



The good, the bad and the darn right impossible.

Hoare Lea – 2017



Agenda



- OUR FIRM
- WHERE WE WERE
- WHERE WE ARE AND HOW DID WE GET HERE
- WHERE ARE WE GOING?

Our firm



Specialist MEP designers for over 150 years

We are a highly successful, international firm of MEP consulting engineers.

We are the largest firm of MEP consulting engineers in the UK and provide an expanding range of complementary specialist services to our clients across the entire life span of their projects; from strategic definition through design, handover, occupation and in use.

Our client-focused and design-led service is underpinned by our commitment to collaboration and our passion for innovative sustainable design.

Our firm remains wholly owned by our partners, enabling us to better focus on the needs of our clients.



SUSTAINABILITY • MECHANICAL

INTELLIGENT BUILDINGS • CGI • PERFORMANCE OPTIMISATION EXPERT WITNESS • VERTICAL TRANSPORTATION
FAÇADE ACCESS • PROPERTY SERVICES • ELECTRICAL ACOUSTICS • UTILITY AND ENERGY INFRASTRUCTURE
LIGHTING • OPERATIONAL ENGINEERING • PUBLIC HEALTH AIR QUALITY • RESEARCH AND DEVELOPMENT
BUILDING PHYSICS • FIRE ENGINEERING

Our firm



Great people

We use our industry leading professional development scheme to nurture and develop the very best people.

We promote inquisitiveness and innovation.

Within a supportive and collaborative environment we produce individuals who enjoy working with us, delivering simple, elegant and efficient designs.

Respected reputation

We have influence in the wider industry and are in a unique position to make a real difference in the industry.

Connected to decision makers we sit on many advisory committees, contributing to complex agendas and help guide policy.



Industry recognition

We are very proud of the fact that what we do and how we do it gets recognised regularly by the wider construction industry.

We are the current holder of the CIBSE Building Performance Awards: Consultant of the Year, as voted by many of our peers in the industry.

We have been awarded this accolade more times than anyone else since this award was inaugurated.



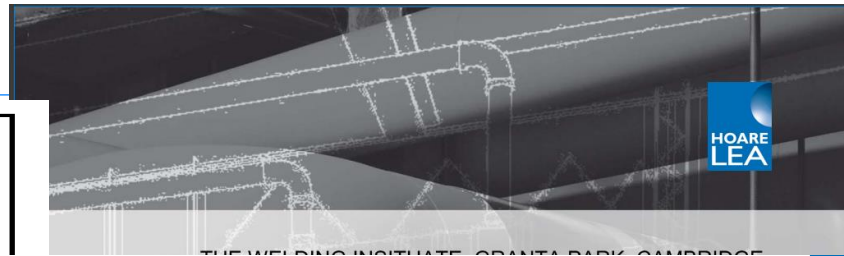


Where We were

Hoare Lea – 2017



Where We Were



AIR HANDLING UNIT SCHEDULE	
PROJECT	Chemical Engineering & Biotechnology
No.	26/01013
SYSTEM	Primary Supply Air



SCHEDULE OF LV SWITCHBOARDS

CHEMICAL ENGINEERING & BIOTECHNOLOGY
26/01013



Schedule: Y71-1
Revision: C1
Made: 25/01/2013
Made: EH
Checked: JMB

Notes:
1. Devices supplying main fire alarm panels are to incorporate a red panel.
2. Each device to be permanently labelled with reference and function.
3. Battery and associated charger to be provided internally to all panels to supply all motorised devices as required.

Board Ref.	Function	Construction	Form	IP	Device Pattern	Access	Cabling		Finish
							Power	Controls	
W111/LV1	Main LV Panel within Services Compound	Indoor multicubical, freestanding	4b Type 2	31	ACBs withdrawable, all others fixed	Front and Rear	In: Down, Out: Up	In/Out: Up	Standard
W111/LV2	2nd Floor Plantroom LV Panel	Indoor multicubical, freestanding	4b Type 2	31	ACBs withdrawable, all others fixed	Front and Rear	In/Out: Up	In/Out: Up	Standard
W111/ACO	Autochangeover panel supplying W111/ESB from either normal or generator sources.	Indoor wall mounted panel board	2 Type 2	31	Fixed	Front Only	In: Down, Out: Up	In/Out: Down	Standard
W111/ESB	Generator LV Panel Board	Indoor wall mounted panel board	4b Type 2	31	Fixed	Front Only	In: Down, Out: Up	In/Out: Down	Standard
L/LG/NSB	Lab Block LG Floor North Panel Board	Indoor wall mounted panel board	4b Type 2	31	Fixed	Front Only	In: Down, Out: Up	In/Out: Down	Standard
L/LG/SSB	Lab Block LG Floor South Panel Board	Indoor wall mounted panel board	4b Type 2	31	Fixed	Front Only	In: Down, Out: Up	In/Out: Down	Standard
L/UG/NSB	Lab Block UG Floor North Panel Board	Indoor wall mounted panel board	4b Type 2	31	Fixed	Front Only	In: Down, Out: Up	In/Out: Down	Standard
L/UG/MRRC	Lab Block UG Floor NMR Panel Board	Indoor wall mounted panel board	4b Type 2	31	Fixed	Front Only	In/Out: Up	In/Out: Down	Standard
L/UG/SSB	Lab Block UG Floor South Panel Board	Indoor wall mounted panel board	4b Type 2	31	Fixed	Front Only	In: Down, Out: Up	In/Out: Down	Standard
L/01/NSB	Lab Block First Floor North Panel Board	Indoor wall mounted panel board	4b Type 2	31	Fixed	Front Only	In: Down, Out: Up	In/Out: Down	Standard
L/01/SSB	Lab Block First Floor South Panel Board	Indoor wall mounted panel board	4b Type 2	31	Fixed	Front Only	In: Down, Out: Up	In/Out: Down	Standard
R/ACO1	Autochangeover panel located at the top of Researchers' House North Lift shaft to changeover from normal to emergency supply	Indoor wall mounted panel	2 Type 2	31	Fixed	Front Only	In/Out: Down	In/Out: Down	Standard
R/ACO1	Autochangeover panel located at the top of Researchers' House South Lift shaft to changeover from normal to emergency supply	Indoor wall mounted panel	2 Type 2	31	Fixed	Front Only	In/Out: Down	In/Out: Down	Standard

MAX INITIAL FLOW RESISTANCE
MAX FINAL FLOW RESISTANCE
FILTER TYPE

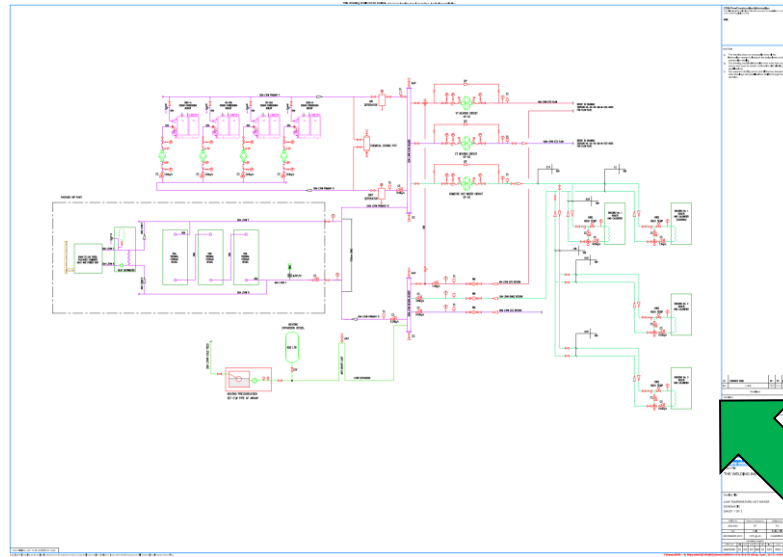
100 Pa
250 Pa
Bag
inspection window and internal light

