CitA
BIM GATHERING

Building Capabilities in Complex Environments

CitA BIM Gathering 2017, Croke Park, November 23rd & 24th, 2017

CitA
BIM GATHERING

Introduction

Zoey Ritchie

Mark Bew

PCSG

www.pcsg.co.uk

Commercial outputs from Building Information Modelling

Possibilities and Challenges


GREGGS
Multi-Deck Display


L SHAPE superstardust

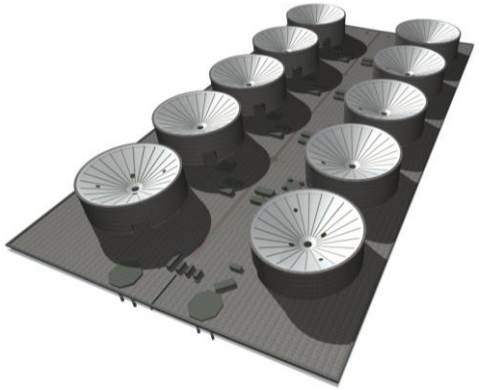

XL Refrigerators
superradical


FRESH MEAT COUNTER

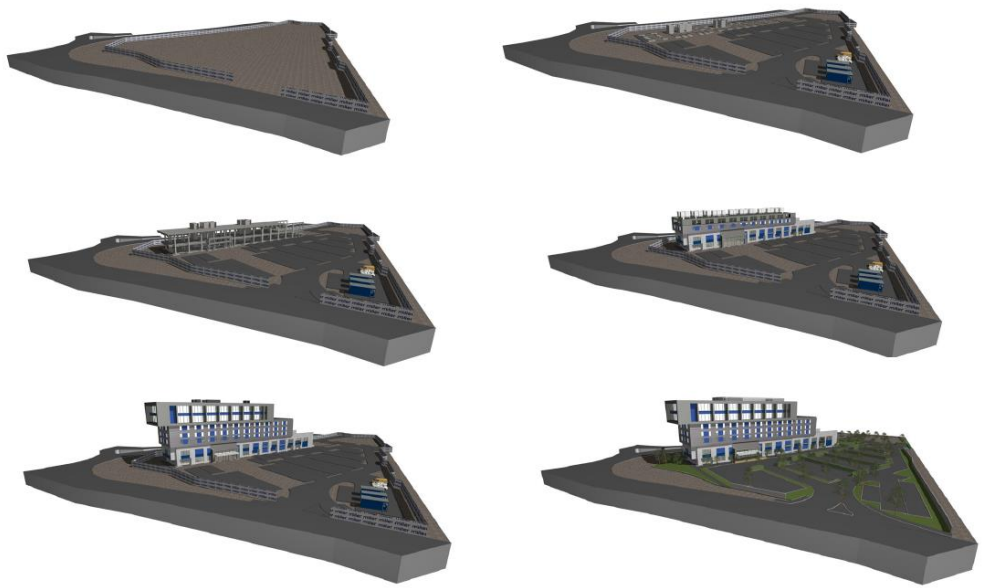
2006

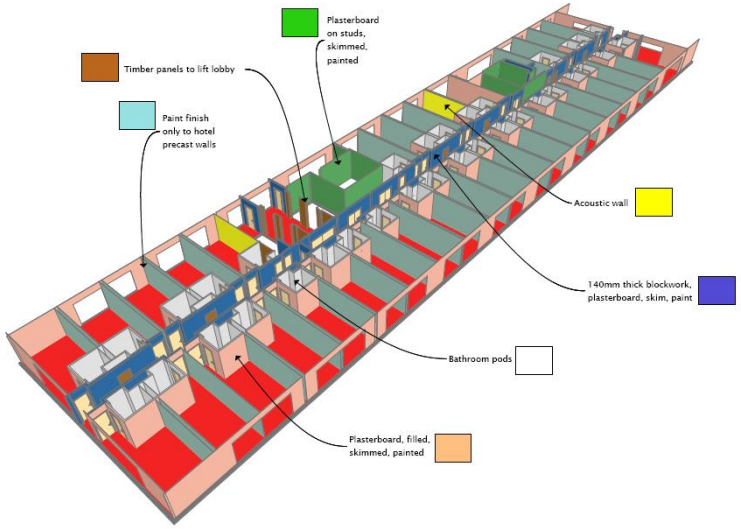
privic

niche products and services - engineered perfection



Business Model?





What is BIM???

privicA

privic


United Kingdom
Newcastle upon Tyne
Isle of Man
Great Britain
Liverpool
Manchester
ENGLAND
Cambridge
WALES
Oxford
London
Bristol
Cardiff
Brighton
Southampton
Plymouth

RIB running together

D Groundwork

D20 Excavating and filling
Q20 Granular sub-bases to roads/pavings

INFORMATION PROVIDED				MEASUREMENT RULES	DEFINITION RULES	COVERAGE RULES	SUPPLEMENTARY INFORMATION
P1 The following information is shown either on location drawings under A Preliminaries/General conditions or on further drawings which accompany the bills of quantities or stated as assumed: (a) the ground water level and the date when it was established, defined as the pre-contract water level (b) the ground water level is to be re-established at the time each excavation is carried out and is defined as the post contract water level (c) ground water levels subject to periodic changes due to tidal or similar effects are so described giving the mean high and low water levels (d) details of trial pits or boreholes including their location and the Soil Investigation Report together with the chemical analyses thereof from which the inert, non-hazardous and hazardous material classifications can be determined (e) features retained (f) live over or underground services indicating location (g) pile sizes and layout in accordance with Sections D30 – D32 where applicable							
CLASSIFICATION TABLE							
1 Site preparation	1 Removing trees 2 Removing tree stumps	1 Girth 600 mm – 1.50 m 2 Girth 1.50 – 3.00 m 3 Girth > 3.00 m, girth stated	nr	M1 Tree girths are measured at a height of 1.00 m above ground M2 Stump girths are measured at the top		C1 This work is deemed to include: (a) grubbing up roots (b) disposal of materials (c) filling voids	S1 Filling material described
	3 Clearing site vegetation	4 Description sufficient for identification stated	m²		D1 Site vegetation is bushes, scrub, undergrowth, hedges and trees and tree stumps ≤ 600 mm girth		
	4 Lifting turf for preservation	1 Method of preserving, details stated	m²				

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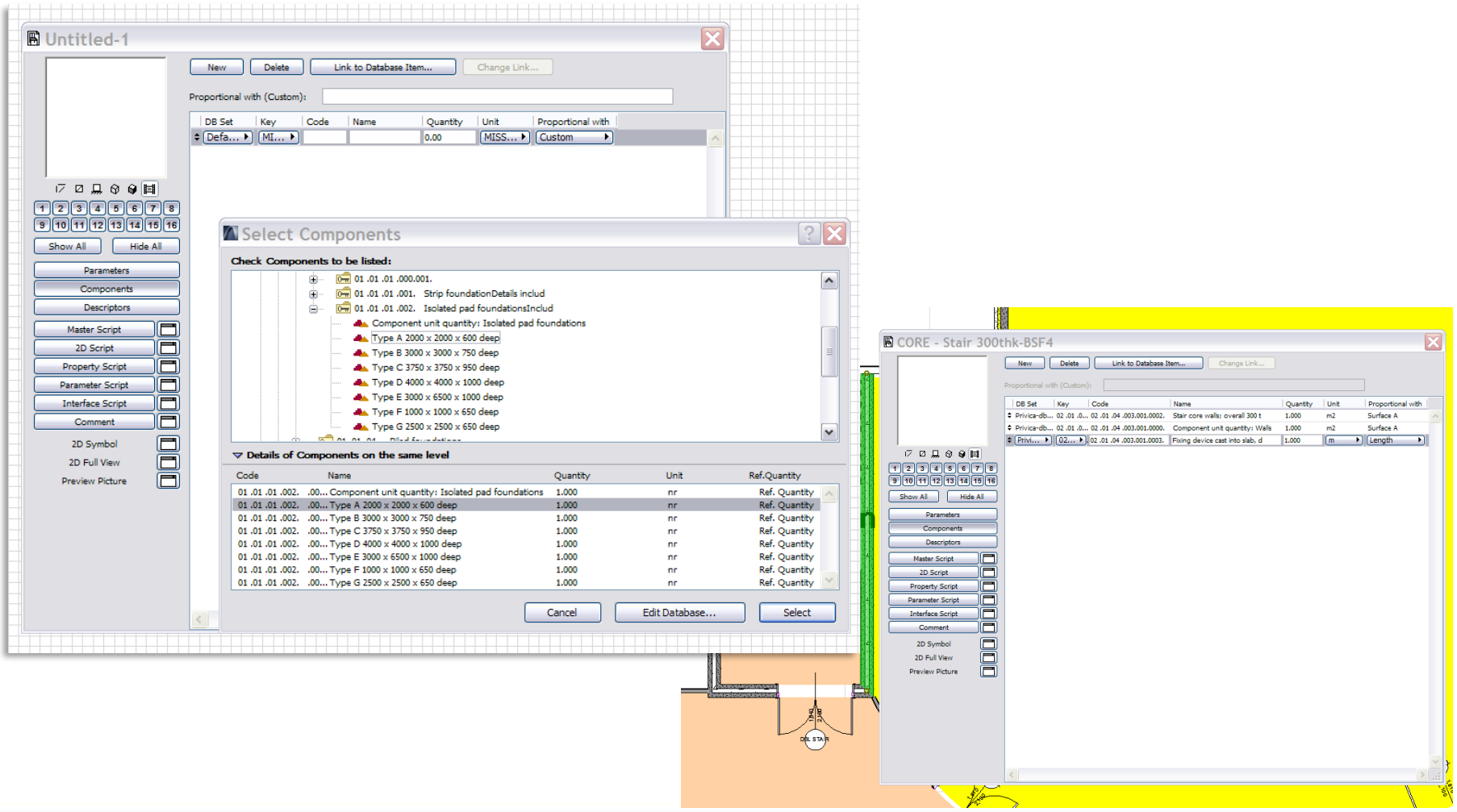
Input

Specification

Scope

Structure

01 .	Substructure		m2	
01 .00 .	Group element unit quantity: Substructure		m2	
01 .00 . . . .0000.	Area of lowest floor measured as for gross internal floor area	0	m2	0.00
01 .01 .	Foundations		m2	
01 .01 .01 .	Standard foundation Definition: Standard foundations up to and including the damp-proof course.		m2	
01 .01 .01 .000.	Sub element unit quantity: Standard foundations		m2	
01 .01 .01 .000.001.				
01 .01 .01 .000.001.0000.	Area of lowest floor measured as for gross internal floor area	0	m2	0.00
01 .01 .01 .000.001.0001.	Area of lowest floor measured as for gross internal floor area	0	m2	79.60
01 .01 .01 .001.	Strip foundation Details including depth of foundation, to be stated.		m	
01 .01 .01 .001. .0001.	Ground boot beam. Insitu concrete wall units 350mm thick; with 80mm Architectual concrete cladding; 120mm insulation and 150mm thick Insitu concrete structural wall to provide inner skin of external wall; including propping, grouting. On mass fill concrete.	0	m	332.759
.01 .01 .001. .0002.	Intermediate support for hollowcore floor including concrete, reinforcement, formwork, exacavation etc.	0	m	77.44
.002.	Isolated pad foundations Including concrete, reinforcement, formwork, excavation & disposal.		nr	
.002. .0000.	Component unit quantity: Isolated pad foundations	0	nr	0.00
.01 .002. .0001.	Type A 2000 x 2000 x 600 deep	0	nr	1,081.535
.01 .01 .002. .0002.	Type B 3000 x 3000 x 750 deep	0	nr	2,557.42
.01 .01 .002. .0003.	Type C 3750 x 3750 x 950 deep	0	nr	4,441.65
01 .01 .01 .002. .0004.	Type D 4000 x 4000 x 1000 deep	0	nr	0.00
01 .01 .01 .002. .0005.	Type E 3000 x 6500 x 1000 deep	0	nr	0.00
01 .01 .01 .002. .0006.	Type F 1000 x 1000 x 650 deep	0	nr	296.588
01 .01 .01 .002. .0007.	Type G 2500 x 2500 x 650 deep	0	nr	0.00
01 .01 .04 .	Piled foundations			
01 .01 .04 . . .0001.	Area of piled foundations	0	m2	300.00


Untitled-1
New
Delete
Link to Database Item...
Change Link...
Proportional with (Custom):
DB Set
Key
Code
Name
Quantity
Unit
Proportional with
Show All
Hide All
Parameters
Components
Descriptors
Master Script
2D Script
Property Script
Parameter Script
Interface Script
Comment
2D Symbol
2D Full View
Preview Picture
Select Components
Check Components to be listed:
01 .01 .01 .000.001.
01 .01 .01 .001. Strip foundationDetails includ
01 .01 .01 .002. Isolated pad foundationsInclud
Component unit quantity: Isolated pad foundations
Type A 2000 x 2000 x 600 deep
Type B 3000 x 3000 x 750 deep
Type C 3750 x 3750 x 950 deep
Type D 4000 x 4000 x 1000 deep
Type E 3000 x 6500 x 1000 deep
Type F 1000 x 1000 x 650 deep
Type G 2500 x 2500 x 650 deep
Details of Components on the same level
Code
Name
Quantity
Unit
Ref.Quantity
Cancel
Edit Database...
Select
CORE - Stair 300thk-BSF4

01 .00 . . . .0000.	Area of lowest floor measured as for gross internal floor area	3,645.736	m2
01 .01 .02 .001. .0001.	Mass concrete strip footing; 870mm deep x 550mm wide. Including mass concrete poured against unblined surface, excavation and d	275.731	m
01 .01 .02 .001. .0002.	Internal: Intermediate groundbeam support for hollowcore floor including concrete, reinforcement, formwork, excavation etc.	579.933	m
01 .01 .02 .001. .0003.	External: Insitu concrete wall units 350mm thick; with 80mm Architectual concrete cladding; 120mm insulation and 150mm thick I	372.642	m
01 .01 .02 .002. .0001.	Nr of pile caps	108.000	nr
01 .01 .02 .002. .0002.	Nr of piles	539.000	nr
01 .04 .01 .000. .0000.	Area of lowest floor measured as for gross internal floor area	3,645.736	m2
01 .04 .01 .001.001.0001.	260mm thick Bison hollowcore plank with insulation pre-bonded to the underside, including structural topping and trowelling.	3,645.736	m2
01 .04 .01 .003.001.0011.	Reinforced insitu concrete stub columns to make up from pad foundation to underside floor slab including concrete, rebar and fo	61.000	nr
02 .01 .04 .001.001.0000.	Component unit quantity: Column casings	864.000	m
02 .01 .04 .001.001.0021.	400 x 400 x 3300 long	240.000	nr
02 .01 .04 .003.001.0000.	Component unit quantity: Walls	1,163.405	m2
02 .01 .04 .003.001.0001.	Lift core walls; overall 250 thick	267.300	m2
02 .01 .04 .003.001.0002.	Stair core walls; overall 300 thick	896.105	m2
02 .01 .04 .003.001.0003.	Fixing device cast into slab, dowel starters for twin wall units	346.700	m
02 .02 .00 . . .0000.	Area of upper floors measured as for gross internal floor area	6,690.307	m2
02 .02 .01 .000.001.0000.	Area of upper floors measured as for gross internal floor area	6,690.307	m2
02 .02 .01 .001.001.0001.	Supply and erect omnia planks	6,690.307	m2
02 .02 .01 .001.001.0002.	Allowance for temporary falsework	3,345.153	m2
02 .02 .01 .001.001.0052.	Insitu concrete topping 150 - 300 thick	863.050	m3
02 .02 .01 .001.001.0053.	Reinforcement to concrete topping (15kg/m2)	100.355	t
02 .02 .01 .002.001.0041.	Formwork to edge of slabs: height < =250 mm	95.129	m2
02 .02 .01 .003.001.0010.	Allowance for day joints (total omnia area)	6,690.307	m2
02 .02 .01 .004.001.0001.	Finish to concrete surface, easy float	6,690.307	m2
02 .03 .00 . . .0000.	Area of roof on plan	3,514.890	m2
02 .03 .01 .000.001.0000.	Area of roof on plan	3,514.890	m2
02 .03 .01 .010.001.0000.	Component unit quantity: Roof structure	2,121.227	m2
02 .03 .01 .010.001.0203.	Supply and erect omnia planks	2,121.227	m2
02 .03 .01 .010.001.0204.	Allowance for temporary falsework	2,121.227	m2
02 .03 .01 .010.001.0205.	Insitu concrete topping 150 - 300 thick	273.638	m3
02 .03 .01 .010.001.0206.	Reinforcement to concrete topping (15kg/m2)	31.818	t
02 .03 .01 .011.001.0041.	Formwork to edge of slabs: height < =250 mm	2.025	m2
02 .03 .01 .012.001.0010.	Allowance for day joints (total omnia area)	2,121.227	m2
02 .03 .01 .012.001.0020.	Construction Joints	10.606	m
02 .03 .01 .013.001.0000.	Component unit quantity: Area of northlight	730.242	m2
02 .03 .01 .013.001.0203.	Area of louvred panels	69.930	m2
02 .03 .01 .013.001.0204.	Area of glass panels	79.080	m2
02 .03 .01 .013.001.0205.	Kalzip roof covering	730.242	m3
02 .03 .01 .013.001.0206.	Allowance for steel frame	6.000	t
02 .03 .01 .014. .0001.	Composite insulated panel on steel purlins; 80mm thick	624.079	m2
02 .03 .01 .014. .0002.	Kalzip roof to roof stair core and lift over run	39.341	m2
02 .03 .02 .000.001.0000.	Area of roof.	2,121.227	m2
02 .03 .02 .001.004.0001.	Inverted roof system comprising hot melt roofing works to screeded roof laid to falls, insulation and finish to main roof area.	1,458.694	m2
02 .03 .02 .009. .0051.	150mm Extensive (Low maintenance) Sedum roof comprising: plants, growing medium, filter membrane, drainage elements, moisture m	662.533	m2
02 .03 .05 .000.001.0000.	Area of roof on plan.	3,514.890	m2
02 .03 .05 .001.001.0000.	Component unit quantity: Gutters	104.202	m
02 .03 .05 .001.001.0010.	Insulated gutter to metal composite roof; ply, membrane lined.	104.202	m
02 .03 .06 .000.001.0000.	Number of rooflights	4.000	nr
02 .03 .06 .001. .0005.	Individual circular polycarbonate roof light hatches	4.000	nr
02 .04 .00 . . .0000.	Number of stairs and ramps.	11.000	nr
02 .04 .01 .000.001.0000.	Number of stairs and ramps	11.000	nr

RIB
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RIB CONSTRUCTION SUITE contractor 14.1 (Profile: Global\Privica\Priv02) - [\Projects 50 - Laing O'Rourke\BSF\CPE200 V1 (Bid) - CPE200 - BoQ CPE200]

Project Edit View Insert Quantity Tools Window Help

\Projects 50 - Laing O'Rourke\BSF\CPE200 V1 (Bid) | \Projects 50 - Laing O'Rourke\BSF\CPE200 V1 (Bid) - CPE200 - BoQ CPE200

