

St Silas School

Design & Development

Case Study

20 March 2012

The Project

- St Silas Primary School, Blackburn
- Delivered as part of the Blackburn with Darwen BSF
- Completes early April 2012
- Value £5.5m
- Designers Capita Selected by the Local Authority and novated to Balfour Beatty
- Capita - a multi-disciplinary team
- All team members working in BIM (Autodesk Revit Software)
- First fully integrated BIM project involving designers, construction and supply chain

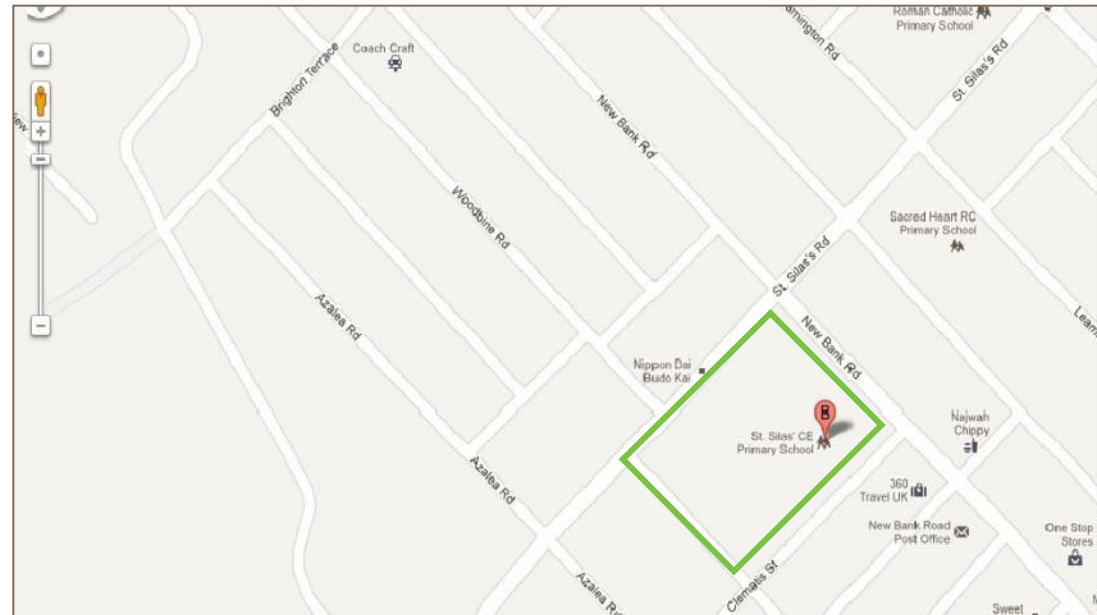
Client's Drivers

- Retain school in same location
- Maximising use of a very tight site
- Increasing amount of open space
- Increasing sports facilities
- Dynamic image
- Increase community usage
- High degree of public engagement
- Use of BIM to ease decision making



Project Issues

- Very constrained site
- Steeply sloping site
- Culvert running across centre
- Surrounded by public realm
- Narrow Roads on all 4 sides
- In midst of Housing Estate
- Poor ground conditions



Lower Ground Floor Plan



Ground Floor Plan



First Floor Plan



Room No.	Room Name	Area (sqm)	Volume (m³)	Perimeter (m)	Notes
101	Office	15.0	30.0	20.0	
102	Office	15.0	30.0	20.0	
103	Office	15.0	30.0	20.0	
104	Office	15.0	30.0	20.0	
105	Office	15.0	30.0	20.0	
106	Office	15.0	30.0	20.0	
107	Office	15.0	30.0	20.0	
108	Office	15.0	30.0	20.0	
109	Office	15.0	30.0	20.0	
110	Office	15.0	30.0	20.0	
111	Office	15.0	30.0	20.0	
112	Office	15.0	30.0	20.0	
113	Office	15.0	30.0	20.0	
114	Office	15.0	30.0	20.0	
115	Office	15.0	30.0	20.0	
116	Office	15.0	30.0	20.0	
117	Office	15.0	30.0	20.0	
118	Office	15.0	30.0	20.0	
119	Office	15.0	30.0	20.0	
120	Office	15.0	30.0	20.0	
121	Office	15.0	30.0	20.0	
122	Office	15.0	30.0	20.0	
123	Office	15.0	30.0	20.0	
124	Office	15.0	30.0	20.0	
125	Office	15.0	30.0	20.0	
126	Office	15.0	30.0	20.0	
127	Office	15.0	30.0	20.0	
128	Office	15.0	30.0	20.0	
129	Office	15.0	30.0	20.0	
130	Office	15.0	30.0	20.0	
131	Office	15.0	30.0	20.0	
132	Office	15.0	30.0	20.0	
133	Office	15.0	30.0	20.0	
134	Office	15.0	30.0	20.0	
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150	Office	15.0	30.0	20.0	
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153	Office	15.0	30.0	20.0	
154	Office	15.0	30.0	20.0	
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156	Office	15.0	30.0	20.0	
157	Office	15.0	30.0	20.0	
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159	Office	15.0	30.0	20.0	
160	Office	15.0	30.0	20.0	
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162	Office	15.0	30.0	20.0	
163	Office	15.0	30.0	20.0	
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165	Office	15.0	30.0	20.0	
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167	Office	15.0	30.0	20.0	
168	Office	15.0	30.0	20.0	
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177	Office	15.0	30.0	20.0	
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193	Office	15.0	30.0	20.0	
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195	Office	15.0	30.0	20.0	
196	Office	15.0	30.0	20.0	
197	Office	15.0	30.0	20.0	
198	Office	15.0	30.0	20.0	
199	Office	15.0	30.0	20.0	
200	Office	15.0	30.0	20.0	