ACCESS SECTION
WIDTH: 600 mm

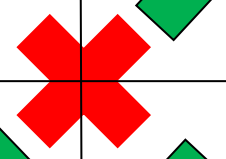
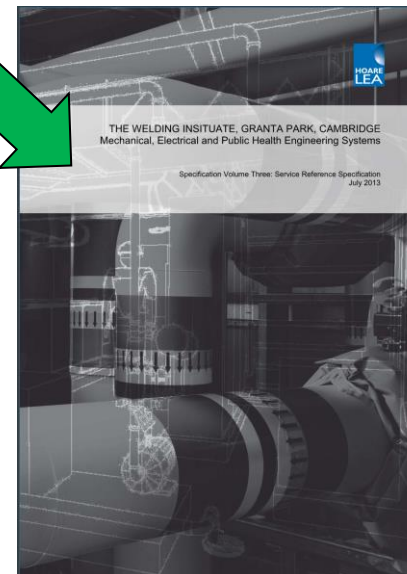
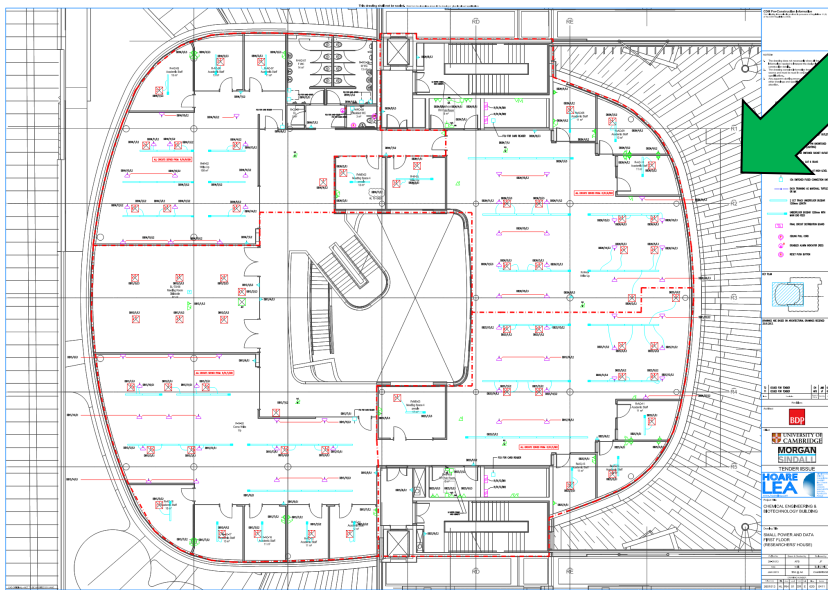
DATE	BY	DESCRIPTION
25/01/2013	EH	ISSUED FOR CONSTRUCTION

DATE	BY	DESCRIPTION
25/01/2013	EH	ISSUED FOR CONSTRUCTION

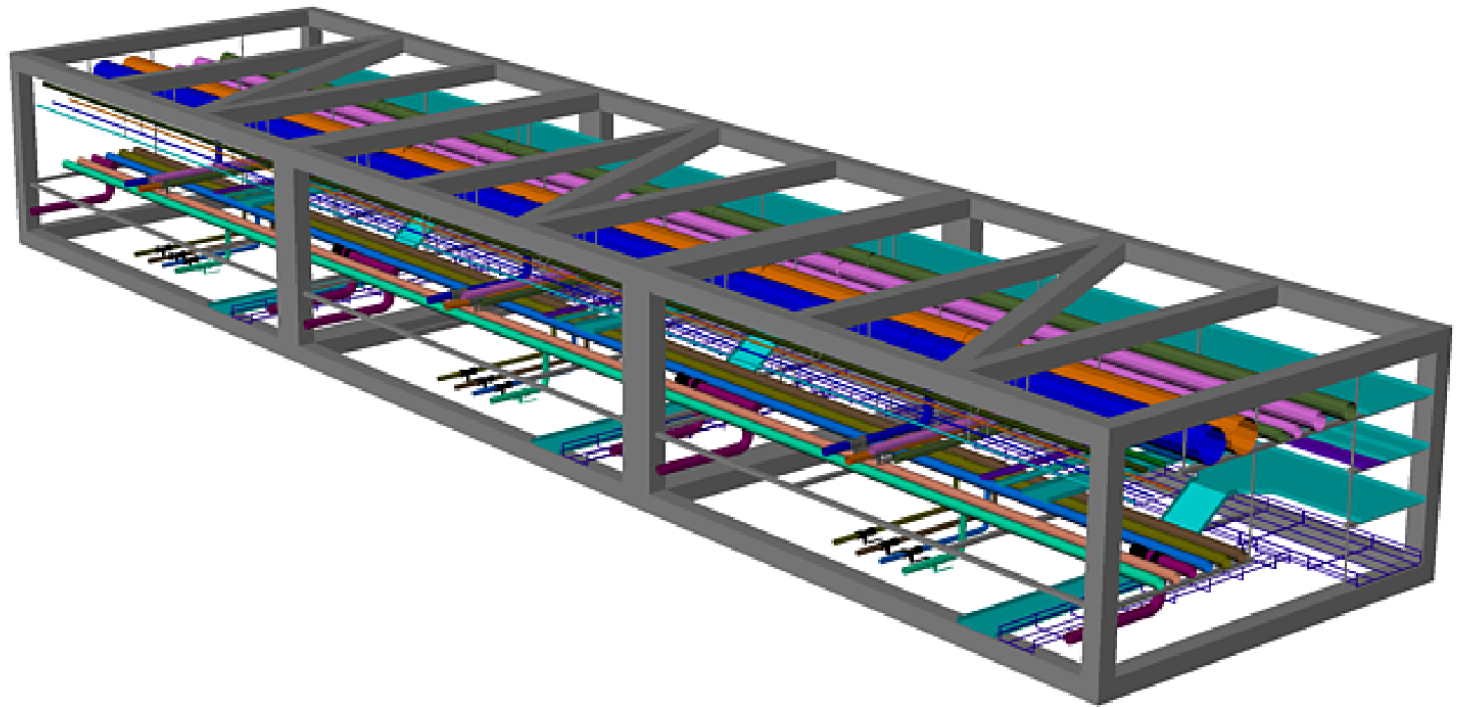
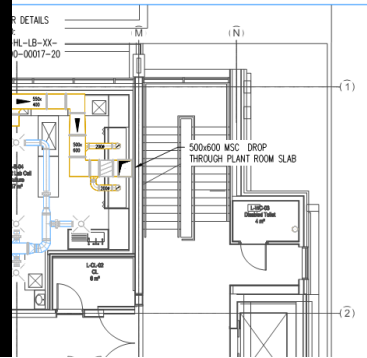
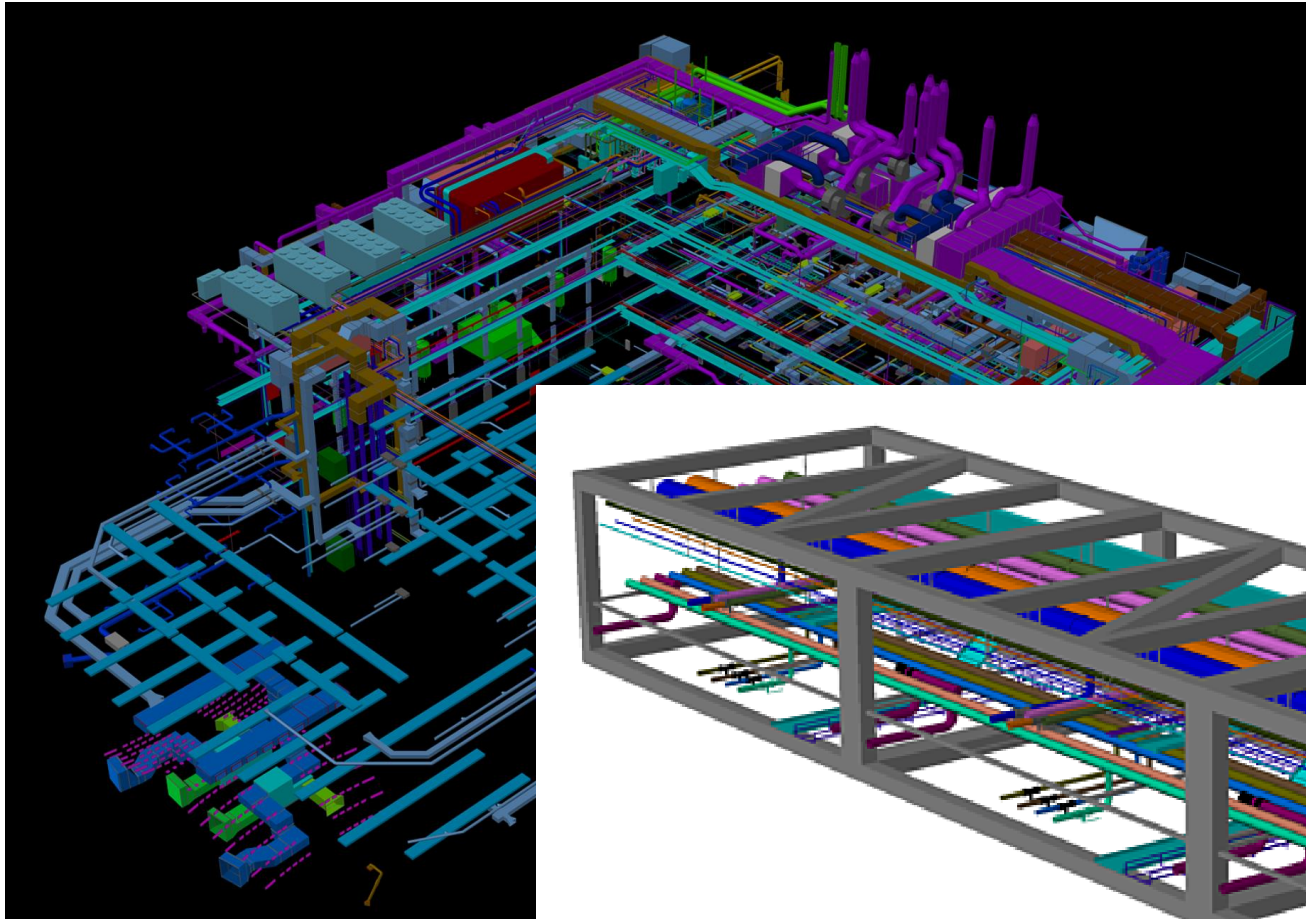
Where We Were