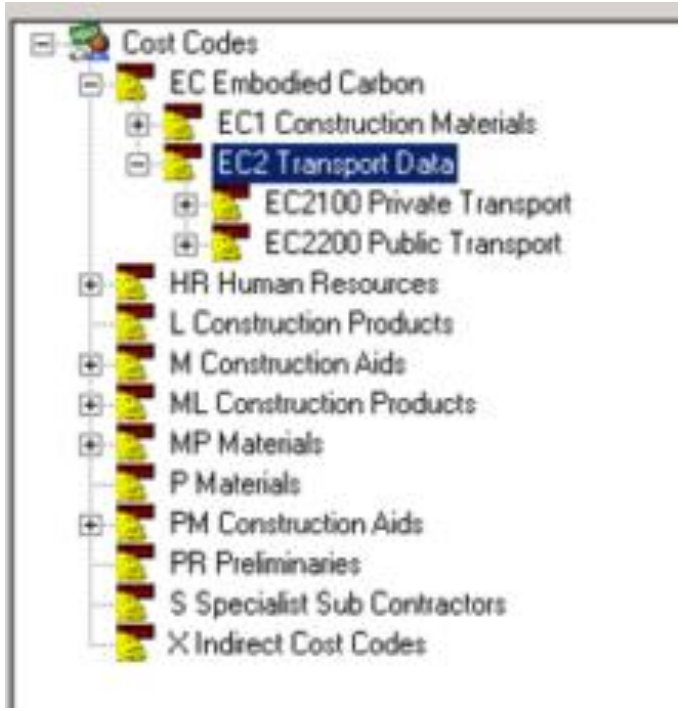
- BoQ: CPE200 - Hindley High 1125 pupils
  - 00 Assumptions
  - 01 Substructure
  - 02 Superstructure
    - 00 Group element unit quantity: Superstructure
    - 01 Frame
    - 02 Upper floors (deductions made over stairs & risers)
      - 00 Element unit quantity: Upper floors
        - 0000. Area of upper floors measured as for gross inter
      - 01 Concrete floors - Definition: Reinforced and post tensic
        - 000 Sub element unit quantity: Concrete floors
          - 001
            - 0000. Area of upper floors measured as for gr
        - 001 Suspended floor slabs - Details, including thickne
          - 001
            - 0001. [FixP] Supply and erect omnia planks
            - 0002. [FixP] Allowance for temporary falsewo
            - 0052. [FixP] Insitu concrete topping 150 - 30
            - 0053. [FixP] Reinforcement to concrete toppi
        - 002 Edge formwork - Details of formwork finish to be s
          - 001
            - 0041. [FixP] Formwork to edge of slabs: heigh
        - 003 Designed joints: details - to be stated.
          - 001
            - 0010. [FixP] Allowance for day joints (total om
            - 0020. [FixP] Construction Joints
        - 004 Surface treatments - Details to be stated.
          - 001
            - 0001. [FixP] Finish to concrete surface, easy
    - 03 Roof structure
    - 04 Stairs and ramps
    - 05 External walls
    - 06 Windows and external doors
    - 07 Internal walls and partitions
    - 08 Internal doors
  - 03 Internal finishes
  - 04 Fittings, furnishings and equipment
  - 05 Services
  - 08 External works
  - 09 Facilitating works
  - 50 Accommodation and Design Features

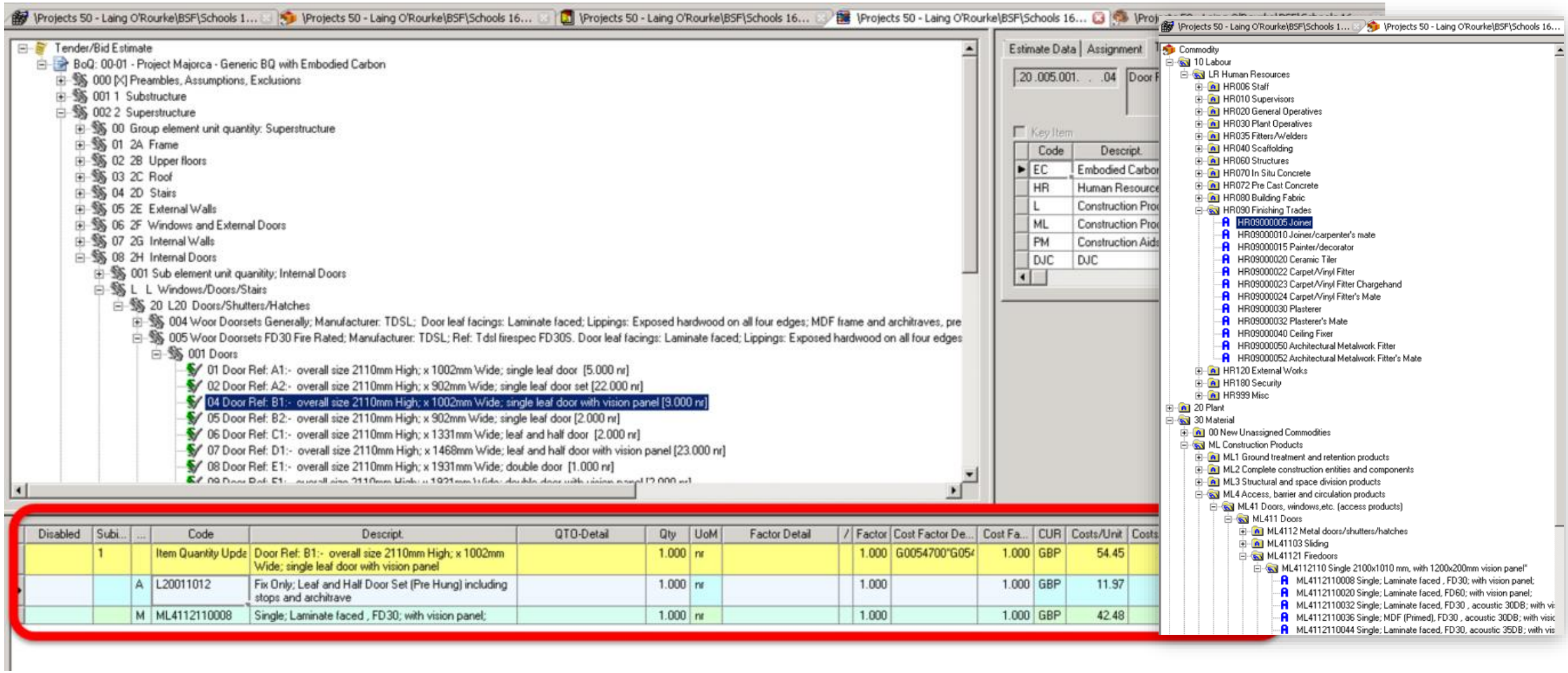
Disabled	Ref.No.	Outline Spec	Quantity	UoM	Unit Rate	Total
	02 .02 .	Upper floors (deductions made over stairs & risers)	5,413	m2	114.89	621,914.13
	02 .02 .00 .	Element unit quantity: Upper floors	5,413	m2		0.00
	02 .02 .00 . . .0000.	Area of upper floors measured as for gross internal floor area	5,413	m2	0.00	0.00
	02 .02 .01 .	Concrete floors Definition: Reinforced and post tensioned concrete suspended floors	0.000			621,914.13
	02 .02 .01 .000.	Sub element unit quantity: Concrete floors	5,413	m2		0.00
	02 .02 .01 .000.001.		0.000			0.00
	02 .02 .01 .000.001.0000.	Area of upper floors measured as for gross internal floor area	5,413	m2	0.00	0.00
	02 .02 .01 .001.	Suspended floor slabs Details, including thickness (mm); concrete strength (N/mm²), reinforcement rate (kg/m³) and type of formwork finish, to be stated	8,120	m2	71.44	580,097.27
	02 .02 .01 .001.001.		0.000			580,097.27
	02 .02 .01 .001.001.0001.	Supply and erect omnia planks	5,413	m2	59.19	320,395.47
	02 .02 .01 .001.001.0002.	Allowance for temporary falsework	2,707	m2	26.71	72,303.97
	02 .02 .01 .001.001.0052.	Insitu concrete topping 150 - 300 thick	698	m3	115.32	80,493.36
	02 .02 .01 .001.001.0053.	Reinforcement to concrete topping (15kg/m2)	81.198	t	1,316.59	106,904.47
	02 .02 .01 .002.	Edge formwork Details of formwork finish to be stated.	0	m		5,144.31
	02 .02 .01 .002.001.		0.000			5,144.31
	02 .02 .01 .002.001.0041.	Formwork to edge of slabs: height < =250 mm	81	m2	63.51	5,144.31
	02 .02 .01 .003.	Designed joints: details to be stated.	40	m	292.97	11,718.62
	02 .02 .01 .003.001.		0.000			11,718.62
	02 .02 .01 .003.001.0010.	Allowance for day joints (total omnia area)	5,413	m2	1.74	9,418.62
	02 .02 .01 .003.001.0020.	Construction Joints	40	m	57.50	2,300.00
	02 .02 .01 .004.	Surface treatments Details to be stated.	5,413	m2	4.61	24,953.93
	02 .02 .01 .004.001.		0.000			24,953.93
	02 .02 .01 .004.001.0001.	Finish to concrete surface, easy float	5,413	m2	4.61	24,953.93

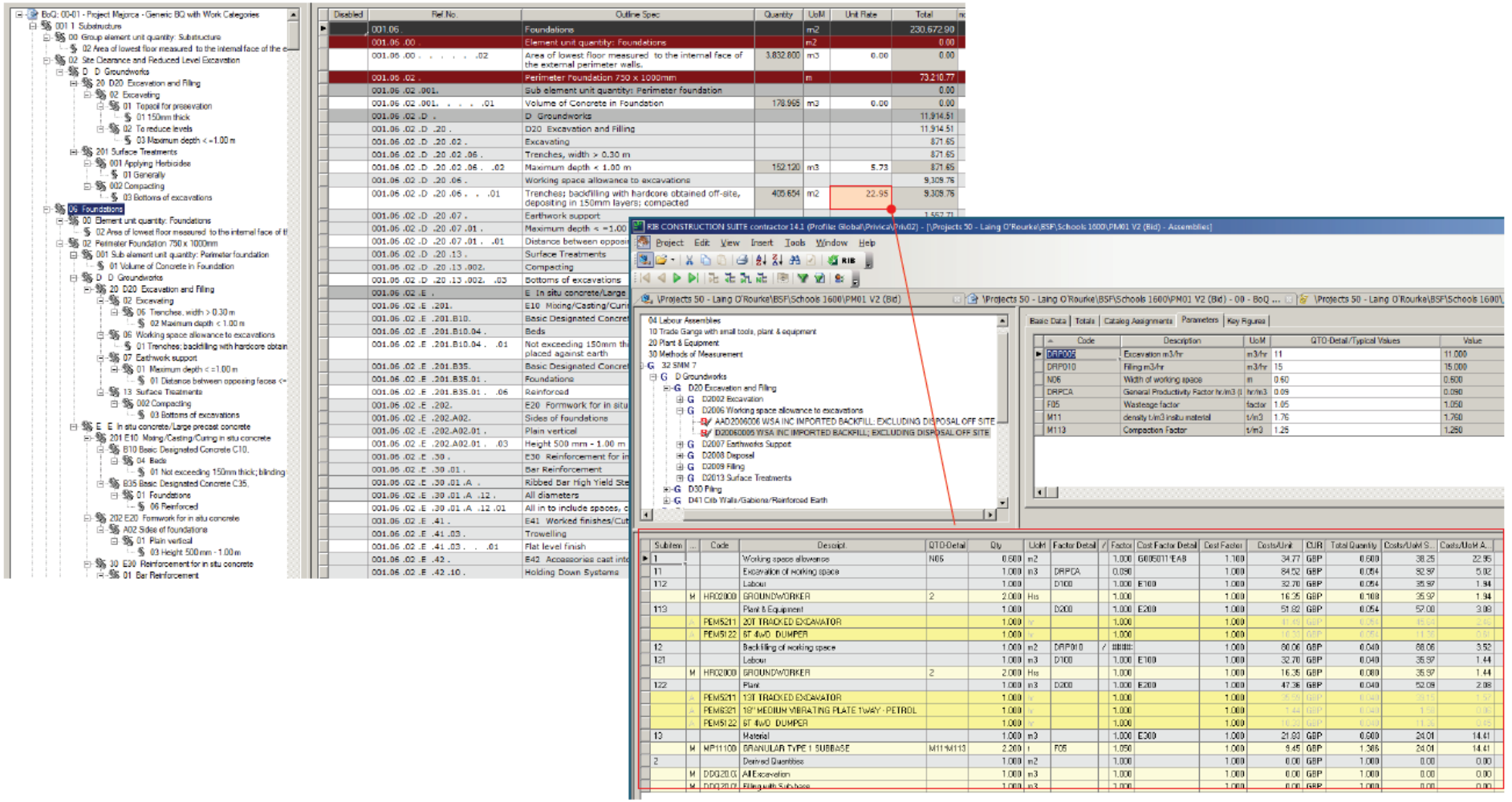
1	**Grand Total**					**17,032,935.92**	**1,603.10**	**100.00%**
010.	**Substructure**					**2,062,885.03**	**194.15**	**12.11%**
010.000.	**Group element unit quantity: Substructure**							
010.000.000.000.000.0000.	Area of lowest floor measured as for gross internal floor area	3,646	m2					
010.010.	**Foundations**					**1,691,584.19**	**159.21**	**9.93%**
010.010.020.	**Piled foundations**					**1,691,584.19**	**159.21**	**9.93%**
010.010.020.000.	Sub element unit quantity: Piled foundations							
010.010.020.000.001.0000.	Area of lowest floor measured as for gross internal floor area	3,646	m2					
010.010.020.001.	Pile caps and ground beams					533,759.19	50.24	3.13%
010.010.020.001.000.0001.	Pile caps and ground beams. Pile caps assumed 2.0m x 2.0m x 1.0m. Ground beams assumed 0.55 x 0.87m	3,646	m2	115.88	422,498.48			
010.010.020.001.000.0002.	Internal: Intermediate groundbeam support for hollowcore floor including concrete, reinforcement, formwork, excavation etc. (assumed to sit ontop of intermediate groundbeams measured above)	580	m	77.44	44,915.20			
010.010.020.001.000.0003.	External: Insitu concrete wall 'boot beam' 350mm thick; with 80mm Architectual concrete cladding; 120mm insulation and 150mm thick Insitu concrete structural wall to provide inner skin of external wall; including propping, grouting, To sit on top of perimeter groundbeams and pile caps.	373	m	177.87	66,345.51			
010.010.020.002.	Piled foundations					1,157,825.00	108.97	6.80%
010.010.020.002.000.0003.	Piling mat. Assumed 300mm thick Type 1.	3,646	m2	13.70	49,950.20			
010.010.020.002.000.0004.	Bored Pile using temporary casings Installed length = nominal length + 1.0m from top of pile mat to top of prepared pile head. Assumed 15m long, 600mm diameter.	540	nr	1,772.33	957,058.20			
010.010.020.002.000.0005.	Disposal of Pile Arisings	540	nr	225.60	121,824.00			
010.010.020.002.000.0006.	Breaking Down tops of piles by 1.0m Including disposal off site	540	nr	53.69	28,992.60			
010.040.	**Ground floor construction**					**371,300.84**	**34.95**	**2.18%**
010.040.000.	**Element unit quantity: Ground floor construction**							
010.040.000.000.000.0000.	Area of lowest floor measured as for gross internal floor area	3,646	m2					
010.040.010.	**Ground floor slab/bed and suspended floor construction Definition:The entire lowest floor assembly below the underside of screed or lowest floor finish.**					**371,300.84**	**34.95**	**2.18%**
010.040.010.000.	Sub-element unit quantity: Ground floor slab/bed and suspended floor construction							
010.040.010.000.000.0000.	Area of lowest floor measured as for gross internal floor area	3,646	m2					
010.040.010.001.	Lowest floor construction Bison Hollowcore suspended ground floor.					347,427.34	32.70	2.04%
010.040.010.001.001.0001.	260mm thick Bison hollowcore plank with insulation pre-bonded to the underside, including structural topping and trowelling.	3,646	m2	95.29	347,427.34			
010.040.010.003.	Extra over lowest floor construction for forming of lift pits and the like Details, including the number and size of lift pits, to be stated.					23,873.50	2.25	0.14%
010.040.010.003.001.0010.	Lift pits including concrete, rebar, formwork, waterproofing etc.	3	nr	7,022.50	21,067.50			
010.040.010.003.001.0011.	Reinforced insitu concrete stub columns to make up from pad foundation to underside floor slab including concrete, rebar and formwork.	61	nr	46.00	2,806.00			

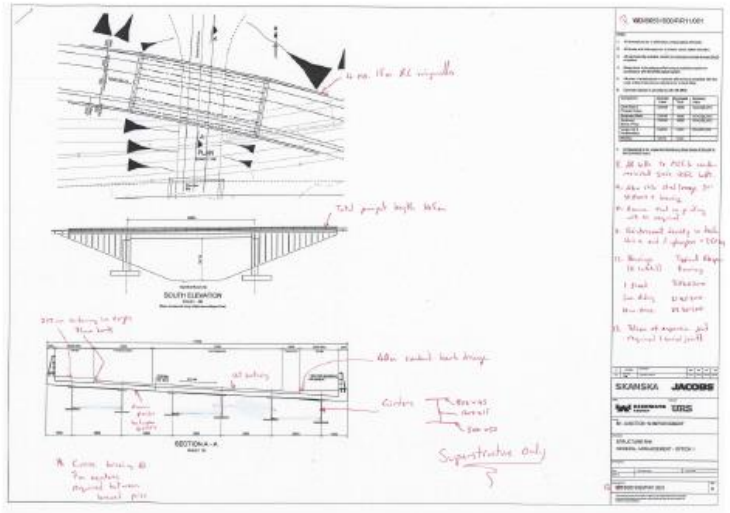
Uniclass 1.4

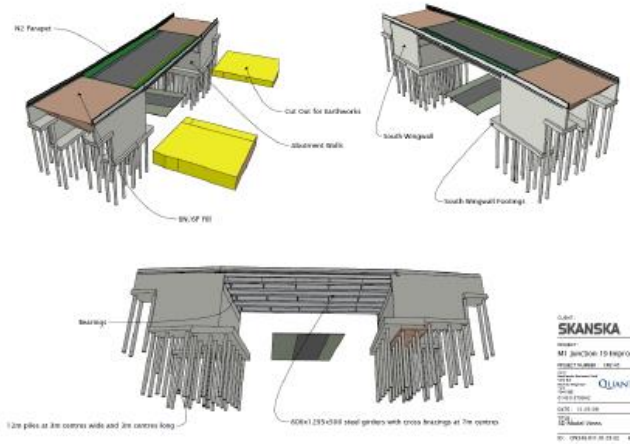
1. **A** - Form of Information
2. **B** - Subject Disciplines
3. **C** - Management
4. **D** - Facilities
5. **E** - Construction Entities
6. **F** - Spaces
7. **G** - Elements
8. **J** - Work Sections for Buildings/Civil Engineering Works
9. **L** - Construction Products
10. **M** - Construction Aids
11. **N** - Properties and Characteristics
12. **P** - Materials
13. **Q** - Universal Decimal Classification
14. **Z** - CAD




