through the doors to be drilled in defect-free construction.

Peter and his two colleagues are Willmott Dixon veterans, combining complementary skills and 70 years' experience between them at the firm. Peter, who is the compliance director, has held a number of senior roles, including that of technical director. Compliance manager Jo was a senior surveyor who became head of customer relations, while Tony, also now a compliance manager, was an operations director, in charge of construction delivery (see box, "The three wise mentors").

They report directly to chief operating officer Charlie Scherer and provide a service to our three housing offices. Our regional managing directors can call on them at any time to deal with specific

project requirements. "In simple terms, what we do is a compliance health check of the scheme six to eight weeks into a project. We'll then follow up later on down the line," says Peter.

"We're going in with a fresh pair of eyes to see how the team and project has been set up," he explains. "We double-check that they have the right compliance systems and the right resources and skills."

"Audits also cover everything on site from technical procedures, understanding risk and the whole element of good project management. We're looking to make sure the project gets off on a good and sound footing."

Jo adds: "When I go into a project, I can be emotionally detached and take a very independent view."

The team has carried out about 25 audits to date and produces comprehensive reports, which are shared across the business, with best practice and good ideas highlighted. Any corrective action requests identified during

the visit must be addressed. From time to time they also step in to turn around projects that are going awry. This might be to do with budgets or construction delays. Another example is where they supported a site team in challenging a supplier over a technical query on finishes to steel beams.

Peter says: "When we first went on to site, we were seen as a bit 'Big Brother'. Now there is more acceptance of who we are and what we do. We now get invited because people realise we're not there to pick holes and be critical – it's more about providing development support."

Tony agrees: "I think people see compliance officers as checkers of work – but our approach is different. What we're here to do is support people and point them in the direction of additional help if they need it."

Jo concurs: "There's a very strong mentoring and coaching aspect to the role. We may find problems but we're not looking to allocate any blame."

Jo has spearheaded the setting up of the Housing Quality Academy. Every Willmott Dixon manager, designer and surveyor will attend training at the HQA at least once every two years. The company is also offering HQA sessions to key suppliers and clients.

The emphasis on quality is certainly paying dividends. "We are seeing huge improvements, particularly in the last six months. There is less snagging needed and people are performing better," says Peter.

"WHEN WE FIRST WENT ON TO SITE, WE WERE SEEN AS A BIT 'BIG BROTHER'. WE NOW GET INVITED BECAUSE PEOPLE REALISE WE'RE THERE TO PROVIDE DEVELOPMENT SUPPORT"
Peter Walton



THE THREE WISE MENTORS

1 Tony Organ, compliance manager: "I'm really enjoying the sense of helping people on site to achieve their goals and giving them that extra degree of confidence in their work."

2 Jo Weston, compliance manager: "I like the variety of interactions with people from across all aspects of the business and the feeling that we're helping and supporting every single person. Having worked in the business for so long, we understand the pressures teams are up against."

3 Peter Walton, compliance director: "It's not the sort of role that would suit everyone. It can be a bit isolated and you need a good understanding and broad knowledge of the whole process, from dealing with enforcement to answering technical queries."

NEW STARTERS AND EXISTING STAFF

A good induction can really make a difference in retaining an effective and engaged new employee. To help achieve this, we launched our Housing Induction Programme in 2015. This is a three-month programme, tailored to each new starter.

New recruits receive their programme prior to joining us and are welcomed into our business on day one by their line manager. They spend the entire day with them: being introduced to colleagues, discussing our culture, and being given a basic introduction to their job role. We also include site visits and a full day with their designated mentor. New starters do not begin specific job tasks until day five.

This is only the start of a journey of continuous learning at Willmott Dixon Housing. We ensure staff are supported throughout their career. Our recently launched Advanced Development Programme aims to fast-track the careers of colleagues with the greatest potential.



Tom Wakelin, 22, management trainee
"I began as a site management trainee in October 2014 after a six-month work placement. I did the three-month Housing Induction Programme.