The Project



The Project



Interiors



Interiors



Exterior



Night shot



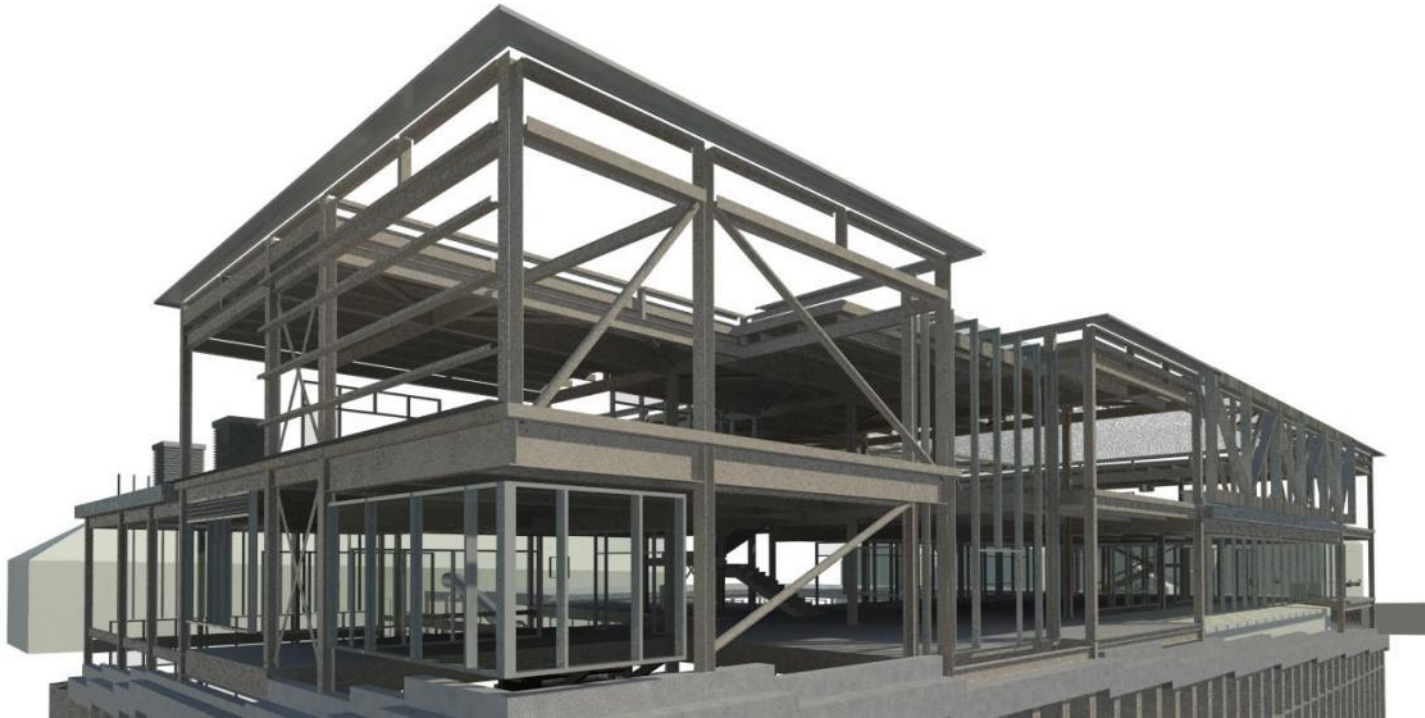
Integrated Schedule of Accommodation

The screenshot displays the Autodesk Revit Architecture 2011 interface. The main window shows the 'Accommodation Schedule' table, which lists various rooms and their associated areas. The table includes columns for Name, Number, Required Area, Area, Area Difference, BB Department, and Comments. The table is sorted by Name. The 'Area' column is highlighted in red for several rows, indicating a discrepancy between the required and actual areas.