\Projects 50 - Laing O'Rourke\BSF\Schools 1...
\Projects 50 - Laing O'Rourke\BSF\Schools 16...
Tender/Bid Estimate
BoQ: 00-01 - Project Majorca - Generic BQ with Embodied Carbon
000 [X] Preambles, Assumptions, Exclusions
001 1 Substructure
002 2 Superstructure
00 Group element unit quantity: Superstructure
01 2A Frame
02 2B Upper floors
03 2C Roof
04 2D Stairs
05 2E External Walls
06 2F Windows and External Doors
07 2G Internal Walls
08 2H Internal Doors
001 Sub element unit quantity: Internal Doors
L L Windows/Doors/Stairs
20 L20 Doors/Shutters/Hatches
004 Woor Doorsets Generally; Manufacturer: TDSL; Door leaf facings: Laminate faced; Lippings: Exposed hardwood on all four edges; MDF frame and architraves, pre
005 Woor Doorsets FD30 Fire Rated; Manufacturer: TDSL; Ref: Tdsl firespec FD30S. Door leaf facings: Laminate faced; Lippings: Exposed hardwood on all four edges
001 Doors
01 Door Ref: A1:- overall size 2110mm High; x 1002mm Wide; single leaf door [5.000 nr]
02 Door Ref: A2:- overall size 2110mm High; x 902mm Wide; single leaf door set [22.000 nr]
04 Door Ref: B1:- overall size 2110mm High; x 1002mm Wide; single leaf door with vision panel [9.000 nr]
05 Door Ref: B2:- overall size 2110mm High; x 902mm Wide; single leaf door [2.000 nr]
06 Door Ref: C1:- overall size 2110mm High; x 1331mm Wide; leaf and half door [2.000 nr]
07 Door Ref: D1:- overall size 2110mm High; x 1468mm Wide; leaf and half door with vision panel [23.000 nr]
08 Door Ref: E1:- overall size 2110mm High; x 1931mm Wide; double door [1.000 nr]
Estimate Data
Assignment
Key Item
Code
Descript.
EC
Embodied Carbon
HR
Human Resource
L
Construction Pro
ML
Construction Pro
PM
Construction Aids
DJC
DJC
Commodity
10 Labour
LR Human Resources
HR006 Staff
HR010 Supervisors
HR020 General Operatives
HR030 Plant Operatives
HR035 Fitters/Welders
HR040 Scaffolding
HR060 Structures
HR070 In Situ Concrete
HR072 Pre Cast Concrete
HR080 Building Fabric
HR090 Finishing Trades
HR09000005 Joiner
HR09000010 Joiner/carpenter's mate
HR09000015 Painter/decorator
HR09000020 Ceramic Tiler
HR09000022 Carpet/Vinyl Fitter
HR09000023 Carpet/Vinyl Fitter Chargehand
HR09000024 Carpet/Vinyl Fitter's Mate
HR09000030 Plasterer
HR09000032 Plasterer's Mate
HR09000040 Ceiling Fixer
HR09000050 Architectural Metalwork Fitter
HR09000052 Architectural Metalwork Fitter's Mate
HR120 External Works
HR180 Security
HR999 Misc
20 Plant
30 Material
00 New Unassigned Commodities
ML Construction Products
ML1 Ground treatment and retention products
ML2 Complete construction entities and components
ML3 Structural and space division products
ML4 Access, barrier and circulation products
ML41 Doors, windows,etc. (access products)
ML411 Doors
ML4112 Metal doors/shutters/hatches
ML41103 Sliding
ML41121 Firedoors
ML4112110 Single 2100x1010 mm, with 1200x200mm vision panel"
ML41121100008 Single; Laminate faced , FD30; with vision panel;
ML41121100020 Single; Laminate faced, FD60; with vision panel;
ML41121100032 Single; Laminate faced, FD30 , acoustic 30DB; with vi
ML41121100036 Single; MDF (Primed), FD30 , acoustic 30DB; with visi
ML41121100044 Single; Laminate faced, FD30, acoustic 35DB; with vis
Disabled
Subi...
Code
Descript.
QTO-Detail
Qty
UoM
Factor Detail
Factor
Cost Factor De...
Cost Fa...
CUR
Costs/Unit
1
Item Quantity Upda
Door Ref: B1:- overall size 2110mm High; x 1002mm Wide; single leaf door with vision panel
1.000
nr
1.000
G0054700"G054
1.000
GBP
54.45
A
L20011012
Fix Only; Leaf and Half Door Set (Pre Hung) including stops and architrave
1.000
nr
1.000
1.000
GBP
11.97
M
ML4112110008
Single; Laminate faced , FD30; with vision panel;
1.000
nr
1.000
1.000
GBP
42.48


BoQ: 00-01 - Project Majorca - Generic BQ with Work Categories
001 1 Substructure
00 Group element unit quantity: Substructure
02 Area of lowest floor measured to the internal face of the e
02 Site Clearance and Reduced Level Excavation
D D Groundworks
20 D20 Excavation and Filling
02 Excavating
01 Topsoil for preservation
01 150mm thick
02 To reduce levels
03 Maximum depth < =1.00 m
201 Surface Treatments
001 Applying Herbicides
01 Generally
002 Compacting
03 Bottoms of excavations
06 Foundations
00 Element unit quantity: Foundations
02 Area of lowest floor measured to the internal face of t
02 Perimeter Foundation 750 x 1000mm
001 Sub element unit quantity: Perimeter foundation
01 Volume of Concrete in Foundation
D D Groundworks
20 D20 Excavation and Filling
02 Excavating
06 Trenches, width > 0.30 m
02 Maximum depth < 1.00 m
06 Working space allowance to excavations
01 Trenches; backfilling with hardcore obtain
07 Earthwork support
01 Maximum depth < =1.00 m
01 Distance between opposing faces <=
13 Surface Treatments
002 Compacting
03 Bottoms of excavations
E E In situ concrete/Large precast concrete
201 E10 Mixing/Casting/Curing in situ concrete
B10 Basic Designated Concrete C10.
04 Beds
01 Not exceeding 150mm thick; blinding
B35 Basic Designated Concrete C35.
01 Foundations
06 Reinforced
202 E20 Formwork for in situ concrete
A02 Sides of foundations
01 Plain vertical
03 Height 500 mm - 1.00 m
30 E30 Reinforcement for in situ concrete
01 Bar Reinforcement
Disabled
Ref No.
Outline Spec
Quantity
UoM
Unit Rate
Total
001.06.
Foundations
m2
230,672.90
001.06 .00 .
Element unit quantity: Foundations
m2
0.00
001.06 .00 02
Area of lowest floor measured to the internal face of the external perimeter walls.
3,832.800
m3
0.00
0.00
001.06 .02 .
Perimeter Foundation 750 x 1000mm
m
73,210.77
001.06 .02 .001.
Sub element unit quantity: Perimeter foundation
0.00
001.06 .02 .001. 01
Volume of Concrete in Foundation
178.965
m3
0.00
0.00
001.06 .02 .D .
D Groundworks
11,914.51
001.06 .02 .D .20 .
D20 Excavation and Filling
11,914.51
001.06 .02 .D .20 .02 .
Excavating
871.65
001.06 .02 .D .20 .02 .06 .
Trenches, width > 0.30 m
871.65
001.06 .02 .D .20 .02 .06 . .02
Maximum depth < 1.00 m
152.120
m3
5.73
871.65
001.06 .02 .D .20 .06 .
Working space allowance to excavations
9,309.75
001.06 .02 .D .20 .06 . . .01
Trenches; backfilling with hardcore obtained off-site, depositing in 150mm layers; compacted
405.654
m2
22.95
9,309.75
001.06 .02 .D .20 .07 .
Earthwork support
001.06 .02 .D .20 .07 .01 .
Maximum depth < =1.00
001.06 .02 .D .20 .07 .01 . .01
Distance between opposi
001.06 .02 .D .20 .13 .
Surface Treatments
001.06 .02 .D .20 .13 .002.
Compacting
001.06 .02 .D .20 .13 .002. .03
Bottoms of excavations
001.06 .02 .E .
E In situ concrete/Large
001.06 .02 .E .201.
E10 Mixing/Casting/Curi
001.06 .02 .E .201.B10.
Basic Designated Concre
001.06 .02 .E .201.B10.04 .
Beds
001.06 .02 .E .201.B10.04 . .01
Not exceeding 150mm thi
placed against earth
001.06 .02 .E .201.B35.
Basic Designated Concre
001.06 .02 .E .201.B35.01 .
Foundations
001.06 .02 .E .201.B35.01 . .06
Reinforced
001.06 .02 .E .202.
E20 Formwork for in situ
001.06 .02 .E .202.A02.
Sides of foundations
001.06 .02 .E .202.A02.01 .
Plain vertical
001.06 .02 .E .202.A02.01 . .03
Height 500 mm - 1.00 m
001.06 .02 .E .30 .
E30 Reinforcement for in
001.06 .02 .E .30 .01 .
Bar Reinforcement
001.06 .02 .E .30 .01 .A .
Ribbed Bar High Yield Ste
001.06 .02 .E .30 .01 .A .12 .
All diameters
001.06 .02 .E .30 .01 .A .12 .01
All in to include spaces,
001.06 .02 .E .41 .
E41 Worked finishes/Cut
001.06 .02 .E .41 .03 .
Trowelling
001.06 .02 .E .41 .03 . . .01
Flat level finish
001.06 .02 .E .42 .
E42 Accessories cast int
001.06 .02 .E .42 .10 .
Holding Down Systems
RIB CONSTRUCTION SUITE contractor 14.1 (Profile: Global\Privica\Priv02) - [\Projects 50 - Laing O'Rourke\BSF\Schools 1600\PM01 V2 (Bid) - Assemblies]
Project Edit View Insert Tools Window Help
\Projects 50 - Laing O'Rourke\BSF\Schools 1600\PM01 V2 (Bid)
\Projects 50 - Laing O'Rourke\BSF\Schools 1600\PM01 V2 (Bid) - 00 - BoQ ...
\Projects 50 - Laing O'Rourke\BSF\Schools 1600\
04 Labour Assemblies
10 Trade Gangs with small tools, plant & equipment
20 Plant & Equipment
30 Methods of Measurement
32 SMM 7
D Groundworks
D20 Excavation and Filling
D2002 Excavation
D2006 Working space allowance to excavations
AAD2006006 WSA INC IMPORTED BACKFILL, EXCLUDING DISPOSAL OFF SITE
D2006D005 WSA INC IMPORTED BACKFILL; EXCLUDING DISPOSAL OFF SITE
D2007 Earthworks Support
D2008 Disposal
D2009 Filling
D2013 Surface Treatments
D30 Piling
D41 Crib Walls/Gabions/Reinforced Earth
Basic Data
Totals
Catalog Assignments
Parameters
Key Figures
Code
Description
UoM
QTO Detail/Typical Values
Value
DRP006
Excavation m3/hr
m3/hr
11
11.000
DRP010
Filling m3/hr
m3/hr
15
15.000
N06
Width of working space
m
0.60
0.600
DRPCA
General Productivity Factor hr/m3 (I
hr/m3
0.09
0.090
F05
Wastage factor
factor
1.05
1.050
M11
density t/m3 insitu material
t/m3
1.76
1.760
M113
Compaction Factor
t/m3
1.25
1.250
Subitem
Code
Descript.
QTO Detail
Qty
UoM
Factor Detail
Factor
Cost Factor Detail
Cost Factor
Costs/Unit
CUR
Total Quantity
Costs/UoM S...
Costs/UoM A...
1
Working space allowance
N06
0.600
m2
1.000
GB05011EAB
1.100
34.77
GBP
0.600
38.25
22.95
11
Excavation of working space
1.000
m3
DRPCA
0.090
1.000
84.02
GBP
0.054
92.97
5.02
112
Labour
1.000
D100
1.000
E100
1.000
32.70
GBP
0.054
35.97
1.94
M
HRG2000
GROUNDWORKER
2
2.000
Hrs
1.000
1.000
16.35
GBP
0.108
35.97
1.94
113
Plant & Equipment
1.000
D200
1.000
E200
1.000
51.82
GBP
0.054
57.00
3.08
A
PEM5211
20T TRACKED EXCAVATOR
1.000
hr
1.000
1.000
41.49
GBP
0.054
45.64
2.46
A
PEM5122
6T 4WD DUMPER
1.000
hr
1.000
1.000
10.33
GBP
0.054
11.36
0.61
12
Backfilling of working space
1.000
m2
DRP010
#####
1.000
60.06
GBP
0.040
66.06
3.62
121
Labour
1.000
m3
D100
1.000
E100
1.000
32.70
GBP
0.040
35.97
1.44
M
HRG2000
GROUNDWORKER
2
2.000
Hrs
1.000
1.000
16.35
GBP
0.080
35.97
1.44
122
Plant
1.000
m3
D200
1.000
E200
1.000
47.36
GBP
0.040
52.08
2.08
A
PEM5211
13T TRACKED EXCAVATOR
1.000
hr
1.000
1.000
26.59
GBP
0.040
29.25
1.17
A
PEM6321
18" MEDIUM VIBRATING PLATE 1WAY - PETROL
1.000
hr
1.000
1.000
1.44
GBP
0.040
1.59
0.06
A
PEM5122
6T 4WD DUMPER
1.000
hr
1.000
1.000
10.33
GBP
0.040
11.36
0.45
13
Material
1.000
m3
1.000
E300
1.000
21.83
GBP
0.600
24.01
14.41
M
MP11100
GRANULAR TYPE 1 SUBBASE
M11*M113
2.200
t
F05
1.050
1.000
9.45
GBP
1.386
24.01
14.41
2
Derived Quantities
1.000
m2
1.000
0.00
GBP
1.000
0.00
0.00
M
DDG20.0
All Excavation
1.000
m3
1.000
0.00
GBP
1.000
0.00
0.00
M
DDG20.0
Filling with Subbase
1.000
m3
1.000
0.00
GBP
1.000
0.00
0.00





BQ Reference	Description	Quantity	UoM	Factor	HA Element Code	Candy Code Structures
0004.	Formwork					
170.	1700 Structural Concrete					
170.003.	Surface Finish of Concrete-Formwork					
170.003.001.	Formwork more than 300mm wide					
170.003.001.001.	Class F1					
170.003.001.001.001.	Type to be confirmed					
170.003.001.001.001.0003	Vertical - to wingwalls & abutment bases	274 m2		1.000	0004.14.10.00.00.00.10.	03832
170.003.001.001.001.0004	Vertical - to abutments	104 m2		1.000	0004.14.10.00.00.00.10.	03832
170.003.001.001.001.0007	Vertical - to wingwalls	664 m2		1.000	0004.14.10.00.00.00.10.	03832
170.003.001.001.001.0028	Horizontal - to abutments	16 m2		1.000	0004.14.10.00.00.00.80.	03880
170.003.001.001.001.0030	Inclined - to abutments	16 m2		1.000	0004.14.10.00.00.00.85.	03881
170.003.001.004.	Class F4					
170.003.001.004.001.	Type to be confirmed					
170.003.001.004.001.0004	Vertical - to abutments	344 m2		1.000	0004.14.10.00.00.00.10.	03832
170.003.001.004.001.0028	Horizontal - to abutments	16 m2		1.000	0004.14.10.00.00.00.80.	03880
170.003.002.	Permanent formwork more than 300mm wide					
170.003.002.006.	Omnia Bridge Decking					
170.003.002.006.001.	Planks					
170.003.002.006.001.0001	300mm wide	640 m2		1.000	0004.14.10.00.00.00.80.	03870
170.003.003.	Formwork less than 300mm wide					
170.003.003.001.	Class F1					
170.003.003.001.006.0001	To abutments	16 m2		1.000	0004.14.10.10.00.00.85.	03830
170.003.003.004.	Class F4					
170.003.003.004.006.0002	To bridge deck	22 m2		1.000	0004.14.10.10.00.00.80.	03830
170.003.003.004.006.0003	To parapet copes	57 m2		1.000	0004.14.10.10.00.00.80.	03830

CitA
BIM GATHERING

Laing O’Rourke

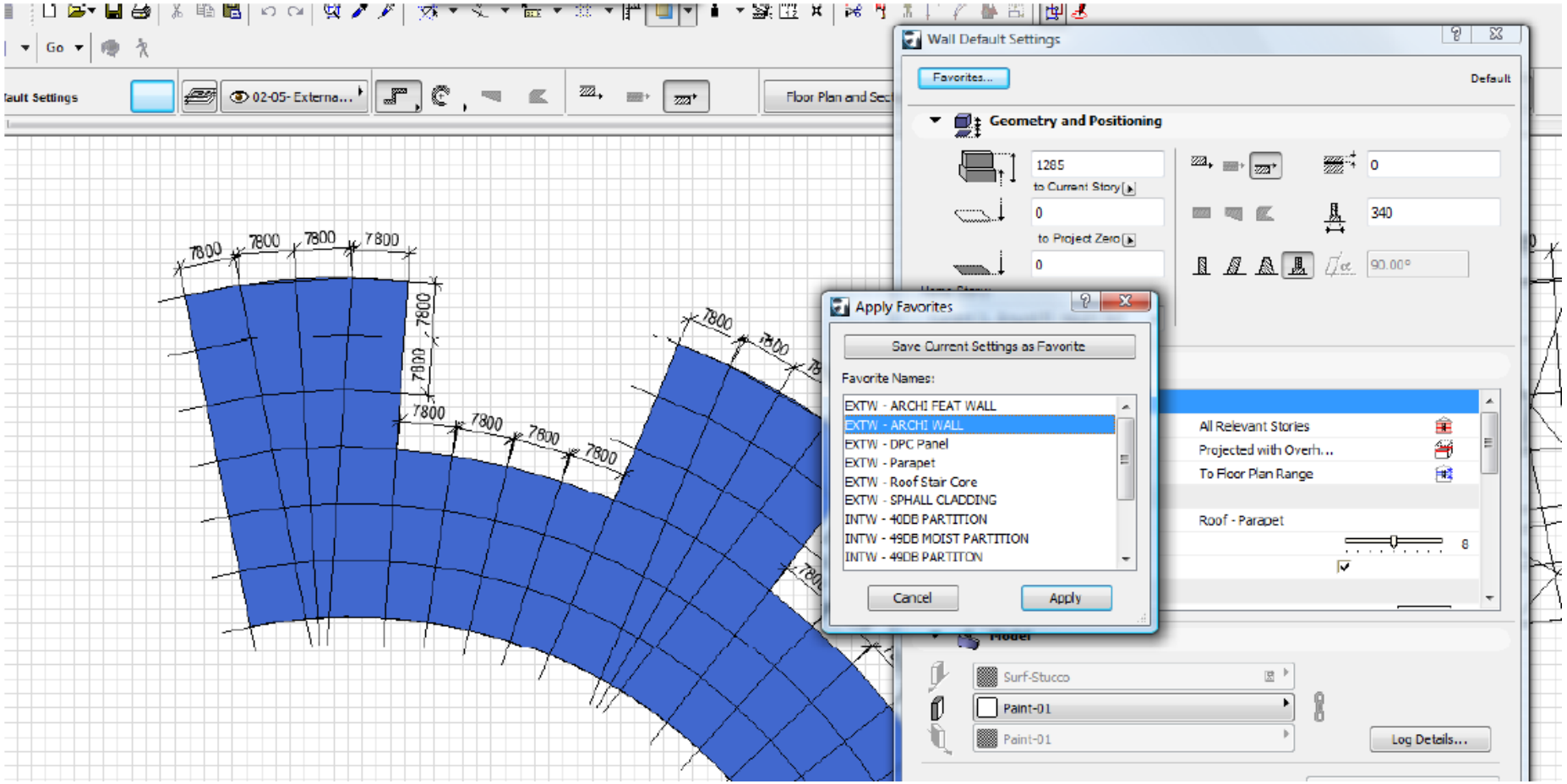
Laing O'Rourke snaps up Privica

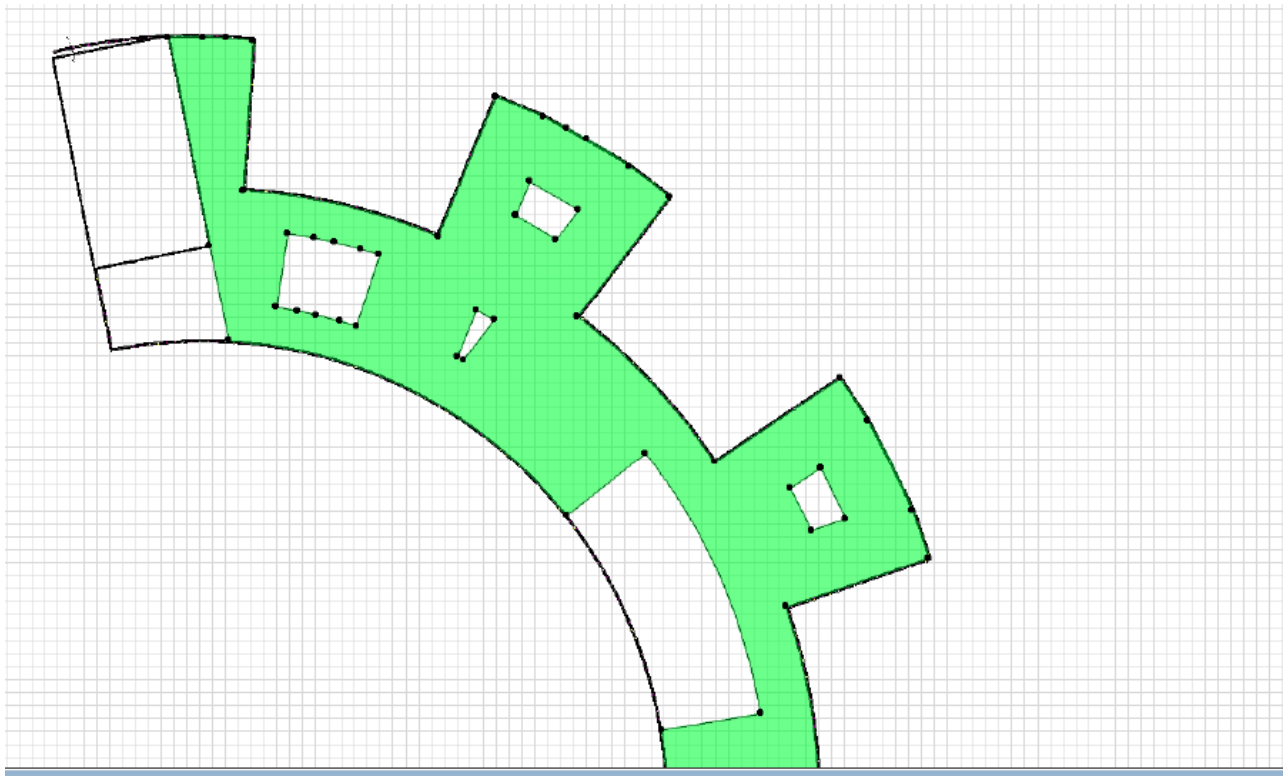
By Tom Bill | 12 January 2010

Laing O'Rourke has bought billing specialist Privica for an undisclosed sum.