In site management, I expected to meet everyone from designers to bricklayers, working on a building's inside and outside. It's fulfilled expectations; there's never a dull day. I assist a senior site manager and lead community work, including college visits to raise awareness of placements."



Scott Prentice, 29, assistant building manager
"I'd worked as a carpenter but was on a part-time construction course elsewhere when I was taken on in my current role in August 2014. I've learned a lot about management, from dealing with subcontractors to planning and checking materials. I'm supported to develop my career, have completed site management training and am still doing my construction studies one day a week. I feel like I'm constantly moving forward, and that career progression is valued."



The compliance team on site at Edge Green Lane, Wigan

WAR ON ERRORS

The Housing Quality Academy (HQA) at Willmott Dixon's 4Life training facility in Aston, Birmingham has had a busy first year. It has seen the majority of Willmott Dixon Housing's employees (more than 400 people, as well as a number of suppliers and clients) through its doors to learn the latest on materials and installation processes from key suppliers such as British Gypsum and Rockwool.

The aim, as Peter Walton, compliance director at Willmott Dixon, says, is to ensure the homes we build are "ready for occupation". He adds: "It is not our clients' job to inspect and snag our work. It is the team's responsibility to provide every unit to the same high standard so the client can take immediate handover on the day it is offered."

The training is a series of classroom tutorials and practical sessions in purpose-built "pods" aimed at raising awareness of typical defects and controlling quality. Each pod has been developed in conjunction with the relevant manufacturer, including British Gypsum, IKO and Manhattan Kitchens. The pods contain life-size mock-ups that are replicated in drawings on our Field View system, hosted on web-enabled tablets. By comparing drawings with the mock-ups, course members identify defects, and are shown examples of the work completed correctly.

Our selection of suppliers is dovetailed with the product recommendations contained within the Willmott Dixon Housing Design Manual (see page 11).



PHOTO: GREG KING

THE TRAILBLAZER RAVINDER GILL

Ravinder Gill is a senior building manager at Willmott Dixon Housing's 132-home Gatefold project at the Old Vinyl Factory in Hayes, London. Gatefold is the first project that Willmott Dixon Housing aims to deliver under its new "zero-defect" approach. This means there can be no defects during construction, and to help deliver this ambition, Ravinder and his five building manager colleagues on the project have all completed the HQA training. "The training has been very

"BECAUSE OF OUR APPROACH WE HAVE BEEN ABLE TO ADDRESS ANY ISSUES QUICKLY SO THAT THEY DON'T AFFECT THE PROJECT PLAN"
Ravinder Gill

helpful. It's amazing the things that come out that could be fixed easily with better attention to detail earlier in the build. For instance, socket points in the wrong place, or partition errors. "I'd be lying if I said we haven't had challenges with some subcontractors in terms of doing exactly as we need first time. But because of our approach we have been able to address any issues quickly so that they don't affect the project plan. To date we are on time and on budget for a handover in May 2016."

THE TEAM PLAYER STEVE MATTHEWS

Steve Matthews (pictured, centre) is a senior building manager for Willmott Dixon Housing on its project in South Ockendon, Essex. "Everyone would like to deliver projects with zero defects, but it's another thing actually doing it. I attended a Housing Quality Academy course recently and the key message was, 'Stop, slow down and look at the schedule'. This sounds simple, but when you are pushing to get a job done, it's not always the case. "For me, the drylining section

with British Gypsum was very useful. I certainly took away a load of notes and ideas that I have shared with my team on site. "It really helped that the emphasis of the day at the HQA was on the performance of the whole team. A typical cause of a defect is where a job has fallen between two subcontractors. That comes down to better supervision, but also to our teams knowing the emphasis we have on doing things right first time."



INNOVATION

We are constantly looking for new ways of doing things in order to improve quality and drive efficiencies. The next three pages show how developments such as off-site manufacture are transforming the way we work.

