

# Role of Technology in Sir Robert M<sup>c</sup>Alpine's Evolution :



**Vince Lydon**

Deputy Managing Director  
(London Region)



**Nick Leach**

Strategic BIM Manager

Proudly building Britain's future heritage

**Sir Robert  
M<sup>c</sup>ALPINE**

# Sir Robert M<sup>c</sup>Alpine

- Established in 1869
- First contract the repair of a mine chimney for £2.45
- £1b turnover in 2019
- 1500 employees



Our reputation is founded on 150 years of technical excellence and innovation, our entrepreneurial spirit and our future-focused approach.

# Building for success

Launched in 2018 our five-year strategy supports our ambition to be:

**The best builder**



**The best place to work**





# The M<sup>c</sup>Alpine technology journey

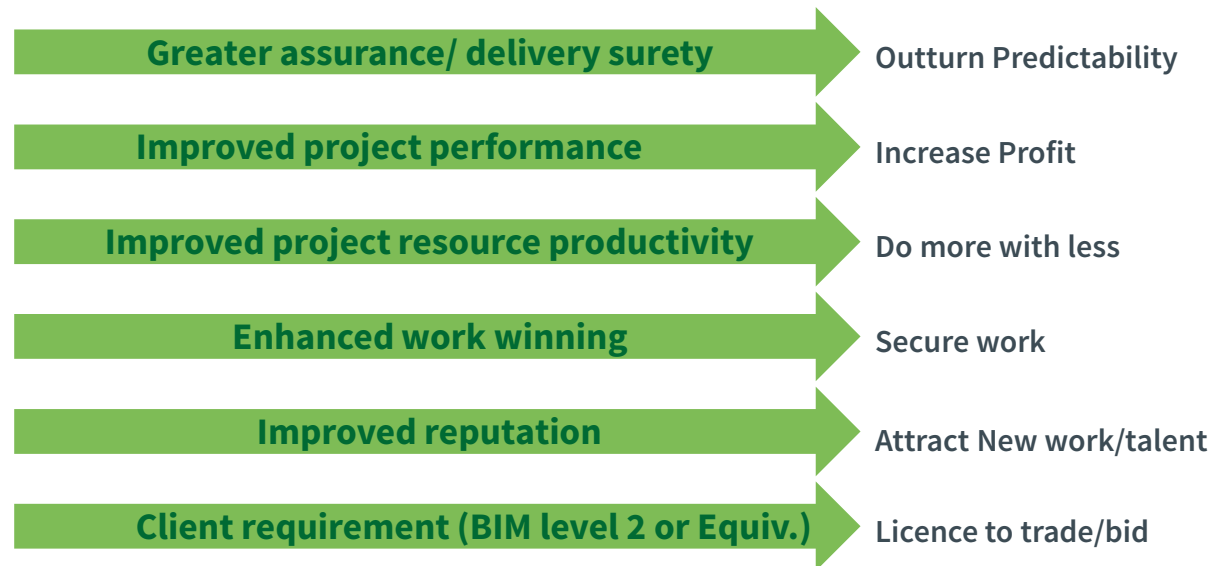




# How the journey began...

## Compelling Business Case

Desire for exceptional Project performance was driver for BIM adoption





## August 2017...

Recommendations To the Board	
Submitted	22
Endorsed	21
Delivered	17
In progress	4



## Key recommendations...

- Establish a minimum Group Standard which is clear, consistent and cannot be diluted – **the SRM BIM Maturity Metric**
  - Invest in new resources / new roles to manage the strategy and upskill the project teams
  - Measure progress and report performance on a regular basis to drive ongoing engagement
  - Provide a variety of learning resources to upskill and engage the project teams
  - Enable project teams with the necessary software and technology hardware
- 
- 

# Driving the understanding




- Face to face learning
- 4 Regional workshops conducted
- Over 150 attendees of Senior management
- Launch of the BIM Maturity Menu Metric





# BIM maturity menu



**BIM Maturity**

Enablers

- 01 Communication & Engagement
- 02 Design Development
- 03 Design Review
- 04 Site Logistics Methodology
- 05 Programme Validation
- 06 Health & Safety
- 07 Mobile Field Applications
- 08 Cost & Procurement
- 09 Performance Analysis
- 10 Digital Handover

Accountability

L	Lead Accountability
S	Support Role

Deliverables

03

Design Review

WORK WINNING
PRE CONSTRUCTION
CONSTRUCTION
HANDOVER & AFTERCARE

BIM MATURITY

0  
Non existent

Design reviews are carried out from 2D documentation only.