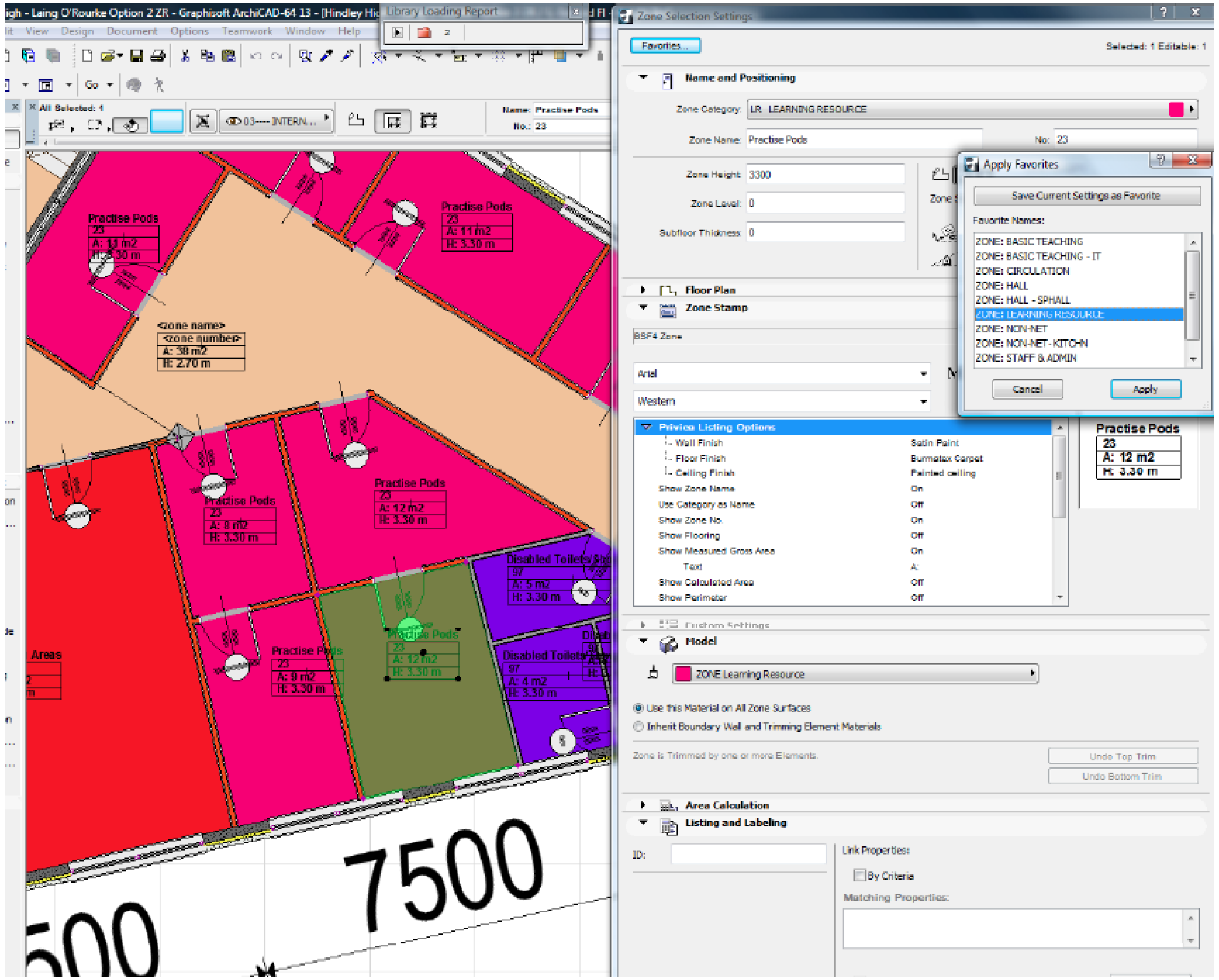
The York-based company produces bills of quantities, estimates, cost plans and 3D visuals for the construction industry.

In an internal announcement to staff yesterday, chairman Ray O'Rourke said: "To accelerate the development of our Building Information Modelling (BIM) services, I am delighted to announce today the acquisition of Privica Ltd, a niche consultancy practice providing specialist products and services to the construction industry."

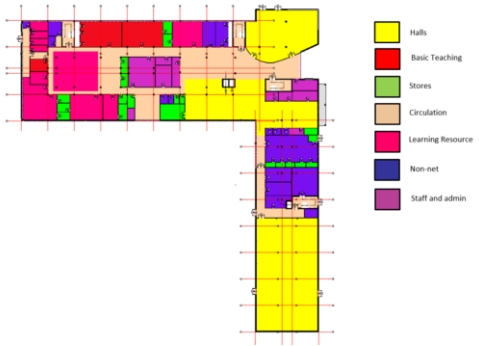

Wall Default Settings
Favorites...
Default
Geometry and Positioning
1285
to Current Story
0
to Project Zero
0
340
90.00°
Apply Favorites
Save Current Settings as Favorite
Favorite Names:
EXTW - ARCHI FEAT WALL
EXTW - ARCHI WALL
EXTW - DPC Panel
EXTW - Parapet
EXTW - Roof Stair Core
EXTW - SPHALL CLADDING
INTW - 40DB PARTITION
INTW - 49DB MOIST PARTITION
INTW - 49DB PARTITON
Cancel
Apply
All Relevant Stories
Projected with Overh...
To Floor Plan Range
Roof - Parapet
Surf-Stucco
Paint-01
Paint-01
Log Details...
7800



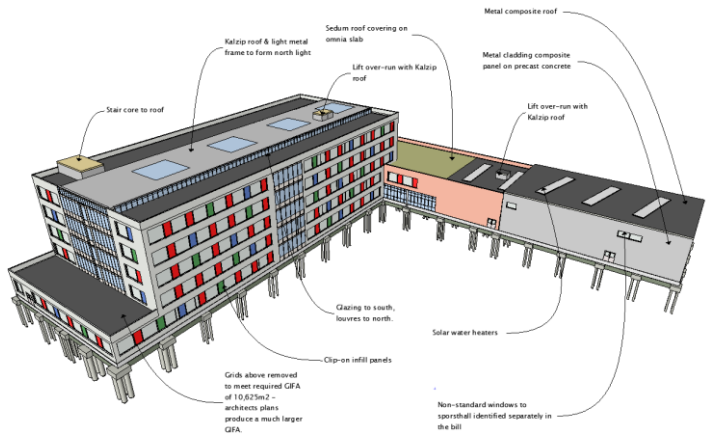
	Component Code	Component Name	Component Quantity	Component Unit Name	Component Reference Unit
ors	02 .02 .00 . . .0000.	Area of upper floors measured as for gross internal floor area	3706.124	m2	m²
	02 .02 .01 .000.001.0000.	Area of upper floors measured as for gross internal floor area	3706.124	m2	m²
	02 .02 .01 .001.001.0001.	Supply and erect omnia planks	3706.124	m2	m²
	02 .02 .01 .001.001.0002.	Allowance for temporary falsework	1853.062	m2	m²
	02 .02 .01 .001.001.0052.	Insitu concrete topping 150 - 300 thick	478.090	m3	m²
	02 .02 .01 .001.001.0053.	Reinforcement to concrete topping (15kg/m2)	55.592	t	m²
	02 .02 .01 .002.001.0041.	Formwork to edge of slabs: height < =250 mm	28.259	m2	
	02 .02 .01 .003.001.0010.	Allowance for day joints (total omnia area)	3706.124	m2	m²
	02 .02 .01 .004.001.0001.	Finish to concrete surface, easy float	3706.124	m2	m²


Library Loading Report
View Design Document Options Teamwork Window Help
Name: Practise Pods
No.: 23
Practise Pods
23
A: 11 m2
H: 3.30 m
<zone name>
<zone number>
A: 38 m2
H: 2.70 m
Practise Pods
23
A: 12 m2
H: 3.30 m
Practise Pods
23
A: 8 m2
H: 3.30 m
Disabled Toilets
A: 5 m2
H: 3.30 m
Areas
Disabled Toilets
A: 4 m2
H: 3.30 m
7500
Zone Selection Settings
Favorites...
Selected: 1 Editable: 1
Name and Positioning
Zone Category
LR LEARNING RESOURCE
Zone Name
Practise Pods
No: 23
Zone Height 3300
Zone Level 0
Subfloor Thickness 0
Apply Favorites
Save Current Settings as Favorite
Favorite Names:
ZONE: BASIC TEACHING
ZONE: BASIC TEACHING - IT
ZONE: CIRCULATION
ZONE: HALL
ZONE: HALL - SPHALL
ZONE: LEARNING RESOURCE
ZONE: NON-NET
ZONE: NON-NET - KITCHN
ZONE: STAFF & ADMIN
Cancel
Apply
Floor Plan
Zone Stamp
BSF4 Zone
Arial
Western
Preview Listing Options
Wall Finish
Satin Paint
Floor Finish
Burmatex Carpet
Ceiling Finish
Painted ceiling
Show Zone Name
On
Use Category as Name
Off
Show Zone No
On
Show Flooring
Off
Show Measured Gross Area
On
Text
Show Calculated Area
Off
Show Perimeter
Off
Practise Pods
23
A: 12 m2
H: 3.30 m
Custom Settings
Model
ZONE Learning Resource
Use this Material on All Zone Surfaces
Inherit Boundary Wall and Trimming Element Materials
Zone is Trimmed by one or more Elements.
Undo Top Trim
Undo Bottom Trim
Area Calculation
Listing and Labeling
ID:
Link Properties:
By Criteria
Matching Properties:

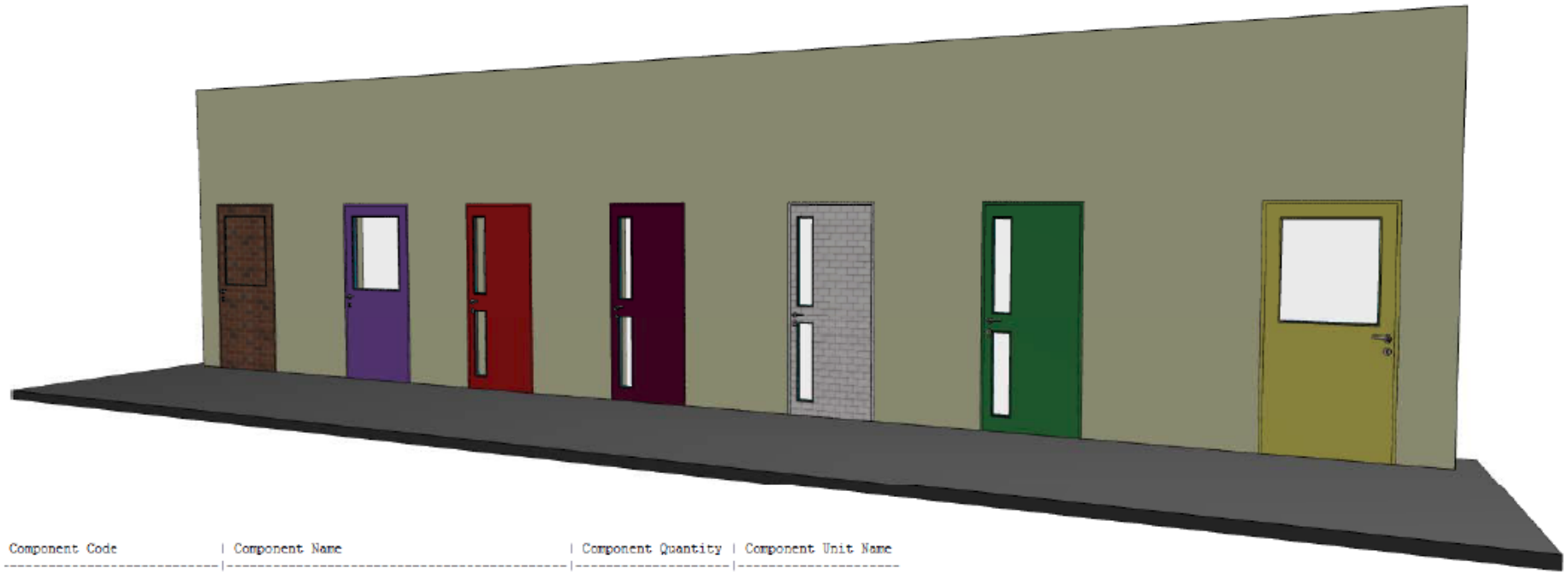
1	**Grand Total**					**17,032,935.92**	**1,603.10**	**100.00%**
010.	**Substructure**					**2,062,885.03**	**194.15**	**12.11%**
010.000.	**Group element unit quantity: Substructure**							
010.000.000.000.000.0000.	Area of lowest floor measured as for gross internal floor area	3,646	m2					
010.010.	**Foundations**					**1,691,584.19**	**159.21**	**9.93%**
010.010.020.	**Piled foundations**					**1,691,584.19**	**159.21**	**9.93%**
010.010.020.000.	Sub element unit quantity: Piled foundations							
010.010.020.000.001.0000.	Area of lowest floor measured as for gross internal floor area	3,646	m2					
010.010.020.001.	Pile caps and ground beams					533,759.19	50.24	3.13%
010.010.020.001.000.0001.	Pile caps and ground beams. Pile caps assumed 2.0m x 2.0m x 1.0m. Ground beams assumed 0.55 x 0.87m	3,646	m2	115.88	422,498.48			
010.010.020.001.000.0002.	Internal: Intermediate groundbeam support for hollowcore floor including concrete, reinforcement, formwork, excavation etc. (assumed to sit ontop of intermediate groundbeams measured above)	580	m	77.44	44,915.20			
010.010.020.001.000.0003.	External: Insitu concrete wall 'boot beam' 350mm thick; with 80mm Architectual concrete cladding, 120mm insulation and 150mm thick Insitu concrete structural wall to provide inner skin of external wall; including propping, grouting, To sit on top of perimeter groundbeams and pile caps.	373	m	177.87	66,345.51			
010.010.020.002.	Piled foundations					1,157,825.00	108.97	6.80%
010.010.020.002.000.0003.	Piling mat. Assumed 300mm thick Type 1	3,646	m2	13.70	49,950.20			
010.010.020.002.000.0004.	Bored Pile using temporary casings Installed length = nominal length + 1.0m from top of pile mat to top of prepared pile head. Assumed 15m long, 600mm diameter.	540	nr	1,772.33	957,058.20			
010.010.020.002.000.0005.	Disposal of Pile Arisings	540	nr	225.60	121,824.00			
010.010.020.002.000.0006.	Breaking Down tops of piles by 1.0m Including disposal off site	540	nr	53.69	28,992.60			
010.040.	**Ground floor construction**					**371,300.84**	**34.95**	**2.18%**
010.040.000.	**Element unit quantity: Ground floor construction**							
010.040.000.000.000.0000.	Area of lowest floor measured as for gross internal floor area	3,646	m2					
010.040.010.	**Ground floor slab/bed and suspended floor construction Definition:The entire lowest floor assembly below the underside of screed or lowest floor finish.**					**371,300.84**	**34.95**	**2.18%**
010.040.010.000.	Sub-element unit quantity: Ground floor slab/bed and suspended floor construction							
010.040.010.000.000.0000.	Area of lowest floor measured as for gross internal floor area	3,646	m2					
010.040.010.001.	Lowest floor construction Bison Hollowcore suspended ground floor.					347,427.34	32.70	2.04%



