# Using BIM to Improve Service Delivery



**John Lorimer**
**BIM Task Group**

# APSE Seminar 2013

➡ BIM - What is it?

➡ BIM – Improving service - some examples.

➡ BIM – What do I need to do?

# What is **BIM?**
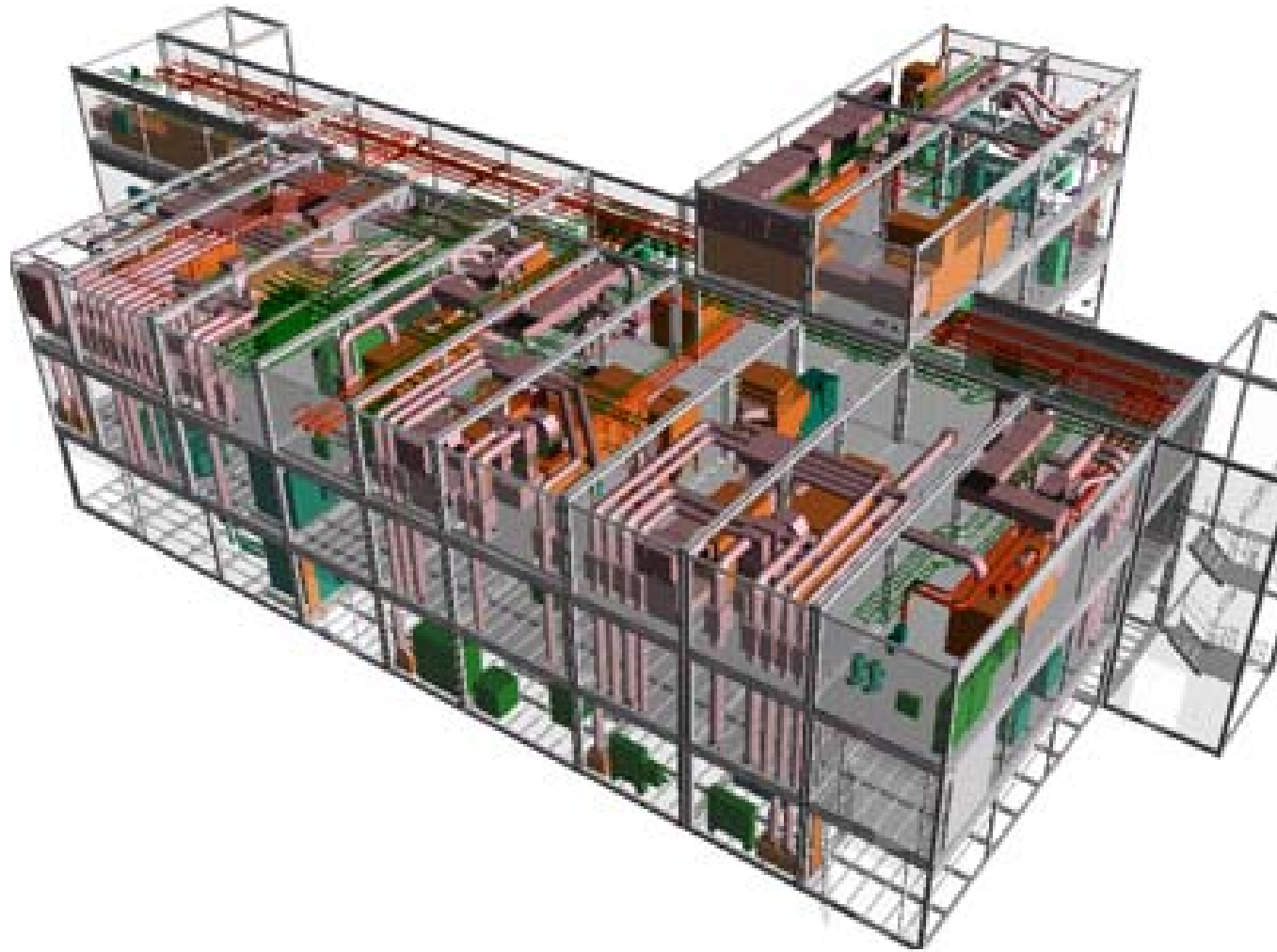
# What is **BIM?**

BIM is a revolution in how our built assets are conceived, designed, built, managed & maintained.

This is achieved by a development of traditional methods using collaborative digital modelling and structured information management through the whole life of an asset – currently within existing contracts.

The benefits of BIM are now well proven with the construction industry and some asset owners unlocking significant benefit from its use.

BIM brings a clearer earlier vision of any built asset to all stakeholders and gives greater certainty, at lower cost, and with a reduced risk and environmental impact.

Above all BIM is a process using digitally produced structured data.

**To release these benefits Clients must be clear on what information they need & when, and how this is reliably delivered by their suppliers.**