**Definition**

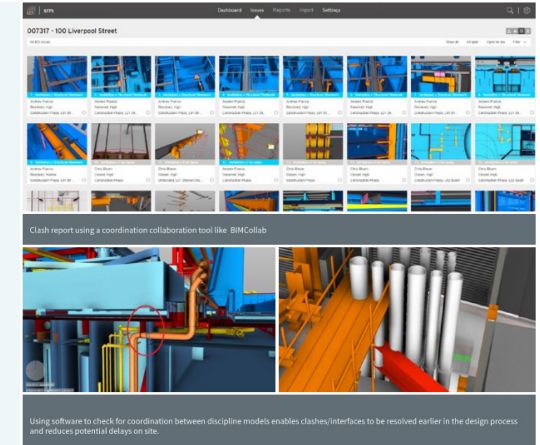
3D Models are used to identify clashes either visually or through automated built-in rule sets available in tools like Autodesk Navisworks. Clash resolution is an iterative process leading to improved design coordination throughout the project lifecycle.

**Benefits**

- Increased accuracy of design
- Risk identification
- Early evaluation of design coordination
- Reduced re-work on site

**Build Sure Mapping**

- ☑ Safe
- ☑ On time
- ☑ Sustainable



Clash report using a coordination collaboration tool like BIMCollab

Using software to check for coordination between discipline models enables clashes/interfaces to be resolved earlier in the design process and reduces potential delays on site.

Lead Accountability

Design Management

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Support Role

- BIM Management
- Building Services
- Construction Management
- Document Control
- Health & Safety
- Package Management
- Project Management
- Quality

Version 2.0

8 BIM Project Maturity Menu

32 BIM Project Maturity Menu

## Digital BIM journey targets



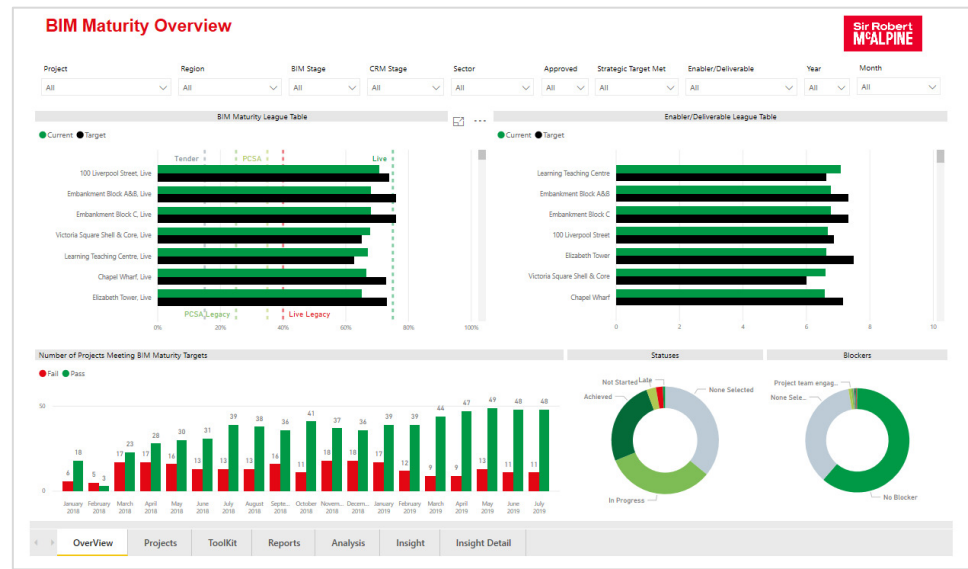
**Business Target:** Improve efficiency, productivity and outturn predictability through industry-leading use of BIM

**Year 1 Target (2018):** All new projects to reach a minimum **40%** target as measured against the SRM defined **BIM Maturity Metric**

**Year 2 Target (2019):** All new projects to reach a minimum **75%** target as measured against the SRM defined **BIM Maturity Metric**

# Utilising BIM maturity data captured

Monthly project BIM maturity reporting is captured in an App...