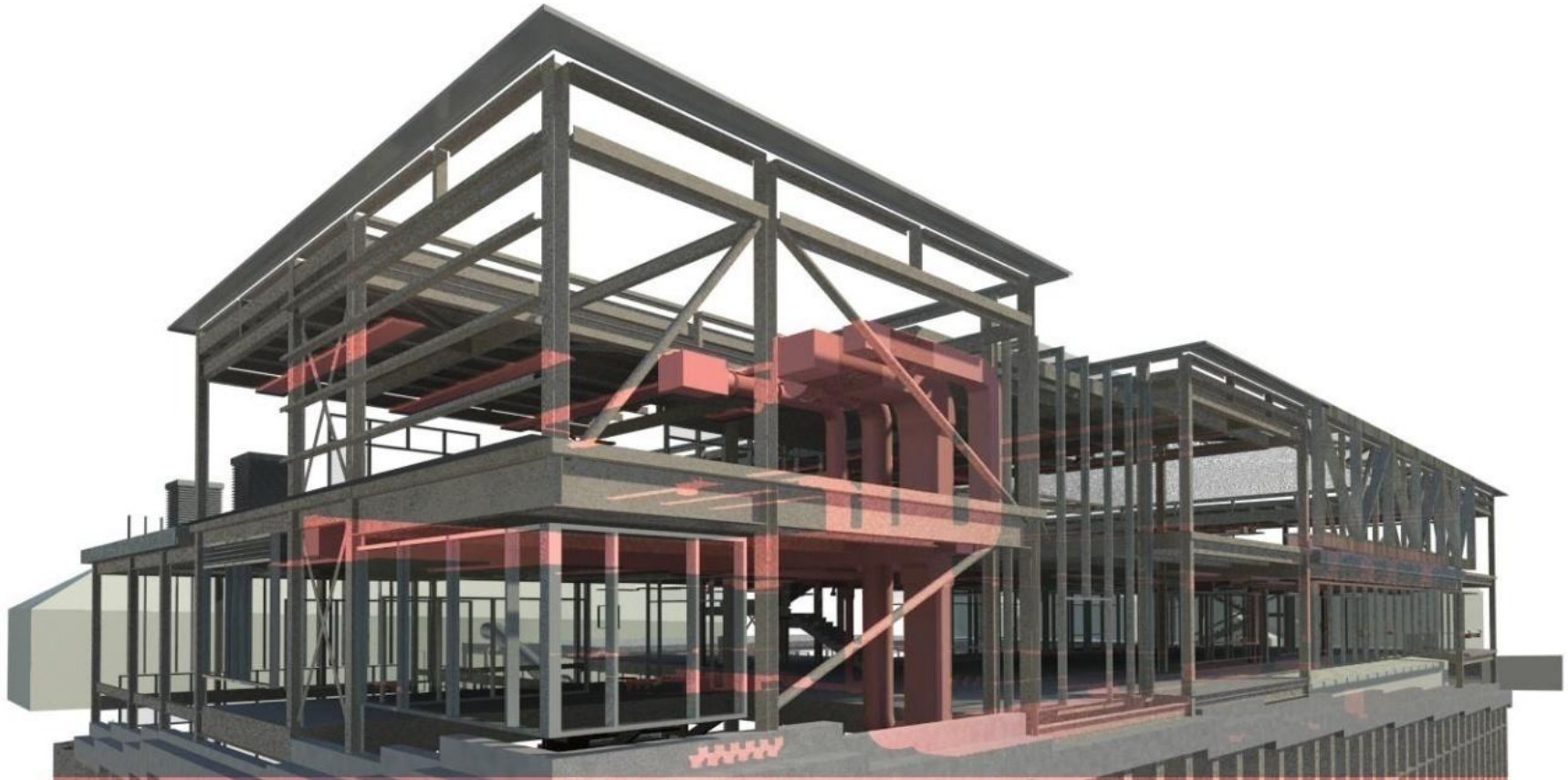
Name	Number	Required Area	Area	Area Difference	BB Department	Comments
Reception Classroom 1	TCH 01	66 m²	67.6 m²	1.6 m²	Basic Teaching	Class & cloak stores included in area
Reception Classroom 2	TCH 02	66 m²	67.6 m²	1.6 m²	Basic Teaching	Class & cloak stores included in area
Year 1 Infant Classroom 1	TCH 03	61 m²	62.7 m²	1.7 m²	Basic Teaching	Class & cloak stores included in area
Year 1 Infant Classroom 2	TCH 04	61 m²	62.8 m²	1.8 m²	Basic Teaching	Class & cloak stores included in area
Year 3 Junior Classroom 1	TCH 05	61 m²	63.5 m²	2.5 m²	Basic Teaching	Class & cloak stores included in area
Year 2 Infant Classroom 2	TCH 06	61 m²	65.7 m²	4.7 m²	Basic Teaching	Class & cloak stores included in area
Year 2 Infant Classroom 1	TCH 07	61 m²	65.7 m²	4.7 m²	Basic Teaching	Class & cloak stores included in area
Year 2 Junior Classroom 2	TCH 08	61 m²	69.7 m²	8.7 m²	Basic Teaching	Class & cloak stores included in area
Year 4 Junior Classroom 1	TCH 09	61 m²	69 m²	8 m²	Basic Teaching	Class & cloak stores included in area
Year 4 Junior Classroom 2	TCH 10	61 m²	66.7 m²	7.7 m²	Basic Teaching	Class & cloak stores included in area
Year 6 Junior Classroom 1	TCH 11	61 m²	67 m²	6 m²	Basic Teaching	Class & cloak stores included in area
Year 6 Junior Classroom 2	TCH 12	61 m²	67.3 m²	6.3 m²	Basic Teaching	Class & cloak stores included in area
Year 5 Junior Classroom 1	TCH 13	61 m²	66.9 m²	7.9 m²	Basic Teaching	Class & cloak stores included in area
Year 5 Junior Classroom 2	TCH 14	61 m²	66.1 m²	7.1 m²	Basic Teaching	Class & cloak stores included in area
Food Bay	TCH 15	4 m²	6.6 m²	2.6 m²	Basic Teaching	
Food / Science / O&T	TCH 16	38 m²	37.4 m²	-0.6 m²	Basic Teaching	
Breakout Space	TCH 17	38 m²	70.6 m²	32.6 m²	Basic Teaching	Previously ICT Suite
Basic Teaching: 17		944 m²	1049.4 m²			
Dining Hall	DN 01	108 m²	115.6 m²	7.6 m²	Dining & Social	
Dining & Social: 1		108 m²	115.6 m²			
Main Hall	HAL 01	150 m²	149.9 m²	-0.1 m²	Halls	
Halls: 1		150 m²	149.9 m²			
Library Resource Centre	LRC 01	40 m²	42.5 m²	2.5 m²	Learning Resource	
Learning Resource: 1		40 m²	42.5 m²			
Upper Entrance	CR 01	0 m²	66.3 m²	66.3 m²	Non-Net	
Lower Entrance	CR 02	0 m²	72.9 m²	72.9 m²	Non-Net	
Circulation	CR 03	349 m²	12 m²	-337 m²	Non-Net	Total circulation figure from BB99 schedule added to
Stair 1	CR 04	0 m²	10.9 m²	10.9 m²	Non-Net	
Circulation	CR 05	0 m²	42.8 m²	42.8 m²	Non-Net	
Stair 2	CR 06	0 m²	9 m²	9 m²	Non-Net	
Circulation	CR 07	0 m²	5.8 m²	5.8 m²	Non-Net	
Circulation	CR 08	0 m²	41.6 m²	41.6 m²	Non-Net	
Circulation	CR 09	0 m²	13.3 m²	13.3 m²	Non-Net	
Circulation	CR 10	0 m²	24.3 m²	24.3 m²	Non-Net	
Circulation	CR 11	0 m²	15.1 m²	15.1 m²	Non-Net	
Circulation	CR 12	0 m²	14.4 m²	14.4 m²	Non-Net	
Lobby	CR 13	0 m²	5.7 m²	5.7 m²	Non-Net	
Kitchen	KIT 01	78 m²	86.7 m²	8.7 m²	Non-Net	
Lift	LFT 01	0 m²	3.3 m²	3.3 m²	Non-Net	
Plant	PLT 01	49 m²	32.4 m²	-16.6 m²	Non-Net	
M&E Riser	RGR 02	0 m²	1.1 m²	1.1 m²	Non-Net	
Reception Toilets	SAN 01	4 m²	7.4 m²	3.4 m²	Non-Net	
Year 1 Infant Toilets	SAN 02	4 m²	7.6 m²	3.6 m²	Non-Net	
Reception / Infant Unisex: Toi	SAN 03	10 m²	15.1 m²	5.1 m²	Non-Net	
Pupil Unisex: Toilets	SAN 04	10 m²	17.6 m²	7.6 m²	Non-Net	
Disabled / Visitor / Staff W/C	SAN 05	4 m²	3.3 m²	-0.7 m²	Non-Net	
Junior Unisex: Toilets	SAN 06	10 m²	12.3 m²	2.3 m²	Non-Net	
Disabled / Staff W/C	SAN 07	4 m²	3.3 m²	-0.7 m²	Non-Net	
Staff / Visitor Toilets	SAN 08	4 m²	11.6 m²	7.6 m²	Non-Net	

The left side of the screenshot shows three GIFA (Ground Floor Area) diagrams: 1. Lower Ground Floor GIFA (1:500), 2. Upper Ground Floor GIFA (1:500), and 3. First Floor GIFA (1:500). The bottom right corner shows the Windows taskbar with the start button and several open applications, including Microsoft Outlook and Autodesk Revit Architecture.

