



Buildoffsite Water Hub

Shaun McCarthy OBE

30th August 2017

Welcome and context for the session

Shaun McCarthy

Chair

Supply Chain School

shaun@actionsustainability.com





Shaun McCarthy OBE



Director and part owner of a company specialising in sustainable supply chains IN London and Sydney. 2006-present



Sustainability advisor to Board chaired by the Mayor of London. 2008-16



Chair of the School with 45 industry partners and over 14,000 members, a virtual learning environment for sustainability since 2012 and offsite management in the construction sector since 2015



Chair of the official assurance body for the London 2012 sustainability programme, reporting to the Mayor of London and Olympics Minister. 2006-13



Chair Professional Standards Committee and non-exec director 2017-present

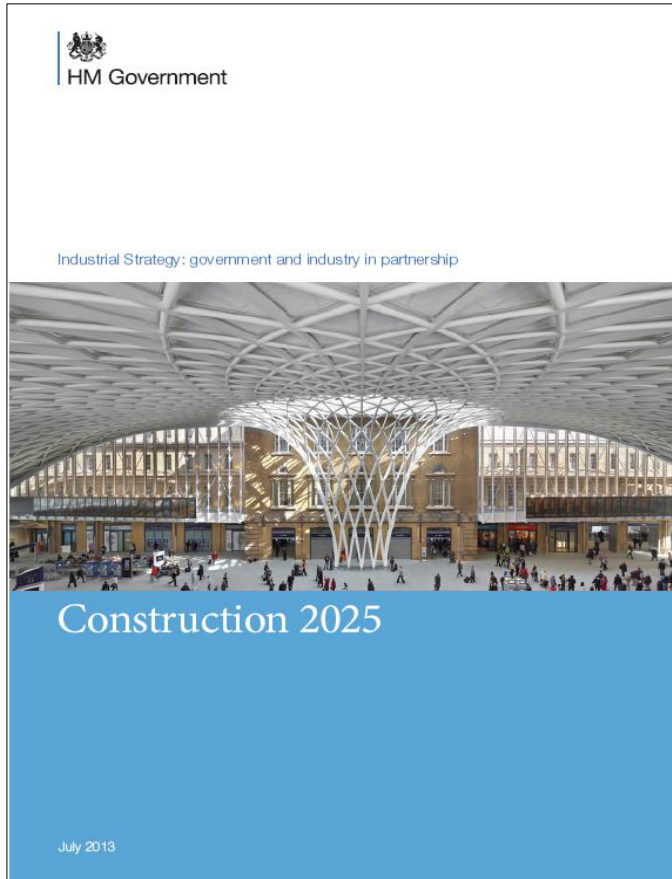


Advisor to executive board 2013-present

Meeting Construction 2025

Construction Industry Strategy

- Industrial strategy jointly agreed by government and industry in 2013
- By 2025, an industry that leads the world in low carbon and 'green' construction exports
- Emphasis on whole-life cost and retrofit, with reduced embodied carbon and better energy usage.
- The School helps you meet the challenging targets set out by the UK Construction Strategy 2025.



Construction Industrialisation

The need for change



Modernise or die

“The challenge the report sets us is to do things differently – to reduce the reliance on building in the same way that we have for decades if not centuries, with its heavy demand for on-site labour. We will not have the labour force to deliver what the country needs by working in those ways, and those ways will not create enough added value for clients or suppliers to allow construction firms to prosper, and make those investments in our people and performance.”

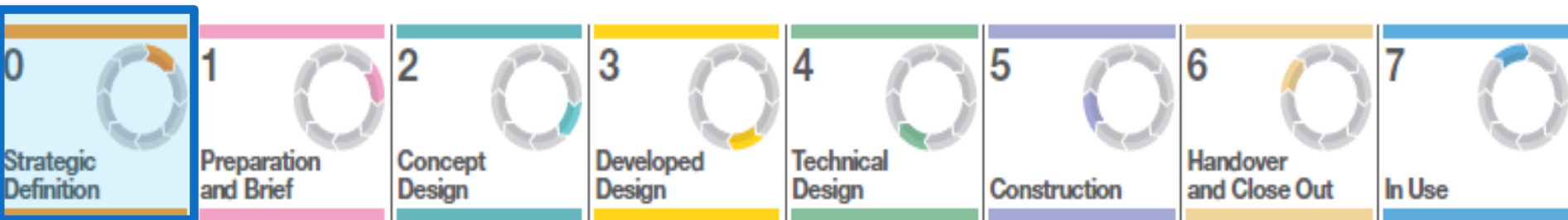
Andrew Wolstenholme OBE

Co-Chair, Construction Leadership Council



Benefits

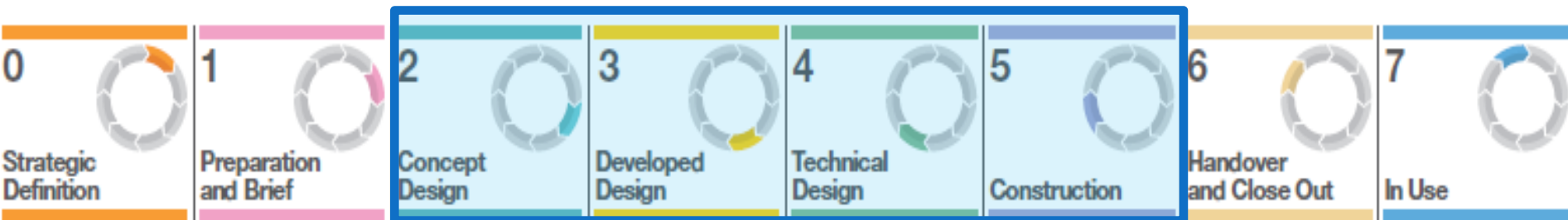
- 20% shorter programme
- 28% cost reduction
- Reduced embodied CO2





Benefits

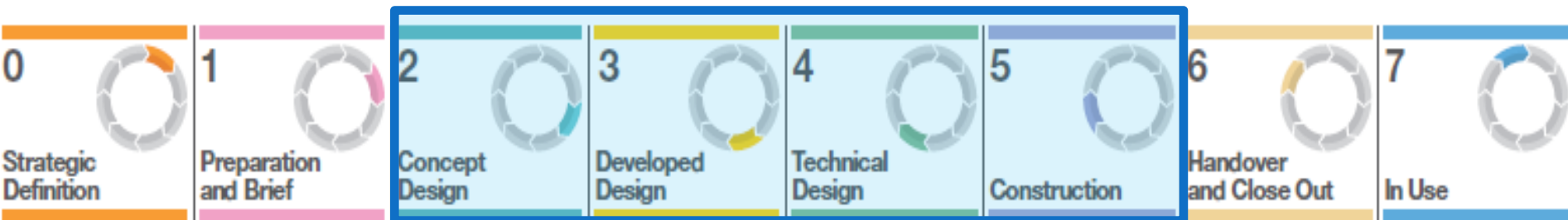
- 44% reduction in cost
- 73% reduction in defects
- 60% reduction in time





Benefits

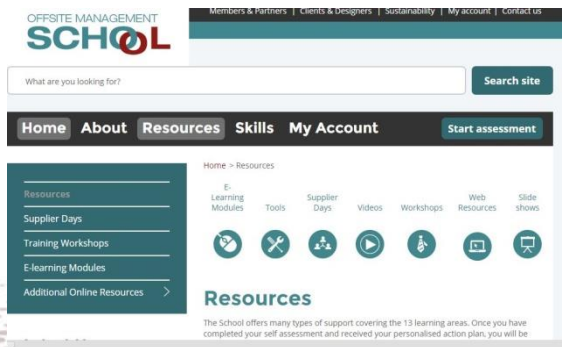
- 90% reduction in waste
- Certainty of cost & programme
- Reduced carbon emissions
- Greatly reduced noise and disruption
- Greatly improved build quality



Offsite School



- ✓ A virtual learning environment that aims to help construction suppliers and sub-contractors to develop their offsite knowledge and competence.
- ✓ Making us all better able to address the offsite challenges our industry face.
- ✓ E-learning, case studies, training workshops, Personalised Action Plan.
- ✓ **Free to Supplier Members and confidential.**



Part of a bigger picture



School “departments” for sustainability, offsite, management



Meeting your clients' sustainability requirements

We can help you to build, maintain and operate more sustainable buildings, infrastructure and homes.

