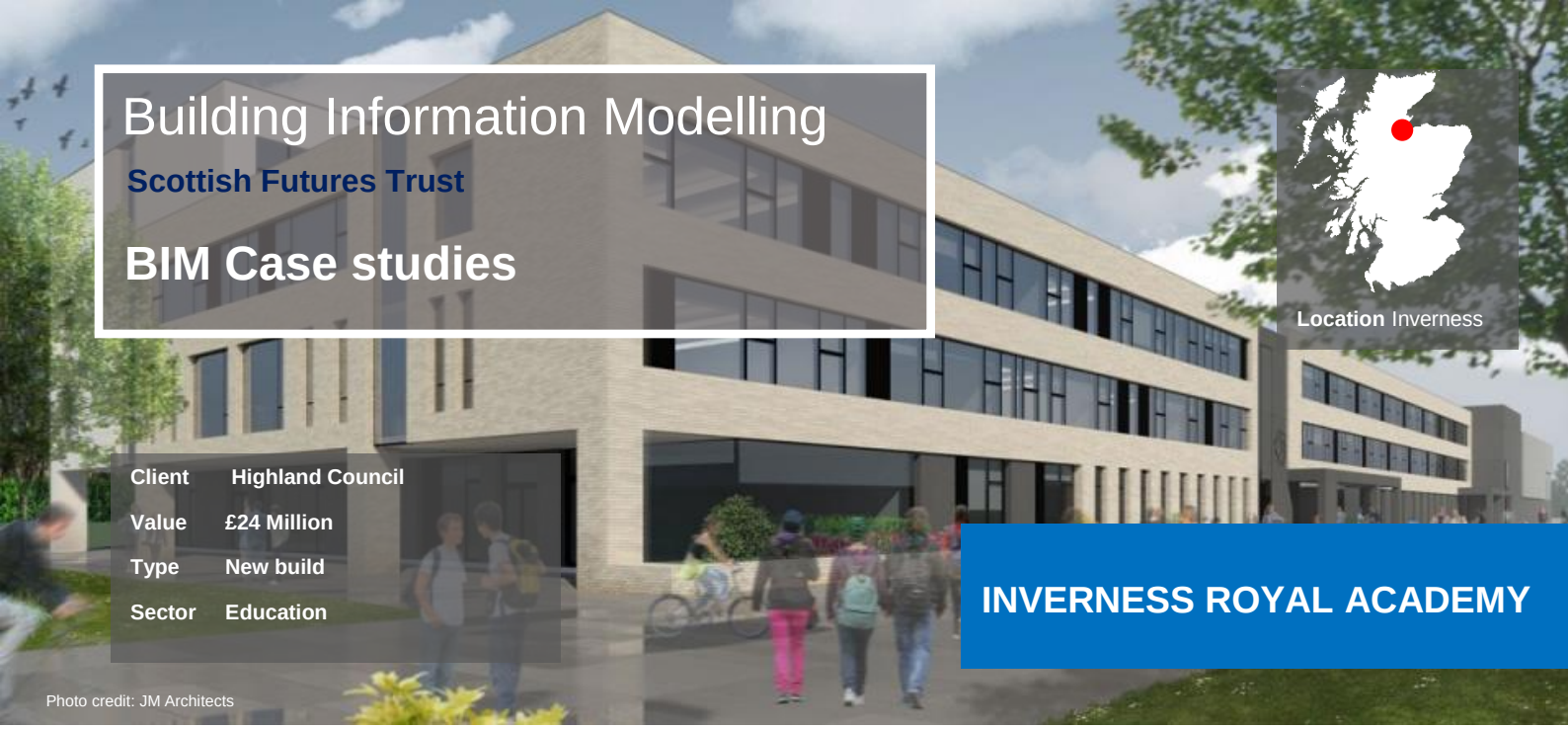
Building Information Modelling

Scottish Futures Trust

BIM Case studies



Location Inverness

Client	Highland Council
Value	£24 Million
Type	New build
Sector	Education

Photo credit: JM Architects

INVERNESS ROYAL ACADEMY

Relevant project stages

01	02	03	04	05	06	07
Brief	Concept	Definition	Design	Build and Commission	Handover & Close out	Operation In Use

DESIGNING OUT CHANGE

The Project

The new Inverness Royal Academy replaces the existing school building, providing a modern learning environment capable of meeting the needs of current and future pupils, as well as offering greater provision for community use during the evenings and weekends.