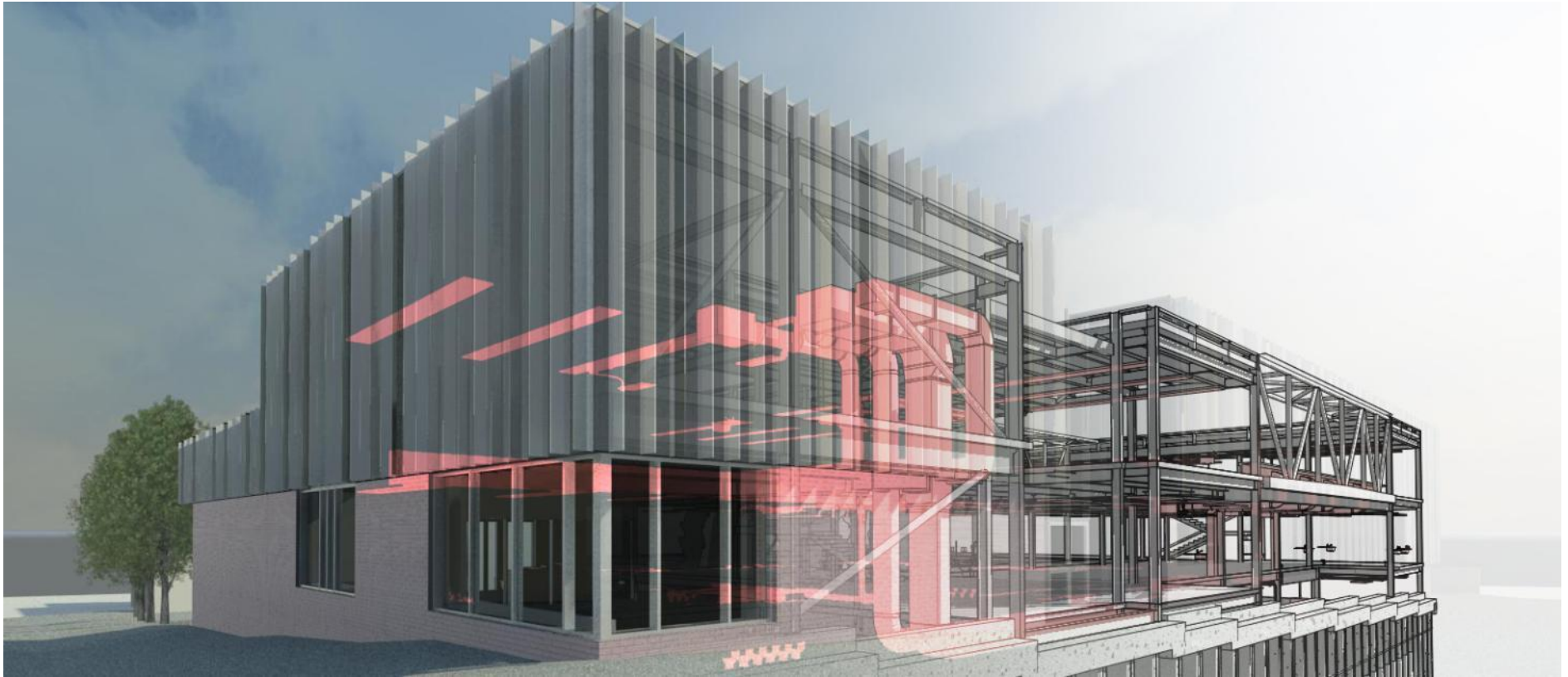
BIM modelling



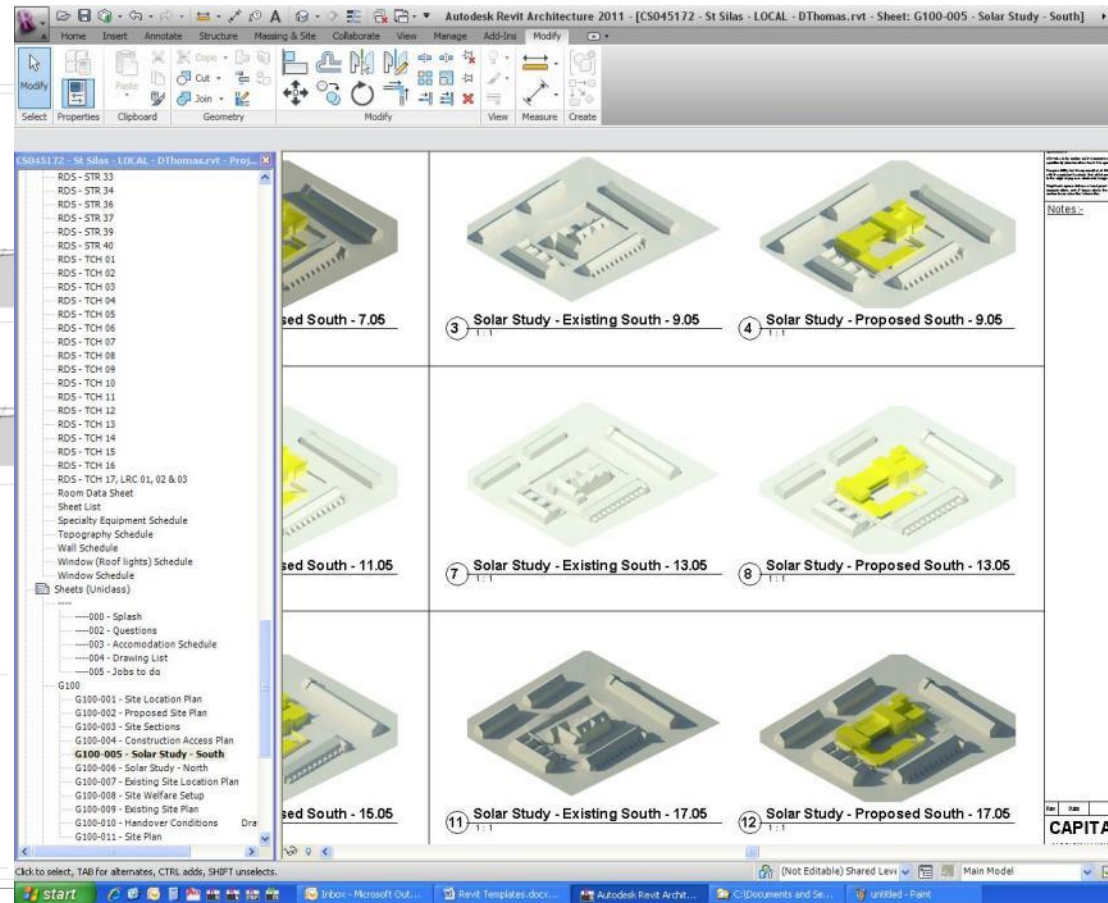
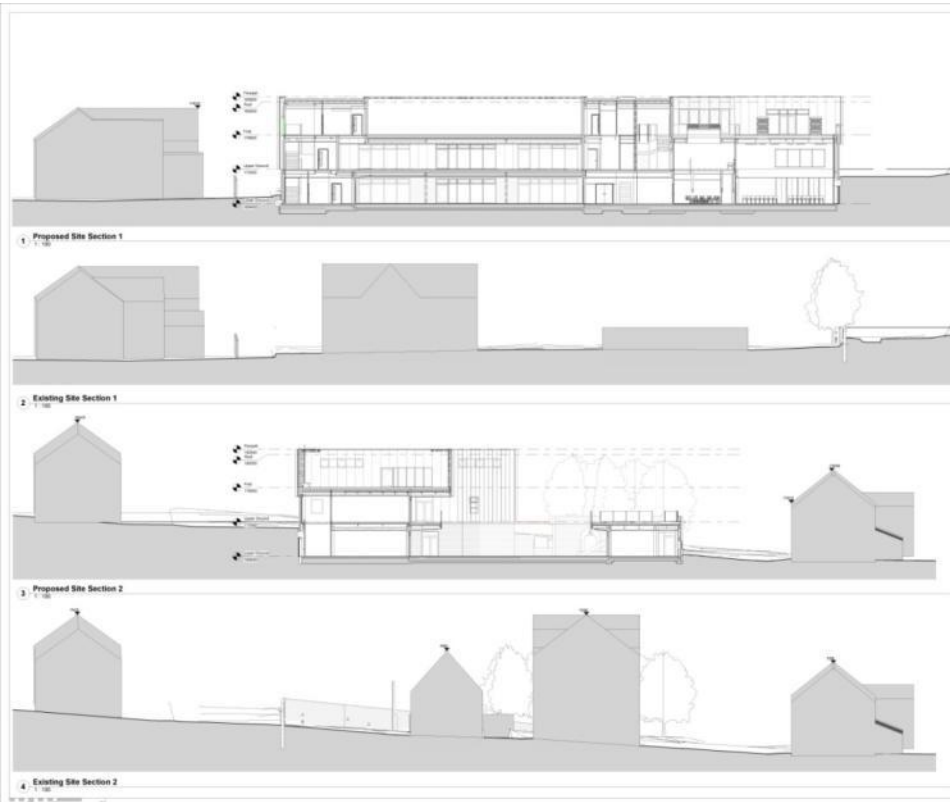
Structure and Services