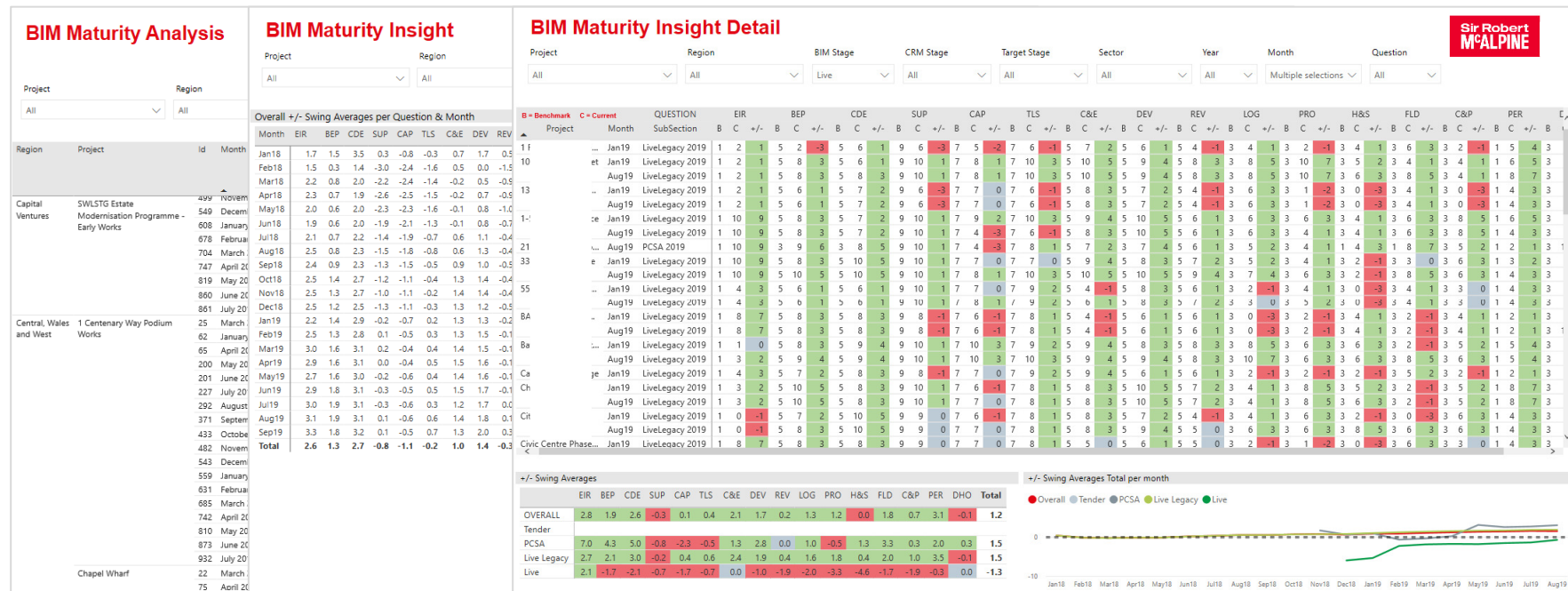


...and results are displayed graphically in PowerBI

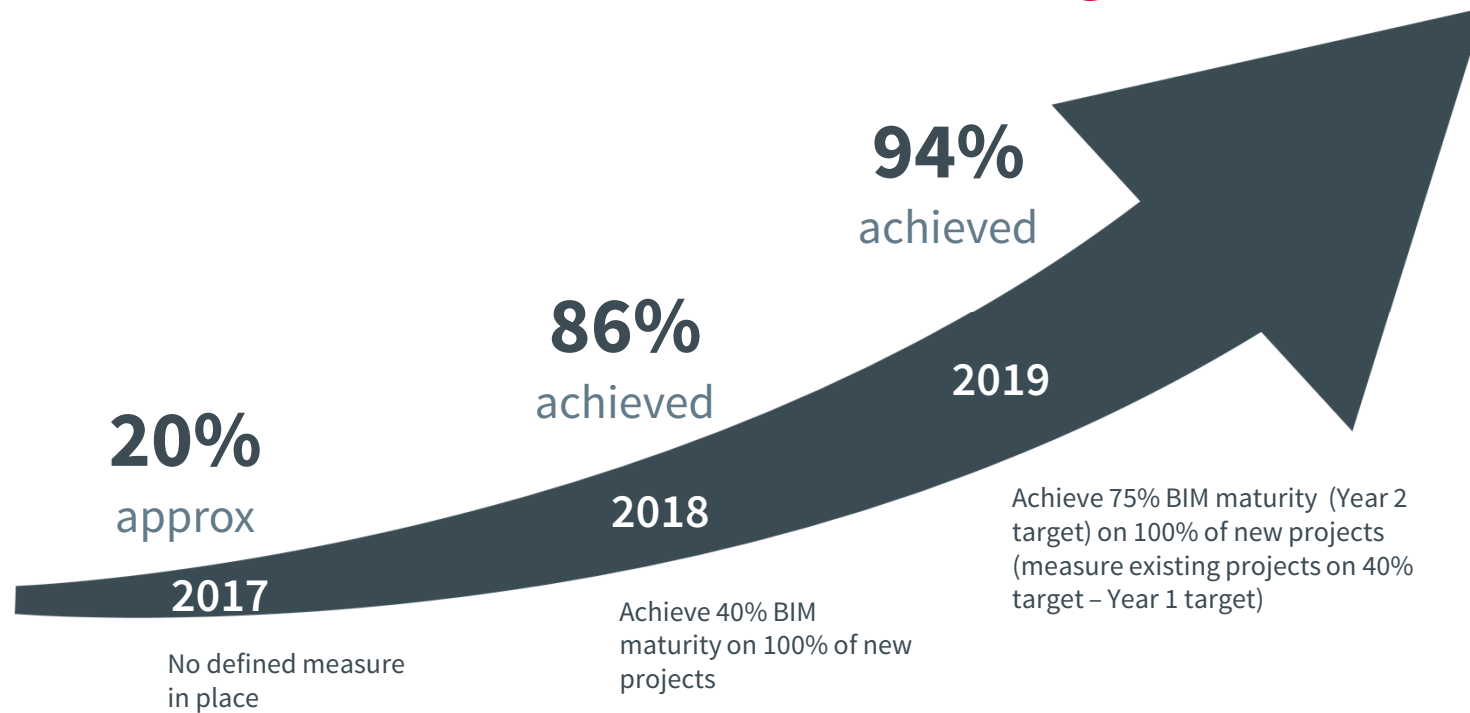


# Utilising BIM maturity data captured

Further in depth analysis can be harnessed from the way data can be viewed...