Simply **register**, select your **country**, your **subject**, your **area of supply**, and our **Partners you sell to** and we'll link you to our award winning resource library that comprises e-learning, films, tools and learning resources with best in class knowledge on **sustainability**, **offsite construction** and **management** techniques to help you lead and embed change.

School in Numbers



2,009

Resources



98,234

Resources accessed



2,468

Member Companies



3,984

Individual Members



66

Partners



22,251

Registered Users

Delivering our vision

“The world class collaboration enabling a sustainable built environment”

Subject Matter	Target Audience	Accreditation	New knowledge
We will provide learning content that builds skills to deliver a sustainable built environment	We will deliver a School free at the point of use for anybody who works in, or may aspire to work in, the built environment sector	We will offer CPD accredited learning where appropriate and learning that contributes to professional qualifications. We will recognise members' effective participation in the School and work with the industry to promote recognition of School members	We will engage with industry, academia and research organisations to instigate and seed fund new research that can be translated into School learning content in the future
Leadership	Geographic reach	Partners	Funding
We will establish the School as the centre of excellence with respect to developing supply chains to deliver a sustainable built environment	We will seek global best practice to reach partners' supply chains across the UK and outside the UK where appropriate. Our delivery partner will respond to opportunities to franchise the School at their own cost and risk	We will seek partners who share the values of the School and who commit to share knowledge, contribute financially and in kind	We will fund the School from partner contributions, franchise fees and appropriate sources of government or industry funding. We will not ask members for money or allow commercial sponsorship of our learning content or activities

Our values

Collaborative	Progressive	Inspirational	Inclusive
We share knowledge and resources. Our direction is led by our partners and members.	We deliver measurable impact through dynamic leadership.	We inspire our members and partners to drive positive change.	We exemplify respect for the planet, our colleagues and wider society.

64 Partners leading our work

OFFSITE MANAGEMENT
SCHOOL



Online (Free!) Learning Environment



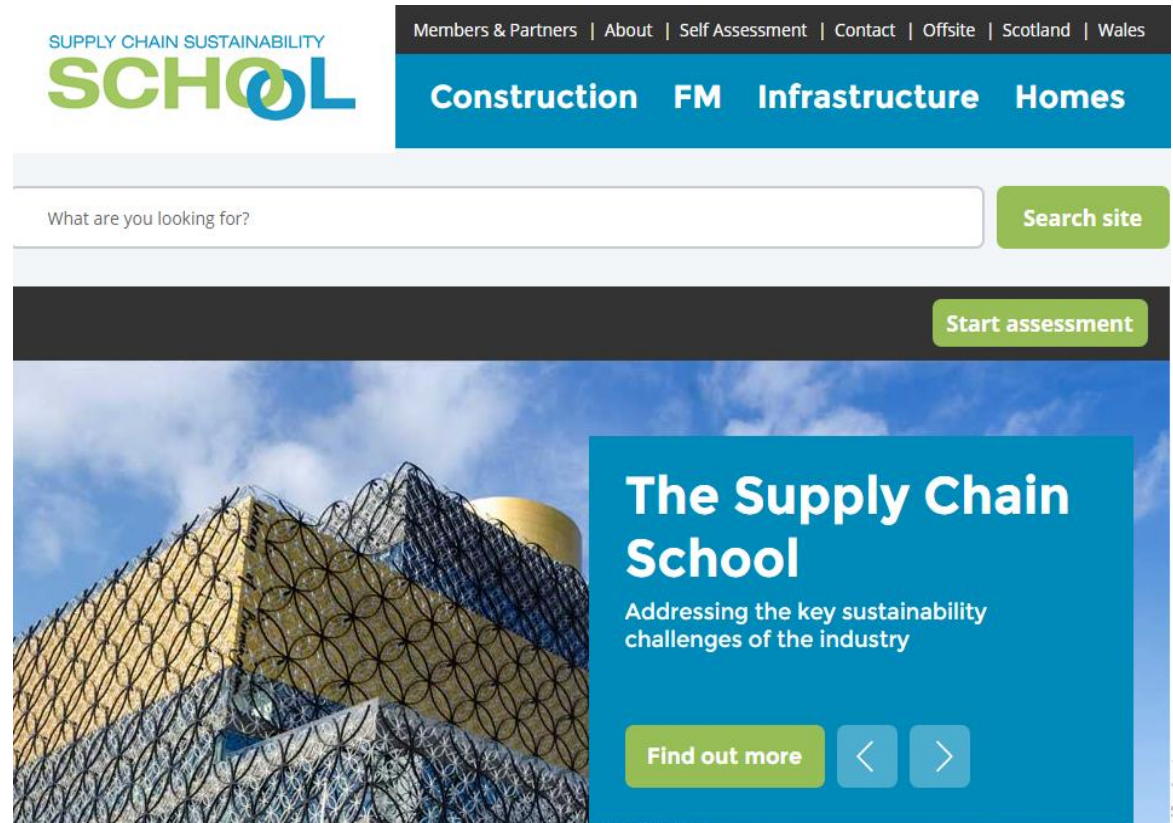
The School is a collaboration between clients, contractors and 1st tier suppliers who have a mutual interest in building the skills of their supply chains. **They pay for the School, so it's all FREE for you.**

Across the built environment...
There are 4 'built environment' schools.



The Schools are:

- **Construction**
- **FM**
- **Infrastructure**
- **Homes**



Management School

The Management School has its own unique resources.....




MANAGEMENT
SCHOOL

MANAGEMENT

[Sign Up](#)

[Login](#)

100's of leading resources to help you
to develop your leadership and
management skills and drive
sustainable change



Offsite School

The Offsite School has its own unique resources.....



School Board (9 elected members)

Delivery Partner

Partners

Departments (currently 3)

Category groups
(new)