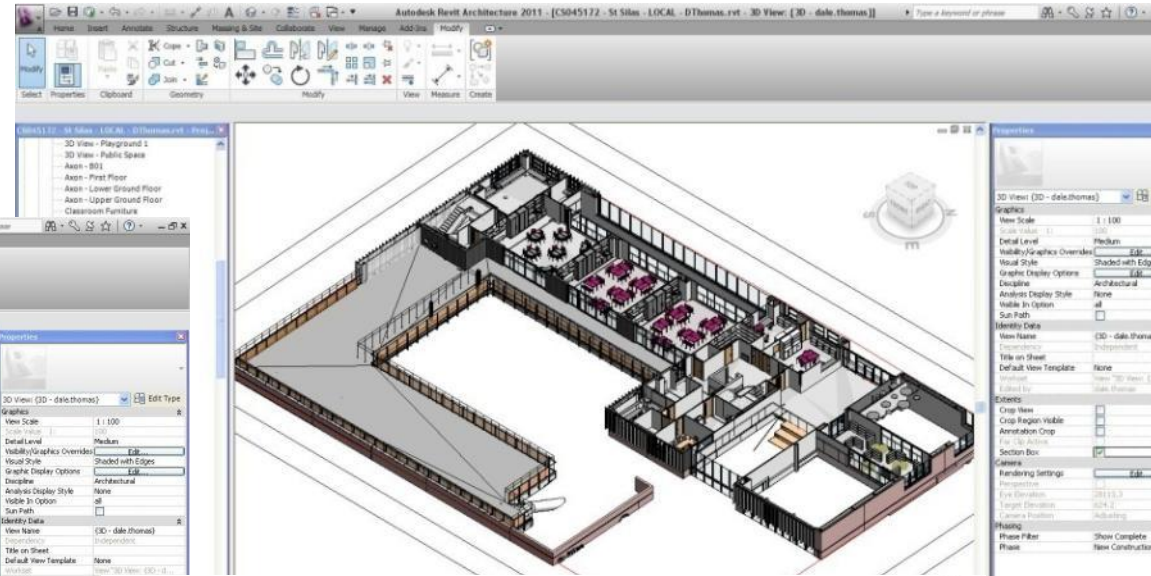
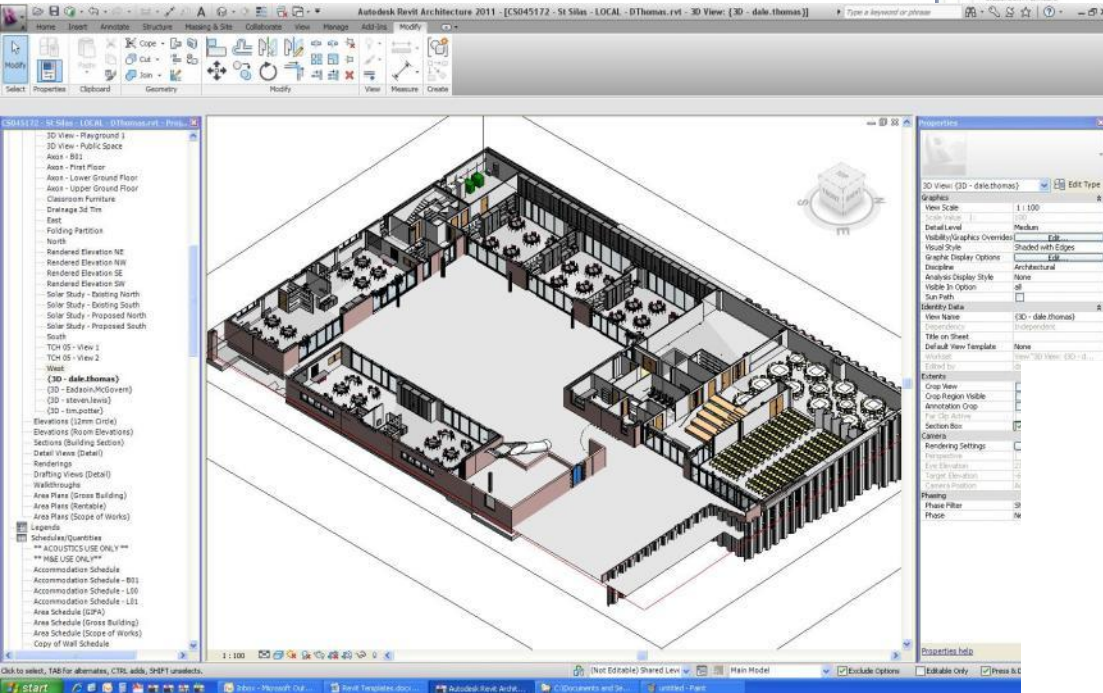
Envelope