AIR HANDLING UNIT SCHEDULE		
PROJECT	Chemical Engineering & Biotechnology	
No.	26/01013	
SYSTEM	Primary Supply Air	
REFERENCE	J10-03	
GENERAL INFORMATION		
CONSTRUCTION	PURPOSE: DECK BASE FRAME HEIGHT: 195 mm PANEL THICKNESS: DOUBLE SKINNED: 50 mm WEATHERPROOF CONSTRUCTION: Yes SINGLE OR DOUBLE STAGGED: No	Primary Supply Air - Variable volume (M1.3)
MAXIMUM DIMENSIONS	LENGTH: 9000 mm WIDTH: 1700 mm HEIGHT: 2300 mm	
ACCESSORIES	INSPECTION POINTS TO FAN: Yes INSPECTION POINTS FOR CONTROL INSTRUMENTS: Yes CLEAN FILTERS AT COMPLETION: Yes SPARE SET OF FILTERS AT COMPLETION: Yes PRESSURE GAUGE ON EACH FILTER BANK: Yes CARTRIDGE TYPE HEAT COOLING COILS ON RAILS: Yes - Magnathic HUMIDIFIER SECTION VENTURI INLET WHIRL PLATE: N/A COOLING COIL SECTION ELIMINATORS: Yes MILNEX LINING TO ACOUSTIC SPLITTERS: No LOW LEAKAGE DAMPERS: Yes DAMPER ACTUATORS: Yes - By Controls Specialist	
MARK TEST	TEST SPECIES REQUIRED: Yes	
SUITY	SYSTEM DESIGN AIR FLOW RATE: 5,550 m ³ /h AIR FLOW RATE CAPABILITY MARGIN: 5.0 % AHU COMPONENT SELECTION AIR FLOW RATE: 5,828 m ³ /h	
PERFORMANCE	SEE SEPARATE PERFORMANCE CRITERIA IN SPECIFICATION CLAUSE V05.4500	Yes
COMPONENTS GENERALLY IN DIRECTION OF AIRFLOW		
INLET DAMPER	WIDTH: 800 mm	Inspection window and internal light
ACCESS SECTION	WIDTH: 800 mm	Inspection window and internal light
FIN ROOM FLOOR (HEATING / RECOVERY)	AIR DENSITY: 1.205 kg/m ³ AIR TEMPERATURE ON: 18.0 °C AIR TEMPERATURE OFF: 8.0 °C HEATING/HEAT RECOVERY CAPACITY (HAW/HWR): 0 kW PERCENTAGE PROPYLENE GLYCOL: 8.0 % ANTICIPATED GLYCOL TEMPERATURE ON: 18.0 °C ANTICIPATED GLYCOL TEMPERATURE OFF: 18.0 °C SPECIFIC HEAT FOR GLYCOL/WATER MIX: 4.2 kJ/kg°C GLYCOL FLOW RATE: 0.0 kg/s	Inspection window and internal light
FIN ROOM COIL (HEATING / RECOVERY) DOWNSTREAM	WIDTH: 800 mm AIR DENSITY: 1.205 kg/m ³ AIR TEMPERATURE ON: 18.0 °C AIR TEMPERATURE OFF: 8.0 °C HEATING CAPACITY: 107 kW HEATING FLUID SPECIFIC HEAT CAPACITY: 4.2 kJ/kg°C HEATING FLUID TEMPERATURES: FLOW: 80 °C, RETURN: 60 °C HEATING FLUID FLOW RATE: 3.3 kg/s	Inspection window and internal light
ACCESS SECTION	WIDTH: 800 mm	Inspection window and internal light
REFILTER	FILTER CLASS: G4 BS EN 779 MAX INITIAL FLOW RESISTANCE: 50 Pa MAX FINAL FLOW RESISTANCE: 150 Pa	Filter
FILTER	FILTER CLASS: F9 BS EN 779 MAX INITIAL FLOW RESISTANCE: 100 Pa MAX FINAL FLOW RESISTANCE: 250 Pa	Filter
ACCESS SECTION	WIDTH: 800 mm	Inspection window and internal light



Where We Were



NOTES	
1.	The drawing does not necessarily show all the information needed to construct the design shown in this specification sheet.
2.	The drawing is intended to illustrate the basic form and function of the system and is not intended to be used as a construction document.
3.	Any specific details, sizes and dimensions between other drawings and specifications shall be brought to our attention.

NO.	REVISION	DATE	BY	CHECKED
1	Issue for approval	12/12/2012	HL	HL

Copyright: This drawing is the property of Hoare Lea and all rights reserved. No part of this drawing may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Hoare Lea.