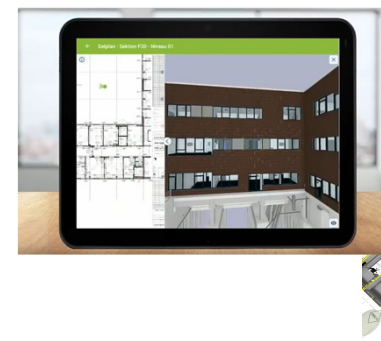
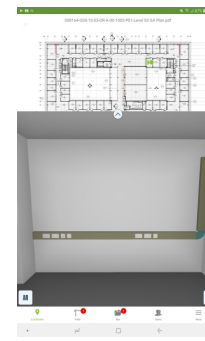
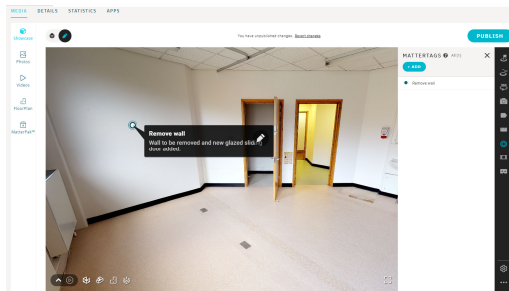
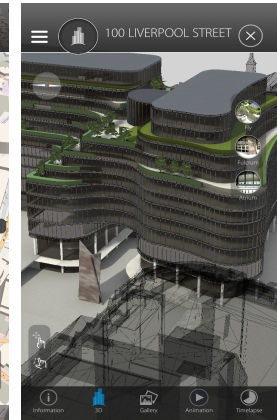
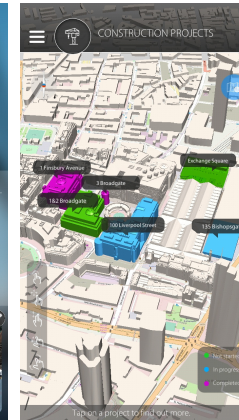
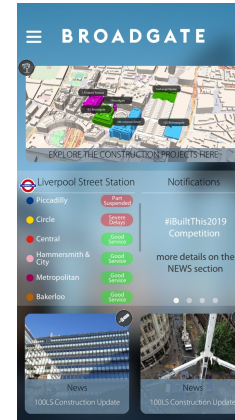
# Did we achieve our BIM maturity target?