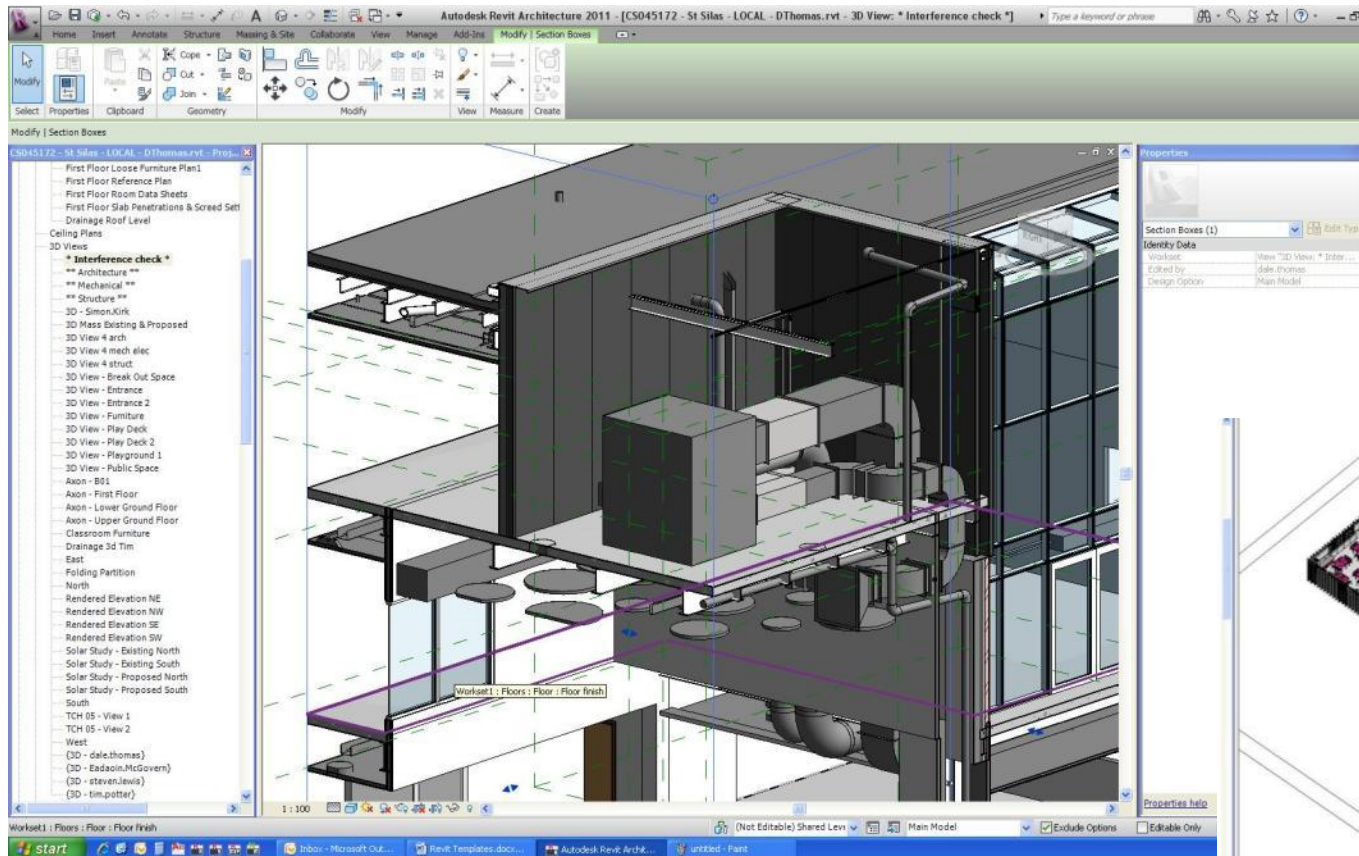
Environmental Analysis



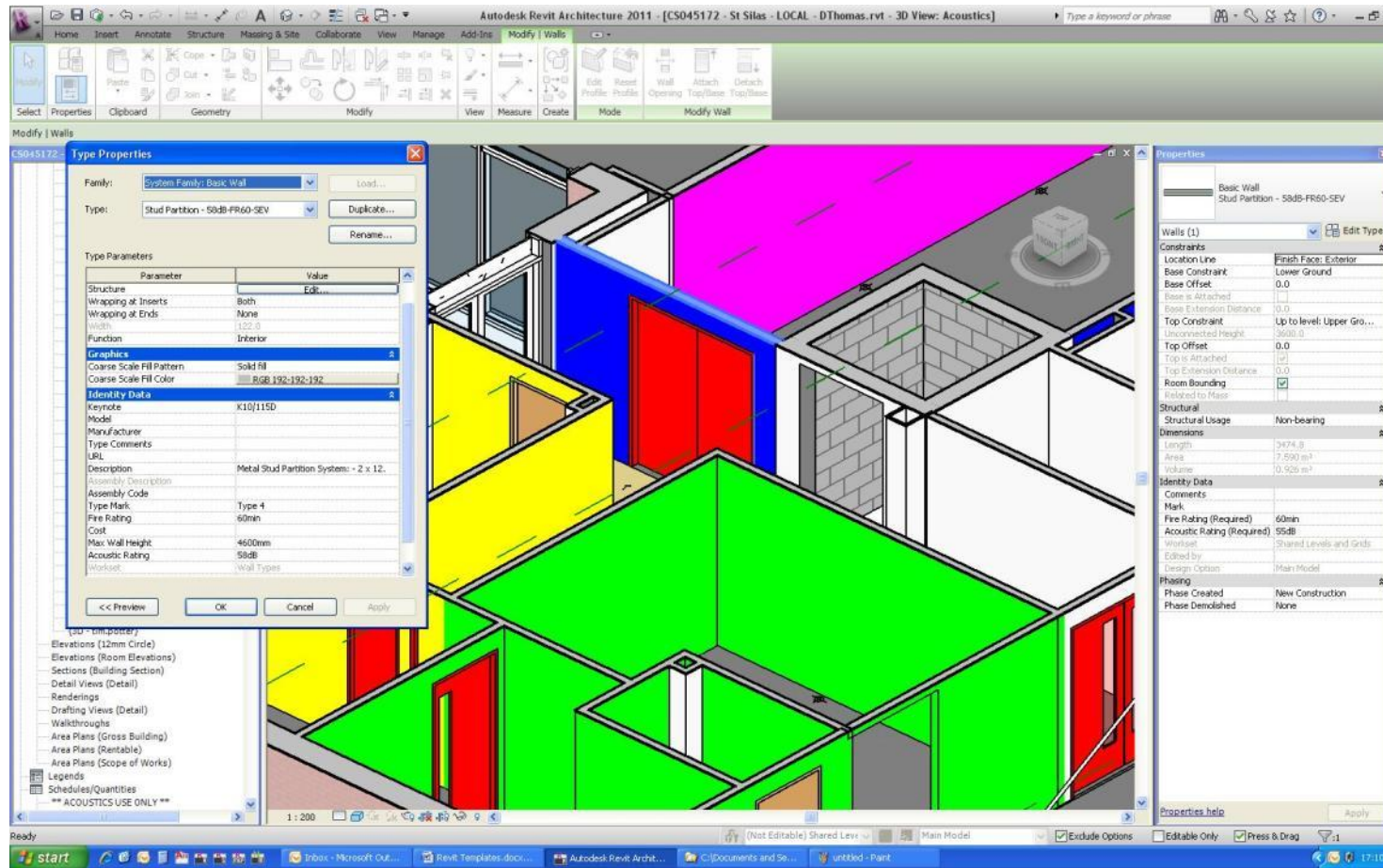
FFE Integration



Installation Sequencing



Material Properties



Clash Detection Reports

The screenshot displays a software interface for clash detection. On the left, a list of clash items is shown with their details. On the right, a 3D model of a building structure is visible, with red markers indicating the locations of clashes.