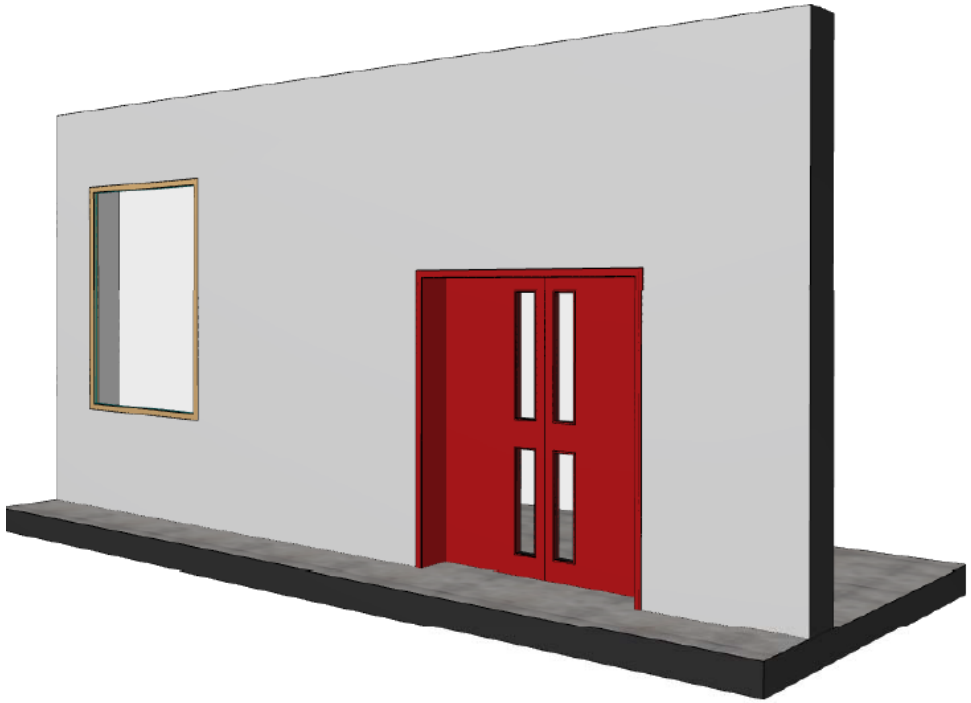
3 days work

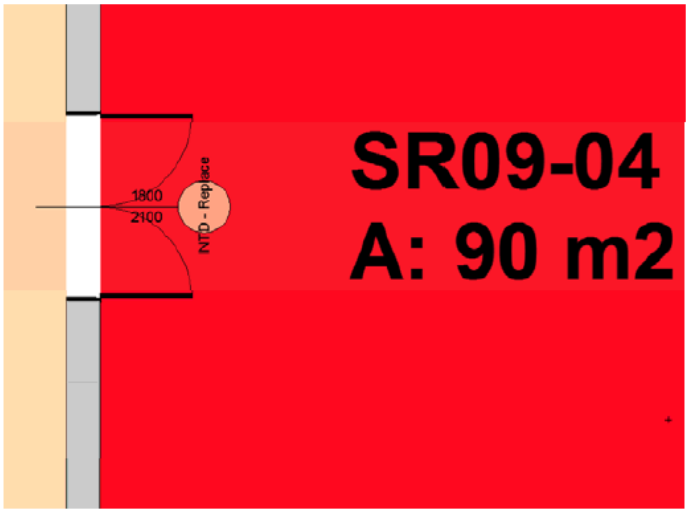


Refurbishment



Component Code	Component Name	Component Quantity	Component Unit Name
07 .01 .01 .003.002.0001.	INTD - Removal of single door	1.000	nr
07 .01 .01 .003.002.0003.	INTD - Removal of single door	1.000	nr
07 .01 .01 .003.002.0005.	INTD - Removal of single door for repair	1.000	nr
07 .01 .01 .003.002.0008.	EXTD - Removal of single door	1.000	nr
07 .01 .01 .003.002.0010.	EXTD - Removal of single door	1.000	nr
07 .01 .01 .004.000.0001.	INTD - Breaking out for new single door	1.911	m2
07 .01 .01 .004.000.0005.	INTD - Door blocked up	1.000	nr
07 .01 .01 .004.000.0007.	EXTD - Door blocked up	1.000	nr
07 .01 .01 .004.000.0009.	EXTD - Breaking out for new single door	1.911	m2
07 .01 .01 .004.002.0001.	INTD - New single door to replace existing	1.000	nr
07 .01 .01 .004.002.0004.	INTD - New single door - new opening	1.000	nr
07 .01 .01 .004.002.0016.	EXTD - New single door to replace existing	1.000	nr
07 .01 .01 .004.002.0018.	EXTD - New single door - new opening	1.000	nr
07 .06 .04 .001.001.0015.	INTD - Repair of single door	1.000	nr



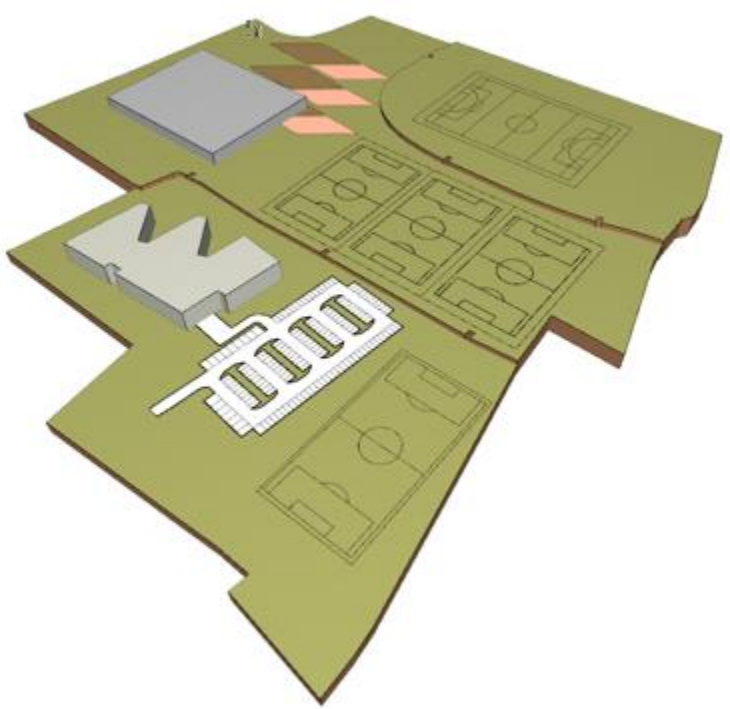

1800
2100
NTD - Replace
SR09-04
A: 90 m2

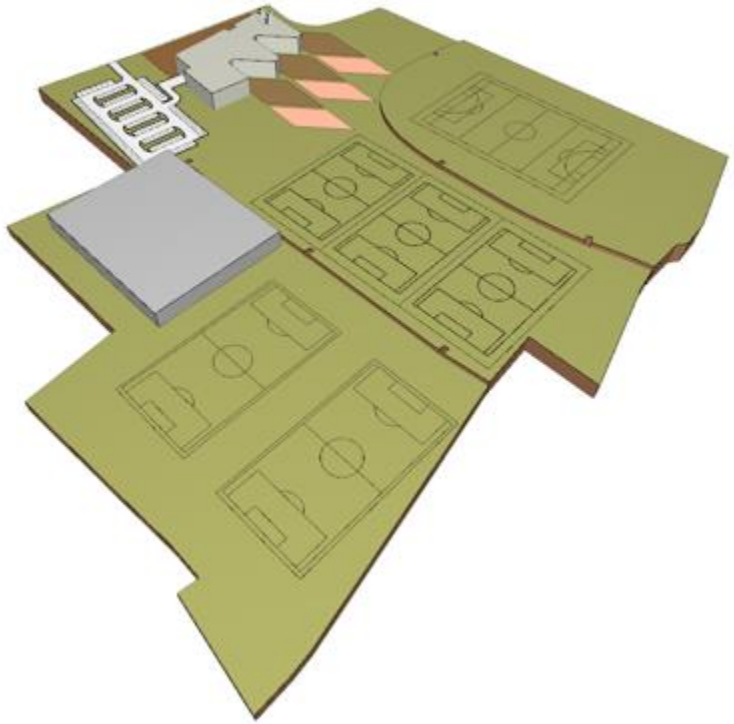
Room Number	Room Name	Measured Area	Walls	Floor	Skirting	Ceiling	Protect FF&E	Strip & Store FF&E	Blinds	Replace Lighting and Emergency Lighting	BWIC For fix screen and projector	Paint radiators and pipes	Carpentry Allowance	Make good after Cat 6 Cablin g	Wall patching enter m2	Ceiling patching enter m2	Projector screens & brackets	(m) of nosing
CORR-GF	Corridor	81.69	Minor making good	Clean & reseal	Seal skirting	Paint high level ceiling	☐	☐	☐	☐	☐	1000	0	0	0	0	N/A	0
CORR-GF	Corridor	90.87	Minor making good	Clean & reseal	Seal skirting	Paint high level ceiling	☐	☐	☐	☐	☐	1000	0	0	0	0	N/A	0
CORR-GF	Corridor	111.34	Minor making good	Clean & reseal	Seal skirting	Paint high level ceiling	☐	☐	☐	☐	☐	1000	0	0	0	0	N/A	0
CORR-GF	Tunnel	69.66	N/A	N/A	N/A	Insulation and cladding	☐	☐	☐	☐	☐	0	0	0	0	0	N/A	0
FIRE-GF	Fire Escape	19.97	Minor making good	Clean & reseal	Paint skirting	Paint Ceiling	☐	☐	☐	☐	☐	200	0	0	0	0	N/A	20
LIBR-01	Library	194.13	Minor making good	New flooring: CARPET	Paint skirting	Acoustic Ceiling	☐	☒	☐	☐	☐	500	500	1000	0	0	N/A	0
LIBR-01	Library side room	17.72	Minor making good	New flooring: CARPET	Paint skirting	Acoustic Ceiling	☐	☒	☐	☐	☐	0	250	0	0	0	N/A	0
LIBR-01	Mezzanine	47.77	N/A	New flooring: CARPET	Paint skirting	Acoustic Ceiling	☐	☒	☐	☐	☐	100	0	0	0	0	N/A	0
LIBR-02	Libray Entrance	1.07	Minor making good	New flooring: CARPET	Paint skirting	Paint Ceiling	☐	☒	☐	☐	☐	0	0	0	0	0	N/A	0
LIBR-02	Libray Entrance	5.64	Minor making good	New flooring: CARPET	Paint skirting	Paint Ceiling	☐	☒	☐	☐	☐	0	250	0	0	0	N/A	0
LIBR-04	Library Store	10.58	Minor making good	New flooring: CARPET	Paint skirting	Paint Ceiling	☐	☒	☐	☐	☐	0	250	0	0	0	N/A	0
PUW-04	WC	45.97	Skim and paint	New flooring: VINYL	Remove & replace: VINYL	Remove & replace ceiling	☐	☒	☐	☐	☐	0	0	0	0	0	N/A	0
SR05-07	Science	90.54	Minor making good	New flooring: VINYL	Paint skirting	Replace tiles	☐	☒	☐	☐	☒	200	300	900	0	0	N/A	0
SR05-08	Science	10.34	Minor making good	Clean	Paint skirting	Replace tiles	☒	☐	☐	☐	☒	0	200	200	10	0	N/A	0
SR05-08	Science	89.55	Minor making good	Clean	Paint skirting	Replace tiles	☒	☐	☐	☐	☒	200	300	900	0	0	N/A	0
SR05-09	Science	90.16	Minor making good	Clean	Paint skirting	Paint Ceiling	☒	☐	☐	☐	☒	200	300	900	0	0	N/A	0
SR05-10	Science	100.00	Minor making good	Clean	Paint skirting	Replace tiles	☒	☐	☐	☐	☒	200	300	900	0	0	N/A	0
SR05-11	Science	88.70	Minor making good	Clean	Paint skirting	Make good ceiling	☒	☐	☐	☐	☒	200	300	900	0	0	N/A	0
SR05-12	Science	88.69	Minor making good	Clean	Paint skirting	Remove & replace ceiling	☒	☐	☐	☐	☒	200	300	900	0	0	N/A	0
SR09-01	Media	91.24	Skim and paint	New flooring: CARPET	Remove & replace: TIMBER	Acoustic Ceiling	☐	☒	☒	☐	☒	0	0	0	0	0	N/A	0
SR09-02	Media	91.24	Skim and paint	New flooring: CARPET	Remove & replace: TIMBER	Acoustic Ceiling	☐	☒	☒	☐	☒	0	0	0	0	0	N/A	0
SR09-03	Media	90.00	Skim and paint	New flooring: CARPET	Remove & replace: TIMBER	Acoustic Ceiling	☐	☒	☒	☐	☒	0	0	0	0	0	N/A	0
SR09-04	Media	89.55	Skim and paint	New flooring: CARPET	Remove & replace: TIMBER	Acoustic Ceiling	☐	☒	☒	☐	☒	0	0	0	0	0	N/A	0
SR09-05	Store	7.18	Minor making good	Clean	Paint skirting	Paint Ceiling	☒	☐	☐	☐	☐	0	250	0	0	0	N/A	0
SR09-06	Store	7.71	Minor making good	New flooring: CARPET	Paint skirting	Paint Ceiling	☐	☒	☐	☐	☐	0	250	0	0	0	N/A	0
SR15-01	Hall	389.62	Minor making good	Sand & seal	Seal skirting	Paint Ceiling	☒	☐	☐	☐	☐	500	1000	2000	0	0	N/A	0
SR15-02	Stage	59.68	N/A	Sand floor	Seal skirting	Paint Ceiling	☒	☐	☐	☐	☐	300	1000	0	0	0	N/A	0
SR15-04	Back of Hall	85.04	Minor making good	Clean	Seal skirting	Paint Ceiling	☒	☐	☐	☐	☐	200	0	0	0	0	N/A	0
SR29-08	Media Off	5.87	Minor making good	Clean	Paint skirting	Paint Ceiling	☒	☐	☐	☐	☐	0	0	0	0	0	N/A	0
SR30-03	WC	7.22	Minor making good	Clean	Seal skirting	Paint Ceiling	☒	☐	☐	☐	☐	100	300	0	0	0	N/A	0
SR33-00	Library	8.33	Minor making good	New flooring: CARPET	Paint skirting	Acoustic Ceiling	☐	☒	☐	☐	☐	0	0	0	0	0	N/A	0
SR45-00	Co-Location Team	20.95	Minor making good	New flooring: CARPET	Paint skirting	Remove & replace ceiling	☐	☒	☐	☐	☐	100	250	200	0	0	N/A	0
SR45-00	Comm office	20.95	Minor making good	New flooring: CARPET	Paint skirting	Remove & replace ceiling	☐	☒	☐	☐	☐	100	250	200	0	0	N/A	0
SR45-08	Science prep and store	15.41	Minor making good	Clean	N/A	Paint Ceiling	☒	☐	☐	☐	☐	50	250	150	0	0	N/A	0
SR45-10	Science prep and store	10.33	Minor making good	Clean	N/A	Make good ceiling	☒	☐	☐	☐	☐	50	250	0	0	0	N/A	0
SR45-11	Science prep and store	6.00	Minor making good	Clean	Paint skirting	Paint Ceiling	☒	☐	☐	☐	☐	50	250	0	0	0	N/A	0
SR45-12	Science prep and store	21.90	Minor making good	Clean	Paint skirting	Paint Ceiling	☒	☐	☐	☐	☐	50	250	200	0	0	N/A	0
SR50-00	Central stock	45.70	N/A	N/A	N/A	N/A	☐	☐	☐	☐	☐	0	0	0	0	0	N/A	0
SR51-00	Central stock post	12.00	N/A	N/A	N/A	N/A	☐	☐	☐	☐	☐	0	0	0	0	0	N/A	0
SR52-00	Autism Unit	33.43	Acoustic plasterboard	New flooring: CARPET	Paint skirting	Acoustic Ceiling	☐	☒	☐	☐	☐	0	250	300	0	0	N/A	0
SR55-00	Chair store	12.95	Minor making good	Clean	Seal skirting	Paint Ceiling	☒	☐	☐	☐	☐	0	300	0	0	0	N/A	0
SR58-00	Senco	21.90	Minor making good	New flooring: CARPET	Paint skirting	Acoustic Ceiling	☒	☐	☐	☐	☐	0	250	200	0	0	N/A	0
SR62-00	HYG	21.68	Tiling	Tiling	N/A	Moisture Resistant	☐	☒	☐	☐	☐	0	0	0	0	0	N/A	0

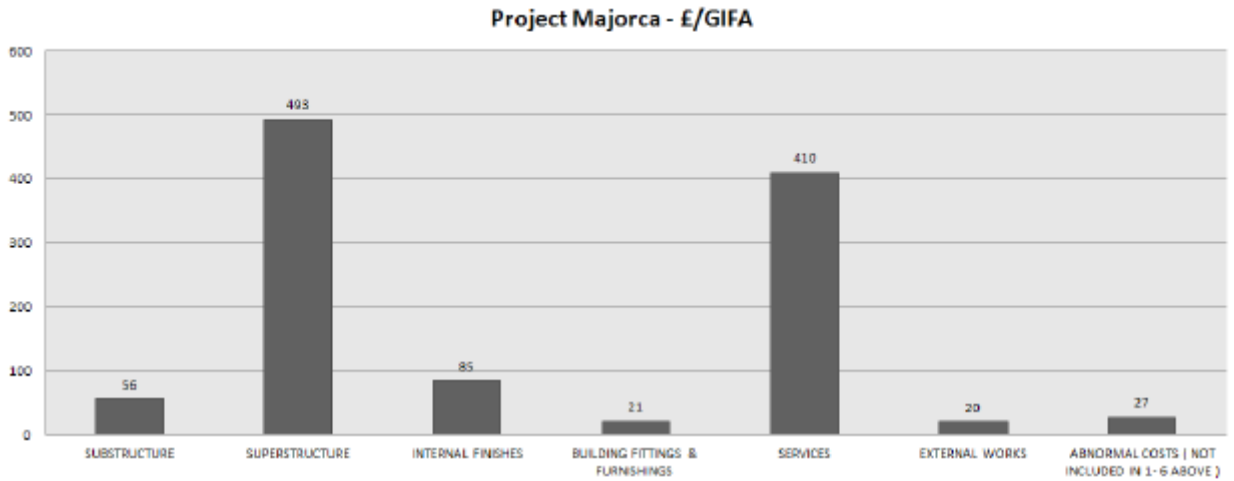
LIBR-04	Library Store				3,657.35
070.020.	Superstructure				
070.020.070.	Internal walls and partitions				
070.020.070.000.	Element unit quantity				
070.020.070.000.000.0001.					
070.020.070.005.	N				
070.020.070.005.000.0020.					
070.020.080.	In				
070.020.080.002.	N				
070.020.080.002.000.0020.					
070.030.	Inte				
070.030.010.	W				
070.030.010.000.000.0002.					
070.030.020.	Fl				
070.030.020.000.000.0001.1					
070.030.020.000.000.0020.					
070.030.020.000.000.0030.					
070.030.030.	C				
070.030.030.000.000.0040.					
070.030.050.	C				
070.030.050.000.000.0250.					
070.070.	Ab				
070.070.060.	D				
070.070.060.003.	R				
070.070.060.003.003.					
070.070.060.003.003.0002.					
070.070.060.003.010.					
070.070.060.003.010.0002.					