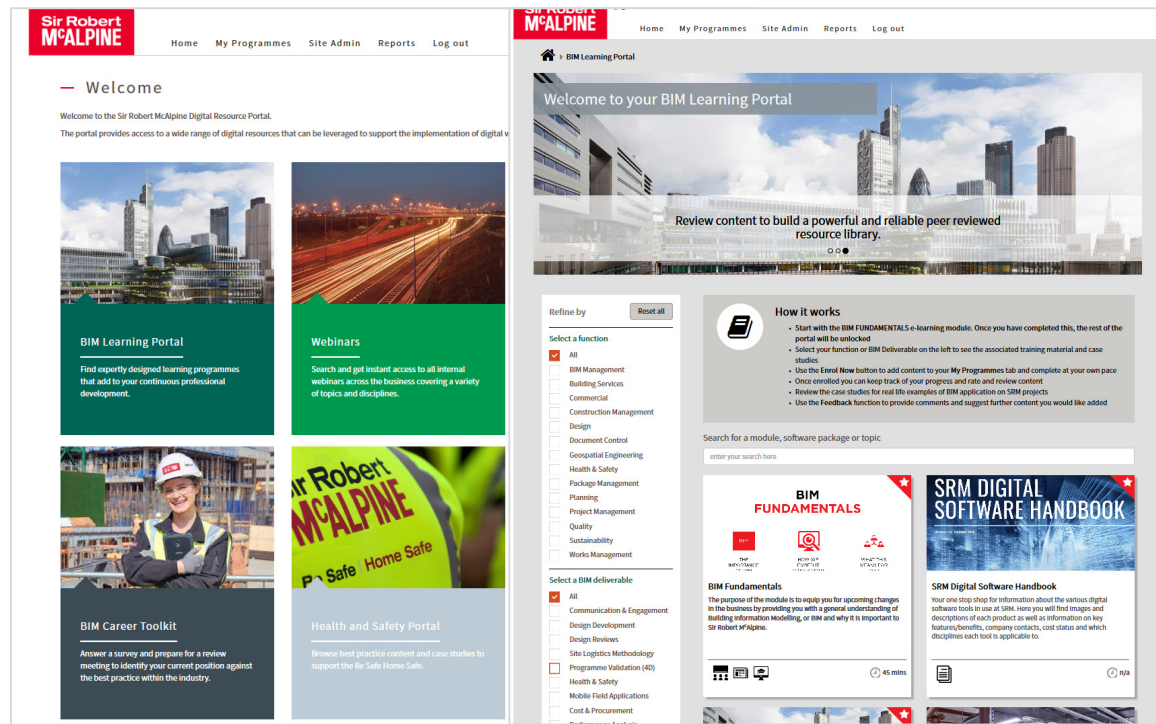


# Adopting the tools we have



Working closely with IT/Business systems in the requirements for upgrading hardware – Upgraded Mobiles/Tablet's for example

# Enabling the implementation

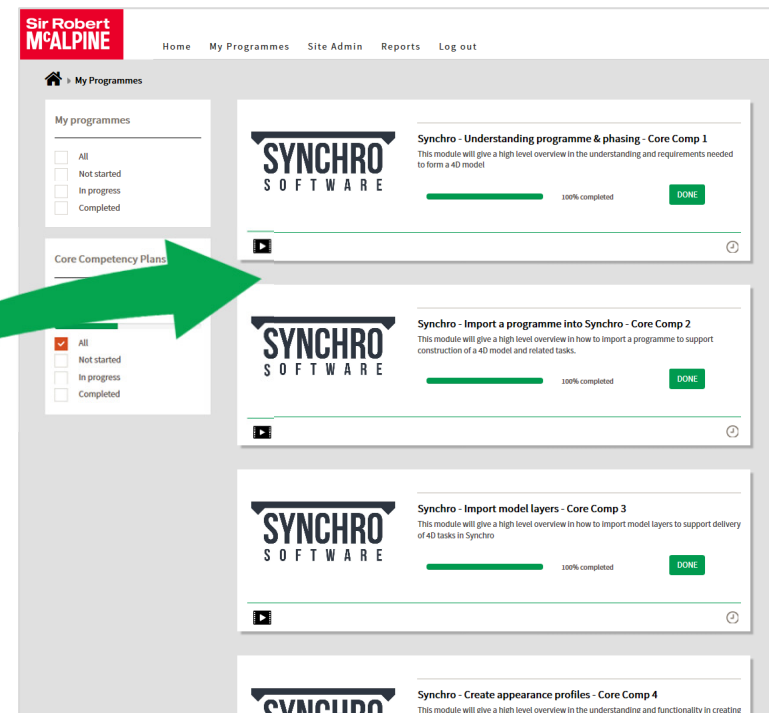
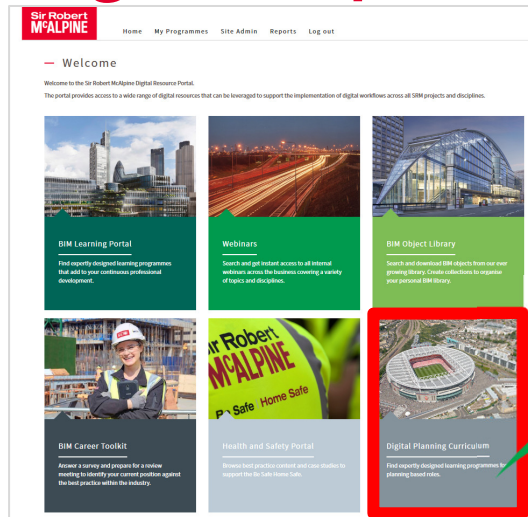


Created a Digital learning portal for training resource internally for business

8,000 +  
VISITS TO THE  
DIGITAL LEARNING PORTAL

1,200 +  
COMPLETED THE  
BIM FUNDAMENTALS  
E-LEARNING MODULE

# Enabling the implementation



## 5 Step Process

- Initial Contact & awareness made
- Presentation/engagement conducted
- Individual Core Competency Modules agreed
- Roadmaps/Strategy Plans Formed
- Reporting on Progress Ongoing