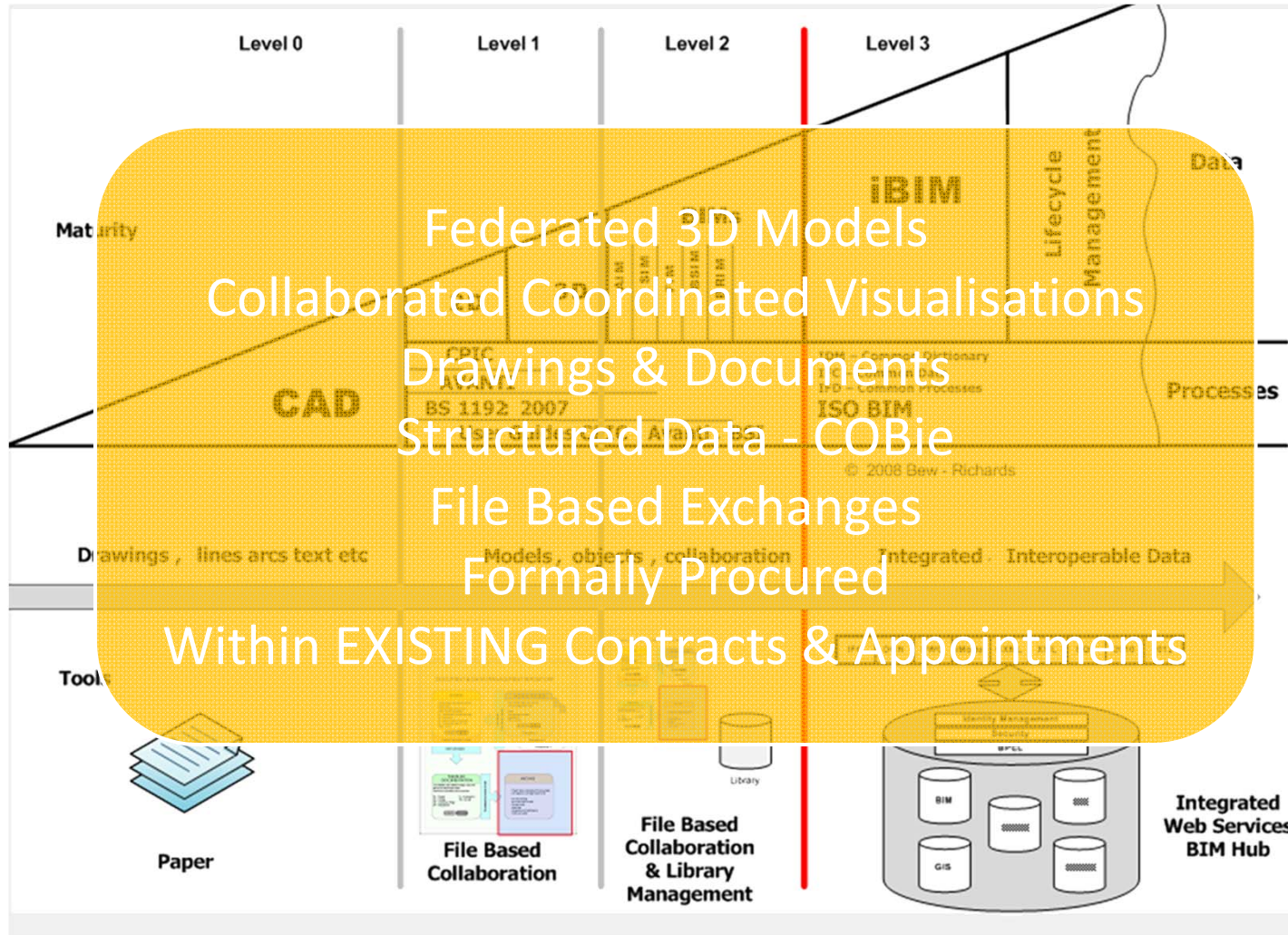# BIM **Level 2 (Bew Richards)**



Federated 3D Models
Collaborated Coordinated Visualisations
Drawings & Documents
Structured Data - COBie
File Based Exchanges
Formally Procured
Within EXISTING Contracts & Appointments

# Level 2 BIM Standards

BiM
Management for value, cost & carbon improvement

A report for the
Government Construction Client Group
Building Information Modelling (BIM) Working Party
Strategy Paper

March 2011

GCS 2.27
..identify, establish & report on pilot projects

## GCS 2.31
### Government coordinated BIM Collaborative Standards

## GCS 2.32
### Government requires fully collaborative BIM (all project and asset information, documentation & data being electronic)

**BS1192:2007**
Collaborative production of AEC Information

**GCS 2.28**
PAS91 mandated for Government Work

**CIC/BIM Protocol**

**CIC/INF MAN/S**

**CIC BIM/INS**

### Standards

BRITISH STANDARD
Collaborative production of architectural, engineering and construction information — Code of practice

BS1192:2007

BSI
British Standards

Construction prequalification questionnaires

HM Government
bsi.

**PAS1192:2**
phase of construction projects using building information modelling

bsi.

BUILDING INFORMATION MODEL (BIM) PROTOCOL

OUTLINE SCOPE OF SERVICES FOR THE ROLE OF INFORMATION MANAGEMENT

BEST PRACTICE GUIDE FOR PROFESSIONAL INDEMNITY INSURANCE WHEN USING BUILDING INFORMATION MODELS

### Model Documents & Guides

BiM

Employer's Information Requirements
Version 07  28.02.13

Core Content and Guidance Notes

BiM

Employer's Information Requirements - Guidance notes version 07  28.02.13

CPIx on Line

Post Contract-Award Building Information Modelling (BIM) Execution Plan (BEP)

Project Name:
Project Address:
Project Number:
Date:

BiM
Supporting the HMG Construction Strategy

Building Information Modelling
The Digital Plan of Work & Assemblies

BiM
Management for value, cost & carbon improvement

- ✓ PAS91 PQQ & BIM Protocol to procure direct supplier appointments
- ✓ EIR by Employer & responding BIM Execution Plans by direct appointments
- ✓ Agreed Plan of Work, Employer Decision Gates, Plain Language Questions & Information detail.
- ✓ Agreed collaborative digital information exchange process & protocol to PAS1192:2.
- ✓ Agreed exchange file set: Native & Federation models, drawings & documents, & COBie data.
- ✓ End to End Assigned Roles: Information Manager; Design, Contractor & Operator Lead

HM Government    BIS | Department for Business Innovation & Skills    Construction Industry Council    BiM    Building Information Modelling (BIM) Task Group

# Gov **Level 2 BIM** to include:

✓ PAS91 PQQ & BIM Protocol to procure direct supplier appointments

✓ EIR by Employer & responding BIM Execution Plans by direct appointments

✓ Agreed Plan of Work, Employer Decision Gates, Plain Language Questions & Information detail.