The new school, located west of the city's Culduthel Road, will have an increased pupil capacity in order to accommodate housing growth within the catchment area and increased uptake in Gaelic Medium education. Consisting of 84 rooms, along with an additional six classrooms, the school will also provide a number of facilities that can be used by the wider Inverness community.

An additional games hall (two halls in total), a fitness suite, dance studio, gymnasium and two synthetic turf pitches are all part of the plans.

BIM Implementation

The application of BIM occurred quite late in the project with the process starting at the start of HUB Stage 2 / CIC work stage 3. The BIM deliverables were largely driven by the main contractor who appointed an Information Manager to establish a common data environment (CDE), produce the BIM documentation, and help manage the 3D coordination between disciplines through regular clash detection workshops and audits. The aim was to test the concepts of BIM Level 2 delivery, monitor resultant benefits, and look at what issues needed to be addressed from this process.

Due to contractual arrangements the majority of 3D model work was initially limited to Architectural and Structural models, with an MEP services model being fully developed on appointment of the MEP Subcontractor. It is difficult to quantify or attribute potential savings associated with clashes identified and resolved during the design stage as they never manifested themselves physically on-site. However as a result of BIM implementation the time traditionally resourced for a full time design manager on site was reduced by approximately 3 months on this project.

Key Benefits

3D model used directly to generate visualisations improving stakeholder engagement

Building services and pre-cast concrete elements integrated with 3D models.

Production information auto updated from BIM software

Project Team

Architects - JM Architects

Structural Engineers – CH2M

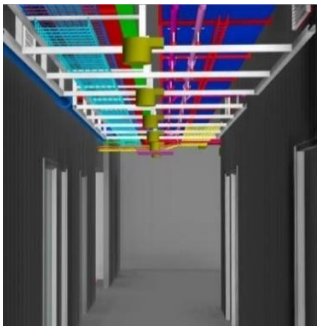
MEP Design – DSSR

MEP Subcontractor –Vaughan Engineering

Contractor- Morrison Construction

SCOTTISH FUTURES TRUST

INVERNESS ROYAL ACADEMY



Images (L) The FF&E3D model was utilised for stakeholder consultation, RDD sign off, and coordination with the design models. (above) Coordinated MEP systems and framing were modelled digitally and fabricated off site. Model data was used to check tolerances and simulate virtual installation sequences.

Client Value

Over the design process and clash detection 100's of issues were picked up and resolved and therefore never came to fruition on-site. It is possible, that some would have become a reality on-site and consequential costs and programme implications realised. As a resultant of BIM adoption these have been widely negated.

Lessons learnt & feedback

BIM coordination between architecture and structure number of site interface issues reducing re-work, material wastage and time.

Timely MEP subcontractor appointment enabled early collaboration and decision making with design consultants, resulting in earlier coordination of exposed services. Model simulations used to determine installation sequencing and tolerances prior to offsite fabrication of MEP modular units

Client BIM requirements are vital at the start of a project to ensure appropriate contracts are utilised and there is full buy-in by all stakeholders

Use of BIM for educational purposes within current school curriculum via 3D walkthroughs, and linking the model to gaming platforms e.g. PlayStation handset, enriched stakeholder engagement, build community awareness &trust.

All consultants need to be on board –mixing BIM with 'traditional' CAD workflows reduces the overall effectiveness of the coordination process, and increases the time required to achieve a fully integrated design.

https://bimportal.scottishfuturestrust.org.uk/

bimdeliverygroup@scottishfuturestrust.org.uk

+44 (0)131 510 0800

The Scottish Futures Trust (SFT) is an independent company established by the Scottish Government with a responsibility for delivering value for money across public sector infrastructure investment

SCOTTISH FUTURES TRUST