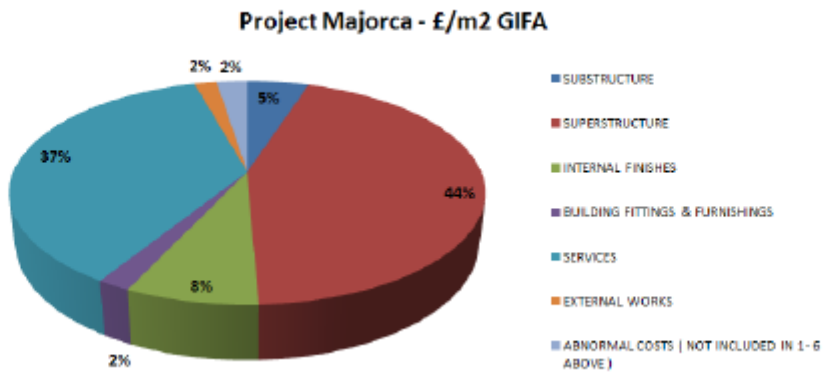
SR05-01	Science				4,432.25
070.020.	Superstructure				
070.020.080.	Internal doors				
070.020.080.003.	Alterations to internal door				
070.020.080.003.000.0001.	Paint and make good existing internal single door inc. painting to frames	8	m2	12.00	96.00
070.030.	Internal Finishes				
070.030.010.	Wall finishes				
070.030.010.000.000.0002.	Minor making good and repaint walls	128	m2	6.75	864.00
070.030.020.	Floor finishes				
070.030.020.000.000.0005.	Clean only	89	m2	2.00	178.00
070.030.020.000.000.0020.	Paint existing skirting	35	m	4.00	140.00
070.030.030.	Ceiling finishes				
070.030.030.000.000.0002.	Make good existing ceiling	89	m2	13.00	1,157.00
070.030.040.	Internal finishes				
070.030.040.000.000.0001.	Paint window board	15	m	4.00	60.00
070.030.040.000.000.0003.	Paint windows to corridor	3	nr	30.00	90.00
070.030.040.000.000.0200.	Paint radiators and pipes	1	item	200.00	200.00
070.030.050.	Carpentry (Allowance for minor joinery repairs)				
070.030.050.000.000.0350.	Allowance for minor joinery repairs	1	item	350.00	350.00
070.040.	Fittings,furnishings and equipment				
070.040.001.	FF&E				
070.040.001.000.000.0024.	New door signage	2	nr	150.00	300.00
070.040.001.000.000.0025.	Protection of FF&E	89	m2	0.25	22.25
070.050.	Services				
070.050.005.	New services				
070.050.005.000.000.0002.	BWIC for fix screen and projector	1	item	75.00	75.00
070.050.005.000.000.0900.	Make good after Cat 6 cabling	1	item	900.00	900.00

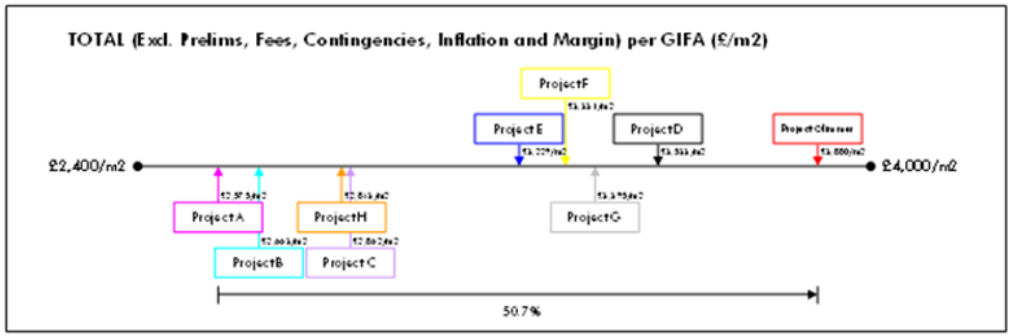
Feasibility Studies

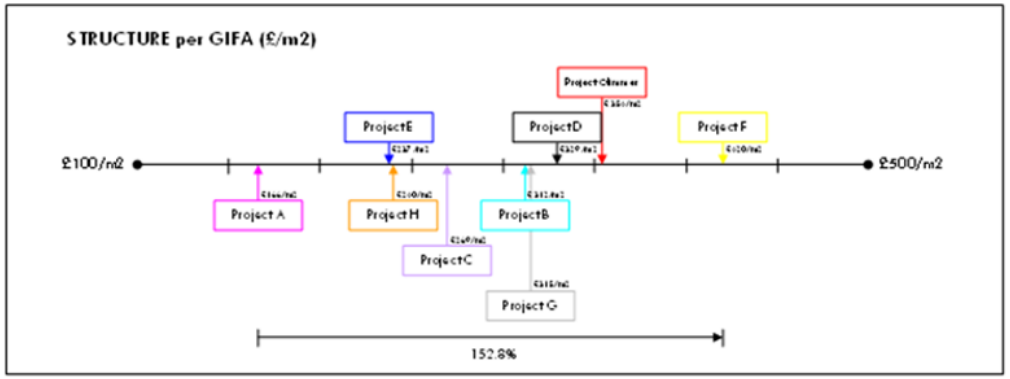




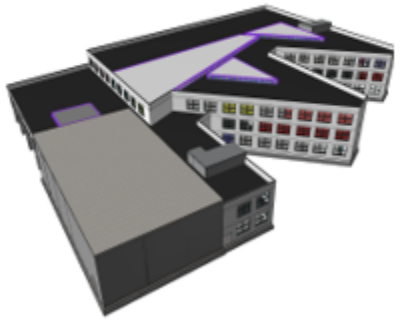

Project Majorca - £/GIFA
600
500
400
300
200
100
0
56
493
85
21
410
20
27
SUBSTRUCTURE
SUPERSTRUCTURE
INTERNAL FINISHES
BUILDING FITTINGS & FURNISHINGS
SERVICES
EXTERNAL WORKS
ABNORMAL COSTS (NOT INCLUDED IN 1-6 ABOVE)


Project Majorca - £/m2 GIFA
2%
2%
5%
37%
44%
8%
2%
SUBSTRUCTURE
SUPERSTRUCTURE
INTERNAL FINISHES
BUILDING FITTINGS & FURNISHINGS
SERVICES
EXTERNAL WORKS
ABNORMAL COSTS (NOT INCLUDED IN 1-6 ABOVE)


TOTAL (Excl. Prelims, Fees, Contingencies, Inflation and Margin) per GIFA (£/m2)
ProjectF
ProjectE
ProjectD
£2,400/m2
£4,000/m2
Project A
ProjectH
ProjectG
ProjectB
Project C
50.7%


STRUCTURE per GIFA (£/m2)
ProjectE
ProjectD
Project F
£100/m2
£500/m2
Project A
ProjectH
ProjectB
ProjectC
Project G
152.8%

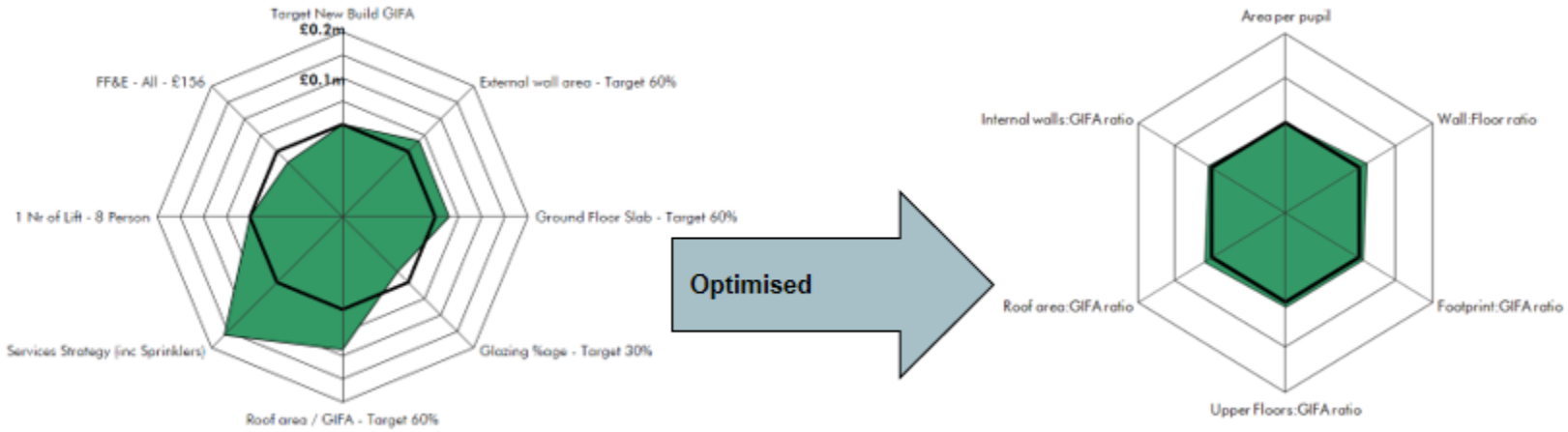
Design to Cost

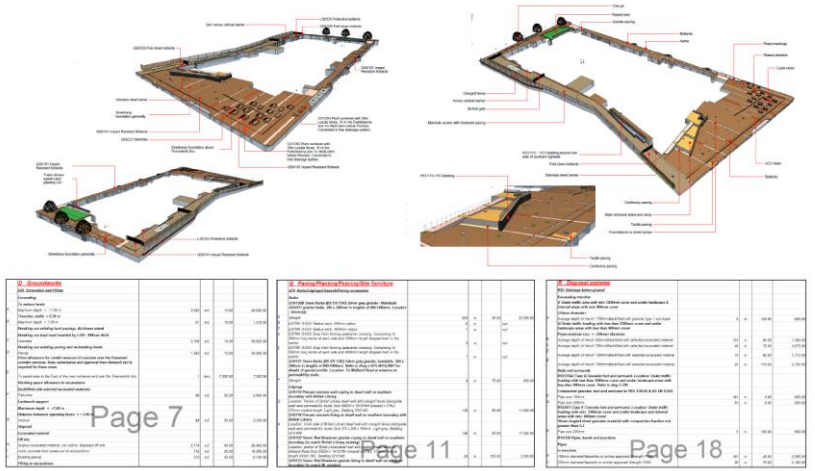


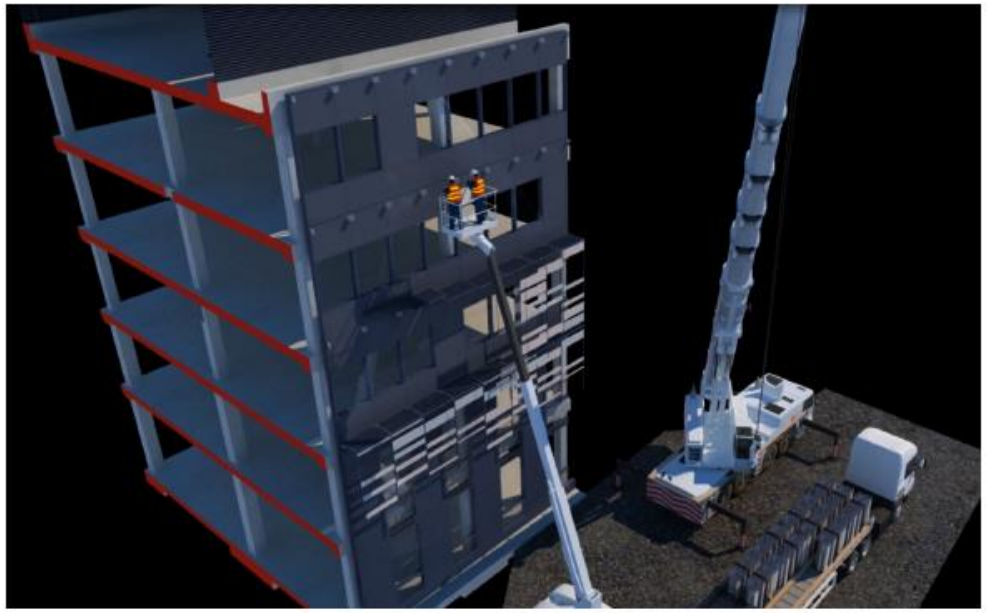
- Design team led to develop options and schemes within defined cost levels
- Design optimised to add best value
- Identify the major factors that are putting cost pressures on the project so risk can be identified and controlled early on.

Cost certainty ✔

Best value design ✔




Page 7
Page 11
Page 18



CitA
BIM GATHERING

Expanding the capability

Scalable?

Mystical creature?

Change management

Technology

Process

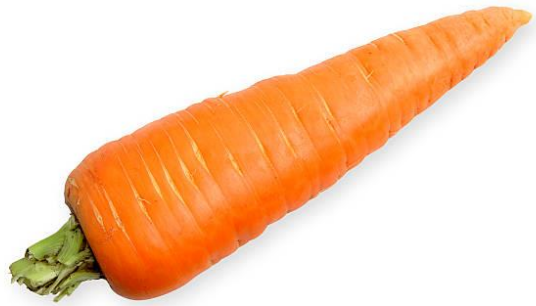
People

Process barriers:

- Non-standard measurement systems
- Offset of risk to supply chain

People barriers:

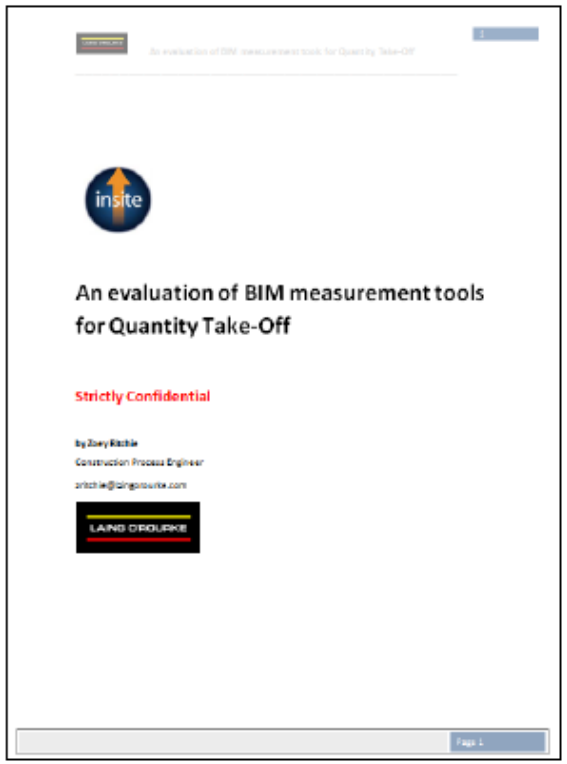
- Culture – trust/blame
- No incentive - Stick / carrot
- We've always done it this way!

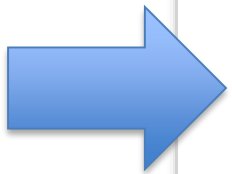


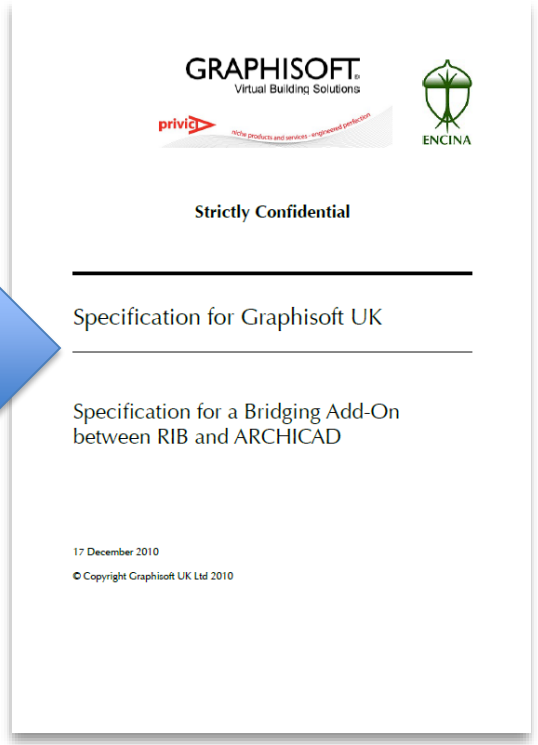
CitA
BIM GATHERING

Improving the technology

Developing the technology…

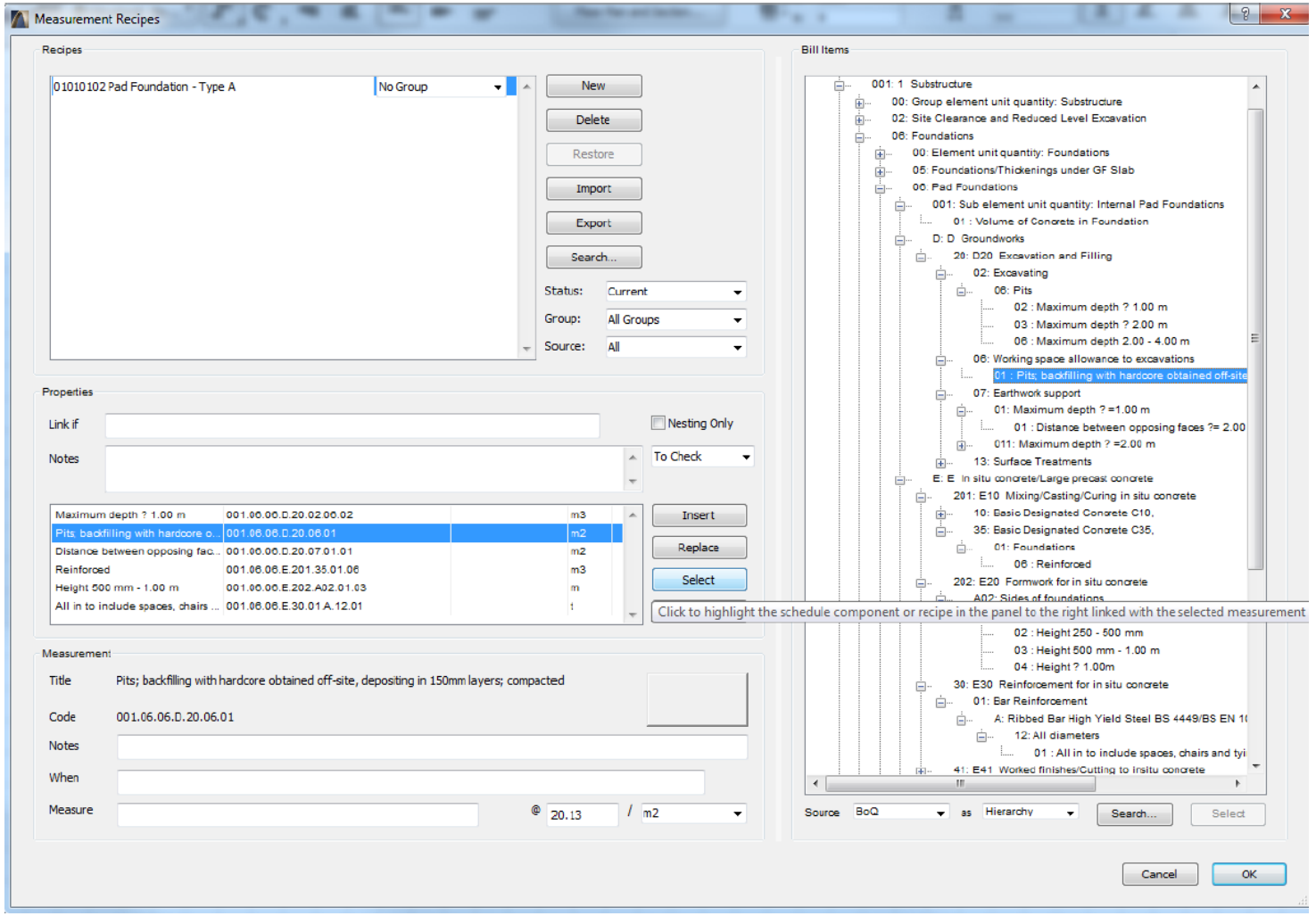






Why create our own tool?