P9 OFF-SITE MANUFACTURING
We aim to build more than 1,000 OSM homes a year and to achieve this have agreed three-year partnerships with two OSM expert firms in timber frame and light-gauge steel frame.

P10 STANDARD HOUSE TYPES
We have worked with our suppliers to develop our own set of standard house and apartment types to eliminate design waste and maximise the potential of off-site components.

P11 DESIGN MANUAL
Launched in 2015, this is our live document for efficient and consistent design that provides instruction on the methods and materials that we want to implement for each building element.

P11 SUPPLY CHAIN AGREEMENTS
To ensure maximum value from our supply chain we are forming closer relationships with select supply chain partners.

WHY ARE THESE PICTURES SPECIAL?

The construction skills crisis risks undermining the government target of building 1 million homes by 2020. We believe the images below contain a big part of the answer ...

Off-site manufacturing is a familiar phrase in the housing world, but is one that has yet to fully resonate. Willmott Dixon Housing believes that the time is right for this to change and that it must if the country is to stand a chance of bridging the construction skills gap to build 1 million homes by 2020.

A key issue that has often undermined the attractiveness of high-quality homes built to precise specifications in a factory off site has been the need for a consistent volume of orders, thereby allowing efficiencies of scale to be generated. Tim Carey, product >

Below left Timber frame built by Robertson Timber Engineering being assembled on site
Below right External steel-frame wall panel after being injected with fire-retardant EPS





director at Willmott Dixon, says he feels the housing sector is now “more comfortable with OSM and with what it can do”. He says this is “partly as a result of sky-rocketing costs of labour on traditional housing sites”, but also because of the “consistent quality in construction that OSM can offer”.

As a result and to ensure that our customers can benefit from the economies of scale OSM can generate, we have struck long-term partnership deals with two off-site manufacturing experts: Robertson Timber Engineering for timber frame and Fusion Building Systems for light-gauge steel frame construction. The pictures on the previous page are examples of their work. The deals will run for three years from January 2016 and we hope to be building more than 1,000 OSM properties a year within 12 months.

Charlie Scherer, chief operating officer at Willmott Dixon Housing, says these deals are a “cornerstone in our strategy to develop as a business, putting engineering, innovation and design expertise at our heart in order to deliver cost-effective, sustainable building solutions to our clients”.

The standard house types we have been developing in partnership with our OSM

OUR APPROACH IS ALL ABOUT FINDING THE RIGHT SOLUTION FOR PARTICULAR SITES. SOMETIMES THAT WILL BE ON SITE, BUT THERE IS NO REASON WHY MUCH OF OUR WORK COULD NOT BE DONE OFF SITE

Tim Carey

STANDARD HOUSE TYPES: THE BENEFITS

- Fixed design, cost and specification
- Repeatable product
- Fully compliant with Building Information Modelling (BIM) level 2
- Improved quality of end product through factory-based approaches
- Real-time site viability service using these types to support client budgeting and land bids
- Maximises factory based assembly and minimises the use of on-site manufacturing

suppliers are a crucial part of the jigsaw in making the most from emerging technologies. We have been exploring the use of standard house and apartment types for a number of years, such as at our 55-home project with Walsall Housing Group (pictured). Our latest designs are fully compliant with level 2 of Building Information Modelling (BIM), which will be required from April 2016 on all publicly funded projects. We hope the use of standard designs will help to eliminate site waste and allow us and our clients to make the most from OSM (see box, above).

Tim says: “Our approach is all about finding the right solution for particular sites. Sometimes that will be on site, but there is no reason why, with support from our suppliers to use components that can be manufactured off site and with reference to our standard house types, much of our work could not be done off site. We want to embrace the best that modern technology has to offer and ensure we offer our clients a choice of how to build the best possible homes.”



Above and left Willmott Dixon Housing's 55-home project for Walsall Housing Group uses standard housing types



DESIGN MANUAL HOLDS KEY TO QUALITY AND CONSISTENCY

Comprehensive guide will cover 61 processes

For Peter Walton, compliance director at Willmott Dixon Housing, the idea of the company's first comprehensive Design Manual is straightforward: “We want to introduce standard processes where we can, so that those areas of a project that require a greater problem-solving focus receive it.”