Where We Were



Creating Project Awareness

HL Apps

0510516 - Cabot Circus

Context Panel

ACAD Project Drawing

Properties

Actions

Drawing Setup

Scale: 1:100

LayoutName: Layout1

TemplateFile: R:\Hoare Lea Library\AutoCAD\01 - Templates\HL

TitleBlockAttribute: R:\Hoare Lea Library\AutoCAD\03 - Hoare L

Title Block Template: A0LN_HL13 - A0 Landscape Normal HL13

Title Block Information

TitleLine1: Public Health Engineering Systems

TitleLine2: Level 03

TitleLine3: Public Health

TitleLine4: General Arrangement

Title: Public Health Engineering Systems Level 03 P

Number: 0510516-HL-Z3-03-GA-P-520-0001

Zone: Z3 - Zone 3

Level: 03 - Level 03

Type: GA - General Arrangement

Role: P - Public Health Engineering Systems

Code: 520 - Public Health

Project Title
CABOT CIRCUS
ADDRESS LINE 1 EDIT
ADDRESS LINE 2 EDIT
ADDRESS LINE 3 EDIT

Drawing Title
PUBLIC HEALTH ENGINEERING SYSTEMS
LEVEL 03
PUBLIC HEALTH
GENERAL ARRANGEMENT

PRELIMINARY

Drawn by	Designed by	Reviewed by
-	-	-
Project No	Date	Scale @ A0
0510516	Oct 13	1:100

DRAWING NUMBER								
Project Code	Orig.	Zone	Level	Type	Role	Class.	Number	Rev.
0510516	HL	Z3	03	GA	P	520	0001	00

AutoCAD Tools

- > _ARCHISORT Archisort
Simplifies an Architect's drawing ready for use as an xref.
- > _hatchkill Hatchkiller
Removes hatching.
- > _hthicken HThicken
Increases the thickness of lines.
- > _hflatten Hflatten
Flattens Z coordinates of most objects to 0
- > _XBRK X Break
Breaks one line crossing another
- > _unbreak Un-Break
Combines two lines
- > _ROD-END Rod End
Constructs a "broken shaft end" at the end of two lines
- > _MODLAYRN Mod Layer Numbering

Eristo\Drawings\0510516\004 PUBLIC HEALTH\0510516-HL-Z3-03-GA-P-520-0001.dwg:Will Reynolds

HL Apps

Icons for drawing management and search.

Search Results Columns

FileName	Title	Number	Zone	Level
0510516-HL-Z3-03-GA-P-520-0001.dwg	Public Health Engineering Systems Level 03	0510516-HL-Z3-03-GA-P-520-0001	Z3	03
0510516-HL-Z3-02-GA-P-520-0002.dwg	Public Health Engineering Systems Level 02	0510516-HL-Z3-02-GA-P-520-0002	Z3	02
0510516-HL-Z3-01-GA-P-520-0003.dwg	Public Health Engineering Systems Level 01	0510516-HL-Z3-01-GA-P-520-0003	Z3	01
0510516-HL-Z2-03-GA-P-520-0004.dwg	Public Health Engineering Systems Level 03	0510516-HL-Z2-03-GA-P-520-0004	Z2	03
0510516-HL-Z2-02-GA-P-520-0005.dwg	Public Health Engineering Systems Level 02	0510516-HL-Z2-02-GA-P-520-0005	Z2	02
0510516-HL-Z2-01-GA-P-520-0006.dwg	Public Health Engineering Systems Level 01	0510516-HL-Z2-01-GA-P-520-0006	Z2	01
0510516-HL-Z1-03-GA-P-520-0007.dwg	Public Health Engineering Systems Level 03	0510516-HL-Z1-03-GA-P-520-0007	Z1	03
0510516-HL-Z1-02-GA-P-520-0008.dwg	Public Health Engineering Systems Level 02	0510516-HL-Z1-02-GA-P-520-0008	Z1	02
0510516-HL-Z1-01-GA-P-520-0009.dwg	Public Health Engineering Systems Level 01	0510516-HL-Z1-01-GA-P-520-0009	Z1	01



Whilst this is not “BIM”.

It was the start of us trying to create and manage information and drawings from one source and use that information in multiple places.

Our First Revit Project Was in 2009?

- **We have since worked on over 300 Revit (BIM) projects across the firm**
- **Things have changed and moved on a huge amount!**



WERE WE ARE AND HOW DID WE GET HERE

Hoare Lea – 2017



Getting to where we are



We we're early adopters

As an industry leader we adopt BIM technologies early enabling us to provide our clients with the latest services.

We had revit templates and a family library with about 1500 objects.

A huge shared parameter file.

We were starting to automate scheduling and performing some calculations directly in Revit.

We were delivering regular 2 day Revit training courses. Half of our employees were trained.

Use of Revit was starting to catch and in some office overtake the use of AutoCAD

We were pretty proud of our efforts.



Getting to where we are



BUT!

PAS 1192-4 Came out

We started to get requests for COBie and delivering models with all sorts of classification systems embedded

We were seeing more and more EIRs

Projects were getting bigger and more complex. = Bigger more complex model.

We were delivering more projects from multiple locations

And cracks in our methods, family libraries and templates started to show

We also realised that too much knowledge and knowhow sat within a small group of people who were spread around the business.

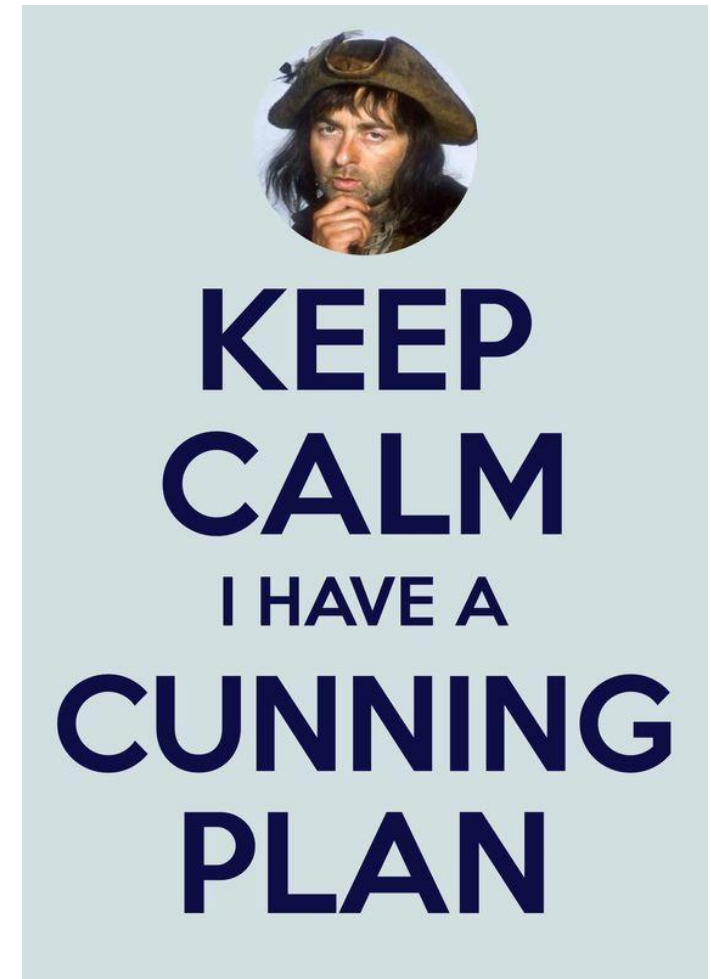
SOMEONE HAD A CUNNING PLAN!

We'll just make our families Level 2!

By adding Uniclass 1.4 & 2015 Parameters to our families

And the fields from COBie as shared parameters to our families and project templates, use the (old version of the) COBie toolkit and we'll be fine.