Clash Item 1:

- Layer: Upper Ground
- Item Name: Stud Partition - 42dB-FR60-SEV
- Item Type: Solid
- Item 2:
 - Element ID: 1297596
 - Layer: <No level>
 - Item Name: 356x171x57UB
 - Item Type: Solid

Clash Item 2:

- Name: Clash72
- Distance: -472.1mm
- Description: Hard
- Status: New
- Clash Point: 366823911.2mm, 428548629.0mm, 175853.7mm
- Date Created: 2011/5/27 15:13:47
- Item 1:
 - Element ID: 324921
 - Layer: Upper Ground
 - Item Name: Stud Partition - 50dB-FR60-SEV
 - Item Type: Solid
- Item 2:
 - Element ID: 1902608
 - Layer: <No level>
 - Item Name: 305x165x46UB
 - Item Type: Solid

Clash Item 3:

- Name: Clash73
- Distance: -472.1mm
- Description: Hard
- Status: New
- Clash Point: 366817459.7mm, 428542530.7mm, 175854.9mm
- Date Created: 2011/5/27 15:13:47
- Item 1:
 - Element ID: 324921
 - Layer: Upper Ground
 - Item Name: Stud Partition - 50dB-FR60-SEV
 - Item Type: Solid
- Item 2:
 - Element ID: 1902608
 - Layer: <No level>
 - Item Name: 305x165x46UB
 - Item Type: Solid

Client Engagement



Client Testimonial



Client Testimonial



“Because we have been able to see exactly what it looks like **we have been able to order the furniture now in advance**, which would never have been able to with the use of flat plans.”

A lot of consultation has gone on, **I certainly feel more confident** because we can actually see what it’s going to look like.

They have used the **BIM model** to help understand how to “Keeping the school **looking good**, knowing how much that’s going to **cost, sustainability**, knowing how long **things will last**, all of those have been within the conversations we have had and very **much built into the planning**”

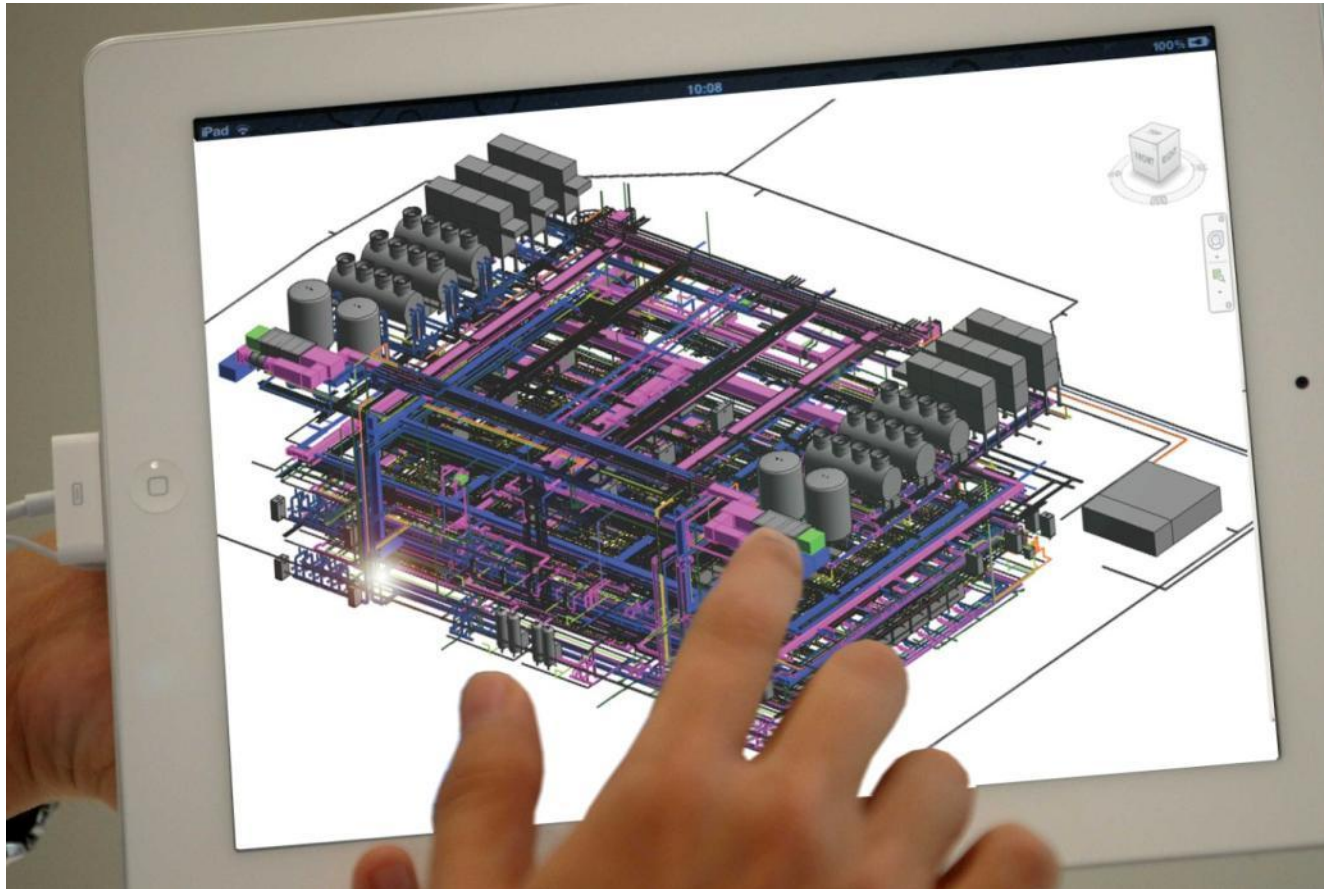
Project Aims and Results

- Design Integration
- Shorter programme to planning
- Reduced RFIs (23 to date)
- Supply chain integration
- Integration of FF&E, SoA schedules
- Zero M&E Clashes on site
- Visibility of Programming
- Integration of Temporary Works
- Increased safety-managing public interfaces on tight site
- Aid to client decision making