Although this is simple to say, producing and then updating the Design Manual – which has been endorsed by the NHBC – is no mean feat. When it is complete later in 2016, it will run to nine sections covering 61 construction processes. The first two sections on roofing and partitioning were launched within the company in October 2015 and the next sections on upper floors, balconies, internal doors and parapet walls – an area in which analysis has shown we can improve our processes – have recently been added.

The manual is a live document that provides instruction and guidance on the details, methods and materials that we want to implement for each building element. It aims to ensure greater consistency of the end product and clearer guidance to internal teams, suppliers and consultants. It engineers out defects and embeds the use of our preferred suppliers, promoting the use of certain components to reduce unnecessary variations. The manual also promotes the use



of off-site manufacturing where beneficial and aims to minimise on-site resource wherever possible, in order to ensure more consistently high-quality homes.

For Charlie Scherer, chief operating officer at Willmott Dixon Housing, the Design Manual is an important illustration of the company's plan to “tackle the challenge of the skills shortfall in construction head on”. He adds: “We believe that a minimum of 4% of our target to reduce on-site resources by 15% can be achieved by leaner designs. This Design Manual seeks to achieve that.”

Another crucial aspect is our focus on striking long-term agreements with key manufacturers (see box). Tim Carey, product director at Willmott Dixon, says: “We have found from our work in sectors such as schools and hospitals that the best approach for certain components is to have a single supplier agreement. This gives certainty of supply and quality and certainty that suppliers are taking a sustainable approach in terms of materials and training.”

We have so far struck four such agreements and Tim adds that a “critical mass of 10-15” should be in place in the next 12 months. The long-term certainty of supply this generates is good for our suppliers, good for us and – most importantly – good for our customers.

PRODUCT MANUFACTURERS

The Design Manual has been developed with the following product contributors to promote robust details: Rockwool, British Gypsum, IKO Roofing Systems.

TECHNOLOGY

Smart use of technology is at the heart of our efforts to make efficiency gains and deliver our pledge of better homes, built right first time, every time. You can see the results of our work over the next four pages.

P12 LINE OF BALANCE

LOB manages and monitors the fit-out and final delivery of housing units to our clients. Using LOB cuts errors and waste and enables us to accurately predict when jobs will be complete.

P12 FIELD VIEW

Our tablet-operated Field View system allows building managers to manage the project on site in real time, using the live database of project drawings to report on inspections and process snagging and rectifications.

P14 BUILDING INFORMATION MODELLING

BIM ensures design flaws are resolved before we get on site and means a database is compiled to inform occupancy and future maintenance requirements.

P15 MIPROJECT AND MIAFTERCARE

The former is the sole data-capture system for the company, eliminating data duplication and simplifying performance reporting. The latter provides the client with a searchable database of all building information to log any defects and ensure a trouble-free occupancy.



ZERO HEROES

The Gatefold project in west London is set to be Willmott Dixon Housing's first zero-defect development. And central to this ambitious plan are two very smart pieces of technology: Line of Balance and Field View

The 132-home Gatefold project in west London is part of the Old Vinyl Factory mixed-use scheme that occupies what was once home to music giant EMI's vinyl record pressing factory. It also housed EMI's Central Research Laboratory, which for decades produced advances in radar, medical science and computing.

Willmott Dixon Housing is continuing this spirit of innovation as Gatefold is the first project at which we aim to build a zero-defect development. We want to allow quicker construction, but most importantly, at the best possible quality. Smart use of technology is at the heart of this step into the future, so how is it being done?