No one checks the COBie anyway!!! Right



Getting to where we are



A MORE THOROUGH PLAN WAS REQUIRED

A steering group consisting of delegates from all levels was formed

The business was consulted to identify key challenges and areas of main concern

Key challenges were identified and prioritised

Steering groups were formed at the requisite levels

A thorough strategy and business plan was proposed, reviewed many times and finally signed off a year after it's inception.

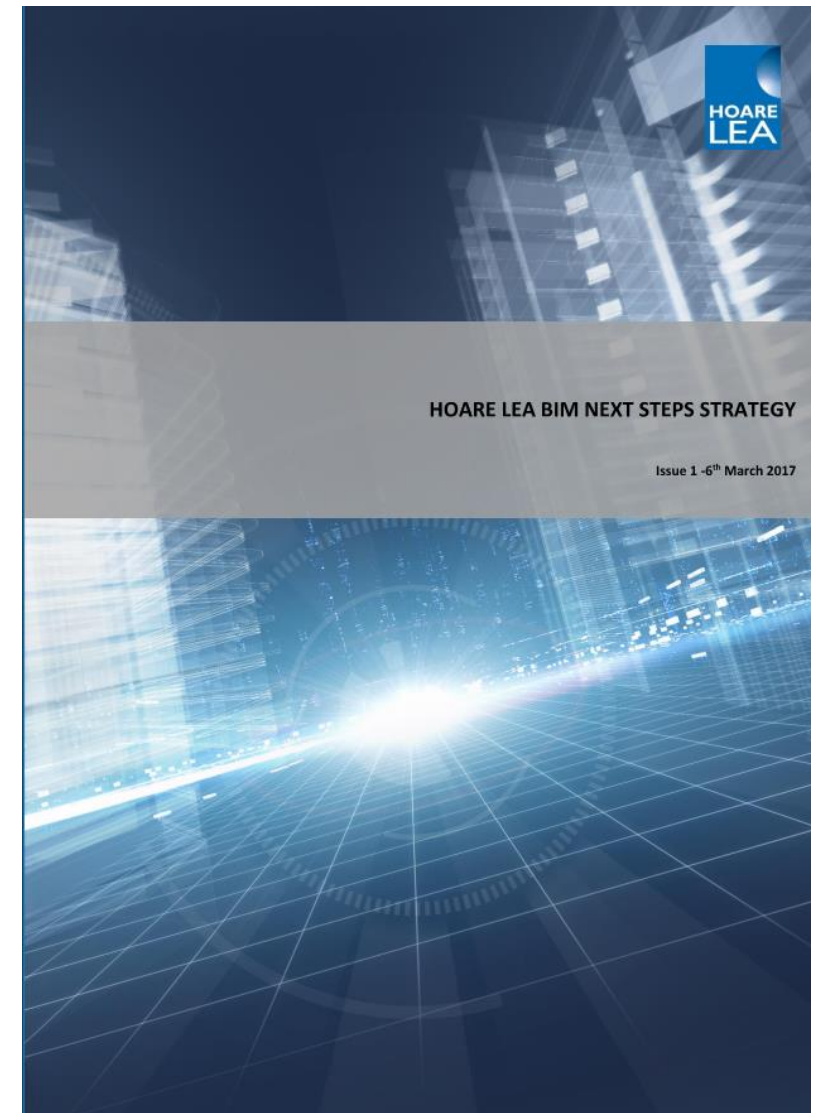
During this time many of the critical items were beginning to be addressed.

- **Re-organisation of project teams to align with PAS 192-2 Roles**
- **Training and guidance**
- **Fixing out libraries and templates**

A total of 16 actions were identified.

Split into dealing with External and Internal issues

And how we would and who was responsible for addressing an issue



Where are we?



We strive to have the best staff with the best training in all areas of the firm. BIM Is no different.

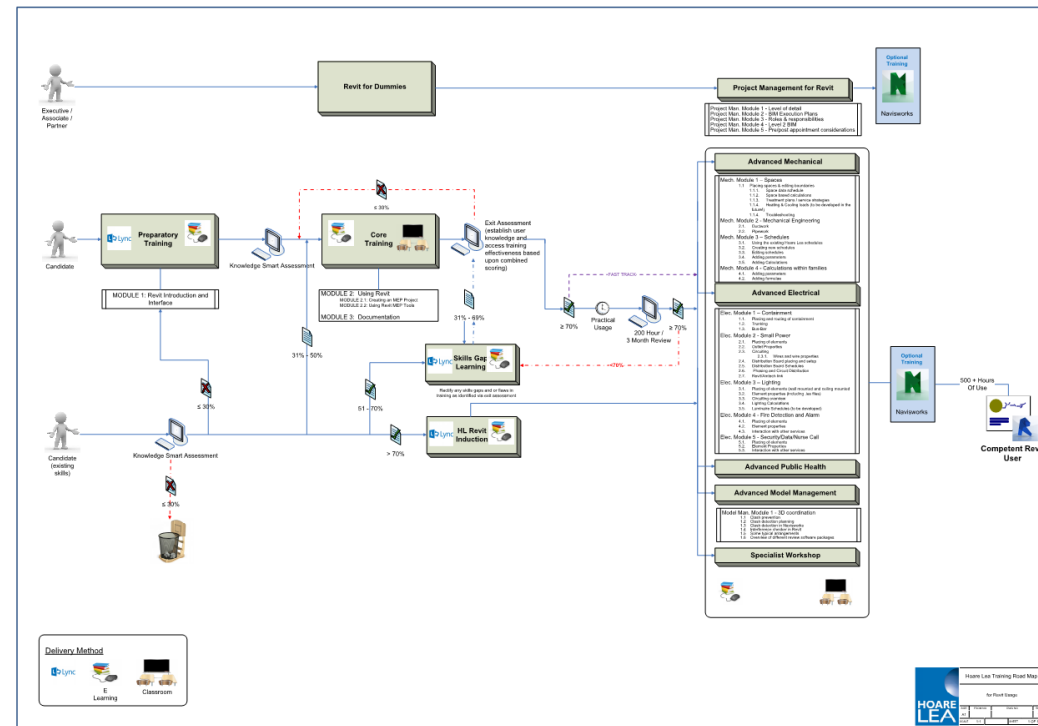
Over 75% of our Staff are trained to use Revit.

We deliver much of training to our people in-house using best practice knowledge at all levels.

Our training programme includes:

- Revit basics
- Advanced Revit use
- BIM Project Management
- Partner level training

Our BIM training is tailored to integrate with our ways of working.



Where are we?



We have a comprehensive suite of guidance documents

These are aimed at 3 Levels.

Partners and Senior Management

Project Managers and Engineers

Technical Staff

These documents are under constant review and regularly revised

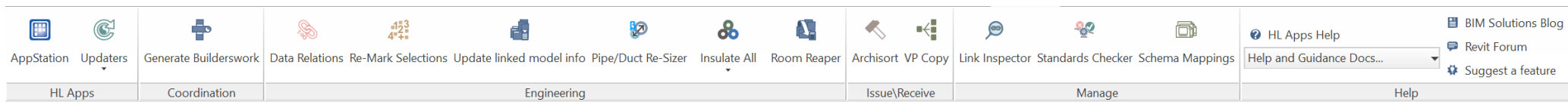
Many of these documents have now become integrated with our standard business and operating procedures blurring the lines between BIM and non BIM projects