SIGs, Horizon

Sector groups

Construction

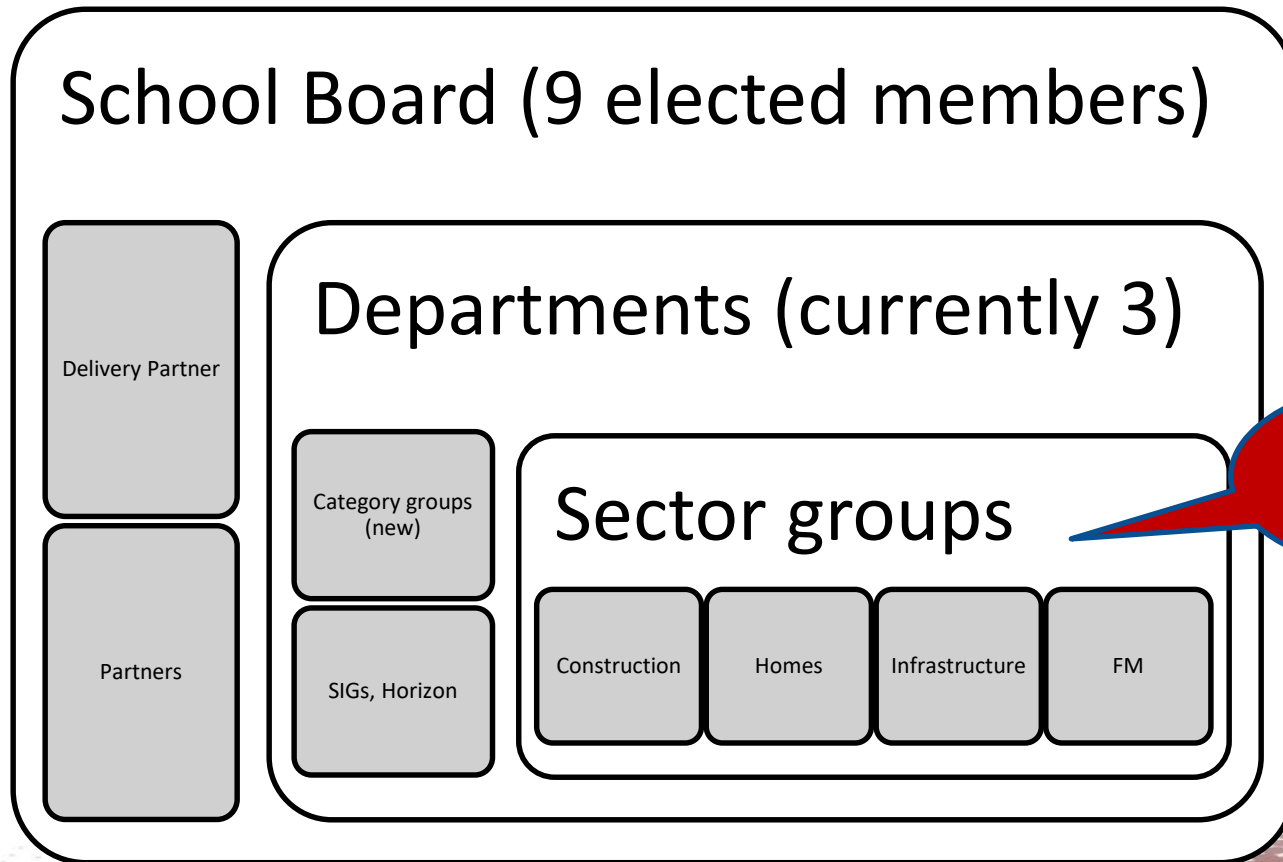
Homes

Infrastructure

FM

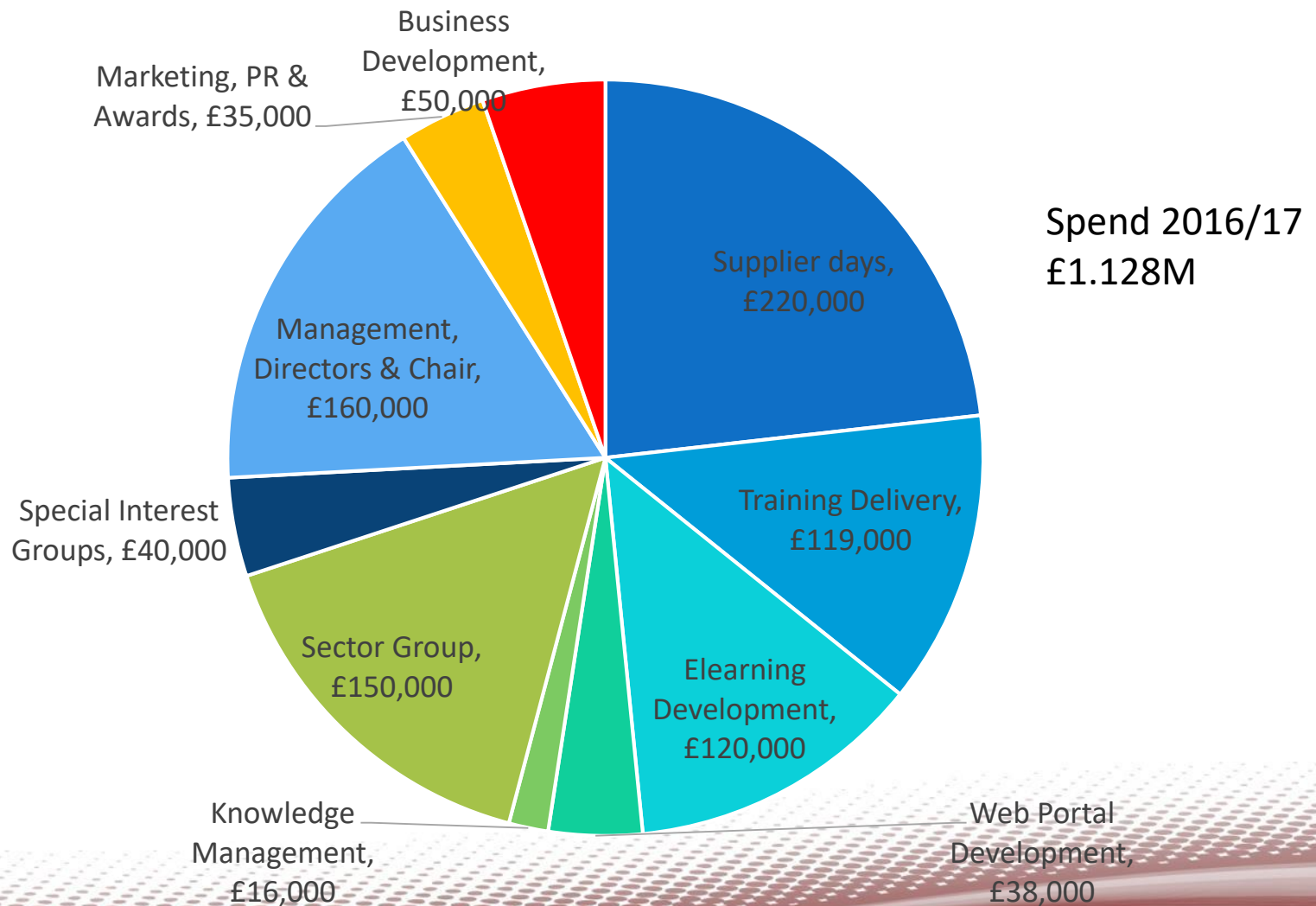
Governance

Could there be a water group?

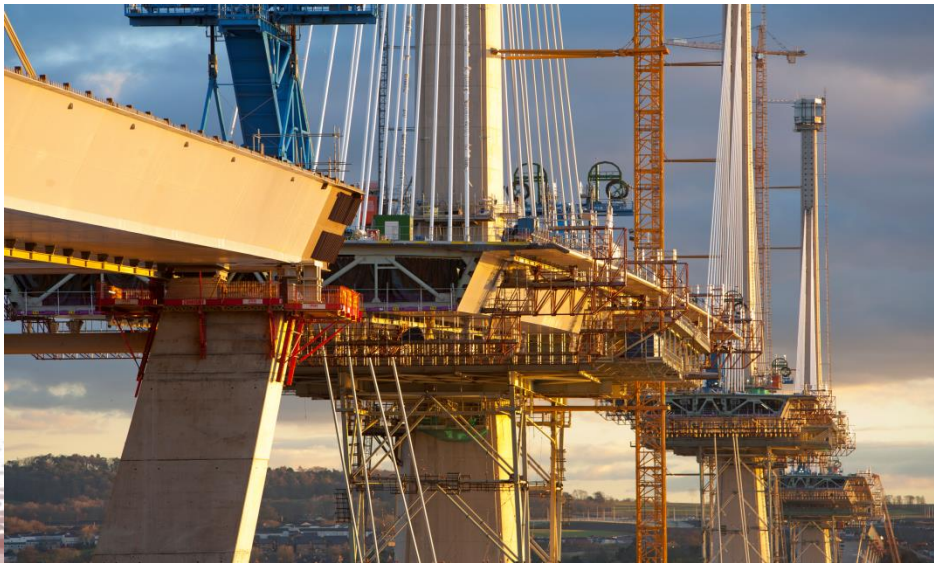


Insert here

Transparent financial governance



The Construction Industrialisation Process

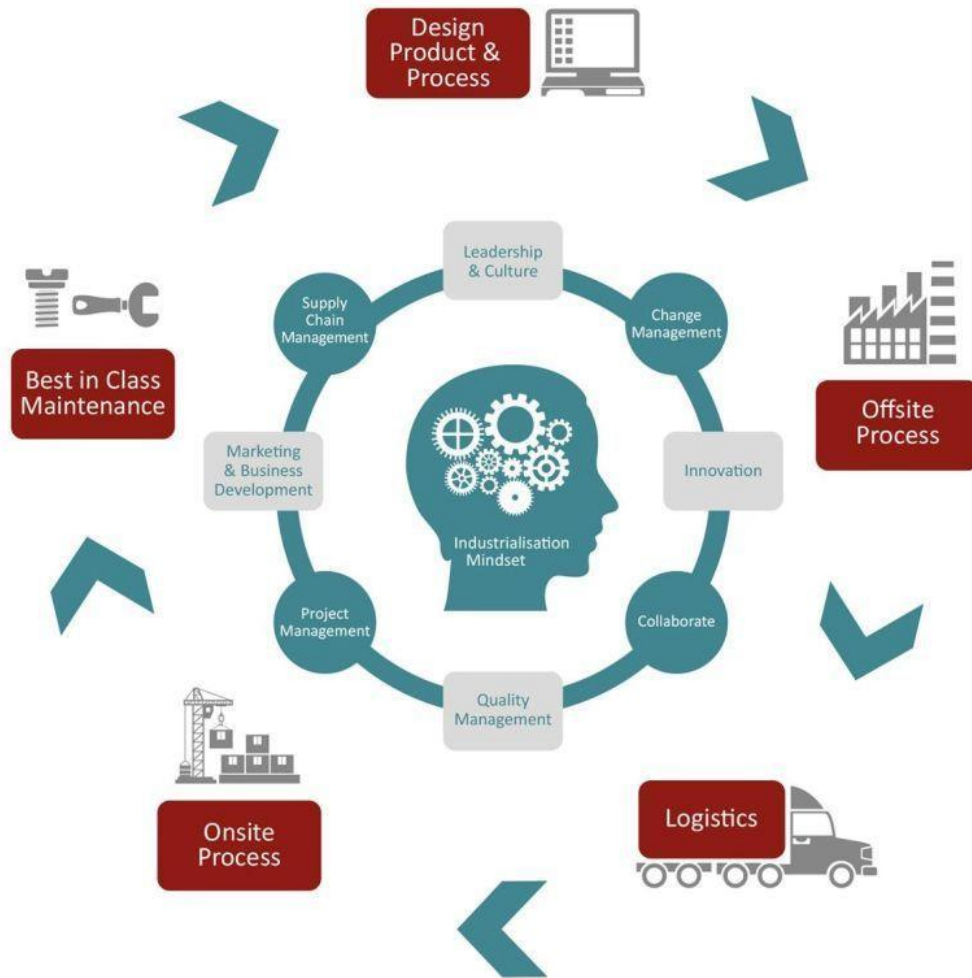


The school focuses on in the five stages of construction industrialisation:

- Digital design
- Offsite manufacturing
- Logistics
- Onsite assembly
- Best in class maintenance.