Steve Skuse, new business director at Willmott Dixon Housing, says there are two key elements to the ambitious Gatefold scheme: training and rigorous checking. As highlighted in the People section (page 8), Willmott Dixon Housing has invested in launching the Housing Quality Academy at our existing 4Life Academy in Aston, Birmingham. The majority of Willmott Dixon employees (over 400 people), including all building managers, surveyors and supervisors, have attended training on specific aspects of the build process (dry-lining, electrical fixes, etc) at the HQA.

LINE OF BALANCE

This practical training allows us to deliver the second aspect of what Steve says is crucial to the success of Gatefold as a defect-free development: rigorous checking. This involves using a new assessment approach we have developed called Line of Balance (LOB).

This approach is used in the latter stages of housing development, when homes are being fitted out with kitchens, bathrooms, joinery and decoration. By using LOB to monitor and manage the flow of work we are able to accurately predict when homes will be finished – a crucial aspect for our customers.

Steve says: "Often on building sites, when you find something is wrong or someone's made a mistake, there isn't time to fix it and so you move onto the next stage and fix it later. This causes delays as you are having to

"IF THERE IS AN ALTERATION IN THE FIT-OUT WORK, LOB WILL RECALCULATE WHAT STEPS YOU NEED TO TAKE AND THE MANPOWER NEEDED TO CATCH UP"
Scott Prentice



Left Management trainee Tom Wakelin uses Field View on the Gatefold site

Above A tablet shows the Field View interface

Below Assistant building manager Scott Prentice analyses the Line of Balance data



cut into decorated walls in carpeted rooms to, say, relocate a socket. You've then got to redecorate and reclean. Our Line of Balance approach with weekly reviews is intended to put a stop to this wasted time and effort."

Scott Prentice is an assistant building manager on the Gatefold project and uses Line of Balance every day. He says the approach has worked exactly as planned. "Line of Balance allows you to do more and have greater certainty of work for subcontractors," he says.

Although the use of LOB means subcontractors have to work in a different way than they are perhaps used to, Scott says there have been few issues in effectively implementing the system and sticking to the construction schedule. He says the flexibility of the system is crucial. "If there is an alteration in the fit-out work, or a delay, LOB will recalculate what steps you need to take and the manpower needed to catch back up and hit the completion date."

FIELD VIEW

Another Willmott Dixon Housing innovation helping to ensure the Gatefold project remains defect-free is Field View. The tablet-based system allows projects to be managed on site in real time, with the database of live drawings on the tablet allowing work to be checked and flagged for rectification direct to the relevant tradesman as required. As Field View tablets are web-enabled, building managers can complete tasks as they go. This saves hours of valuable time in administration that was formerly completed on return to the office.

Ravinder Gill is a senior building manager at Gatefold and says Field View is already his "best friend on site" due to the time it saves.

Tom Wakelin is a management trainee at Willmott Dixon Housing and has been using Field View since joining Willmott Dixon in October 2014. He says: "It is simply a great bit of kit. It allows me to be outside on site as much as possible and cuts out so much that I would otherwise have to go back to the office to do."

An example of this is issuing site permits. "If someone wants to work at height, for instance, but doesn't have the permit, previously you'd have had to take up time going to the site office and writing this out by hand. Now, I can do it all there and then on the Field View tablet, so you don't cause unnecessary delays and affect productivity."