Topic	Author	Type	Document / Location	Priority	Status
Fees and Our Commercial Offer	Andrew Krebs	Principles	Document Store\Management Groups\BIM Solutions\Management Guidance	A	Published
Appointments and Duties	Matthew Heaman	Standard Fee Proposal	Document Store\Management Groups\Marketing\External Marketing Kit\Kit of Parts\7 - Bespoke Bid Material\7c - Fee Proposal	A	Published
Capability Brochure	Richard Harryman	Marketing Brochure	Document Store\Management Groups\Marketing\External Marketing Kit\Kit of Parts\4 - Generic Capability Statement	A	Published
PQQ standard responses on Nexus	Andrew Krebs	Nexus Page	Can be found on the Marketing Nexus page under Submissions/PQOs - PQQ Database - BIM Solutions	A	Published
Managing External expectations	Richard Dunne	Principles	Document Store\Management Groups\BIM Solutions\Management Guidance	A	Published
BIM - A Quick reference Guide	Ben Roberts	Powerpoint	Document Store\Management Groups\BIM Solutions\Management Information\Guidance	A	Published
Project Mobilisation and Setup	Darren Quigley	Principles	Document Store\Management Groups\BIM Solutions\Project Leader Information\Guidance	A	Published
Graphical Output Quality	Andy Hill	Methods	Document Store\Management Groups\BIM Solutions\Technical Guidance	A	Published
Model Elements/Families	Paul Cooper	Principles	Document Store\Management Groups\BIM Solutions\Technical Information\Guidance	A	Published
Model Elements/Families	Grayham Roper	Methods	Document Store\Management Groups\BIM Solutions\Technical Information\Guidance	A	Published
Why We Need to Manage Models	Andrew Krebs	Principles	Document Store\Management Groups\BIM Solutions\Project Leader Guidance	A	Published
Model Performance	Andy Hill	Methods	Document Store\Management Groups\BIM Solutions\Technical Information\Guidance	A	Published
How To Use The BIM Protocol	Andrew Krebs	Methods	Document Store\Management Groups\BIM Solutions\Project Leader Information\Resources	A	Published

Where are we?



We have a central BIM team that includes software developers, engineers, content creation and training specialists.



We have a network of champions in each office representing every level of the business

Office	Managing Partner	Partner Champion	Project Manager Champion	Engineering BIM Champion	BIM Manager
Oxbridge	Matt Jones	Matt Chambers Partner BIM Steering Group	Paul Cooper BIM Project Management Forum	E – Jordan Mason M – Monika Nowak Technical BIM Champions	Grayham Roper Deputy - Craig Hobbs

We have in house visualisation, R&D, technical control property services and many other teams all looking a the best way to leverage models and data to deliver better projects and value to our clients

These groups do all try and work together and share information and development.

We have even recently employed an external BIM consultant to came and work in our Bristol office to critique what we do!



Our Approach

Automation of routine tasks

Revit to Excel two-way link

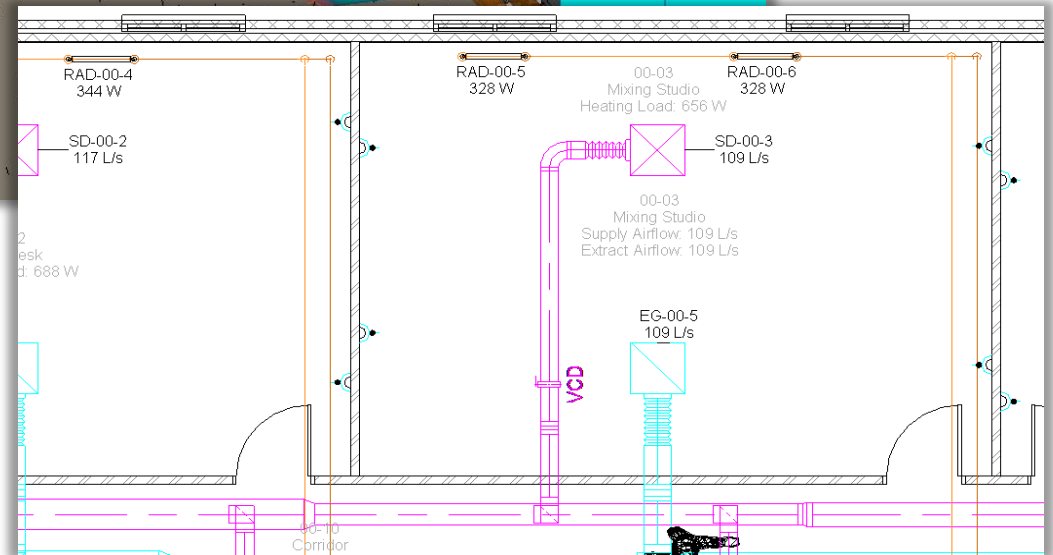
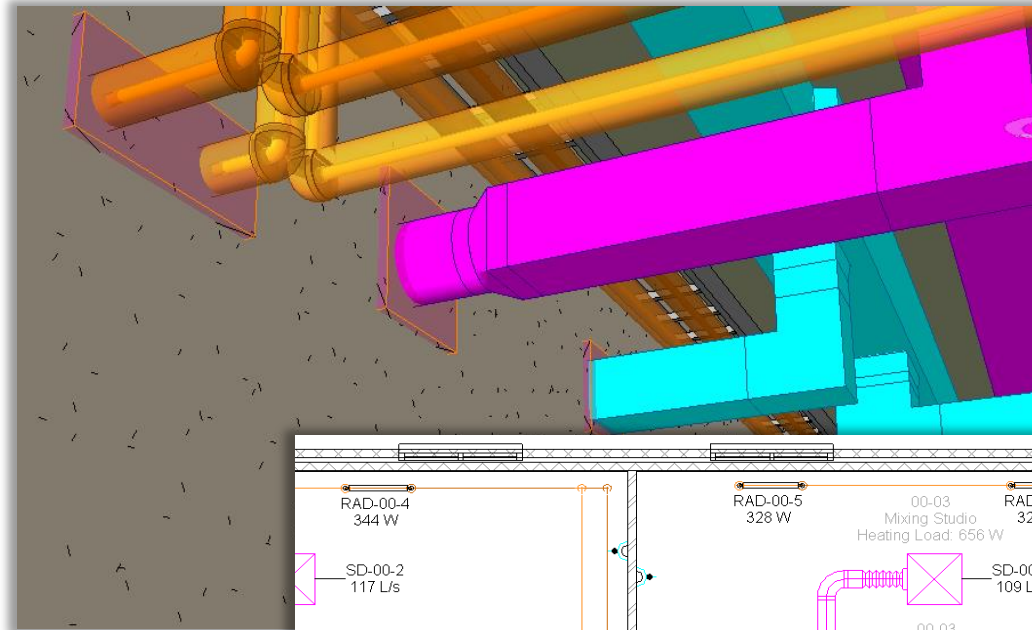
Automated builders' work holes

Automated pipe insulation

Model management tools such as standards checker

viewport copy, archisort, mark updater, room reaper, etc.

This allows us to spend more time concentrating on design



Our Approach – Using Revit as a design tool



Autodesk Revit MEP 2012 - HL-ProjectTEMPLATE 2012_robertsb

Home Insert Annotate Analyze Architect Collaborate View Manage Add-Ins Modify Modify Schedule/Quantities

Properties Group Ungroup New Delete Hide Unhide All Highlight in Model

Properties Headers Rows Columns Element

Modify Schedule/Quantities

Properties Schedule

Schedule: U41-1 Fan Edit Type

Identity Data

View Name U41-1 Fan Co...
 Dependency Independent
 Default View Templ... None
 Workset View "Sche...
 Edited by robertsb

Phasing

Phase Filter Show All
 Phase New Constr...

Other

Fields Edit...
 Filter Edit...
 Sorting/Grouping Edit...
 Formatting Edit...
 Appearance Edit...