To support this process the school concentrates on **eight** enabling management competencies to help businesses to build skills in these areas.

The Construction Industrialisation Process



The school focuses on in the five stages of construction industrialisation:

- **Digital design**
- **Offsite manufacturing**
- **Logistics**
- **Onsite assembly**
- **Best in class maintenance.**

To support this process the school concentrates on **eight** enabling management competencies to help businesses to build skills in these areas.

OFFSITE

Sign Up

Login

Construction

Home

About

Members

Partners

Resources

Skills

Clients & Designers

Event Calendar

DfMA e-learning

CPD accredited and free to School members!

Find out more



Significant reductions in costs, project times and CO₂ emissions are called for by 2025, new and smarter construction

Offsite School Partners

A smart assessment



Each supplier who becomes a member undertakes an assessment tailored to their area of supply

500 resources

OFFSITE MANAGEMENT
SCHOOL



OffsiteSchool.com – building skills

Resources


Supplier Days

Training Workshops

E-learning Modules

Additional Online Resources >

Not signed up yet? **LOGIN**

 ursula.cooper@actionsu



Forgotten password?

Login

Registering with the School is FREE!

[Home](#) > [Resources](#) > [E-learning Modules](#)

Part funded by



E-Learning Modules

Sorry, there are currently no beginner E-learning Modules available.

Intermediate

Leading Change

Time 45 minutes

This e-Learning module takes you through the process of change management - how can your business adapt to market change?

[View Module](#)

Onsite Process

Time 1 hour

This 1 hour e-Learning module outlines the processes and best-practice methods for Onsite assembly.

[View Module](#)

Project Management

Offsite Process

Time 1 hour

This 1 hour e-Learning module will provide you with an overview of the Offsite manufacturing process and how the construction industry can benefit from pre-fabricated components.

[View Module](#)

Leadership

Time 1 hour

This 1 hour e-Learning module covers the need for strong leadership within the Offsite Industry, and how leadership skills can be enhanced in order to improve your business performance.

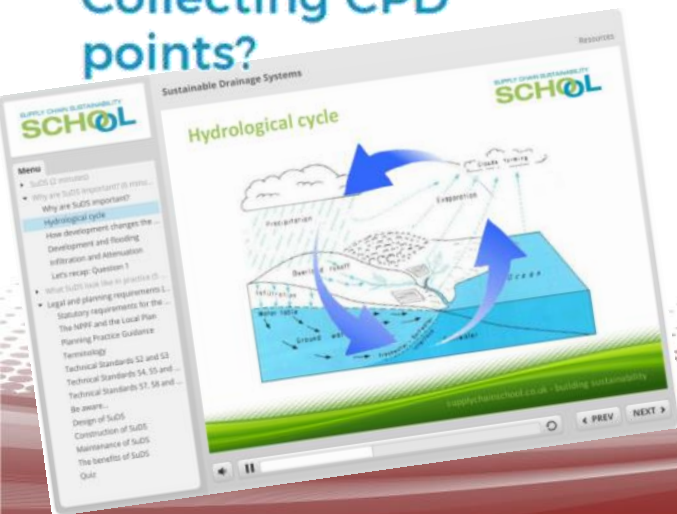
[View Module](#)

Design: Product and Process

E-learning modules



Collecting CPD points?



Building Management	Modern Slavery (x2)	Life Cycle Analysis
Carbon in Infrastructure	Overheating in Homes	Heat Mapping
Collaborative Planning	Labour Practises in FM	Social Value (x2)
Ethical Business (x2)	Performance Gap	Sustainability in Food & Drink
Fairness, Inclusion & Respect (x3)	Sustainable Drainage Systems	Sustainable Timber
Green Infrastructure	Sustainability in FM	Offsite
Introduction to Biodiversity	The Circular Economy	Quality
Introduction to CEEQUAL	BES 6001 for Responsible Sourcing	Supply Chain Management
Climate Change & Carbon	BIM	Project Management
Economy & Community	Sustainable Construction	Offsite & Onsite process
Environmental Management	Carbon Reporting	Marketing & Business Development
Sustainable Homes	Energy & Carbon Efficient Buildings	Logistics
Sustainable Procurement	Engaging a Diverse Supply Chain	Leading Change (x2)
Introduction to Waste	Getting Value out of your EMS	Collaborative Planning
Introduction to Water	Leading Change	Best in Class Maintenance
Local and SME Spend in FM	Life Cycle Analysis	Design: Product & Process

Resources



Workshops

- ✓ Open to supply chain
- ✓ Delivered by training providers
- ✓ Can be both internal and/or supply chain
- ✓ Partners support for venues
- ✓ 2 – 3 hours long and 20 people typically
- ✓ Contributes to the bronze, silver and gold requirements
- ✓ **More than 5,000 attendees** participated in our free workshops in 2016, with **95% rating the quality of workshops as excellent or very good.**



Collecting CPD
points?

Supplier Days



Top media Tweet earned 308 impressions

Overcoming sustainability challenges -
group work at **#SCSday** in Leicester
@centricapl **@Carillionpl**
pic.twitter.com/nRw4UkcQjO



2 1

[View Tweet activity](#)

[View all Tweet activity](#)