SITE SMART

A brief guide to the four technologies radically reshaping the way we work

	WHAT?	WHEN?	WHY?	WHERE?	HOW?	WHO?
BIM	Building Information Modelling (BIM) technology is an accurate virtual model of a building digitally constructed. This model can be used for planning, design, construction and operation of the facility.	The more advanced use of BIM – level 2 – will be required on all government-funded projects from April 2016.	BIM helps the project team to visualise what is to be built, and to identify any potential design, construction, or operational issues before they start on site. This is especially valuable when the client is considering alterations.	Willmott Dixon has used BIM since 2008 on schools and hospitals. We have undertaken substantial preparation to ensure we have the expertise and processes to maximise the benefits of BIM level 2 on housing projects.	We have invested resources in developing our knowledge base and training our staff and suppliers to make the most of BIM level 2. We are also working with clients to ensure they are comfortable with their role in the new approach.	Richard Kelsey is head of BIM at Willmott Dixon Housing: "As well as identifying any design 'clashes', the use of BIM also simplifies maintenance once the building is occupied. Our clients are raving about it," he says.
LINE OF BALANCE	We have developed a Line of Balance tool to manage and monitor the fit-out and final delivery of housing units to our clients. This allows us to plan a consistent flow of work.	LOB is used in the latter stages of development, when homes are being fitted out with kitchens, bathrooms and decoration. These tasks become quite repetitive, so LOB takes its cue from vehicle manufacture.	By using LOB to manage the flow of work, we are able to accurately predict when homes will be finished – a crucial aspect for our customers.	We have been introducing the use of LOB on our housing sites over the past year.	For example, on our flagship Gatefold project in Hayes, London, the use of LOB by our building managers has been crucial in ensuring no wasted time and effort on correcting earlier construction mistakes.	Scott Prentice is an assistant building manager on the Gatefold project. He says the approach has done exactly as planned. "If there is an alteration in the fit-out work, or a delay, LOB will recalculate what steps you need to take."
FIELD VIEW	Field View is a web-based system developed by Willmott Dixon that is operated through a handheld tablet. It is the basis of our quality, delivery, commissioning, snagging and handover procedure.	Our building managers use Field View whenever they are doing site inspections.	Projects can be managed on site in real time, with the database of live drawings on the tablet allowing work to be checked and flagged for rectification direct to the relevant tradesman.	As Field View tablets are web-enabled, building managers can complete tasks as they go. This saves hours of valuable time in administration that was formerly completed on return to the office.	All snagging items are automatically recorded by Field View onto the contractor database and tracked until completed by the relevant trade contractor.	Ravinder Gill, senior building manager, says it is already his "best friend on site" due to the time it saves. "I can annotate the drawing and send an email to the relevant subcontractor there and then."
MIPROJECT & MIAFTERCARE	MiProject and MiAftercare are unique to Willmott Dixon. They are an award-winning, one-stop-shop portal for efficiently capturing, organising, using and reporting on performance targets, procedures and forms.	Previously our operatives were capturing data on 56 digital platforms. Now information is entered once across the whole company, removing duplication and improving project management and client liaison.	MiProject and MiAftercare will significantly improve our efficiency and effectiveness. They will also improve transparency and hence our relationship with our customers.	MiProject has been coming into its own in client meetings as we are able to show them detailed aspects of their project at the touch of a button. Queries that may have taken weeks now take moments.	MiProject helps during the construction phase and the data collected during this process is made available to the client through the MiAftercare platform. This allows any defects to be logged and monitored.	Chris Farr is Scape framework manager for the North at Willmott Dixon Construction and uses MiProject daily. "It has revolutionised the way we use data and are able to quickly and clearly present to clients what we do."



THE NEXT LEVEL

BIM level 2 is set to have huge benefits, both for project teams and clients

Projects can be finished more quickly, at less cost and to a higher standard using Building Information Modelling (BIM). Willmott Dixon has been using this approach since 2008 to build schools and hospitals, but its use in residential projects in the UK is still in its infancy.

This is all set to change, says Richard Kelsey, head of BIM at Willmott Dixon Housing: "The use of BIM level 2 will be mandatory on all government-funded projects from April 2016 – this includes housing."