Properties help Apply

3D View: (3D - robertsb) - HL-ProjectTEMPLATE 2012_robertsb

Floor Plan: 00 - Working View - HL-ProjectTEMPLATE 2012_robertsb

Schedule: U41-1 Fan Coil Unit Schedule - HL-ProjectTEMPLATE 2012_robertsb

REF	Room Number	Room Name	Type	Floor area served	Room conditions				Room cooling load		Room heating load	Maximum fan gain	Fresh air supply
					Summer		Winter		Sensible	Latent			
					Temperature	RH	Temperature	RH					
FCU-00-01	001014	SU-14	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-02	001013	SU-13	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-03	1149	Space	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-04	001011	SU-11	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-05	001012	SU-12	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-06	1061	Space	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-07	1023	Space	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-08	1149	Space	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-09	1149	Space	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-10	001010	SU-10	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-11	001009	SU-09	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-12	001008	SU-08	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-13	001007	SU-07	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s
FCU-00-14	001006	SU-06	HL_FCU-4 Spigot	60	24	50	21	50	800	160	800	1	80 L/s

HL-ProjectTEMPLATE 2012_robertsb - Proj...

- Views (Discipline)
- Legends
- Schedules/Quantities
 - 00 - Space loading calculations
 - COBie2-Component
 - COBie2-Component-Door
 - COBie2-Component-Window
 - COBie2-ComponentsToSchedule
 - COBie2-Space-FromSpaceObjects
 - COBie2-SpaceFromRooms
 - COBie2-System
 - COBie2-Type
 - COBie2-Zone
 - Document Issue sheet
 - Duct Schedule
 - Pipe Schedule
 - S11-1 Electric Water Heater Schedule
 - S11-2 Gas Water Heater Schedule
 - T31-1 Radiator Schedule
 - T31-4 Trench Heater Schedule
 - T31-5 Underfloor Heating Manifold Sch
 - U41-1 Fan Coil Unit Schedule**
 - U61-1 Passive Chilled Beam Schedule
 - U61-2 Active Chilled Beam Schedule
 - Y43-1 Duct Mounted Heating Coils Sch
 - Y45-1 Attenuator schedule
 - Y46-1 Supply Diffuser / Grille Schedule
 - Y46-2 Extract Grille Schedule
- Sheets (all)
- Families
- Groups
- Revit Links

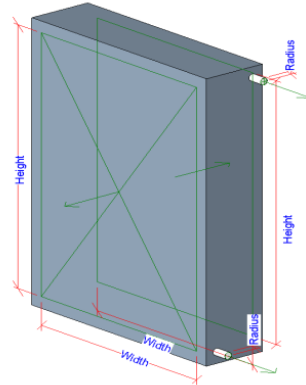
Ready Mechanical General (Not E) Main Model

Our Approach – Using Revit as a design tool

Calculations

Parameter	Value	Formula
TEMP SET (def:alt)	24.000000	=
TEMP HEAT COIL (def:alt)	16.000000	=
TEMP HOT IN (def:alt)	15.000000	= TEMP SET + (COOL DUTY / (0.2 * UPS LINES)) /
TEMP HOT OUT	70.000000	=
LINEAR TEMP DIFF	50.000000	=
HEAT FLOW (def:alt)	1000000	= COIL DUTY * (4.2 * (LINEAR TEMP DIFF -
HEAT BATTERY (HEAT (def:alt)	1.000000	= (0.2 * UPS LINES) * (TEMP SET - TEMP HEAT COIL
HEAT FLOW HEAT (def:alt)	1000000	= HEAT FLOW * HEAT FLOW
COIL DUTY (def:alt)	1.000000	= HEAT BATTERY (HEAT + HEAT REQUIRED FOR
HEAT (def:alt)	0.000000	=
Pressure	Act/line	=
UPS Flow (def:alt)	100.00 L/s	=
Electrical Efficiency	HEAT REQUIRED (def:alt)	0.000000
Dimensions		
Height (def:alt)	400.0	= Duct Width + 50 mm
Height (def:alt)	200.0	= Height / 2
Height (def:alt)	400.0	= Duct Height + 50 mm
Duct Width (def:alt)	400.0	=
Duct Height (def:alt)	500.0	=
Depth	125.0	=
Family Data		
Description	HEATER BATTERY	=
Family Code		=
Formula		=
Model		=
Manufacturer		=
Type Comments		=
URL		=
Cost		=
Values		
UPS Flow (def:alt)	1.00 L/s	=
HE FLOW (def:alt)	1.00 L/s	=
UPS LINES (def:alt)	100.000000	= UPS Flow / (4.2 * UPS

Intelligent Objects



Typical calculations

Flowrates
Coil Duties
Physical sizing

HEATER BATTERY SCHEDULE			
PROJECT		Project Name	
REF	LOCATION	SYSTEM	CO TY
HB6/01			
HB6/02			
HB6/03			
HB6/03			
HB6/4			

iSchematic

Answer the questions below, then once finished hit the build button to create or update the schematic. **Build in Model**

Boiler Schematic - Low water content, floor-standing

Q0 Give this schematic a name: **Build in Model**

Q1 Add required Boilers, including spares **Add+ V ^ X**

1 **Add+**

Q2 Number of CHPs **Add+ V ^ X**

1 **Add+**

Q3 CHP arrangement (refer to guidance notes)

Q4 Are there separate flue gas heat exchangers on CHPs? **No**

Q5

Q7 Secondary Circuits **Add+ V ^ X**

1 **Add+**

Build in Model

Help **Close**



Our People

[Back](#)



Rob Jackson

BA Hons Dip Arch
Associate Director

Contact Rob:

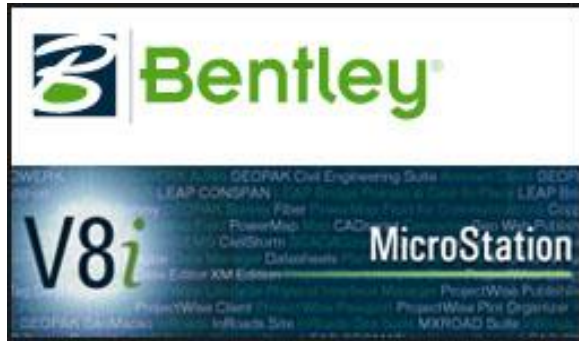
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THE COBIENATOR

RISE OF INDUSTRY FOUNDATION CLASSES

Our Approach – Interoperability



Industry Foundation Classes



Compliant Services

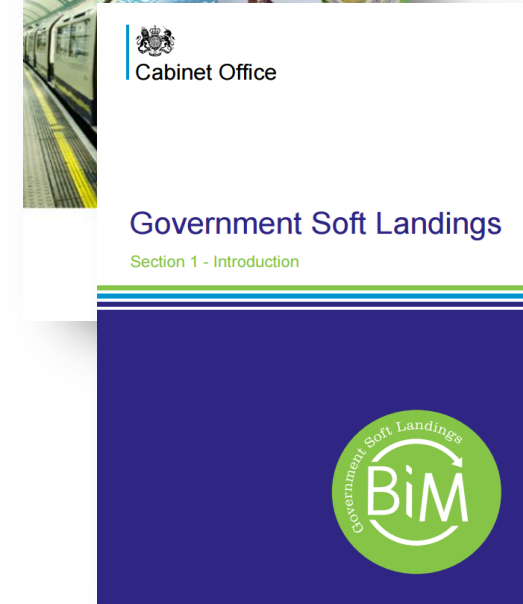
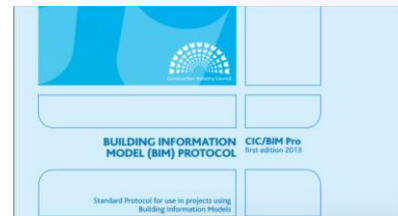


Level 2 BIM Compliance

Our range of BIM services are compliant with all current regulations and guidelines.

These include:

- PAS 1192 compliant team structures and information sharing processes.
- BS 1192 & BS8541 compliant naming standards.
- Regular use of Common Data Environments on all our BIM projects.
- COBie parameters and Uniclass 2015 classification codes embedded in all our content.