- ✓ Open to supply chain
- ✓ Focus on regions, sectors or themes

You Retweeted



Helen Carter @helenjc72 · Mar 7

Final session of the day.. turning sustainability into action...
@SupplyCSSchool

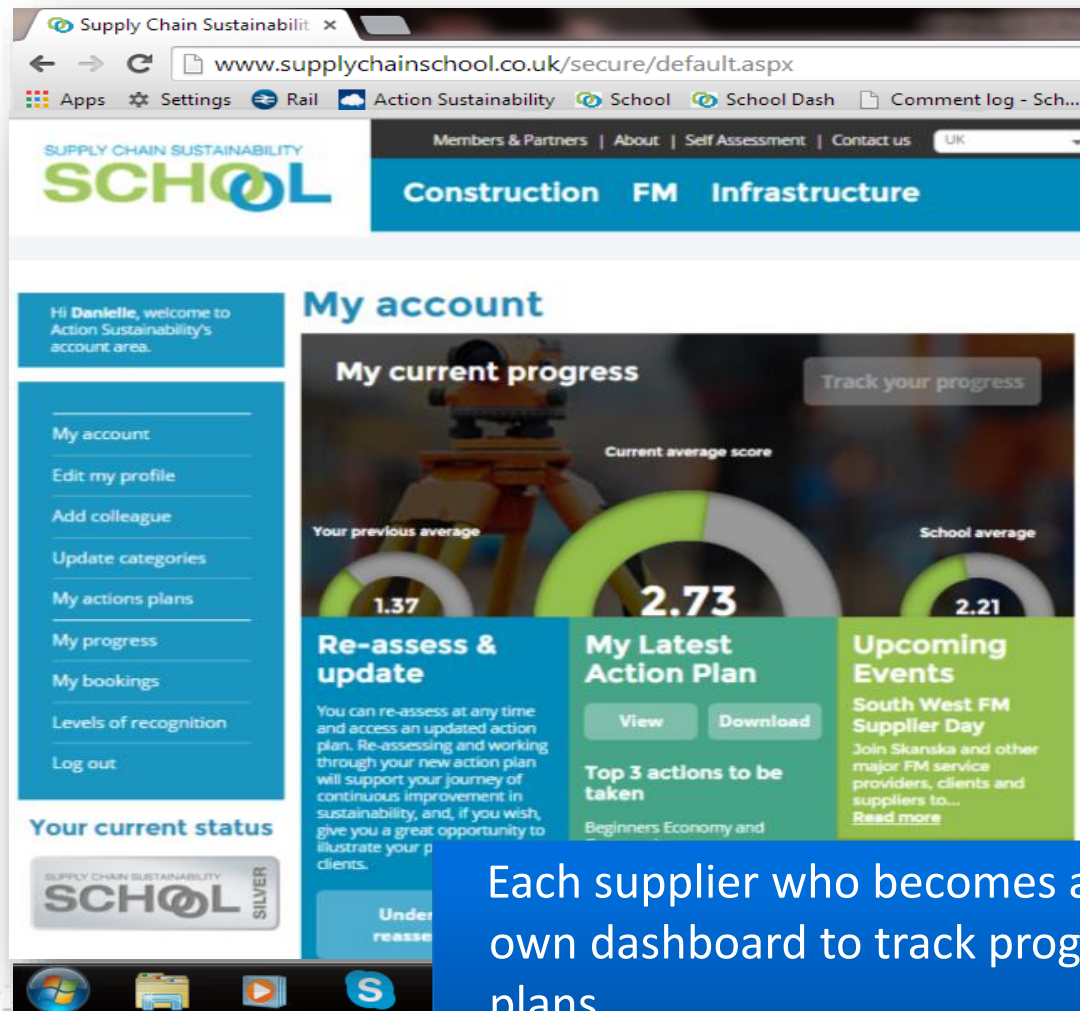


School Resources.....

Across all the schools, members have access to:

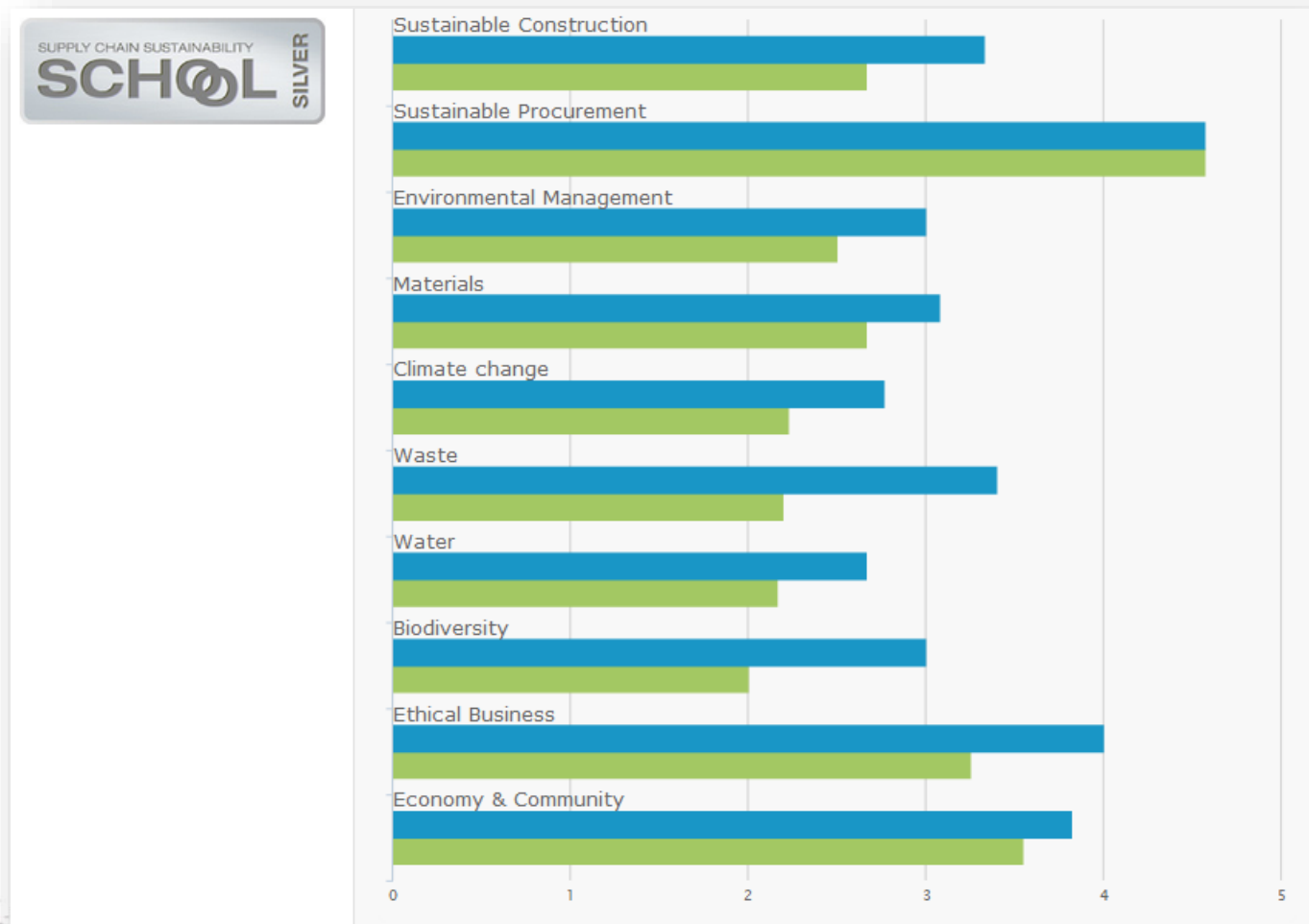
Dept	Resource Issue	e-Learning	Web Link	Document	Video	Tool
MGT	Leadership	1	8	0	21	1
MGT	Supply Chain Management	1	7	1	6	0
MGT	Project Management	1	7	0	8	0
MGT	Quality	1	15	0	13	0
MGT	Marketing and Business Development	1	19	0	11	0
MGT	Collaborative working	1	14	3	10	1
MGT	Change Management	1	11	0	6	0
OFF	Best in Class Maintenance	2	22	6	14	1
OFF	Offsite	1	32	13	36	6
OFF	Onsite Process	1	13	11	25	0
OFF	Design	2	39	10	37	2
OFF	Logistics	1	14	6	18	0
SUS	Biodiversity	2	119	16	18	1
SUS	Ethical Business	9	225	11	27	2
SUS	Local Economy	4	145	19	9	2
SUS	Carbon and Energy	5	166	29	16	12
SUS	Waste	2	125	41	8	11
SUS	Water	2	115	6	5	9
SUS	Sustainable Strategy	11	173	29	39	1
SUS	Sustainable Procurement	2	147	15	27	8
SUS	Environmental Management	3	60	17	7	4
SUS	Materials	2	119	16	18	1

Supplier dashboards



Each supplier who becomes a member gets their own dashboard to track progress and action plans

Supplier dashboards




Updating my profile

How do I reach Bronze, Silver or Gold status?

What level am I?

Not signed up yet? [LOGIN](#)

 ursula.cooper@actionsu



[Forgotten password?](#)

Login

Registering with the School is FREE!

[Home](#) > [About](#) > [Frequently Asked Questions](#)

> [How do I reach Bronze, Silver or Gold status?](#)



How do I reach Bronze, Silver or Gold status?

Our levels of recognition are based on how active you are in the School, so check in with us regularly! You might drop down or lose the level you've achieved if you do not maintain a certain level of engagement.

Bronze Members must have . . .

- Completed self assessment in past 12 months
- Used at least 5 resources in the last 6 months but not yet re-assessed

Silver Members must have . . .

- Completed a re-assessment in the past 12 months
- Used at least 5 resources in the last 6 months

And Gold Members must have . . .

- Completed a re-assessment in the past 6 months
- Used at least 10 resources in last 6 months
- Demonstrated an increase in sustainability competence
- Actively shared their knowledge and experience with other members

Contact us to download your Bronze, Silver or Gold badge now to include on your email signatures, on your website or wherever you like!

Are you a Silver member looking to become Gold? Do you have a case study outlining best practice, or are you interested in speaking about sustainability at one of our future events?

What are Special Interest Groups?