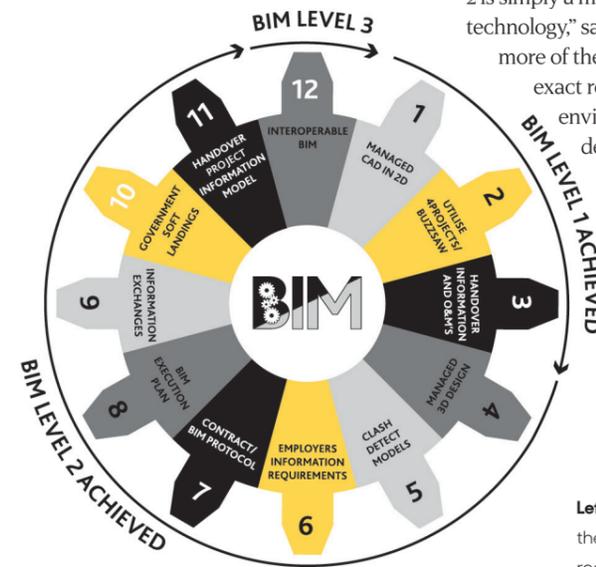
So what is BIM level 2 and how will its use improve UK housebuilding? "BIM level 2 is simply a more advanced use of the technology," says Richard. "It captures many more of the benefits of designing a 3D

exact replica of a building in a virtual environment, down to the last detail. BIM is used for planning, designing, constructing and operating a facility. It helps identify any design or construction issues, such as clashes of M&E services, before they become an expensive problem on site. It also simplifies maintenance once the building is occupied." Richard says Willmott Dixon

has been working hard to ensure it, its supplier chain and its clients are ready to maximise the benefits. "Our internal knowledge base on BIM is being worked up, we are working with our subcontractors to share this expertise and taking our clients through the process to ensure they are aware of the potential that BIM offers and the additional design steps open to us that will save time and money."

Recent projects where Willmott Dixon has used BIM – such as the 132-home Gatefold project in west London – have seen thousands of potential design "clashes" resolved on screen and Richard says clients are "raving" about the benefits.

LEVEL 2 CAPTURES MANY MORE OF THE BENEFITS OF DESIGNING A 3D EXACT REPLICA OF A BUILDING IN A VIRTUAL ENVIRONMENT, DOWN TO THE LAST DETAIL
Richard Kelsey



Left Willmott Dixon's BIM Wheel shows the steps that need to be taken to reach BIM levels 1, 2 and 3

DATA REVOLUTION

MiProject and MiAftercare are massive timesavers and invaluable tools for clients

MiProject has been developed by Willmott Dixon and is a one-stop-shop to ensure project data is only entered once across the business. This may sound a relatively simple step, but MiProject replaces a system where our staff were entering the same data up to six times across 56 different systems – a situation common across the construction sector.

"MiProject was introduced from August 2014 and the second version was rolled out in December 2015," says Scott Corey, Scape director and the man behind MiProject. "It was an obvious move forward for us: it makes staff much more efficient and gives us the audited statistics to demonstrate to clients we are great at what we do."



Chris Farr, Scape framework manager for the north at Willmott Dixon Construction, says that he uses MiProject "at least once or twice a day" and that "it has revolutionised the way we use our data and are able to quickly and clearly present to clients what we do". He

adds: "There is nothing else out there in the marketplace like MiProject – it is a massive timesaver. Clients also really appreciate the level of detail we can give them in a meeting on demand, for instance, on how much of their money is being spent locally or the number of apprentices we have."

MiAftercare was launched as part of the second phase of MiProject. It provides the client with a searchable database of all information on a building to log any defects and ensure a trouble-free occupancy. "Previously we were printing £1 million-worth of documents each year to pass to clients," says Scott. "Now we are giving clients a searchable, digital resource that saves us time and money and improves client relations."

WILLMOTT DIXON HOUSING: REGIONS

Midlands and North

New business director:

Frances McConnell
Central Office
Bromwich Court
Gorse Lane
Coleshill
Birmingham B46 1JU
Tel: 01675 461700