✓ Agreed collaborative digital information exchange process & protocol to PAS1192:2.

✓ Agreed exchange file set: Native & Federation models, drawings & documents, & COBie data.

✓ End to End Assigned Roles: Information Manager; Design, Contractor & Operator Lead

# Some BIM benefits

Improved design reliability  Reduced design risk  Reduced waste  More time to get the design right  Enhanced coordination and fewer errors Improved decision making Greater productivity  Higher quality of work Downstream uses for FM  Supports sustainability Improved safety  Computation of material quantities Improved planning, control, management of construction  Enhanced communication Effective resource utilisation and coordination of activities Reduction in costs associated with planning, design and construction  Reduced number of RFIs  Improved collective understanding of design intent  Less time documenting more time designing  Quantity take-off  Client engagement Improved spatial coordination Programme reduction Off-site prefabrication with confidence

# A **Local Authority BIM Case Study**
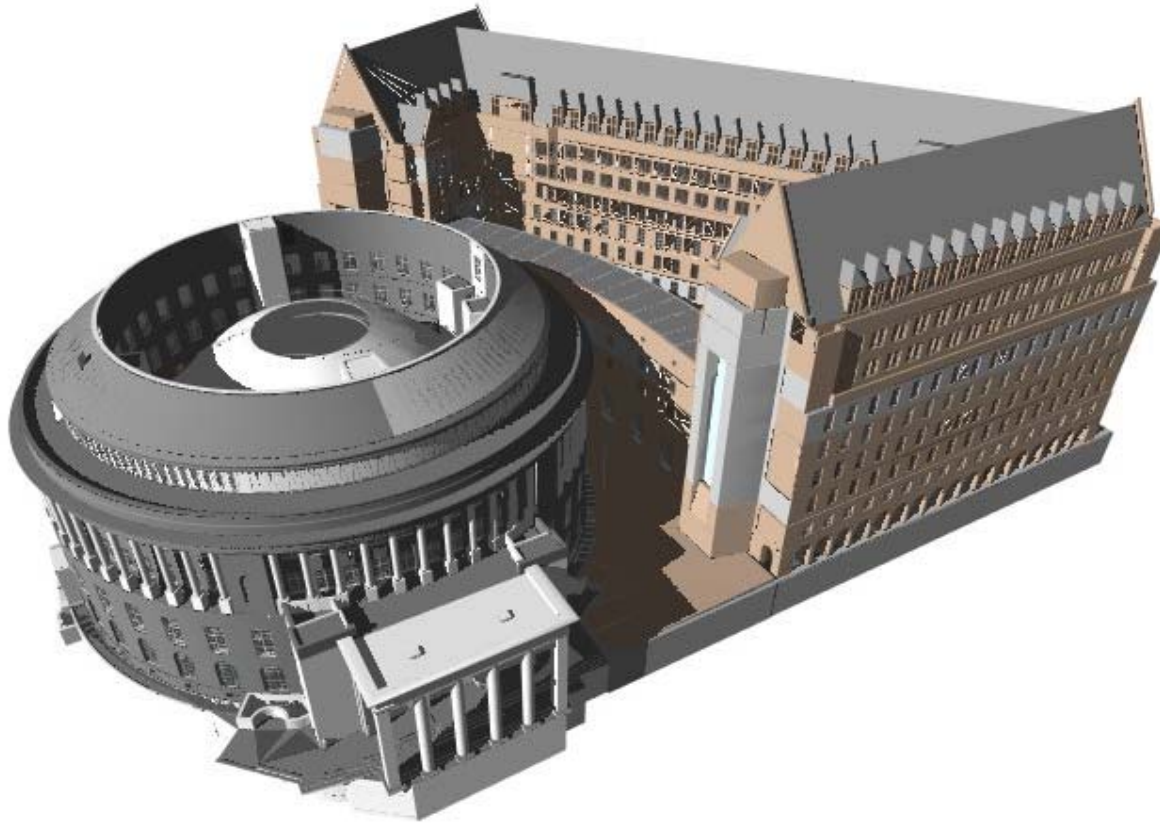


- → £100m CAPEX
- → Grade 2* listing
- → MCC Transformation
- → Shared Services
- → Significant Interventions
- → Full BIM CAPEX
- → BIM OPEX WIP