- Tackle an issue in the industry **collaboratively**
- Time bound group typically 6 months
- Representation from a broad range of School partners
- Output/outcome driven
- Terms of reference & reports into board

DfMA resource library



OFFSITE MANAGEMENT
SCHOOL

RIBA Plan of Work Designing for Manufacture and Assembly overlay						www.offsiteschool.com/DfMA			
This Overlay to the RIBA Plan of Work 2013 includes additional task bars to support Designing for Manufacture and Assembly. It should be used in conjunction with the RIBA Plan of Work 2013. www.rbaplanofwork.com									
www.offsiteschool.com/DfMA									
Stages	0	1	2	3	4	5	6	7	
Strategic Definition	Preparation and Brief	Concept Design	Developed Design	Technical Design	Construction	Handover and Close Out	In Use		
Tasks	Identify client's Business Case and Strategic Brief and other core project requirements.	Develop Project Objectives , including Quality Objectives and Project Outcomes , Sustainability Aspects , Project Budget , other parameters or constraints and develop Initial Project Brief . Undertake Feasibility Studies and review of Site Information .	Prepare Concept Design , including outline proposals for structural design, building services systems, outline specifications and preliminary Cost Information along with relevant Project Strategies in accordance with the Design Programme . Agree attributes to brief and issue Final Project Brief .	Prepare Developed Design , including coordinated and updated proposals for structural design, building services systems, outline specifications, Cost Information and Project Strategies in accordance with the Design Programme .	Prepare Technical Design in accordance with the Design Responsibility Matrix and Project Strategies to include architectural, structural and building services information, specialist subcontractor design and specifications, in accordance with the Design Programme .	Offsite manufacturing and onsite construction in accordance with the Construction Programme and resolution of Design Queries from site as they arise.	Handover of building and conclusion of the Building Contract .	Undertake In Use services in accordance with Schedule of Services .	
DfMA Strategy	Consider opportunities for applying DfMA across portfolios or programmes or projects. Consider how DfMA might impact on the Business Case or Strategic Brief . Consider where the issues in the Strategic Brief including options for reuse or repurposing and recycling of components at the end of the building's life. Consider Research and Development that might assist Feasibility Studies or the Concept Design including intellectual property issues.	Consider opportunities for incorporating client requirements into the Initial Project Brief . This should include high level targets for the extent of DfMA adoption and time cost/benefit savings against traditional benchmarks. Consider opportunities for reusability, also logistical constraints, Research and Development and early input required from specialist subcontractors. Consider best practice DfMA exemplars for comparable projects.	Test initial Concept Design options against the DfMA aspirations set out in the Initial Project Brief . Identify opportunities for the greatest impact and initiate any Research and Development required to integrate DfMA into the Concept Design . Prepare the Construction Strategy considering high level DfMA benefits including safety, productivity, quality and sustainability, considering topics such as assembling offbuilding, wet or hot works, the delivery methodology and the suitability of proposed systems.	Update the Construction Strategy taking into account DfMA opportunities appropriate to the Developed Design and construction activities. Prepare a schedule of DfMA components and consider national or other standards appropriate for DfMA. Consider suitability, including how the erection sequence, fabrication or manufacturing techniques and tolerances impact on interfaces. Update Cost Information taking into account discussions with potential contractors, specialist subcontractors and suppliers.	Develop the DfMA components more accurately considering the implications of the proposed methods of manufacturing or fabrication. Develop the interfaces and specifications, including structural, water/moisture/vapour penetration and acoustic risks. Update the Construction Strategy considering the lifting, handling and transportation strategy for each component and sub-assembly. Consider manufacturing and assembly roles in the updated Risk Assessment and Health and Safety Strategy . Develop a commissioning plan optimising the use of factory acceptance testing.	Update the Construction Strategy including a logistics plan that ensures the right materials, plant and operatives are deployed in the right place at the right time. Commission the building programme and capture As-Constructed information. Consider how DfMA impacts the Construction Programme .	Consider how to capture commissioning and As-Constructed information in a manner that will assist the In Use stage including the potential dismantling of the building. Monitor the performance of standardised components including maintenance and replacement and provide Feedback . Monitor dismantling or potential reuse of materials during demolition at the end of the stage and provide Feedback .		
Suggested BIM Tasks for DfMA	Analyse data from the existing building to identify key metrics for analysis. Gather cost and programme data from previous projects to set benchmarks. Consider establishing a BIM object library if components are going to be used across multiple projects.	Use BIM for the preparation of Feasibility Studies including data rich 'spreadsheets' details with limited geometry to assist in the preparation of Cost Information . Use BIM to test and optimise the Initial Project Brief . Include the Level of Development required at each stage when preparing the Design Responsibility Matrix . Consider the implications for professional services contracts and the Design Responsibility Matrix where a client is using their own BIM strategy including intellectual property and professional indemnity insurance.	Develop the BIM model and components to the Level of Development set out in the Design Responsibility Matrix . Validate the model against the client's information requirements. Consider DfMA tolerances in the development of the BIM model.	Progress the BIM model and components to next Level of Development set out in the Design Responsibility Matrix , including every aspect of manufacture, logistics and assembly before work starts on site. Use digital technologies as part of coordination exercises.	Progress the BIM model and components to next Level of Development set out in the Design Responsibility Matrix , including every aspect of manufacture, logistics and assembly before work starts on site. Use 4D technologies to test and validate the sequencing set out in the Construction Strategy including every aspect of manufacture, logistics and assembly before work starts on site.	Use BIM to train site operatives. Use digital technologies to track each step of the manufacturing, packing, logistics and delivery process. Consider recording the complete history and location of every component for Feedback , future use and learning. Link components to assembly manuals, method statements and quality records including identifying any aspects of the design which may be reused in the future.	Ensure any relevant documentation relating to DfMA components is linked to BIM components for Feedback , including lessons learned and potential repurposing. Consider configuration management techniques to maintain an up to date record (BIM model) of the building.		
Suggested Procurement Tasks for DfMA	Feedback - Ensure lessons learned from previous projects have been incorporated. Consider how DfMA impacts on the assembly of the project team including how the project team will achieve a collaborative approach and how innovation can be incentivised.	Consider how to emphasise the importance of DfMA in the Initial Project Brief when assembling the project team and developing the Procurement Strategy , including how to select design team members with DfMA experience. Ensure that any tender information encourages the behaviours required for effective collaboration and the experience needed to identify early DfMA opportunities.	Update the Procurement Strategy and tenders/contracts with subcontractors and specialist subcontractors relevant to the procurement route to test DfMA objectives set out in the Concept Design including the Construction Strategy . Consider the appropriateness of early contractor involvement (ECI).	Hold further discussions with contractors and specialist subcontractors relevant to the procurement route to test DfMA components and coordination exercises set out in the Developed Design including the updated Construction Strategy .		Capture Feedback including lessons learned from site installation to inform the Procurement Strategy of future projects.	Ensure that As-Constructed information relating to DfMA elements has been delivered including Feedback on information to be incorporated into the client's in-house BIM object library. Provide Feedback on the capability and performance of specialist subcontractors who delivered DfMA aspects.		

© RIBA

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RIBA Plan of Work 2013
Designing for Manufacture and Assembly

www.offsiteschool.com/DfMA

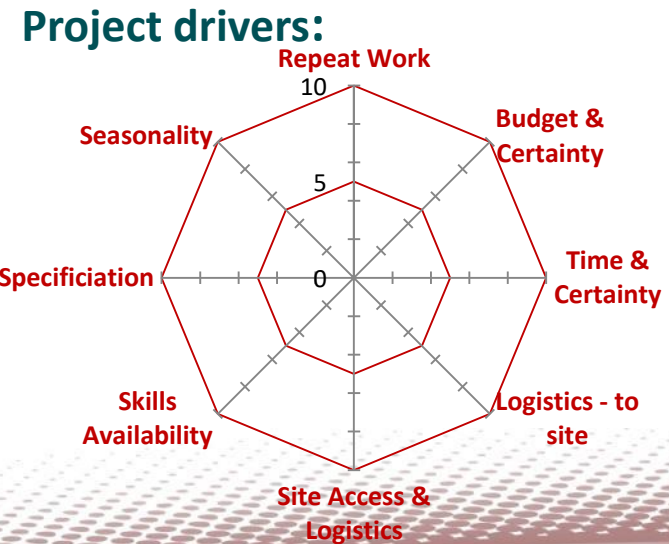
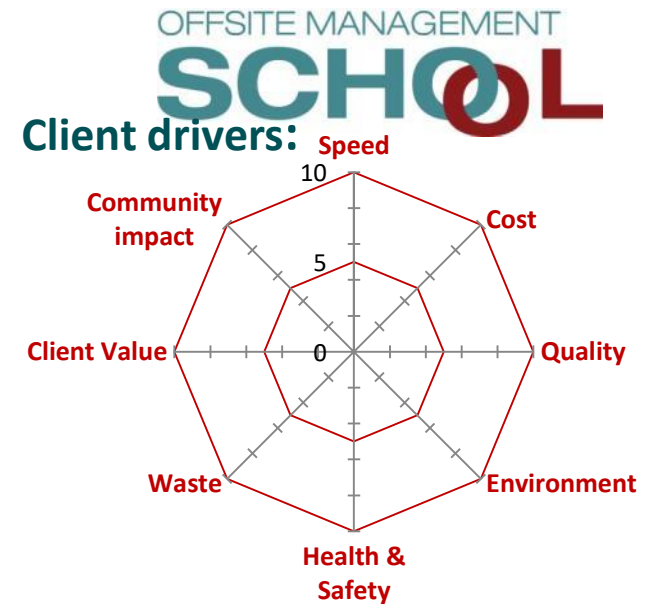
DfMA strategy

Project brief:

The project team is delivering a **Mixed Use** development close to a major city centre. The development comprises **130 apartments**, in two blocks, with **retail** units below. It includes a community building and 1 form entry **primary school** under section 106.