- We were creating our own models
- Always items that require measurement that would not be typically modelled i.e. roof details, angles and abutments
- Tried and tested process with Archicad
- Nothing better on the market


Measurement Recipes
Recipes
01010102 Pad Foundation - Type A
No Group
New
Delete
Restore
Import
Export
Search...
Status: Current
Group: All Groups
Source: All
Properties
Link if
Nesting Only
Notes
To Check
Maximum depth ? 1.00 m 001.06.06.D.20.02.06.02 m3
Pits; backfilling with hardcore o... 001.06.06.D.20.06.01 m2
Distance between opposing fac... 001.06.06.D.20.07.01.01 m2
Reinforced 001.06.06.E.201.35.01.06 m3
Height 500 mm - 1.00 m 001.06.06.E.202.A02.01.03 m
All in to include spaces, chairs ... 001.06.06.E.30.01.A.12.01 t
Insert
Replace
Select
Measurement
Title Pits; backfilling with hardcore obtained off-site, depositing in 150mm layers; compacted
Code 001.06.06.D.20.06.01
Notes
When
Measure
@ 20.13 / m2
Bill Items
001: 1 Substructure
00: Group element unit quantity: Substructure
02: Site Clearance and Reduced Level Excavation
06: Foundations
00: Element unit quantity: Foundations
05: Foundations/Thickenings under GF Slab
06: Pad Foundations
001: Sub element unit quantity: Internal Pad Foundations
01 : Volume of Concrete in Foundation
D: D Groundworks
20: D20 Excavation and Filling
02: Excavating
06: Pits
02 : Maximum depth ? 1.00 m
03 : Maximum depth ? 2.00 m
06 : Maximum depth 2.00 - 4.00 m
06: Working space allowance to excavations
01 : Pits; backfilling with hardcore obtained off-site
07: Earthwork support
01: Maximum depth ? =1.00 m
01 : Distance between opposing faces ?= 2.00
011: Maximum depth ? =2.00 m
13: Surface Treatments
E: E In situ concrete/Large precast concrete
201: E10 Mixing/Casting/Curing in situ concrete
10: Basic Designated Concrete C10,
35: Basic Designated Concrete C35,
01: Foundations
06 : Reinforced
202: E20 Formwork for in situ concrete
A02: Sides of foundations
02 : Height 250 - 500 mm
03 : Height 500 mm - 1.00 m
04 : Height ? 1.00m
30: E30 Reinforcement for in situ concrete
01: Bar Reinforcement
A: Ribbed Bar High Yield Steel BS 4449/BS EN 1
12: All diameters
01 : All in to include spaces, chairs and tyi
41: E41 Worked finishes/Cutting to Insitu concrete
Source BoQ as Hierarchy
Search...
Select
Click to highlight the schedule component or recipe in the panel to the right linked with the selected measurement
Cancel
OK

Properties

Link if element.id = "SUB-PAD A"

Nesting Only

Notes

To Check

Reinforced	001.06.06.E.201.35.01.06	element.volume	m3
Height 250 - 500 mm	001.06.06.E.202.A02.01.02	element.length	m
Height 500 mm - 1.00 m	001.06.06.E.202.A02.01.03	element.length	m
Height ? 1.00m	001.06.06.E.202.A02.01.04	element.length	m2
All in to include spaces, chairs ...	001.06.06.E.30.01.A.12.01		
100dia x 600mm sleeve to reci...	001.06.06.E.42.10.10.01	1	nr

A list of measurements taken by this recipe

Insert

Replace

Select

Delete

Measurement

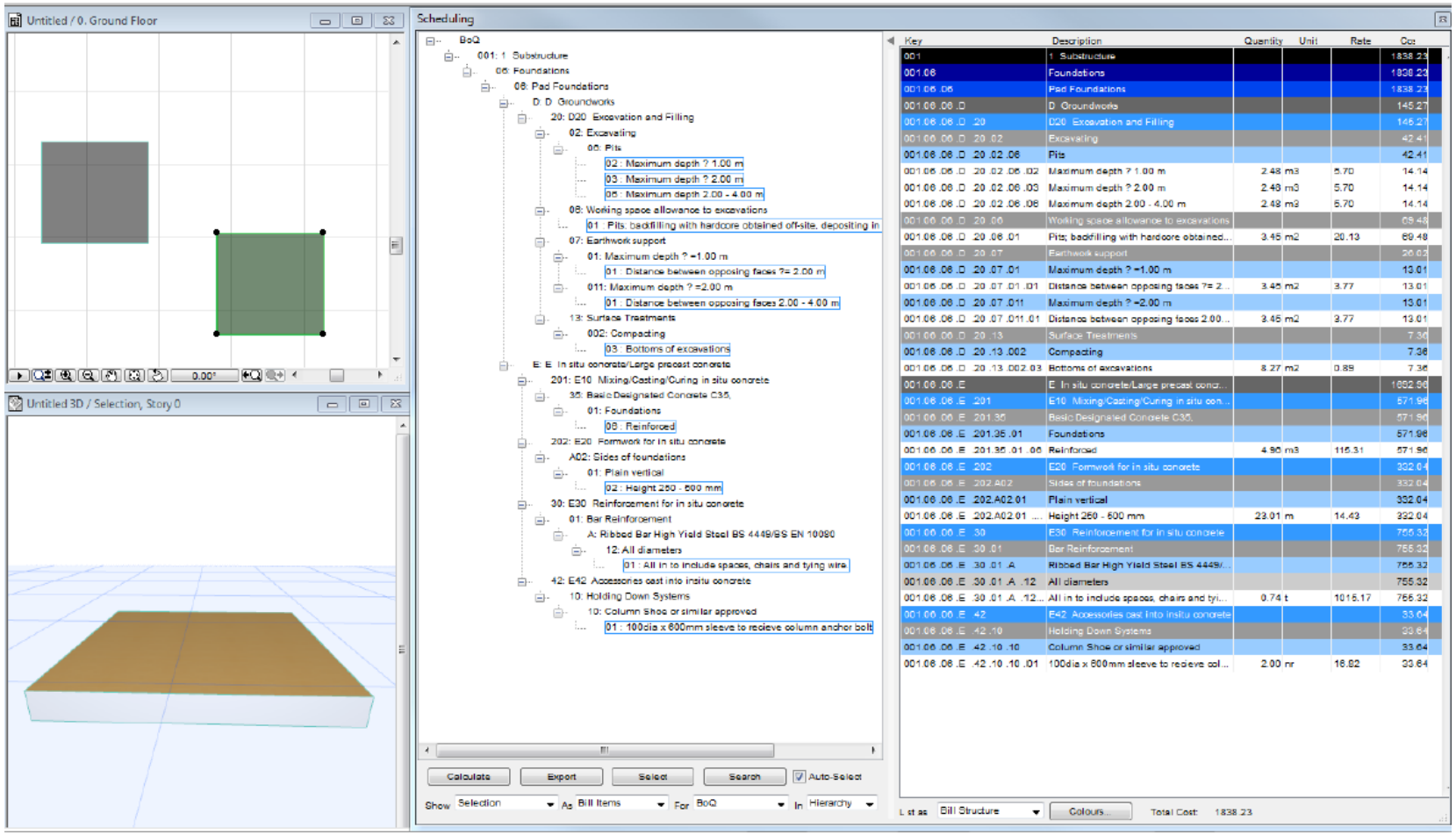
Title Height 250 - 500 mm

Code 001.06.06.E.202.A02.01.02

Notes

When element.height <0.5

Measure element.length @ 14.43 / m


Untitled / 0. Ground Floor
Untitled 3D / Selection, Story 0
Scheduling
BoQ
001: 1 Substructure
06: Foundations
08: Pad Foundations
D D Groundworks
20: D20 Excavation and Filling
02: Excavating
05: Pits
02 : Maximum depth ? 1.00 m
03 : Maximum depth ? 2.00 m
05 : Maximum depth 2.00 - 4.00 m
08: Working space allowance to excavations
01 : Pits; backfilling with hardcore obtained off-site, depositing in
07: Earthwork support
01: Maximum depth ? =1.00 m
01 : Distance between opposing faces ?= 2.00 m
011: Maximum depth ? =2.00 m
01 : Distance between opposing faces 2.00 - 4.00 m
13: Surface Treatments
002: Compacting
03 : Bottoms of excavations
E: E In situ concrete/Large precast concrete
201: E10 Mixing/Casting/Curing in situ concrete
35: Basic Designated Concrete C35.
01: Foundations
08 : Reinforced
202: E20 Formwork for in situ concrete
A02: Sides of foundations
01: Plain vertical
02 : Height 250 - 500 mm
30: E30 Reinforcement for in situ concrete
01: Bar Reinforcement
A: Ribbed Bar High Yield Steel BS 4449/BS EN 10080
12: All diameters
01 : All in to include spaces, chairs and tying wire
42: E42 Accessories cast into insitu concrete
10: Holding Down Systems
10: Column Shoe or similar approved
01 : 100dia x 600mm sleeve to recieve column anchor bolt
Calculate
Export
Select
Search
Auto-Select
Show Selection As Bill Items For BoQ In Hierarchy
Key
Description
Quantity
Unit
Rate
Cost
001 1 Substructure 1838.23
001.06 Foundations 1838.23
001.06 .06 Pad Foundations 1838.23
001.06 .06 .D D Groundworks 145.27
001.06 .06 .D .20 D20 Excavation and Filling 145.27
001.06 .06 .D .20 .02 Excavating 42.41
001.06 .06 .D .20 .02 .06 Pits 42.41
001.06 .06 .D .20 .02 .06 .02 Maximum depth ? 1.00 m 2.48 m3 5.70 14.14
001.06 .06 .D .20 .02 .06 .03 Maximum depth ? 2.00 m 2.48 m3 5.70 14.14
001.06 .06 .D .20 .02 .06 .06 Maximum depth 2.00 - 4.00 m 2.48 m3 5.70 14.14
001.06 .06 .D .20 .06 Working space allowance to excavations 69.48
001.06 .06 .D .20 .06 .01 Pits; backfilling with hardcore obtained... 3.45 m2 20.13 69.48
001.06 .06 .D .20 .07 Earthwork support 26.02
001.06 .06 .D .20 .07 .01 Maximum depth ? =1.00 m 13.01
001.06 .06 .D .20 .07 .01 .01 Distance between opposing faces ?= 2... 3.45 m2 3.77 13.01
001.06 .06 .D .20 .07 .011 Maximum depth ? =2.00 m 13.01
001.06 .06 .D .20 .07 .011 .01 Distance between opposing faces 2.00 ... 3.45 m2 3.77 13.01
001.06 .06 .D .20 .13 Surface Treatments 7.36
001.06 .06 .D .20 .13 .002 Compacting 7.36
001.06 .06 .D .20 .13 .002 .03 Bottoms of excavations 8.27 m2 0.89 7.36
001.06 .06 .E E: In situ concrete/Large precast concr... 1692.96
001.06 .06 .E .201 E10 Mixing/Casting/Curing in situ con... 571.98
001.06 .06 .E .201.35 Basic Designated Concrete C35. 571.98
001.06 .06 .E .201.35 .01 Foundations 571.98
001.06 .06 .E .201.35 .01 .08 Reinforced 4.96 m3 115.31 571.98
001.06 .06 .E .202 E20 Formwork for in situ concrete 332.04
001.06 .06 .E .202.A02 Sides of foundations 332.04
001.06 .06 .E .202.A02.01 Plain vertical 332.04
001.06 .06 .E .202.A02.01 ... Height 250 - 600 mm 23.01 m 14.43 332.04
001.06 .06 .E .30 E30 Reinforcement for in situ concrete 755.32
001.06 .06 .E .30 .01 Bar Reinforcement 755.32
001.06 .06 .E .30 .01 .A Ribbed Bar High Yield Steel BS 4449/... 755.32
001.06 .06 .E .30 .01 .A .12 All diameters 755.32
001.06 .06 .E .30 .01 .A .12... All in to include spaces, chairs and tyi... 0.74 t 1015.17 755.32
001.06 .06 .E .42 E42 Accessories cast into insitu concrete 33.64
001.06 .06 .E .42 .10 Holding Down Systems 33.64
001.06 .06 .E .42 .10 .10 Column Shoe or similar approved 33.64
001.06 .06 .E .42 .10 .10 .01 100dia x 600mm sleeve to recieve col... 2.00 nr 16.82 33.64
List as Bill Structure
Colours...
Total Cost: 1838.23

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Measuring models received from others

Work Winning

- **Created Internally**
- **Full Control**

Delivery

- **Created by design team**
- **No Control**

Work Winning

Post Win

Consultant Revit Model

Static IFC / Remodel in ArchiCAD

Measured in Archicad

Static BoQ Exported

"Tweaked" & Priced by Estimators

Contract Sum

S/C Procurement on Spec & Dwgs

Manual remeasure for design change

RISK OF INTEROPERABLITY / MISINTERPRETATION OF DESIGN INTENT

MANUAL "TWEAKS" MAKE QUANTS INAUDITABLE / UNTRACKABLE

RISK OF NON RETURNS / UNCONTROLLED QUANTS

RISK OF INACCURACY / MISUNDERSTANDING CONTRACT INCLUSIONS

Database

Issues quantifying models created by others:

- No standard modelling rules
- No standard application of modelling tools
- Always items that requirement measurement that would not be typically modelled i.e. roof details, angles and abutments
- Any changes to the model to enable this would need to be done each time the designers model changes
- Unreliable IFC exchange

To use models by others

- Reliable IFC exports
- Modelling and naming protocol (BEP)
- Quality assurance process
- Still need to add to the model to comply with measurement rules - i.e formwork, roof details

Work Winning

Post Win

Consultant Revit Model → Measured in Revit → Priced by Estimators → Contract Sum → S/C Procurement with our BoQ's → Design change quantified in Revit through dynamic link to live model.

RISK OF QUANTIFICATION ACCURACY SITS WITH LOR

Feedback to Cost Database

Business case for Revit…. and project delivery

DE Work-Win

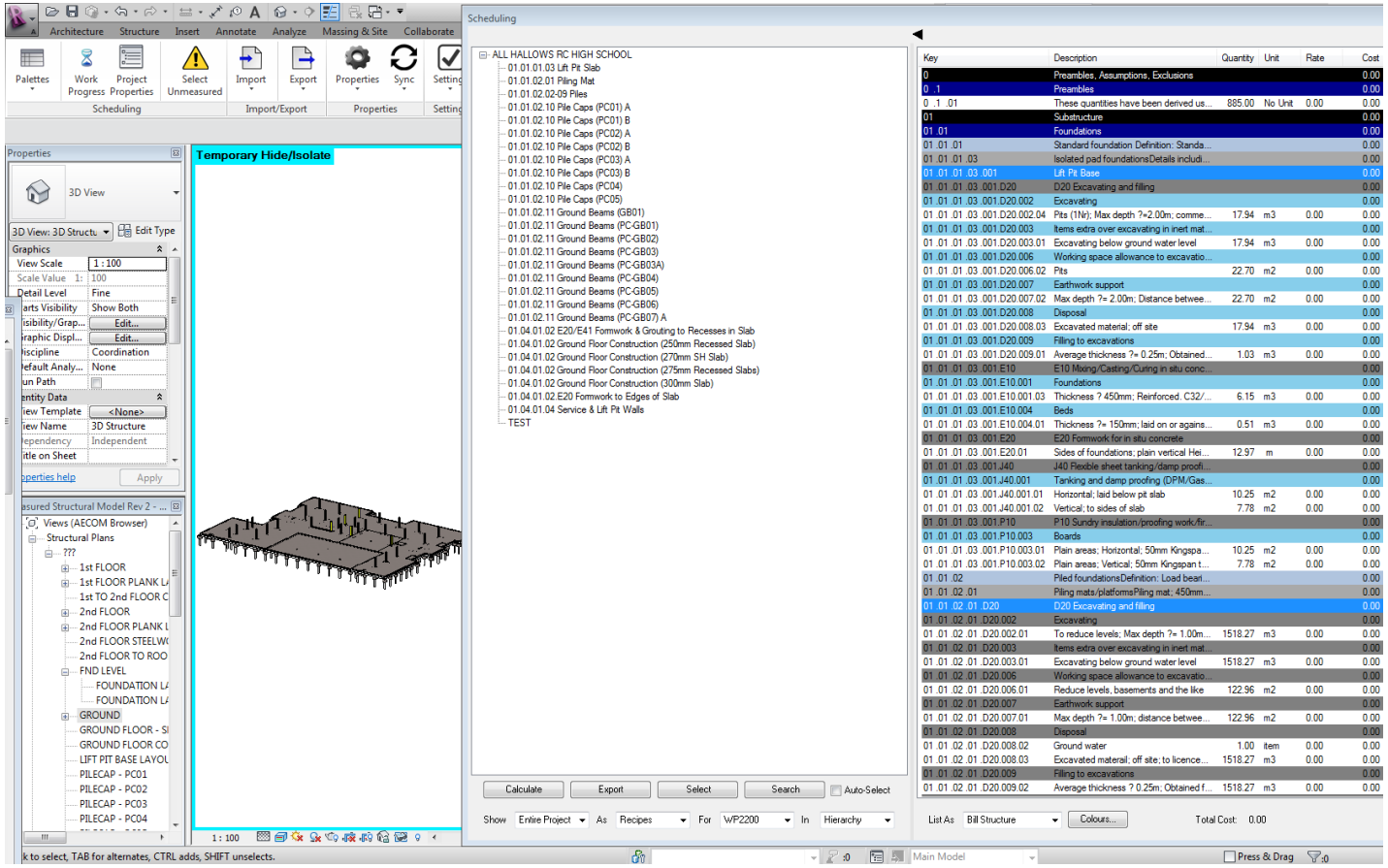
- We receive an increasing amount of Revit models to work with
- IFC translation is getting better but it is still a work-around and can be quite inefficient
- When quantification is completed in Archicad it is effectively 'thrown away' at project hand-over.

Commercial Team

- There is a clear desire to have quantification data passed from tender stage into project delivery.
- Commercial Team have no mature 5d tool to use in Project Delivery.

Commercial Strategy

- Spec and Drawings offset the risk but might not always provide the best value i.e how do we know that we are getting a fair price??
- Our supply chain are becoming more reluctant to price on spec and drawings as it involves a lot of effort to price and places all the risk on them
- Change Management is impossible to accurately measure without a detailed BoQ
- We cannot benchmark if we don't know how much of what we have built!



- A few technology barriers
- Commercial model still didn't fit!