## Manchester Town Hall Complex

# MCC Sprinkler System
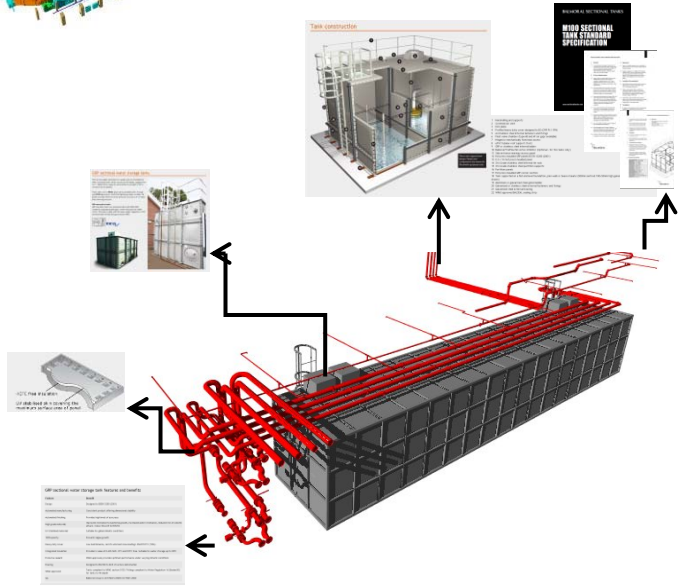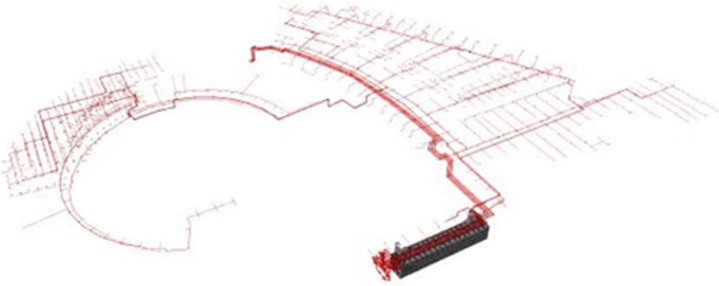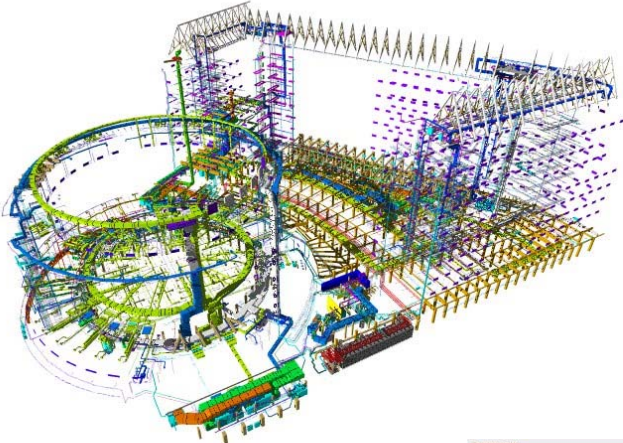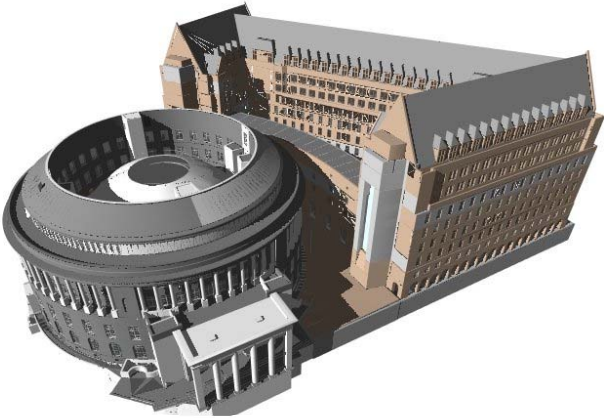
# MCC LTHW System
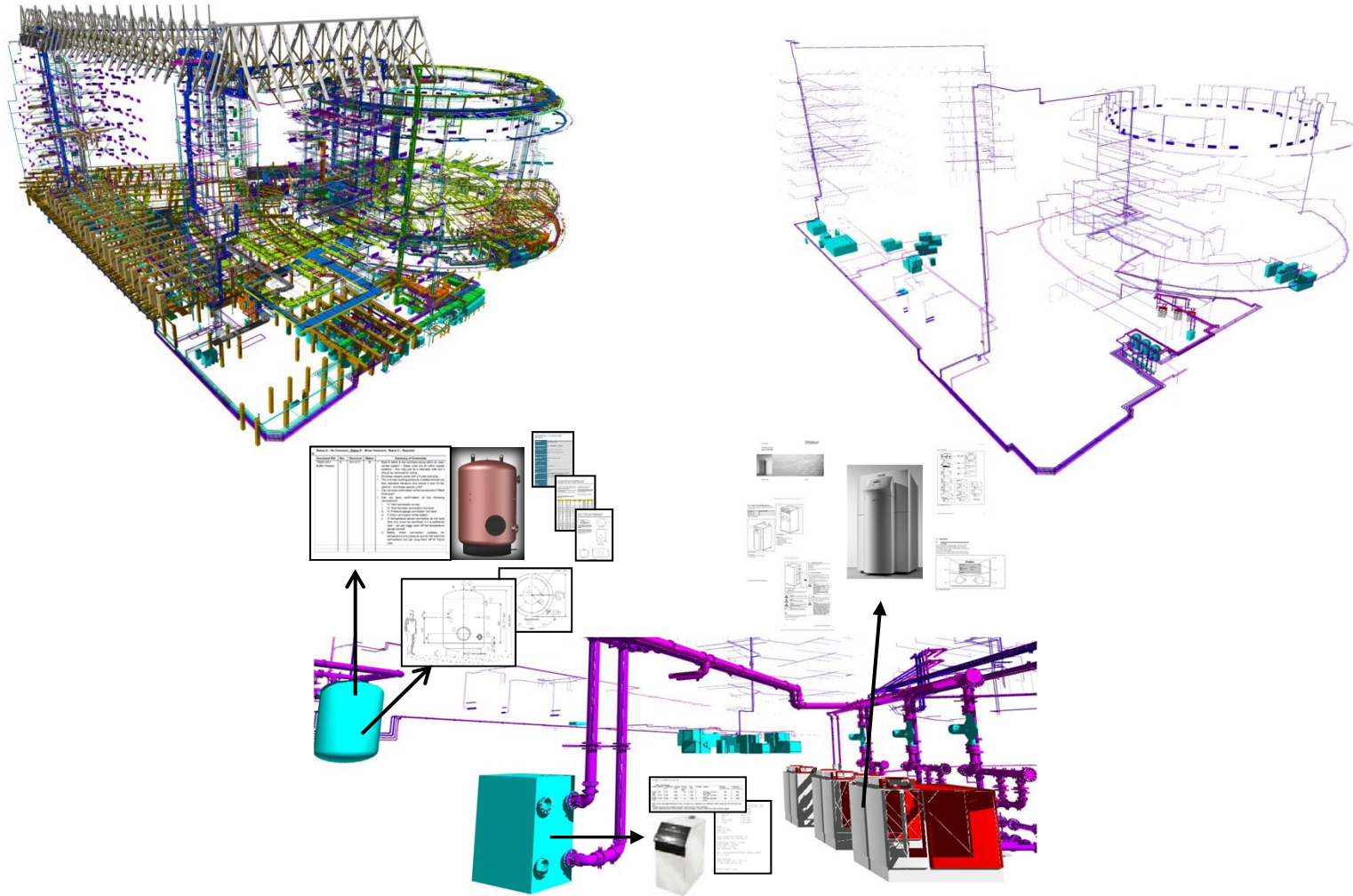
# MCC Fire Management
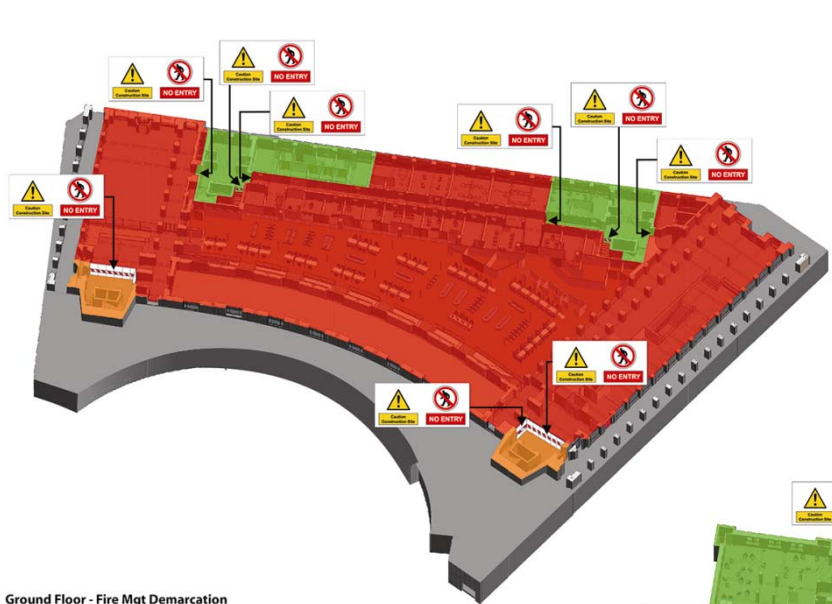