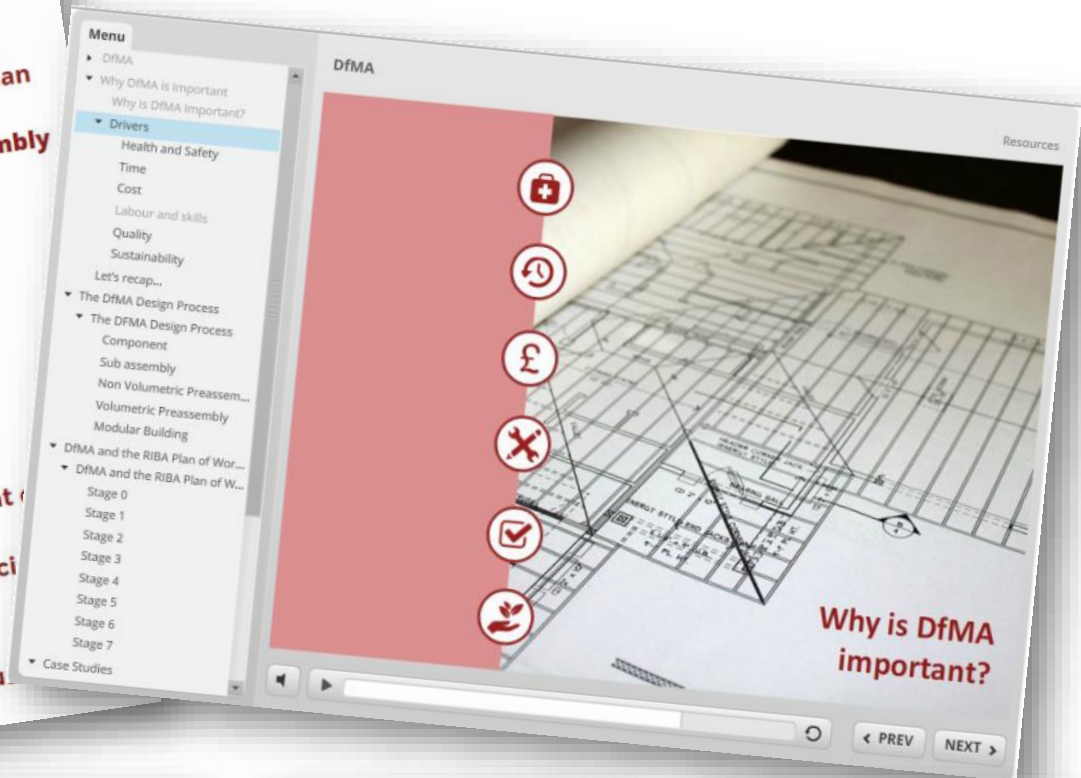
Exercise: Client drivers. Plot traditional supply chain performance (Red) vs. client expectations: 5 ≈ OK. Add the potential we might achieve with DfMA (Green)
Project Drivers: Plot business as usual performance and the potential with DfMA.
Grid: Divide the project into packages and assess where offsite / DfMA techniques are valuable (Green), have potential (Amber), or inappropriate (Red).

Application Grid	Work packages – where to standardise?						
Package:							
Traditional							
Component							
Sub-assembly							
2 D Assembly							
Volumetric							
Modular							



DfMA resource library

- Design For Manufacturability / Assembly Guidelines
- Delivering Construction 2025 RIBA Action Plan
- DfMA: Design for Manufacture and Assembly e-learning module
- DfMA and Sustainability
- DfMA: a client's perspective
- DfMA: a client's perspective - cost
- DfMA: a designer's perspective - client
- DfMA: a designer's perspective - efficient designs
- DfMA: a designer's perspective - Quality



BIM Special Interest Group

Objectives

- Develop a consistent mechanism for contractors to understand the competence of their sub-contractors and suppliers in BIM level 2

Outcomes

- An **agreed diagnostic** that can be used to assess a supplier's / sub-contractor's **competence** in BIM level 2
- An **online version** of this diagnostic for supply chain companies to use to **benchmark themselves** against the requirements
- **Partner dashboard** for partners to review **aggregated** data on the BIM competence of their supply chain

BIM - elearning



<http://www.supplychainschool.co.uk/documents/elearning/53/story.html>

Partners involved in the SIG

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Balfour Beatty



**Sir Robert
McALPINE**



Wates

SKANSKA



BIM Special Interest Group

Progress to date

- Matrix currently being web-enabled to be launched by the end of October
- It has been road tested 3 times with companies from different areas of the supply chain
- 4 different sections of the matrix - Nearly 40 questions overall - most of them are in Process & Technology
 - - Company information (which covers overall strategy and company commitment)
 - - People (which covers training, HR strategy, roles & resp)
 - - Process & Technology (the most meaty part of the matrix)
 - - Security (which has had input from a BIM security expert)

One size does not fit all

Prioritised solution

- Matrix has been prioritised for different companies in the supply chain depending on what their '**design capability**' is:
 - Design consultant
 - Contractor with design responsibility
 - Contractor w/o design resp
 - Supplier
 - Manufacturer

Coming soon

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SCHOOL

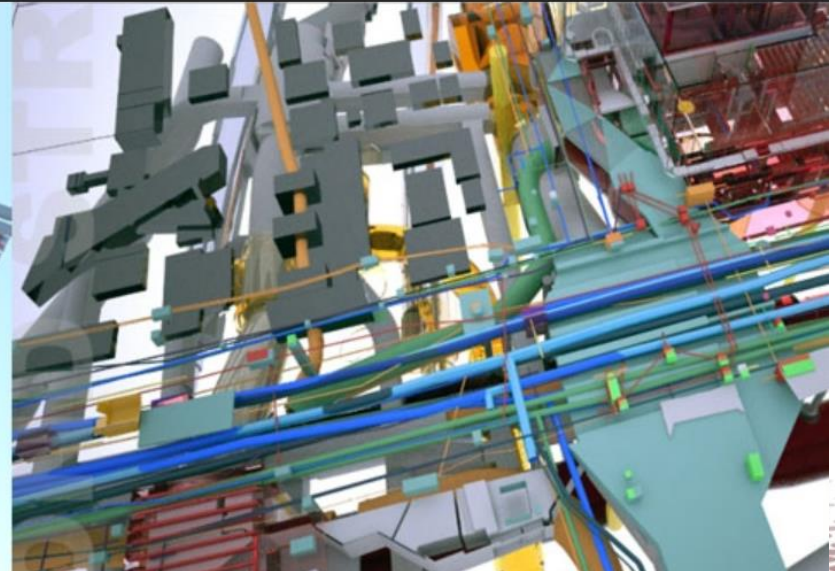
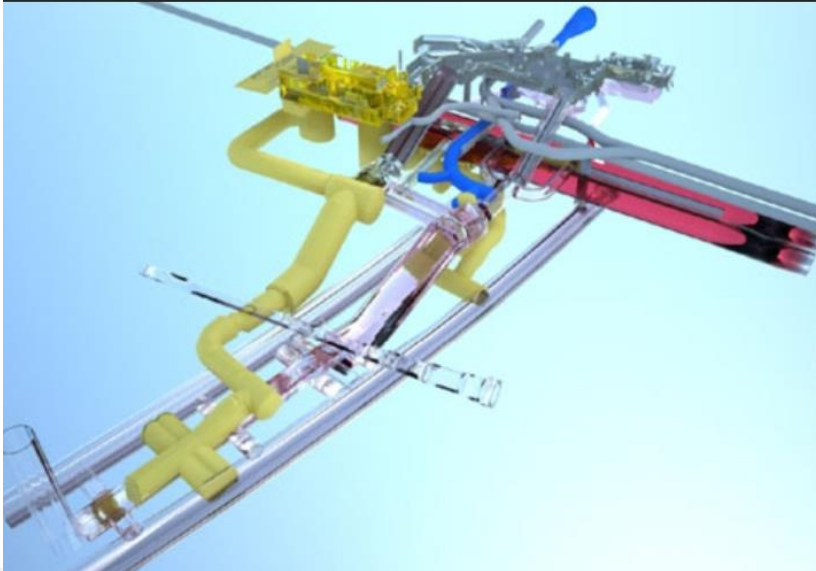
School for BIM



Building Information
Modelling (BIM)
Task Group



Welcome About ▾ Resources ▾ BIM Partners ▾ Task Group Labs GSL ▾ News ▾



Coming soon

School for lean construction

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GLOBAL LEAN COMMUNITIES



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[LEARNING](#)

[WHAT'S NEW](#)



THE PROOF IS POSITIVE.