# Supply chain portal launched

“It was a very interesting day finding out the views and experiences of other subcontractors”

Andrew Harrison – Technical Director  
Hathaway Roofing Ltd

“We were impressed with the commitment SRM has made to its digital transformation. I am particularly interested in the way in which you are extending this transformation through your supply chain”



Nicola Pearson – Head of Change and Knowledge Transfer  
Centre for Digital Built Britain (CDBB)

“Very informative, and a first for us from any Main Contractor”

Gary Fry – Technical Director  
Hillcrest Structural Limited

“A refreshing approach”

Andrew Wright – Design Manager  
Thorp Precast Limited





# Supply chain portal

Home My Account Log Out

Welcome to the Supply Chain BIM Portal

Search streamlined learning materials quickly and easily through your laptop, tablet or mobile device.

**MANDATORY TASKS**

<b>Business Details</b> 0/4 mins Please provide details of your business type, contact etc. here.	<b>PAS1192 Certification</b> If your organisation has been formally certified for your PAS1192 compliance, you do not need to complete the BIM Fundamentals course prior to completing the Capability Assessment.	<b>BIM Fundamentals</b> 45 mins All the purpose of the module is to provide you with a general understanding of Building Information Modelling, or BIM and what it is required to be linked to McAlpine.	<b>Survey</b> 10 mins Capability Assessment People: 1.0 Process: 2.0 Technology: 1.0 Role: 2.0
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**RESULTS**

Thank you for completing the BIM Capability Assessment. You have not achieved the expected scores overall, and there may be a significant issue with your ability to deliver the project information requirements. You should review these sections immediately with your team and our team in order to remedy your situation. (Scroll left to view sections).

**RECOMMENDED TASKS**

**BIM Implementation**  
 This module will build upon the awareness module and will focus on the key 3 enablers of process, technology and people required for successful BIM implementation.

**BIM Awareness**  
 If you need further support to enable your BIM strategy please contact us using the form below and we will get in touch to discuss your requirements.

**OPTIONAL TASKS**

**BIM Protocols**  
 BIM can provide a real day, face to face workshops to train you with regards to the CIC BIM Protocol. It is a one and done for your business. Please register your details below and the Regional BIM Manager will contact you. You do not need to make a commitment at this time.

Privacy | Accessibility | Feedback | Service Desk

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 Promote Street, London, UK, E2 0JG

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Reports > Visits Report

Visits Report

Visits in last 24 hours 7	Visits in last 7 days 18	Visits in last 14 days 19	Visits since launch 1773
BIM Fundamentals Completions 216	BIM Fundamentals in progress 38	Total number of users 577	

**Q9: Do you contribute to / develop a project model?**

Select one. You must make a selection to continue.

<b>PEOPLE</b> Leadership & Management Resources Training & Upskilling	Designs are not formally coordinated with other parties
<b>PROCESS</b> Information Modelling Information Management Question 2 of 11	Design coordination is carried out from 2D drawings only
<b>TECHNOLOGY</b> IT Infrastructure IT Security Systems Performance Software	Unstructured clash detection and coordination reviews are carried out
	We have a capability assessment aligned with PAS1192-2 that we use on a case by case basis only
	All projects are modelled using a standard object library and meet requirements set out in PAS 1192-2
	In addition, we model using parametric objects and create bespoke elements

PROGRESS 9 / 49

Targeted **200** sub contractors in **2019**

190 contractors attended face to face workshops across Regions to date

Target for **2020** to aim for total of 250 Sub-contractors



# Supply chain portal

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**Sir Robert McALPINE**

Home Projects

### Projects

Search:

Name	Reference	Cost Centre	Start Date	End Date	Active	
Morelio 2	003801	003801	2019-07-18	2021-07-18	Yes	Work Packages <a href="#">↗</a>
Z1 Moorfields	006562	006562	2019-01-05	2022-01-01	Yes	Work Packages <a href="#">↗</a>
Elizabeth Tower	007371	007371	2019-12-17	2020-12-17	Yes	Work Packages <a href="#">↗</a>
Iona Rose House	007421	007421	2019-01-01	2021-12-01	Yes	Work Packages <a href="#">↗</a>
Monkbridge	007437	007437	2019-09-01	2021-01-01	Yes	Work Packages <a href="#">↗</a>
Project Pegasus	007961	007961	2019-01-01	2020-12-01	Yes	Work Packages <a href="#">↗</a>
Mustard Wharf	007966	007966	2019-01-01	2021-01-01	Yes	Work Packages <a href="#">↗</a>
Edinburgh Park Phase 1	008138	008138	2019-01-09	2021-01-01	Yes	Work Packages <a href="#">↗</a>
Birtchwood	008661	008661	2019-07-18	2021-07-18	Yes	Work Packages <a href="#">↗</a>
Embankment West	008689	008689	2019-01-01	2021-01-01	Yes	Work Packages <a href="#">↗</a>