Ground Floor - Fire Mgt Demarcation
Sectional Completion 2
12 April, 2013
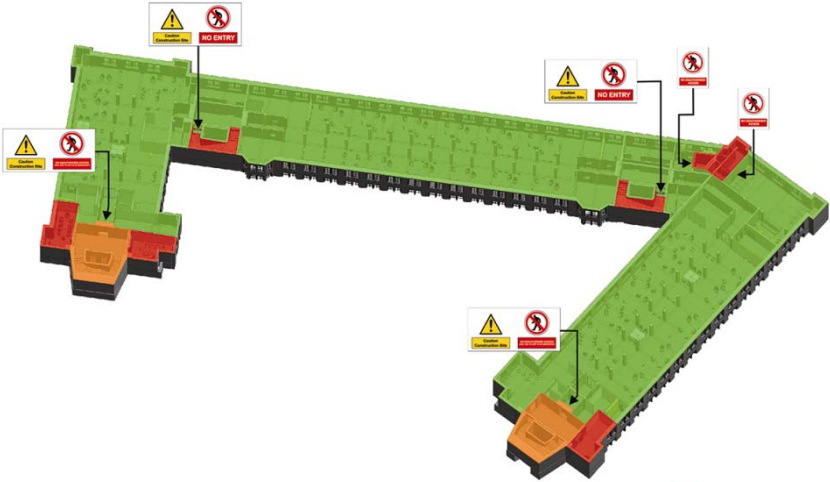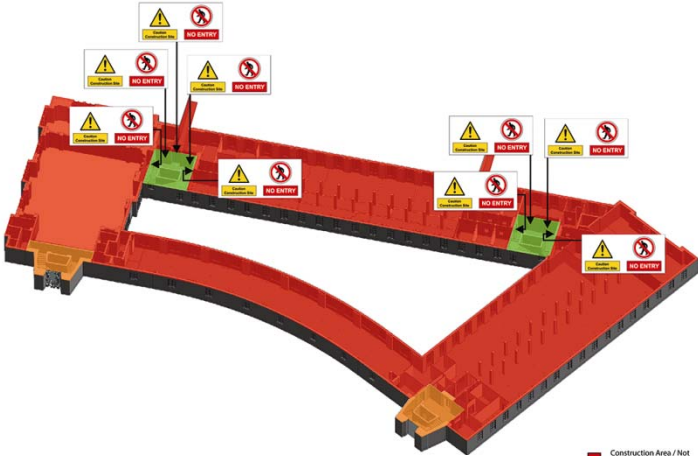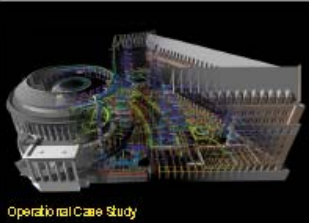
Seventh Floor - Fire Mgt Demarcation
Sectional Completion 2
12 April, 2013