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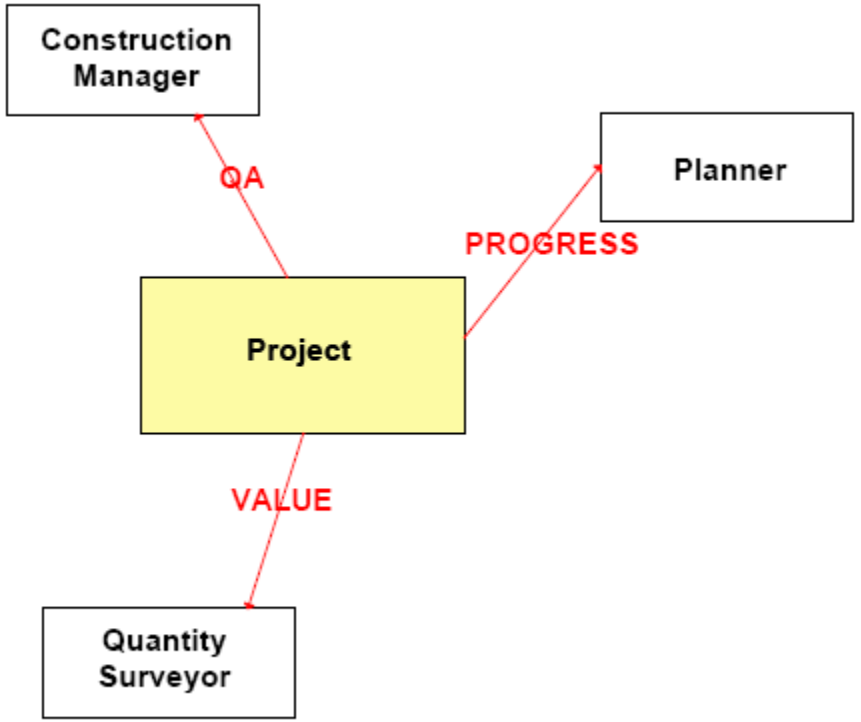
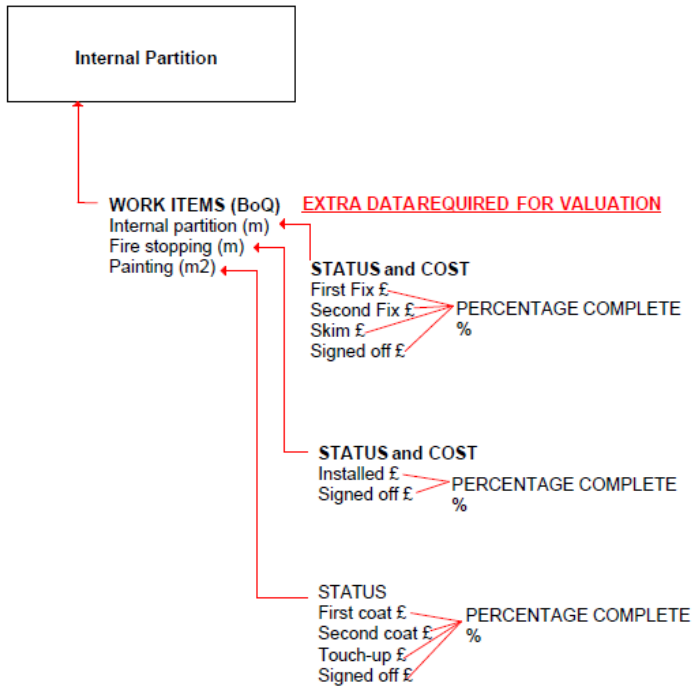
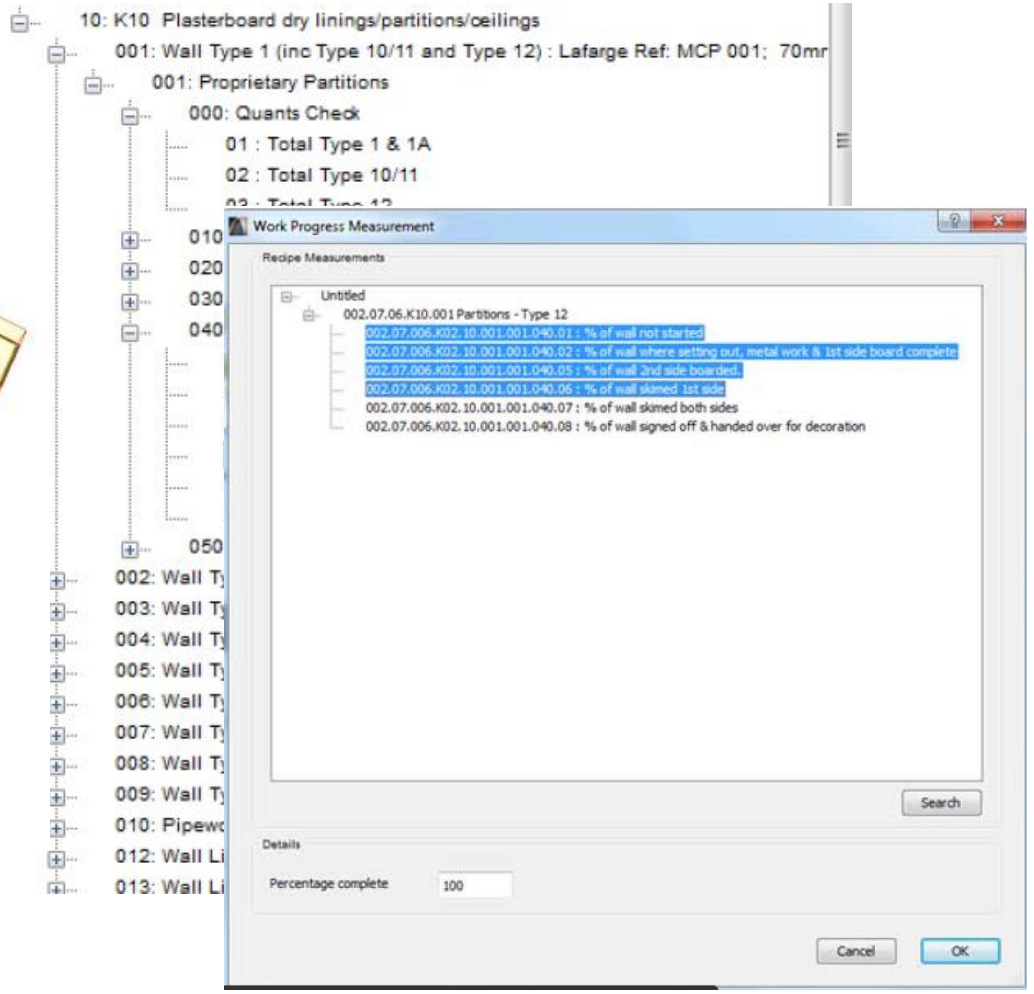
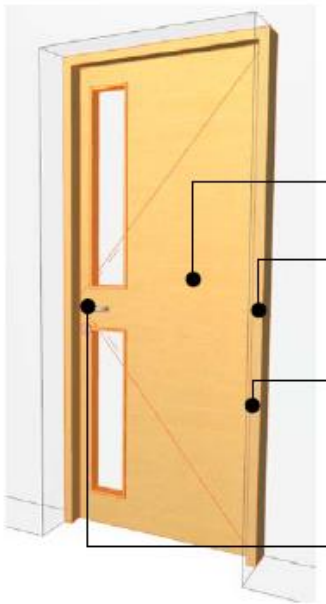
Valuations from models

Valuations from models



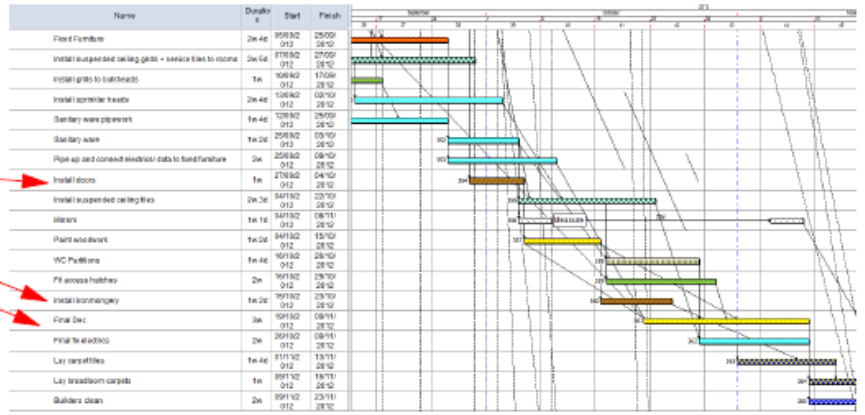

Internal Partition
WORK ITEMS (BoQ)
Internal partition (m)
Fire stopping (m)
Painting (m2)
EXTRA DATA REQUIRED FOR VALUATION
STATUS and COST
First Fix £
Second Fix £
Skim £
Signed off £
PERCENTAGE COMPLETE
%
STATUS and COST
Installed £
Signed off £
PERCENTAGE COMPLETE
%
STATUS
First coat £
Second coat £
Touch-up £
Signed off £
PERCENTAGE COMPLETE
%


10: K10 Plasterboard dry linings/partitions/ceilings
001: Wall Type 1 (inc Type 10/11 and Type 12) : Lafarge Ref: MCP 001; 70mr
001: Proprietary Partitions
000: Quants Check
01 : Total Type 1 & 1A
02 : Total Type 10/11
010
020
030
040
050
002: Wall Ty
003: Wall Ty
004: Wall Ty
005: Wall Ty
006: Wall Ty
007: Wall Ty
008: Wall Ty
009: Wall Ty
010: Pipewo
012: Wall Li
013: Wall Li
Work Progress Measurement
Recipe Measurements
Untitled
002.07.06.K10.001 Partitions - Type 12
002.07.006.K02.10.001.001.040.01 : % of wall not started
002.07.006.K02.10.001.001.040.02 : % of wall where setting out, metal work & 1st side board complete
002.07.006.K02.10.001.001.040.05 : % of wall 2nd side boarded.
002.07.006.K02.10.001.001.040.06 : % of wall skimed 1st side
002.07.006.K02.10.001.001.040.07 : % of wall skimed both sides
002.07.006.K02.10.001.001.040.08 : % of wall signed off & handed over for decoration
Search
Details
Percentage complete
100
Cancel
OK



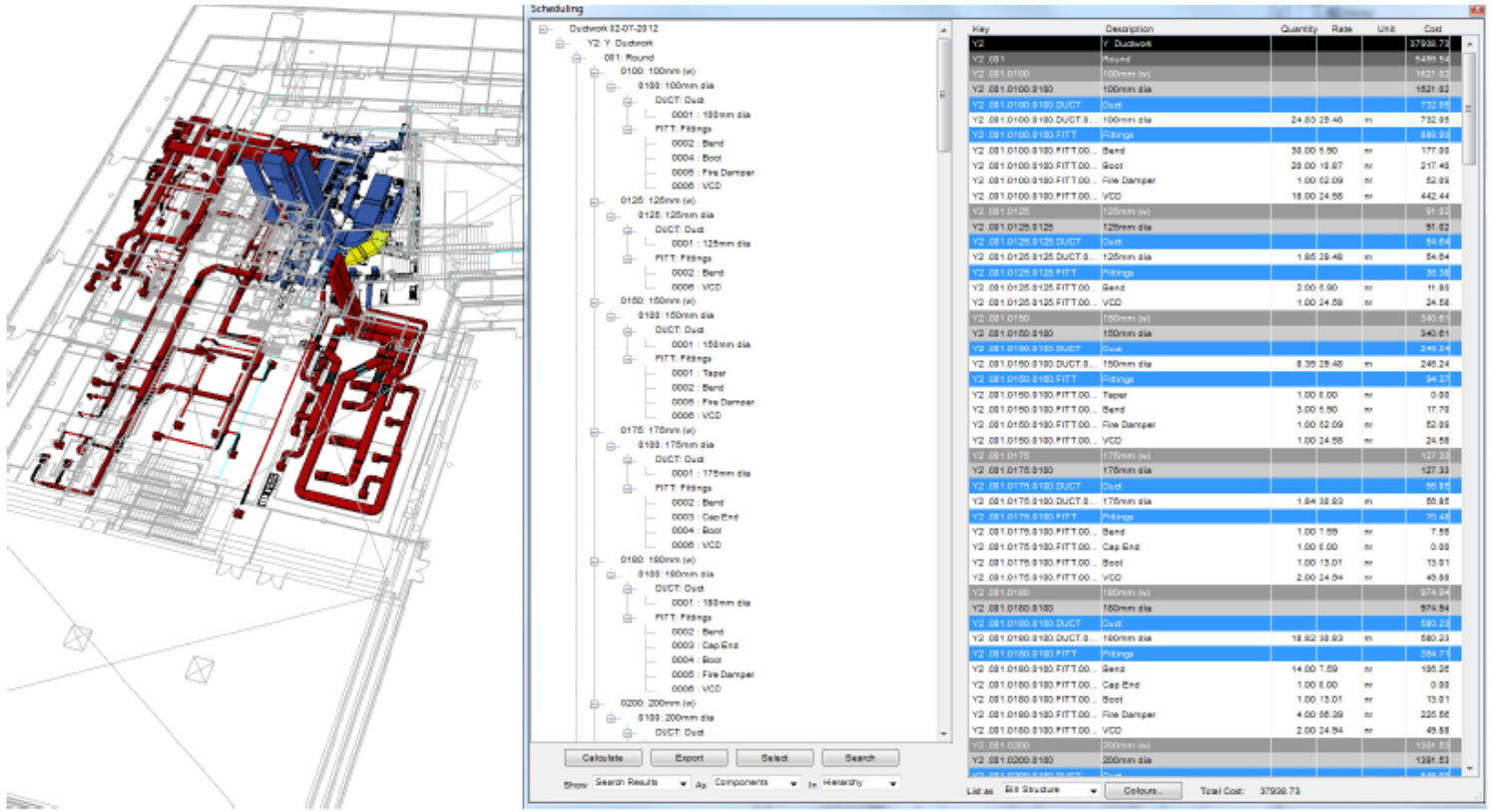
One door in a 3d model does not equal one measurement item or one status.

Although a data tag can export from Archicad to Synchro, only one data tag per element can be exported.



Measurement of MEP Elements

A.08.19 Valuation of Ductwork - 30-07-2012



Zone 1
Complete

Zone 2
Not started

Zone 2
Complete

ITEM	DESCRIPTION OF WORKS	KEY DRAWINGS FOR REFERENCE	QTY	UNIT	RATE	COST
	MEASURED WORKS					
1	Wall Type 1	Aedas 22 series drawings				
a	Plasterboarding, metal works and skimming (Up to 3300-3600mm high)		1348	m	87.08	117,383.84
b	Plasterboarding, metal works and skimming (Up to 6900-7200mm high)			m		
c	Type 1A Dwarf wall; plasterboarding, metal works and skimming		12	m	37.34	448.08
d	Shaftwall 60mm studs at 600cts, 25mm firecoreboard shaftside & 1x15mm Impact resistant palsterboard room side in lieu wall type 1		114	m	118.83	13,546.62
e	Additional board to Hub and Server walls upgraded to 2hr FR		53	m	39.83	2,110.99
2	Wall Type 2	Aedas 22 series drawings				
a	Plasterboarding, metal works and skimming (Up to 3300-3600mm high)		412	m	96.63	39,811.56
b	Plasterboarding, metal works and skimming (Up to 6900-7200mm high)			m		
3	Wall Type 3	Aedas 22 series drawings				
a	Plasterboarding, metal works and skimming (Up to 3300-3600mm high)		66	m	133.74	8,826.84
b	Plasterboarding, metal works and skimming (Up to 6900-7200mm high)			m		
4	Wall Type 4	Aedas 22 series drawings				
a	Plasterboarding, metal works and skimming (Up to 3300-3600mm high)		171	m	156.36	26,737.56
b	Plasterboarding, metal works and skimming (Up to 6900-7200mm high)			m		

Lessons learnt…

- BoQs need to be created from the model to begin with
- Cost doesn't easily translate into 4d
- Transparency is not always desirable!

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Commercial Change Management

- We need to harness our digital engineering capabilities to support everything the commercial function undertakes. This includes measurement, scope identification, design development and change management which needs further focus.

"Tangible" change

- Alteration or modification of design
- Quantifiable scope change
- Correction of departures from the adopted method of measurement
- Correction of inconsistencies between the Bill of Quantities and contractual other documents
- Quality/Defects

DE support

"Non-tangible" change

- Contract alterations by Contractor/Employer
- Additional obligations/restrictions
- A change in the order or period in which work is to be carried out.
- Delays/late work commencement, change in sequence

Amount of Pre-Work Required

1. **Visualisation of Change** – You can SEE the change

2. **Unstructured Quantity Change** – Schedule of change

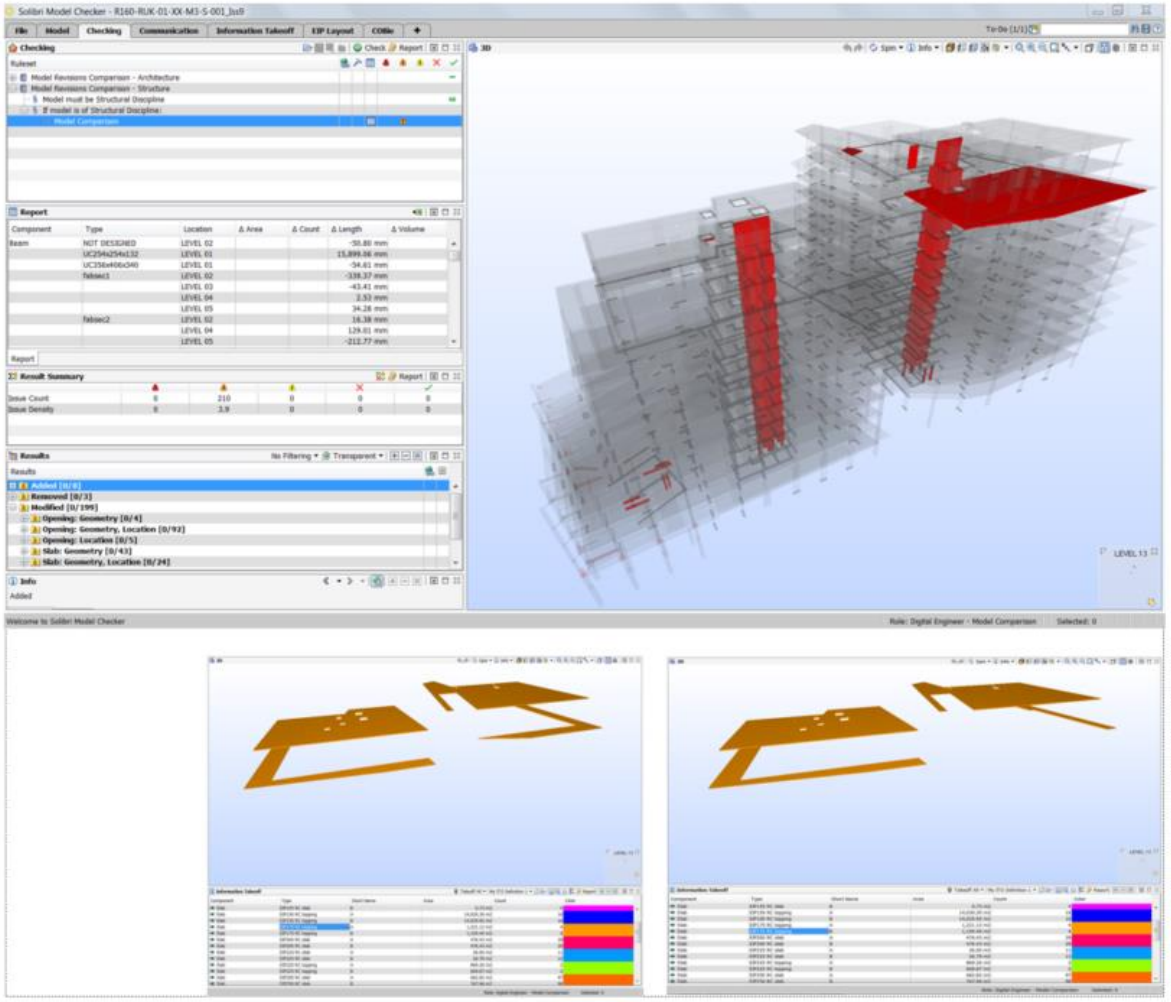
3. **Structured (measured) Quantity Change** – Measured and priced impact of change

Control of Change

The lack of tools for change management is NOT the biggest problem

It is our processes, our skill sets and our commercial strategy (procurement methods)

We cannot manage change with cost without detailed BoQ's generated from the model and usually we DO NOT have this in the project delivery phase.



Amount of Pre-Work Required

1. **Visualisation of Change** – You can SEE the change

2. **Unstructured Quantity Change** – Schedule of change

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Control of Change

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Implementation today

What are you trying to achieve?

Process first….then technology

What is the value vs. the cost?

Selecting technology

- What is the process/outputs you are trying to achieve?
- What are the requirements of the tool?
- Which tool best meets those requirements?
- The solution may be several tools joined together

- Start simple and build up
- Easy wins with the biggest impact

In the future….

- IFC is improving
- More standards are being developed such as PAS1192-7
- The more ‘standard’ modelling methodology and data becomes the easier it is to measure

- Don’t rely on BIM specialists to do all of the doing
- Don’t rely on software solutions
- To leverage all of the capability the processes may need to change
- Change requires a proper change management programme

If we can do it anyone can!

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Thank you

Zoey Ritchie
zoey.ritchie@pcsg.co.uk