Showing 1 to 10 of 12 entries Previous 1 2 Next

[+ ADD NEW](#)

Home Capability Assessment Questions

### Questions

#	Category	Sub Category	Question	Target Score	Critical
1	People	Leadership and Management	How is BIM driven within your organisation?	1	<input type="checkbox"/>
2	People	Leadership and Management	Do you have a BIM Strategy in your organisation?	4	<input type="checkbox"/>
3	People	Resources	How does BIM affect staffing / resources?	6	<input checked="" type="checkbox"/>
4	People	Resources	Are there structured and defined roles within your BIM team?	3	<input type="checkbox"/>
5	People	Training & Upskilling	Do you train your staff in BIM and the use of BIM tools?	2	<input checked="" type="checkbox"/>
6	People	Training & Upskilling	How do you assess the BIM competency of your staff?	1	<input type="checkbox"/>
7	People	Training & Upskilling	Do you carry out capability assessments of your supply chain?	2	<input type="checkbox"/>
8	Process	Information Modelling	How is design coordination managed?	4	<input checked="" type="checkbox"/>
9	Process	Information Modelling	What clash detection processes do you use?		
10	Process	Information Modelling	Do you contribute to develop a project model?		
11	Process	Information Modelling	How do you manage the Level of Detail?		
12	Process	Information Modelling	Do you contribute to / develop Asset Information Models?		
13	Process	Information Modelling	Do you have a process for naming model files and documents?		
14	Process	Information Modelling	What is your experience in producing a project model?		
15	Process	Information Modelling	What is your experience in sharing a project model?		
16	Process	Information Modelling	Do you implement 4D (planning and control)?		
17	Process	Information Modelling	Do you implement 5D (Quantity take off)?		
18	Process	Information Management	How do you store share information with external organisations?		
19	Process	Information Management	What's your experience of checking, reviewing and approving the BIM Environment (CDE)?		
20	Process	Information Management	Sharing Approval		
21	Process	Information Management	BIM Protocols		
22	Technology	IT Infrastructure	How do you manage your IT network?		
23	Technology	IT Infrastructure	How is your software maintained?		
24	Technology	IT Security	How do you use removable media (e.g. USB)?		
25	Technology	IT Security	How do you manage data security?		
26	Technology	IT Security	How do you manage local machine security?		
27	Technology	IT Security	Which statement reflects your approach to disaster recovery?		
28	Technology	Systems Performance	What solutions and policies you have in place to ensure system performance?		

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Home Capability Assessment Critical Questions Report

### Critical Questions Report

#	Category	Sub Category	Question	Target Score	# Below Target
3	People	Resources	How does BIM affect staffing / resources?	6	63
5	People	Training & Upskilling	Do you train your staff in BIM and the use of BIM tools?	2	82
8	Process	Information Modelling	How is design coordination managed?	4	85
9	Process	Information Modelling	What clash detection processes do you use for design co-ordination?	4	91
10	Process	Information Modelling	Do you contribute to / develop a project model?	2	62
13	Process	Information Modelling	Do you have a process for naming model files and documents?	8	109
16	Process	Information Management	How do you store share information with external organisations?	2	44
20	Process	Information Management	Sharing Approval	4	79
21	Process	Information Management	BIM Protocols	6	111
25	Technology	IT Security	How do you manage data security?	2	28
26	Technology	IT Security	How do you manage local machine security (e.g. anti-virus, firewalls)?	2	13
27	Technology	IT Security	Which statement reflects your approach to disaster recovery?	2	19

[EXPORT TO CSV](#)