London and Northern Home Counties

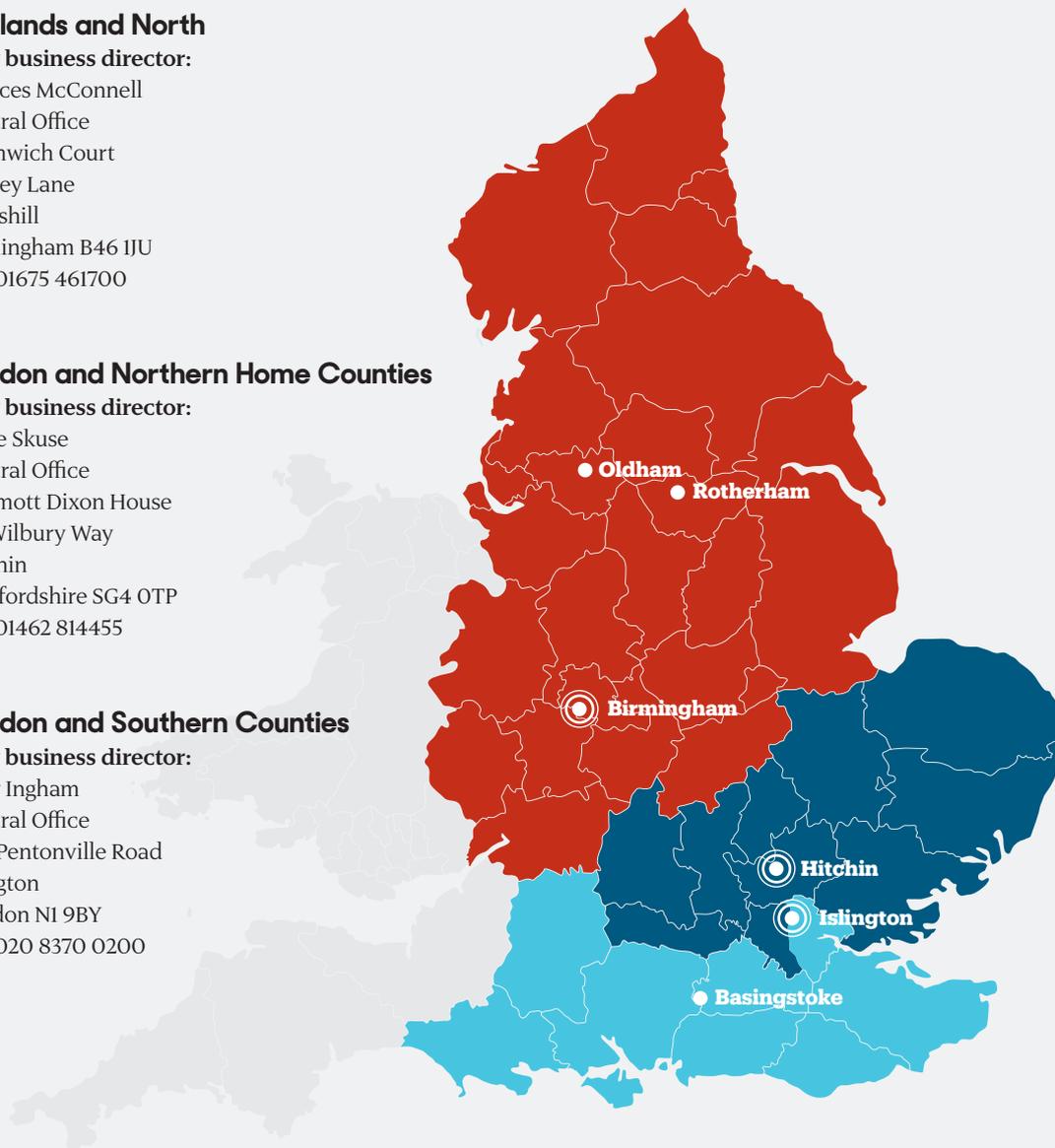
New business director:

Steve Skuse
Central Office
Willmott Dixon House
80 Wilbury Way
Hitchin
Hertfordshire SG4 0TP
Tel: 01462 814455

London and Southern Counties

New business director:

Sally Ingham
Central Office
44a Pentonville Road
Islington
London N1 9BY
Tel: 020 8370 0200



For further information on Willmott Dixon Housing in your area, please contact the relevant office above.