Construction Area / Not Accessible to MCC

Construction Area / Emergency access ONLY to MCC

Area Fully Complete / Handed Over to MCC

Construction Area / Not Accessible to MCC

Construction Area / Access to MCC ONLY on Building Evacuation

Area Handed Over to MCC

# Case Studies : real life BIM benefits/savings



Case studies on www.bimtaskgroup.org/bim4lg

# Gaming Technologies – here & now!
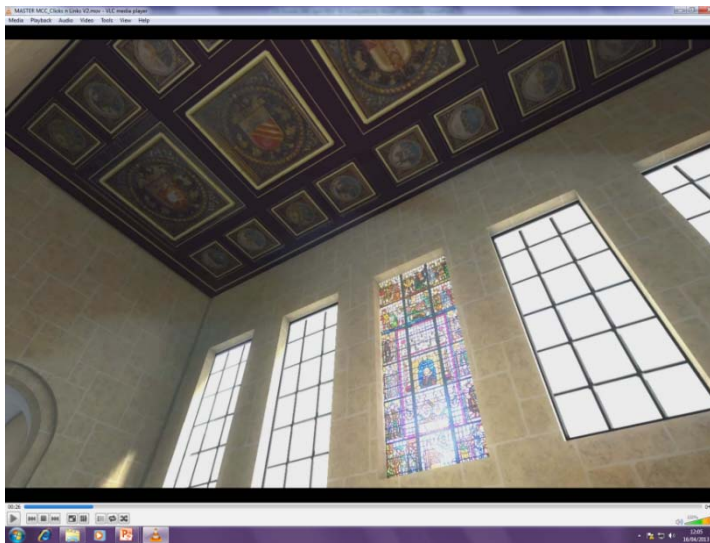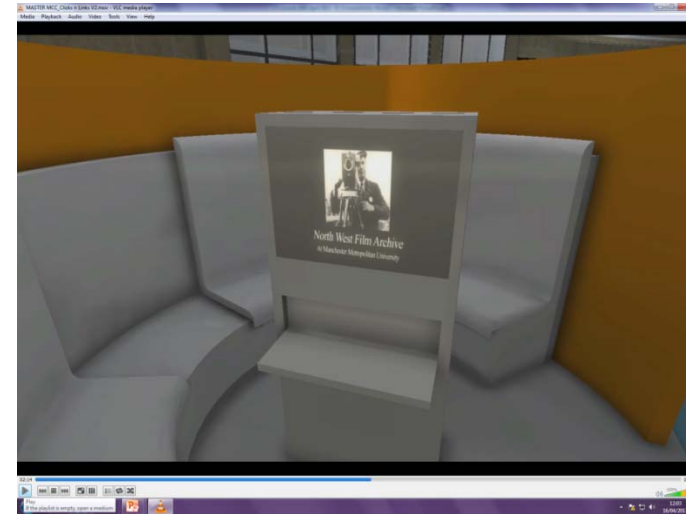


- Communications Tool
- Information Desk
- Training Suites
- Simulation
- Selling Facilities

# What do we need to do?

# A time of radical change…

**Cabinet**Office

Government
Construction
Strategy

May 2011

"This strategy calls for **a profound change** in the relationship between public authorities and the construction industry to ensure the Government consistently gets a good deal and the country gets the social and economic infrastructure it needs for the long-term"

## CAPEX efficiencies of 20% Cost & Carbon

HM Government · BIS | Department for Business Innovation & Skills · Construction Industry Council · BIM | Building Information Modelling (BIM) Task Group

# What is Government **BIM?**

**2.32 Government will require fully collaborative 3D BIM** (with all project and asset information, documentation and data being electronic) as a minimum by 2016. A staged plan will be published with mandated milestones showing measurable progress at the end of each year.

**Mandated for Central Gov't Depts NOT for Local Government**

HM Government | BIS | Department for Business Innovation & Skills | Construction Industry Council | BIM Building Information Modelling (BIM) Task Group

# Government Soft Landings (GSL) Powered by BIM

**To champion better outcomes for our built assets during the design & construction stages though Government Soft Landings (GSL) powered by a Building Information Model (BIM) to ensure value is achieved in the operational lifecycle of an asset.**

**BIM + GSL = Better Outcomes**

**www.bimtaskgroup.org/GSL**

# Government Aspirations
# Construction 2025...



HM Government

Industrial Strategy: government and industry in partnership

Construction 2025

July 2013
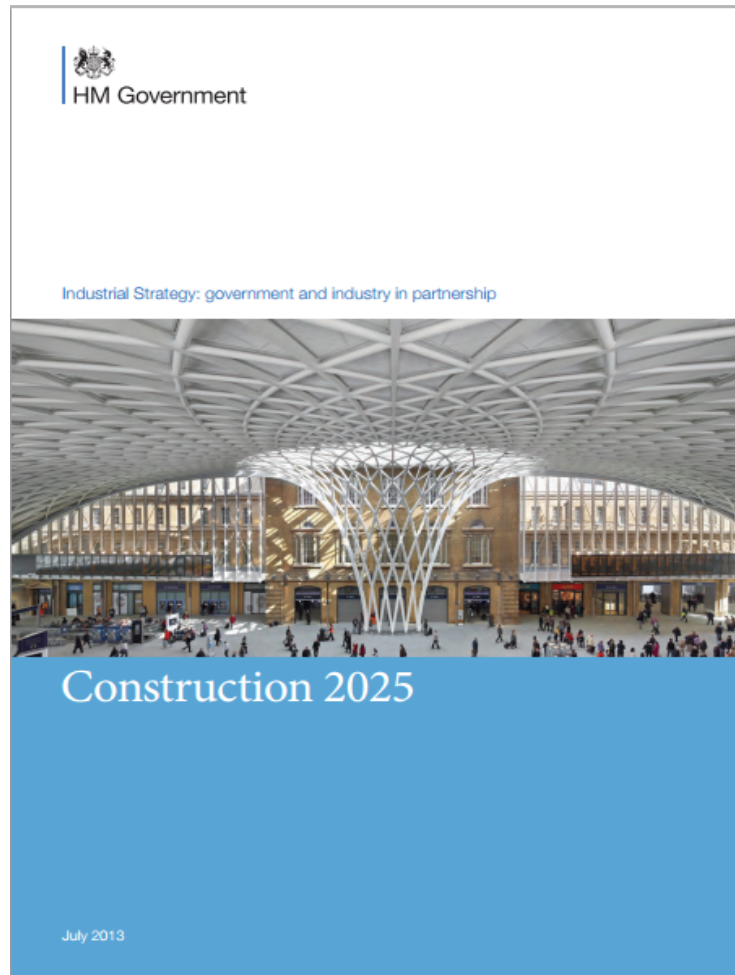
## HM Government 2013

Industrial Strategy: government and industry in partnership

**Lower costs**

**33%**

reduction in the initial cost of construction and the whole life cost of built assets