3D Modelling



Immersive Design Experience

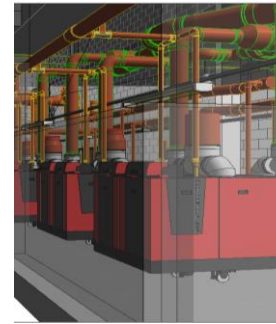
3D modelling is a key part of our BIM offering.

We use these models to help our clients:

- Visualise designs
- Take virtual tours of plant spaces
- Coordinate services

By enabling clients to fully understand their decisions during the design stage we help to ensure that the right decisions are made at the right time.

This in turn reduces the need for future changes and helps to effectively manage project costs.

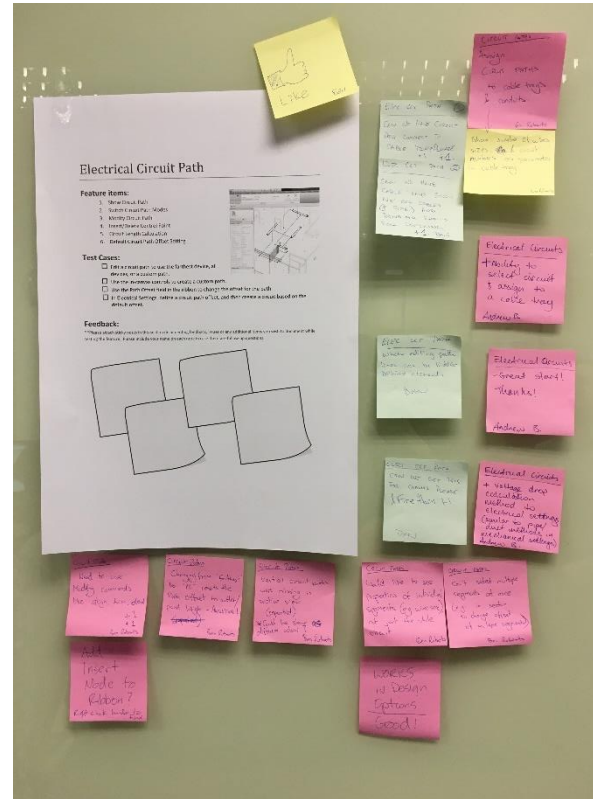


Contributing to the future of BIM

We pride ourselves on being at the forefront of BIM development and are recognised in the industry as a leader.

In particular, we are continuously pushing the boundaries of using Revit as a design tool, helping Autodesk improve software capability, and writing our own bespoke add-ins.

We have contributed substantially to BSRIA BG6, helping to shape BIM in the industry today. We continuously offer guidance to the industry through regular worldwide speaker slots, debate panels and journal articles, and we are an active member of the CIBSE Digital Steering Group.



Challenges and Barriers



INTERNAL

Resistance to change

Doing what we've always done is easy

Conflicting opinions

Budgets



EXTERNAL

Resistance to change

Conflicting opinions

Managing Change (Incoming Models)

Differing Knowledge and skill levels

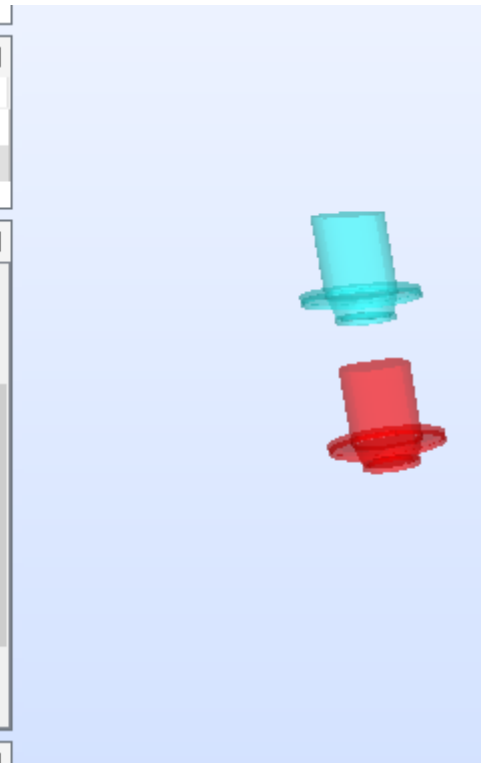
Managing expectations

Changing technology

Changing standards

Result Summary					
Issue Count	0	93	0	0	0
Issue Density	0	7.9	0	0	0

Results					
No Filtering Automatic					
Results					
Removed [0/1]					
Distribution Element [0/1]					
Sensor CombinedDetectorBeacon [1]					
(OLD) Distribution Element. 1.352					
Modified [0/91]					
Distribution Element: Geometry [0/3]					
Distribution Element: Reported Property [0/20]					
LightingDevice PIRDetectorRecessed [0/8]					
Sensor CombinedDetectorBeacon [0/12]					
Electric Appliance: Reported Property [0/1]					
Lamp: Geometry, Reported Property [0/18]					
Light Fixture: Reported Property [0/30]					





WHERE ARE WE GOING

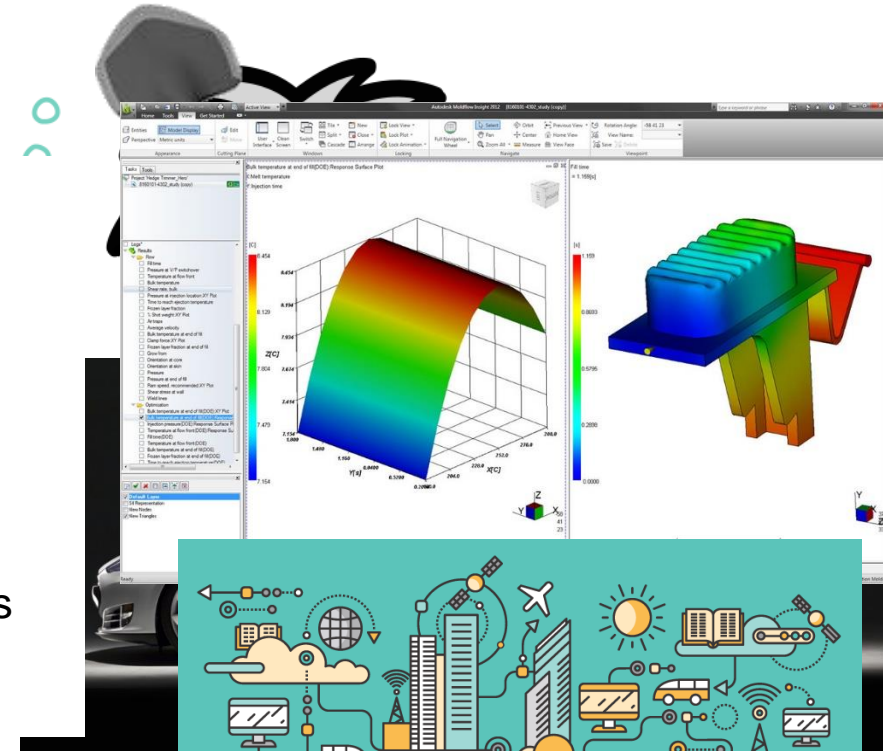
Hoare Lea – 2017



Timeline of Digital Innovation



- 10 Years: Agile, Immediate and Informative
 - Computers will optimise rather than just test
 - Instant feedback on design decisions
 - Close collaboration with team members
 - Designing directly in the virtual environment
 - We will be very involved with in-use data
 - Integrating buildings into smart cities
 - Construction will be modular prefab, carried out by robots and 3D printers



– Making loads of mistakes

2017 Getting ahead 2018 2019 2020 2021 2022 2023

– Pushing the boundaries of Revit's capabilities