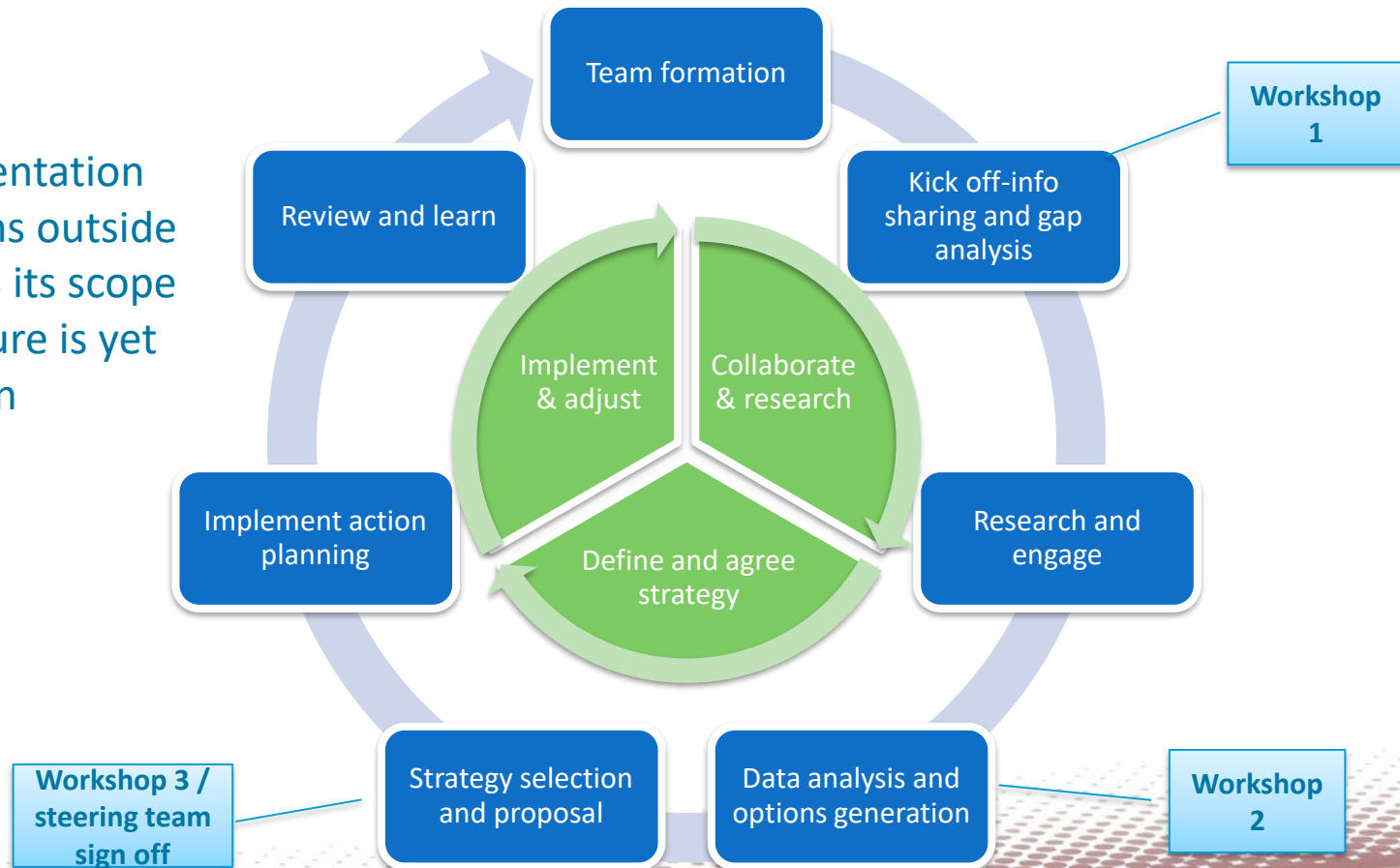
<https://www.leanconstruction.org/learning/research/>

OffsiteSchool.com – building skills

Coming soon.....

Category based approach

Implementation
of actions outside
scope as its scope
and nature is yet
unknown



New content

Special Interest Groups continually add new content

Supply Chain Mapping

Guidance Protocol

Version 1, May 2017

The screenshot displays the Offsite School website interface. At the top, the navigation bar includes the 'SUPPLY CHAIN SUSTAINABILITY SCHOOL' logo, links for 'Sustainability', 'Management', and 'Offsite', a dropdown menu, a language selector set to 'ENGLAND', and a search icon. Below the navigation bar is a green banner with 'Sign Up' and 'Login' buttons. The main content area features a left-hand menu with links: 'About the School', 'Assessment Tool', 'Becoming a Member', 'Becoming a Partner', 'Contact us', 'Fairness, Inclusion and Respect', 'Horizon Group', 'Modern Slavery', and 'Performance Measurement'. The main content area shows the 'Home > Social Value' breadcrumb, a large image of a colorful mural, and the 'Social Value' section header.

New content

Special Interest Groups continually add new content



Fairness, Inclusion & Respect

- promoting a better workplace for everybody.



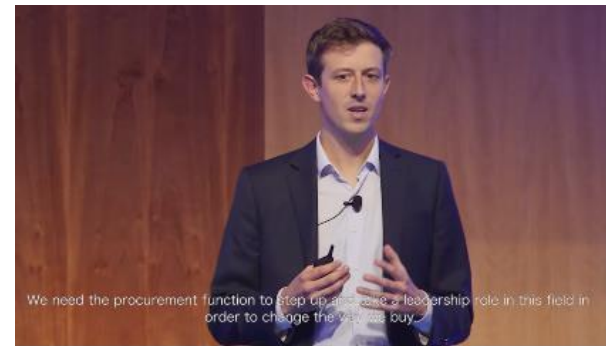
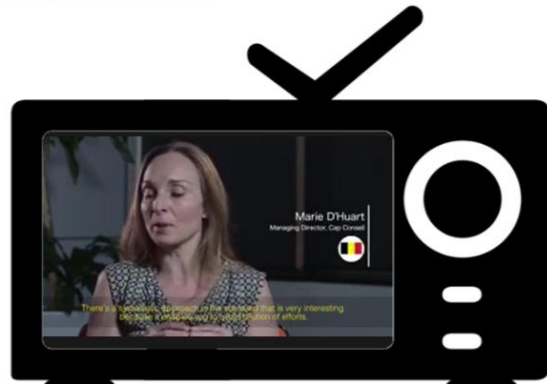
Modern Slavery - resources to help you comply with new legislation.

New content

Sustainable procurement using ISO20400

Film: Key benefits of ISO 20400

[Click the icon to view a short film!](#)



ISO 20400 overview by Jean-Louis

10 minute video from Jean-Louis Haie of Planet Procurement and Action Sustainability presenting the...

Research links

The Horizon Group links us to universities

University partners



UNIVERSITY OF
BATH



The University of
Nottingham

UNITED KINGDOM • CHINA • MALAYSIA

**Sheffield
Hallam
University**

What's not to like.....?

Collaborative	Progressive	Inspirational	Inclusive
We share knowledge and resources. Our direction is led by our partners and members.	We deliver measurable impact through dynamic leadership.	We inspire our members and partners to drive positive change.	We exemplify respect for the planet, our colleagues and wider society.



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Thanks for listening

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SUPPLY CHAIN SUSTAINABILITY
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