**Faster delivery**

**50%**

reduction in the overall time, from inception to completion, for newbuild and refurbished assets

**Lower emissions**

**50%**

reduction in greenhouse gas emissions in the built environment
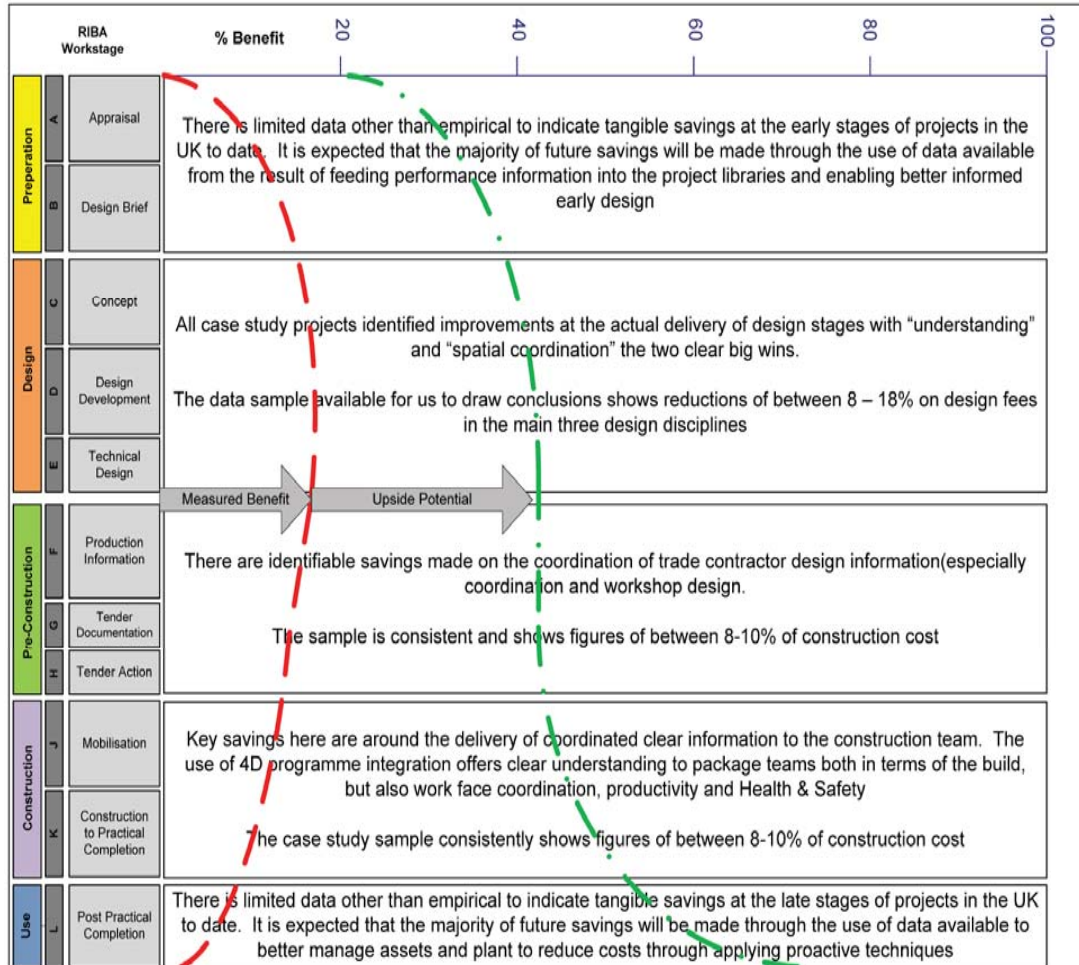
**Improvement in exports**

**50%**

reduction in the trade gap between total exports and total imports for construction products and materials

## Towards a Digital Built Britain.

HM Government   BIS | Department for Business Innovation & Skills   Construction Industry Council   BIM | Building Information Modelling (BIM) Task Group

# BIM Benefits full **Built Asset Lifecycle**

# BIM4LG

# Local Government BIM Community microsite



BIM4Lg microsite

www.bimtaskgroup.org/bim4lg

Register to access
Documents, Scorecard, Projects & Local
Government Community
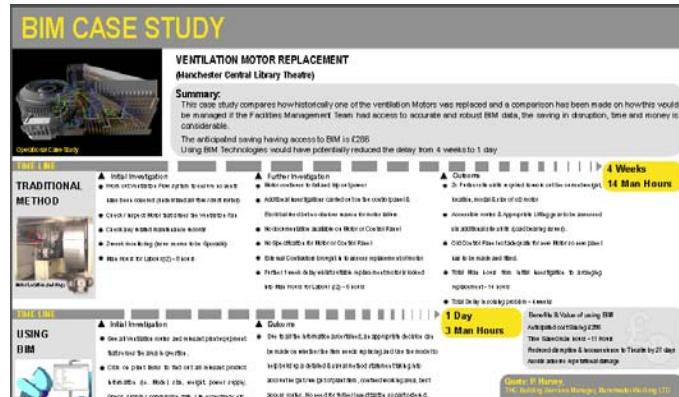.gov.uk email addresses only

# M4LG Documents



- ➜ Model Documents
  - ➜ Business Case
  - ➜ Local Government Flyer
- ➜ Reference Standards
- ➜ Case Studies

# M4LG Documents
## Model Business Case

rafted in plain language

support a local BIM Strategy
ocument(s)

M Business Case

T Business Case



BIM' for Local Government

A Model Business Case

### Introduction

BIM is a process which uses digitally produced asset data to improve information visibility and performance. It generates an interactive model which facilitates fully integrated planning, procurement, construction, operation, and maintenance of built asset and infrastructure projects. It saves money because mistakes made through poor communication between the numerous parties involved in construction using traditional methods are significantly reduced.