# Evolution of BIM resources



Business process and standards verified by BSI

Oct 2019  
**41**



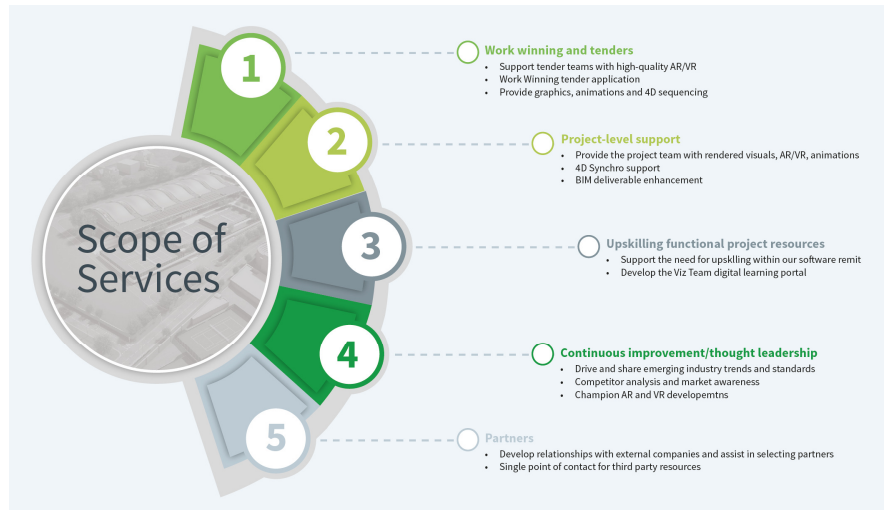
Oct 2018  
**25**



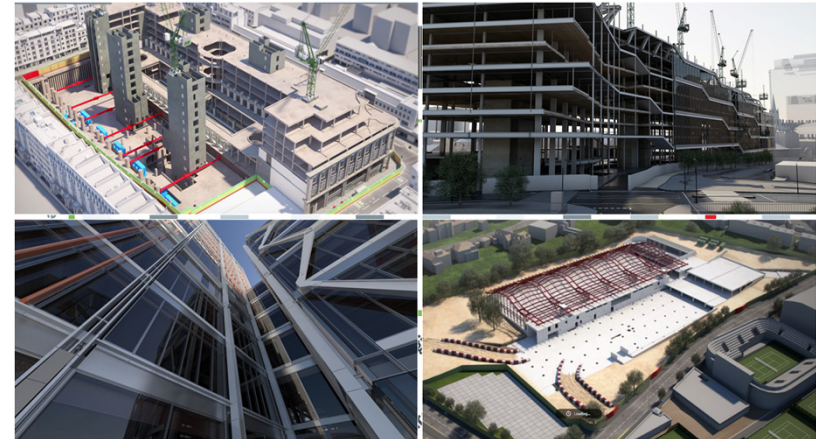
Oct 2017  
**12**

- Head of BIM
- 2 Strategic BIM Managers
- 4 Regional BIM Managers
- 19 BIM Managers
- 5 BIM Coordinators
- 4 Graduate roles
- 6 Visualisation Specialists

# Visualisation Team



## Software capabilities within the Visualisation team





<b>3DS Max</b>	Modelling, rendering and animating - V-Ray render engine used
<b>InfraWorks</b>	Terrain modelling based on Google Earth
<b>Photoshop</b>	Photo editing
<b>After Effects</b>	Post production
<b>Premiere Pro</b>	Video editing
<b>Unity</b>	Game engine - used for creating interactive apps
<b>Unreal</b>	Games engine - used for creating interactive apps and VR/AR production
<b>TwinMotion</b>	Live link to model - real time rendering with fast outputs
<b>Synchro</b>	4D Planning software
<b>Revit</b>	Modelling
<b>NavisWorks</b>	Model interrogation





## Summary

- Ensuring both a top down and bottom up approach
  - Eliminate the blockers before they arise
  - Use technology for a purpose not just for the sake of using it
  - Understand what you can use the data for and outputs required
  - Involve the wider team (Internal/supply chain)
  - Drive the importance around skilled Digitally enabled people on projects (Internally & Externally)
  - Ensure individuals know what is available to them – hardware/software
- 
- 

# Looking forward...

- Driving continued consistency in how we use digital tools and technology
- Harness more ways of data production to inform greater business decisions and project efficiencies
- Greater functional/role training plans and agendas developed for Digital competency
- Utilise as the foundations for supporting the wider business digital agenda and culture

The screenshot shows a news article from Construction News titled "McAlpine: 25 firms sign up to data-sharing project" by David Price, dated 09 Dec 2019. The article features a photo of Paul Harmer, Sir Robert McAlpine's chief executive, and text stating that he has convinced 25 other companies to join a construction data-sharing platform. Below the article is a strategic framework grid with the following content:

Our 5-year strategy	Profitable growth through Build Sure	Trusted client and supply chain relationships	Stronger and		
	The best place to work	Industry leaders in our chosen sector	Technology and data to inspire and improve		
Our values	Honourable	Enterprising	Responsible	Teamwork	Excellence
Our vision	Proudly building Britain's future heritage				

At the bottom of the grid, there is a red banner with the text: "THE McALPINE WAY 2019-2024" and "SAFE ON TIME SUSTAINABLE QUALITY PROFITABLE". The Sir Robert McAlpine logo is also present.



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**We want to stay Competitive for next 150 years!**



**Thanks...**



**Vince Lydon**

Deputy Managing Director  
(London Region)



**Nick Leach**

Strategic BIM Manager

Proudly building Britain's future heritage

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McALPINE**