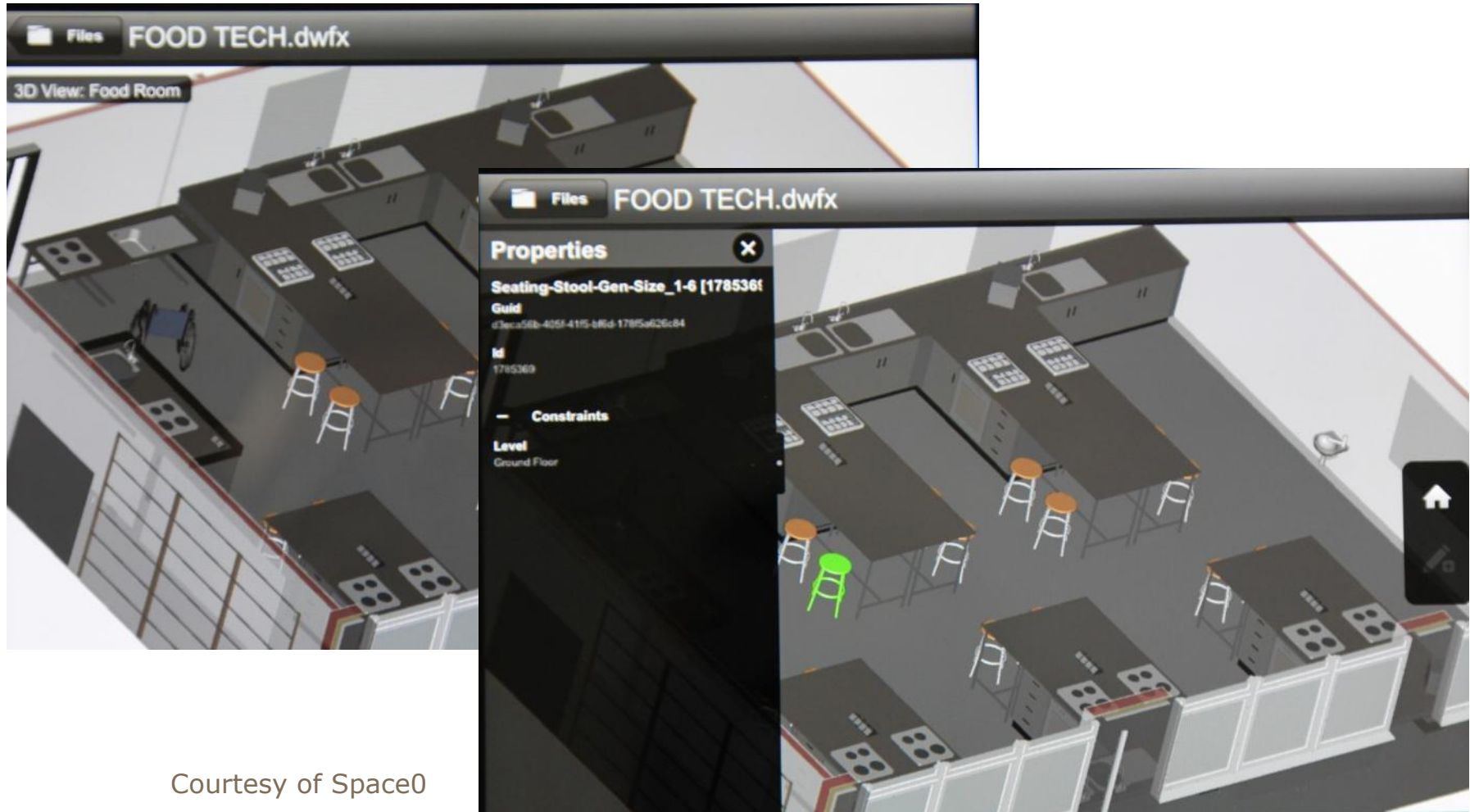
Portable technology



Used by Client, design and site staff

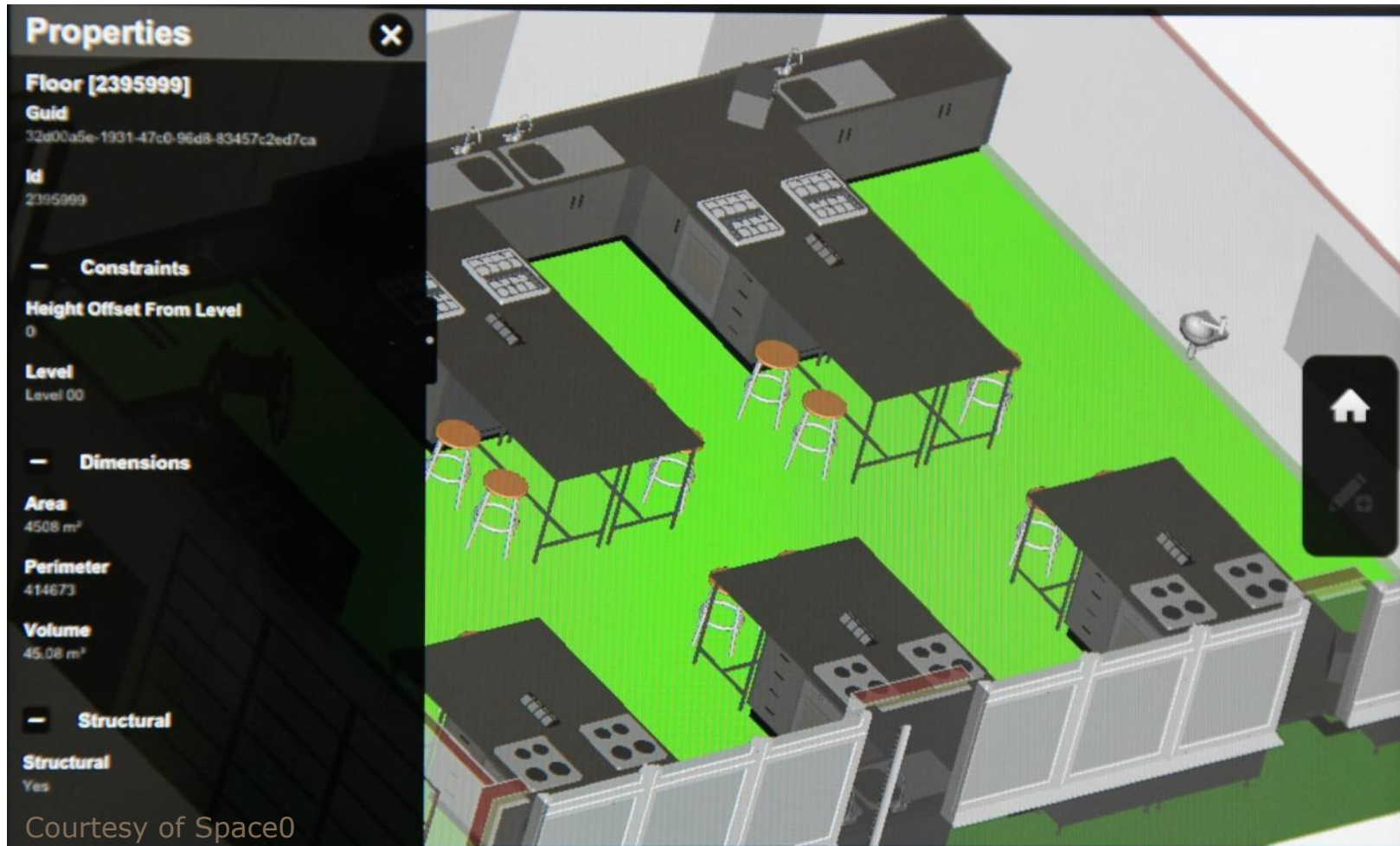


Component Properties



Courtesy of Space0

Component Properties



360 Gyroscopic Views



Courtesy of Space0



Thank you