Managing and using common data results in greater clarity and accuracy through the option appraisal process. Faster construction, improved asset quality and reduced running costs will result in less capital and revenue investment.

It is one of the processes used by the car and aerospace industries which has allowed them to significantly improve the quality of their product whilst also reducing the end price.

The HM Government Construction Strategy mandates the use of BIM on all directly funded projects by 2016. This is based on the hypothesis that "a client can derive significant improvements in cost, value and carbon reduction performance through the use of open shareable asset information". BIM will contribute towards an overall target of 20% saving. The total annual spend by Local Government in construction is c£108n pa. The opportunity to make significant savings or reinvest is therefore clearly one that should be explored.

### The Benefits

Evidence taken from projects already using BIM demonstrates clear benefits to clients, primarily a saving in cost, and a significant increase in certainty and quality, not just in the project execution stage but also the operation and maintenance of the asset.

### Certainty and Quality

The data can be visualised in real time which allows the asset to be designed in a virtual environment prior to going on site. End users and stakeholders can contribute with more confidence and clarity at all stages of project option appraisals through design development, thus creating a robust engagement process which reduces the risk of misunderstanding and improves clarity. This will deliver efficiencies when working with Regulatory and Statutory Bodies. The model generates a far higher level of coordination such that risks of additional

# M4LG Projects & Members

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Search:

| | LOCATION | TOWN | TYPE | FRAMEWK VAL £M | INCEP COMP | REG |
|---|---|---|---|---|---|---|
| ad Fire Station | Yorks & Humber | Hull | CIVIC BUILDINGS | 0.0 | 0/0 | 11/2014 | East Riding of Yorkshire Co |
| rd: Bridlington | Yorks & Humber | Bridlington | LEISURE | 0.0 | 0/0 | 10/2015 | East Riding of Yorkshire Co |
| r Town Hall | North West | Manchester | CIVIC BUILDINGS | 0.0 | 0/0 | 01/2014 | Manchester C Council |
| ett Primary | South East | | SCHOOLS | 0.0 | 0/0 | 09/2015 | Hampshire C Council |
| aterlooville chool | South East | Waterlooville | SCHOOLS | 8.0 | 0/0 | 09/2014 | Hampshire C Council |

| | LOCATION | TOWN | TYPE | FRAMEWK VAL £M | INCEP COMP | REG |
|---|---|---|---|---|---|---|

to 5 of 5 entries
Next

**BIM4LG** Building Information Modelling (BIM) for Local Government

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## Members

This page lists all BIM4LG active members and their contact details.
There are curently 26 active members.
Please DO NOT circulate or otherwise abuse member details.

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|---|---|---|---|
| Allister Lewis | Hampshire County Council | 01962846158 | allister.lewis@hants.gov.uk |
| Andy Norton | Cheshire East Council | | andy.norton@cheshireeast.gov.uk |
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| James Lister | Gateshead Council | | jameslister@gateshead.gov.uk |
| MEMBER | LG AUTHORITY | PHONE | EMAIL |

# M4LG Documents
## M4LG Flyer

**LG**

## BIM for
## Local Government

### ee more - achieve more - use less

IM is a revolution in the way our built assets are conceived, esigned, built, managed & maintained. This is achieved by a evelopment of traditional methods using digital modelling and tructured information management through the whole life of an sset, from identifying the need, to disposal.

he benefits of BIM are now well proven with asset owners and the onstruction industry deriving significant benefit from its use.

IM for Local Government (BIM4LG) supported by the HM overnment BIM Task Group is helping deliver the benefits the M Government Construction Strategy to Local Government.

IM will bring a clearer vision of an authority's built asset estate to I stakeholders and achieve greater utilisation, with greater value d at lower cost, and with a reduced risk and environmental npact.

or more information and guidance on how to join the programme sit our website at

### LG Drivers for BIM

HM Government Construction Strategy mandates BIM for Government Departments.

Significant pressure on capital & revenue budgets.

Pressure to improve asset utilization and asset cost.

Maximise stakeholder engagement, value & benefit

Minimise delivery risk, reserves and maximise outcomes.

Maximise capital & revenue funding potential.

Support leaner sustainability & carbon reduction commitments.

Maintain an efficient asset procurement, design & management capability.

Maintain efficient framework & supply chain relationships.

Improve built asset cost, time, quality & carbon performance.

BIM4LG is open to all Local Government Authorities who procure or manage built assets as a client.

The programme is open, collaborative and mutually supported by its members.

### BIM BENEFITS

1 **Estate Visibility** - better information management, better decisions & performance reporting.

2 **Stakeholder Engagement** - digital modelling results in better, earlier & a more engaged understanding.

3 **Asset Utilisation** - better user access, flexibility, managed capacity & agile facility management.

4 **Health & Safety** - better management of fire, natural disaster, development & operational health & safety risk.

5 **Environmental Impact** - less waste, less energy, better carbon & environmental performance.

6 **Quality** - improved outcomes, stakeholder satisfaction, operational flexibility & design life, performance.

7 **Value & Cost** - improved value, efficiency and reduced cost.

8 **Whole Life Asset Management** - from inception to disposal, full tractability, design, management, planned & reactive maintenance.

9 **Development Risk** - greater certainty of outcome, reduced risk premium, insurances & programme uncertainty.

10 **Project Delivery** - shorter development cycles, fewer programme & cost variations.

# M4LG 10 Min **Score Card**



10 Minute BIM Test

# M 4 Local Government



more information see

**www.bimtaskgroup.org/bim4lg**

ontact (via the website)

John Lorimer - Local Government Liaison Officer

Graeme Tappenden – Local Government Support Officer